4.5 MW GROUPED SMALL HYDROPOWER PROJECTS FOR GRID SYSTEM BY BHORUKA POWER CORPORATION LIMITED IN KARNATAKA STATE, INDIA

Document Prepared By: LGAI Technological Center, S.A. (Applus+ Certification)

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Summary:

Verification purpose: The main purpose of this bundled project activity is to generate clean form of electricity through 4.5 MW Grouped Hydro Power Plants in the state of Karnataka, which includes the 1 MW Mini Hydel Power Project of Shahapur-D9 at Gulbarga district and 3.5 MW (2×1.75) Capacity Mini Hydel Power Project at Mandya District. The project envisages installation of 1no's of horizontal Francis turbine at Shahapur-D9 site and 2 no's horizontal Kaplan turbines at Mandagere site, which makes total installed capacity of 4.5 MW. The Shahpur-D9 unit was commissioned on 29-August-2003 and Mandagere unit on 16-September-2004. The electricity generated from the project activity is supplied to KPTCL grid (now Indian Grid), which is mainly dominated by thermal/fossil fuel-based power plant. The power generated by the project activity is being sold to respective State Electricity Board. The project is located at two sites i.e.;

Shahapur-D9 Project (1x1MW): The project is a canal based Mini Hydel scheme on the 36 km distributary-9 of Shahapur Branch canal (SBC). The project site is located near the village Banathal, in the District of Gulbarga, Karnataka State and

Mandagere Project (2x1.75 MW): The project is located on the downstream of Mandagere anicut near Mandagere Village, Mandya district of Karnataka state.

Start date of the project activity is 29-August-2003, the day on which the project has accounted for emission reductions as per the registered VCS PD version 02, dated 10-September-2009 and final validation report dated 14-November-2009. An undertaking has been submitted by PP for double counting would never happens with the any other GHG program. During the current monitoring period, project activity undergoes continued operation and no major breakdown had taken place.

This is 3rd verification under VCS and covers this activity from 01-January-2013 to 29-February-2016 (inclusive both days). During the current verification period, the project activity has supplied

20,387.289 MWh (20.387289 GWh) of electricity, and thus contributing to the GHG reductions 17,413 tCO_2e.

Thus, VCS crediting period is of 10 years (Fixed). The start date of crediting period is 01-April-2006[1] and 31-March-2016 is the end date of the crediting period.

A risk-based approach has been followed to perform this verification activity. In the course of verification, *08* Corrective Action requests (CAR), 00 Clarification Requests (CLs) and 00 Forward action requests (FARs) were raised and successfully closed. The review of the monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided VVB with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by "Bhoruka Power Corporation Limited (BPCL)" to perform the 3rd verification of the "4.5 MW Grouped Small Hydropower Projects for Grid system by Bhoruka Power Corporation Limited in Karnataka State, India" under VCS standard v.4.1 and Program guide version 4.0. The objective of this verification activity is to have an independent third party for the assessment of the project design, monitoring report and Final Verification report and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular;

- the project's baseline is assessed against "AMS-I.D version 13.0"
- the project's monitoring plan is assessed against "AMS-I.D version 13.0"
- the projects compliance with, the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS Program guide v.4.0 and standard, version 4.1
- CDM Validation and Verification Standard for project activities, version 02.0
- CDM Project Standard for project activities, version 02.0
- CDM project cycle procedure for project activities, version 02.0
- VCS standard, version 4.1
- VCS Program Guide, version 4.0

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

[1] As per VCS Program guide Version 4.0

The scope of the verification is the independent and objective review of the monitoring report (MR). The MR is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM Validation and Verification Standard for the project activities, version 02, review against registered PD and Final Validation report, CDM Project Standard for project activities, version 02.0; CDM Project Cycle Procedure for project activities, version 02.0 and VCS program Guide v.4.0 and standard version 4.1.

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

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

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

CONTENTS

1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Hereinafter referred as Applus+ Certification) has been appointed by "Bhoruka Power Corporation Limited (BPCL)" to perform the 3rd periodic verification of the project entitled "4.5 MW Grouped Small Hydropower Projects for Grid system by Bhoruka Power Corporation Limited in Karnataka State, India" under VCS standard, version 4.1 and Program guide version 4.0. The objective of this verification activity is to have an independent third party for the assessment of the project design, monitoring report and final verification report and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular;

- the project's baseline is assessed against "AMS-I.D version 13.0"
- the project's monitoring plan is assessed against "AMS-I.D version 13.0"
- the project's compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS Program guide version 4.0 and standard version 4.1
- CDM Validation and Verification Standard for project activities, version 02.0
- CDM Project Standard for project activities, version 02.0
- CDM project cycle procedure for project activities, version 02.0
- VCS standard, version 4.1
  VCS Program guide, version 4.0
- Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of estimated verified emission reductions (VERs).

1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR) prepared as per the registered PD and registered approved methodology AMS-I.D version 13.0. The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS standard version 4.1 and program guide version 4.0, including the approved baseline and monitoring methodology AMS-I.D version 13.0. The verification was based on the requirements in the CDM validation and verification standard for project activities, Version 02.0, CDM Project Standard for project activities, version 02.0, CDM project cycle procedure for project activities, version 02.0 and VCS program guide v.4.0 and standard version 4.1

The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread sheet. It invoices follows the paper trail back to the raw data such as meter reading records and invoices. There are no material errors, overestimation of ER, omission or misstatement. The verification team has reviewed all the documents like commissioning certificates, JMR, invoices etc.

1.3 Level of Assurance

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. The entire documents checked/Power plant verification conducted to arrive at positive verification conclusions

1.4 Summary Description of the Project

The main purpose of this bundled project activity is to generate clean form of electricity through 4.5 MW Grouped Hydro Power Plants in the state of Karnataka, which includes the 1 MW Mini Hydel Power Project of Shahapur-D9 at Gulbarga district and 3.5 MW (2×1.75) Capacity Mini Hydel Power Project at Mandya District. The project envisages installation of 1no's of horizontal Francis turbine at Shahapur-D9 site and 2 no's horizontal Kaplan turbines at Mandagere site, which makes total installed capacity of 4.5 MW. The Shahpur-D9 unit was commissioned on 29-August-2003 and Mandagere unit on 16-September-2004. The electricity generated from the project activity is supplied to KPTCL grid (now Indian Grid), which is mainly dominated by thermal/fossil fuel-based power plant. The power generated by the project activity is being sold to respective State Electricity Board. The project is set up by Bhoruka Power Corporation Limited and located at:

Shahapur-D9 Project (1x1MW): The project is a canal based Mini Hydel scheme on the 36 km distributary-9 of Shahapur Branch canal (SBC). The project site is located near the village Banathal, in the District of Gulbarga, Karnataka State. The project activity lies between Latitude 16° 41'30" N and 76°45'30" E.

Mandagere Project (2x1.75 MW): The project is located on the downstream of Mandagere anicut near Mandagere Village, Mandya district of Karnataka state. The project activity lies between Latitude 12° 44'0" N and 76° 22'30" E .

The Project activity is a new facility (Greenfield) and the electricity delivered by the project activity is exported to the KPTCL grid (now Indian grid). The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant

electricity grid. The PP has entered into long term Power Purchase Agreement with Karnataka Power Transmission Corporation Ltd. (KPTCL) and electricity is being sold to KPTCL.

During the Current Monitoring Period from 01-January-2013 to 29-February-2016 (First and last date included) the project activity has supplied 20,387.289 MWh (20.387289 GWh) of electricity, and thus contributing to the GHG reductions 17,413 tCO_2e.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Process: The project assessment is based on the Clean Development Mechanism Validation and Verification Standard for project activities, version 02.0 and VCS standard, version 4.1 and program guide, version 4.0 and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

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

I. A desk review of the monitoring Report against the registered PD;
II. Follow-up interviews with project participant;
III. The resolution of outstanding issues and the issuance of the final verification report and opinion.

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

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

According to the sectoral scope / technical area and experience in the sectoral or national business environment, LGAI Technological Center S.A. (Applus+ Certification) has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of LGAI Technological Center S.A. (Applus+ Certification).

The composition of audit team shall be approved by the LGAI Technological Center S.A. (Applus+ Certification) ensuring that the required skills are covered by the team.

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

- Lead Auditor (LA).

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

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

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

The complete list of CVs is included as Appendix 3 of this report.

Document review

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

Follow-up interviews

A remote audit was conducted by LGAI Technological Center S.A. (Applus+ Certification) who performed interviews, telephone conferences with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report in the below sections.

Resolution of Clarification and Corrective Action Request

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

The final MR Version 02 submitted by PP on 29-March-2021 serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country

Internal quality control

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

After confirmation of the project owners the positive verification opinion and relevant documents are submitted to the VCS secretariat through the VCS web-platform.

2.2 Document Review

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

2.3 Interviews

A remote audit was conducted for the project activity on 04-September-2020. Remote audit was conducted due to on going COVID-19 pandemic situation in the entire state of India. Taking into account the rules of relevant national and local authorities (local to the DOE offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the DOE and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return). Moreover, The VCS Program does not explicitly mandate site visits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (per Section 4.1.2 of the VCS Standard, version 4.1).

The VVB has taken alternative measures to reach reasonable level of assurance and conducted remote audit through Google Meet/Telephone with site personal & consultant (refer section 2.3) with the PP representative. This is also in line with the COVID-19 travel guidance for projects of VERRA[2] .

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

During the remote audit, the PP representatives were questioned about the implementation of the project activity. Several topics like the verification of commissioning date of meters, the generation, recording, and monitoring of the data and the error accountability were discussed. To cross check the information provided by PP, various documents like technical specifications, commissioning certificates, PPA, JMR sheets, invoice, calibration certificates, s, etc. were also

[2] https://verra.org/covid-19-travel-guidance/

verified. The names of the persons interviewed during remote audit through Google Meet & telephonic interview is given below;

Organization	Name of Persons/Designation	Topics discussed	Team Member
Bhoruka Power Corporation Limited	Mr. S Chandrsekhar Project Manager	Project Management and Invoice Practicing	Dr. Atul Takarkhede
	Mr. Momman Anand Site-In-charge (Mandagere) Mr. Malkanna Site-in-Charge (Shahapur D9)	Project activity implementation, Project Description, LSC Mechanism Operation, Calibration, O&M practices, JMR, Mechanical maintenance, Electrical maintenance	
EKI Energy	Mr. Barun Sharma	MR, ER calculations etc.	
	Mr. Souvik Mitra, EKI Consultant	MR, ER calculations etc.	

2.4 Site Inspections

Duration of Remote Audit: 04-September-2020 (Via Google Meet video conference)				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. Assessment team also checked that whether the monitoring plan as described in the VCS PD is actually practised onsite. Also, assessment team checked any change in host country criteria which may affect the baseline of the project activity.	District Gulbarga and Mandya, Karnataka	04-September-2020 (Via Google Meet video conference)	Dr. Atul Takarkhede

2.5 Resolution of Findings

The objective of this phase of the verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for LGAI Technological Center S.A. (Applus+ Certification)'s positive conclusion on the project design and

Monitoring report. The Corrective Action Requests and Clarification Requests raised by LGAI Technological Center S.A. (Applus+ Certification) were resolved during communications between the Client and LGAI Technological Center S.A. (Applus+ Certification) to guarantee the transparency of the validation process, the concerns raised and responses given are summarized below in the appendix 2.

The final MR Version 02 submitted by project owners on 29-March-2021 serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	00	00	00
Description of project activity	00	04	00
Application of selected baseline and monitoring methodology and selected standardized baseline			
- Applicability of methodology and standardized baseline	00	00	00
- Deviation from methodology	00	00	00
- Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00
Project boundary	00	00	00
Establishment and description of baseline scenario	00	00	00
Demonstration of additionality	00	00	00
Emission reductions	00	02	00
Calibration details	00	01	00
Monitoring plan	00	00	00
No Net harm assessment	00	00	00
Local stakeholder consultation	00	01	00
Others (please specify)	00	00	00
Total	**00**	**08**	**00**

The list of findings and their resolution is presented in appendix 2 of this report.

2.5.1 Forward Action Requests

This is 3rd periodic verification of the project activity under VCS and no FAR was raised from VCS Validation & previous VCS verifications. No FAR raised during this verification as well.

2.6 Eligibility for Validation Activities

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

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project activity is neither registered nor seeking registration in any other GHG programs. Moreover, project proponent has also provided undertaking that it would not GHG credits in any GHG program other than that in VERRA for the current monitoring period 01-January-2013 to 29-February-2016. Assessment team verified the same with UNFCCC webpage.

3.2 Methodology Deviations

The project activity used AMS-I.D version 13.0 which is as per the registered VCS PDD and thus no deviation is sought regarding the methodology. The project complies with all the requirement of the methodology and thus deviation to the methodology is not a requirement for the present project activity.

3.3 Project Description Deviations

During this verification it was observed that the project activity is implemented as per the approved VCS PD. Further, this is 3rd periodic verification and no project description deviation was sought during previous monitoring periods and also during this monitoring period.

3.4 Grouped Project

The project is a grouped project activity. The project activity included the 1 MW Mini Hydel Power Project of Shahapur-D9 (hereafter referred to as Shahapur-D9 Project) and 3.5 MW (2×1.75) Capacity Mini Hydel Power Project at Mandagere village, K.R.Pet Taluk, Madya Dist.(here after referred as Mandagere Project). However, no new instances have been introduced in the project activity.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the remote audit (Google Meet video conference video call), it was concluded that the project is implemented as per the instruction of the VCS PD and this is verified from the commissioning certificate. During the current monitoring period it was observed that no unforeseen situation evolved which can impact the operation of the project activity. The same was verified through the breakdown summary sheet of the project activity. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team.

Project location is confirmed by the assessment team through interview with PP and monitoring report. Assessment team also checked with the photograph of project site containing latitude and longitude of the project site and confirmed that the details as mentioned in the registered PD are correct. The latitude and longitude of the project activity is given below;

Project Site	State	Latitude	Longitude
Shahapur-D9	Karnataka	16º 41' 30" N	76º 45' 30" E
Mandagere		12o 44'0" N	76º 22' 30" E

Shahapur-D9 site: Shahapur – D9 Project envisages the utilization of seven drops accounting for 11 m head and a chute structure of 10 m – total 21 m gross head and the flow in the distributaries to generate 1 MW with single installed unit of capacity 1000 kW. The generated energy from the project after meeting its auxiliary equipment (dewatering pump, drainage pump, Oil Pumps, Cooling water pumps, plant lighting, etc.) requirement would be exported to the substation at Gugi which is 8 km away from the project site.

Mandagere site: In case of Mandagere project site, the scheme utilizes the flows which are spilling over the anicut from the regulated releases of Gorur dam in Hemavathi river and a gross head of 8 m available in the river due to the presence of Mandagere anicut and rapids in the downstream for power generation with two units of each 1750 kW installed capacity totalling to 3.5 MW. The generated energy from the project after meeting its auxiliary equipment (dewatering pump, drainage pump, Oil Pumps, Cooling water pumps, plant lighting, etc.) requirement would be exported to the substation at Kikkere which is at 5 km far away from the Project site.

Technical and equipment details: -

Parameter	Shahapur-D9 site	Mandagere site
Hydrology		
Rated discharge (m3/sec)	6	30.86
Design head (m)	21	6.8
Plant Equipment Details		
Type of hydro turbine	Horizontal Francis	Horizontal Kaplan
Type of generator	Squiralcage induction	Synchronous
No. of generating units	1	2
Capacity of each generating unit (kW)	1000	1750
Generation voltage (kV)	3.3	3.3

Frequency (Hz)	50	50

Assessment team checked the commissioning certificate of all units and confirms that the commissioning date are correct.

The assessment team confirmed through interview with O & M personal on Google Meet video conference that there are no changes in to the project design during this monitoring period. It was found that the monitoring plan was implemented as per the requirement of the VCS PD & approved monitoring Plan and approved methodology AMS.I-D version 13.0. The organisational role and responsibility as mentioned in the registered VCS PD is followed onsite. The calibration of energy meter is done as per the required frequency mentioned in the VCS PD. All the emergency preparedness as mentioned in the registered VCS PD is followed onsite and no discrepancies were found regarding the same.

The Project participant contribution from the project activity towards sustainable development in accordance to NCDMA as explained below:

Social well-being:

The project helps in generating employment. The project activity leads to development in infrastructure in the region like development of roads and also may promote business with improved power generation.

Economic well-being:

The project is clean technology investment in the area, thus leading to the overall development of the region and helping demand supply gap in the state.

Environmental well-being:

The project activity being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the project activity also helps in avoiding significant amount of GHG emissions

Technical well-being:

The operation of project activity leads to promotion of hydro based power generation and encourages other entrepreneurs to participate in similar projects.

The project activity is neither registered nor seeking registration in any other GHG programs. Moreover, project proponent has also provided undertaking that it would not GHG credits in any GHG program other than that in VERRA for the current monitoring period 01-January-2013 to 29-February-2016. The same is confirmed by the PP during the verification remote audit. Assessment team also conducted independent review regarding the same and found that the

statement of the PP is accurate and wouldn't claim GHG credit in other GHG program for the current monitoring period except under VCS.

The assessment team observed that the project is in line with the registered PD and applied methodology and thus no clarification/deviation is sought. CAR 01, CAR 02, CAR 03 and CAR 04 were raised during the verification process and closed successfully. Please refer below Appendix 2 for the detail closure of the CAR.

Assessment team confirms following during the verification remote audit:

1. Start date of the project is 01-April-2006[3] (as per commissioning Certificate).
2. An undertaking letter dated: 27-November-2020 has been submitted by PP for double counting with any other GHG program. PP also has given a written declaration that project has not claimed other form of GHG credit for the concerned monitoring period.
3. Assessment team confirms that this is the 3rd monitoring under VCS and covers the activity from 01-January-2013 to 29-February-2016 (inclusive of both dates). Thus, VCS crediting period should be 10 years (fixed) till end date of crediting period. 01-April-2006 is the start date and 31-March-2016 will be the end date of the crediting period.
   The VCUs for this monitoring period i.e. from 01-January-2013 to 29-February-2016 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the "Double Counting". PP have submitted declaration dated 27-November-2020 for avoiding double counting of the emission reductions achieved during this monitoring period.
4. Assessment team checked and found that the Project proponent of the project activity is as below for the current monitoring period:

Organization name	Bhoruka Power Corporation Limited
Contact person	Mr. S Chandrasekhar
Title	Managing Director
Address	48, Lavelle Road, Hitananda 2, Bengaluru-560001, Karnataka, India
Telephone	Landline: + 91 80 2227 2271 – 74
Email	bhoruka@bhorukapower.com

Further, Project activity also involved "EKI Energy Services Limited" as Project Consultant and details are as follows.

Organization name	EKI Energy Services Limited

[3] As per the definition of VCS Program guide Ver-4.0

	Project Consultant
	Mr. Souvik Mitra
	Project Manager
	Office No 201, Plot No 48, Scheme 78, Vijay Nagar Part- II, Indore 452010, India
	+91-9109120945
	souvik@enkingint.org

5. The quantified emission reduction calculation for the monitoring period is correct and conservative. Assessment team also compared actual VER with the estimated VER and found that the actual VER is 17,413 tCO_2e which is 67.4% lesser than the estimated emission reduction 53,374 tCO_2e (16,867 tCO_2e/ 365 days x 1155 days) during this monitoring period.
The decrease in Emission Reductions is due to the variations in water availability which is dependent on rainfall, grid availability and other parameters which are not in the control of PP. PP confirmed during interview that no change in project design occurred since installation of project, which can affect generation of electricity. Hence acceptable.

4.2 Safeguards

4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the remote audit. The project is renewable energy project and thus no negative impact observed onsite.

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

However, assessment team still conducted the No net harm assessment for some of the parameters and the result is described below:

SL.NO	Indicator	Assessment team opinion
1	Air quality	The project generates clean energy which replaces the fossil fuel intensive electricity generation. Also report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013. This report clearly mentioned that hydro plant operations do not result in direct air pollution. Adequate measures were taken to mitigate the envisaged impacts like spraying water on the road side to reduce dust level, etc. This

SL.NO	Indicator	Assessment team opinion
		was confirmed by the local stakeholders. Therefore, it is validated that mitigation measures were robustly implemented on ground for air quality issues project will have a positive impact on air quality.
2	Soil condition	There are negligible impacts envisaged during operation of the project activity being run of river project. For mitigating the impacts during construction, various mitigation measures were taken which is validated from the plant records of PP and the interview with local villagers. It was also confirmed that, the vegetation done at site helps for soil erosion. The same is confirmed during the stakeholder interviews during remote audit. Therefore, it can be concluded that the project has no effect on soil conditions during its operation because it has no waste coming out.
3	Biodiversity	During the validation site visit it was observed that the condition of ground vegetation will be gradually improved; No rare species has been found in the around area. The project site is not on the migration route of migratory bird. As Such small hydro plant do not have any obstruction in the path of migratory birds. Nor project is affecting aquatic life. With the implementation of Project, the greening water will be increased significantly; the biodiversity in the vicinity will be improved with the vegetation improvement. No negative impact envisaged.
4	Employment Generation	The project activity employed local population as skilled workers as well as security guards which were envisaged during the validation site visit. The personnel employed by the project activity are also provided trainings and exposed to various awareness programs therefore a positive indicator has been accepted.
5	Livelihood of the poor	The project is associated with infrastructure development like roads in the nearby areas and promoting economic activities like grants to local school and communities temples etc. Also, project employed local villagers as guards for the security of power project. Positive impact envisaged.

4.2.2 Local Stakeholder Consultation

All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. There was no change in project description form the VCS PD. Complaint/suggestion/feedback register is maintained at site as a part of ongoing communication with stakeholders in line with clause 3.16.17 of VCS Standard, ver. 4.1 and appropriate actions taken time to time by PP. Assessment team confirmed the same during the remote audit and document review i.e., grievance register etc. CAR 05 was raised on this section and closed successfully. Please refer Appendix 2 for further details

4.3 AFOLU-Specific Safeguards

Not applicable

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the MR. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the VCS PD and MR.
Findings	CAR 06 and 07 were raised on this section and closed successfully. Please refer Appendix 2 for further details
Conclusion	Baseline emission: The baseline Emissions for a given year is calculated by multiplying the energy baseline (EB) with the regional grid emission factor of the grid. Formula Used: - $BE_y = EG_y \times EF_{,y}$ BE_y - baseline emissions in year y (tCO_2) EG_y - Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh), and EF_y -CO_2 baseline emission factor of the grid in year y (tCO_2/MWh) Ex-ante parameters Following parameters has been taken Ex-ante: $EF_{grid,OM,y}$ or EF_y = Baseline Emission Factor (tCO_2/MWh) Calculated from the CO2 emission factor and electricity generation database of Indian Power Sector, published by CEA. The baseline emission factor is taken as 0.8545. NCV_{Diesel}= Net Calorific Value of Diesel (TJ/Gg) IPCC value have been used for diesel since no country specific data is available. The value is taken as 43 (Source: IPCC 2006) EF_{CO2}: CO2 emission factor of diesel (tCO_2/TJ) IPCC data is the only reliable source of data for this parameter; The Indian specific emission factor value as 74.1 is used for data parameter. The emission factor is conservative since it specific to the country and the applied value is high from IPCC emission factor. OXID = IPCC 2006 Default Values (constant) IPCC value have been used for the fuel type since no country specific oxidation factor is available. The value is taken as 1.

	Density = Density of diesel (Kg/lit) The Society of Indian Automobile Manufacturers value is considered as it is publicly available and can be referred as authentic source. The value is taken as 0.82. Ex-post parameters: $EG_{gross, y:}$ Total electricity generated by the project in the year y [kWh (or MWh)] The Gross electricity generated by the project is measured through the Energy Meters of 0.2s accuracy class. The readings are monitored continuously and recorded monthly during Onsite Measurements. The verification team has checked the monthly generation data for the monitoring period and found the monitoring parameter $EG_{gross,y}$ is monitored and recorded as per the monitoring plan in the registered VCS PD. Thus, Gross Electricity generated by the project activity during the current monitoring period is 7,144.25 MWh by D9 unit and 13,600.30 MWh by Mandagere unit. $EG_{export,y}$ = Electricity exported to the grid by the project during the year y [kWh (or MWh)] The electricity exported to the grid is measured through the Energy Meters of 0.2s accuracy class. The readings are monitored continuously and recorded monthly during JMR process. The verification team has checked the entire monthly JMR report and invoices applicable for the monitoring period and found the monitoring parameter $EG_{export,y}$ is monitored and recorded as per the monitoring plan in the registered VCS PD. However, during monitoring period it was found that calibration frequency was not maintained and hence, conservative error factor of 0.2% was deducted from export and added to the import conservatively for delayed period inline with para 366(a) of the CDM Validation and Verification Standard for project activities, version 02.0. Thus, Electricity exported to the grid by the project activity during the current monitoring period 20,531.583 MWh[4] (20.531583 GWh). $EG_{import,y}$ = Electricity imported from grid by the project during the year y [kWh (or MWh)] The electricity imported from the grid is measured through the Energy Meters of 0.2s accuracy class. The readings are monitored continuously and recorded monthly during JMR process. The verification team has checked the entire monthly JMR report and invoices applicable for the monitoring period and found the monitoring parameter $EG_{import,y}$ is monitored and recorded as per the monitoring plan in the registered VCS PD. However, during monitoring period it was found that calibration frequency was not maintained and hence, conservative error factor of 0.2% was deducted from export and added to the import conservatively for delayed period inline with para 366(a) of the CDM

[4] After application of error factor for delayed calibration.

Validation and Verification Standard for project activities, version 02.0. Thus, Electricity exported to the grid by the project activity during the current monitoring period 144.294 MWh[5] (0.144294 GWh).

EG_y = Net electricity supplied to the grid by the project [kWh (or MWh)]
The net electricity supplied by project activity to grid is calculated by subtracting total electricity imported by project from grid from total electricity delivered by project to grid.
The verification team has crosschecked the emission reduction sheet and monitoring report data with the JMR sheet and invoice bills and found all the values are matching. Thus, Net electriity exported to the grid by the project activity during the current monitoring period 20,387.289 MWh[6] (20.387289 GWh).

$F_{d,y}$ = Quantity of fossil fuel type i combusted in the project plant during year y (Litre)
Diesel Quantity of diesel consumed is monitored with the help of level gauge. The quantity of the diesel consumed recorded daily in the logbooks maintained at site. Assessment team checked the daily data and found that 1011.6 Ltrs diesel consumed during current monitoring period through both units. Values entered in the ER sheet and MR thus found correct.

Project Emission: As per applied methodology, for most renewable energy project activities, PE_y = 0. Though the project is equipped with diesel generator to meet the emergency requirements of power house etc. and there can be project emissions due to usage of diesel (fossil fuel), the usage during the current monitoring period is
As the project is equipped with diesel generator to meet the emergency requirements of power house etc. emissions out of usage of fossil fuel (diesel) are being accounted as project emissions by using the following equation.
$PE_y = (F_{d,y} \times Density \times NCV_{diesel} \times EF_{CO2} \times OXID)/10^6$

Where,

$F_{d,y}$ = Quantity of diesel used during the year (Litre)

Density of diesel = (0.82 kg/Ltr. as per Society of Indian Automobile Mfgs.)

NCV_{diesel} = Calorific value of diesel (43 TJ/Gg as per IPCC 2006 default value)

EF_{CO2} = CO_2 emission factor of Diesel (74.1 t CO2/TJ as per IPCC 2006 default value)

OXID = Oxidation factor of the diesel (1 as per IPCC 2006 default value)

Monitoring Period	Diesel Consumption (Litre)

[5] After application of error factor for delayed calibration.

[6] After application of error factor for delayed calibration.

	D9 Site	Mandagere Site
2013	28.1	333.0
2014	38.7	215.0
2015	33.3	301.0
2016	10.5	52.0
Total	110.6	901.0
Grand Total	1011.6	

Monitoring Period	Project Emissions(tCO_2)		Total Project Emissions (tCO_2)
	D9 Site	Mandagere Site	
2013	0.073	0.870	1.00
2014	0.101	0.562	1.00
2015	0.087	0.786	1.00
2016	0.027	0.136	1.00
Total	4 (round-up value)		

The total project emissions from the diesel consumption from DG set are 4 tCO_2 during the monitoring period.
The assessment team has checked the metered data and plant log book data and the same have been found correct.
The calculation approach was in line with the VCS PD.
Leakage: As per registered PDD the leakage is zero.
Thus, Emission Reductions are:
The emission reductions (ER_y) by the Project activity during a given year y is the difference between baseline emissions (BE_y), project activity emissions (PE_y) and leakage, as follows
$ER_y = BE_y - PE_y - Ly$

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the break down log for the monitoring period. During the verification assessment the energy meters are also checked. The Calibration details of the monitoring meters are also checked with calibration certificates.
Findings	CAR 08 was raised on this section and closed successfully. Please refer Appendix 2 for further details

<table>
<tr>
<td>Conclusion</td>
<td>The metering arrangement is tri-vector bi-directional energy meters of accuracy class 0.2s (main and check). These electricity meters are being used by state electricity board for monthly generation reports.
The Net electricity supplied to the grid is then calculated from export and import values. The electricity Export, Import and Net electricity exported to the grid are cross checked from the invoices raised to respective state electricity board which is in line with Methodology requirement for small scale project activity. Hence assessment team confirmed that the value of net electricity exported to the grid as used in emission reduction calculation is correct.
The calibration frequency of meters is quarterly as per the VCS PD and PPA. Electricity supplied to the grid is metered by main meters & Check meter and tested regularly by KPTCL.
Considering the frequency of meter calibration as once in every quarter, there have been delays in calibration of meters – both Unit 1 and Unit 2 in the current monitoring period.
Further, Information about Meter details and calibration dates are provided in Appendix 5.

Delay in calibration
<table>
<tr><th>Shahapur D9 site</th><th>Mandagere site (both Line 1 and Line 2)</th></tr>
<tr><td>07-March-2013 to 30-July-2013</td><td>01-January-2013 to 24-May-2013</td></tr>
<tr><td>31-October-2013 to 18-December-2013</td><td>25-August-2013 to 03-December-2013</td></tr>
<tr><td>19-March-2014 to 02-September-2014</td><td>04-March-2014 to 16-July-2014</td></tr>
<tr><td>03-December-2014 to 21-January-2015</td><td>17-October-2014 to 10-November-2014</td></tr>
<tr><td rowspan="2">22-April-2015 to 29-February-2016</td><td>11-February-2015 to 26-April-2015</td></tr>
<tr><td>27-July-2015 to 27-September-2015</td></tr>
</table>
During verification, assessment team found that PP does not have testing and calibration certificate for the given periods in above table. Further, as testing and calibration certificates of periods given in appendix 5 was only submitted by PP. Thus, conservative error factor of 0.2% has been applied for complete month of delayed calibration period on the values of export and import: -
- In case of Shahapur D9 site for the months – March 2013 to July 2013, October 2013 to December 2013, March 2014 to September 2014,</td>
</tr>
</table>

	December 2014 to January 2015, April 2015 to February 2016.. - In case of Mandagere site (Both line 1 and line 2) for the months – January 2013 to May 2013, August 2013 to December 2013, March 2014 to July 2014, October 2014 to November 2014, February 2015 to April 2015, July 2015 to September 2015 Conservative error factor of 0.2% (0.27% for the months May to December 2013 for Line 2 of Mandagere site as the error found during meter testing as per meter calibration report) was deducted from export and added to the import conservatively inline with para 366(a) of the *CDM Validation and Verification Standard for project activities, version 02.0*. Being conservative and inline with applicable guidance's same have been accepted by the assessment team. The diesel monitoring gauge was calibrated annually and thus no delay observed. Details of the calibration of monitoring instruments is provided in Appendix 5 of this report. The meter reading is taken jointly on a fixed day of every month for the preceding month at the delivery point and signed by the representatives of state utility and PP. In the event of failure of main meter, the check meter will be used in monitoring the electricity data. It is reported that the data will be kept for 2 years following the end of the crediting period or till the last issuance of VERs for the project activity whichever occurs later. The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the remote audit. Remote audit and interview with site personnel also confirms that the operational and organizational chart as mentioned in VCS PD is as per the site practice and thus assessment team confirms that the details are correct. The break down log is checked and found that the plant undergone scheduled maintenance and break down. No unforced error observed.

4.6 Non-Permanence Risk Analysis

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

5 VERIFICATION CONCLUSIONS

Applus+ Certification has been engaged by Bhoruka Power Corporation Limited to perform the verification of the "4.5 MW Grouped Small Hydropower Projects for Grid system by Bhoruka Power Corporation Limited in Karnataka State, India"

The management of the project participant/owner is responsible for the preparation of the GHG emissions data and the reported/estimated GHG emissions reductions on the basis set out within the project's Monitoring Plan in the VCS PD and MR and the approved methodology AMS.I-D version 13.0.

Our Verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board and VCS Standard version 4.1. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

the project is operated as planned and described in the project document;
the monitoring plan is as per the applied methodology;
the monitoring process in Monitoring Report is as per the PD
the development and maintenance of records and reporting procedures are in accordance with the monitoring plan
the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately except delayed calibration is addressed in line with para 366 (a) of the "CDM validation and verification standard for project activities, Version 02";
the monitoring system is in place and generates GHG emission reductions data;
the GHG emission reductions are calculated without material misstatements.
A reasonable level of assurance was achieved during the verification.
No limitation observed for the present verification

Verification period: From 01-January-2013 to 29-February-2016 (first and last date 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)
01-January-2013 to 31-December-2013	5,613	1	0	5,612
01-January-2014 to 31-December-2014	6,659	1	0	6,658
01-January-2015 to 31-December-2015	5,099	1	0	5,099

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)
01-January-2016 to 29-February-2016	46	1	0	45
Total	**17,417**	**4**	**0**	**17,413**

The quantified emission reduction calculation for the monitoring period is correct and conservative. Assessment team also compared actual VER with the estimated VER and found that the actual VER is 17,413 tCO_2e which is 67.4% lesser than the estimated emission reduction 53,374 tCO_2e (16867 tCO_2e/ 365 days x 1155 days) during this monitoring period. The variation in Emission Reductions is due to the variations in water availability which is dependent on rainfall, grid availability and other parameters which are not in the control of PP.

PP confirmed during interview that no change in project design occurred since installation of project, which can affect generation of electricity. Hence acceptable.

APPENDIX I: DOCUMENTS REVIEWED DURING VERIFICATION

No.	Author	Title	References to the document	Provider
1.	NA	Commissioning certificate	Commissioning of the Hydro turbine unit	Project participant
2.	NA	Contract of the other entity with the DOE	Contract of the other entity with the DOE	Project participant
3.	NA	Technical specifications	Technical specifications of turbines	Project participant
4.	NA	Power Purchase agreement for the project activity	D9 - Dated 25-July-2007 Mandagere – dated 30-December-2014	Project participant
5.	NA	VCS Project Description	VCS Project Design Document, Version 02, Dated: 10-September-2009	Project participant
6.	NA	Initial Monitoring report Final Monitoring Report	Version 01, dated 25-August-2020 Version 02, dated 29-March-2021	Project participant
7.	NA	Emission Calculation sheet	Version 1, dated 25-August -2020	Project participant
8.	NA	Emission Calculation sheet	Version 02, dated 29-March-2021	Project participant
9.	NA	Tools/ Guides used in the project activity • UNFCCC Methodology: AMS-I.D version 13.0 • VCS verification report template Version 4.0 • VCS Standard, version 4.1	UNFCCC CDM web site VERRA website	UNFCCC & VERRA
10.	NA	Calibration details of the project activity undergoing verification	Calibration certificates	Project participant
11.	NA	JMR records+ Invoices for the complete monitoring period	JMR copies Invoices for the complete Monitoring period	Project participant
12.	NA	Break down details of the complete monitoring period	Log Sheet	Project participant
13.	NA	Diesel Consumption data	From January 2013 to February 2016	Project participant
14.	NA	VCS Declaration	Declaration dated 27-November-2020 from PP for Participation under Other GHG Programs	Project participant

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

Project Implementation Status

CAR ID	01	Section no.	4.1	Date: 04-Sept-2020
Description of CAR				
During review of monitoring report following inconsistencies observed: 1. Monitoring period dates are not clear about inclusion of start and end dates. Correction sought. 2. All sections of the MR are not completed inline with guideline to complete monitoring report mentioned in the Template of MR, VCS version 04. Corrections sought. 3. PP requested to submit copies of commissioning certificates & PPA.				
Project participant response				**Date:** 29-March-2021
1.It has been clarified that start date and end date of monitoring period are included in monitoring period in title page of VCS MR *2. MR has been revised in line with guidelines to complete* monitoring report mentioned in the Template of MR, VCS version 04 3. PPA and Commissioning certificate copies of both the sites provided				
Documentation provided by project participant				
1. *VCS MR v02* 2. *Commissioning certificates (grid synchronization approval) of both the sites – D9 and Mandagere.* 3. *PPA*				
DOE assessment				
1. In Revised MR, PP has clearly mentioned about inclusion of start date and end date in current monitoring period. Thus, accepted and **CAR is closed.** 2. PP has revised all sections of MR as per the guidelines to complete VCS MR v.04. Assessment team found it acceptable thus **CAR is closed.** 3. Commissioning certificate and PPA has been submitted to PP. Assessment team found consistency between both Commissioning Certificates and revised MR related to commissioning dates. Thus, accepted and **CAR is closed**.				

CAR ID	02	Section no.	4.1	Date: 04-Sept-2020
Description of CAR				
In Section 1.6 of MR, It is mentioned that the start date of crediting period is considered from 01/04/2006. However, project commission date is 29/08/2003. PP is requested to clarify.				

Project participant response	Date: 29-March-2021
The project was commissioned on 29/08/2003 (the date of commissioning of D9 site). However, PP chose crediting period from 01/04/2006 and the same is mentioned in registered VCS PD and that has also been provided in section 1.6 of VCS MR along with reference of VCS PD	
Documentation provided by project participant	
1. VCS MR v02	
DOE assessment	**Date:** 27-April-2021
As the PP has clarify about the start date of crediting period of project activity and same has been mentioned in Section 1.6 of revised MR. Assessment team found it acceptable and thus, **CAR is closed.**	

CAR ID	03	Section no.	4.1	Date: 22 August-2020
Description of CAR				
In Section 1.9 of MR PP claimed that project activity is neither registered nor seeking registration in any other GHG programs. However, it is not clear whether REC benefit is taken for the current monitoring period covered under VCS. Supporting documents and details regarding the same is missing in the MR. Corrective action is sought for the same. Further, PP is requested to submit an undertaking for no any double accounting for current monitoring period and project activity is not participated any other GHG program other than VCS.				
Project participant response				**Date:** 29-March-2021
PP has provided undertaking for double accounting for current monitoring period that the it would not claim GHG credits in any GHG program other than that under VERRA for the current monitoring period. *PP has also provided undertaking that the project activity is not availing REC benefits for the current monitoring period*				
Documentation provided by project participant				
Undertaking that PP would not claim GHG credits in any GHG program other than that under VERRA for the current monitoring period and undertaking that PP is not availing REC benefits for the current monitoring period				
DOE assessment				**Date:** 27-April-2021
In section 1.9 of revised MR, PP has made justification regarding for not taking REC benefits for the current monitoring period under any GHG program other than in VCS. Also, in order to verify the same PP has provided an undertaking to assessment team. Thus accepted and CAR is closed.				
As per VCS PD, EGgrossy is also a monitoring parameter. However, this parameter is missing in MR. PP to clarify the same. Further, in Section 5.1 of MR, it is mentioned that “These values are taken from the “Certificate for Share of Electricity Generated by Wind Farm” issued by state electricity board. Corrective action is sought.				

CAR ID	04	Section no.	4.1	Date: 22 August-2020
Description of CAR				
Section 3.1 of MR is not filled in line with the guidelines given in Monitoring Report Template, VCS Version 4.1. Corrective action is sought.				
Project participant response				**Date:** 29-March-2021
Section 3.1 of MR has been revised in line with the guidelines given in Monitoring Report Template, VCS Version 4.1.				
Documentation provided by project participant				
VCS MR v02				
DOE assessment				**Date:** 27-April-2021
PP has rectified the section 3.1 of revised MR as per the guidelines to complete VCS Monitoring report template Version 4.0. thus, accepted and **CAR is closed.**				

CAR ID	05	Section no.	4.2.2	Date: 22 August-2020
Description of CAR				
PP requested to submit supporting evidences of ongoing local stakeholder consultation including grievance register and email id.				
Project participant response				**Date:** 29-March-2021
Supporting documents for ongoing stakeholder consultation including grievance register have been provided. Mail id has been provided in section 2.2 of MR.				
Documentation provided by project participant				
1. *VCS MR v02* 2. *Grievance Register*				
DOE assessment				**Date:** 27-April-2021
PP has submitted grievance register to assessment team as an evidence document of ongoing local stakeholder consultation. Team found it consistent with revised MR. thus **CAR is closed.**				

Accuracy of GHG Emission Reduction and Removal Calculations

CAR ID	06	Section no.	4.4	Date:04-Sept-2020
Description of CAR				
As per VCS PD, EG_{grossy} is also a monitoring parameter. However, this parameter is missing in MR. PP to clarify the same. Further, in Section 5.1 of MR, it is mentioned that "These values are taken from the "Certificate for Share of Electricity Generated by Wind Farm" issued by state electricity board. Corrective action is sought.				
Project participant response				**Date:** 29-March-2021
$EG_{Gross,y}$ has been included in section 4.2 of MR. *Section 5.1 of MR has been revised.*				

Documentation provided by project participant	
VCS MR v02	
DOE assessment	**Date:** 27-April-2021
In revised MR, PP has mentioned "EG_{grossy}" as Monitoring parameters in section D.2 as per the registered VCS PD. Also, PP has rectified the section 5.1 and omitted the irrelevant sentence. Thus, accepted by assessment and **CAR is closed,**	

CAR ID	07	Section no.	4.4	Date:04-Sept-2020
Description of CAR				
PP requested to submit copies all JMRs, invoices and logbook/diesel purchased records for the complete monitoring period.				
Project participant response				**Date:** 29-March-2021
All JMRs,invoices and logbook for diesel consumption for the entire monitoring period have been provided				
Documentation provided by project participant				
1. *Form- B copies (for both D9 and Mandagere sites)* 2. *Monthly invoices for sale of electricity (both D9 and Mandagere sites)* 3. *Logbook for monthly diesel consumption (both D9 and Mandagere sites)*				
DOE assessment				**Date:** 27-April-2021
Copies of JMRs and invoices related to the current monitoring period has been submitted to assessment team by Project participants. Team found it consistent with revised MR thus **CAR is closed**,				

Quality of Evidence to Determine GHG Emission Reductions and Removals

CAR ID	08	Section no.	4.5	Date:04-Sept-2020
Description of CAR				
Calibration details of monitoring equipment's; energy meters & level gauge etc. including calibration date, validity of calibration etc are missing in MR. Correction is sought..				
Project participant response				**Date:** 29-March-2021
Details of calibration of energy meters and level gauge have been provided in section 4.2 of MR				
Documentation provided by project participant				
1. *VCS MR 02*				
DOE assessment				**Date:** 27-April-2021
PP has provided meter and its calibration details in Appendix 1 of revised MR. also in order to verify the same, PP has submitted copies of calibration certificates to assessment team. Team found both consistency between calibration certificates and Revised MR. thus accepted and **CAR is closed.**				

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

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

Technical reviewer and approver of the verification and certification report

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

Short CVs of the Team:

1. Dr. Atul Takarkhede counts with 9 years of experience in field of Environmental Auditing, consulting and accreditation. He is an Expert in ISO 9001-14001, CO2/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management Reporting for organizations environmental performance. His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; Conducting Environmental/water Audits; NABET requirements appliance. Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. He has Ph.D. (Environmental Science) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical reports related to environmental science.

2. Simon Shen (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he joined Applus+ LGAI, he had been worked for TÜV SÜD as a GHG Validator/Assessment team and ISO 9001/14001 Lead Auditor for 3.5 years.

APPENDIX 4: ABBREVIATIONS

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

APPENDIX 5: CALIBRATION DETAILS

Details of Meter:

Shahapur D9 site:

Description	Main Meter	Check Meter
Serial No.	08002008	08002025
Type	Tri-vector Meter	Tri-vector Meter
Make	L & T	L & T
Accuracy	0.2s	0.2s
Calibration Frequency	Every calendar quarter	Every calendar quarter

Calibration details

Date of calibration	Valid till
07-December-2012	06-March-2013
31-July-2013	30-October-2013
19-December-2013	18-March-2014
03-September-2014	02-December-2014
22-January-2015	21-April-2015
26-August-2019	25-November-2019

Mandagere site

	Unit 1		Unit 2	
Description	Main Meter	Check Meter	Main Meter	Check Meter
Serial No.	03157703 (till 03-December-2013) 07005931 (from 04-December-2013)	03157704 (till 03-December-2013) 07005969 (from 04-December-2013)	03157705 (till 03-December-2013) 07005975 (from 04-December-2013)	03157706 (till 03-December-2013) 07005956 (from 04-December-2013)
Type	Tri-vector Meter	Tri-vector Meter	Tri-vector Meter	Tri-vector Meter
Make	L & T	L & T	L & T	L & T

Accuracy	0.2s	0.2s	0.2s	0.2s
Calibration Frequency	Every calendar quarter	Every calendar quarter	Every calendar quarter	Every calendar quarter

Calibration dates:

Unit 1		Unit 2	
Date of Calibration	Valid till	Date of Calibration	Valid till
25-May-2013	24-August-2013	25-May-2013	24-August-2013
04-December-2013	03-March-2014	04-December-2013	03-March-2014
17-July-2014	16-October-2014	17-July-2014	16-October-2014
11-November-2014	10-February-2015	11-November-2014	10-February-2015
27-April-2015	26-July-2015	27-April-2015	26-July-2015
28-September-2015	27-December-2015	28-September-2015	27-December-2015
02-December-2015	01-March-2016	02-December-2015	01-March-2016