



**Verified Carbon  
Standard**

## 9 MW NERIA HYDROELECTRIC PROJECT, KARNATAKA, INDIA



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

<b>Project Title</b>	<i>9 MW Neria Hydroelectric Project, Karnataka, India</i>
<b>Version</b>	02
<b>Report ID</b>	TQC 12419

<b>Report Title</b>	<i>9 MW Neria Hydroelectric Project, Karnataka, India</i>
<b>Client</b>	<i>Bhoruka Power Corporation Limited</i>
<b>Pages</b>	38
<b>Date of Issue</b>	<i>23-February-2021</i>
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### Summary:

Verification purpose: The main purpose of this project activity is to generate clean form of electricity through Hydro power source using the hydro potential of the River Neria, a tributary of the River Nethravathy. The project is set up by Boruka Power Corporation Limited and located at downstream of Nidle bridge across the River Neria at Village Dhamasthala in Dakshina Kannada District of Karnataka State in India. The project envisages installation of 2 no's horizontal S type Kaplan turbines, 4.5 MW each, which makes total installed capacity of 9 MW. Both units of project activity was commissioned on 27-July-2006. 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.

Start date of the project activity is 27-July-2006, the day on which the project has accounted for emission reductions as per the registered VCS PD version 05, dated 12-August-2008 and final validation report version 02.0 dated 10-September-2008. 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 2<sup>nd</sup> verification under VCS and covers this activity from 01-September-2011 to 26-July-2016 (inclusive both days). During the current verification period, the project activity has supplied 98,781.64 MWh (98.78164 GWh) of electricity, and thus contributing to the GHG reductions 84,642 tCO<sub>2e</sub>.

Thus, VCS crediting period is of 10 years (Fixed). The start date of crediting period is 27-July-2006<sup>1</sup> and 26-July-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, 05 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 DOE with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

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<sup>1</sup> As per VCS Version 4.0 guidelines

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by “Bhoruka Power Corporation Limited (BPCL)” to perform the 2<sup>nd</sup> verification of the “9 MW Neria Hydroelectric Project, Karnataka, India” under VCS standard and guideline 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 10”
- the project's monitoring plan is assessed against “AMS-I.D version 10”
- 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 guideline and standard, version 4.0
- 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 4.0
- VCS guideline, 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).

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 guideline and standard version 4.0.

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.

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# 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 2<sup>nd</sup> periodic verification of the project entitled “9 MW Neria Hydroelectric Project, Karnataka, India” under VCS standard and guideline 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 10”
- the project's monitoring plan is assessed against “AMS-I.D version 10”
- 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 guideline and standard version 4.0
- 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 4.0
- VCS guideline, 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 10. 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 and guideline version 4.0, including the approved baseline and monitoring methodology AMS-I.D version 10. 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 guideline and standard version 4.0

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 project activity is to generate clean form of electricity through Hydro power source using hydro potential of river Neria, a tributary of River Nethravathy. Boruka Power Corporation Limited has set up a 9 MW capacity, grid connected, hydroelectric power generating unit which envisages installation of 2 no's horizontal S type Kaplan turbines, each of 4.5 MW rated capacity. The project is located at downstream of Nidle bridge across the River Neria at village Dhamasthala in District Dakshin Kannada of Karnataka State of India. The project is conceived as a run-of-the-river hydroelectric project and hence construction of dam or impounding of water is not required. The project activity was commissioned on 27-July-2006. The project activity lies between Latitude 12° 56'07.20" N and 75° 22'53.87" 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-September-2011 to 26-July-2016 (First and last date included) the project activity has supplied 98,781.64 MWh (98.78164 GWh) of electricity, and thus contributing to the GHG reductions 84,642 tCO<sub>2</sub>e.

## 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 and guideline, 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. Denny Xue	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 12-February-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 07-August-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, v4.0).

The VVB has taken alternative measures to reach reasonable level of assurance and conducted remote audit through Skype/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<sup>2</sup>.

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

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<sup>2</sup> <https://verra.org/covid-19-travel-guidance/>

Organization	Name of Persons/Designation	Topics discussed	Team Member
Bhoruka Power Corporation Limited	Mr. Sangmesh Project Manager	Project Management and Invoice Practicing	Dr. Atul Takarkhede
	Mr. Ganesh Shetty Plant In charge	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: 07-August-2020 (Via Google Meet)				
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.	Village Dharmasthala, Taluka Belthangady, and District Dakshina Kannada, Karnataka	07-August-2020 (Via Google Meet)	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 12-February-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	03	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	01	00
Calibration details	00	01	00
Monitoring plan	00	00	00
No Net harm assessment	00	00	00
Local stakeholder consultation	00	00	00
Others (please specify)	00	00	00
<b>Total</b>	<b>00</b>	<b>05</b>	<b>00</b>

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

### 2.5.1 Forward Action Requests

This is 2<sup>nd</sup> periodic verification of the project activity under VCS and no FAR was raised from previous VCS and CDM verification process. No FAR raised during this verification.

## 2.6 Eligibility for Validation Activities

This section is not applicable for present verification as LGAI holds the accreditation to perform Validation Activities under the VCS.

## 3 VALIDATION FINDINGS

### 3.1 Participation under Other GHG Programs

The project is also registered in CDM with UN reference no. 1549. However, the project proponent has provided undertaking it will not claim GHG credits in any other GHG programs e.g., CDM other than that under VERRA in the current monitoring period. Assessment team verified the same with UNFCCC webpage.

### 3.2 Methodology Deviations

The project activity used AMS-I.D version 10 which is as per the registered CDM 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

The project activity is also registered with CDM mechanism with UNFCCC No. 1549 and the Revision in Monitoring Plan is approved on 24-August-2011<sup>3</sup>. The revised monitoring plan four parameters included viz.  $EG_{export,y}$ ,  $EG_{import,y}$ ,  $EG_y$  &  $F_{i,y}$  instead five monitoring parameters as per registered CDM PDD i.e.  $EG_y$ ,  $EG_{gross,y}$ ,  $EG_{auxiliary,y}$ ,  $EG_{import,y}$  &  $F_{i,y}$ . Same deviation have been now applied by the PP during this monitoring period. Same have been accepted by the assessment team as this is already approved deviation by UN and do not have impact on the scale, meth, additionality & emission reductions of the project activity.

### 3.4 Grouped Project

The project is not a grouped project thus this is not applicable

## 4 VERIFICATION FINDINGS

### 4.1 Project Implementation Status

During the remote audit (Google Meet 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

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<sup>3</sup> <https://cdm.unfccc.int/Projects/DB/DNV-CUK1200571481.71/view>

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;

District	State	Latitude	Longitude
Dakshin Kannada	Karnataka	12°56' 07.20" N	75° 22' 53.87" E

The project activity comprises diversion structure, power canal, fore bay, penstock, power house and power evacuation system. The powerhouse comprises two synchronous generators of capacity 4.5 MW each coupled to two numbers of horizontal 'S' type full kaplan turbines. The generated voltage at the generator terminals is 11 kV which will be stepped-up to 33 kV to match the nearest substation voltage level.

EQUIPMENT	
Turbine:  Type: 'S' type horizontal full kaplan Quantity: 02 in number. Capacity: 4808.21 kW Rated Discharge: 30 Cumecs/ unit Rated Head: 17.5 Mtr	Generator:  Quantity: 02 Make: T.D Power Systems Pvt. Ltd Type: Horizontal Synchronous Rated capacity: 4500 kW Speed: 750 rpm Voltage: 11 kV Power Factor: 0.85 Frequency: 50 Hz

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 that there is 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 10. 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.

It was observed during the verification process is that project is registered in CDM with UN reference no. 1549. However, the project proponent has provided undertaking that it would not claim GHG credits in any other GHG program (e.g. CDM) other than under VERRA in the current monitoring period. 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 and CAR 03 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 27-July-2006<sup>4</sup> (as per commissioning Certificate).
2. An undertaking letter dated: 31-January-2021 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 2<sup>nd</sup> monitoring under VCS and covers the activity from 01-September-2011 to 26-July-2016 (inclusive of both dates). Thus, VCS crediting period should be 10 years (fixed) till end date of crediting period. 27-July-2006 is the start date and 26-July-2016 will be the end date of the crediting period.

The VCUs for this monitoring period i.e. from 01-September-2011 to 26-July-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 31-

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<sup>4</sup> As per the definition of VCS Ver-4.0 Guidelines

January-2021 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

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 84,642 tCO<sub>2</sub>e which is 13.6% lesser than the estimated emission reduction 97,955 tCO<sub>2</sub>e (19,963 tCO<sub>2</sub>e/ 365 days\*1791 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	<p>The project generates clean energy which replaces the fossil fuel intensive electricity generation.</p> <p>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.</p> <p>Adequate measures were taken to mitigate the envisaged impacts like spraying water on the road side to reduce dust level, etc. This 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.</p>
3	Soil condition	<p>There are negligible impacts envisaged during operation of the project activity being run of river project.</p> <p>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.</p> <p>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.</p> <p>Therefore, it can be concluded that the project has no effect on soil conditions during its operation because it has no waste coming out.</p>
4	Biodiversity	<p>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.</p> <p>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.</p> <p>With the implementation of Project, the greening water will be increased significantly; the biodiversity in the vicinity will be improved with the vegetation improvement.</p> <p>No negative impact envisaged.</p>
5	Employment Generation	<p>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.</p>
6	Livelihood of the poor	<p>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.</p> <p>Positive impact envisaged.</p>

#### 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 from 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. 4.0 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.

#### 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 04 were raised on this section and closed successfully. Please refer Appendix 2 for further details
Conclusion	<p><u>Baseline emission:</u> The baseline Emissions for a given year is calculated by multiplying the energy baseline (EB) with the regional grid emission factor of the grid.</p> <p>Formula Used: -</p> $BE_y = EG_y * EF_y$ <p>BE<sub>y</sub> - baseline emissions in year y (tCO<sub>2</sub>)                      EG<sub>y</sub> - 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<sub>y</sub>-CO<sub>2</sub> baseline emission factor of the grid in year y (tCO<sub>2</sub>/MWh)</p> <p>Ex-ante parameters                      The baseline emission factors and CO<sub>2</sub> emission factor of fuel type diesel are taken ex-ante in line with the registered VCS PD as well as cross checked with section validation report and found correct. Combined margin CO<sub>2</sub> emission factor (EF<sub>y</sub> is equal to 0.857 tCO<sub>2</sub>/MWh and CO<sub>2</sub> emission factor of fuel type diesel is taken as 74000 kg CO<sub>2</sub>/TJ.</p> <p>Ex-post parameters:                      EG<sub>export,y</sub> = Electricity exported to the grid by the project during the year y                      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</p>

	<p>monthly JMR report and invoices applicable for the monitoring period and found the monitoring parameter <math>EG_{export,y}</math> is monitored and recorded as per the monitoring plan in the registered VCS PD &amp; revised CDM Monitoring plan. 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 99,345.83 MWh<sup>5</sup> (99.34583 GWh).</p> <p><math>EG_{import,y}</math> = Electricity imported from grid by the project during the year y                  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 <math>EG_{import,y}</math> is monitored and recorded as per the monitoring plan in the registered VCS PD &amp; revised CDM Monitoring plan. 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 564.09 MWh<sup>6</sup> (0.56409 GWh).</p> <p><math>EG_y</math> = Net electricity supplied to the grid by the project                  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 electricity exported to the grid by the project activity during the current monitoring period 98,781.64 MWh<sup>7</sup> (98.78164 GWh).</p> <p><math>F_{i,y}</math> = Quantity of fossil fuel type i combusted in the project plant during year y                  Diesel                  Quantity of diesel consumed is monitored with the help of Glass Gauge (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 2437 Ltrs (2.437 KL) diesel consumed during current monitoring period. Values</p>
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<sup>5</sup> After application of error factor for delayed calibration.

<sup>6</sup> After application of error factor for delayed calibration.

<sup>7</sup> After application of error factor for delayed calibration.

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.

$$PE_y = F_{i,y} \times COEF_i$$

Where,

$PE_y$  : Project emissions from combustion of fossil fuel (diesel for DG set) in the project activity during the year y(tCO<sub>2</sub>)

$F_{i,y}$  : Quantity of fossil fuel type i combusted (DG set) during the year y(litre)

$COEF_i$ : Carbon dioxide emission coefficient of the fuel type (kgCO<sub>2</sub>/TJ)

$$COEF_i = NCV_i \times EF_{CO_2,i}$$

Where,

$NCV_i$ : Net calorific value of diesel (43.3 TJ/Gg as per IPCC 2006 , Volume-2, Table-1.2 @95% Confidence interval upper limit value is considered)

$EF_{CO_2,i}$  : CO<sub>2</sub> emission factor of Diesel (74000 kgCO<sub>2</sub>/TJ or 74.0 tCO<sub>2</sub>/TJ as per CDM PDD

Therefore,  $COEF_i = 43.3 \times 74.0 = 3,204.2 / 1000000 = 0.0032042$  tCO<sub>2</sub>/kg

Density of diesel = 0.845 kg/Litre as per Society of Indian Automobile manufacturers Assessment team found that diesel was used in project and the project emission was calculated as per the method given in the registered PDD.

The year wise calculation of project emissions is provided below:

Year	Fossil Fuel Consumption (Litres)	Density of Diesel (kg/Litre)	COEF <sub>i</sub> (tCO <sub>2</sub> /kg)	Project Emissions (tCO <sub>2</sub> )
2011	145.0	0.845	0.00324	1.00
2012	483.0	0.845	0.00324	2.00
2013	371.0	0.845	0.00324	2.00
2014	583.0	0.845	0.00324	2.00
2015	557.0	0.845	0.00324	2.00
2016	298.0	0.845	0.00324	1.00
Total	2437.0	--	--	10.00

The total project emissions from the diesel consumption from DG set are 10 tCO<sub>2</sub> 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 $ER_y = BE_y - PE_y - L_y$
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#### 4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the break down log for the monitoring period. During the verification assessment the energy meters are also checked. The Calibration details of the monitoring meters are also checked with calibration certificates.															
Findings	CAR 05 was raised on this section and closed successfully. Please refer Appendix 2 for further details															
Conclusion	<p>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.</p> <p>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.</p> <p>The calibration frequency of meters is quarterly as per the VCS PD and PPA. Electricity supplied to the grid is metered by main meters &amp; Check meter and tested regularly by KPTCL.</p> <p>Considering the frequency of meter calibration as once in every quarter, there have been delays in calibration of meters – both Line 1 and Line 2 in the current monitoring period. Further, Information about Meter details and calibration dates are provided in Appendix 5.</p> <p>Delay in calibration</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Line 1</th> <th style="width: 50%;">Line 2</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">01-September-2011 to 04-November-2012</td> <td style="text-align: center;">01-September-2011 to 02-July-2013</td> </tr> <tr> <td style="text-align: center;">03-January-2014</td> <td style="text-align: center;">03-December-2013 to 03-January-2014</td> </tr> <tr> <td style="text-align: center;">04-April-2014 to 08-April-2014</td> <td style="text-align: center;">04-April-2014 to 03-July-2014</td> </tr> <tr> <td style="text-align: center;">09-July-2014 to 06-October-2014</td> <td style="text-align: center;">04-October-2014 to 06-October-2014</td> </tr> <tr> <td style="text-align: center;">07-January-2015</td> <td style="text-align: center;">07-January-2015 to 08-July-2015</td> </tr> <tr> <td style="text-align: center;">08-April-2015 to 10-April-2015</td> <td style="text-align: center;">09-October-2015 to 14-October-2015</td> </tr> </tbody> </table>		Line 1	Line 2	01-September-2011 to 04-November-2012	01-September-2011 to 02-July-2013	03-January-2014	03-December-2013 to 03-January-2014	04-April-2014 to 08-April-2014	04-April-2014 to 03-July-2014	09-July-2014 to 06-October-2014	04-October-2014 to 06-October-2014	07-January-2015	07-January-2015 to 08-July-2015	08-April-2015 to 10-April-2015	09-October-2015 to 14-October-2015
Line 1	Line 2															
01-September-2011 to 04-November-2012	01-September-2011 to 02-July-2013															
03-January-2014	03-December-2013 to 03-January-2014															
04-April-2014 to 08-April-2014	04-April-2014 to 03-July-2014															
09-July-2014 to 06-October-2014	04-October-2014 to 06-October-2014															
07-January-2015	07-January-2015 to 08-July-2015															
08-April-2015 to 10-April-2015	09-October-2015 to 14-October-2015															

	09-October-2015 to 14-October-2015	15-January-2016 to 25-May-2016
	15-January-2016 to 25-May-2016	
<p>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: -</p> <ul style="list-style-type: none"> <li>- In case of Line 1 for the months – September 2011 to November 2012, January 2014, April 2014, July 2014 to October 2014, January 2015, April 2015, October 2015, January 2016 to May 2016.</li> <li>- In case of Line 2 for the months – September 2011 to July 2013, December 2013 to January 2014, April 2014 to July 2014, October 2014, January 2015 to July 2015, October 2015, January 2016 to May 2016</li> </ul> <p>Conservative error factor of 0.2% was deducted from export and added to the import conservatively inline with para 366(a) of the <i>CDM Validation and Verification Standard for project activities, version 02.0</i>. 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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>The break down log is checked and found that the plant undergone scheduled maintenance and break down. No unforced error observed.</p>		

## 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 Boruka Power Corporation Limited to perform the verification of the “9 MW Neria Hydroelectric Project, Karnataka, 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 10.

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 4.0. 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-September-2011 to 26-July-2016 (first and last date included).

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

Year	Baseline emissions or removals (tCO <sub>2</sub> e)	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
01-September-2011 to 31-December-2011	8,483	1	0	8,482

Year	Baseline emissions or removals (tCO <sub>2</sub> e)	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
01-January-2012 to 31-December-2012	16,328	2	0	16,326
01-January-2013 to 31-December-2013	21,042	2	0	21,040
01-January-2014 to 31-December-2014	17,500	2	0	17,498
01-January-2015 to 31-December-2015	15,875	2	0	15,873
01-January-2016 to 26-July-2016	5,424	1	0	5,423
<b>Total</b>	<b>84,652</b>	<b>10</b>	<b>0</b>	<b>84,642</b>

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 84,642 tCO<sub>2</sub>e which is 13.6% lesser than the estimated emission reduction 97,955 tCO<sub>2</sub>e (19963 tCO<sub>2</sub>e/ 365 days x 1791 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	Dated 29-September-2004	Project participant
5.	NA	VCS Project Description	CDM Project Design Document, Version 05, Dated: 12-August-2008	Project participant
6.	NA	Initial Monitoring report Final Monitoring Report	Version 01, dated 13-July-2020 Version 02, dated 12-February-2021	Project participant
7.	NA	Emission Calculation sheet	Version 1, dated 13-July-2020	Project participant
8.	NA	Emission Calculation sheet	Version 02, dated 12-February-2021	Project participant
9.	NA	Tools/ guidelines used in the project activity <ul style="list-style-type: none"> <li>• UNFCCC Methodology: AMS-I.D version 10</li> <li>• VCS verification report template Version 4.0</li> <li>• VCS Standard, version 4.0</li> </ul>	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 September 2011 to July 2016	Project participant
14.	NA	VCS Declaration	Declaration dated 31-January-2021 from PP for Participation under Other GHG Programs	Project participant
15.	NA	Verification report for 1 <sup>st</sup> verification of project activity under VCS by BVC (Report No. 53607308-08/643)	Version 01 dated 23-March-2009	Project participant
16.	NA	Verification report for 1 <sup>st</sup> verification of project activity under	Version 01 dated 23-April-2012	Project participant

No.	Author	Title	References to the document	Provider
		CDM program by TUV NORD CERT (Report no. - 53608009 - 10/79)		
17.	NA	Verification report for 2 <sup>nd</sup> verification of project activity under CDM program by DNV KEMA Energy and Sustainability (Report no. 2013-9060)	Version 02 dated 21-February-2013	

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

## Project Implementation Status

<b>CAR ID</b>	01	<b>Section no.</b>	4.1	<b>Date:</b> 22-August-2020
<b>Description of CAR</b>				
During review of monitoring report following inconsistencies observed: <ol style="list-style-type: none"> <li>1. Monitoring period dates are not clear about inclusion of start and end dates. Correction sought.</li> <li>2. PP requested to submit copies of commissioning certificates &amp; Power Purchase Agreement.</li> </ol>				
<b>Project participant response</b>				<b>Date:</b> 28-Jan-2021
<ol style="list-style-type: none"> <li>1. VCS MR front page has been revised – it has been clarified that monitoring period is inclusive of start and end dates</li> <li>2. Commissioning certificates and PPA have been provided</li> </ol>				
<b>Documentation provided by project participant</b>				
<ol style="list-style-type: none"> <li>1. VCS MR v02</li> <li>2. Commissioning Certificate</li> <li>3. PPA</li> </ol>				
<b>DOE assessment</b>				
<ol style="list-style-type: none"> <li>1. Project Participant has now clearly mentioned in revised MR that start date and end date of monitoring period are also considered for complete emission reduction calculations. <b>hence ok</b></li> <li>2. Project Participant provided following supporting documents to assessment team for verification of project activity:                         <ol style="list-style-type: none"> <li>i. <i>Synchronisation certificate</i> dated 01-August-2006</li> <li>ii. <i>Power Purchase Agreement</i> between M/s Bharuka Power Corporation ltd and Karnataka Power Transmission Corporation Ltd, dated 29-September-2004.</li> </ol> </li> </ol> <p>Both documents found consistent with Revised Monitoring report. <b>Hence Ok</b>  <b>CAR 01 Closed</b></p>				

<b>CAR ID</b>	02	<b>Section no.</b>	4.1	<b>Date:</b> 22-August-2020
<b>Description of CAR</b>				

<p>As per section 1.9 of the VCS MR, it was stated that the project is not registered under other GHG programs. However, the project is registered under other GHG program i.e. CDM (UN1549). Further, MR is not clear about all issuances in all mechanisms. Also all previous issuance documents are not available on VERRA webpage. It is not clear that credits for Sept. 2011 to Dec. 2012. Is issued under VCS mechanism. Clarification requested and also corrections in the MR for the same.</p> <p>Also, PP needs to justify whether REC benefits is taken for the present Monitoring period covered under VCS. Corrective action is sought for the same. PP is requested to submit an undertaking for no any double accounting for current monitoring period and for project activity is participated in other GHG program other than VCS.</p>	
<b>Project participant response</b>	<b>Date:</b> 28-Jan-2021
<p>1. Section 1.9 of VCS MR have been revised – in section 1.9 it has been mentioned that the project is also registered in CDM (UN Ref 1549) but PP has provided undertaking that it would not claim any GHG credits in any GHG program other than that in VCS in the current monitoring period.</p> <p>2. Section 1.10 of MR has been revised that PP would not claim any environmental credits e.g. RECs in the current monitoring period for the project activity</p> <p>3. There was no issuance record for the period 01-Sept-2011 to 31-Dec-2013 in any GHG program; this period has been included in the monitoring period in VERRA and revised monitoring period is 01-Sept-2011 to 26-July-2016; revised MR and Expost ER sheet have been provided</p>	
<b>Documentation provided by project participant</b>	
<p>1. VCS MR v02</p> <p>2. Expost ER sheet v02</p> <p>3. Undertaking from PP that it would not claim any GHG credits in any GHG program other than that in VCS and any environmental credits e.g. REC in the current monitoring period.</p>	
<b>DOE assessment</b>	<b>Date:</b> 05-Feb-2021
<p>As per the Section 1.9 and 1.10 of Revised MR, PP stated that Project is also registered with CDM program (UN 1549) but PP doesn't claim any GHG credit for period same as current monitoring period.</p> <p>PP also made an explanatory note in undertaking and Revised MR that GHG credits for period from 01-September-2011 to 26-July-2016 is only applied with VCS program. Found Satisfactory thus <b>CAR02 closed.</b></p>	

<b>CAR ID</b>	03	<b>Section no.</b>	4.2.2	<b>Date:</b> 22 August-2020
<b>Description of CAR</b>				
Details of ongoing stakeholders consultation mechanism provided in section 2.2 of the MR inline with VCS guidelines to complete MR. however, PP requested to submit records of ongoing local stakeholder consultation including grievance register etc..				
<b>Project participant response</b>				<b>Date:</b> 28-Jan-2021/12/2020
Record of ongoing stakeholder consultation(grievance register) has been provided				
<b>Documentation provided by project participant</b>				
Grievance register				
<b>DOE assessment</b>				<b>Date:</b> 05-Feb-2021

PP has provided the records of ongoing stakeholders consultation mechanism and updated the Section 2.2 of revised MR. Also submitted the copy of grievance register to assessment team. Thus accepted. **CAR03 closed.**

### Accuracy of GHG Emission Reduction and Removal Calculations

<b>CAR ID</b>	04	<b>Section no.</b>	4.4	<b>Date:</b> 22-August-2020
<b>Description of CAR</b>				
PP requested to submit copies all JMRs and invoices for the complete monitoring period. ER sheet submitted however; ER reserved for submission of supporting documents.				
<b>Project participant response</b>				<b>Date:</b> 28-Jan-2021
<i>JMRs(Form-B) and invoices copies have been provided</i>				
<b>Documentation provided by project participant</b>				
1. Form-Bs 2. Electricity sales invoices				
<b>DOE assessment</b>				<b>Date:</b> 05-Feb-2021
PP has submitted copies of all JMRs and invoices for complete monitoring period. The electricity generation data's have been checked by the assessment team and the same was also cross checked with the Invoices. Found consistent thus <b>CAR04 closed.</b>				

### Quality of Evidence to Determine GHG Emission Reductions and Removals

<b>CAR ID</b>	05	<b>Section no.</b>	4.5	<b>Date:</b> 22-August-2020
<b>Description of CAR</b>				
PP requested to submit copies of the calibration certificates and meter change MoM/certificate for meter change if any, covering complete monitoring period.				
<b>Project participant response</b>				<b>Date:</b> 28-Jan-2021
Calibration details of all the monitoring parameters are now being attached in this submission.				
<b>Documentation provided by project participant</b>				
<i>Calibration certificates of energy meter</i>				
<b>DOE assessment</b>				<b>Date:</b> 05-Feb-2021
PP has successfully submitted copies of calibration certificates to assessment team, covering certain months of monitoring period. however, PP also applied conservative error factor of 0.2% on values of electricity export and import, wherever calibration is delayed. Thus found ok and <b>CAR05 Closed.</b>				

## 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	Xue	Denny	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. Denny Xue has a Bachelor's Degree on Thermal Energy Engineering and Master's Degree on Environmental Engineering. He has more than 10 years of experience on CDM project development. Before he joined Applus+ LGAI, he has been worked for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development. He is working with Applus+ since 2011 carrying out Validation and verification for CDM/GS/VCS project under scope 1 and 13 as auditor, lead auditor, technical expert and technical reviewer.

## 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 <sub>2</sub>	Carbon dioxide
CO <sub>2e</sub>	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 :

Parameter	Line 1		Line 2	
	Main Meter	Check Meter	Main Meter	Check Meter
Type	ERP 300P	ERP 300P	ERP 300P	ERP 300P
Make	L & T	L&T	L & T	L& T
Accuracy Class	0.2s	0.2s	0.2s	0.2s
Serial No.	10039548 (Meter installation period 01-September-2011 to 31-May-2016)  16195520 <sup>8</sup> (Meter installation period 01-June-2016 onwards)	10059254 (Meter installation period 01-September-2011 to 31-May-2016)  16195538 (Meter installation period 01-June-2016 onwards)	10039546	10039553
Calibration Frequency	Calibration of the meters is carried out by KPTCL as per the PPA - once in every quarter.			

### Calibration details

#### Line 1

Main Meter (10039548)		Check Meter (10059254)	
Calibration date	Validity till	Calibration date	Validity till
05-November-2012	04-February-2013	05-November-2012	04-February-2013
11-January-2013	10-April-2013	11-January-2013	10-April-2013
07-April-2013	06-July-2013	07-April-2013	06-July-2013
03-July-2013	02-October-2013	03-July-2013	02-October-2013

<sup>8</sup> Both main & check Meters of line 1 was replaced on 01-June-2016 and same verified from MoM of

03-October-2013	02-January-2014	03-October-2013	02-January-2014
04-January-2014	03-April-2014	04-January-2014	03-April-2014
09-April-2014	08-July-2014	09-April-2014	08-July-2014
07-October-2014	06-January-2015	07-October-2014	06-January-2015
08-January-2015	07-April-2015	08-January-2015	07-April-2015
11-April-2015	10-July-2015	11-April-2015	10-July-2015
09-July-2015	08-October-2015	09-July-2015	08-October-2015
15-October-2015	14-January-2016	15-October-2015	14-January-2016
26-May-2016(new meter installed, serial no. 16195520)	25-August-2016	26-May-2016(new meter installed, serial no. 16195538)	25-August-2016

## Line 2

Main Meter(serial no. 10039456)		Check Meter(serial no. 10039553)	
Calibration date	Validity till	Calibration date	Validity till
03-July-2013	02-October-2013	03-July-2013	02-October-2013
03-October-2013	02-December-2013	03-October-2013	02-December-2013
04-January-2014	03-April-2014	04-January-2014	03-April-2014
04-July-2014	03-October-2014	04-July-2014	03-October-2014
07-October-2014	06-January-2015	07-October-2014	06-January-2015
09-July-2015	08-October-2015	09-July-2015	08-October-2015
15-October-2015	14-January-2016	15-October-2015	14-January-2016
26-May-2016	25-August-2016	26-May-2016	25-August-2016

Assessment Team verified the above meters details and calibration details with the copies of calibration certificates provided by Project Participants, thus found acceptable.