



VCS GROUPED PROJECT FOR RENEWABLE POWER GENERATION BY ESSEL MINING AND INDUSTRIES LIMITED



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Summary:

The grouped project activity by Essel Mining & Industries Limited (EMIL) through various SPVs involves the generation of electricity through solar photovoltaic plant with a combined capacity of 150.4 MW in the state of Telangana, Karnataka, Gujarat, Rajasthan and Maharashtra, India. There is no addition of any new project instance during this verification inline with the VCS Standard Version 4.1. This is a Greenfield project activity and supply the generated electricity to the National power grid i.e. Indian Grid. Thus, project activity has reduced the dependence on fossil fuel-powered power plants by substituting carbon-intensive energy with the clean renewable solar energy. As per the baseline scenario, “Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants that are fossil fuel fired power plants”. The baseline scenario is the same as the scenario existing prior to the implementation of the project activity.

During the Current Monitoring Period from 21-February-2020 to 31-march-2021(First and last date included) the project activity has supplied 278,222MWh of electricity, and thus contributing to the GHG reductions 272,745 tCO₂e.

PP has applied for the deviation in monitoring procedure and same have been discussed and assessed in Section 3.3 of this report.

Essel Mining & Industries Limited (EMIL) contracted **ESPL** to conduct the verification of the project. The scope of verification includes confirming the implementation of the monitoring plan in the registered PD (Ver. 04 dated 15-December-2012) and the application of methodology ACM0002: Grid-connected electricity generation from renewable sources, Version 16.0, AMS I.D. Grid connected renewable electricity generation, Version 18&AMS-I.F.: Renewable electricity generation for captive use and mini-grid --- Version 3.0

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

A risk-based approach has been followed to perform this verification activity and No uncertainties associated with the verification. A total of 00 CL and 08 CARs have been raised during the verification process of the project activity which were successfully closed.

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

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1 INTRODUCTION

1.1 Objective

“Essel Mining & Industries Limited (EMIL)” has contracted ESPL (Hereinafter referred as Earthood) to conduct the verification of the project activity “VCS Grouped Project for Renewable Power Generation by Essel Mining and Industries Limited” according to the requirements of the Verified Carbon Standard Version 4.1.

The objective of this verification is to verify and certify emission reductions reported for the PA” VCS Grouped Project for Renewable Power Generation by Essel Mining and Industries Limited” for the period 21-February-2020 to 31-march-2021(including both days).

1.2 Scope and Criteria

The scope of the verification is to establish/verify that:

- the appropriate VCS-MR form (and other templates) was used and correctly filled up; (As per <https://verra.org/wp-content/uploads/2019/09/VCS-V4-Summary-of-Effective-Dates.pdf> the use of updated version of all VCS Program templates and representations is mandatory from 19 March 2020)
- The project activity is in accordance with all relevant host country criteria (India);
- The project activity is in accordance with all relevant VCS rules and requirements;
- The project activity is in accordance with conditions of the latest version of applied methodology ACM0002: Large Consolidated methodology-Version 16.0, AMS I.D. Grid connected renewable electricity generation, Version 18&AMS-I.F.: Renewable electricity generation for captive use and mini-grid --- Version 3.0/7/.

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

1.3 Level of Assurance

- ☒ Reasonable level of assurance
- ☐ Limited level of assurance

ESPL's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considers necessary to give reasonable assurance that reported estimated GHG emission reductions are fairly stated. All documentary evidences were checked, and site visit was conducted to project plant site to arrive at a verification conclusion by the assessment team.

In our opinion, the estimated GHG emissions reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002, Version 16.0, AMS I.D. Grid connected renewable electricity generation, Version 18, AMS-I.F. Renewable electricity generation for captive use and mini-grid -- Version 3.0 and the VCS standard, Version 4.1.

1.4 Summary Description of the Project

The grouped project activity by Essel Mining & Industries Limited (EMIL) through various SPVs involves the generation of electricity through solar photovoltaic plant with a combined capacity of 150.4 MW in the state of Telangana, Gujarat, Karnataka, Rajasthan and Maharashtra, India. This is a greenfield project activity and supply the generated electricity to the National power grid i.e., Indian Grid. Thus, project activity has reduced the dependence on fossil fuel-powered power plants by substituting carbon-intensive energy with the clean renewable solar energy. As per the baseline scenario, "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants that are fossil fuel fired power plants".

There is no addition of any new project instance during this verification inline with the VCS Standard Version 4.1.

The project is a voluntary action being undertaken by each project owner of the project activity. EKI Energy Services Limited (hereafter referred as "EKIESL") is acting as the other party for this project activity.

Verification team confirmed the capacity by verifying commissioning certificates/10/ and also verified through interview during remote audit that plants are operational in all the locations (Telangana, Gujarat, Karnataka, Rajasthan and Maharashtra). The details of interconnection with grid of solar plants and commissioning details are given in Section 4.1 of this report.

The technical specifications of solar plants confirmed with technical specifications from technology supplier and details as confirmed on skype during remote audit provided in Sec. 4.1 of this report.

These are the SPVs of Essel Mining & Industries Limited (EMIL) and the projects are promoted by each SPV. The electricity meters are of a precision of 0.2s. The details of meters such as make, Sr. No., calibration frequency etc. are provided in Appendix 5 of this report. The project is based on sectoral Scope 1: Energy Industries (renewable sources) with ACM0002: Grid-connected electricity generation from renewable sources, Version 16.0, AMS-I.F.: Renewable electricity generation for captive use and mini-grid --- Version 3.0 & AMS I.D. Grid connected renewable electricity generation, Version 18.

During the Current Monitoring Period from 21-February-2020 to 31-march-2021 (First and last date included) the project activity has supplied 278,222 MWh of electricity, and thus contributing to the GHG reductions 272,745 tCO₂e.

2 VERIFICATIONPROCESS

The registered VCS project is undergoing third verification and the approach adopted to ensure the quality of emission reductions is described in the following sub-sections.

2.1 Method and Criteria

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using ESPL's internal procedures. The Project was verified against the latest requirements (Version 4.1) /14/ and guidance set out in VCS Standards as applicable.

- The verification process consists of the following three phases;
- A document review of the PD and VCS MR (described in Section 2.2)
- Site visit and follow up interviews with project stakeholders (described in Section 2.3 and 2.4)
- The resolution of outstanding issues and issuance of the final report and opinion. (described in Section 2.5)

DOE's Sampling Approach: No sampling approach was required for undertaking the current verification since all monitored data was verified by the assessment team.

2.2 Document Review

The verification is performed primarily as a document review of the documents submitted at various stages of assessments. The review is performed by assessment team using dedicated protocols. The assessment team cross checks the information provided in the documents (PDD, MR, validation report) and information from sources other than those used, if available, and also conducts independent background investigations. Earthood conducted a desk review as under;

- a) A review of the data and information presented to verify their completeness.

- b) A review of the monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.

- c) An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

2.3 Interviews

A remote audit was conducted on 16-June-2021 through Skype video call which covers all the sites (includes all the locations) in the state of Karnataka, Telangana, Gujarat, Rajasthan & Maharashtra in India. No sampling procedures were adopted either in document verification and all the documents were cross checked to ensure conservative estimation of emission reduction. Remote audit conducted due to pandemic situation and technical details and metering/monitoring arrangement verified through photos/certificates shared by PP. The names of the persons interviewed during remote audit through Skype/telephonic interview/9/is given below;

Name of Persons/Designation	Affiliation	Topics discussed	Team Member
Mr. Irfan Shaikh	Essel Mining and Industries Limited	Project Implementation, Management practices, Grievance mechanism, Data collection, data storage, QA/QC etc.	Dr. Atul Takarkhede
Mr. Sudheer			
Mr Anil Patil	Aditya Birla Renewables SPV 1 Limited	Project Implementation, Monitoring practices, JMR, Calibration requirements etc.	
Mr. Balu Modhuudia	Aditya Birla Renewables SPV 1 Limited		
Pankaj Rajpoot, Manager, EKI Energy Consultant	EKI Energy	GHG calculations, MR and ER preparation	

2.4 Site Inspections

Duration of on-site inspection: NA				
No.	Activity performed on-site	Site location	Date	Team member
1.	NA	NA	NA	NA

At the time of verification, the host country, India, was witnessing increasing numbers of COVID-19 infected people in the country. There have been several restrictions regarding interstate travel under such circumstances, the verification team has avoided the risk of exposure by not conducting the on-site visit due to outbreak of global pandemic Covid-19, increased risk of exposure and contact due to travel, as the affected cases in the country are spurring¹.

The project developer has a Verified Emissions Reductions Agreement (VERPA) which requires delivery of credits by 31/10/2021, and the project finances are reliant on the payment from sale of carbon credits/29/.

Moreover, the VCS program does not explicitly mandate site visits as part of the validation and verification process during such unprecedented circumstances, 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 4.1/14/.

The DOE reached reasonable level of assurance through remote verification via Skype/Telephonic interview (refer section 2.3) with the representative PP. through review of documentation/evidence such as technical layout, metering arrangements/specification of solar power Plants, logbook/26//monthly generation data/ photographs/20/and name plates of solar power plants, calibration certificates of meters, validation and verification report/21/ of various issuance.

A remote audit was conducted by the assessment team (Dr. Atul Takarkhede) on 16-June-2021 to carry out the following;

- An assessment of the implementation and operation of the registered project activity as per the registered PD or any approved revised PD/1/and MR/2/.
- A review of information flow for generating, aggregating and reporting the monitoring parameters.
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PD.
- A cross-check between information provided in the monitoring report and data from other sources such as JMR sheets, invoice slips, PPA agreement etc.
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PD/1/, the applied methodology including applicable tool(s), and, where applicable, the applied standardized baseline.

¹<https://www.ciicovid19update.in/state-govt-notifications.html>

- f. A review of calculations and assumptions made in determining the GHG data and emission reductions.
- g. An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

2.5 Resolution of Findings

The findings may be of the following types: CAR- Corrective Action Request, CL- Clarification Request and FAR- Forward Action Request.

The list of findings and their resolution are presented in Appendix 2 of this verification report. The section also includes the response, if provided, by the project participants and an assessment by the assessment team if it was closed or otherwise. It is to be noted that all the findings have been satisfactorily resolved by the assessment team.

A total of 08 CAR and 00 CL were raised in the current verification. All the findings that are raised and communicated to project participant during the verification are included under Appendix 2. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise

2.5.1 Forward Action Requests

This is 3rd periodic verification of the project activity and no FAR is raised during current verification and no FAR from validation/previous verification as well.

2.6 Eligibility for Validation Activities

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

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

This section is not applicable for present verification. Same was also verified from the UNFCCC CDM website, GS registry, VERRA project database and REC registry of India.

3.2 Methodology Deviations

No methodology deviation is envisaged for present verification.

3.3 Project Description Deviations

There is no Deviation in project activity during this monitoring period.

3.4 Grouped Project

This is a grouped project. However, there is no addition of any new project instance during this verification inline with the VCS Standard Version 4.1/14/.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the remote verification audit was concluded that the project is implemented as per the instruction of the registered JOINT VCS PD & MR/1/, and this is verified from the commissioning certificates/10/. During the current monitoring period it was observed that no unforeseen situation evolved which can impact the operation of the project activity. Breakdown summary is submitted by PP for the solar plants/26/. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team/9/.

The grouped project activity by Essel Mining & Industries Limited (EMIL) through various SPVs involves the generation of electricity through solar photovoltaic plant with a combined capacity of 150.4 MW in the state of Telangana, Gujarat, Karnataka, Rajasthan and Maharashtra, India/10/. There is no addition of any new project instance during this verification/1/ /2/inline with the VCS Standard Version 4.1/14/.The technical parameters/specification have been verified by the assessment team through interview with site personal during the remote audit/09/with the nameplates as well as the same is also verified with the details as provided by the manufacturer/18/. The details of interconnection with grid of solar plants and commissioning details/10/ are given below.

Project activity instances	Title of the project activity	Project Capacity	Commissioning Date
Instance – 1 Bhadla	VCS Project for Solar Power Plant at Bhadla, Rajasthan	20 MW	12-March-2014
Instance – 2 Achampet	VCS Project for Solar Power plant at Achampet, Telangana	5 MW	07-July-2014
Instance – 3 Kalwakurthy	VCS Project for Solar Power Plant at Kalwakurthy, Dist.	10 MW	30-June-2014

	Mehabubnagar, Telangana		
Instance – 4 Salakpur	VCS Project for Solar Power Plant at Salakpur, Telangana	10 MW	17-September- 2014
Instance – 5 Alladurg	VCS Project for Solar Power Plant at Alladurg, Telangana	10 MW	28-July-2014
Instance – 6 Karnataka	VCS Project for Solar Power Plant at Karnataka	20 MW	11-May-2017
		20 MW	12-May-2017
		20 MW	13-October- 2017
		17 MW	26-March- 2018
Instance – 7 Bijapur	VCS Project for Solar Power Plant at Vijaypur	6.8 MW	26-March- 2018
Instance – 8 Hotgi	VCS Project for Solar Power Plant at Hotgi, Maharashtra	0.8 MW	20-June-2018
Instance – 9 Gotan	VCS Project for Solar Power Plant at Gotan, Rajasthan, India	5 MW	01-February- 2018
Instance – 10 Gujarat	VCS Project for Solar Power Plant at Sevagram, Gujrat	5 MW	14-August- 2018
Instance – 11 Pune	VCS Project for Solar Power Plant at Pune, Maharashtra	0.8 MW	01-February- 2018

The assessment team interviewed remotely with the plant site personals in order to verify the status of the project implementation of the monitoring plan. It has also been verified as per the guidelines in ACM0002: Grid-connected electricity generation from renewable sources, Version 16.0, AMS I.D. Grid connected renewable electricity generation, Version 18&AMS-I.F. Renewable electricity generation for captive use and mini-grid --- Version 3.0 that the calculations for the GHG emission reductions are done in accordance with the aforesaid methodology^{7/}.

The assessment team also confirmed that the monitoring system for emission reduction calculation was in place and in accordance with the registered JOINT VCS PD & MR/^{1/}.

During the current monitoring duration, no events have been found that can change the design of project/^{9/}.

The details of the SPVs for the project and their location of installation are mentioned in the table below:

Project activity instances	Title of the project activity	Location	Project Owner	Geo Coordinates
Instance – 1 Bhadla	VCS Project for Solar Power Plant at Bhadla, Rajasthan	Bhadla Solar Park, Village – Bhadla, Tehsil – Bap, District – Jodhpur, Rajasthan India	Essel Mining and Industries Ltd.	Latitude: 27.561° N Longitude: 71.929° E
Instance – 2 Achampet	VCS Project for Solar Power plant at Achampet, Telangana	5 MW Solar Power Plant, Achampet Village and Mandal, Dist. Mehaboobnagar, Telangana, India.		Latitude: 16.4° N Longitude: 78.6° E
Instance – 3 Kalwakurthy	VCS Project for Solar Power Plant at Kalwakurthy, Dist. Mehabubnagar, Telangana	Ternikal Village, KalwakurthyMandal, Dist. Mehaboobnagar, Telangana, India.		Latitude: 16.7° N Longitude: 78.5° E
Instance – 4 Salakpur	VCS Project for Solar Power Plant at Salakpur, Telangana	Village: Salakpur District: Warangal State: Telangana, India		Latitude: 17.89° N Longitude: 79.05° E
Instance – 5 Alladurg	VCS Project for Solar Power Plant at Alladurg, Telangana	Village: Bharamdhibba District: Medak State: Telangana, India		Latitude: 17.94° N Longitude: 77.92° E
Instance – 6 Karnataka	VCS Project for Solar Power Plant at Karnataka	Village: Bellatti, Shirahatti District: Gadag State: Karnataka, India	Aditya Birla Solar Limited	Latitude 15.09° N , Longitude: 75.623° E
		Village: Chandargi, Kaktol, Ramadurg Taluk District: Belagavi State: Karnataka, India	Aditya Birla Solar Limited	Latitude: 16.021° N, Longitude: 75.127° E

Project activity instances	Title of the project activity	Location	Project Owner	Geo Coordinates
		Village: Mulbangal, District: Kolar State: Karnataka, India		Latitude:13° 05'04.4" N, Longitude:78° 17'28.8" E
		Village: Devar Nimbargi, District: Vijayapura State: Karnataka, India		Latitude:17.250426°N, Longitude:75.660746°E
Instance – 7 Bijapur	VCS Project for Solar Power Plant at Vijaypur	Village: DevarNimbargi, District: Vijayapura State: Karnataka,India	Aditya Birla Renewables SPV 1 Limited	Latitude:17.250426°N Longitude: 75.660746°E
Instance – 8 Hotgi	VCS Project for Solar Power Plant at Hotgi, Maharashtra	Village: Hotgi, Tal South Solapur District: Solapur State: Maharashtra, India		Latitude:17.55953712° N Longitude: 76.00214484°E
Instance – 9 Gotan	VCS Project for Solar Power Plant at Gotan, Rajasthan, India	Village: KhariaKhangar, Tehsil: Bhopalgarh District: Jodhpur State: Rajasthan, India		Latitude:26° 36' 25" N, Longitude:73° 41' 33"E
Instance – 10 Sevagram	VCS Project for Solar Power Plant at Sevagram, Gujrat	Village: Sevagram, Tal- AbdasaDistrict: Kutch State:Gujarat, India	Aditya Birla Renewables SPV 1 Limited	Latitude:23° 25' 44.55" N, Longitude:68° 42' 13.17"
Instance – 11 Pune	VCS Project for Solar Power Plant at Pune, Maharashtra	Village: Peth, Tal Haveli, Dist Pune, Maharashtra, India		Latitude: 18.494475°N, Longitude:74.0970218°E

Capacity of the projects and date of commissioning verified with commissioning certificates/10/and technical specifications provided by technology supplier/18/.

Geo coordinates were checked on the google earth/17/ and also cross-checked with validation report & previous verification report/12/and verification team concluded that the geo coordinates of project locations are consistent with registered PD/1/.

Assessment team checked the technical details of the project activity from the manufactures specification and found correct/18/.

Assessment team concludes the following:

- a) The implementation status of project activity was found to be in compliance with registered PD/1/.
- b) DOE has conducted the remote audit to confirm the implementation status of the project/9/.
- c) The commissioning date of the project activity was found to be accurately and consistently recorded/10/.
- d) The actual operation of project activity was found to be in compliance with the flow diagram provided in registered PD/1/.
- e) The emission reductions achieved during the current monitoring period are 272,745 tCO₂e.

The project activity contributes to the sustainable development by utilising solar energy for generating electricity which otherwise would have been generated through fossil fuels. Thereby reduction in usage of non-renewable sources used to generate energy.

Further the GHG emission reductions generated by the project activity has not been included by any other an emissions trading program or any other mechanism that includes GHG allowance trading. Also, the project has not received any other form of environmental credit and has not been participated/rejected under any other GHG programs.

Sustainable Development- The project will contribute to the sustainable development in the following ways:

1. Environmental: Since the project activity leads to cleaner production of energy, it is leading to displacement of fossil fuel-based energy.
2. Social: Setting up of the project activity has created new job openings hence is supporting employment of the local people around.
3. Cleaner Air: Since the project activity leads to lesser GHG emission it results in better air quality

Further the project has been implemented as described in the Project Description/1/. CAR 01, CAR 02, CAR 03 and CAR 04 were raised and same were resolved by revision in the MR. details are provided in Appendix 2 of this report.

The total emission reductions achieved in this monitoring period i.e., from 21-February-2020 to 31-march-2021 (including both days) are 272,745 tCO₂e.

4.2 Safeguards

4.2.1 No Net Harm

As PP does not see and identify any potential negative environmental and socio-economic impacts, hence this section is not required.

4.2.2 Local Stakeholder Consultation

Local stakeholder consultation has been conducted at the time of project registration hence not applicable in the current monitoring period. However, PP has kept a dedicated visitor cum grievance registers at the project sites which is accessible to stakeholders to provide their feedback on the project as an ongoing communication with local stakeholders. This is in compliance with the requirement of para 3.16.4 of VCS standard, Version 4.1. Assessment team has checked the grievances register and confirms that there are no any grievances received during the current monitoring period/28/.However, CAR 05 was raised and same were resolved by submission of requested documents

4.3 AFOLU-Specific Safeguards

This is non AFOLU projects, hence this section not applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the MR. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the MR.
Findings	CAR 06 and CAR 07 was raised during the verification process and closed successfully. Refer Appendix 2 of this report for the detail closure of the CAR.
Conclusion	Ex-ante Parameter: $EF_{CO_2, grid, y}$ Parameter is fixed ex-ante for the entire crediting period and as per the validated PDsame is fixed 0.9770tCO₂/MWh for NEWNE grid and 0.9817tCO₂/MWh for Southern grid. Verification team found same was used in the ER calculations. Ex ante value of emission factor is taken from CEA database, Ver. 10, December, 2014. Verification team checked the EF value and found in consistent with registered PD/1/. Baseline Emissions: The baseline Emissions for a given year is calculated by multiplying the energy baseline with the grid emission factor. The grid in this case would be the 'Indian Grid'

	Formula Used: - $BE_y = EG_{PJ,y} * EF_{grid,y}$ Where, $EG_{PJ,y}$ = Quantity of net electricity generation that is generated and fed into the grid or grid electricity displaced as a result of the implementation of the CDM project activity in year y (MWh) $EF_{grid,y}$ = Combined margin CO₂ emission factor for grid connected power generation Thus $BE_y = 272,745 \text{ tCO}_2\text{e}$ (round down values) Monitored Parameter: $EG_{PJ, \text{ facility, y}} = EG_{BL,y} = 278,222 \text{ MWh}$ The parameter is monitored through the bi-directional energy meters (main and check) installed at the Switchyard/State Electricity Board (SEB) substation as per the PPA/State electricity board requirements with accuracy class of 0.2s. The verification team has checked the entire monthly JMR reports/06/ for net electricity generated & supplied to the grid and crosschecked same with the invoices/05/raised by PP towards State Utilities for the monitoring period. All values are found correct/3/. All the parameters are monitored and recorded as per the monitoring plan in the MR/1/. However, PPs have apportioned the values for the first and last month of the monitoring period where dates are not matching with JMR cycle. Apportioning found appropriate and conservative/3/. The verification team has crosschecked the revised emission reduction sheet and monitoring report data with the JMR sheet and invoice and found all the values are matching. PE_y = As per approved PD, para39 of the small-scale methodology AMS.I.D (version 18.0), para 24 of AMS I.F Version 03 and para 35 of the large scale methodology ACM0002 (version 16.0), all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected. As the project activity involved solar power project emissions (PE_y) are taken as zero/1/. Leakage: As per approved PD, para 39 of the small scale methodology AMS.I.D (version 18.0), para 24 of AMS I.F Version 03 and para 35 of the large scale methodology ACM0002 (version 16.0), Leakage emissions are not considered for the project activity/1/.
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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/26/. During the remote verification audit and the feeder wise location of the solar plants is also checked. The metering arrangement is bi-directional energy meters (main and check) at the Switchyard/State Electricity Board (SEB) substation. These meters record parameters including electricity exported & imported/6/. Moreover, the meters are located at the HT side of the transformer and are of accuracy class of 0.2s for project activity applied for verification/20/. These electricity meters are being used by state electricity board for JMR (Joint Meter Reading)/credit note electricity generation statements. The Net electricity supplied to the grid is then calculated from export and import values. The net electricity exported to the grid is also cross checked from the invoices raised to respective state electricity board which is in line with Methodology requirement for large scale project activity/5/.The main meter reading is taken jointly on a fixed day of every month for the preceding month at the delivery point and signed by the representatives of state utility and O&M personnel/9/. In the event of failure of main meter, the check meter is used in monitoring the electricity data. The agency is experienced in the monitoring system and is managing O&M of numerous other solar farm projects. Verification team confirms the metering process by interviewing the O&M personnel and PP representatives during remote audit and found the monitoring process is in line with approved PD/1/. Calibration of all the meters is done by state electricity board officials as per the industry standards/9/.The calibration is done once in a 5 year/19/as per calibration frequency in registered VCD PD/1/.The details of Calibration of the meters as confirmed from verification and during remote verification audit and calibration details are mentioned in Appendix 5 of this report/4/. Pre-calibrated energy meters were installed during the commissioning of the project activity and valid for 5 years/1/. The assessment team checked the same and found correct/10/. The energy meter recording the export and import from the grid at substation is under the control and supervision of state electricity board officials. Similarly, O&M contractor is responsible for monitoring of the generation data at CMS/9/. PP representatives confirmed that the CMS data as well as JMR sheets and invoices will be kept for 2 years following the end of the crediting period/1/.During site visit and discussion with PP, assessment team confirm that the data will be kept for 2 years following the end of the crediting period/9/. 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 document review and by interviewing O&M personnel and checking of records/ log books maintained at site/9/.
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Findings	CAR 08 was raised during the verification process and closed successfully. Refer Appendix 2 of this report for the detail closure of the CAR.
Conclusion	The assessment team confirms that the value of net electricity exported to the grid as used in emission reduction calculation is correct/3/. The verification team therefore is of the opinion that the project participant through the O&M agency is capable of implementing the monitoring plan in the context of the project activity. Interview with O&M personnel during remote verification audit also confirms that the operational and organizational chart as mentioned in MR is as per the site practice and thus assessment team confirms that the details are correct/9/. The break down log/26/ is checked and found that the solar panels undergone scheduled maintenance as per the guideline provided by the manufacturer which is acceptable to the assessment team. No unforeseen incident observed during the monitoring period which could alter the applicability of the methodology or change in project specification as mentioned in the registered PDD/6/. The project undergone Continuous operation from the inception/commissioning and the same is confirmed from the JMR reports and invoices raised for the said period of verification PDD/6/, /5/. Comparison of actual and estimate emission reductions achieved: Assessment team checked the calculation of estimated VER vs. Actual VER. As per the registered PD the amount of VERs annually is 247,123 tCO₂e/1/. The days involved in present monitoring period are 405. Therefore, on pro-rata basis, the estimated VERs for the monitoring period is 274,198 tCO₂e. Actual VERs obtained for the monitoring period is 272,745 tCO₂e and thus the actual VER is 0.53% lower than the estimated VER. This variation is majorly due to the variations in availability of sunny days, climatic conditions, grid availability and other parameters which are not in the control of PP/6/;/9/. Hence verification team confirms that decrease in VER by 0.53% in this monitoring period is acceptable.

4.6 Non-Permanence Risk Analysis

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

5 VERIFICATION CONCLUSION

Earthood Services Private Limited (Earthood), contracted by Essel Mining & Industries Limited (EMIL), has performed the independent verification of the emission reductions for the VCS project activity reference number 1497 “VCS Grouped Project for Renewable Power Generation by Essel Mining and Industries Limited” in India for the monitoring period 21-February-2020 to 31-march-2021(inclusive both days) reported in the Monitoring Report Version 02 dated 06-August-2021.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity.

Earthood commenced the verification on the basis of the baseline and monitoring methodology “ACM0002 - Version 16.0, AMS-I.F. – version 3.0& AMS I.D. Grid connected renewable electricity generation, Version 18, the monitoring plan contained in the PD version 03 and VCS guidelines version 4.0,Monitoring Report Version 02 dated 06-August-2021 as per the process described under Section 2 of this report.

Earthood’s verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that Earthood considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 21-February-2020 to 31-march-2021are fairly stated in the Monitoring Report Version 02 dated 06-August-2021. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology “ACM0002 - Version 16.0, AMS-I.F.- version3.0 & AMS I.D. Grid connected renewable electricity generation, Version 18” and the VCS standard.

Verification period: 21-February-2020 to 31-march-2021(inclusive of both days).

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
21-February-2020 to 31-December-2020	212,780	0	0	212,780
01-January-2021 to 31-March-2021	59,965	0	0	59,965
Total	272,745	0	0	272,745

Approved by



Dr. Kaviraj Singh
Managing Director
Earthood Services Privated Limited

Date: 19-August-2021
Place: Gurgaon, Haryana

APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED (VERIFICATION)

S.No	Title of Document	Version	Date
1.	Registered JOINT VCS PD & MR	version 04	15-December-2018
2.	Initial VCS Monitoring Report Final VCS Monitoring Report	01 02	18-May-2021 06-August-2021
3.	ER spreadsheet (corresponding to the final monitoring report)	02	06-August-2021
4.	Certificates of calibration for all SPVs belongs to project activity	-	-
5.	Invoice issued by PP for the duration of monitoring period (21-February-2020 to 31-march-2021)	-	-
6.	Joint Meter Readings for the duration of monitoring period (21-February-2020 to 31-March21)	-	-
7.	ACM0002: Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources AMS I.D. Grid connected renewable electricity generation AMS- I.F.: Renewable electricity generation for captive use and mini-grid	Version 16.0 Version 18 Version 3.0	-
8.	CO ₂ Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA), Ministry of Power, Govt.	version 10	December, 2014
9.	Remote Audit through Skype video call/Telephonic discussions	-	16-June-2021
10.	Commissioning certificates/Calibrations records for initial calibration of the meters installed during commissioning of the project activity	-	-
11.	Power Purchase Agreements for SPVs	-	-
12.	VCS webpage for the project, VCS ID 1497; https://registry.verra.org/app/projectDetail/VCS/1497	-	Last accessed on 21-July-2021
13.	O&M contract for all project sites	-	-
14.	VCS Standard	Version 4.1	Last accessed on 21-July-2021
15.	VCS Program Guide	Version 4.0	Last accessed on 21-July-2021
16.	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period and double counting	-	19-July-2021
17.	Google Earth desktop/Mobile application	-	Last accessed on 21-July-2021
18.	Technical specifications by technology supplier		
19.	Meter calibration guidelines: http://cea.nic.in/reports/regulation/CEA_metering_regulation_amendment_2019.pdf	-	-
20.	Photograph of site/Name plates	-	-
21.	Verification report of the last monitoring period.	Version 01	27-May-2020
22.	Ministry of Home Affairs Order https://www.mha.gov.in/sites/default/files/MHAorder%20copy.pdf		24-March-2020

S.No	Title of Document	Version	Date
23.	Ministry of Home Affairs Order (D.O No.40-3/2020-DM-I(A) https://www.mha.gov.in/sites/default/files/MHA%20D0%20letter%20dt.14.4.2020%20to%20Chief%20Secretaries%20and%20Administrators%20for%20strict%20implementation%20of%20Lockdown%20Order%20during%20extended%20period.pdf	-	14-April-2020
24.	Ministry of Home Affairs Order (Order No.40-3/2020-DM-I(A) https://www.mha.gov.in/sites/default/files/MHA%20Order%20Dt.%2015.2020%20to%20extend%20Lockdown%20period%20for%202%20weeks%20w.e.f.%204.5.2020%20with%20new%20guidelines.pdf	-	01-May-2020
25.	https://www.mha.gov.in/sites/default/files/MHAOrderextension_1752020_0.pdf	-	17-May-2020
26.	Break down log sheet of Plants	-	-
27.	Skill development training records	-	-
28.	Copies of the grievance registers maintained at sites	-	-
29.	ERPA signed for sale of credits from the project activity		07/06/2021

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

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

FAR ID	01	Section no.	E.2	Date :DD/MM/YYYY
Description of FAR				
There is no FAR from the validation of the project activity				
Project participant response				Date :DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD/MM/YYYY
NA				

Table 2. CL from this verification

CL ID	02	Section no.	4.1	Date : 23-June-2020
Description of CL				
NA				
Project participant response				Date :DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

Table 3. CAR from this verification

CAR ID	01	Section no.	4.1	Date : 21-June-2021
Description of CAR				
Following discrepancies observed during review of the MR:				
1. Alteration in MR template observed. Page numbers missing. Corrective action sought.				
2. Project activity is already implemented however MR missing actual implementation. Corrective action sought.				
3. Date format is not inline with guidelines to complete MR. Corrective action sought.				
4. Actual benefits towards sustainable developments missing in the MR. Corrective action sought.				
Project participant response				Date :23-June-2021
1. The page numbers have now been incorporated as per the template.				
2. Actual implementation measures have now been incorporated in section 3.1 of Monitoring Report Version 02.				
3. Date format has now been made in line with guidelines in Monitoring Report Version 02.				
4. Actual benefits towards sustainable developments have now been incorporated in section 1.11 of Monitoring Report Version 02.				
Documentation provided by project participant				
Monitoring Report Version 02.				
DOE assessment				Date:21-July-2021

1. PP has made required revision in revised MR and assessment team found it correct.
2. PP has reframed the language throughout the revised MR as the project activity is already implemented and contributing towards emission reduction. Hence accepted.
3. PP has revised Date format throughout the revised MR as per the guidelines to complete VCS MR v.04. Hence accepted.
4. Actual benefits towards sustainable developments have been incorporated by PP in section 1.11 of revised MR and assessment team found it correct. Hence accepted.
Above all revision has been made correctly thus CAR#01 is Closed.

CAR ID	02	Section no.	4.1	Date	: 21-June-2021
Description of CAR					
PP requested to submit all relevant supporting documents like commissioning certificates, technical specifications, O&M agreements, break down details, PPA, training records, etc. of all SPV involved in the project activity for review by assessment team.					
Project participant response					Date :23-June-2021
Relevant supporting documents like commissioning certificates and Power Purchase Agreement of all SPV involved in the project activity have now been submitted to assessment team.					
Documentation provided by project participant					
1. Commissioning certificates, 2. Technical specifications, 3. O&M agreements, 4. break down details 5. Power Purchase Agreement 6. training records					
DOE assessment					Date :21-July-2021
Following documents has been submitted by PP to assessment team:					
1. Commissioning certificate of all site issued by their respective state authority. 2. Power Purchase Agreement between PP and respective DISCOM. 3. Technical Specification Document issued by OEM of Solar panels. 4. O&M agreements 5. Breakdown details 6. training records for the onsite personnel					
Above all supporting documents found consistent with the revised MR. hence accepted and CAR#02 is closed.					

CAR ID	03	Section no.	4.1	Date	: 21-June-2021
Description of CAR					
Section 3.1of the MR missing information on “The operation of the project activity(s) during this monitoring period, including any information on events that may impact the GHG emission reductions or removals and monitoring”.					
Project participant response					Date :23-June-2021
The relevant information on “The operation of the project activity(s) during this monitoring period, including any information on events that may impact the GHG emission reductions or removals and monitoring” has now been incorporated in section 3.1 of Monitoring Report Version 02.					
Documentation provided by project participant					
Monitoring Report Version 02.					
DOE assessment					Date :21-July-2021
PP has updated the section 3.1 of revised MR and provided all required information as per the guidelines to complete VCS MR. Found consistent and accepted thus CAR#03 is closed.					

CAR ID	04	Section no.	4.1	Date	: 21-June-2021
Description of CAR					

PP requested to submit declaration in effect of avoiding double counting with regard to participation under other GHG Programs/Other forms credits, rejection under other GHG program etc.	
Project participant response	Date :23-June-2021
No double counting declaration has now been submitted to assessment team.	
Documentation provided by project participant	
No double counting declaration	
DOE assessment	Date:21-July-2021
PP has submitted Declaration related to No double counting of credits with regards to participation under GHG program credits. Hence accepted and CAR#04 is closed.	

CAR ID	05	Section no.	4.2.2	Date : 21-June-2021
Description of CAR				
Section 2.2 of MR is not clear about any comments received during monitoring period. PP also requested to submit copies of grievance registers.				
Project participant response				Date :23-June-2021
Grievance received during the current monitoring period has now been incorporated in section 2.2 of monitoring report version 02. Copy of grievance register has now been submitted to assessment team.				
Documentation provided by project participant				
1. Monitoring Report Version 02 2. Copy of Grievance Register				
DOE assessment				Date:21-July-2021
PP has submitted copies of grievance register of all instance's location site to the assessment team. During review, team found that no major grievance mentioned in the register throughout the monitoring period. Hence accepted and CAR#05 is closed.				

CAR ID	06	Section no.	4.4	Date : 21-June-2021
Description of CAR				
PP requested to submit all supporting documents for calculation of net electricity generation supplied by the project activity along the copies of invoices for cross checking.				
Project participant response				Date :23-June-2021
Joint Meter Readings (JMRs) and invoices for the current monitoring period has now been submitted to assessment team.				
Documentation provided by project participant				
1. JMRs 2. Invoices				
DOE assessment				Date:21-July-2021
PP has submitted all relevant copies of JMR and Invoices to the assessment team. During Review, team found value of net electricity generated throughout MP in JMRs/invoice are consistent and conservatively calculated in the ER sheet. Hence accepted and CAR#06 is closed.				

CAR ID	07	Section no.	4.4	Date : 21-June-2021
Description of CAR				
All parameters fixed ex-ante missing in the MR. Corrective action sought. Further, impact of higher emission reductions achieved on additionality for each instance missing in the MR/ER sheet. Corrective actions sought.				
Project participant response				Date :23-June-2021
All fixed ex-ante parameters have now been incorporated in Monitoring Report Version 02. Impact of higher emission reductions achieved on additionality for each instance has now been incorporated in Monitoring Report Version 02.				
Documentation provided by project participant				
MR v02				

CAR ID	07	Section no.	4.4	Date : 21-June-2021
Description of CAR				
DOE assessment				Date: 21-July-2021
Detailed information related to the fixed ex-ante parameter has been successfully mentioned in the Section 4.1 of revised MR. Assessment team found it consistent with the registered PDD. Moreover, justification related to impact of higher emission reduction achieved on additionality also provided in section 3.1 of revised MR. found accepted hence CAR#07 is closed.				

CAR ID	08	Section no.	4.5	Date : 21-June-2021
Description of CAR				
PP requested to submit copies of the calibration certificates/meter replacement records to justify calibration frequency compliance throughout monitoring period.				
Project participant response				Date :23-June-2021
As per the registered joint VS PD& MR, the calibration frequency is once in five years. The detailed information regarding the same has now been incorporated in appendix 1 of Monitoring Report Version 02.				
Documentation provided by project participant				
Copies of calibration certificate				
DOE assessment				Date: 21-July-2021
Copies of calibration certificate of all instances relevant to the current monitoring period has been submitted to assessment team. During review team found no delay in calibration and monitoring period is calibrated throughout the monitoring period. Hence accepted and CAR#08 is closed.				

Table 4. FAR from this verification

FAR ID	XX	Section No.		Date :DD/MM/YYYY
Description of FAR				
There is no FAR from this verification				
Project participant response				Date :DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD/MM/YYYY
NA				

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Competence Statement			
Name	Atul Takarkhede		
Education	Ph.D. Environmental Science		
Experience	12 years		
Field	Climate Change and environment		
Approved Roles			
Team Leader	YES		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (1.2)		
Reviewed by	Shreya Garg	Date	24/04/2019
Approved by	Anshika Gupta	Date	25/04/2019

Competence Statement	
Name	Shreya Garg
Country	India
Education	M.Sc. (Climate Science & Policy), TERI University
Experience	7 Years +
Field	Climate Change
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012
Local expert	YES (India)
Financial Expert	NO
Technical Reviewer	YES
TA Expert	YES (TA 1.2, TA 3.1)

Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CM	Combined Margin
CMS	Central Monitoring system
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
PP	Project Participant

APPENDIX 5: METER CALIBRATION DETAILS

Since the calibration frequency of the meters are once in five years, the calibration is valid during the current monitoring period. For all SPVs pre-calibrated meters of 0.2s accuracy were installed during commissioning of the SPV. There is no delay in calibration.

The Energy Meters details used for the respective SPV are tabulated below:

Project activity instances	Project site	Main Meter	Check Meter	Calibration Date	Validity
Instance – 1: Bhadla	Bhadla, Rajasthan	13194946	13194947	01/10/2018	30/09/2023
Instance – 2: Achamper	Achamper Telangana	02781573	02781574	28/01/2017	27/01/2022
Instance – 3: Kalwakurthy	Kalwakurthy, Telangana	02781577	02781578	28/01/2017	27/01/2022
Instance – 4: Salakpur	Mutsyal, Telangana	13194257	13194258	18-01-2017	17-01-2022
Instance – 5: Alladurg	Alladurg, Telangana	02781621	02781631	07/03/2018	06/03/2022
Instance – 6: Karnataka	Shirahatti, Karnataka	16102125	16102130	16/08/2017	15/08/2022
	Ramadurg Karnataka	16102135	16102133	28/01/2017	27/01/2022
	Mulbangal Karnataka	14194780	14194782	05/02/2017	04/02/2022
	Vijaypur, Karnataka	X0488422	X0488423	06/04/2018	05/04/2023
Instance – 7: Vijaypur	Vijaypur, Karnataka	X0488419	X0488421	06/04/2018	05/04/2023
Instance – 8: Hotgi	Hotgi, Maharashtra	05288830	05288838	28/01/2017	27/01/2022
Instance – 9: Gotan	Gotan, Jodhpur	RJB 90318	RJB 90317	17/01/2018	16/01/2023
Instance – 10: Sevagram	Sevagram Gujarat	HT 01180175	HT 01180176	30/07/2018	29/07/2023
Instance – 11: Pune	Pune, Maharashtra	Y 0355612	Y 0355568	06/02/2018	05/02/2023