300MW HYDROPOWER PROJECT BY JHPL

Project title	300MW Hydropower project by JHPL
Project ID	VCS 92
Monitoring period	01-August-2022 to 31-July-2024 (inclusive of both start and end dates)
Original date of issue	12-November-2024
Most recent date of issue	16-November-2024
Version	02
VCS Standard Version	4.7
Prepared by	Mr. Vipul Sahu Email ID: registry@enkingint.org Address: Office no. 201, Plot 48, Scheme 78 part 2 Vijay Nagar, Near Brilliant Convention Centre Indore - 452010 (M.P, India) Website www.enkingint.org

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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Baspa project is a run-of-the-river hydro-electric power plant with an installed capacity of 300 MW. The diversion barrage of the project is located across river Baspa, one of the major tributaries of the river Sutlej, at Kuppa in Himachal Pradesh. The power house is located at Karcham village in Kinnaur District. The project activity was an initiative of Jaiprakash Hydro Power Limited (JHPL) a part of the Jaypee Group. The purpose of the project activity is to generate electricity using renewable hydro energy and sell it to Himachal Pradesh State Electricity Board (HPSEB). The project activity is a run-of-the-river hydro project which supplies power through Indian Grid. INDIAN grid is operating with a mix of hydro, nuclear and fossil fuel power plants. Prior to the start of the project activity the existing demand in the Northern Region Grid was met through its existing fossil fuel based (coal, gas and diesel), nuclear, hydro and renewable energy-based power plants.

From 01-September-2015 onwards, the Himachal Baspa Power Company Ltd. (HBPCL) has owned this hydro power plant and its name changed to JSW Hydro Energy Limited[1] from 01-September-2018 thus JSW Hydro Energy Limited is the new owner who is acting as project proponent for the project activity. The 300 MW hydro power project was implemented in three phases for three units –

Unit No.	Date of Commissioning
Unit I	24-May-2003
Unit II	29-May-2003
Unit III	08-June-2003

The run-of-river hydro-Power project consists of three units with installed capacity 100 MW each making total installed capacity of 300 MW.

The power produced displaces an equivalent amount of power from the grid, which is fed mainly by fossil fuel fired power plants. Hence, it results in reduction of GHG emissions. Also, the project is renewable crediting period activity and has completed its 1st crediting period and now reducing the carbon emission for the 2nd crediting period. For this crediting period estimated carbon emission reduction is 1,212,379 tCO_2e/annum. This is the 5th verification activity of Second crediting period for the duration 01-August-2022 to 31-July-2024 (inclusive of both days). Also, during the current monitoring period, 2,346,049 tCO_2e of emission avoidance as a result of supplying 2,529,980.71 MWh clean electricity to grid.

In current monitoring period, it has been operational with normal schedule with scheduled maintenance, plant breakdown has occurred during the current monitoring period, total breakdown duration is calculated as 90 hours 25 minutes, this can be checked from Appendix 3 of the monitoring report wherein the breakdown details have been mentioned. No significant

[1] The relevant document for company name change has been provided

impacts have occurred due to plant breakdown on the GHG emission reduction from the project activity and monitoring process of the project activity.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
First Verification & Validation of Second Crediting period	01-April-2016 -- 31-December-2017	VCS	LGAI TECHNOLOGICAL CENTER, S.A. (APPLUS+ CERTIFICATION)	01 Years 08 Month 30 Days
Second Verification	01-January-2018 -- 31-October-2020	VCS	TUV SUD SOUTH ASIA PVT LTD	02 Years 09 Month 29 Days
Third Verification	01-November-2020 -- 31-July-2021	VCS	LGAI TECHNOLOGICAL CENTER, S.A. (APPLUS+ CERTIFICATION)	08 Month 29 Days
Fourth Verification	01-August-2021 -- 31-July-2022	VCS	VKU CERTIFICATION PVT. LTD	00 Years 11 Month 30 Days
Fifth Verification	01-August-2022 -- 31-July-2024 (Current Verification)	VCS	LGAI TECHNOLOGICAL CENTER, S.A. (APPLUS+ CERTIFICATION)	02 Years 00 Month 00 Days

1.3 Sectoral Scope and Project Type

Sectoral scope[2]	1 - Energy industries (renewable- /non-renewable sources).
Project activity type	Type I – Renewable Energy Projects

1.4 Project Proponent

Organization name	JSW Hydro Energy Limited (formerly Himachal Baspa Power Company Ltd)
Contact person	Mr. Vikas Sharma

[2] *Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes*

Title	Plant Engineer
Address	Karcham- Wangtoo H.E. Project, Sholtu Colony, P.O. Tapri, Sholtu, Himachal Pradesh 172104, India
Telephone	+ 91 9816183100
Email	vikas1.sharma@jsw.in

1.5 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the project	Project Consultant
Contact person	Mr. Vipul Sahu
Title	Deputy Manager
Address	Office No 201, Plot No 48, Scheme 78, Vijay Nagar Part- II, Indore 452010, India
Telephone	+91 91111112889
Email	registry@enkingint.org or Vipul.sahu@enkingint.org

1.6 Project Start Date

Project start date	24-May-2003
Justification	The project start date is earliest date of commissioning of the Unit-I.

1.7 Project Crediting Period

Crediting period	☐ *Seven years, twice renewable* ☐ *Ten years, fixed* ☒ *Other (The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times, As per relevant guidelines of Verified Carbon Standard Version 3.7[3]).*

[3] This project is duly registered as per VCS standard 3.7 as per the validation report, in accordance with 3.8.1 of VCS standard 3.7 the project crediting period shall be a maximum of ten years which may be renewed at most twice. Please refer: https://verra.org/wp-content/uploads/2020/11/PREVIOUS-VERSION-VCS-Standard-v3.7.pdf

Start and end date of first or fixed crediting period	• *01-April-2006 to 31-March-2016 (inclusive of both days) First Crediting Period* • *01-April-2016 to 31-March-2026 (inclusive of both days) Second Crediting Period*

1.8 Project Location

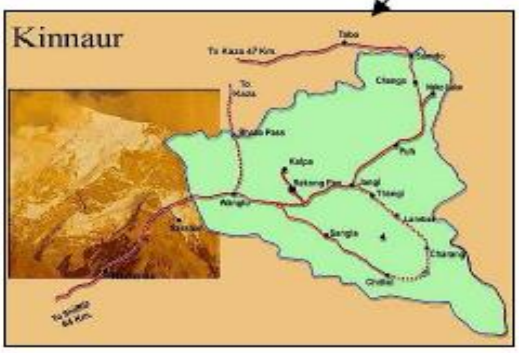
The project site is located about 210 Km from Shimla. Shimla is connected to the project site by National Highway-22 (Hindustan Tibet Road). Nearest broad gauge railway station from the project site is Kalka which is about at a distance of 300Km from the project site. The geographical location of the power house is between Longitude 78°11'23'' East and Latitude 31°29'48'' North. Location is depicted in following maps-



Location of Himachal Pradesh in India



Location of Kinnaur district



1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0002	Consolidated baseline methodology for grid-connected electricity generation from renewable sources	17.0 (EB 89, Annex 1)[4]
Methodological Tool	TOOL07	Tool to calculate the emission factor for an electricity system	06.0[5]
Methodological Tool	TOOL01	Tool for the demonstration and assessment of additionality	05.2[6]

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

[4] https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG

[5] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v6.pdf

[6] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

1.12 Sustainable Development Contributions

The project activity has beneficial effect on the local environment and employment in the nearby region. Clean Electricity generation through Hydro Project result in avoidance of consumption of fossil fuels which results in contribution to SDG 7. The emission avoidance through these activities results in contribution to SDG 13. All the workers at site are trained which results in increase of skills, which contributes to SDG 4. Detailed indicators are mentioned in table 1. This is a voluntary project activity doesn't contribute to achieving any nationally stated sustainable development priorities. Project officials has taken decision to keep all the employees on permanent basis working at the project activity. There is no compliance for monitoring and reporting the emission reduction and SDG contribution from the project activity.

The following documents provided to VVB as evidence regarding the SD contributions:

SD Contributions	Documents submitted to VVB
SDG 4	Training Records
SDG 7	Monthly JMR and Invoices
SDG 13	Emission reduction calculation sheet

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1.	7.2	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 2,529,980.71 MWh renewable electricity has supplied to Indian grid during the reported period (5th monitoring activity of second crediting period) that helps to increase the renewable energy share in the energy mix.	9,663,473.85 (2,564,001.17 (First Verification) + 3,847,176.74 (Second Verification) + 722,315.23 (Third Verification) + 1,376,932 .94 (Fourth verification) + 2,529,980.71 (Fifth Verification)) MWh renewable electricity has supplied to grid during second crediting period.
2.	4.4	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill	Implemented activities to increase	Together with the technology supplier, the Project organize 63 training during current monitoring period. Training related to soft and technical skills.	Overall, 112 (63+59) trainings are provided during over project lifetime.
3.	13.2	13.2.2: Total greenhouse gas emissions per year.	Implemented activities to avoid	By supplying 2,529,980.71 MWh clean electricity (generated through Hydro project) to Indian grid, the project avoided release of 2,346,049 tCO_2e in to the atmosphere during the reporting period.	The project activity prevented the release of 10,237,764 (2,377,598 (First Verification) + 3,567,486 (Second Verification) + 669,802 (Third verification) +1,276,829 (Fourth Verification) +2,346,049 (Fifth Verification)) tCO_2e released into atmosphere during second second crediting period.

1.13 Commercially Sensitive Information

Not applicable, no commercially sensitive information has been excluded from the public version of the project description. There is no commercially sensitive information.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

A detailed stakeholder consultation process has been conducted by PP. A well-known NGO, Sharnam Sewa Samiti, Uttar Pradesh, India has conducted the detailed social audit in 2007. Prior to this, NEERI had conducted a public meeting with the stakeholders. Details mentioned in Section 5.3 of Registered JOINT PROJECT DESCRIPTION & MONITORING REPORT[7].

2.1.1 Stakeholder Identification

Stakeholder Identification	1. Local People 2. Gram Panchayat members of seven villages directly coming under the purview of the project 3. District and state level government officials 4. NGO representatives 5. Representatives of PP
Legal or customary tenure/access rights	The project proponent (JSW) holds legal ownership of the land through a 35-year permit granted by the government. There are no conflicts with local communities or Indigenous Peoples (IPs), as the land does not infringe upon any recognized rights.
Stakeholder diversity and changes over time	Diverse groups including local people, Panchayat members, NGOs, government officials, equipment supplier were identified as stakeholders in the project. They represent varied socio-economic backgrounds and cultural identities.

[7] https://registry.verra.org/app/projectDetail/VCS/92

	Local people speak in Hindi language, while others have proficiency in English. Additionally, stakeholders have diverse employment status. Government officials, NGOs, local people interact with each other for the upliftment of the area. Various community service activities are undertaken around the project area by PP. There is no change in the make-up of stakeholders over the time.
Expected changes in well-being	The project helped in generating employment opportunities during the construction and operation phases.
Location of stakeholders	Local stakeholders comprise of the local people in and around the project area.
Location of resources	The local community, including herders and citizens, holds customary access rights to natural resources such as the grazing land surrounding the project area. However, the fenced portions of the project, including the substation and operation and maintenance buildings, are privately owned by the project shareholders and board of directors.

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	As a part of continual improvement process, feedback from the associated stakeholders is vital, therefore a dedicated Visitor register cum grievance register has been placed at the project site which is accessible to stakeholders to provide their feedback on the project.
Date(s) of stakeholder consultation	Year 2007 No separate stakeholder consultation was done during the current monitoring period.
Communication of monitored results	The monitoring results are communicated from the concerned individuals (stakeholders) to PP, through the grievance register. The site officials acknowledge and address the comments, suggestions, or grievances submitted by stakeholders, resolving issues as needed.
Consultation records	Registers is used to records the grievances and feedback. Grievance register is placed at the main gate of site office and is accessible to everyone.

Stakeholder input	No any grievances received during the current monitoring period.

2.1.3 Free, Prior, and Informed Consent

Consent	The project secured consent through inclusive community consultations, involving Indigenous Peoples (IPs), Local Communities (LCs), and customary right holders. Extensive engagement, transparent information sharing, and acknowledgment of customary rights were key. Consent was documented in clear agreements accessible to all stakeholders. Conflict resolution mechanisms and ongoing engagement ensure a responsive approach. Continuous monitoring and evaluation demonstrate the commitment to transparency and positive community outcomes. The absence of ongoing conflicts reflects the project's success in aligning with stakeholder interests and maintaining a harmonious relationship with the community.
Outcome of FPIC	No complaints were received from Local Stakeholders. PP assures that the project has not encroached on land, relocated people without consent, and forced physical or economic displacement.

2.1.4 Grievance Redress Procedure

The stakeholders are also requested to share their experiences and grievances on continuous basis. Registers is used to records the grievances and feedback. Grievance register is placed at the main gate of site office and is accessible to everyone. During the current monitoring period, no any grievances received during the current monitoring period.

Grievances received	Resolution and outcome
No grievances received	No action required as no grievance received for the current monitoring period

2.1.5 Public Comments

No negative comments have been received on project activity from any of the local stakeholders consulted. As all comments were very positive about the project, no further action is required. There were no further comments raised by the stakeholders and they were totally in support for

setting up of these kinds of projects in the region. The local stakeholders expressed their support to the project

Summary of comments received	Actions taken
No comments received during the global stakeholder period	No comments received has no action required.

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

The management team consists of experienced professionals capable of effectively implementing the project and engaging with the community. No other entities are currently involved in this initiative. If any requirements arise in the future, the project owner will recruit specialized talent to fill any identified gaps, ensuring the project's success. Information of entities involved in previous verifications and registration process are mentioned in section 1.2.

2.2.2 Risk assessment

	Risk identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	No risk identified	No natural or human-induced events have been observed during the monitoring period that could impact stakeholders' wellbeing. All emergency preparedness and response measures are in place.
Risks to stakeholder participation	No risk identified	Stakeholder participation has been ensured through continuous engagement and transparent communication, in alignment with the Environment, Quality, Occupational Health, Safety, and Social (EQHS&S) Policy. No barriers to participation were noted.
Working conditions	No risk identified	All workers operate under safe and fair working conditions. Compliance with national labor laws and company policies has been maintained.

Safety of women and girls	No risk identified	The project adheres to strict policies ensuring the safety and wellbeing of women and girls in the community, with no incidents reported.
Safety of minority and marginalized groups, including children	No risk identified	No risks have been identified that affect minority and marginalized groups, during this period. Safety measures are actively upheld.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	No risk identified	Since this is a hydro project, there are no concerns related to air pollution. Furthermore, power generation from the project will contribute to improved air quality and reduced emissions by offsetting the fossil fuel combustion typically associated with baseline power generation plants. Additionally, pollutant levels, including air quality, noise, and waste generation, remain within permissible limits. There have been no releases of hazardous materials, and all environmental safety measures are being strictly followed.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified[8]	Mitigation or preventative measure(s) taken
Discrimination	No risk identified	Company Policy clearly states company's commitment to providing equal opportunity to all with no discrimination. No incidents of discrimination were

[8] The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

		reported during the current monitoring period.
Sexual harassment	No risk identified	The "Company Policy" clearly emphasizes the organization's commitment to providing equal opportunities for all, free from any form of discrimination or harassment. No incidents of sexual harassment or discrimination were reported during the current monitoring period.
Gender equity in labor and work	No risk identified	As per “Company Policy”, the company provides opportunity to all without any discrimination on the basis of gender. No incident regarding gender inequity was reported during the current monitoring period.
Forced labor	No risk identified	The project strictly prohibits the use of forced labor. No incidents of forced labor were reported during the current monitoring period.
Child labor	No risk identified	The project ensures that no child labor is employed at any stage. No incidents of child labor were reported during the current monitoring period.
Human trafficking	No risk identified	The project does not involve or support human trafficking in any form. No incidents of human trafficking were reported during the current monitoring period.

2.3.2 Human Rights

The following demonstrations show how the project is committed to safeguard the rights of IPs, LCs, and customary right holders, while following the international human rights law[9], the UNDRIP[10] and ILO Convention 169-

Risks identified	Mitigation or preventative measure(s) taken
Free, Prior, and Informed Consent (FPIC)	The project activity has obtained the FPIC from the local stakeholders including the IPs, LCs and customary right holders, ensuring their unforced consent before the project operation, respecting their right to make decisions.
Non-discriminatory Participation in the Project Activity	The project distributed devices without cultural or social biases, safeguarding the rights of IPs, LCs, and customary rights holders to be free from discrimination.
Employment due to the Project Activity	The project activity also leads to the employment from the IPs, LCs and customary right holders, enabling them to exercise their right to fair treatment in employment and salary.

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2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
No any risk Identified	As outlined in the "Environment, Quality, Occupational Health, Safety & Social Policy," the Project Participant (PP) is committed to protecting cultural heritage by preventing pollution at the workplace and surrounding areas, conserving natural resources, and minimizing health, safety, and environmental (HSE) risks for all individuals, including

[9] https://www.ohchr.org/sites/default/files/Documents/Publications/fs9Rev.2.pdf

[10] https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

	customers and the broader community. Therefore, no risks have been identified for Indigenous people or cultural heritage.

2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
Displacement of Indigenous Peoples (IPs) or Local Communities (LCs); Conflicting property rights claims; Loss of customary land tenure/access rights; Access restrictions to natural resources.	Ensure free, prior, and informed consent (FPIC), conduct community consultations, provide fair compensation, recognize and respect customary rights, conduct due diligence on land tenure, utilize legal frameworks for dispute resolution, engage stakeholders for balanced resource access, and implement sustainable management practices.

2.3.5 Benefit Sharing

Summary of the benefit sharing plan	Under its CSR initiatives, JSW Foundation's Benefit Sharing Plan[11] promotes equitable distribution of benefits from social programs in education, health, skills, livelihoods, and sustainability. Through efforts like JSW Shakti, it empowers communities, especially women, fostering inclusive growth, cultural preservation, and long-term positive change in rural India.
Benefit sharing during the monitoring period	Activities undertaken for the welfare of local people for the current monitoring period are provided in the CSR Report separately.

2.4 Ecosystem Health

Risk identified	Mitigation or preventative measure(s) taken during the monitoring period

[11] https://www.jsw.in/foundation

Impacts on biodiversity and ecosystems	No risk identified	This project activity doesn't result in adverse effects; instead, it positively impacts on the biodiversity and ecosystem by decreasing air pollution and mitigating climate change.
Soil degradation and soil erosion	No risk identified	This project activity keeps check of the soil degradation and soil erosion by periodic monitoring.
Water consumption and stress	No risk identified	This project activity is a run-of-river project and does not have any negative impacts on water consumption or does not lead to water stress in any way.

2.4.1 Rare, Threatened, and Endangered species

Project is not located in or adjacent to a habitat of any rare, threatened or endangered Species.

Species or habitat	Not Applicable
Areas needed for habitat connectivity	Not Applicable

	Risks identified	Mitigation or preventative measure(s) taken
Habitats for rare, threatened, and endangered species	No risk identified	All necessary protective measures are in place, and regular monitoring ensures the integrity of these habitats.
Areas for habitat connectivity	No risk identified	Existing habitat corridors are well-maintained, and no significant threats to connectivity have been identified.

2.4.2 Introduction of species

At the time of validation, no species were identified as requiring mitigation for this project. The project involves the generation of hydroelectricity and its export to the Indian grid, which does

not include the planting or introduction of any species. Hence, this section (Section 2.4.2) is not applicable.

Species introduced	Classification	Justification for use	Adverse effects and mitigation
Not applicable	Not applicable	Not applicable	Not applicable

Existing invasive species	Mitigation measures to prevent the spread or continued existence of invasive species
Not applicable	Not applicable

	Risks identified	Mitigation or preventative measure(s) taken
Invasive species	Not applicable	Not applicable

2.4.3 Ecosystem conversion

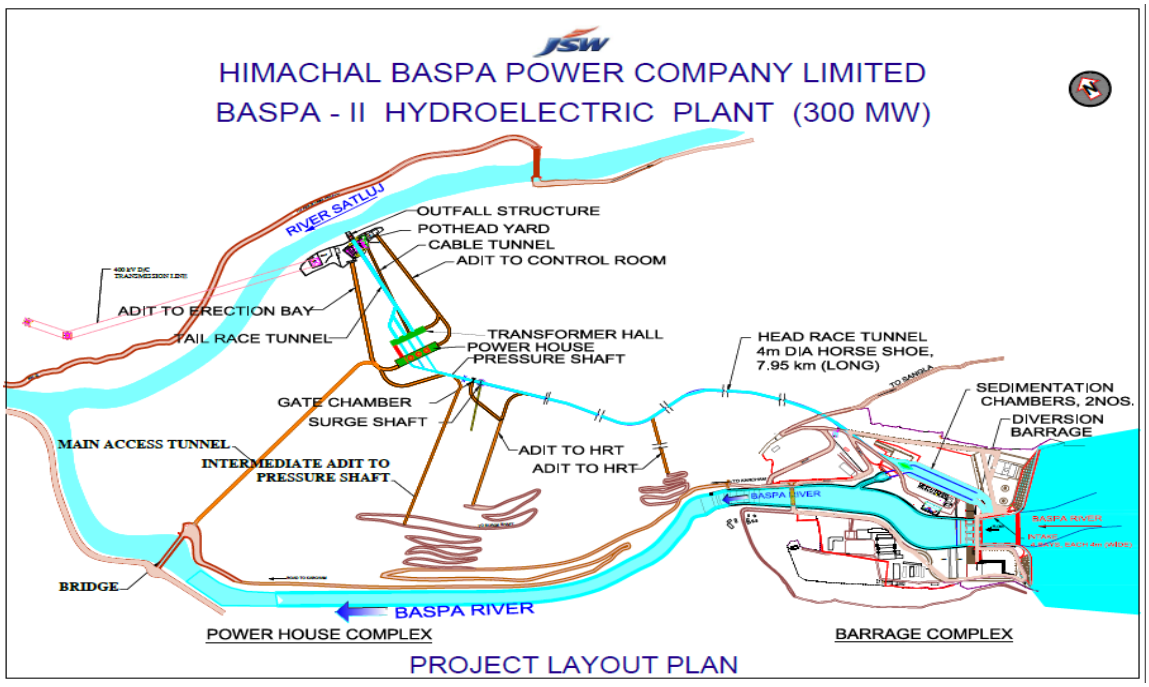
Since, the project activity is neither ARR, ALM, WRC nor ACoGS, hence this information is **not applicable**.

	Risks identified	Mitigation or preventative measure(s) taken
Ecosystem conversion	Not applicable	Not applicable

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The 1st unit of the 300 MW run-of-river hydro power project of installed capacity 100 MW got commissioned on 24-May-2003, the second unit on 29-May-2003 and third unit on 08-June-2003 that corresponds to the date when the project got fully commissioned. The project, being a run-of-river type Hydro-Power project, would generate power by utilizing the water diverted from the flow of river Baspa. The flow in the river Baspa is contributed by several nullahs and khuds and numerous glaciers. The diversion barrage of the project is located across river Baspa, one of the major tributaries of river Satluj, at Kuppa in Himachal Pradesh. Water is diverted from the barrage to the power house through a diversion barrage. Two open sedimentation chambers are used after the diversion barrage to exclude the silt from water used for power generation. The water is passed through a head race tunnel of about 7.95 km long and steel lined pressure shaft (about 885 meters long to create a design head of 702 meters) which is branching into three penstocks for running 3 pelton turbines of 100 MW each. A surge shaft has been constructed between the head race tunnel and the pressure shaft which would be used to regulate the flow.



The power generated is stepped from 33KV up to 400 KV and is evacuated by two circuits of 400 KV lines for the power station to Jhakri substation, which is about 55 Km from the site. The transmission line from the power station to Jhakri consisting of 121 towers has been installed as a part of the project. From Jhakri, 400 KV transmission system is utilized to evacuate the full output of (300 MW) hydroelectric project.

Technical information of the Project activity

Parameters	Specifications
HYDROLOGY	
Catchment area at barrage axis	967.72 sq.km
Snow catchment	514.15 sq.km
Design flood (1 in 100 Years)	1150 Cumec
Minimum discharge for 90% availability	9.4 Cumec
DIVERSION BARRAGE	
Type	Gated, 61 m long
Length of Barrage	70 m (4 bays of 13m each, 3 Piers of 3m each & 2 Abutments of 4.50m)
Height of Barrage from deepest foundation	21.15 m (EL. 2533.50 to EL. 2512.35m at 40m D/S of B/Axis)
Maximum Pond Level	EL. 2531.50m
Minimum Pond Level	EL. 2527.50m
Live Storage at FRL	75.00 Ha-m
Average River bed level at barrage site	EL. 2519.00m

INTAKE	
Crest Level	EL. 2525.00m
No. of intake bays	4 bays each 4 m wide (Plus 2 bays for Baspa Stage-I)
Discharge through intake	65 cumec
SEDIMENTATION CHAMBER AND FLUSHING DUCTS	
Particle Size to be Excluded	(+) 0.2 mm
Flow through velocity	0.3 m/s
Desilting tanks	2 Nos.
Size of tank	138.5m (L) x17m (W) x16m (H)
Flushing discharge	13 cumec
Size of Flushing tunnel	0.84mx1.8m (H) (2 Nos.)
Head Race Tunnel (HRT)	
Length	7950 m (excluding 103m of cut and cover portion)
Type of Section	4m dia, Modified Horse Shoe
Design Discharge	52 cumec
Slope in tunnel	1 in 114
Lining	Concrete lining
SURGE SHAFT	
Type	Underground
Diameter	6m/8m
Height	121m
PRESSURE SHAFT	
No. & Type	One number, steel lined 3.1 m dia 885m long with two bifurcations U/S of Power House
Unit Penstock	3 Nos, 1800 mm dia
Power House	
Capacity	3 x 100 MW
Type	Underground
Size of P.H. Cavern	92 m (L) x 18m (W) x 39 m (H)
Size of T.H. Cavern	75 m (L) x 13m (W) x 20 m (H)
GENERATION	
In 90% dependable year	1213 MU per annum
In 50% dependable year	1391.61 MU per annum
Tail Race Tunnel (TRT)	
Length and Shape	250m long, 5.6m d-shaped
Hydraulic Turbines (HYDRO-VEVEY, SWITZERLAND)	
Type	Pelton
Design Head	702 m

Rated Output	103 MW
Normal Speed	375 rpm
No. of Jets	4
Generators (SIEMENS A.G., GERMANY)	
Rated Output	111MVA with 10% overload margin with higher temperature rise
Rated Voltage	13.8 kV +/- 5%
Frequency	50 Hz +/- 3%
Synchronous speed	375 rpm
MAIN UNIT TRANSFORMERS (BHEL)	
No. & Capacity	3x41 MVA, Single Phase
BUS DUCTS (SIEMENS A.G., GERMANY)	
Type	Isolated phase, Continuous type
Rated Voltage	15 kV
Rated Current	6000 A (Main) / 4000A (Delta)
Cooling	Natural
E.O.T. CRANES (WMI CRANES LTD.)	
No. & Capacity	1x 210/25/10 tonne
Span	18.8 m
55 Km long, 400kV D/C Transmission Line between Baspa-II to Jhakri - Total scope including Benching work, Foundation work, Tower Erection Work, Stringing Work and Revetment Work at 121 Locations involving crossing of the valley 13 times	

During the current monitoring period, the hydro power project was operating with normal operational schedule including scheduled shut down for maintenance mentioned in Appendix 2. During the current monitoring period 01-August-2022 to 31-July-2024, the project activity achieved 2,346,049 tCO_2e as a result of supplying 2,529,980.71 MWh clean electricity to grid.

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviation is applied during the monitoring period.

3.2.2 Project Description Deviations

The following deviation is included in Monitoring period 01-January-2018 to 31-October-2020 and considered in subsequent verifications:

Deviation 1: Since 01-September-2015, project activity ownership rests on the Himachal Baspa Power Company Ltd. The company name changed to JSW Hydro Energy Limited from 01-September-2018. The relevant document for change in company name and corresponding change in communication agreement to VCS has been provided. The project ownership and

project name change deviation has been approved in Verification report (Monitoring duration 01-November-2020 to 31-July-2021)[12].

Timelines:

1st Crediting Period: 01-April-2006 to 31-March-2016 (inclusive of both days)

2nd Crediting Period: 01-April-2016 to 31-March-2026 (inclusive of both days)

Verification Number	Monitoring Period Dates (inclusive of both mentioned days)
First Verification of Second Crediting Period	01-September-2015 to 31-March-2016 (Under First Crediting Period)[13]
	01-April-2016 to 31-December-2012 (Under Second Crediting Period)
Second Verification of Second Crediting Period	01-January-2018 to 31-October-2020[14]
Third Verification of Second Crediting Period	01-November-2020 to 31-July-2021[15]
Fourth Verification of Second Crediting Period	01-August-2021 to 31-July-2024

The following deviations are included in previous verification (Monitoring Period: 01-August-2021 to 31-July 2022, (inclusive of both start and end dates).

Deviation 2: The Longitude (E) and Latitude (N) of the location of the Baspa powerhouse has been updated in the monitoring report to ensure more accurate detection. The deviation doesn't impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario. The coordinates for the power house of the Baspa project have been revised and are now recorded as.

Longitude (E) : 78°11'23"

Latitude (N) : 31°29'48"

The nature of deviation is permanent.

Deviation 3: A typo error was identified in the Joint PD & MR having monitoring date (01-September-2015 to 31-December 2017, (inclusive of both start and end dates)[13] regarding start date of project activity. The reports mention 08-June-2003 but the unit-I commissioned in 24-May-2003. The correct date is mentioned correctly in every monitoring previous and after the crediting period. The deviation doesn't impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario. The nature of deviation is permanent.

[12] https://registry.verra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=68049&IDKEY=2kjalskjf098234kj28098sfkjlf098098kl32lasjdflkj909293839571 section 3.3 page 14

[13] https://registry.verra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=64497&IDKEY=L0e98hfalksuf098fnsdalfkjfoijmn4309JLKJFjlaksjfla9088941363

[14] https://registry.verra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=64503&IDKEY=flksjoiuwqowrnoiuomnckjashoufifmln902309ksdflku098n88949637

[15] https://registry.verra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=68048&IDKEY=k98klasmf8jflkasf8098afnasfkj98f0a9sfsakjflsakjf8df93838192

3.3 Grouped Projects

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

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{Grid, CM,y}$
Data unit	tCO_2/MWh
Description	Combined Margin Grid emission factor for the project activity
Source of data	Calculated from CEA database, Version 12, May 2017[16]
Value applied	0.9273
Justification of choice of data or description of measurement methods and procedures applied	The data are obtained from "CO_2 Baseline Database for Indian Power Sector" version 12.0, published by the Central Electricity Authority, Ministry of Power, Government of India. The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$= Build margin CO_2 emission factor in year y (tCO_j/MWh) $EF_{grid,OM,y}$= Operating margin CO_2 emission factor in year y (tCO_2/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 25% W_{BM} = Weighting of build margin emissions factor (%) = 75% The above weighing is as per "Tool to calculate the emission factor for an electricity system", version 06.0.0 for other projects (hydro in this case) and for second crediting period
Purpose of data	Calculation of baseline emissions
Comments	The value is fixed and it is same for the entire crediting period

[16] https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver12.pdf

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{PJ,y}$ / $EG_{facility,y}$
Data unit	MWh
Description	Net Electricity supplied to the grid by the project activity during the year y
Source of data	Joint Meter Reading (JMR) by SEB (State Electricity Board)
Description of measurement methods and procedures to be applied	For the measurement of net energy delivered to the grid, two transmission lines are provided. Each transmission line has a set of main meter and check meter have been installed at the power house of project activity. The meters are capable of metering export and import data separately. The net electricity delivered to the grid would be the difference of export and import energy. The JMR Readings form the basis for calculation of the emission reductions. The JMR Readings are taken at the power house of the project activity in the presence of HPSEB (State Electricity Board) officials and the PP representative.
Frequency of monitoring/recording	Continuous monitoring and monthly recording
Value monitored	See table below
Monitoring equipment	TWO SETS OF METERS (MAIN & CHECK METERS) ARE USED FOR MEASURING THE ELECTRICITY EXPORT TO THE GRID AND ELECTRICITY IMPORT FROM THE GRID. THE DETAILS OF METERS AND CALIBRATION DETAILS ARE PROVIDED IN

Year	Net Electricity Supplied to grid (MWh)
2022	618,282.71
2023	1,163,976.00
2024	747,722.00
Total	2,529,980.71

	APPENDIX 2: Meter Calibration details.
QA/QC procedures to be applied	The meters are calibrated once in every 5 years[17]; and faulty meters will be duly replaced immediately. The meter accuracy class and calibration interval is under purview of state electricity board and PP do not have any control on it. It is also noted that monitoring procedure is under control of state electricity board. The net electricity export value is also cross checked with electricity sales invoices.
Purpose of the data	Calculation of baseline emissions
Calculation method	Net Energy Generation = Total electricity generation – 0.65% of Total electricity generation
Comments	-

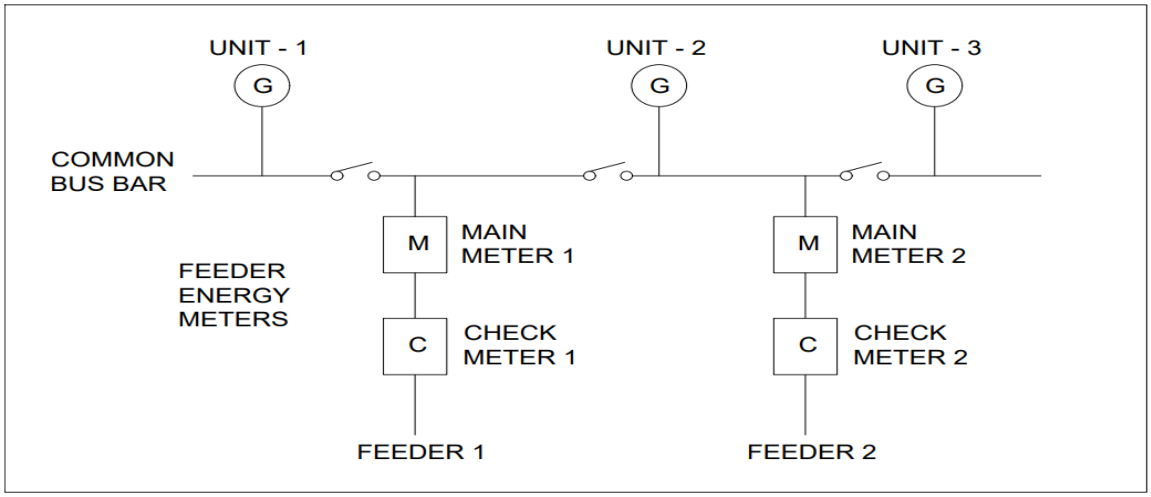
4.3 Monitoring Plan

An internal audit carried out every year to ensure that the monitoring parameters are being monitored on sampling basis in accordance with Section 4.2 of monitoring report.

A project team is constituted with participation from relevant departments at the site. It is comprising of personnel at the Kuppa barrage, and the Sholtu office. This team is responsible for data collection and archiving. They meet periodically to review the project activity, and check the data collected, etc. The Kuppa office is responsible for barrage control and the operation and maintenance of hydro mechanical equipment. The Sholtu office looks into the general administration along with the liaisoning with various government departments viz civil administration, horticulture etc. and is overall in-charge of the Baspa plant along with the barrage, transmission lines and co-ordination with HPSEB (Himachal Pradesh State Electricity Board). At the project site, the JMR of commercial metering at inter-connection point is jointly recorded by the representatives of PP and HPSEB (Himachal Pradesh State Electricity Board) every month. To account the transmission loss between project site and Jhakri sub- station, the net electricity supplied to grid measured at project site has been deducted at 0.65%. This is as per state electricity board regulations. For a clear and concise overview of a power system's components and their interconnections a single line diagram has been provided.

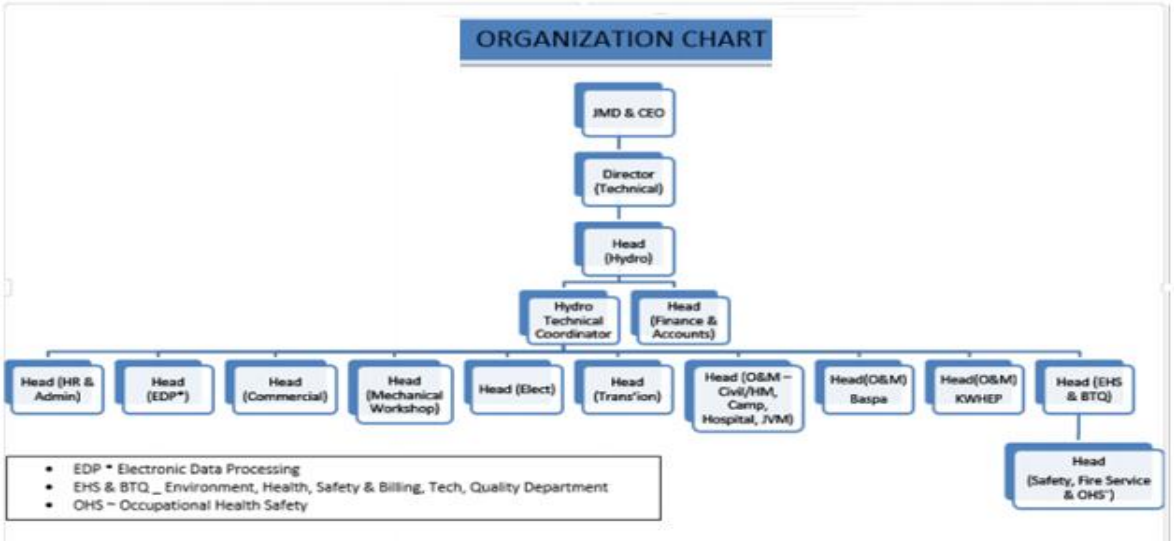
All the metering points of the project activity are shown in the schematic line diagram below:

[17] https://cea.nic.in/wp-content/uploads/2020/02/meter_reg.pdf



The JMR reports are checked and discussed by the senior team members/managers periodically. In case of any irregularity observed by any of the team member, it is informed to the concerned person for necessary actions. The project site also has a digital system SCADA for the overall monitoring of the project.

The management structure is as given in the diagram below:



Data Monitoring:

The methodology requires monitoring of the following:

- Net Electricity generation from the project activity;

All the main meters and check meters are tested by PGCIL (Power Grid Corporation of India Limited) on a periodic basis. In case of any faulty readings observed appropriate corrective action will be taken. If the error is found beyond the permissible limits, the PP will inform the respective agency so as to immediately rectify the error in the instrument.

Metering System

The project activity comprises of two transmission lines for energy exported to the grid. Each transmission line has a main meter and a check meter, which are calibrated once in 5 years as per CEA notification[18]. Although the selected calibration frequency is once every five years, PP follows the good practice of replacing meters annually. These are tri-vector meters of Secure make with digital display and are of 0.2s accuracy class. There is a separate import meter for the 22kV line which is used to supply power to the Sholtu site. This meter is under the purview of HPSEB (Himachal Pradesh State Electricity Board) and is maintained by them.

Completeness and Reliability:

The project activity has installed the latest state-of-art monitoring and control equipment that measure, record, report, monitor and control various key parameters. Real time data monitoring by SCADA takes place using this control system. All the monitoring equipments undergo the process of regular meter testing and calibration as under Section 4.2. The JMRs for the power exported from the project activity and the HPSEB (Himachal Pradesh State Electricity Board) bills/ invoices are used to validate the data accuracy.

Frequency:

The frequency is as explained in data and parameters monitored.

QA/QC of monitored data:

The monitoring procedure is under control of state electricity board. The meters are calibrated once in every 5 years and faulty meters will be duly replaced immediately. The meter accuracy class and calibration interval are under purview of state electricity board and PP do not have any control on it. The net electricity export value is also cross checked with electricity sales invoices. All data will be kept for a minimum of 2 years following issuance of certified emission reductions or the end of the crediting period, whichever is later, and the storage of this data will be the responsibility of the project owner.

Emergency preparedness:

In case Main meter or check meter is found to be outside the acceptable limits of accuracy or faulty or not functioning properly, it is being repaired, recalibrated or replaced as soon as possible. In the event that the Main meter is not in service as a result of maintenance, repairs or calibration, the check meter is being used. In case both the main and check meter are found to be outside the acceptable limits of accuracy or faulty or not functioning properly, both the meters shall be calibrated immediately and the error percentage found in the main mater during its calibration shall be applied to its metered energy data for the entire period since its last calibration to obtain the corrected value of net electricity exported to the grid. However, no such case has been observed.

[18] https://cea.nic.in/wp-content/uploads/2020/02/meter_reg.pdf

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline emissions are calculated by multiplying the Net electricity exported to the grid with net baseline emission factor.

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

Where,

BE_y = Baseline Emissions (tCO_2/year)

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

$EF_{grid, CM, y}$ = Baseline Emission Factor (Combined margin CO_2 emission factor for grid)

The project activity being a greenfield projects paragraph 46 ACM0002 V17[19],

$EG_{PJ, y} = EG_{facility,y}$= Net electricity exported to grid by the project activity (MWh/year)

The calculation of yearly baseline emissions is provided in the table below:

Year	Net Electricity Export (MWh)	Baseline Emission Factor (tCO_2e/MWh)	Baseline Emissions (tCO_2e)
2022	618,282.71	0.9273	573,333
2023	1,163,976.00	0.9273	1,079,354
2024	747,722.00	0.9273	693,362
Total	2,529,980.71	0.9273	2,346,049

Hence the baseline emission calculated for the reported monitoring period i.e. BE_y= 2,346,049 tCO_2e

5.2 Project Emissions

PE_y= Project emission due the project activity in a year

For most renewable energy power generation project activities, PE_y = 0.

As per para 38 of ACM0002 Version 17.0, for all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected.

[19] https://cdm.unfccc.int/UserManagement/FileStorage/D5YFS9I3VKBT18MQNGX0LPZ6U7AWCO

The project emission includes the CH4 emission from the reservoir. Since the project activity is a run-of-the-river project with a reservoir facility for diurnal storage, the calculation for project emissions as per the methodology is as follows:

Parameters	Unit of Measurement	Value
Capacity	MW	300
Running Hours	Hours	24
Reservoir area	Ha	33

$PD = (Cap_{PJ} - Cap_{BL}) / (A_{PJ} - A_{BL})$

PD = Power density of the project activity, in W/m2

Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W).

Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W).

A_{PJ} = Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m2)

A_{BL} = Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m2). For new reservoirs, this value is zero

Since the reservoir is a newly installed facility and does not result in the increase of existing reservoir, and Cap_{BL} and A_{BL} can be assumed to be zero. The reservoir area is 33 ha (FSL).

Thus,

$PD = Cap_{PJ} / A_{PJ} = (300*1000*1000)/ (33*10000) = 909\ W/m^2$

As per the methodology AM0002 V17 para 43(c), if the power density (PD) of the power plant is greater than 10 W/m^2, then the project emission are zero.

Hence the Project Emission are $PE_y = 0\ tCO_2e$

5.3 Leakage Emissions

According to ACM0002 version 17.0, Section 5.6, leakage emissions are nil. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

$LE_y = 0\ tCO_2e$

5.4 GHG Emission Reductions and Carbon Dioxide Removals

As per section 5.7. Emission reductions, Paragraph number 58 of methodology ACM0002 Version 17.0 the Emission reductions are calculated as Follows:

$ER_y = BE_y - PE_y - LE_y$

Where,

ER_y = Emission Reduction in tCO_2/year
BE_y = Baseline emission in tCO_2/year
PE_y = Project emissions in tCO_2/year
LE_y = Leakage Emissions in tCO_2/year

For the project activity during the current monitoring period, as per Methodology.

BE_y = 2,346,049 tCO_2e,

PE_y = 0 tCO_2e,

LE_y = 0 tCO_2e,

ER_y = 2,346,049 – 0 – 0

ER_y = 2,346,049 tCO_2e

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Reduction VCUs (tCO_2e)	Removal VCUs (tCO_2e)	Total VCUs (tCO_2e)
01-August2022 to 31-December-2022	573,333	0	0	0	0	573,333
01-January-2023 to 31-Decemebr-2023	1,079,354	0	0	0	0	1,079,354
01-January-2024 to 31-July-2024	693,362	0	0	0	0	693,362
Total	2,346,049	0	0	0	0	2,346,049

Vintage details for current monitoring period:

Vintage period	Ex-ante estimated reductions/ removals	Achieved reductions/ removals	Percent difference	Explanation for the difference
01-August2022 to 31-December-2022	508,202	573,333	12.82%	The variation in GHG emission reductions is attributed to higher electricity generation resulting from the PLF, considering the period from 01-August2022 to 31-December-2022.
01-January-2023 to 31-Decemebr-2023	1,212,379	1,079,354	-10.97%	This is due to Breakdown of the WTGs. The details of the same are available in **Error! Reference source not found.**Appendix 3: Breakdown Summary information
01-January-2024 to 31-July-2024	707,497	693,362	-2.0%	This is due to Breakdown of the WTGs. The details of the same are available in **Error! Reference source not found.**Appendix 3: Breakdown Summary information
Total	2,428,078	2,346,049	-3.38%	This is due to Breakdown of the WTGs. The details of the same are available in **Error! Reference source not found.**Appendix

				3: Breakdown Summary information

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

No commercially sensitive information has been provided

APPENDIX 2: METER CALIBRATION DETAILS

There are four (4) meters in the project activity in two sets – two main meters and remaining two are check meters. Although the selected calibration frequency is once every five years, PP follows the good practice of replacing meters annually. The details of meters along with operation schedule are given below:

Details of meters (all)- Make: SECURE & Accuracy class: 0.2s

Feeder	Main Meter	Check Meter Serial Number	Calibration Date Serial Number	Due Date
Feeder 1	Q0333309	Q0333448	17-November-2021	16-November-2026
Feeder 2	Q0333368	Q0333403	18-November-2021	17-November-2026

Feeder	Meter	Old Meter Serial Number	Meter Change date	New Meter Serial Number
Feeder 1	Main Meter	Q0333309	11-November-2022	HPU13630
Feeder 1	Check Meter	Q0333448	11-November-2022	HPU13631
Feeder 2	Main Meter	Q0333368	11-November-2022	HPU13632
Feeder 2	Check Meter	Q0333403	11-November-2022	HPU13633

Feeder	Main Meter	Check Meter Serial Number	Calibration Date Serial Number	Due Date
Feeder 1	HPU13630	HPU13631	10-November-2022	09-November-2027
Feeder 2	HPU13632	HPU13633	10-November-2022	09-November-2027

Considering calibration frequency of once in five years[20], there have not been any delay in calibration of the meters.

APPENDIX 3: BREAKDOWN SUMMARY INFORMATION

Major Breakdown Details: from 01-August-2022 to 31-July-2024.

Month	Remarks	Total Duration (Hrs:Min)
September-2022	Unit-2 under forced outage due to Hydraulic Oil Leakage and Deflector-1 assembly displacement from 03:00 hrs. to 17:30 hrs. of 05-September-2022.	14:30
June-2023	Unit-3 under Planned Shutdown due to Rotor Earth Fault Alarm from 23:30 Hrs. of 23-June-2023 to 02:30 Hrs. of 24-June-2023.	03:00
July-2023	Unit-3 under Planned Shutdown for checking of slip ring and carbon brushes due to observed sparking from 10:45 Hrs. of 07-July-2023 to 13:15 Hrs. of 07-July-2023.	02:30
	Unit-3 under Planned Shutdown due to replacement of defective Generator Air Cooler from 13:00 Hrs. of 08-July-2023 to 15:45 Hrs. of 08-July-2023.	02:45
April-2024	Unit-1 under planned shutdown for Upgradation of Excitation System from 14:00 Hrs. of 12-April-2024 to 08:00 Hrs. of 15-April-2024.	66:00

[20] https://cea.nic.in/wp-content/uploads/2020/02/meter_reg.pdf

July-2024	Unit-3 under forced shutdown due to electronic governor major fault from 15:30 hrs. to 17:10 hrs. of 27- July-2024.	01:40
	Total	90:25