

<b>Project Title</b>	<b>Small Hydro Power Project in Chamba, Himachal Pradesh</b>
<b>ERM CVS Project Reference</b>	2398.V1
<b>Client Name</b>	Batot Hydro Power Limited
<b>Client Address</b>	Batot Hydro Power Limited, 214, Dr. D.N. Road, Empire House Mumbai-400001 Maharashtra (India)

## CDM Validation Report

**ERM Certification and Verification Services**  
2nd Floor, Exchequer Court  
33 St Mary Axe  
London EC3A 8AA

<b>Version Control</b>	<b>Date</b>
Version 1.0	14-August-2012 (Draft Validation Report)
Version 2.0	28 December 2012 (Final Validation Report)
Version 2.1	05 July 2012 (Final Validation Report incorporating response for Request for Review comments)

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## Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH <sub>4</sub>	Methane
CL	Clarification request
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
COP	Conference of the Parties
DNA	Designated National Authority
FAR	Forward Action Request
DOE	Designated Operational Entity
EB	Executive Board
EIA	Environmental Impact Assessment
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GSP	Global Stakeholder Process
GWP	Global Warming Potential
GWh	Giga Watt hour
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of approval
MOP	Meeting of the Parties
MP	Monitoring Plan
MW/MWh	Mega Watt/Mega Watt hour
NCV	Net Calorific Value
NGO	Non-Governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PPA	Power Purchase Agreement
SCE	Standard coal equivalent
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added tax
VVS	CDM Validation and Verification Standard

## Project/Party specific abbreviations

BHPL	Batot Hydro Power Limited
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
NEWNE	North Eastern Western and North Eastern
GCV	Gross Calorific Value
DPR	Detailed Project Report
MoEF	Ministry of Environment and Forest
HPSEB	Himachal Pradesh State Electricity Board
BSE	Bombay Stock Exchange
HPPTCL	Himachal Pradesh Power Transmission Corporation Limited
PLF	Plant Load Factor
MNRE	Ministry of New and Renewable Energy

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NCDMA	National Clean Development Mechanism Authority (NCDMA) established in the Ministry of Environment and Forests (MoEF)
REC	Renewable Energy Certificate
SHP	Small Hydro Power
JMR	Joint Meter Reading

# 1 Project Information

## 1.1 Key project information

<b>Project Title</b>	<b>Small Hydro Power Project in Chamba, Himachal Pradesh</b>
<b>Project Location(s)</b>	<b>Balij Ka Naala, Village: Batot &amp; Kawari, Chamba, Himachal Pradesh</b>
<b>Host Party</b>	India
<b>Other Party(ies)</b>	Not Applicable
<b>Project participants</b>	<b>Batot Hydro Power Limited</b>

<b>Methodology(ies) used</b>	Grid Connected Renewable Electricity Generation (AMS I.D, Version 17)
<b>Methodological tool(s) used</b>	"Tool to calculate the emission factor for an electricity system" (Version 02.2.1, EB63)
<b>Sectoral Scope(s)</b> (as per <a href="http://cdm.unfccc.int/DOE/scopes.html">http://cdm.unfccc.int/DOE/scopes.html</a> )	Sectoral Scope 01 :Energy Industries (renewable/ non- renewable sources)

<b>Project Design Document GSP Version</b>	Date: 03 August 2012	<b>Project Design Document Final Version</b>	Date: 01 July 2013
	Version Number: 01		Version Number: 04.1

<b>Starting date of the project activity</b>	16 March 2006
<b>Crediting Period start and end date</b>	31-December-2012 till 30-December-2019 (Renewable)
<b>Estimated annual average emission reductions</b>	11,954 tCO <sub>2</sub> e

<b>Dates of GSP</b>	09 August 2012 - 07 September 2012
<b>Date(s) of validation site visit</b>	14 August 2012 to 15 August 2012

## 1.2 Key technical information

Capacity of the project (if applicable)	3.5MW
Lifetime of the project	40 years
Quantity of net energy (electrical) delivered to the end user per year (if applicable)	12,970 MWh/year
Grid to which the project is connected to (if applicable)	Northern Eastern Western and North-Eastern (NEWNE)


## 1.3 Key financial information

IRR of the project without income of CERs	11.61%
IRR benchmark	16.82%

## 2 Summary and Validation Opinion

<b>Project Title</b>	Small Hydro Power Project in Chamba, Himachal Pradesh
<b>Name of Client</b>	Batot Hydro Power Limited
<b>Basis of validation</b>	<p>ERM CVS based its validation work on:</p> <ul style="list-style-type: none"> <li>• CDM approved monitoring methodology, Grid Connected Renewable Electricity Generation (AMS I.D, Version 17, EB61)</li> <li>• CDM Validation and Verification Standard (version 02)</li> <li>• ERM CVS's internal CDM validation methodologies and protocols</li> <li>• CDM decisions and guidance issued by the CDM Executive Board</li> <li>• UNFCCC criteria for the Clean Development Mechanism</li> <li>• Host Country criteria for the Clean Development Mechanism</li> </ul>
<b>Responsibilities of ERM CVS</b>	ERM CVS is responsible to provide a thorough independent third party assessment of the proposed CDM project activity to ensure that the proposed CDM project activity meets all the identified and applicable criteria for registration of projects under the CDM.
<b>Responsibilities of Project participants</b>	The Project Participants are responsible for preparing the PDD, supporting documentation and providing all necessary evidences to support the information included in the PDD.
<b>Activities performed</b>	<p>ERM CVS conducted its activities in accordance with the CDM Validation and Verification Standard. The validation consisted of a review of project documentation, a site visit, and interviews with relevant personnel, cross checking information through other reliable sources and reporting. Validation work was based on a validation protocol that sets out relevant CDM requirements. Where necessary, Clarification Requests and Corrective Action Requests were raised and closed out with the Project participants. The validation work was subject to detailed Technical Review and assessment prior to submission.</p> <p>No component of the project activity was excluded from the validation.</p>
<b>ERM CVS Conclusion</b>	<p>ERM Certification and Verification Services (ERM CVS) has performed the validation of the project activity against the criteria for the Clean Development Mechanism as set out by the Conference of the Parties and the UNFCCC CDM Executive Board, and host country criteria. The validation employed standard auditing techniques, and addressed the requirements of the CDM Validation and Verification Manual.</p> <p>The Party involved in the project fulfils the criteria for participation in the CDM, and has issued a letter of approval (LoA) for the project and authorised the Project participant. The LoA of the host Party confirms the contribution of the project towards sustainable development.</p> <p>The validation has provided sufficient evidence to demonstrate that the project activity is not the baseline scenario, and that emission reductions would be additional to what would have taken place in the absence of the CDM project activity.</p> <p>The project meets the applicability criteria and correctly applies methodology AMS ID "Grid connected renewable energy generation" and is therefore expected to result in real, measurable and long term reductions in greenhouse gas emissions.</p> <p>The monitoring plan provides for the collection and archiving of data sufficient to ensure that emission reductions can be verified. The DNA of the host Party has confirmed that the project assists in meeting sustainable development criteria.</p> <p>Nothing came to our attention to suggest that the project activity, if implemented as described, would not result in emission reductions of annual 11,954tCO<sub>2</sub>e per year on average over the first 7 year crediting period.</p>



	<p>In summary, it is the opinion of ERM CVS that the Project as described in the PDD Version 04.1 of 01 July 2013, meets all stated criteria of the CDM, correctly applies the methodology, and is expected to result in real, measurable and long term emission reductions.</p> <p>ERM CVS therefore requests the CDM Executive Board approves registration of the project activity.</p>
<b>Signed on behalf of ERM CVS</b>	 A handwritten signature in black ink, appearing to read "Mel Eddis".
<b>Name:</b>	Melanie Eddis
<b>Date:</b>	05 July 2013

## 3 Introduction

### 3.1 Validation Objectives

The purpose of validation is to ensure a thorough, independent assessment of proposed CDM project activities submitted for registration as a proposed CDM project activity against the applicable CDM requirements.

The DOE is responsible for reporting the results of its assessment in a validation report and submitting this validation report, along with the supporting documents to the CDM Executive Board as part of the request for registration of a project activity as a proposed CDM project activity.

The DOE also presents its opinion on the compliance of the proposed CDM project activity with the applicable CDM requirements, and only requests registration if this is a positive opinion.

In the course of validation, ERM CVS assesses the project's baseline, additionality demonstration, applicability to an approved CDM methodology, monitoring plan (MP), and compliance with relevant UNFCCC and host country criteria.

#### 3.1.1.1 Validation Criteria

ERM CVS applies the following principles in performing its validation:

- Consistency
- Transparency
- Impartiality, independence and safeguarding against conflicts of interest
- Confidentiality

In all aspects of its work, ERM CVS ensures that the information and data reported are accurate, conservative, relevant, credible, reliable and complete.

### 3.2 Scope

The validation scope addresses the project activity as described in the Project design document (PDD) and associated documentation. The PDD and associated documentation are reviewed against the criteria and requirements stated in the CDM Validation and Verification Standard (VVS) and Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, as well as relevant decisions made by the CDM Executive Board.

The validation scope also included an assessment of completeness and accuracy of documentation, evaluation of evidences, information and assumptions made in the PDD and supporting documentation.

### 3.3 Contract Review

Prior to contracting with the client, a full review of the project and the validation requirements was made. This addressed both commercial risk and project risks associated with conducting the validation activities and confirmed the availability of an appropriately qualified team to conduct the validation.

### 3.4 Validation Personnel

Based on ERM CVS's review of the project, a validation team was established that takes into account the coverage of the technical area(s), sectoral scope(s) and relevant host country experience.

Personnel who were involved in the validation of this project activity were:

## Validation Team

Name	Role	CDM Requirements	Technical area	Financial Expertise	Participated in site visit?
Shubha Shanbhag	Team Leader	Fully Competent	Fully Competent	No	Yes
Saurav Chakraborty	Assessor in Training	No	No	No	Yes
Simon Cochrane	Financial Expert	No	No	Fully Competent	No

## DOE Head Office

Name	Role	CDM Requirements	Knowledge relevant to the technical area
Jonathan Avis	Technical Reviewer	Full	yes

## 3.5 Summary of CVs of the validation personnel

**Shubha Shanbhag** has been working in CDM for the past 6 and half years, originally as a project developer and consultant. From year 2007 onwards she has been involved in validation/verification of CDM projects and also as a technical reviewer. Shubha has worked on almost 25 validations and 8 verifications in the sectors of Wind, Hydro, Biomass, WHR - Steel, WHR - Cement and CMM. Shubha has completed a Bachelor in Environmental Engineering and has also worked in the capacity of ISO 14001 Environmental Management Systems Auditor.

**Saurav Chakraborty** is presently working with ERM from their Mumbai office. His current role in ERM involves field activities and implementation of full scale remediation systems for Contaminated Soil and Groundwater. He also ensures and looks after proper on field implementation of Health & Safety for client employees & sub-contractor employees as per project Health & Safety requirements. Saurav has already worked on a number of validation projects. Saurav holds a Bachelor of Technology (B.Tech) in Environmental Engineering from GGSIP University, Delhi and a Masters of Technology (M.Tech) in Environmental Engineering from NIT, Jaipur. **Simon Cochrane** is a CDM Financial Expert based in London, United Kingdom. Mr. Cochrane has attained an Accounting Technician qualification and the CIMA Diploma in Management Accounting, which includes units on investment appraisal methods and tools. He has almost 10 years' experience working in a variety of finance roles within the ERM Group, including project finance focused roles liaising directly with project managers and project directors on hundreds of environmental projects. Since November 2010, Mr. Cochrane has been working with ERM CVS specifically to audit investment analyses against the requirements of the CDM.

**Jonathan Avis** is CDM Business Manager for ERM CVS, and a GHG Assessor and Technical Reviewer with over 6 years experience in the CDM. Since joining ERM CVS Jonathan has worked as a Technical Reviewer or GHG Assessor on more than 30 CDM validations in Renewable Energy (scope 1), more than 10 CDM validations in Manufacturing Industries (scope 04), 6 CDM validations in Mining (scope 8), and 5 CDM validations in Waste Handling and Disposal (scope 13). Jonathan's previous work experience involved screening and due diligence of carbon projects, Project Design Document (PDD) development, quality assurance and technical review of CDM project documentation, the development of carbon monitoring plans, and management of carbon projects through the validation, registration and verification stages. Jonathan has completed the ERM CVS CDM training as well as the GHGMI Renewable Energy training and Gold Standard training. Jonathan holds a BA in Geography and an MSc in Environmental Change and Management from the University of Oxford.

## 4 Validation Approach

In carrying out its validation work, ERM CVS has:

- (a) Determined whether the proposed project activity complies with the requirements of paragraph 37 of the CDM Modalities and Procedures (M&Ps), the applicability conditions of the selected methodology and guidance issued by the Board;
- (b) Assessed the claims and assumptions made in the project design document (PDD). The evidence used in this assessment has not been limited to that provided by the project participants.

The validation was carried out in accordance with the most recent version of the VVS. The validation process employed standard auditing techniques and undertook necessary cross-checks and follow-up actions to ascertain the correctness of the information. The validation team included staff with experience in the relevant technical areas within the sectoral scope, and financial expertise where relevant. The validation report and associated documents have undergone a thorough technical review by ERM CVS before being submitted to the CDM Executive Board for registration. The validation consisted of the following key stages:

- Upload of the PDD for Global Stakeholder Process (GSP), receipt of any comments from stakeholders
- Review of documentation including PDD, methodology and key supporting documents and references
- A visit to the project site, including interviews with personnel responsible for developing the project
- Development of a draft validation report, identifying non-compliances including Corrective Action Requests (CARs) and Clarification Requests (CLs), taking into account findings of the GSP, desk review and site visit / interviews
- Resolution of outstanding issues (CARs and CLs) and development of a final validation report and validation opinion
- Independent technical review and report approval

### 4.1 Document Review

A detailed document review of the PDD, methodology and all other associated documentation and references took place in advance of the site visit, and additional documents that were not available for the desk review were requested for review during the site visit. The document review includes:

- A review of data and information to verify the correctness, credibility and interpretation of presented information;
- Cross checks between information provided in the PDD and information from other sources, not limited to those provided by the PPs, applying ERM CVS's sectoral or local expertise and, if necessary, with independent background investigations
- Reference to available information relating to projects or technologies similar to the proposed project activity
- Review, based on the approved methodology being applied, of the appropriateness of formulae and accuracy of calculations

Where the review of the PDD at the document review stage raised issues, these were further reviewed and validated through supporting documentation and cross-checking from other sources and interviewing relevant personnel involved in the project activity during the site visit. During the document review the project team also compared the proposed project activity with available information relating to projects or technologies similar to the proposed CDM project activity under validation. Where appropriate, the validation team assessed the appropriateness of formulae and the correctness of calculations presented by the PPs. A list of all documents reviewed or referred to in the course of this validation is included in Appendix A.

### 4.2 Site visit and Interviews

The site visit included a tour of the physical project site, including the weir, intake channel, desilting basin, water diversion tunnel power house and sub-station. The site visit also included a visit to the site & main project office of the Batot Hydro Power Limited.

Site visits and interviews provide additional background to the project as well as cross checks with project documentation. Interviews were undertaken with relevant stakeholders in the host country, as well as personnel with knowledge of the project design and implementation. A list of interviewees, and the main topics discussed with each person can be found in appendix A.

The site visit was designed to enable the validation team to

- undertake a detailed review of additional project documentation and verify the supporting documentation;
- inspect the project site and confirm the validity of the project description in the PDD;
- assess the validity of the project boundary;
- cross-check the validity of the project information with other sources of information, including cross checks between information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted; and
- interview relevant stakeholders in the host country, and personnel with knowledge of the project design and implementation.

### 4.3 Preparation of Draft Validation Report

Based on the findings of the desk review and site visit, ERM CVS prepared a draft validation report including a list of CARs and CLs, and provided this to the PPs. Where issues are identified that need to be further elaborated, researched or added to in order to confirm that the project activity meets the CDM requirements and can achieve credible emission reductions, ERM CVS identified these issues in the DVR so that they could be discussed with the PPs and concluded upon in the final validation report (FVR).

#### 4.3.1 Remediation requests

Where issues were identified, ERM CVS raised one of the following remediation requests:

Clarification Request (CL): where information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Corrective Action Request (CAR): where:

- Mistakes have been made that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- The CDM requirements have not been met; or
- There is a risk that emission reductions cannot be monitored or calculated.

Forward Action Requests (FAR): where it was necessary to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

CARs and CLs must be 'closed out' before the validation can be concluded. Close out is only possible where the PPs modify the project design, rectify the PDD or provide adequate additional explanation or evidence that satisfies ERM CVS's concerns. The validation process may be halted until the CARs and CLs are addressed to the validation team's satisfaction.

### 4.4 Final Validation Report and Validation Opinion

The final validation report (FVR) is completed when the CARs and CLs have been closed out to the satisfaction of ERM CVS. The FVR includes the validation opinion that sets out the validation conclusion regarding the compliance of the project with CDM requirements.

### 4.5 Internal Quality Control

The process of validation and decision of the validation team has been subject to an independent Technical Review. The scope of the Technical Review process is to independently assess that all procedures have been followed, necessary requirements have been met, and all conclusions are justified. The final validation decision is based on the findings and conclusions of the

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validation team, assessing the compliance of the project activity with the CDM requirements, and the technical evaluation of the independent technical reviewer. The final report is then reviewed and approved by the qualified signatory / final decision maker within ERM CVS.

## 5 Validation findings – Approval & Participation, Authorisation, Contribution to Sustainable Development, and Modalities of Communication

### 5.1 Approval & Participation

As per VVS section VII F, ERM CVS assessed whether the DNA of each Party indicated as being involved in the project activity has provided an appropriate letter of approval (LoA).

	ERM CVS has confirmed that the LoA has been issued and provides confirmation of:			
Party	Ratified Kyoto Protocol?	Voluntary Participation	Contribution to Sustainable Development	Exact project title
India (Host Party)	Yes	Yes	Yes	Yes

ERM CVS received the LoA from the PP. The authenticity has been confirmed by comparing the content of LoA with other similar registered projects and checking the signatures.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/CL	Final OK/ NOT OK
5.3.1	<p>Are LoAs in place for every PP that confirm</p> <ul style="list-style-type: none"> <li>▪ Ratification of the Kyoto Protocol</li> <li>▪ Voluntary Participation</li> <li>▪ Reference to the precise project title in the PDD</li> <li>▪ Contribution to sustainable development (host party only)</li> </ul>	<p>The LoA was not provided for validation and hence CAR2 had been raised. Please see Appendix B for details.</p> <p>The host Party of the proposed project is India. India has ratified the Kyoto Protocol on 26 August 2002. The Designated National Authority is the National Clean Development Mechanism Authority (NCDMA) established in the Ministry of Environment and Forests (MoEF).</p> <p>The information of the Designated National Authority (DNA) has been confirmed by the validation team against the relevant information on the UNFCCC CDM website (<a href="http://cdm.unfccc.int/DNA/index.html">http://cdm.unfccc.int/DNA/index.html</a>).</p> <p>The validation team reviewed the LoA presented by the PP including:</p> <ul style="list-style-type: none"> <li>• confirmation of the Party's ratification to the Kyoto Protocol</li> <li>• voluntary participation</li> <li>• the project activity's contribution to sustainable development of the country (host Party), and</li> <li>• the precise title of the CDM project activity of the final PDD referenced.</li> </ul> <p>The LoA was noted as unconditional with respect to the above elements. The contents of the LoA and the signature of the authorised issuer were also compared with those of other approval cases issued by the host country DNA. Therefore, the team has confirmed the authenticity of the letter issued.</p>	CAR2	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
5.3.2	Is the information in the LoAs consistent with the other project documentation, including PP names, etc	LoA from host country DNA was not available for validation and hence CAR2 had been raised. This is closed further to the receipt of LoA from the PP. Please refer Appendix B for further details.  Yes the information in the LoA consistent with the other project documentation including PP names.	CAR2	OK

ERM CVS also reviewed whether the LoAs contain any additional specifications:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
5.3.3	Does any LoA contain additional specification or conditions of the project activity? If so, are these conditions fully complied with?	LoA from host country DNA was not available for validation and hence CAR2 had been raised. This is closed further to the receipt of LoA from the PP. Please refer Appendix B for further details.  The LoA does not contain any additional specification or conditions of the project activity.	CAR2	OK
5.3.4	If the LoA references a specific version of the Validation Report and this version cannot be submitted, then has either of the following been submitted? <ul style="list-style-type: none"> <li>a statement indicating final LoA has not been received or</li> <li>an updated Validation Report</li> </ul>	The LoA does not refer any specific version of the validation report.	CAR2	OK
5.3.5	If the project is a bundled activity (more than 1 project in the same PDD) does the LoA from the host party acknowledge the bundle activity?	The project is not a bundled activity.  It was observed & noted during the site visit of ERM CVS team that another small hydro project is coming up at 1 KM radius on the upstream of Balij ka Nala. So PP is requested to clarify on the status of that project and demonstrate that the project is not a debundled component of a large scale project. Hence CL4 has been raised.  Further to the clarification received from PP and interactions with top management representatives of PP, it was confirmed that the other projects coming on stream are being implemented by different PPs and hence not applicable for the project activity. The CL4 is closed.  This is also confirmed after review of LoA from the Host country DNA.  Refer to Appendix B for details on CAR2 & CL4	CAR2  CL4	OK



## Conclusion

ERM CVS confirmed that LoA has been received from the party involved in the project.

ERM CVS's validation of the approval status of the project activity confirmed that:

- a) Each Party is a Party to the Kyoto Protocol;
- b) Participation is voluntary;
- c) In the case of the Host Party, the project activity contributes to the sustainable development of the country;
- d) The title of the project activity is identical in the LoA and the PDD.

ERM CVS therefore confirms that the LoA is in accordance with paragraphs 38-44 of the VVS.

## 5.2 Authorisation

As per VVS section G, ERM CVS evaluated whether all PPs are listed in a consistent manner in section A.3 of the PDD and have been appropriately authorised by a Party to the Kyoto Protocol. ERM CVS also checked the consistency of information between the PDD, Letters of Approval (LoAs) and the Modalities of Communication (MoC).

PPs (list all)	Is the PP listed in Section A.3 of PDD?	Are contact details given in Annex 1 of PDD?	Does the LoA name the authorised PP?	Is information in the MoC consistent with PDD and LoA?
Batot Hydro Power Limited	Yes	Yes	Yes	Yes

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/CL	Final OK/ NOT OK
5.4.1	Is the correct information provided on PPs, and consistently applied in A.4 and Annex 1 of the PDD and other project documentation (Letters of Approval and Modalities of Communication)?	<p>LoA from host country DNA &amp; MoC were not available for validation and hence CAR2 had been raised. This is closed further to the receipt of LoA and MoC form from the PP. Please refer Appendix B for further details.</p> <p>Information provided on PP is not consistent in section A.4 and Annex 1. Hence CAR2 point no 2 had been raised</p> <p>PP name in PDD section A.4 has now been corrected to Batot Hydro Power Limited (BHPL) appropriately. Further, Appendix 1 of the PDD has been updated to refer to the PP's company website.</p> <p>The name has been validated by ERM CVS against "Certificate of Change of Name"/8/ and the same has been found acceptable. CAR2 point no 2 was closed.</p>	<p>CAR2</p> <p>CL6</p>	OK
	Can it be confirmed that there are no entities other than those approved as PPs included in	LoA from host country DNA & MoC was not available for validation and hence CAR2 had been raised. This is closed further to the receipt of LoA and MoC form from	CAR2	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/CL	Final OK/ NOT OK
	section A.4 or Annex 1 of the PDD.	the PP. Please refer Appendix B for further details.  It can be confirmed that there are no entities other than those approved as PP included in section A.4 or Annex 1 of the PDD		

**Conclusion** All PPs to the project activity have been authorised by a party to the Kyoto Protocol, and ERM CVS has reviewed the letters of approval to confirm this. The PPs and are listed in a consistent manner in the PDD and all related project documentation, including the LoAs and Modalities of Communication. No entities other than those approved as PPs are included in section A.4 or Annex 1 of the PDD.

### 5.3 Contribution to Sustainable Development

As per VVS section H, ERM CVS evaluated whether the letter of approval by the DNA of the host Party confirms the contribution of the proposed CDM project activity to the sustainable development of the host Party.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.1.1	Does the LoA from the Host Party confirm that the project activity contributes to the sustainable development of that country?	The LoA from the Host Party confirm that the project activity contributes to the sustainable development of the Host Country (India).  LoA was not available and hence CAR2 had been raised. This is closed further to the receipt of LoA from the PP. Please refer Appendix B for further details.	CAR2	OK

### 5.4 Modalities of Communication

As per VVS section I, ERM CVS validated that the MoC statement has been correctly completed and duly authorised. ERM CVS also, validated the corporate identity of all project participants and focal points included in the Modalities of Communication (MoC) statement, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories (VVS para 53).

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
5.5.1	Are all corporate and personal details in the MoC, including specimen signatures, correct?	MoC were not available for validation. CAR2 was raised.  The MoC has been received from the project participant .In accordance with the VVS paragraph 54, corporate and personal details in the MoC have been confirmed through review of letter from PP stating the authorised signatories/82/. . The name of the project participant in MoC are confirmed to be consistent with the information in the authorization letter/82/.  CAR 2 is closed. Please refer to Appendix B to this report.	CAR2	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
	<p>Has the MoC statement been correctly completed, including:</p> <ul style="list-style-type: none"> <li>Using the latest form?</li> <li>All information, including annex 1, has been correctly provided?</li> <li>Listing all PPs?</li> </ul>	<p>The MoC was not provided. CAR 2.</p> <p>CAR 2 is closed. Please refer to Appendix B to this report.</p> <p>ERM CVS has checked the Modalities of Communication /08/, and confirms that:</p> <ul style="list-style-type: none"> <li>The MoC is using the latest form;</li> <li>All information, including annex 1, has been correctly provided;</li> </ul> <p>The MoC is listing all PPs.</p>	CAR2	OK
	<p>Has the MoC been signed by the authorised signatories of the PP?</p> <p>Are the signatories consistent with the names given in Annex 1 of the MoC?</p>	<p>The MoC were not provided. .CAR 2.</p> <p>.CAR 2 is closed. Please refer to Appendix B to this report.</p> <p>ERM CVS has checked the Modalities of Communication /8/, and confirms the MoC been signed by the authorised signatories of the PP/82/ and the signatories are consistent with the names given in Annex 1 of the MoC.</p>	CAR2	OK

## Conclusion

ERM CVS has performed due diligence on the MoC statement in accordance with the requirements established in the VVS. ERM CVS can confirm that the MoC statement complies with all relevant forms and requirements.

## 6 Validation findings – GSP, PDD and Project Description

### 6.1 Main changes between the PDD version published for GSP and the final version submitted for registration:

- Changes related to the CARs and CLs, as identified in Appendix B

### 6.2 Global Stakeholder Consultation

At the start of the validation, in accordance with the latest version of the Project Cycle Procedure, the unvalidated PDD supplied by the client was uploaded on the UNFCCC website for global stakeholder review for a period of 30 days. The global stakeholder process (GSP) period was from 09 Aug 12 to 07 Sep 12.

<http://cdm.unfccc.int/Projects/Validation/DB/10Z3NDFXWOE5LDRXNYLS4B40BM7JF0/view.html>

ERM CVS contacted the authors of the comment asking for further information to substantiate the claims. However, no response was received. The comments received were evaluated by the validation team and taken into account in the course of the validation activities, and are described below.

Comment	Response
<b>Received from: Himanshu Thakker</b>	
1. Himachal Pradesh has slotted over 750 MW of power from 'small hydro' projects. Such power projects produce less than 25 MW each. Very large of such projects are coming up with state and central government subsidies and policy encouragement, many of them without CDM credits. This clearly shows that such projects do not require CDM credits and hence are not additional.	<p>Project was granted MNRE subsidy but due to delayed project implementation, the same was not disbursed. However the same is considered in the investment analysis and hence conservative. Also subsidy element (31.88 Million INR) is minimal in comparison with project cost (232.60 Million INR) and hence project cannot be viable with the subsidy alone. Also it is worth noting that the actual project cost/33/ incurred by the PP is 438.83 Million INR as against the estimation of 232.60 Million INR in the DPR/02/. In line with the additionality tool, PP has used the benchmark analysis method to demonstrate additionality. All the parameters &amp; sources used for the same have been transparently illustrated in the PDD and validated in the report.</p> <p>Please refer section 8.3 of the report for further details.</p> <p>Further as per UNFCCC guidelines, SSC-CDM projects are not required to support their additionality argument with common practice analysis.</p>
2. The Project proponent has neglected to mention additional financial incentives available to the project in the form of Renewable Energy Certificates distributed by the Central Government of India. According to the Renewable Energy Certificate Registry of India, "RE [Renewable Energy] generators will have two options - either to sell the renewable energy at preferential tariff fixed by the concerned Electricity Regulatory Commission or to sell the electricity generation and environmental attributes associated with RE generation separately. On choosing the second option, the environmental attributes can be exchanged in the form of REC. Price of electricity component would be equivalent to weighted average power purchase cost of the distribution company including short-term power purchase but excluding renewable power purchase cost. The value of REC will be equivalent to 1 MWh of electricity injected into the grid from renewable	<p>As per the additionality tool and latest version of guidance on assessment of investment analysis, PP has to demonstrate additionality with all the input values available to it at the time of investment decision. PP had taken the investment decision for this project activity on 23 August 2005/15/. At that point in time, there was no Renewable Energy Certificate mechanism/policy implemented by the Indian government.</p> <p>The REC mechanism was adopted on 14/01/2010/80/ and falls under EB22 para 7b states as under "(b) National and/or sectoral policies or regulations under paragraph 6 (b) that have been implemented since the adoption by the COP of the CDM M&amp;P (decision 17/CP.7, 11 November 2001) need not be taken into account in developing a baseline scenario. Therefore, REC is considered as 'E-' policy with reference to EB16 Annex 3 and EB22 Annex 3; and not being considered in the financial analysis. The financial analysis consider the preferential tariff as mentioned in the hydro policy applicable at the time of investment decision and as used in the DPR/02/.</p> <p>Even if REC benefits are considered, the project still remains additional as the actual project cost/33/ is very high</p> <p>On this point validation team had raised CL5 and is closed out successfully. Refer Appendix B for further details.</p> <p>The tariff used in the financial analysis is in line with the DPR/02/ as prepared by the third party engineering firm and found to be OK and also the tariff assumed is in line with the hydro policy/59/ available at the time of investment decision making for the project</p> <p>The tariff was also compared with similar registered projects (refer table under A.2 of Appendix A) in the region and noted to be consistent.</p>

Comment	Response
<p>energy sources.”<sup>1</sup> Under the above policy, Batot project would be eligible to avail additional revenues, if it comes up. This is a significant amount of public subsidy that may have been left out of their PDD to make the project seem less financially attractive.</p>	<p>Also it was confirmed that PP had assumed the grid tariff prescribed by state electricity board for the decision making.</p> <p>Even if PP considers the Average Pooled Power Cost (APPC) and REC and the actual cost/<sup>33</sup>/ incurred (Actual cost incurred by the PP is 438.83 Million INR as against 232.60 Million INR estimated in DPR) the IRR is 7.49% and remains below the benchmark hence accepted.</p> <p>Please refer section 8.3 of the report for further details.</p>
<p>3. Though the PDD talks about a stakeholder consultation in section E, the details provided there is insufficient, misleading and patchy. The PP had conducted no genuine public consultation and they must be asked to produce video recording of the claimed consultation and share all the details with affected people. They claim the consultation happened in Nov 2009, but they provide no information about the process of consultation, how the meeting was called, when was it called, what information was shared a month in advance of the meeting, in what form and language this information was shared and so on, no information is given by the PP. It is clearly a wrong claim that cannot be accepted. In any case to come to the CDM based on that dated consultation is also violation of the principles of consultations. They claim that Civil contractors, Company employees and Representatives from the local pollution control board are stakeholders! They are not, because they are beneficiaries or regulators, not the affected people. The whole narrative of the consultation shows that there has been no genuine consultation.</p>	<p>The webhosted PDD has been revised to give more details about the Local Stakeholder consultation process as a response to CAR15 raised by the validation team. All proof for Local Stakeholder consultation like Minutes, photographs, feedback and attendance sheet/<sup>37</sup>/ has been reviewed by the validation and confirmed to be acceptable. In addition the validation team has interviewed the local stakeholders/IV7/IV8/IV9/ during onsite visit to confirm the appropriateness of the same. Video recording is not mandatory as per UNFCCC guidelines. The photographs for the meeting are also reviewed</p> <p>Review of attendance sheet confirms that the representatives from nearby villages were also called along with Pollution Control Board, contractors and company employees.</p> <p>The validation team confirms that the local stakeholder consultation meets the requirements of CDM Guidelines and is adequate.</p> <p>Please refer section 10.2 of the report for further details.</p>
<p>4. The calculations provided in the PDD fail to include various government subsidies which are available for the purpose of constructing small hydro power projects. As displayed on the Ministry of New and Renewable Energy (MNRE)’s website, the government has provided a formula to calculate Central Financial Assistance for the construction of small hydro power projects, which is available to all projects:</p> <p style="text-align: center;">1.50 crore X (C)<sup>0.646</sup> *C being the capacity of the project in MW</p> <p>Using this formula, one finds that the total amount of subsidy available to Batot Project comes out to be Rs 2.8 Crore (approximately 560 000 USD). This is a significant amount of public funding and seems to have been neglected in the PP’s investment</p>	<p>MNRE subsidy as referred to by the comment point # 4 has already been taken into account as an inflow in the financials by PP to prove additionality. This subsidy is calculated as per the same formula (as per MNRE/59/) and the subsidy granted for the project activity is INR 31.88 Million or ~3.19 crores</p> <p>Project was granted MNRE subsidy but due to delayed project implementation, the same was not disbursed. However the same is considered in the investment analysis and hence conservative.</p> <p>On this point validation team had raised CAR 9 and is closed out successfully. Refer Appendix B for further details.</p> <p>Please refer section 8.3 of the report for further details.</p>

Comment	Response
analysis in order to overstate the additionality of the project.	
<p>5. In addition to the Rs 2.8 Crore available under the aforementioned Grid-Interactive Power Programme the central government has recently established a department under the MNRE specifically to deal with small hydro power projects (the Small Hydro Power Division of the MNRE). In 2009 the Ministry revealed a Small Hydro Power Programme to promote SHP projects of 25 MW capacities or less. In this, the government offers resources to identify SHP project sites, help in upgrading existing SHP stations, financial aid for setting up ventures in the private/cooperative/joint sectors, and support for training, business meets, and further development of SHP. In addition to the benefits offered in the SHP Programme, Small Hydro Power (SHP) projects in both the public and private sectors enjoy complete exemption from: public hearings (the main vehicle for citizens to know about the project and express their views about development works in India), Environmental Impact Assessment (EIA), and other standard regulations such as environmental clearance, Environmental Management Programme, environment monitoring and compliance. Thus, contrary to what the PP has stated in the PDD, there are no existing barriers to the execution of the Batot project. Keeping all of the above considerations in mind, CDM credits are clearly superfluous to the economic viability of the project.</p>	<p>In actual scenario, PP has not availed any financial benefits from MNRE SHP programme 2009. Also the MNRE subsidy was granted but not issued as project commissioning was delayed a lot. Project was granted MNRE subsidy but due to delayed project implementation, the same was not disbursed. However the same is considered in the investment analysis and hence conservative. Also subsidy element (31.88 Million INR) is minimal in comparison with project cost (232.60 Million INR) and hence project cannot be viable with the subsidy alone. Also it is worth noting that the actual project cost/33/ incurred by the PP is 438.83 Million INR as against the estimation of 232.60 Million INR in the DPR/02/. The same has been demonstrated in the PDD and financial analysis.</p> <p>PP has not claimed any other barriers other than investment barriers (which is based on investment analysis) and hence the comment is not relevant.</p> <p>On this point validation team had raised CAR 9 and is closed out successfully. Refer Appendix B for further details</p> <p>Please refer section 8.3 of the report for further details.</p>
<p>6. The project proponent has assumed electricity tariff as Rs 2.45 per unit (kwhr) in section B.5 "Demonstration of Additionality". This is completely wrong and misleading. Such projects even currently get over Rs 3 per unit and sometimes upto Rs 5 per unit in open market. Such assumptions are made to wrongly show the project as unviable without CDM credits.</p>	<p>At the time of investment decision (i.e.23 August 2005) /15/, the prevailing preferential tariff in the state (Himachal Pradesh) was 2.5 INR per kWh. In addition, the state utility was eligible to claim 2% rebate for timely payment. Hence, as considered in the third party DPR/02/, PP has appropriately assumed tariff of 2.45. As on date, due to increased costs, the PP intends to sign a PPA at APPC rate and also avail REC benefits in order to improve project's returns. However, it would be prudent to note that even with this new tariff mechanism and actual cost, it has been demonstrated that the project will still require CDM funds to become viable.</p> <p>On this point validation team had raised CL5 and is closed out successfully.</p> <p>The tariff used in the financial analysis is in line with the DPR/02/ as prepared by the third party engineering firm and found to be acceptable and also the tariff assumed is in line with the hydro policy/59/ available at the time of investment decision making for the project</p> <p>The tariff was also compared with similar registered projects (refer table under A.2 of Appendix A) in the region and noted to be consistent.</p> <p>Also it was confirmed that PP had assumed the grid tariff prescribed by state electricity board for the decision making.</p> <p>Even if PP considers the Average Pooled Power Cost (APPC) and Renewable Energy Certificates and the actual cost/33/ incurred (Actual cost incurred by the PP is 438.83 Million INR as against 232.60 Million INR estimated in DPR/02/)the IRR is 7.49% and remains below the benchmark hence accepted.</p> <p>Please refer section 8.3 of the report for further details.</p>

Comment	Response
<p>7. The sensitivity analysis on page 13 of PDD should have been done for simultaneous change in all variables, as is the standard practice, and not one at a time.</p>	<p>As per the applied additionality tool and guidance on assessment of investment analysis, IRR testing with simultaneous changes in all variables is not required to be demonstrated.</p> <p>The sensitivity analysis approach followed by PP is in line with all other similar CDM projects in the host country and also in line with UNFCCC requirements and guidelines on assessment of investment analysis and additionality tool.</p>
<p>8. From the chronology of events on page 14-15 it is clear that the project is under implementation since 2005 and the MOU was signed even earlier. This is sufficient to show that the project developer are not bothered about the cost or time over runs and also do not need CDM credits to break even. The project is clearly not additional.</p>	<p>Project implementation was initiated in March 2006 which is considered as the start date as well. However, due to implementation related constraints (specifically due to technical constraints faced in tunnel work), the project work was delayed and the reasons for the same have been illustrated in PDD and validated in FVR.</p> <p>Prior CDM awareness of the PP and continuous real action taken to secure CDM funds in parallel with project implementation have been demonstrated by PP and validated by the validation team.</p> <p>Please refer section 8.1 of the report for further details.</p> <p>On this point validation team had raised CAR7 and is closed out successfully. Please refer Appendix B for further details</p> <p>With the delays, the project cost has increased by more than 50% thus further increasing the need for CDM funds for the project. the actual cost/33/ incurred by the PP is 438.83 Million INR as against 232.60 Million estimated in DPR)</p>
<p>9. Section D1 starts with talking about applicability of EIA notification of 2009, there is no such notification. The relevant EIA notification that is valid even today is that of Sept 14, 2006. The PDD is clearly giving wrong information. Moreover, as p 14 of PDD shows the project work started much earlier than Sept 14, 2006, so that EIA notification is no longer valid for the project, the PP is clearly giving wrong information.</p>	<p>Section D.1 of the PDD has been updated to refer to EIA notification 2006 which was applicable at the time of initiation of project implementation.</p> <p>Please refer section 10.1 of the report for further details.</p> <p>On this point validation team had raised CAR14 and is closed out successfully. Please refer Appendix B of this report for details.</p>
<p>10. The statement in section D1 that, "There are no significant environmental impacts due to the implementation of the project activity" is clearly wrong, all such projects have adverse social and environmental impacts. The PP has not assessed the impacts as they themselves state. On top of it, they are claiming there are no impacts! This is completely wrong. They should have assessed the impacts and taken the people into confidence, and sought the consent of village assemblies, as required under HP law.</p>	<p>PP has obtained NOCs and clearances from the village Gram-panchayat and all the other statutory bodies. As per EIA notification 2006/62/, PP is not required to obtain Environmental Clearance and also not required to conduct any formal EIA study. However, the third party DPR has performed a high level environment impact assessment and has not found any critical issues.</p> <p>Villages and other local stakeholders were also given opportunity to voice their opinion about the project activity during the local stakeholder consultation meeting. This is confirmed through review of local stakeholder consultation Minutes, photographs, feedback and attendance sheet/37/ and confirmed to be acceptable. In addition the validation team has interviewed the local stakeholders/IV7/IV8/IV9/ during onsite visit to confirm the appropriateness of the local stakeholder consultation process .</p> <p>Review of attendance sheet confirms that the representatives from nearby villages were also called along with Pollution Control Board, contractors and company employees.</p> <p>The validation team confirms that the local stakeholder consultation meets the requirements of CDM Guidelines and is adequate.</p> <p>The validation team confirms that the environmental impact assessment meets the requirements of host country/62/ and is adequate.</p> <p>Please refer section 10.1 of the report for further details.</p> <p>On this point validation team had raised CAR14 and is closed out successfully.</p>
<p>11. It is shocking to note in section F that the PP is yet to get NCDMA approval for a project for which the CDM</p>	<p>As per the NCDMA guidelines, PP is required to submit an undertaking stating that "Same version of PCN and PDD will be submitted by PP to NCDMA as that is submitted to DOE for web hosting". Hence it is not ethically correct for PP to apply for HCA from NCDMA prior to</p>



Comment	Response
considerations on since 2005! The whole case seems full of questionable claims and not trustworthy.	<p>web hosting of PDD.</p> <p>Project implementation was initiated in March 2006 which is considered as the start date as well. However, due to implementation related constraints (specifically due to technical constraints faced in tunnel work), the project work was delayed and the reasons for the same have been illustrated in PDD and validated in FVR.</p> <p>Prior CDM awareness of the PP and continuous real action taken to secure CDM funds in parallel with project implementation have been demonstrated by PP and validated by the validation team.</p> <p>Please refer section 8.1 of the report for further details.</p> <p>On this point validation team had raised CAR7 and is closed out successfully. Please refer Appendix B of this report for further details.</p>
12. It is surprising that after so many years of being involved in development of the project, they do not even have a good map of the project location; the map they have given on page 4 is clearly useless for locating the project.	<p>The SSC PDD guidelines require PP to indicate the location of the project activity like Country, State, and Village etc. Along with the maps, the PP also has to provide geo-coordinates which indicate the specific location. PP has adhered to all these. The se have been verified during the site visit and confirmed to be acceptable.</p>
13. The Batot Hydro Power Limited that is developing the project is a subsidiary of Karma Energy Ltd, see: <a href="http://www.karmaenergy.co/goc.html">http://www.karmaenergy.co/goc.html</a> and Karma is a subsidiary of Weizmann Limited, see: <a href="http://weizmann.co.in/goc.html">http://weizmann.co.in/goc.html</a> . Weizmann itself is an international group involved in many businesses including foreign exchange, textiles, non banking financial activities, western union money transfer and many other international businesses including AIG group related work. This means the group has access to finances from all over the world and it needs to be ascertained to what extent there is involvement of money from annex 1 countries. In any case, such a company should not be requiring CDM credits to make this project viable.	<p>The funding for project activity was from Term loan issued by State Bank of Patiala and equity funding by PP.</p> <p>Although PP's parent companies have businesses across the globe, PP has not obtained any ODA funding for the project activity. A declaration/35/ regarding the same has been submitted by the PP and reviewed by the team.</p> <p>UNFCCC guidelines do not prohibit projects which have External commercial borrowings from Annex-I countries but only prohibit projects that take or divert ODA funds which is not the case for the project activity.</p> <p>Please refer section 10.3 of the report for further details.</p> <p>On this point validation team had raised CAR3 and is closed out successfully. Please refer Appendix B of this report for further details.</p>
<b>Received from: M. Brutus</b>	
1. The project is claimed to be run of river hydro project. So the calculation of reservoir is wrong. The criterion 3 is applicable only to pumped storage or accumulation hydro projects. What does reservoir refer to as per PP?	<p>Section B.2 of the PDD that "The proposed CDM project activity does not involve reservoir and the project activity is across the Balij ka Nalla, a tributary of river Ravi. Hence, essentially, the project can be classified as a run of the river small hydro project."</p> <p>The project type is also confirmed during the onsite visit by the validation team and confirmed to be run-of river project and no reservoir was found at the site.</p> <p>Please refer section 7.1, 7.2 of the report for further details.</p>
2. The justification of opting out alternative 3 and alternative 4 is not justified adequately. It should be based on latest published data and figures. Refer B.4. Pls. clarify.	<p>As per the applied methodology, "The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid." The chosen the baseline scenario is in line with applied methodology and hence accepted. There is no alternative 3 and 4 in the PDD.</p> <p>Hence comment is not relevant to this PDD.</p>
3. The bilateral agreements, PPA with India are the documents, DOE to check thoroughly	<p>Project is a unilateral CDM project. The terms and conditions of long term PPA are currently under discussion at the time of validation.</p>
4. Date of investment decision should be at the time of DPR preparation. So, the basis of the cost escalation factors at a later date for CDM consideration is not valid. Pls. clarify. Refer B5. Step 3a. (Investment barrier).	<p>The date of investment decision is in the same month as DPR preparation viz. August 2005. There is no cost escalation factor applied and hence the above comment is not relevant for the project PDD.</p> <p>Please refer section 8.3 of the report for further details.</p>



Comment	Response
5. How the CDM benefit will alleviate the technical barriers. As per additionality tool, if the barriers are not alleviated by CDM, then the project is not additional.	The project activity has not demonstrated additionality with barrier analysis and hence the comment is not relevant.
6. Emission factor for state is not calculated. it should be made available to DOE to clearly validate this value. Emission factor for India is not as per "Tool for emission factor for the system".	PP has calculated transparently the NEWNE grid emission factor as per the latest and applied version of "Tool to calculate the emission factor for an electricity system". This in turn validated in line with tool and the value is found to be consistent with emission factor database/60/ published by the host country and hence acceptable. Please refer section 7.5 of the report for further details.
7. Electricity generated by the project, auxiliary consumption, transmission losses, transformer losses, net electricity exported to India, net electricity exported to the grid. These parameters to be monitored continuously and to be cross checked with sale receipts.	The parameters like electricity generated by the project, auxiliary consumption, transmission losses, transformer losses, net electricity exported are considered as per the third party DPR/02/ which was available at the time of investment decision. The appropriateness of the values has already been demonstrated. All the above parameters are not required to be monitored as per the applied tools and methodology. PP is monitoring all the requisite parameters in line with applied tools and methodology. Please refer section 9 of the report for further details.
8. The Meth mentions that if investment analysis option is used, apply the following:  a. Apply an investment comparison analysis, as per Step 3 of the .Combined tool to identify the baseline scenario and demonstrate additionality., if more than one alternative is remaining after Step 2 and if the remaining alternatives include scenarios P1 and P3;  b. Apply a benchmark analysis, as per Step 2b of the .Tool for the demonstration and assessment of additionality. If more than one alternative is remaining after Step 2 and if the remaining alternatives include scenarios P1 and P2. But PP failed to apply like this. Pls. clarify.	<p>a. As per para. 19 of the Guidance on assessment of investment analysis "If the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services, a benchmark analysis is not appropriate and an investment comparison analysis shall be used. If the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate." Hence PP has appropriately used benchmark analysis.</p> <p>b. As per para. 19 of the Guidance on assessment of investment analysis "If the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services, a benchmark analysis is not appropriate and an investment comparison analysis shall be used. If the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate." Hence PP has appropriately used benchmark analysis.</p> <p>Please refer section 8.3 of the report for further details.</p>
9. PLF should be based on EB48 Annex 11 guideline which says The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval; (b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company); But PDD doesn't demonstrate how PLF has been arrived at.	PP has considered PLF as estimated by third party in its DPR/02/ thus meeting the para 3 (b) of the EB48 Annex11 "Guidelines For The Reporting And Validation Of Plant Load Factors".  Please refer section 8.3 of the report for further details.
10. Whether PLF includes machine shutdown, machine availability. Whether grid availability is accounted for in the calculation of gross generation. To my surprise, critical parameter like PLF is missing from the PDD. How DOE has allowed this.	PP has considered PLF as estimated by third party in its DPR/2/ thus meeting the para 3 (b) of the EB48 Annex11 "Guidelines For The Reporting And Validation Of Plant Load Factors". PLF incorporates Auxiliary Consumption- 0.5%, Transformation losses - 0.5%, Transmission losses - 2%, Loss due to outages 5%. This has now been clearly stated in revised PDD/01/ section B.5 and validated in the FVR.  Please refer section 8.3 of the report for further details.
11. Common practice analysis should be based on EB 39 Annex 10 (Additionality tool). Each step of common practice	Comment is not relevant to the PDD as Project is small scale CDM project.

Comment	Response
analysis should be fulfilled as per tool.	
12. Emission reduction calculation should be based on EB 50 Annex 14 "Tool for emission factor for the electricity system.	Emission reduction calculation is in line with the applied methodology, tools and specifically with latest version of "Tool to calculate the emission factor for an electricity system.  Please refer section 7.5 of the report for further details.
13. Whether only one set of main meter, check meter set is enough for three projects. The monitoring parameters need to be checked by DOE.	There is only one CDM project which is a part of this PDD. There are no three bundled projects. Hence comment is not relevant.  The monitoring requirements and equipment details have been transparently presented in PDD. Please refer section 9 of the report for further details.
14. The main meter and check meter technical parameters like accuracy level, make, etc. needs to be mentioned in the PDD.	The monitoring requirements and equipment details like accuracy class, calibration frequency etc have been transparently presented in PDD.  SSC PDD guidelines do not require PP to specify the make of the meters. Please refer section 9 of the report for further details.
15. Layout of power transmission lines from the generation to the consumer with the metering system is not shown. It should include the distance of transmission lines. DOE has to check the meters are installed to monitor electricity generated, net electricity used in Bhutan, net electricity exported to India. Pls. clarify.	SSC PDD guidelines do not require PP to illustrate the transmission line diagrams in PDD. The various aspects related to transmission lines have been reviewed by validation team during the site visit. The monitoring requirements and equipment details like accuracy class, calibration frequency etc have been transparently presented in PDD in line with the applicable tools and guidelines. Step-wise approach specified in Tool to determine emission factor for the electricity system has been followed in PDD. Emission reduction calculation is in line with the applied methodology, tools and specifically with latest version of "Tool to calculate the emission factor for an electricity system.  Please refer section 7.5 of the report for further details.
16. The status of the construction & commission of the project is not stated in the PDD.	Chronology of events table has been updated to specify the status of the construction & commission of the project in the revised PDD. Please refer section 8.1 of the report for further details.
17. What is the basis of calculation for transmission loss, auxiliary consumption and transformer losses? What is the length of transmission line?	PP has considered PLF as estimated by third party in its DPR/2/ thus meeting the para 3 (b) of the EB48 Annex11 " Guidelines For The Reporting And Validation Of Plant Load Factors". PLF incorporates Auxiliary Consumption- 0.5%, Transformation losses - 0.5%, Transmission losses - 2%, Loss due to outages 5%. This has now been clearly stated in revised PDD/01/ section B.5.  Please refer section 8.3 of the report for further details.
<b>Received from: Himdhara</b>	
1. The project is coming up in Mahela block of Chamba district on Balij stream which is tributary of river Ravi. On this stream 4 other projects are either planned and/or commissioned which are not only going to adversely impact the riverine ecology of the stream but also the livelihood of the local community which is dependent on it.	PP has demonstrated in the PDD section D that there are no adverse impacts of the project activity on the environment. Also, the fact that the Ministry of Environment & Forests (MoEF)/62/ has waived off the need to conduct Environment Impact Assessment (EIA) for small hydro projects and this reinstates PP's claim.  Since, the project uses renewable hydro resources for power generation; it does not lead to any greenhouse gas emission. Avoidance of fossil fuel consumption results in SOx, NOx and particulate matter emission reduction. The local community is positively impacted due to opportunities available to them during construction and operation stage of the project.
2. In Ravi basin already 4 major projects are in operation i.e. Chamera 1, 2 and 3rd and Baira- Siyul and generating more than 1000 megawatt of electricity. After generating so much of electricity, Chamba is the most backward district of the State and one of the 50 most backward district of the country. It clearly shows, generation of hydroelectricity has no connection with the development and social well being of the affected area. So, all the claims made in the PDD regarding social and economic well being are false.	Local labor wherever possible for civil and other construction work has been used. This is confirmed during the onsite visit by the validation team. PP's project team also involves local population. This project has definitely generated and will keep generating employment opportunities for the local population. In addition, generation of electricity has a multiplier effect thus boosting the overall economy of the state.  Since, the project uses renewable hydro resources for power generation; it does not lead to any greenhouse gas emission. Avoidance of fossil fuel consumption results in SOx, NOx and particulate matter emission reduction.  The project will supply all of its generated power to the Himachal Pradesh state utility and the same would be used appropriately by the state government / state utility. Like other projects in the region, PP does not have control over which districts the state utility supplies power to.
3. For small hydro project there is no	PP has been granted the right to implement and operate this SHP(Small Hydro Power) project

Comment	Response
provision of environment impact assessment. But one can understand if the whole river will either flow in tunnel or channel what will be impact on river hydrology and aquatic ecosystem exist in the river. This project with other project on Balji will make the river bed dry in long stretches and will kill the river ecosystem completely.	from the Himachal Pradesh state government only and it is not a self-identified site. This is confirmed through the interview of project head/IV1/ and HIMURJA Officer/IV10/.  PP has obtained the required NOCs /10/11/12/ from the local gram-panchayats, Irrigation and other (Public Works Department (PWD)) departments only after which the project is allowed to commission. Hence it is confirmed that the project activity is not expected to have negative impacts on the nearby region.
4. The project has been in operation and has been planned and constructed when there was no provision of CDM. It means the project was financially profitable without CDM also. Moreover, the project has been not registered for CDM on time.	India has ratified Kyoto protocol in 2002 and CDM was well established during 2005-06 (time when the investment decision/15/ was taken). PP has demonstrated prior awareness of CDM and also CDM consideration in its decision making process. Moreover, PP has transparently demonstrated financial additionality and hence need for CDM funds for the project activity.  On this point had raised CAR7 and has been successfully closed out.  Please refer section 8.1 of the report for further details.
5. The project proponent has written on page 26 of PDD that the operational lifetime of project is 20 years which is wrong. All the small HEPs are given by the state to private companies for 40 years, starting from 30 months after signing of Implementation Agreement. Considering this IRR has been calculated on wrong presumption.	PDD has been updated to correct the operational lifetime as 40 years as per the implementation agreement /7/ signed with the state government. Equity IRR however has been estimated for 20 years in line with the Guidance on assessment of investment analysis and PP has also considered the residual value at the end of 20 years in order to make the IRR estimate more realistic and appropriate.  On this point had raised CAR13 and has been successfully closed out.  Please refer section 6.4.1 of the report for further details.

## 6.3 Project Design Document (PDD)

As per VVS section J, ERM CVS reviewed the PDD to determine whether it has been prepared in accordance with the latest PDD form (template) and guidance from the CDM Executive Board available on the UNFCCC website.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
5.5.2	Is the PDD prepared in accordance with the latest forms and guidance required by the CDM EB?  <a href="http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html">http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html</a>	The PDD has been checked against the "Guidelines for Completing the Project Design Document Form for Small Scale CDM Project Activities" (Version 01.0, EB66).  Please refer to CL/CARs in Appendix B, Remediation Form. It's confirmed that the final version of PDD is prepared in accordance with the latest forms and guidance by the CDM EB.	OK	OK

## Conclusion

ERM CVS has confirmed that the PDD has been prepared in accordance with the latest relevant forms and guidance.

## 6.4 Project Description

As per VVS section K, ERM CVS reviewed the description of the project in the PDD in order to evaluate whether it provides a clear and accurate description of the proposed CDM project activity. Validation of the project description was based on review of documentation, a physical site inspection and interviews.

## 6.4.1 Description of the project activity

The project activity is 3.5MW small hydroelectric power plant developed by Batot Hydro Power Limited (BHPL). The plant is expected to generate an annual electricity of 12,973 MWh which will be exported to the Himachal Pradesh State Electricity Board (HPSEB) grid, which forms a part of the NEWNE grid of India.

The small hydro-electric power plant is a run of river power project located across Balij ka Nala, a tributary of the river Ravi in Chamba district, Himachal Pradesh, India. The details on the location of the project activity were confirmed during the site visit and are as given under section A.4.1.4 of the PDD.

The plant and machinery of the project activity consists of two numbers of Horizontal Francis turbine each having an installed capacity of 1.75 MW. The technical specifications including the installed capacity and the over-rating of the project activity has been further verified from the technical specifications provided by the manufacturer (Kirkoskar Brothers Ltd)/17/. The project civil structures include diversion weir and river water intake structure, desilting cum forebay tank, penstock, tailrace, powerhouse, tailrace channel and a switch yard for power evacuation. This was confirmed by visual inspection during site visit to the project activity.

In the absence of the project activity the electricity will otherwise be generated by the operation of grid-connected power plants and by the addition of other new carbon intensive generation sources. In the post-project scenario, renewable electricity generated from the Project will displace the more carbon-intensive grid sourced electricity and will result in a reduction in greenhouse gas (GHG) emissions of approximately by 11,954 tonnes of CO<sub>2</sub>e per annum. The findings of our validation of the project description in the PDD are set out below.

## 6.4.2 Project Location and Status

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
5.6.1	<p><b>(i) Description: project design</b></p> <p>Does the project description in the PDD section A.3 provide a clear, accurate and sufficiently detailed description of all relevant elements of the proposed project activity?</p> <p>Specifically, does the project description provide clear indication of:</p> <ul style="list-style-type: none"> <li>a) List of main technologies involved</li> <li>b) List of main equipment and installations</li> <li>c) The lifetime of the project equipment</li> <li>d) Monitoring equipment and its location</li> <li>e) Capacities and efficiencies</li> <li>f) Emissions sources and GHGs involved in the project activity</li> <li>g) Existing and forecast energy and mass flows and balances</li> <li>h) Interaction with processes/equipment outside the project boundary, if any, is stated.</li> <li>i) Description of technology transfer from Annex I</li> </ul>	<p>The PDD contains a clear and complete description of the project activity, and the nature and technical implementation of the project activity. The description includes:</p> <ul style="list-style-type: none"> <li>a) List of main technologies involved: the key components of the project technology were not described. Hence CAR1 had been raised. This is now correctly presented in the revised PDD and the details were confirmed from the DPR/2/ and the equipment contract/17/. Hence CAR1 was closed, refer Appendix B for details</li> <li>b) List of main equipment and installations involved in the project were not been mentioned in-line with the Detailed Project Report (DPR). Hence CAR1 had been raised. This is now correctly presented in the revised PDD and hence CAR1 was closed. Refer Appendix B for details.</li> </ul> <p>The description of individual equipment/component in the revised PDD has been validated against the details mentioned in the DPR/02/. The components mentioned in the revised PDD are now in line with the details mentioned in the DPR and the same has found acceptable.</p> <ul style="list-style-type: none"> <li>c) The lifetime of the project equipment was not stated in the PDD and hence CAR1. This is now addressed in the revised PDD and the project life is found consistent with Implementation Agreement/07/</li> <li>d) Monitoring equipment and its location was not mentioned in the PDD. Hence CAR 1 was raised. This is now addressed in the revised PDD and the same was confirmed to be in line with that observed during the site visit and hence accepted, kindly refer to Appendix B for details.</li> <li>e) Capacities and efficiencies: the installed capacity of the project is stated and has been validated against the DPR/02/ and during site visit to the site. There has been inconsistency in the capacities of the turbine that has been found on DPR/02/ and during site visit. Hence CL3 had been raised. This is now addressed in the revised PDD. The max rating of turbines is cross checked from the technical specifications provided by the manufacturer/17/. The project capacity of 3.5 MW and turbine capacity of 1.75 MW each is confirmed from the Certificate of Commercial Operation issued by the HPSEB/34/ and</li> </ul>	<p>CAR1</p> <p>CL3</p> <p>CL6</p>	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	countries (if applicable)	<p>hence accepted kindly refer to Appendix B for details.</p> <p>f) Emissions sources and GHGs involved in the project activity: these were not listed in accordance with the applied methodology and hence CAR1 was raised. This is now addressed in revised PDD, kindly refer Appendix B for further details. The emissions sources and GHGs are consistent with the applied methodology.</p> <p>g) Existing and forecast energy and mass flows and balances: the annual electricity generation of the project is stated and has been validated against the DPR /02/.</p> <p>h) Interaction with processes/equipment outside the project boundary: not applicable, since the electricity grid is also included as part of the project boundary.</p> <p>i) Description of technology transfer from Annex I countries: this is not applicable as the project uses domestically produced equipment. This has been validated against the Contract Letter/17/ placed by BHPL to Kirloskar Brothers Ltd for Electrical &amp; Mechanical equipment. Apart from that ERM CVS team also confirmed it during site visit and during interaction and interview of site representative of Project Participant. However in the PDD, this was not mentioned and hence CAR1 had been raised. Kindly refer to Appendix B for details.</p> <p>The address of Batot Hydro Power Limited as mentioned in the GSP- PDD Appendix 1 was not consistent with the registered address that is been mentioned on the copy of the resolution passed at the Board of Directors meeting on 23rd August 2005. Hence CL6 was raised.</p> <p>As a response to the finding, PP confirmed that Batot Hydro Power Limited has a registered office at the address specified in the letter head used for printing the Board resolution extract. However, for administration purposes, most of the management works from the address specified in the Appendix 1 of the PDD and hence PP would like to retain the same for effective communication purpose. The clarification was found acceptable. CL6 was closed.</p>		
5.6.2	<b>Description: Project location</b>  Is the location of the project correctly stated in the PDD? Are geographical coordinates given (in decimal format)? How has the location been validated?	<p>Yes, the location is correctly stated in the PDD and the correct geographical coordinates are given and in line with the DPR/02/.</p> <p>However, there were inconsistencies in section A.1 and section A.2.3 with description of location. Hence CL2 had been raised.</p> <p>In response to CL2, PP has updated the name village "Kawari" in section A.2.3 in the revised PDD and the project location is now consistent throughout the PDD and hence CL2 has been closed.</p> <p>This information was confirmed during the site visit and by review of the Detailed Project Report (DPR)/02/ prepared by Dr. Hutarew &amp; Partners, which is a third party engineering consultant firm.</p>	CL2	OK
5.6.3	<b>Description: Existing installations</b>  a) If the proposed CDM project activity involves the alteration of an existing facility, installation or process, does the project description clearly state the differences resulting from the project activity compared to the pre-	<p>Not applicable. The project does not take place in an existing installation. This was confirmed during the site visit and noted that project is on a Greenfield site.</p>	NA	NA

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	<p>project situation?</p> <p>b) How has the description of the existing facility, installation or process been validated?</p> <p>c) Is the description of the existing facility, installation or process consistent with information provided in other parts of the PDD such as common practice and baseline selection?</p>			
5.6.4	<p><b>Description: Operational lifetime</b></p> <p>a) Does the PDD state the operation start date of the project? How was this validated? If the project is being implemented in phases, is this clearly described in the PDD?</p> <p>b) What is the expected operational lifetime of the project activity? Is this lifetime considered reasonable for a project of this type in the host country?</p>	<p>a) The operation start date is 16 June 2012 which has been validated against the Certificate of Commercial Operation /34/ issued by Himachal State Electricity Board Limited (HSEBL) to Batot Hydro Power Limited (BHPL). The project was found to be in operation during the site visit. However PDD didn't mention the exact operation start date of the project and only mentioned June 2012. Hence CAR 7 had been raised.</p> <p>In response to CAR7, PP has now mentioned the operation date in CDM Chronology as 16 June /2012. This has been found acceptable. Kindly refer to Appendix B for details.</p> <p>b) As per site visit discussion with site representative, it was identified that the operational lifetime for the project is 40 years. However in PDD section C.1.2, the lifetime was considered as 20 years. Hence CAR 13 had been raised. The project lifetime is now corrected to 40 years across the PDD. This is cross checked with the implementation agreement /07/ between PP &amp; Himachal Pradesh Government and found to be consistent. The finding is closed.</p>	<p>CAR7</p> <p>CAR13</p>	OK
5.6.5	Is information on the plant load factor provided in the PDD? How has this been validated (please refer to the Guidelines for the reporting and validation of plant load factors, EB48_Annex 11).	<p>The information on the plant load factor (PLF) was not provided in the GSP-PDD and hence CAR1 has been raised.</p> <p>In the revised PDD, in response to CAR1 the PP has now stated the Plant Load Factor (PLF) as 46%, which has been validated against the PLF value in the DPR/02/ prepared by independent third party engineering firm. Hence now it has been found to be in line with the "Guidelines for the reporting and validation of plant load factors" (Version 01, EB 48 Annex11).</p> <p>ERM CVS has validated the load factor according to the Guidelines for the reporting and validation of the plant load factors as below.</p> <p>The load factor is 46% and is calculated from the annual generation values sourced from Feasibility Study Report, prepared by Dr. Hutarew &amp; Partners which is a third party engineering firm contracted by the PP. As noted from the DPR/02/, this is based on the hydrological data from 1982 to 2002, which is considered to be a sufficiently long and representative time-series of data. This is consistent with the annual generation estimates presented in the PDD.</p>	CAR1	OK

## Conclusion

The process undertaken to validate the accuracy and completeness of the project description is set out in detail above. ERM CVS has confirmed that the project description in the PDD provides a clear, accurate and complete understanding of the nature of the proposed CDM project activity.



## 6.4.3 Description of baseline scenario

The project description was evaluated to confirm whether or not it provides a clear and accurate summary of the project and baseline scenario.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
5.6.6	Is there a clear description of the baseline scenario in the PDD? This should include: <ul style="list-style-type: none"> <li>a) A list of the equipment(s) and systems that would have been in place in the absence of the project activity (if any)</li> <li>b) Information about the age and average lifetime of the baseline facility based on manufacturer's specifications and industry standards (if applicable)</li> <li>c) Installed capacities, load factors and efficiencies of the baseline facility (if applicable)</li> <li>d) An explanation of how the same types and levels of services provided by the project activity would have been provided in the baseline scenario.</li> </ul>	<p>The PDD includes a description of the baseline, which is defined in the methodology AMS I-D as "Grid connected renewable electricity generation" by the Project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources" as reflected in the combined margin ("CM") calculations according to the "Tool to calculate the emission factor for an electricity system". Details of the NEWNE grid are provided in section B.6 of the PDD, and have been validated against CEA database Version 07</p> <p>(a) Not applicable since the project is a Greenfield project</p> <p>(b) Not applicable since there is no baseline facility</p> <p>(c) Not applicable since there is no baseline facility</p> <p>(d) The GSP PDD did not explain that the electricity generated by the project would have been generated by the fossil fuel based power plants to the grid in the baseline scenario in section A.3. Hence CAR1 had been raised. As a response to the finding, PP revised the PDD and explanation has been provided by the PP that how the same types and levels of services provided by the project activity would have been provided in the baseline scenario. CAR1 is closed. Refer Appendix B for details</p>	CAR1	OK
	If the scenario existing prior to the start of the implementation of the project activity is different from the selected baseline scenario, is there a clear description of the pre-existing scenario, with a list of the equipment(s) and systems in operation at that time?	The scenario existing prior to the start of the implementation of the project activity is the same as the selected baseline scenario	OK	OK

## Conclusion

The project description in the PDD contains a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation. The description sufficiently covers all relevant elements, is accurate, and clearly states the differences resulting from the project activity compared to the pre-project situation.

## 7 Validation findings – Baseline and Monitoring Methodology

ERM CVS has evaluated the baseline and monitoring methodology selected by the PPs to confirm its applicability and whether or not it has been appropriately applied to the project activity.

### 7.1 Validity of selected methodology and methodological tools

As per VVS section L.1, ERM CVS validated that an approved and currently valid baseline and monitoring methodology (and associated methodological tools) have been applied for this proposed CDM project activity.

Baseline methodology applied	AMS-1.D "Grid Connected renewable electricity generation" (Version 17, EB61)  This is the latest and active version of the methodology and is confirmed from  <a href="http://cdm.unfccc.int/methodologies/DB/RSCTZ8SKT4F7N1CFDXCSA7BDQ7FU1X">http://cdm.unfccc.int/methodologies/DB/RSCTZ8SKT4F7N1CFDXCSA7BDQ7FU1X</a>
Methodological tools applied as required by the methodology	"Tool to calculate the emission factor for an electricity system" (Version 02.2.1, EB63)

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.1.1	Are the number, title and version of the approved methodology clearly and correctly stated?  Is the methodology within its period of validity?	ERM CVS has determined that the methodology is correctly quoted and applied by comparing with the actual text of the applicable version of the methodology AMS-1.D "Grid Connected renewable electricity generation" (Version 17, EB61), available on the UNFCCC CDM website.  However the choice of the selected methodology was not justified in the PDD by showing that the project activity meets each applicability conditions of the selected methodology. Table 2 on the applicability of AMS I-D, AMS I-A & AMS I-F based on project type was not included in section B.2 of the PDD. Hence CAR 4 had been raised.  In response to CAR4, PP has now updated section B.2 of the PDD to justify the each of the applicability criteria of methodology AMS1-D). The same has been found acceptable to ERM CVS.  This is the latest and active version of the methodology and is confirmed from:  <a href="http://cdm.unfccc.int/methodologies/DB/RSCTZ8SKT4F7N1CFDXCSA7BDQ7FU1X">http://cdm.unfccc.int/methodologies/DB/RSCTZ8SKT4F7N1CFDXCSA7BDQ7FU1X</a>	CAR4	OK
	Are all the required tools applied and fully referenced in the PDD?  Are the version numbers applicable at the time of validation?	ERM CVS has determined that the methodological tools are correctly quoted and applied by comparing with the actual text of the applicable version of the tools available on the UNFCCC CDM website. The tools are within their period of validity	OK	OK
	If applicable, has any specific guidance provided by the CDM EB relevant to the project type or methodology been considered?	Yes. The following EB guidance have been considered:  Guidelines on the demonstration and assessment or prior consideration of the CDM, EB 62, Annex 13;  Guidance on the Assessment of Investment Analysis, EB 62, Annex 5;  Guidance for the reporting and validation of plant load factors (version 01), EB 48 Annex 11;	OK	OK



	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		General guidelines for SSC CDM methodologies Version 19.0, EB69 Annex 27  Guidelines on assessment of de-bundling for SSC project activities Version 03.0, EB54 Annex 13		

**Conclusion** The applied methodology and associated methodological tools have been correctly described and are approved by the CDM Executive Board. All versions are currently valid.

## 7.2 Applicability of the selected methodology to the project activity

As per VVS section L.2, ERM CVS evaluated whether the selected baseline and monitoring methodology applied is applicable to the project activity. This evaluation was based on a review of the PDD and associated documentation and a visit to the project site. ERM CVS has validated that the applicability conditions of the methodology (and tools, where relevant) are met and that the project activity is not expected to result in emissions other than those allowed by the methodology.

ERM CVS has assured the compliance of the project activity with each of the applicability conditions of the selected methodology and tools:

	Applicability Conditions in methodology and/or tools	Is this condition discussed in the PDD? (yes/no)	Does the project meet this condition? (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
6.2.1	This methodology is applicable to renewable energy generation units such as photovoltaic, hydro, tidal, wind, geothermal and renewable biomass:  a) Supplying electricity to a national or a regional grid; or  b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	Yes	Yes	This applicability condition was able to be validated on site. ERM CVS has confirmed by visual inspection that the project is a renewable energy generation unit from hydropower and supplying electricity to regional grid i.e. NEWNE grid through Himachal Pradesh State Electricity Board (HPSEB) which has been validated with the implementation agreement/07/ signed between Himachal Pradesh Government and PP. It has also been validated against DPR/02/ and found to be acceptable.	OK	OK
	This methodology is applicable to project activities: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) Involve a capacity addition; (c) Involve a retrofit of an existing plant; or (d) Involve a replacement of an existing	Yes	Yes	This applicability condition was able to be validated on site. ERM CVS has confirmed by visual inspection that the project is a newly built grid connected hydropower plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant). This has been also validated against details mentioned in the third party DPR/02/	OK	OK

	Applicability Conditions in methodology and/or tools	Is this condition discussed in the PDD? (yes/no)	Does the project meet this condition? (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
	plant					
	<p>Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <p>(1) The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</p> <p>(2) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup>;</p> <p>(3) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup></p>	Yes	This condition is not relevant for the project	<p>Project activity doesn't have a reservoir since the project activity is across the Balij Ka Nalla, a tributary of river Ravi. Being run of the river type hydro project, no storage of water is required for the project. This was verified by ERM CVS team during the site visit. This has been also validated against Detailed Project Report (DPR) prepared by Dr. Hutarew &amp; Partners (I) Pvt Ltd/2/.</p> <p>However, PDD did not clearly mention that project is run of the river type of hydro project. Also, clear description regarding this applicability condition is not mentioned on the PDD.</p> <p>Hence CAR 4 had been raised. In response to CAR 4, PP has now mentioned the project type as run of the river in section B.2 of the updated PDD. The same has been accepted by ERM CVS.</p>	CAR4	OK
	If the unit added has both renewable and non-renewable components, the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	Yes	Yes	There is no addition of non-renewable unit and this has been confirmed during the site visit. The project capacity is 3.5 MW and is confirmed to be in line with DPR/02/ and through site visit and hence cannot exceed the limit of 15 MW.	OK	OK
	Combined heat and power (co-generation) systems are not eligible under this category	Yes	This condition is not relevant for the project	Since the project activity only include generation of hydro-electric power and it doesn't involve any co-generation system which has been checked during visual inspection during site visit and through review of DPR/02/. Hence this condition is not applicable	NA	NA
	In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the	Yes	This condition is not relevant for the project	This condition is not applicable since the project has been developed on a Greenfield site which has been confirmed by ERM CVS by visual inspection during site visit.	NA	NA

	Applicability Conditions in methodology and/or tools	Is this condition discussed in the PDD? (yes/no)	Does the project meet this condition? (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
	existing units.					
	In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	Yes	This condition is not relevant for the project	This condition is not applicable since the project new/greenfield power generation project which has been confirmed by ERM CVS by visual inspection during site visit.	NA	NA

	Question	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
6.2.2	Has any source of GHG emission been identified within the project boundary that is expected to contribute more than 1% of the project activity's expected average annual emissions reductions, and which is not addressed by the applied methodology?	Other than the emissions addressed in the applied approved methodology ERM CVS has determined that there will be no other GHG emissions within the project boundary expected to contribute more than 1% of the predicted emission reductions, which are not addressed by the applied methodology. This was confirmed by assessment of the project on site and by review of the detailed project design (DPR)/02/	OK	?? OK

## Conclusion

The applied methodology and associated tools are fully applicable to the project activity and is correctly applied in the PDD. There are no greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology, were identified.

### 7.2.1 Small scale project eligibility criteria

For small scale projects, the following has been checked:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.2.3	Does the project meet the criteria for eligibility as a small scale project, as per decision 17/CP.7, paragraph 6(c), i.e.:  <b>Type (i) project activities:</b> <i>renewable energy project activities with a maximum output capacity equivalent to up to 15 MW (or an appropriate equivalent)</i>  <b>Type (ii) project activities:</b> <i>energy efficiency improvement</i>	The project activity falls under Type (i) project activities of renewable energy project since it is a small hydro-electric power project with an installed capacity of 3.5 MW, which is less than the stated threshold capacity of 15MW. This has been validated against the following documents: <ul style="list-style-type: none"><li>Loan sanction letter from State Bank of Patiala/16/;</li><li>Implementation agreement between Himachal Pradesh government and Weizmann group/07/;</li><li>Detailed Project report (DPR)/02/ that has been prepared by Dr. Hutarew &amp; Partners, a third party engineering consulting firm.</li></ul>	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	<p><i>project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 GWh per year</i></p> <p><b>Type (iii) project activities:</b> <i>other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually</i></p>	<ul style="list-style-type: none"> <li>Contract for the main equipment /17/</li> </ul> <p>This project generates renewable energy that displaces electricity from the electricity grid system. The total installed capacity of the project is 3.5 MW which is less than 15MW. ERM CVS confirmed this through the review of above mentioned project documents and through interview with top management/IV1/IV2/ and engineers of PP/IV3/IV4/. The validation team has confirmed that the PP does not intend to increase the generation capacity of this project.</p> <p>Thus, validation team confirmed that the total size of the project will remain under 15MW, the limits of small-scale project activity Type I "Renewable energy project activities with a maximum output capacity equivalent to up to 15 MW (or an appropriate equivalent)" during every year of the crediting period. Hence, ERM CVS confirms that the project activity satisfies the criteria set out for use of the SSC M&amp;P with respect to Type I project activities.</p>		
	Has it been demonstrated that the project is not a debundled component of a larger project activity, in accordance with the Guidelines on the Assessment of de-bundling for SCC project activities (Version 03) (EB 54, Annex 13)?	<p>It has been observed &amp; noted that another small hydro project is being developed upstream of Balij ka Nalla at 1 KM distance from the proposed project activity. So PP is requested to provide clarification on that aspect and demonstrate that the project activity is not a debundled component</p> <p>Hence CL4 had been raised. Further to the clarification received from PP and interactions with top management representatives of PP/IV1/IV2/, it was confirmed that the other project being developed upstream are being implemented by different PPs and hence not applicable for the project activity. The finding is closed.</p>	CL4	OK

## Conclusion

The small scale project was confirmed to fully meet the applicability criteria for a small scale project and it has been confirmed that the project is not a debundled component of a larger project activity.

### 7.3 Project Boundary

As per VVS section L.5, ERM CVS reviewed the description of the project boundary in the PDD, to determine whether all main GHG emission sources, the physical delineation of the proposed project activity and other relevant project and baseline emission sources covered in the methodology are included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.

According to the applied methodology, the spatial extent of the project boundary includes physical boundary. The project boundary includes the diversion weir & water intake point, penstock, tailrace, ,power plant house (including two horizontal Francis turbines), switch yard, and the connected NEWNE grid. This has been validated during the site visit of ERM CVS team and it's in line with the applied methodology AMS I.D (Version 17 *Emission sources*)

The emissions sources included in or excluded from the project boundary, as set out in the applied methodology are as follows:

	Source	Gas	Is this source included within the project boundary in the PDD?	Is inclusion / exclusion from the project boundary justified in the PDD?	How has this been validated?
Baseline	CO2 emissions from electricity generation in fossil	CO <sub>2</sub>	Yes	Yes	In absence of this Hydro Power project, the electricity requirement in the grid would have been filled by the

	Source	Gas	Is this source included within the project boundary in the PDD?	Is inclusion / exclusion from the project boundary justified in the PDD?	How has this been validated?
emissions	fuel fired power plants that are displaced due to the project activity.				<p>power houses running on fossil fuels in the NEWNE grid. The emission factor has been determined as <i>ex-ante</i> from CO2 Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA), Ministry of Power, Government of India /60/.</p> <p>This is in line with applied methodology.</p>
Project emissions	No project emissions are considered	CO <sub>2</sub>	No	Yes	<p>The project is a hydroelectric renewable energy project which doesn't involve usage of fossil fuel. Even since the project is a run of the river type hydro project and it doesn't have any reservoir. So there won't be any project related emissions which has been confirmed during site visit and also against the Detailed Project Report/02/.</p> <p>According to the project design, a backup diesel generator may be used for emergency purposes on site. The methodology does not include this as a source of emissions because it is not significant. Therefore CAR 16 was raised.</p> <p>Monitoring of diesel consumption was removed from the monitoring plan, and CAR 16 was closed. Please see appendix B for further details.</p>
Leakage emissions	No leakage emissions are considered.	N.A.	NA	NA	<p>Since the project is a greenfield hydropower project and all the equipments utilized are newly purchased and has been confirmed with Contract Letter/17/ of electrical &amp; mechanical equipment's which has been supplied by Kirloskar Brothers limited (KBL).</p> <p>No equipment is transferred from another activity, hence no leakage is considered for the project activity as per the applied methodology AMS I.D Version 17.</p>

Emissions from water reservoirs of hydro power plants are not relevant since the project does not have a reservoir, as validated above .

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.3.1	Has the PDD justified the inclusion/exclusion of all potential sources of GHG emissions as set out in the applied baseline methodology	ERM CVS evaluated the sources of GHG emission set out in the applied methodology were included in the project boundary and, the methodology allows PPs to choose whether a source or gas is to be included within the project boundary, this has been clearly justified in the PDD. The validation was based on The PDD and the methodology applied.	OK	OK

## Conclusion

The identified boundary and the selected sources and gases included in the final PDD are appropriately described and justified for the project activity, in accordance with the applied methodology. The information is correctly described in the section B.3 of the PDD.

## 7.3.1 Physical delineation of the project

ERM CVS evaluated whether the PDD correctly describes the physical delineation of the proposed CDM project activity, including which installations/processes are included within the geographical boundary of the project activity.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.3.2	Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary?	Based on the site visit ERM CVS confirmed that the GSP-PDD did not correctly describe which installations/processes are included within the geographical boundary of the project activity. Hence CAR5 had been raised.  In response to CAR 5, the PP has now defined the project boundary which is appropriate to the applied methodology AMS I.D "Grid connected renewable electricity generation". Hence CAR 5 has been closed. Kindly refer to Appendix B for details.	CAR-5	OK
	Were any emissions sources identified that will be affected by the project activity and are not addressed by the selected approved methodology? If so, was clarification of, revision to or deviation from the methodology approved in accordance with required procedures.	No emissions sources other than those addressed by the methodology were identified	OK	OK

## Conclusion

The PDD correctly describes the project boundary, including the physical delineation of the proposed CDM project activity, in compliance with the requirements of the selected baseline methodology, and this is consistent with site observations and other documentation provided. All sources and GHGs required by the methodology have been included within the project boundary. Where the methodology allows PPs to choose whether a source or gas is to be included within the project boundary, the PPs have sufficiently justified that choice. The justifications provided are reasonable, based on assessment of supporting documented evidence (DPR/02/) and site observations. The project boundary is justified for the project activity, based on ERM CVS's local and sectoral knowledge.

## 7.4 Baseline identification

As per VVS section L.6, ERM CVS reviewed the PDD to assess whether it correctly identifies the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity.

As per VVS paragraph 115, no alternative analysis is required if the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario. Thus the baseline scenario selection is in accordance with the baseline methodology AMS I.D (Version 17, EB 61)

The baseline identification has been validated as follows:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.4.1	Does the PDD identify the baseline, a scenario that represents the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed CDM project activity?	Yes. The PDD clearly identifies the baseline scenario as the electricity delivered to the NEWNE grid by the project activity that would have otherwise been generated by the existing grid-connected power plant and the addition of new power sources, as reflected in the combined margin. This has been validated against the CO2 Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA), Ministry of Power, Government of India (Version 07)/60/.	OK	OK
	Have the procedures/ steps to identify the most reasonable baseline scenario, as required by the methodology and applicable tools, been documented clearly in the PDD?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK
	Are all feasible and credible alternatives identified including but not limited to all the potential scenarios listed in the methodology?  Does the list of alternatives include the project activity undertaken without being registered as a CDM project?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required	OK	OK
	Are realistic different configurations or combinations of alternatives that may be able to provide similar outputs and services considered?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required	OK	OK
	Are all considered alternatives assessed for consistency with (enforced) mandatory laws and regulations?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required	OK	OK
	(a) Have all applicable CDM requirements been taken into account in the identification of the baseline scenario?  (b) Have all relevant national and/or sectoral policies and circumstances been taken into account, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector?  Are the relevant national and/or sectoral policies and circumstances identified and correctly considered in the PDD?	(a) All applicable CDM requirements have been taken into account in the identification of the baseline scenario, which has been carried out in accordance with the methodology.  (b) The identified baseline complies with all relevant national/sectoral policies, however there are a few state/regional/local regulatory policies which were not reported in the PDD. Hence CAR6 had been raised.  As a response to the finding the PP has now listed all relevant policies in section B.5 of the revised PDD. This information is cross checked through publicly available sources/59/ and confirmed to be acceptable. CAR6 is closed. Kindly refer to Appendix B for details.  All relevant national and/or sectoral policies and circumstances have been taken into account	CAR6	OK



## Conclusion

The baseline has been correctly identified in line with the methodology, and is in line with all relevant national and/or sectoral policies and circumstances. The identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity

### 7.5 Algorithms and/or formulae used to determine emission reductions

As per VVS section L.7, ERM CVS has evaluated whether the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring methodology.

ERM CVS conducted validation activities to determine whether the equations and parameters in the PDD have been correctly applied by comparing them to those in the selected approved methodology. Where the methodology provides for selection between different options for equations or parameters, ERM CVS confirmed that adequate justification has been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided) and that the correct equations and parameters have been used, in accordance with the methodology selected.

ERM CVS verified the justification given in the PDD for the choice of data and parameters used in the equations. Where data and parameters will not be monitored throughout the crediting period of the proposed CDM project activity but have already been determined and will remain fixed throughout the crediting period (ex-ante parameters), ERM CVS assessed that all data sources and assumptions are appropriate and calculations are correct, applicable to the proposed CDM project activity and will result in a conservative estimate of the emission reductions. Where data and parameters will be monitored on implementation and hence become available only after validation of the project activity, ERM CVS confirmed that the estimates provided in the PDD for these data and parameters are reasonable (please see section 8 for details of the validation of the monitored parameters).

#### 7.5.1 Ex Ante Data and Parameters

Each parameter required by the methodology and tools for this project type is listed and validated in detail as follows:

Parameter required as per methodology / tools	Description of the parameter (as per methodology/tools)	Is the parameter included in the PDD?	Title and description in the PDD line with the methodology/tools?	Data unit correctly expressed in PDD?	Value in PDD correct and provides for conservative estimate of Emission Reductions?  How was this validated?	Measurement method correctly described in the PDD (if applicable)
$W_{OM}$	Weightage of operating margin emission factor (%)	Yes	Yes	Yes	This has been validated against "Tool to calculate the emission factor for an electricity system"	NA
$W_{BM}$	Weightage of build margin emission factor (%)	Yes	Yes	Yes	This has been validated against "Tool to calculate the emission factor for an electricity system"	NA
$EF_{grid,BM,y}$	Build margin CO <sub>2</sub> emission factor for the project electricity system in year y (tCO <sub>2</sub> /MWh)	Yes	Yes	Yes	Yes. It has been validated against CO <sub>2</sub> Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA), Ministry of Power, Government of India Version 7/60/.  The PP uses the Emission Factor for the grid electricity as calculated in CO <sub>2</sub> Baseline Database for the Indian Power	NA



Parameter required as per methodology / tools	Description of the parameter (as per methodology/tools)	Is the parameter included in the PDD?	Title and description in the PDD line with the methodology/tool s?	Data unit correctly expressed in PDD?	Value in PDD correct and provides for conservative estimate of Emission Reductions?  How was this validated?	Measurement method correctly described in the PDD (if applicable)
					<p>Sector published by the Central Electricity Authority (CEA), Ministry of Power, Government of India. The CEA publishes on an annual basis the General Review and the Performance Review of Thermal Power Stations which is used by the majority of CDM project developers. The database for baseline estimation issued by the CEA has been developed consistently with the availability of data in India.</p> <p>The database is an official publication of the Government of India for the purpose of CDM baselines. The CEA Database version 7 has been applied as it was current at the time of submission of the CDM-PDD for validation and hence appropriate.</p>	
EF <sub>grid,OM, y</sub>	Operating margin CO2 emission factor for the project electricity system in year y	Yes	Yes	Yes	Yes. It has been validated against CO2 Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA), Ministry of Power, Government of India Version 7. Please refer above comments for details.	NA

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/C L	Final OK/ Not OK
6.5.1	<p>Have the parameters required by the methodology / tools been correctly described in the PDD?</p> <p>Where the methodology provides for selection between different options for data and parameters; is the choice of data and parameters justified?</p>	<p>The parameters required by the methodology and tools have been correctly described in the PDD and the choice of data and parameters is correctly justified. For further details please see the table above.</p> <p>In the GSP PDD, section B.6.2, the description provided for WBM, EF<sub>grid,BM,y</sub> &amp; EF<sub>grid,OM,y</sub> were not in line with the "Tool to calculate the emission factor for an electricity system"</p> <p>In the revised PDD, the description for the parameters W<sub>BM</sub>, EF<sub>grid,BM,y</sub> &amp; EF<sub>grid,OM,y</sub> are revised by the PP and the same has been validated and found to in line with the "Tool to calculate the emission factor for an electricity system" and hence CAR10 is closed.</p>	CAR10	OK

## 7.5.2 Equations and calculations used to calculate emission reductions

The following steps are applied in the PDD to determine emission reductions, in accordance with the methodology and tools applied:

In accordance with AMS I.D (Version 17, EB61) the emission reductions attributable to the project are calculated using the formula:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

$ER_y$  is the emission reduction in year  $y$  ( $tCO_2$ )  
 $BE_y$  is the baseline emissions in year  $y$  ( $tCO_2$ )  
 $PE_y$  is the project emissions in year  $y$  ( $tCO_2$ )  
 $LE_y$  is the leakage emissions in year  $y$  ( $tCO_2$ )

The equation listed for calculation of emission reduction in PDD is in line with the applied methodology and hence found to be Ok.

### Baseline emissions

The baseline emission is the product of electrical energy baseline  $EG_{BL,y}$  expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor

$$BE_y = EG_{BL,y} \times EF_{CO2,grid,CM,y}$$

Where:

$BE_y$  = Baseline emissions in year  $y$  ( $tCO_2$ )

$EG_{BL,y}$  = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year  $y$  (MWh)

$EF_{CO2,grid,CM,y}$  = Combined margin  $CO_2$  emission factor for grid connected power generation in year  $y$  calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" ( $tCO_2/MWh$ )

As the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity then

$$EG_{BL,y} = EG_{facility,y}$$

Where :

$EG_{BY,y}$  is the quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year  $y$  (MWh)

$EG_{facility,y}$  is the quantity of net electricity generation supplied by the proposed project activity to the grid in year  $y$  (MWh).

The baseline emission factor for the grid has been calculated as the combined margin (CM) consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures described in the "Tool to calculate the Emission Factor for an electricity system (Version 02.2.1, EB63)"

The PDD version for the Global Stakeholder Process was published for global consultation on 14 August 2012, and the calculation of the grid emission factor is calculated based on the latest data available at that time. The most recent data available at the time of PDD submission is the Central Electricity Authority (CEA) of India-  $CO_2$  baseline database for the Indian Power sector (Version 7)/60/.

AMS I-D specifies that the combined margin  $CO_2$  emission factor for grid connected power generation ( $EF_{grid,CM,y}$ ) should be calculated in accordance with the latest approved version of the "Tool to calculate the emission factor for an electricity system". The stepwise methodology from the tool is as follows:

#### **Step 1: Identify the relevant electricity system**

The "Tool to calculate the emission factor for an electricity system" defines a project electricity system as "the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity (e.g. the renewable power plant location or the consumers where electricity is being saved) and that can be dispatched without significant transmission constraints". On this basis, the project electricity system is defined as North Eastern Western and Northern Eastern (NEWNE) grid. This grid is one of the two grids of the power supply system in India (NEWNE and Southern

grid). The project activity is located in northern state, Himachal Pradesh, India and hence choice of NEWNE grid as the relevant electric power system for the calculation of baseline emission factor is appropriate. As per the tool requirements if the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used and hence delineation chosen by PP as per the Central Electricity Authority (CEA) of India- CO<sub>2</sub> baseline database for the Indian Power sector (Version 7)/60/ is appropriate

The CEA CO<sub>2</sub> baseline database (Version 07) is used to source the value for Simple Operating Margin. As per CEA, adjustments for imports from other Indian grids are based on operating margin of exporting grid. For imports from other countries, an emission factor of zero is used. Electricity exports have not been subtracted from electricity generation data used for calculating the emission factor. This is in line with "Tool to Calculate the Emission Factor for an Electricity System", Ver. 2.2.1 (p.4), option b.

**Step 2: Choose whether to include off grid power plants in the project electricity system (optional).**

The PP has chosen only grid power plants for analysis.

**Step 3: Select a method to determine the Operating Margin (OM)**

The "Tool to calculate the emission factor for an electricity system" provides four options for calculating the Operating Margin:

- (a) Simple OM; or
- (b) Simple adjusted OM; or
- (c) Dispatch data analysis OM; or
- (d) Average OM

Option (a) can only be used if low-cost/must-run resources constitute less than 50% of total grid generation (based on either average of the five most recent years, or on long-term averages for hydroelectricity production).

As verified from the Central Electricity Authority (CEA) of India- CO<sub>2</sub> baseline database for the Indian Power sector (Version 7)/60/ it can be clearly established that the share of the low cost/ run resources constitute less than 50% of the total grid generation and hence option (a) (simple OM method), as chosen by the PP, is found to be appropriate.

With regards to data vintage, the project participant wishes to use the ex-ante option wherein the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. This is in line with the applied tool and hence found to be appropriate.

**Step 4: Calculate the operating margin emission factor according to the selected method**

Based on the "Tool to calculate the emission factor for an electricity system", the formula for the simple operating margin is correctly stated in the PDD and is in line with the tool.

The data provided by the Central Electricity Authority (CEA), an official data source has been relied upon for the calculation of the OM. The same has been detailed in Annex 3. The latest version of the database, Version 7 (January, 2012) has been used. The OM calculations have been based upon generation data, fuel consumption and the Net Calorific value (NCV) of the fuel.

Option A has been chosen for calculating Operating Margin emission factor for the project. OM has been determined based on fuel consumption and net efficiency generation of each power plant/ unit, since fuel consumption data for each power plant/ unit is available. This is confirmed from review of Central Electricity Authority (CEA) of India- CO<sub>2</sub> baseline database for the Indian Power sector (Version 7)/60/.

The following assumptions have been made in case of unavailability of data at station level:

Net generation: In case of stations where only gross generation is available, CEA standard values for auxiliary consumption have been applied to calculate the net generation data.

Gross Calorific Value (GCV): Default GCV values for some thermal power stations have been used for cases where station specific data was unavailable.

The following assumptions have been in case of unavailability of data at unit level:

Net generation: The data is not monitored at a unit level and hence the following assumptions have been made:

1. The auxiliary consumption (in % of gross generation) of the unit was assumed to be equal to that of the respective stations in the following cases:

- All units of a station fall into the build margin; or
- All units of a station have the same installed capacity; or
- The units in the station have different capacities but do not differ with respect the applicable standard auxiliary consumption.

2. In all other cases, standard values for auxiliary consumption adopted by CEA were applied.

Fuel consumption and GCV: Fuel consumption and GCV are generally not measured at unit level. Instead, the specific CO<sub>2</sub> emissions of the relevant units were directly calculated based on heat rates.

All the above assumptions and the calculation approach is confirmed to be acceptable and is in line with CO<sub>2</sub> Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA), Ministry of Power, Government of India/60/. The CEA publishes on an annual basis the General Review and the Performance Review of Thermal Power Stations which is used by the majority of CDM project developers. The database for baseline estimation issued by the CEA has been developed consistently with the availability of data in India. The database is an official publication of the Government of India for the purpose of CDM baselines.

## Calculation Approach

The Simple OM has been calculated using the following formula:

$$EF_{grid,OMsimple,y} = \frac{\sum_i (FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y})}{EG_y}$$

Where:

$EF_{grid, OM simple, y}$	Simple operating margin CO <sub>2</sub> emission factor in year y (tCO <sub>2</sub> e/MWh)
$FC_{i,y}$	Amount of fossil fuel type i consumed in the project electricity system in year y (mass or volume unit)
$NCV_{i,y}$	Net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit)
$EF_{CO2, i, y}$	CO <sub>2</sub> emission factor of fossil fuel type i in year y (tCO <sub>2</sub> e/GJ)
$EG_y$	Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must-run power plants/units, in year y (MWh)
i	All fossil fuel types combusted in power sources in the project electricity system in year y
y	The relevant year as per the data vintage chosen in Step 3

As per Annex 3, the last 3 year generation values are 1.0066, 0.9777 and 0.9707 tCO<sub>2</sub>/MWh . These values are in line with with CO<sub>2</sub> Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA), Ministry of Power, Government of India Version 7.0/60/

The 3-year generation-weighted average is calculated to be = 0.9842 tCO<sub>2</sub>/MWh

Therefore  $EF_{grid,OM,y} = 0.9842$  tCO<sub>2</sub>/MWh

*Step 5: Calculate the build margin emission factor*

The build margin (BM) emission factor is calculated as the generation-weighted average emission factor (tCO<sub>2</sub>/MWh) of all power plant units m during the most recent year y for which power generation data is available at the time of preparing the PDD. The equation to calculate the BM emission factor is stated in line with tool and found to be acceptable

Option 1 is chosen whereby for the first crediting period, the build margin emission factor has been calculated ex ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation

The Build Margin has been estimated ex-ante for the first crediting period. For the purpose of ex-ante emission reduction calculations as per the most recent data available (from CEA for 2010-11 in its CO<sub>2</sub> baseline database version 07/70/) has been used and the build margin thus calculated by CEA is 0.8588 tCO<sub>2</sub>/MWh

Note: CEA calculates the Build Margin as per the steps defined in "Tool to Calculate the Emission Factor for an Electricity System", Version 2.2.1 and then releases the Build margin value for a particular year. As PP directly sources this value from CEA, PP has not demonstrated the step-wise approach as per the above tool in the PDD.

Therefore,  $EF_{grid,BM,y} = 0.8588 \text{ tCO}_2/\text{MWh}$

## Step 6: Calculate the combined margin (CM) emission factor

The combined margin emission factor is calculated as weighted average CM:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}$$

Where:

$EF_{grid,BM,y}$  = Build margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)

$EF_{grid,OM,y}$  = Operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)

$W_{OM}$  = Weighting of operating margin factor(%), which is 0.5 by default for a hydro plant for the first crediting period;

$W_{BM}$  = Weighting of build margin factor(%), which is 0.5 by default for a hydro plant for the first crediting period;

## Project emissions

For most renewable power generation project activities,  $PE_y = 0$ . The project is renewable hydro power project and no project emissions are considered. This is in line with the methodology.

## Leakage

No leakage emissions are considered. If the energy generating equipment is transferred from another activity, leakage is to be considered else  $LE_y = 0$ . Since the project is new power plant and involves no transfer of equipment,  $LE_y = 0$ . This is in line with the applied methodology and found to be Ok.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.5.2	Has the PP correctly applied all relevant calculations as required by the methodology and associated tools?  Is it fully explained how the procedures provided in the Methodology and applicable Tools are applied by the proposed project activity? (i.e. Are the required steps clearly	The calculations and formulae as in the approved baseline and monitoring methodology AMS I.D., (Version 17) have been applied. All aspects have been addressed and are presented in a transparent manner, in line with the approved methodology and tools  The PDD has been cross checked by ERM CVS with the approved methodology AMS I.D (Version 17) requirements for the calculations of baseline emission, project emission and leakage emission and found to be appropriate.	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	<i>followed?)</i>			
	Where the methodology provides for selection between different options for equations; is every choice of options for calculating project emissions, baseline emissions and leakage offered by the methodology correctly justified in the context of the project activity and baseline scenario?	The PP has correctly chosen and justified methodological choices , selection of operating margin method as per the applied tool and hence appropriate.	OK	OK
	Are the formulae required for the determination of project emissions, baseline emissions and leakage correctly presented in a complete and transparent manner, enabling a complete identification of parameters to be used and / or monitored?	The formulae required by the methodology for determinations of baseline emission, project emission and leakage have been correctly presented in the PDD. All the parameters required by methodology AMS I-D (Version 17) are correctly presented in the PDD.	OK	OK
	Are detailed calculations provided in a traceable spreadsheet showing relevant information?  Are the tables of emission reductions in the PDD (section A.4.4 and B.6.4) consistent with the calculations?	The detailed calculations are provided in the spreadsheet/4/. The input values in the spread sheet are consistent with the PDD. The tables of emission reductions in PDD are consistent with section B.6.4 of the PDD.	OK	OK
	Can the calculation of emission reductions be replicated using the data and parameters supplied in the PDD?	Yes the calculation of emission reductions can be replicated using the data and parameters supplied in the PDD.	OK	OK

## Conclusion

ERM CVS confirms that:

As per the VVS paragraph 99, based on the information reviewed and calculations reproduced by the validation team, ERM CVS confirms the following:

- All assumptions and data used by the PPs are listed in the PDD, including their references and sources;
- All documentation used by PPs as the basis for assumptions and the sources of data are correctly quoted and interpreted in the PDD;
- All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
- The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD

## 8 Validation findings – Additionality

As per the VVS sections L.8 to L.13, ERM CVS assessed the PDD to determine whether it clearly describes how the proposed CDM project activity is additional, as supported by sufficient and appropriate evidence. In accordance with decision 3/CMP.1, annex, paragraph 43, a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity. ERM CVS assessed and verified the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by PPs to support the demonstration of additionality in order to critically assess the presented evidence, using local knowledge and sectoral and financial expertise. In undertaking this aspect of the validation, ERM CVS considered tools and documents provided by the CDM Executive Board to demonstrate the additionality of proposed CDM project activity, as well as specific complementary or alternative requirements included in the approved CDM methodology. In the sections below, ERM CVS describes all steps taken, and sources of information used, to cross-check the information contained in the PDD on additionality. Where appropriate, we describe how the validation team determined that the documentation assessed is authentic.

### 8.1 Starting date and prior consideration of the CDM

As per VVS section L.9, if the project activity start date is prior to the date of publication of the PDD for stakeholder comments, it shall be demonstrated that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity. ERM CVS therefore evaluated the start date of the project activity

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.1.1	What is the start date of the project activity? Is this before the publication of the PDD for public comments?	The project activity start date is given in the PDD as 16-March-2006, which is before publication of the PDD for Global Stakeholder Consultation (GSP).  This has been validated by ERM CVS with the purchase order (PO) contract placed by Batot Hydo Power Limited (BHPL) to Kirloskar Brothers Limited (KBL), Pune for Electrical & Mechanical equipment/17/.	OK	OK
	Is the start date clearly defined in the PDD in accordance with the "Glossary of CDM terms"?  Does the PDD contain a description of how this start date has been determined, and a description of the evidence available to support this start date?	The start date of the project activity is defined as the date of signing of the electrical & mechanical (E&M) purchase order contract with Kirloskar Brothers Limited, since this is the earliest date of construction, implementation or real action on the project activity. ERM CVS therefore confirms that the start date of the project activity, reported in the PDD, is in accordance with the "Glossary of CDM terms". The PDD contains a description of how the start date was determined and references evidence to support the start date. This is validated in detail in the table below.	OK	OK
	If the start date is prior to the publication of the PDD for stakeholder comments, does the PDD provide an implementation timeline of the proposed CDM project activity, in line with the PDD guidelines?	Yes. The PDD provides an implementation timeline of the proposed CDM project activity, however during the site visit interview it was observed that there were missing links in the PDD timeline. Hence CAR7 was raised.  Kindly refer to Appendix B for details.  In response to CAR7, the PP has updated the CDM Chronology in the updated PDD and the same is now acceptable based on review of all evidence as detailed in table below and CAR7 is closed. The details of the project timeline validation are presented below.	CAR7	OK

The timeline of the project is set out in the table below, showing the evidence used to support each step.

	Activity	Date	How has ERM CVS validated this information	Draft OK/ CAR/CL	Final OK/ Not OK
7.1.2	Land Acquisition activity	February 2005 – March 2006	<p>This has been confirmed from the land documents/36/</p> <p>All the land details have been certified by the public notary/36/ and hence reliable.</p> <p>Also the original copies of land deeds were verified during the visit to PP's main office.</p> <p>Land is an asset that can be used for multiple purposes. Even after buying land, the PP could have decided not to implement the project, and the land could be sold or utilized for any other purpose. The land acquisition costs are minimal in comparison to the investment costs of the proposed project, and land acquisition costs have not been included in the investment analysis (as confirmed from the DPR/2/), because they (only part of them) were incurred as minor pre-project expenses prior to the investment decision date. Thus placement of Electrical &amp; Mechanical equipment purchase order (the start date considered) is a point of no return for PP and it showed commitment towards development of the small hydro project activity.</p> <p>The land acquisition process was initiated in February 2005 and the same was completed by end of March 2006 (i.e. after Start date 16 March 2006). This is confirmed from the year wise expenditure statement/56/ from PP on the actual costs spent on project. More than 50% of the acquired land was private agricultural land which was bought by PP from individual land owners (buying small individual plots from each owner) and this process takes a long time in India. In case, even after buying of land, if PP would have decided against implementing the project, the land could have been utilized for any other purpose like agriculture whereas the forest land, which was allotted on a nominal lease rent by the government of India, would have been surrendered back.</p> <p>This process always goes in parallel to due diligence/feasibility studies/hydrology study. Also it is to be noted that the DPR/02/ which confirms the possibility of project was only available in August 2005 i.e. after start of land acquisition process and hence the initiation of land acquisition cannot be seen as a project real action as the PP is unsure about the feasibility of the project at that time.</p> <p>Further, the cost of land acquisition is less than 3% of the overall project cost and hence does not have any material impact on the overall project implementation decision.</p> <p>However, in comparison, the placement of Electrical &amp; Mechanical equipment purchase</p>	OK	OK



	Activity	Date	How has ERM CVS validated this information	Draft OK/ CAR/CL	Final OK/ Not OK
			order (the start date considered in this PDD) amounts to investment commitment of ~14 % of project cost, showed specific commitment towards development of the small hydro project activity by PP and hence can be considered a real action towards the small hydro project implementation.		
	Receipt of Detailed Project Report	August 2005	This has been reviewed and confirmed from original DPR/2/. The DPR fully considered the CDM.	OK	OK
	Term Loan sanctioned	31 January 2006	This has been validated with the Loan sanction letter/16/ dated of 31/01/2006 from State Bank of Patiala to Batot Hydro Power Limited.	OK	OK
	E&M contract signing with Kirloskar Brothers Limited (Project Start Date)	16 March 2006	This has been validated with contract letter awarded to Kirloskar Brothers Limited/17/ by Batot Hydro Power Limited.	OK	OK
	Offer to civil contractor, Trust House Constructions for approach road and tunnel work	14 April 2006	This has been validated with the letter of contract/18/ awarded to Trust House for the construction of tunnel by Batot Hydro Power Limited dated 14 <sup>th</sup> April 2006.	OK	OK
	Termination of contract with Trust House due to inability in completing the tunnel work	08 November 2007	<p>This has been validated with the termination letter/19/awarded to Trust House for non-execution of tunnel work by Batot Hydro Power Limited dated on 08<sup>th</sup> November 2007.</p> <p>It was confirmed from the site visit interviews with Vice President/IV2/ the project manager/IV5/ involved right from the land acquisition stage that Trust House were not successful in completing the tunnel work and were also breaching many of conditions laid down by PP for the tunnel construction and they abandoned the work. Hence PP had to terminate the contract with them due to excessive delays caused by them and unethical practices followed by them onsite.</p> <p>The slow progress made by Trust House was also evident from the project progress reports/44/ submitted by PP to Himurja officer and confirmation of Himurja Officer by physical inspection onsite.</p> <p>The validation team had an interview with Mr.Kapil Mehta/IV10/, HIMURJA Project Officer and he confirmed the above.</p>	OK	OK
	Civil contract for tunnel work awarded to a new contractor (Vinayak Construction Company)	24 January 2008	This has been validated with the contract letter/21/ awarded to Vinayak Construction Company on 24 <sup>th</sup> January 2008 by Batot Hydro Power Limited with document reference no BHPL/HYDEL/HP/BALIJ-II/1408.	Ok	OK
	Cancellation of contract with Vinayak Construction Company due to unreasonable delays and	18 November 2008	This has been validated against the letter of Abdication of work/22/-Cancellation that has been issued by Batot Hydro Power Limited to Vinayak Construction Company on 18 <sup>th</sup>	OK	OK

	Activity	Date	How has ERM CVS validated this information	Draft OK/ CAR/CL	Final OK/ Not OK
	work completion and non-execution of order within contractual period.		<p>November 2008 with a document reference of BHPL/HYDEL/HP/BALIJ-II/901 due to non-completion of tunnel work.</p> <p>It was confirmed from the site visit interviews with Vice President/IV2/ the project manager/IV5/ involved right from the land acquisition stage that Vinayak Construction were not successful in completing the tunnel work within agreed schedule. Agreed schedule for completion of work was within 250 days however from January to November 2008 they could not even finish 115meters of tunnel length. In addition due to improper handling of equipment by labourers from Vinayak Construction, the PP faced major breakdowns and further delays. Hence the PP decided to terminate the contract with them.</p> <p>The delays made by Vinayak Construction were also evident from the project progress reports/44/ submitted by PP to Himurja officer and confirmation of Himurja Officer by physical inspection onsite.</p> <p>The validation team had an interview Mr.Kapil Mehta/IV10/, HIMURJA Project Officer and he confirmed the above.</p>		
	Contract was awarded to another contractor (Sunrise Construction Company) for Completion of tunnel work	27 January 2009	This has been validated against the contract letter/23/ issued by Batot Hydro Power Limited to Sunrise construction for the completion of the tunnel work dated 27 <sup>th</sup> January 2009	OK	OK
	Inter office correspondence between the top management discussing progress made in tunnel work and overall project implementation.	16 March 2009	This has been validated with the original copy (during the visit to PP's office) of the inter office correspondence letter/25/ issued by Mr. G.N Kamath to Mr. Chetan Mehra on 16 <sup>th</sup> March 2009 that updates the project progress achieved on tunnelling work.	OK	OK
	Completion of construction activities and commissioning of hydro power project	16 June 2012	This has been validated against the Certificate of Commercial Operation/34/ issued by Himachal Pradesh State Electricity Board Limited to Batot Hydro Power Limited dated on 19 June 2012. (the machines were commissioned on 16 June 2012 however the commissioning report was issued on 19 June 2012)	OK	OK

ERM CVS reviewed the evidence provided for the timeline, and can confirm that the timeline is credible and supported by reliable evidence.

## Conclusion

Based on the evidence provided, ERM CVS confirms that the start date for this project is 16 March 2006. This is before the publication of the PDD for stakeholder comments. The starting date of the project activity is before 02 August 2008. ERM CVS has validated the compliance of the project with the Guidelines on the demonstration and assessment of prior consideration of the CDM provided by the CDM Executive Board (EB 62 Annex 13) as follows.

## 8.1.1 Consideration of CDM in decision to implement the project activity

If the project activity has a start date before 02 August 2008 and no new methodology is required for this project activity, ERM CVS has validated that serious consideration of CDM was made before the start date, that the benefits of the CDM were a decisive factor in the decision to proceed with the project, and that real and continuing actions were taken to secure CDM status.

CDM consideration for project activities with a starting date before 02 August 2008					
	<b>BEFORE THE START DATE: Evidence that CDM was seriously considered in the decision to implement the project activity, indicating that the benefits of the CDM were a decisive factor in the decision to proceed with the project</b>	<b>Date</b>	<b>How has ERM CVS validated and assessed the reliability and authenticity of this information</b>	<b>Draft OK/ CAR/CL</b>	<b>Final OK/ Not OK</b>
7.1.4 (a)	Offer for CDM consultancy Services by MITCON for prior CDM awareness	20 April 2005	<p>This has been validated against the offer letter/46/ from MITCON sent to Mr Kamath on 20/04/2005 and also with email that has been sent to Mr. Kamath from MITCON Consultancy dated on 19/05/2005.</p> <p>The MITCON Consultants offer letter has been checked and it mentions clearly in detail about CDM and its benefits to the project participant from the sales of generated CERs. The offer included providing CDM Consultancy services by MITCON to the PP. This has been validated against the Offer letter of MITCON consultancy services/46/ presented to the PP. The original copy of the offer letter was reviewed during the visit to PP's main office.</p>	OK	OK
	Board decision to implement the project considering additional revenue from sale of CERs (Serious CDM Consideration)-Date of Investment Decision	23 August 2005	<p>This has been validated against the original copy of the resolution passed at the meeting of the board of directors of Batot Hydro Power Limited held on 23<sup>rd</sup> August 2005.- at the PP's office</p> <p>Original Board meeting minutes and certified true extracts of the board meeting minutes/15/ were cross verified and it was signed by authorized signatories.</p> <p>The minutes were in continuation to other sampled board meeting minutes/58/ and were bound in one volume. The meeting minutes were signed by the authorized signatories. The board member profile was also reviewed and the date was also confirmed through interview of top management of the PP/IV1/IV2. Therefore the meeting minutes are considered genuine and reliable, based on the validation activities undertaken.</p>	OK	OK
	<b>AFTER THE START DATE: Evidence to demonstrate that that <i>continuing and real actions</i> were taken to secure CDM status in parallel with the project's implementation</b>	<b>Date</b>	<b>How has ERM CVS validated and assessed the reliability and authenticity of this information</b>	<b>Draft OK/ CAR/CL</b>	<b>Final OK/ Not OK</b>
7.1.4 (b)	Notification letter sent to MITCON	12 December 2006	PP was in discussions with MITCON on their offer and since they had faced issues with project implementation they informed MITCON on 12 December 2006/83/ which indicated that their proposal was under consideration and the contract would only be signed after the project implementation issues are resolved in all aspects. MITCON was also notified that the PP was facing major hurdles in construction of the project and hence the finalization of CDM contract would be delayed	OK	OK

CDM consideration for project activities with a starting date before 02 August 2008					
			as decided by the top management		
	Meeting for review of hydro projects conducted with top management	23 & 24 February 2007	<p>The inter office correspondence with the top management of the company (Chetan Mehra, Director, Mr.Kamath, Head of Power Division and others)/84/ in original has been checked and reviewed and it mentions clearly that progress made by Trust House in tunnel excavation was not satisfactory.</p> <p>Head of Power Division, Mr.G.N.Kamath expressed in the meeting that although MITCON was shortlisted for carrying out the CDM consultancy work the decision to sign the contract was on hold due to uncertainty in project implementation. Mr.Chetan Mehra, Director, agreed to the above however also emphasized that signing of CDM contract is just a temporary hold and the project would need CDM to become viable.</p>	OK	OK
7.1.4 (b)	Offer for Carbon Credit Services received from Headway Capital Advisors	<p>23 April 2007</p> <p>(In response request for proposal/letter from PP dated 02 April 2007)</p>	<p>This has been validated against the offer letter/42/ from Headway Capital Advisors sent to Mr Kamath on 23/04/2007 and also with subsequent email that has been sent to Mr. Kamath from Headway Capital Advisors dated on 28/04/2007.</p> <p>The offer letter has been checked and reviewed in original and it mentions clearly in detail about CDM consulting/advisory services to be offered by Headway Capital Advisors to PP on this project and its benefits to the project participant from the sales of generated CERs.</p> <p>This was offer was received after the telephonic discussions held between project head and the CDM Consultant (Headway Capital Advisors) and the request for proposal was sent by the PP to Headway Capital Advisors on 02 April 2007/42/. This is confirmed by the validation team through review of the letter sent by PP to the Headway Capital Advisors/42/.</p>	CAR7	OK
	Meeting for review of hydro projects conducted with top management	14 & 16 August 2007	<p>The inter office correspondence with the top management of the company (Chetan Mehra, Director, Mr.Kamath, Head of Power Division and others) /85/ in original has been checked and reviewed and it mentions clearly in detail about the reasons for delay in tunnel work by the contractor Trust House.</p> <p>The minutes of meeting noted that in view of contractors' inability to complete the tunnel work and if alternate contractor would not be found in time, there would be a need for re-assessment of project description, boundaries and costs.</p> <p>Thus it would be premature to award a contract to CDM consultant at this stage. Head of Power Division, Mr.G.N.Kamath expressed in the meeting that although the proposal from Headway Capital Advisors dated 23/04/2007 is received it would be kept in abeyance till management would get greater clarity on project implementation issues.</p> <p>Chetan Mehra, Director agreed to the above however emphasized that the company should start CDM relation activities as soon as they see some progress on constructional front.</p>	OK	OK

CDM consideration for project activities with a starting date before 02 August 2008					
	Inter office correspondence discussing project implementation being on hold due to delay in tunnel work. The note also suggested initiating CDM registration work only after there is some visibility on project implementation.	04/12/2007	<p>The inter office correspondence/20/ in original has been checked and reviewed it mentions clearly in detail about the reasons for delay in tunnel work.</p> <p>This event was further confirmed from the review of project progress reports/44/ sent to HIMURJA which confirmed that the tunnel work was very much delayed due to different contractors abdicating the work in middle (Trust House, Vinayak Construction) and due to difficult topography of the site.</p> <p>Hence it was communicated by the top management of PP to not finalize the CDM consultant until the project progress starts further. This was also confirmed through interview of PP's top management/IV1/IV2/ and project engineers/IV3/IV4/.</p>	CAR7	OK
	Inter office correspondence between the top management discussing progress made in tunnel work after appointing a new contractor for completion of tunnel work (Vinayak Construction)	14 & 15 March 2008	<p>The inter office correspondence with the top management of the company (Chetan Mehra, Director, Mr.Kamath, Head of Power Division) /86/ in original has been checked and reviewed by the validation team.</p> <p>Head of Power Division enquired to the project team and top management if the appointment of CDM consultant could be initiated now that new contractor has been appointed. To this the General Manager projects confirmed that the new contractor performance was not yet satisfactory and hence further monitoring would be required before taking final decision. Chetan Mehra, Director accepted the views and decided to wait for few more months before finalization of CDM consultant contract.</p>	OK	OK
	Inter office correspondence between the top management discussing performance of the new contractor (Vinayak Construction) on tunnel activities	22 & 23 August 2008	<p>The inter office correspondence with the top management of the company (Chetan Mehra, Director, Mr.Kamath, Head of Power Division) /87/ in original has been checked and reviewed by the validation team.</p> <p>It was noted that the average progress of tunnel work is very slow (completion of only 240 meters in comparison to 700+ meters required) and it was noted that with current speed the tunnel work would span further for a year. Frequent stoppages due to poor quality equipment used by contractor for tunnel work were noted. It was noted in the minutes that there were considerable apprehensions on Vinayak Construction's financial and technical capabilities to complete the work.</p> <p>Chetan Mehra, Director suggested that signing of CDM contract to be done only after gaining full confidence that Vinayak Construction will successfully complete tunnel erection.</p>	OK	OK
	Inter office correspondence between the top management discussing progress made in tunnel work and overall project implementation. Decision taken to re-initiate the process for finalizing the CDM consultant and hence invite offers from consultants for CDM advisory services	16 March 2009	<p>This has been validated with the inter office correspondence letter/25/ issued by Mr. G.N Kamath to Mr. Chetan Mehra on 16<sup>th</sup> March 2009 that advises to initiate CDM registration work after completion of tunnel work-</p> <p>Verified with the original copy of inter office correspondence</p>	OK	OK
	Enquiry/bid sent by PP to various CDM consultants.	16 April 2009	Mail sent by PP to Zenith Energy, J M Environet (for this entity there were also telephonic discussions), CTRAN	OK	OK

CDM consideration for project activities with a starting date before 02 August 2008					
	Receipt of quotation for CDM advisory services from various consultants	From April to July 2009	Consulting services. /68/69/79/  This has been validated from the offers received from Zenith Eenergy/68/, J M Environet /69/, CTRAN Consulting Private Ltd/79/		
	CDM consulting contract with Ernst & Young	04 September 2009	This has been validated against the Engagement letter for CDM Advisory services issued by Weizmann Limited to Ernst & Young dated on 04 September 2009/38. The letter mentions that it has appointed Ernst & Young for GHG abatement projects: Batot Hydro Power Project It has been also validated against the Addendum letter to the initial engagement letter issued by Weizmann Limited to Ernst & Young dated on 12 May 2010/39/ ERM CVS evaluated both the engagement/appointment letter and found it to be acceptable.	OK	OK
	Local stakeholder consultation meeting conducted at the site for getting their feedback	23 November 2009	It has been validated against stakeholder attendance sheet provided by Project Participant, the photographs with banner dated 23/11/2009, and minutes of local stakeholder meeting/37/  The meeting minutes confirmed the CDM benefits for project and a short introduction about CDM and its applicability to project activity  This was also confirmed through interview of PP's top management/IV1/IV2/, project engineers/IV3/IV4/ and local stakeholders/IV7/IV8/IV9/	OK	OK
	Appointment of DOE for initiation of Validation for the project	November 2010	This was validated against the contract with first DOE/57/	OK	OK
	Submission of PDD for completeness check to the DOE	10 December 2010	This was validated against the mail sent by PP to first DOE submitting the PDD for webhosting	OK	OK
	Delay in webhosting of PDD by DOE	January 2011 – April 2011	This was validated against the mail sent by PP to first DOE giving reminder for webhosting and asking for meeting/66/	OK	OK
	Meeting with DOE team to discuss the delay	11 May 2011	This was validated against the mail sent to first DOE by PP asking for a meeting /66/ and the first DOE's response to PP/67/	OK	OK
	Short Closure letter received from DOE for termination of validation contract	19 August 2011	This was validated against the short closure letter/67/ issued by the first DOE to PP and through interview of top management of PP/IV1/IV2/	OK	OK
	Termination of contract with DOE	02 November 2011	This was validated against the mail sent by first DOE to PP/51/ and signed copy of short closure letter/78/ by PP dated 04 February 2012.	OK	OK
	DOE appointment for validation of project activity	27 July 2012	This has been validated from the contract with ERM CVS/81/.	OK	OK

**Conclusion:** It has been demonstrated that the CDM benefits were considered necessary in the decision to undertake the project, and that the PP undertook continuing and real actions to secure CDM status in parallel with the implementation of the project. The gap between real actions to secure CDM is less than 2 years. The project activity therefore complies with the 'Guidelines on the demonstration and assessment of prior consideration of the CDM'.

Therefore in summary, although the CDM consultancy contract was not finally signed until 2009, this is explained by the timeline of implementation of the project, which suffered severe and unforeseen delays. Despite this, the senior management level of the PP were actively engaged in pursuing the CDM registration of the project, and the decision to delay signing of a CDM consulting contract was an active decision and was not due to any deprioritisation of CDM registration efforts or lack of willingness to pursue CDM registration. The actions taken do demonstrate real commitment by the most senior level of the PP, and hence are considered real actions.

The project activity therefore complies with the 'Guidelines on the demonstration and assessment of prior consideration of the CDM'.

## 8.2 Identification of alternatives

The approved methodology AMS I-D (Version 17, EB61) that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required. The methodology defines the baseline as scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid of baseline. Therefore no further assessment of baseline alternatives is required.

## Conclusion

ERM CVS confirms that the baseline is correctly defined in the PDD in line with the methodology.

## 8.3 Investment analysis

As per VVS section L.11, ERM CVS evaluated the investment analysis presented in the PDD to demonstrate the additionality of the proposed CDM project activity. ERM CVS evaluated whether there is sufficient and reliable evidence to validate that the proposed CDM project activity would not be either:

- the most economically or financially attractive alternative; or
- Economically or financially feasible without the revenue from the sale of CERs.

According to Attachment A to Appendix B of the simplified modalities and procedures for CDM small-scale project activities, PPs shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers: investment barriers, technological barriers, barriers due to prevailing practice, and other barriers. An investment barrier is applied to demonstrate additionality of the proposed CDM project activity. The PDD demonstrates that the project activity is not financially viable without the revenue from the sale of CERs in terms of a lower IRR compared with the benchmark /03/04/.

The financial analysis was assessed by the validation team, including assessment of the spreadsheet and evidences relating to the input values to the financial analysis. The analysis was also assessed by referring to the latest version of the 'Guidelines on the assessment of investment analysis' ('I.A. Guidelines') by a financial expert assigned by ERM CVS, who has specific expertise in the assessment of financial analysis for CDM projects. The validation of the investment analysis is set out below and in the resolution of CARs and CLs relating to the investment analysis.

### 8.3.1 Evaluation of Analysis Option

PPs can choose one of the following approaches:

- **Option I (Simple Cost Analysis):** Used when the proposed CDM project activity and the identified alternatives would produce no financial or economic benefits other than CDM-related income. It involves documentation of the costs associated with the proposed CDM project activity and the alternatives identified and demonstration that there is at least one alternative which is less costly than the proposed CDM project activity;
- **Option II (Investment Comparison Analysis):** Used to compare the rate of return of the project activity (without CDM) and the alternative(s), to demonstrate whether the proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative;
- **Option III (benchmark analysis):** Used to demonstrate that the financial returns of the proposed CDM project activity would be insufficient to justify the required investment, when compared to a benchmark.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.1	Has the appropriate option been chosen? (as per the <i>Guidance on the Assessment of Investment Analysis</i> )	The PP has chosen benchmark analysis, which is appropriate given that the project generates revenues from electricity sales (hence option I, simple cost analysis, is not applicable) and the alternative (continuation of electricity supply by the grid) is not a comparable investment alternative (hence option II, investment comparison analysis, is not applicable). The selection by the PP is in line with the 'Tool for the demonstration and assessment of additionality' and the 'Guidance on the assessment of investment analysis'.	OK	OK

## Option III evaluation

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.2	Is benchmark analysis appropriate? (If the PP has to make an investment, to supply the same outputs and services, and there is at least one other alternative option than building the project activity without CDM, benchmark analysis is not appropriate and investment comparison analysis should be used).	The project developer has the alternative of making no investment (continuation of the supply of electricity from the existing generation mix operating in the grid). The project developer is not obliged to make an investment to supply the same outputs and services.	OK	OK
	Is the most suitable financial indicator for the project type and decision-making context clearly identified, such as IRR?	Yes. Equity IRR is used, and this is consistent with the selected benchmark, an estimated cost of equity calculated using CAPM (Capital Asset Pricing Model).	OK	OK

## Conclusion

ERM CVS confirms that the choice of option used for evaluation of the investment analysis is appropriate for this project activity.

### *8.3.2 Evaluation of Benchmark/Discount rate*

The assessment used an *external* source of Benchmark. To confirm the suitability of the benchmark applied in the investment analysis, ERM CVS has

- Determined whether the type of benchmark applied is suitable for the type of financial indicator presented;
- Ensured that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity;
- Determined whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the PPs involved and determining whether the same benchmark has been applied or if there are verifiable circumstances that have led to a change in the benchmark.

Details of the validation of the benchmark are provided in the following table:



	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
<b>If a Government/officially approved benchmark has been used</b>				
7.3.3 (a)	Is the use of a government/official benchmark appropriate ( <i>i.e. are such benchmarks used for investment decisions for this type of project in the host country</i> )?	N/A	N/A	NA
	Is an appropriate benchmark or discount rate value chosen that is relevant for the project activity ( <i>i.e. for this investor, country, risk of project, time of investment decision</i> )?  Is the benchmark applicable to the project activity and the type of IRR calculation presented ( <i>project or equity IRR; before or after tax</i> )?	N/A	N/A	NA
	Is the benchmark or discount rate based on verifiable publicly available data sources?	N/A	N/A	NA
	Is the chosen benchmark appropriate and in line with other benchmarks or discount rates used in current or previous projects by the same or similar investors? ( <i>including the Benchmark or discount rate used in Feasibility Studies or other financial analyses of the project activity</i> )	N/A	N/A	NA
<b>If an external benchmark or discount rate has been used:</b>				
7.3.3 (b)	Is the use of an external benchmark appropriate?	Yes, there is no claim by the project developer that they alone could undertake this project.	OK	OK
	Is the benchmark or discount rate based on publicly available data sources?	The risk-free rate of return is referenced to a report from the Reserve Bank of India website /63/.  The beta data and market premium calculations are referenced to the Bombay Stock Market (BSE) 200 index /64/, and data downloaded from the website is provided in the CAPM calculation spreadsheet /03/.	OK	OK
	Is the benchmark based on parameters that are standard in the market? (I.A Guideline 13)	Yes, the benchmark is based on data taken from the BSE 200 index and long-term Indian government bonds.	OK	OK
	Are the assumptions underlying the referenced benchmark or discount rate relevant to the sector?	Yes, the cost of equity benchmark is made relevant to the project sector by applying a beta. The beta is based on the returns of the stock market and the returns of seven companies in the same sector as the project activity. All of the chosen companies are listed in the Power – Generation / Distribution sector.	OK	OK
	Is an appropriate benchmark or discount rate value chosen	The benchmark is calculated using stock market data relevant to the project host	CAR8	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	that is relevant for the project activity ( <i>i.e. for this investor, country, risk of project, time of investment decision</i> )?	<p>country and project sector / risk profile.</p> <p>The data (risk-free rate of return value, data used for beta calculations, BSE closing value) used for benchmark calculations are consistent with the source provided by the PP however were not corresponding to the investment decision dates. Also the covariance calculations were incorrect for Reliance Infrastructure. Hence CAR8 had been raised.</p> <p>As a response to the finding the PP has now corrected the data to be applicable at the time of investment decision and corrected the covariance calculation for Reliance Infrastructure. The risk-free rate of return value used in the benchmark calculations is now valid at August 2005 and consistent with the source provided /63/.</p> <p>The covariance for Reliance Infrastructure is now correctly calculated using all available data. The BSE closing value taken for the calculation of market premium as shown in the CAPM calculation spreadsheet /03/ is now valid at August 2005 and consistent with the source provided /64/</p>		
	Is the chosen benchmark conservative and in line with other benchmarks or discount rates used in current or previous projects by the same investor? ( <i>including the benchmark or discount rate used in Feasibility Studies or other financial analyses of the project activity</i> )	The calculation approach adopted for the benchmark is similar to the PP's approach of benchmark calculation for their other renewable energy projects and hence consistent. This was confirmed during the visit to PP's main office through interview of top management of PP/IV1/IV2/ and review of summary of finance and cost sheets /55/for other group projects.	OK	OK
	<p>Does the benchmark meet the requirements of the investment analysis guidelines paragraph 15, <i>i.e. if the cost of equity is used in the determination of the benchmark, is the cost of equity determined either by:</i></p> <p>(a) <i>selecting the values provided in Appendix A of the investment analysis guidelines; or by (b) calculating the cost of equity using best financial practices, based on data sources which can be clearly validated?</i></p> <p>Are all underlying factors sufficiently justified?</p>	<p>Yes, the cost of equity benchmark is calculated using best financial practices and is based on data sources which have been validated.</p> <p>All underlying factors have been sufficiently justified.</p>	OK	OK
	If the cost of debt is used in the determination of the benchmark, is it calculated as the cost of financing in the capital markets (e.g. <i>commercial lending rates and guarantees required for the country and the type of project activity concerned</i> ), based on documented evidence from financial institutions with regard to the cost of debt financing of comparable	N/A, the cost of debt is not used in the determination of the benchmark.	N/A	NA

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	<i>projects? In cases where this data is not available, has the commercial lending rate in the host country been used to calculate the cost of debt?</i> (I.A. Guideline 16)			
	Is the debt:equity ratio used to determine the benchmark based on the typical debt/equity finance structure observed in the sector of the country? <i>If such information is not readily available, 50% debt and 50% equity financing may be assumed as a default.</i> (I.A. Guideline 18)	N/A, the debt / equity ratio is not used in the determination of the benchmark.	N/A	NA
<b>If an internal company benchmark or discount rate has been used:</b>				
7.3.3 ©	Can the project only be implemented by the PP? <i>(Only in the particular case where the project activity can only be implemented by the PP, can the specific financial/economic situation of the company undertaking the project activity can be considered in the financial analysis)</i>  Therefore is the use of an internal benchmark or discount rate appropriate in this case?	N/A	N/A	NA
	Is it sufficiently demonstrated that project activities under similar conditions developed by the same company used the same benchmark or discount rate?  Has ERM CVS undertaken a thorough assessment of the financial statements of the PP to assess the past financial behaviour of the entity during at least the last 3 years in relation to similar projects? (I.A. Guideline 14)  If the company is brand new, has it been demonstrated that the same benchmark would have been used for similar projects in the same sector in the country/region?	N/A	N/A	NA
	Is the cost of debt determined in accordance with the guidelines on the assessment of investment analysis, guideline 16?	N/A	N/A	NA

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	Is the cost of equity determined either by: (a) selecting the values provided in Appendix A of the investment analysis guidelines; or by (b) calculating the cost of equity using best financial practices, based on data sources which can be clearly validated?  Are all underlying factors sufficiently justified?  (I.A. Guideline 15)	N/A	N/A	NA
	Is the debt:equity ratio in line with Guideline 17 of the Guidelines on the assessment of investment analysis?	N/A	N/A	NA
<b>Risk Premiums</b>				
7.3.4	Are risk premiums applied in the development of the benchmark or discount rate?  If so, are they reasonable and justified? How has this been validated?	A market risk premium is applied based on historical stock market returns in the host country.  Based on ERM CVS' expertise the market risk premium is considered reasonable and justified. All values used in the calculation are supported with evidence which has been validated.	OK	OK

The benchmark is calculated using the below formula

$$\text{Expected Return on Equity} = R_f + \beta * (R_m - R_f)$$

Where:

$R_f$  = Risk free rate of return

$\beta$  = Beta

$R_m$  = Expected Return of the market

**Risk free return ( $R_f$ ):** The risk free rate is the return that is assured on capital investment. Essentially, these are the financial instruments for investment without any default risk. In the case of India, the Government of India bonds or securities are considered as the most suitable representative for calculation of risk free rate in the market.

The Reserve Bank of India's Yield to Maturity rate has been adopted as the risk-free rate of return for a period of more than 20 years, which stood at 7.4963% (based on most recent available data at the time of decision making). The returns on Central Government securities are verified from the official website of the Reserve Bank of India/63/. The team has confirmed that the risk free rate of return was the recent data as available at the time of investment decision (23 August 2005).

**Beta ( $\beta$ ):**

Beta is the measure of the risk of a specific sector/company. Beta for similar power sector companies can be applied as a proxy risk profile for the project activity for determination of expected/required return on equity. The Beta in the CAPM equation helps account for the systematic risk by quantifying the sensitivity of the stock of a listed company representing a particular project type/sector with the market returns.

The PP has arrived at the Beta value which is the average of the Beta values of seven companies in the power sector for a period 2000 to 2005 that were listed at the time of investment decision. ERM CVS confirms this is in line with paragraph 15 of the Guidance on the Assessment of Investment Analysis which stipulates that risk premiums applied in the determination of required returns on equity shall reflect the risk profile of the project activity being assessed. Validation team confirmed the period for beta calculation is appropriate based on financial expertise and in line with the article "Estimating Risk Parameters, Aswath Damodaran, Stern School of Business" by Aswath Damodaran/75/, which states the following:  
*"Risk and return models are silent on how long a time period one needs to use to estimate betas. Services use periods ranging from two years to five years for beta estimates, with varying results".*

Rm: The average market return has been calculated with the help of the Compound Annual Growth Rate (CAGR). The CAGR is a metric that measures the average returns from the stock market investments over a period of time. It is a more accurate measure than simple average of returns, and is calculated as:

$$\text{CAGR} = (\text{index value at end} / \text{index value at beginning})^{(1 / \text{no. of years})} - 1$$

ERM CVS verified the values considered for calculating the CAGR from publicly available information /63/64/ and confirms the calculation for market rate of return from the data available during the investment decision as 14.79%.

Thus Return on Equity (ROE) using the above values in the expected return on equity formula, the benchmark has been calculated as 16.82%, after tax.

### 8.3.3 Investment analysis assumptions and Input Values

ERM CVS evaluated the assumptions and input values used in the investment analysis

#### Assumptions based on Feasibility Study Reports (FSR)

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.5	Has the DPR been the basis of the decision to proceed with the investment in the project? How has this been verified?	<p>The PPs rely on values from a Detailed Project Report (DPR) that has been prepared by Dr. Hutarew &amp; Partners (I) Pvt Ltd., a third party engineering consulting firm and therefore ERM CVS has ensured that the DPR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalisation of the DPR August 2005 and the investment decision 23 August 2005 is sufficiently short for ERM CVS to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed.</p> <p>The PP presented extracts of the Board meeting held on 23 August 2005. To determine the authenticity of the documents presented, ERM CVS made a visit to the corporate office of the PP and confirmed the original minutes of the board meetings. Pages of minutes were duly attested by the Chairman in accordance with the requirements of The Companies Act, 1956. The meeting minutes were in continuation to several board decisions/58/ taken in other meetings and each of the meeting minutes commenced with the attendance of the board members.</p> <p>The visit confirmed that the extracts of the Board meeting presented were actual extracts from the board meeting minutes held.</p>	OK	OK
	Are the values used in the PDD and associated annexes valid and consistent with the DPR?	The values used in the PDD and associated annexes have been confirmed to be valid and fully consistent with the DPR which has been prepared by Dr. Hutarew & Partners (I) Pvt Ltd., a third party engineering consulting firm.	OK	OK
	At the time of the investment decision, are the input values from the DPR valid and applicable (based on specific local and sectoral expertise and knowledge)?	Based on ERM CVS's local and sectoral knowledge, the values in the third party DPR are valid and applicable at the time of investment decision. The values have been cross checked against other sources as described below:	OK	OK

#### Input values used in the investment analysis

As per VVS paragraph 120 (a to c) ERM CVS has conducted a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determined the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices. ERM CVS has cross-checked the parameters against third-party or publicly available sources, such as invoices or price indices where available, and has reviewed feasibility reports, public announcements and annual financial reports, where available, related to the proposed CDM project activity and the PPs. Details of the validation activities and cross checks carried out are set out as follows:

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
<b>Technical assumptions</b>					
	<p>Net electricity generation per year / (PLF)</p> <p>12.97 Million kWh /45.99%</p>	<p>The net electricity generation is sourced from the third party DPR which is prepared by the third party engineering firm based on their sectoral expertise and long term hydrology data and hence appropriate.</p> <p>Plant Load Factor was not mentioned in the PDD. Hence CAR1 had been raised.</p> <p>In the revised PDD, PP has updated it and mentioned the plant load factor value in the PDD as 45.99%</p> <p>This has been validated with Detailed Project Report (DPR)/02/.</p>	<p>The net electricity generation is a calculated figure. (Gross generation – Losses)</p> <p>This figure is calculated based on the gross generation and losses mentioned in the DPR which is prepared by third party engineering company.</p> <p>The annual generation is sourced from the third party engineering firm's DPR/2/ and is based on 20 year hydrological study data and simulated for the project plant and is very much site specific and hence reliable.</p> <p>The losses (Auxiliary consumption and other losses) are validated below in detail.</p> <p>Moreover, the State Hydro Policy /59/ makes it obligatory for the developers to maintain mandatory 15% water release. The impact of this on PLF would need to be factored in.</p> <p>Moreover, the same PLF is submitted by the PP for debt financing and is confirmed from review of the loan sanction letter /16/.</p> <p>Hence ERM CVS confirms the estimated net generation from the project activity to be accordance with "Guideline for the reporting and validation of plant load factors" (EB 48 Annex 11).</p> <p>The value was sourced from DPR/2/ and was valid and applicable at the time of investment decision/15/.</p> <p>ERM CVS cross checked the similar projects (refer A.2 under Appendix A) in the region and the confirmed the PLF to be reasonable and acceptable from the team's local and sectoral expertise</p> <p>The typical range of plant load factor is between 46.92% (Project 5367) to 66.86% (Project 6239). The plant load factor of the proposed project (45.99%) although slightly lower than the range, is deemed reasonable given the fact that it is less than 1% outside the</p>	CAR1	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>range, and further given the fact that the net electricity generation is sourced from the DPR which is prepared by the third party engineering firm based on their sectoral expertise and long term hydrology data.</p> <p>The validation team has cross checked the Himachal Pradesh Electricity Regulatory Commission (HPERC)'s order on Small Hydro Power Projects dated 18/12/2007/71/ and noted the average PLF for all small hydro power plants in Himachal Pradesh (including non CDM plants) is considered to be 45%. Thus the PLF of 45.99% of the project activity considered to be reasonable.</p> <p>The actual PLF for a hydro project would depend to a large extent on parameters such as location of the project, the river basin, rainfall, etc and hence the validation team confirms the suitability of the net annual generation based on the DPR estimations /2/ to be reasonable based on its local and sectoral expertise.</p>		
	Project Capacity-3.5 MW	<p>This has been validated with the Detailed Project Report (DPR) prepared by Dr Hutarew &amp; Partners, a third party engineering consultant firm.</p> <p>The total project capacity mentioned on DPR is 3.5 MW</p>	<p>This has been validated with contract placed by BHPL to Kirloskar Brothers Ltd for Electrical &amp; Mechanical equipment/17/.</p> <p>This has been also validated against Implementation Agreement signed between PP and Government of Himachal Pradesh/7/.</p> <p>ERM CVS team during site visit also validated the project capacity through visual site inspection</p>	OK	OK
	Auxiliary Consumption & Losses	<p>This has been sourced from the Detailed Project Report (DPR)/02/ prepared by third party engineering consultant firm and hence appropriate. The value of Auxiliary consumption &amp; Losses is 8% (Breakup: Auxiliary Consumption-0.5%; Transformation Losses-0.5%; Transmission Losses-2% &amp; Loss due to Outages- 5%)</p>	<p>The losses are on account of:</p> <ul style="list-style-type: none"> <li>• Outage: 5%</li> <li>• Transmission losses: 2.0%</li> <li>• Auxiliary consumption: 0.5%</li> <li>• Transformation loss: 0.5%</li> </ul> <p>ERM CVS confirmed total losses of 8.0% as indicated in the DPR prepared by third party engineering firm contracted by the PP.</p> <p>Further, the report to power finance corporation prepared by ICRA Limited mentions availability of transmission network as 90% (Therefore, outage or non availability of transmission network for evacuating power is 10%). Further HPERC notification 9 (Ref: HPERC/401 for the year 2005) mentions target total outage of 10%/72/.</p> <p>Therefore, this value was valid and</p>	OK	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>applicable at the time of investment decision.</p> <p>Validation team further confirms the suitability of losses from its sectoral expertise.</p> <p>Hence ERM CVS deems total loss of 8.0% to be appropriate.</p>		
	Project operational lifetime -40 years (Assessment period- 20 years )-	<p>The project lifetime is stated as 20 years in PDD section C.1.2. However, no supporting evidence for the same has been made available for validation and hence CAR13 was raised.</p> <p>The project lifetime is now corrected to 40 years across the PDD. This is cross checked with the implementation agreement /07/ between PP &amp; Himachal Pradesh Government and found to be consistent. The finding is closed.</p>	<p>The project lifetime is cross checked with the implementation agreement /07/ between PP &amp; Himachal Pradesh Government and found to be consistent.</p> <p>The validation team has cross checked the Himachal Pradesh Electricity Regulatory Commission (HPERC)'s order on Small Hydro Power Projects dated 18/12/2007 /71/ and found that 40 years is acceptable. ERM CVS cross checked the similar projects (refer A.2 under Appendix A) in the region and the confirmed the operational lifetime to be reasonable and acceptable from the team's local and sectoral expertise.</p> <p>The typical range of lifetime is between 30 years (Project 6239) to 40 years (all other projects). The lifetime of the proposed project (40 years) is deemed reasonable.</p> <p>As noted, the assessment period is 20 years. Therefore residual value has been included at the end of the 20 year period to reflect the book value of the assets. Please refer to the section 'depreciation and residual value' below, and to CAR 09 for details.</p>	<p>CAR13</p> <p>CAR9</p>	OK
<b>Costs</b>					
7.3.7	Investment costs	<ul style="list-style-type: none"> <li>Total investment costs of INR 232.60 Million are referenced to the DPR /02/ and found to be consistent. The investment costs were determined in the third party DPR which was prepared by a third party engineering firm based on their sectoral expertise, and hence is considered to be appropriate</li> </ul>	<p>The project cost has been confirmed from the DPR/02/, and the investment note considered by the Board during the investment decision.</p> <p>ERM CVS further cross-checked the debt component of the project cost from the :</p> <ul style="list-style-type: none"> <li>Loan sanction letter of the State Bank of Patiala/16/ based on which the</li> <li>Debt component for the project activity was confirmed to be INR 150 million.</li> </ul> <p>In accordance with the local</p>	CAR9	OK



	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>regulations, the project has been evaluated by the bank's independent engineer. Therefore, this value is valid and reasonable.</p> <p>ERM CVS cross checked the similar projects (refer A.2 under Appendix A) in the region and the confirmed the project cost to be reasonable and acceptable from the team's local and sectoral expertise.</p> <p>The typical range of Unit Project cost is between 53.46 INR Million/MW (Project 5099) to 81.81 INR Million (Project 5089). The unit project cost of the Project (66.57 INR Million) is deemed reasonable.</p> <p>The validation team has cross checked the Himachal Pradesh Electricity Regulatory Commission (HPERC)'s order on Small Hydro Power Projects dated 18/12/2007 /71/ and noted the unit cost specified for small hydro power plants in Himachal Pradesh is 65 INR Million/MW which amounts to 227.5 INR million (65 *3.5) for the project. Hence the project cost of 232.60 INR Million is found to be reasonable. The slight variation in cost is due to project site specific topography (steep terrains) and investments in civil structures accordingly.</p> <p>The validation team confirms the suitability of total project cost from its local and sectoral expertise.</p>		
	<p>Annual O&amp;M cost (total) – INR 3,489,060 in year 1, increasing by 5% each year</p> <p>Calculated as 1.5% of investment costs in year 1</p>	<p>Annual O&amp;M costs are referenced to the DPR /02/ and found to be consistent.</p> <p>The third party DPR which is prepared by the third party engineering firm based on their sectoral expertise and hence appropriate</p> <p>The evidence to support the annual escalation rate of 5% p/a applied to O&amp;M costs was not available and hence CAR 9 (point 2 a) was raised.</p> <p>As a response to the finding the PP clarified that the escalation rate for O&amp;M costs was based on the third party DPR. The HPREC order is used to further justify and cross check the assumption /71/. ERM CVS has reviewed the references and confirmed that the escalation in O&amp;M cost is consistent with the evidence provided. Hence the finding was closed.</p>	<p>ERM CVS confirmed the annual O&amp;M cost and annual escalation from the DPR/02/ prepared by the third party engineering firm.</p> <p>The validation team confirmed that the document from the Central Electricity Regulatory Commission (CERC) dated 29/03/2004/76/ mentions O&amp;M cost as 2.5% of the project cost (page 35).</p> <p>ERM CVS confirmed based on review of the DPR /02/ that the escalation rate for O&amp;M costs (5%) was based on the latest information available at the time of investment decision.</p> <p>Further, the tariff order for HPERC tariff order dated 18/12/2007/71/ (which is available after the investment decision) is also cross checked. It mentions O&amp;M cost to be taken at 2.25% of project cost and annual escalation of 4%. However the PP has assumed based on the DPR that annual O&amp;M cost is 1.5% of the project cost which is conservative but with 5% annual escalation. This is considered to be reasonable given that it was the</p>	CAR9	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>information available at the time of decision making.</p> <p>ERM CVS cross checked the similar projects (refer A.2 under Appendix A) in the region and the confirmed the O&amp;M cost to be reasonable and acceptable from the team's local and sectoral expertise</p> <p>The typical range of O&amp;M cost is between 1.5% to 2.25% of project cost. The O&amp;M cost of the Project (1.5%) is deemed reasonable.</p> <p>The validation team confirms the suitability of O&amp;M cost and its annual escalation from its local and sectoral expertise.</p>		
<b>Revenues</b>					
7.3.8	Are all potential sources of revenue accounted for in the analysis?	The sources of revenue included in the analysis are found to be consistent with those in the DPR /02/, and are listed below.	Yes all sources of revenue are considered and are in line with those mentioned in the DPR/2/.	OK	OK
	Net electricity generated and sold to the grid – 12.97 GWh p/a	Referenced to the DPR /02/ and found to be consistent.	Please refer section 7.3.6 above	OK	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	Electricity tariff – INR 2.45 /kWh  In operational years 16 – 20, 10% of electricity sales revenue is paid in royalties	<p>The electricity tariff is referenced to the DPR/2/ and is found to be consistent.</p> <p>The tariff is fixed throughout the assessment period in the analysis. On this point validation team raised CL5 for the PP to clarify the assumption of fixed tariff.</p> <p>This was further successfully closed out in response to the clarification received from PP.</p> <p>It was noted that PP has assumed a preferential tariff (derived by HPERC in their hydro policy) which is determined taking into account escalations in various costs like O&amp;M costs etc for a long period of time typically 20 years. Typically this tariff is estimated by calculating the cost of generation and by adding some return on equity. The levelized tariff is arrived at by using levelized cost of generation and hence is a fixed value for the entire assessment period of 20 years is derived.</p> <p>This tariff is in line with the hydro policy/59/ available at the time of investment decision making for the project. The tariff used in the financial analysis is in line with the DPR/02/ as prepared by the third party engineering firm and found to be OK. The 10% revenue royalty is referenced to the DPR /02/ and found to be consistent.</p>	<p>This has been also validated against the Implementation Agreement/07/ signed between PP and Himachal Pradesh State Government.</p> <p>The tariff rate has been confirmed from the hydro policy/59/. This value was valid and applicable at the time of investment decision. The validation team confirms the suitability of the tariff rate from its local expertise. The tariff was also compared with similar registered projects (refer table under A.2 of Appendix A) in the region and noted to be consistent.</p> <p>The typical range of Tariff rate is between 2.5 INR/kWh to 4.04 INR/kWh. The tariff applied for the Project (2.45 INR/kWh is derived from 2.5 INR/kWh as stipulated by Hydro policy and applying 2% rebate) is deemed reasonable.</p> <p>The 10% revenue royalty is also cross checked from the hydro policy/59/and found to be consistent. This has been validated by ERM CVS with the implementation agreement/7/ between HP Government and BHPL that states 10% of deliverable energy should be levied as a water royalty, but also confirms that this requirement is waived for a period of 15 years from the Commercial operation date (COD).</p>	CL5	OK
<b>Taxes and subsidies</b>					
7.3.9	Are there any policies, subsidies, incentives, grants, tax breaks etc that apply to any of the alternatives? Are these incorporated in the analysis?	The subsidies are sourced from the DPR/02/ and also in line of MNRE policy 2003/59/ and found to be correct	Yes please refer the description below	OK	OK
	Are there any policies, subsidies, incentives, grants, tax breaks etc that apply to any of the alternatives? Are these incorporated in the analysis?	<p>The following policies / subsidies are incorporated in the analysis and are found to be consistent with the DPR /02/:</p> <ul style="list-style-type: none"> <li>The project receives an MNRE subsidy of 31.88 INR Million in year 1</li> <li>No corporation tax is charged in the first 10 years of the analysis</li> </ul> <p>The value of the MNRE subsidy in</p>	<p>The MNRE Subsidy has also been validated against the letter of subsidy sanction issued by the Ministry of New &amp; Renewable Energy/41/ and found to be consistent</p> <p>The tax holidays for 10 years is confirmed from review of HPERC Order/71/ and found to be consistent</p>	CAR-9	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		<p>the investment analysis spreadsheet is not consistent with the value in the PDD. Please make the PDD and appendices consistent – CAR 9</p> <p>This is now addressed in the PDD and CAR9 is closed.</p>			
	Tax rates	<p>All rates are sourced from DPR/02/ and the DPR considered all rates based on the relevant tax laws applicable at time of investment decision and hence acceptable.</p> <p>Minimum Alternat Tax (MAT) is charged at 8.42% of profit before tax.</p> <p>Corporation tax is not charged in the first 10 years. After 10 years corporation tax is charged at 33.66% of profit before tax adjusted for IT depreciation.</p>	<p>ERM CVS confirmed that Minimum alternate tax is 8.42% for the financial year 2005-06 and is confirmed from local tax regulations applicable for the financial year 2005-06/65/</p> <p>The tax holidays for 10 years is confirmed from review of HPERC Order/71/ and found to be consistent/</p> <p>The validation team confirmed that corporate tax rate as per the Income Tax Act 1961/65/ and as applicable for year 2005-2006.</p> <p>Therefore, these value was valid and applicable at the time of investment decision. The validation team confirms the suitability of taxation rates from its local expertise.</p> <p>Ref: Income tax act 1961 and subsequent finance bills/65/.</p>		OK
	Interest rate on debt	<p>10%</p> <p>This has been sourced from the DPR/2/</p>	<p>This has been validated by ERM CVS with loan sanction letter/16/ issued by State Bank of Patiala to Batot Hydro Power Limited which mentions the interest rate as 10%.</p> <p>In addition, ERM CVS also cross-checked the Prime Lending Rate published by the Reserve Bank of India/63/ for the weeks in August 2005. The reported PLR ranges from 10.5% to 10.75%. Therefore, interest rate of 10% was found to be reasonable.</p> <p>Therefore, this value was valid and applicable at the time of investment decision. The validation team confirms the suitability of the interest rate from its local and sectoral expertise</p>	OK	OK
	Corporate tax rate	33.66%	<p>In accordance with the host country taxation laws/65/.</p> <ul style="list-style-type: none"> <li>Corporate Tax rate is calculated as base rate with 10% surcharge and 2% education cess<sup>1</sup> (tax).</li> <li>Base rate for corporate tax is</li> </ul>	CAR9	OK

<sup>1</sup> Cess-This term is nominally used in India as a synonym to "tax/duty)

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			30%. Therefore, this value was valid and applicable at the time of investment decision.  Validation team confirms the suitability of taxation rates from its local expertise. Hence, the final figures are 33.66%. Ref: Income tax act 1961/65/		
	Interest rate on working capital	13.75%	ERM CVS deems an interest rate of 13.75% on working capital to be appropriate for short term loans. The short term loan is generally 2% higher than the prevailing Prime Lending Rate as published by RBI/63 and hence 13.75% is considered to be acceptable. The prime lending rate interest on long terms loan was confirmed to be 10.5-10.75% from the data published on RBI/63/ website at time of decision making.  It may further be noted that using higher interest rate for working capital is conservative for calculation of post tax project IRR.  Therefore, this value was valid and applicable at the time of investment decision.  The validation team confirms the suitability of interest on working capital from its local expertise	OK	OK
	Ministry of New & Renewable Energy (MNRE) Subsidy	31.88 million INR  This is sourced from the DPR and found to be in line with that specified in MNRE policy 2003/59/	The MNRE Subsidy has been validated against the letter of subsidy sanction issued by Ministry of New & Renewable Energy/41/ and found to be consistent	OK	OK
	Minimum Alternate Tax (MAT)	8.42%	Minimum alternate tax is 8.42% for the financial year 2005-06 and is confirmed from local tax regulations applicable for the financial year 2005-06/65/ Therefore, this value was valid and applicable at the time of investment decision. The validation team confirms the suitability of taxation rates from its local expertise  Ref: Income tax act 1961/65/	OK	OK
	Free power to Himachal Pradesh state after 15 years of operation	10% . This is taken from DPR and confirmed to be appropriate	This has been validated by ERM CVS with the implementation agreement/07/ between Himachal Pradesh Government and BHPL that states 10% of deliverable energy should be leviable as water royalty which is waived off for a period of 15 years from Commercial operation date (COD).  ERM CVS further confirmed from information available on IREDA/73/	OK	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>with reference to benefits for small hydro power plants in India, it refers that royalty power/free power fixed by the government.</p> <p>Therefore, this value was valid and applicable at the time of investment decision.</p> <p>The validation team confirms the suitability of free power from its local and sectoral expertise.</p>		

## 8.3.4 Investment analysis calculations

As per VVS paragraph 120(d) ERM CVS has assessed the correctness of computations carried out and documented by the PPs as follows:

### Spreadsheet evaluation

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.10	<p>Has the PP supplied unprotected and traceable spreadsheet versions of all investment analysis?</p> <p>Have the listed input values been consistently applied in all calculations?</p> <p>Are the computations/ formulae correct? (this includes the computations implicit in input values, such as technical calculations of the amount of energy demanded or sold etc)</p> <p>From the investment analysis provided, is it possible to reproduce the results?</p>	<p>Yes, PP supplied unprotected and traceable spreadsheet versions of all investment analysis</p> <p>Yes, the listed input values been consistently applied in all calculations</p> <p>The computations are correct and it is possible to reproduce the results.</p>	OK	OK

### Depreciation and residual value

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.11	<p>Is any residual value of the project activity assets included in the analysis?</p> <p>Are residual value assumptions reasonable and</p>	<p>Residual value of INR 76.30 Million is included in the analysis and is treated as income in the cash flow at the end of the assessment period, which is considered to be appropriate based on ERM CVS' knowledge and expertise.</p> <p>Since the assessment period is shorter than the lifetime of project activity, a fair value (residual value) at the end of 20 years has been included. At the end of 20</p>	CAR-09	OK

	<p>justified and consistent with local accounting rules/international best practice/industry experience?</p>	<p>years, the PP has assumed a residual value equivalent to the non-depreciated book value of the assets. ERM CVS has validated that the residual value is reasonable, given that if it is assumed that the project was to be wound up or dismantled at the end of 20 years, as per Indian accounting practices, the PP could expect to receive the book value of its assets on sale. Although further potential for profit (or loss) on the realisation of the assets (beyond the residual value) at the end of the 20 year period is not included in the analysis, decommissioning costs are also not included in the analysis, hence ERM CVS considers the determination of residual value to be reasonable. Please see CAR 09 for further details of the validation of residual value.</p> <p>The estimated lifetime of the SHP is 40 years, there would be a requirement to perform Repair &amp; Maintenance (R&amp;M) expenses periodically (say after every 10 years) in order to ensure that the installed equipment runs with desired efficiency. After running the machine continuously for about 10 years, efficiency of the machine is reduced due to pitting of runner blades etc. The periodical repairs are essential to maintain the machine efficiency. Further, these periodical repairs can't be done from the provisions of annual O&amp;M provisions. Escalation proposed for O &amp; M provisions is just to meet the escalation in O &amp; M expenses. This is confirmed from the HPERC order/71/</p> <p>PP has not made provisions for periodical special repairs (Repair &amp; Maintenance expenses) in its cash flows and also no derating of machine (decrease in efficiency) is considered. The efficiency of unit is assumed as constant throughout the project life. Hence the approach in estimation of Salvage value is appropriate and conservative.</p>		
	<p>Is the depreciation consistent with the assessment period and the residual value?</p> <p>Are depreciation costs/ periods consistent with local accounting regulations?</p>	<p>Yes, the depreciation calculations are correct and consistent with the local accounting regulations/65/.</p> <p>However in the IRR sheet made available at the time of GSP, depreciation calculations were excluding the financial charges and contingency charges from the depreciation calculations and the calculation of residual value considering remaining NBV at the end of the assessment period and hence CAR9 was raised.</p> <p>The revised documentation has been reviewed /03/. All investment costs are now depreciated, depreciation rates (3.34% for civil and 3.40% for plant and machinery) are correctly referenced and verified from publicly available sources /65/and residual value is clearly calculated. The finding is closed. Please refer Appendix B for further details</p>	CAR9	OK
	<p>Is depreciation correctly accounted for?</p> <p><i>(Depreciation costs (and other non-cash items) related to the project activity should be <u>excluded (not deducted)</u> from net Cash Flow used for calculating the financial indicator (e.g. IRR, NPV). Depreciation is relevant only for the calculation of income tax.)</i></p>	<p>Only the fixed assets including buildings and equipment are subject to depreciation in the calculations.</p> <p>Depreciation costs are excluded from the cash flow and are only included for the purposes of determining income tax.</p>	OK	OK

## Taxation and interest

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.12	Is the treatment of taxation consistent with the chosen benchmark or discount rate? <i>(i.e. taxation should only be treated as an expense in the</i>	Yes, the treatment of taxation is consistent with the chosen benchmark. Both the investment analysis and the benchmark are post-tax.	OK	OK

	<i>IRR/NPV calculation if the chosen benchmark or discount rate is intended for post-tax calculations?)</i>			
	<p>For post-tax benchmarks or discount rates :</p> <p>a) Are interest costs included in the calculation of net taxable income and thus tax?</p> <p>b) Are interest costs calculated in accordance with the <i>Guidance on the Assessment of Investment Analysis</i>?</p>	<p>A post-tax benchmark is applied.</p> <p>a) Yes, interest costs are included in the calculation of income tax.</p> <p>b) Interest payments are correctly accounted for in line with the Guidance on the Assessment of Investment Analysis.</p> <p>The INR 150 Million loan is repaid in 36 equal quarterly instalments starting in year 3. Interest is charged quarterly at the rate of 10% p/a.</p> <p>All loan terms are consistent with the DPR /02/ and these are further confirmed from the loan sanction letter/16/</p> <p>A short term loan is included in the analysis to cover working capital requirements. Required working capital is calculated as 1 month's O&amp;M costs plus 2 month's revenues and approach is in line with that stipulated by the HPREC Order/71/ and hence appropriate. .</p> <p>However in the IRR sheet made available at the time of GSP, the calculations for working capital were not clearly referenced to source data and evidence for 6% inflation rate applied to spares was not available hence CAR9 had been raised.</p> <p>As a response to this finding, the spares cost have been removed from the working capital calculations and hence CAR9 is closed.</p>	CAR9	OK
	<p><i>If a <b>Project IRR</b> has been used:</i> Are the costs of financing expenditures excluded from the calculation of Project IRR? (<i>financing costs should not be deducted from Net Cash Flow</i>)</p> <p><i>If an <b>Equity IRR</b> has been used:</i> Is the debt portion of the investment cost excluded as a cash outflow and the interest costs and principal repayments included as costs?</p>	<p>An equity IRR has been used. Only the equity portion of investment costs are included as a cash outflow while interest costs and principal repayments are included as costs.</p>	OK	OK



## **Recommended projects (Project activities where an investment decision was taken but implementation subsequently ceased)**

The project **is not** a recommended project (i.e. it is not the case that an investment decision was taken but the implementation of the project subsequently ceased, and then re-started due to consideration of the CDM benefits).

### **Sensitivity analysis**

A sensitivity analysis has been carried out to demonstrate the impact on the IRR of variations in the key input values to the financial analysis in accordance with the *Guidelines on the assessment of investment analysis*. All costs and revenues greater than or equal to 20% of total costs / revenues have been included in the analysis. The variation in each parameter needed in order for the IRR to reach the benchmark, and the likelihood of such variations taking place, are explained in the PDD. As per VVS paragraph 120(e) ERM CVS has assessed the sensitivity analysis by the PPs to determine under what conditions variations in the result would occur, and the likelihood of these conditions. ERM CVS has reviewed the calculations for the sensitivity analysis which are presented in the IRR Spreadsheet /03/ and checked whether the computations are reproduced as correct and consistent with the information presented in the PDD.

The findings of the validation of sensitivity analysis are set out below.

	Parameters ≥ 20% of costs or revenues (list all)	Is the parameter included in the PDD sensitivity analysis?	Is the sensitivity analysis correctly calculated and traceable?	Is the degree of variation reasonab le?	Validation of why such variation is considered unlikely, based on evidence	Draft conclusion [OK/ CAR / CL]	Final conclusio n [OK/Not OK]
7.1.14	Investment costs	Yes	Yes  The loan portion of investment costs was not linked to the sensitivity analysis. Hence CAR 9 had been raised. In response to CAR 9, PP has now linked the loan portion of investment cost to the sensitivity analysis. Refer to appendix B for details.	Yes	The +/- 10% variation shown in section B.5 of the PDD and IRR sheet is in line with the guidance on assessment of investment analysis and hence acceptable.  The equity IRR does not meet the benchmark when this parameter is tested at the reasonable variation of + / - 10%.  Investment cost will have to decrease by 12% for the IRR to reach the benchmark, and such a decrease in the project costs is not realistic.  The project cost is taken from the DPR/02/ prepared by the third party engineering firm and the same was considered during decision making/15/. This cost estimate is derived by the third party engineering firm based on their sectoral expertise and experience in the region/2/.  The actual project cost/33/ incurred by the PP is 438.83 Million INR as against the estimation of 232.60 Million INR in the DPR/02/. Hence it is unrealistic that after the actual cost has been spent by the PP to have any further	GAR-9	OK

	Parameters ≥ 20% of costs or revenues (list all)	Is the parameter included in the PDD sensitivity analysis?	Is the sensitivity analysis correctly calculated and traceable?	Is the degree of variation reasonable?	Validation of why such variation is considered unlikely, based on evidence	Draft conclusion [OK/ CAR / CL]	Final conclusion [OK/Not OK]
					decrease in the project cost.		
	O&M costs	Yes	Yes	Yes	<p>The +/- 10% variation shown in the PDD and IRR sheet is in line with the guidance on assessment of investment analysis and hence acceptable.</p> <p>The equity IRR does not meet the benchmark when this parameter is tested at the reasonable variation of + / - 10%.</p> <p>Even with O&amp;M costs of zero the IRR does not reach the benchmark.</p> <p>And such a decrease for O&amp;M cost value is not realistic as the prices of raw materials, equipment and labour have been increasing per year considering the high inflation rate in India/77/.</p> <p>It is not possible for O&amp;M cost to decrease below zero, making the IRR exceed the benchmark, according to ERM CVS' local expertise.</p>	OK	OK
	Electricity tariff	Yes	Yes	Yes	<p>The +/- 10% variation shown in section B.5 of the PDD and IRR sheet is in line with the guidance on assessment of investment analysis and hence acceptable.</p> <p>The equity IRR does not meet the benchmark when this parameter is tested at the reasonable variation of + / - 10%.</p>	CL5	OK

	Parameters ≥ 20% of costs or revenues (list all)	Is the parameter included in the PDD sensitivity analysis?	Is the sensitivity analysis correctly calculated and traceable?	Is the degree of variation reasonable?	Validation of why such variation is considered unlikely, based on evidence	Draft conclusion [OK/ CAR / CL]	Final conclusion [OK/Not OK]
					<p>Electricity tariff will have to increase by 16% for the IRR to reach the benchmark, and such a increase in the tariff is not likely.</p> <p>The project proponent has envisaged to sell the power to the state utility at preferential tariff (net of 2% rebate) of 2.45 INR/kWh and this is confirmed from the review of DPR/02/ and this is also in line with hydro policy/59/ which was applicable at the time of decision making. It was confirmed from the review of hydro policy that no escalation has been prescribed for the tariff rates. The preferential tariff is estimated for a long term (typically 20 years or more) based on the levelized cost of generation and hence remains fixed for the long term duration. Hence an increase in tariff by 16% or more from the first year of operation is unlikely and an unrealistic scenario.</p> <p>In the GSP PDD, no escalation was considered in the tariff rate and hence CL5 was issued to request the clarification. As a response to the finding, PP provided the detailed response on tariff rate and the requisite evidence and hence CL5 is closed. Please refer Appendix B for details.</p> <p>From the publicly available data it is confirmed that there is no annual inflation/continuing increasing trend in the tariff rates observed and hence the PP's assumption is justified.</p>		
	Annual electricity generation	Yes	Yes	Yes	<p>The +/- 10% variation shown in the section B.5 of the PDD and IRR sheet is in line with the guidance on assessment of investment analysis and hence acceptable.</p> <p>The equity IRR does not meet the benchmark when this parameter is tested at the reasonable variation of + / -</p>	OK	OK

	Parameters ≥ 20% of costs or revenues (list all)	Is the parameter included in the PDD sensitivity analysis?	Is the sensitivity analysis correctly calculated and traceable?	Is the degree of variation reasonab le?	Validation of why such variation is considered unlikely, based on evidence	Draft conclusion [OK/ CAR / CL]	Final conclusio n [OK/Not OK]
					<p>10%.</p> <p>The annual generation is sourced from the third party engineering firm's DPR/02/ and is based on 20 year hydrological study data and simulated for the project plant and is very much site specific and hence reliable.</p> <p>It has to be noted that for the hydro power projects the actual capacity factor at a given plant may vary substantially from year-to-year due to changes in annual precipitation. But a 16% increase in the estimated generation for the entire operational lifetime is highly unlikely, as this would represent a significant change in the climate or hydrological regime.</p> <p>Also as confirmed from Notification/61/ issued by Department of Pollution Control Board, Himachal Pradesh state , a minimum discharge of 15% of is required to be released and this applies for lean season as well and hence it is very unlikely for 16% increase in the energy generation.</p>		

## Investment analysis conclusion

On the basis of its specific local and sectoral expertise, ERM CVS has confirmed that the input values to the investment analysis are valid and applicable at the time of the investment decision. Further details on the cross checks carried out on the input parameters are given in the table above.

The PDD presents the key input parameters and results of the IRR of the project, and ERM CVS assessed the correctness of computations carried out by the PPs by reproducing the results using the IRR calculation spreadsheet /03/.

The validation team confirms that the calculations are correct, traceable, and consistent with the results of the DPR/02/.

All input values used in the spreadsheet are consistent with the PDD and the DPR /01/02/03/ and the calculation is in line with the *Guidelines on the Assessment of Investment Analysis*, and is considered reasonable on the basis of ERM CVS's local and sectoral expertise and financial knowledge.

The equity IRR calculated in the PDD and the spreadsheet is in line with the results of the DPR /01/02/03/. The IRR of the project without CDM income is well below the benchmark of 16.82% and hence it can be concluded that the project is additional.

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## 8.4 Barrier Analysis

Barrier analysis has not been used to demonstrate the additionality of the proposed CDM project activity.

## 9 Validation Findings – Monitoring Plan and Other issues

ERM CVS evaluated the monitoring plan for the proposed project to ensure that it is based on the approved monitoring methodology that has been applied. As per the VVS section L.14, ERM CVS applied a two-step process, based on review of the documented procedures, interviews with relevant personnel, project plans and any physical inspection, to assess:

- a) *Compliance of the monitoring plan with the approved methodology*:
  - a. By means of document review, identify the list of parameters required by the selected approved methodology;
  - b. Confirm that the monitoring plan contains all necessary parameters, that they are clearly described and that the means of monitoring described in the plan complies with the requirements of the methodology.
- b) *The Implementation of the monitoring plan*, taking into account:
  - (i) Whether the monitoring arrangements described in the monitoring plan are feasible within the project design;
  - (ii) Whether the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

### 9.1 Compliance of the monitoring plan with the approved methodology

The monitoring plan in the PDD includes all parameters necessary for monitoring of this type of project in accordance with the approved methodology that has been applied for this project. The parameters are clearly described and the means of monitoring described in the plan complies with the requirements of the methodology.

#### 9.1.1 Completeness of monitoring parameters

The monitoring parameters required by the methodology and applicable tools for this type of project are:

Parameter Name	Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence and explanation if any are excluded from the monitoring plan)
EG <sub>facility,y</sub>	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	<p>Yes, the parameter is included in the monitoring plan.</p> <p>The net electricity exported to the NEWNE grid will be calculated as the difference between the electricity export &amp; import values for the project activity.</p> <p>It is the summation of monthly values based on the joint meter reading reports (JMR) issued by HPESB (which is the state electricity utility issuing the JMR to PP)</p>

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.1.1	Are all required parameters (according to the methodology and tools) included in the monitoring plan?	Yes all relevant monitoring parameters are included in the PDD which has been validated against the monitoring parameters required as per the methodology "AMS I-D, Grid Connected Renewable Electricity Generation (Version 17, EB 61)"	OK	OK

Remaining parameters [ Quantity of biomass, moisture content of biomass, NCV of biomass,  $\sigma_{\text{historical}}$ ] are not relevant to this project activity because project activity is a greenfield hydro power project. Methodology requires  $EF_{CO_2,y}$  also to be monitored however this is fixed ex-ante for the project and hence not monitored

**Conclusion** The monitored parameters included in the monitoring are complete and appropriate for monitoring of this project activity. In ERM CVS's opinion, the PPs are able to implement the monitoring plan.

## 9.1.2 Compliance of monitoring

For each parameter, ERM CVS has validated whether it has been addressed in accordance with the baseline and monitoring methodology.

Monitored Parameters	Parameter Names
	EG <sub>facility,y</sub>
Parameter Description correct?	Yes
Description in line with methodology/tool?	Yes
Data unit correctly expressed?	Yes
Source clearly referenced?	Yes
Correct value provided for ex ante estimation?	Yes
How has this value been verified?	Yes. This is confirmed from the review of DPR/02/
Measurement method correctly described?	Yes
Measurement and recording frequency correctly described?	Yes
Correct reference to standards?	NA
Indication of accuracy provided?	Yes
QA/QC procedures described?	Yes
QA/QC procedures appropriate/in line with methodology/tool?	Yes

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.2.2	Are all required parameters appropriately monitored in accordance with the	Yes all required parameters are appropriately monitored in accordance with the applied methodology.  The parameter stated in section B.7.1 of the GSP-PDD was not in line with	CAR11	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	methodology/tools?	<p>applied methodology, accuracy class of the energy meters was not mentioned, measurement method, procedure and the QA/QC procedure stated for the parameter was not in line with that defined by the applied methodology/tool and hence CAR11 was raised.</p> <p>As a response to finding, PP has addressed all the monitoring issues and the revised PDD is now in line with applied methodology and tool and hence CAR11 is closed.</p> <p>Please refer Appendix B for further details</p>		

## **Conclusion**

The means of monitoring all relevant monitored parameters complies with the requirements of the methodology and applicable tools.

### **9.2 Implementation of the monitoring plan**

ERM CVS evaluated the feasibility and sufficiency of the monitoring plan. The key components of the monitoring plan are as follows.

#### **Operational and management structure:**

The monitoring involves the metering of the electricity exported to and imported from the grid. Details of the data collection, frequency of recording and associated formats are described in the PDD and found to be adequate. The meter reading of the electricity exported to the grid will be jointly taken by the representatives of the Project Participant and HPSEB once in a month at sub-station Jarangla. Data collected can be cross-checked with the joint metering report and sales receipts.

As the joint meter reading (JMR) taken at the 33/11 kV Jarangla substation (both at feeder-1 & feeder-2) measures electricity exported & imported not only by the project activity but also by projects implemented by other PP's, there is an apportioning an procedure is followed to estimate the Quantity of net electricity supplied to the grid for the particular period by the project activity.

This calculation is attached as an Annexure and is verified and issued by HPSEB officials and based on which they issue the JMR and PP performs the invoicing/billing based on this value only. Hence the final source of net generation value is JMR issued by HPSEB. This was confirmed by the validation team through review of JMRs for the month of June & July 2012/28/29/ and through the interviews conducted with substation operator/IV6/ and Project Manager of PP/IV3/.

The apportioning method followed by the PP and other project entity to derive their respective net generation quantities is verified by the validation team. The total generation at the feeder by all connected projects is measured by the set of main and check meters installed at HPSEB's Jarangla substation. Generation of individual projects is measured by independent meters (site meters) installed at the power house of each generating project as well as the common pooling station. The difference between the meter at Jarangla and the site meters is the line loss to be shared between individual projects, Further the percentage share of generation of loss for each project is calculated based on the project generation capacity and the length of line to the sub-station which would help to calculate their respective line losses. Thus the net energy generation quantities are derived for each project and these calculations are verified by the respective project representatives and signed by them, and attached to the Joint Meter Reading (JMR) report which is verified by officials of HPSEB. Thus the internal calculations for the project can be verified through JMR attachments. The JMR, internal calculation supporting Annexes for the month of June & July 2012/28/29/ were reviewed by the validation team and found to be adequate and clearly documenting the calculation procedures.

A quality management system covering the monitoring and training procedures and QA/QC of the monitoring equipment has been defined. A monitoring procedure has been defined for daily monitoring, consolidation and reporting of the plant data. The daily data recorded in the plant log books will be consolidated for arriving at the monthly data.



The PDD contains a table illustrating the organisational structure to be implemented in order to monitor the project activity. Additionally a Head –Projects will be in overall charge of the monitoring system/emission reduction calculations and there will be separate roles for data recording and meter calibration and data management, in order to carry out the monitoring plan which includes plant in charge, shift in charge & panel operator with responsibility for data compilation and emission reductions calculations, review of data collected, data source & collection respectively.

The measurement methods, recording procedures, meter maintenance and trouble-shooting procedures described in the monitoring plan are proposed ones. No difficulties are anticipated in implementing the operational and management structure or the monitoring plan as a whole.

## **Equipment:**

Metering the net electricity supplied by the project activity to the grid will be carried out by trivector meters (main meter and check meter) with accuracy of 0.2 S which is in compliance with the host country industrial standard.

All the readings will be jointly taken by HPSEB officials & PP. During site visit to the sub-station Jarangla, ERM CVS has also cross checked the first two Joint Metering Reports (JMR) of June 2012 & July 2012/28/29/ month which has signatures of both HPSEB & PP representative. Further, PDD also states that all the meters will be tested annually and calibrated but at least once in three years as per the standards of energy meters by HPSEB and in compliance with the host country standards. This is in line with the “General Guidelines to SSC CDM Methodologies”. Also, measurement results will be cross checked with the records for sold/purchased electricity.

The accuracy class of meters was not specified and the monitoring plan was not detailed enough in GSP PDD and hence CAR11 and CAR12 were raised. These are now closed further to receipt of revised PDD from PP addressing all monitoring and monitoring plan issues. Please refer Appendix B for further details.

## **Quality Assurance and Quality Control (QA/QC) of equipment and data:**

The monitoring plan described in section B.7.2 of the PDD states that the project owner and the grid company will record the readings of the meters monthly and all monitoring data and records will be archived in both paper and electronic format, and the copies of sales invoices will be kept for cross check purpose. All the electronic and paper documents will be archived and be kept for 2 years after the end of the last crediting period.

The PDD contains sufficient description on how quality will be controlled and assured in the monitoring of emission reductions.

## **Feasibility of the monitoring plan:**

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.2.3	Are the arrangements described in the plan feasible and practical within the project design? Please consider:  (a) operational and management structure, including responsibilities  (b) Plans for maintenance and calibration of equipment  (c) Plans for QA/QC of equipment and data  (d) Installation of monitoring equipment (whether in place, or planned)	<p>The operational and organisational structure is considered sufficient to fulfil the monitoring requirements of the methodology and to ensure that emission reductions can be verified</p> <p>The equipment setup is considered sufficient to carry out the monitoring requirements of the methodology, and the appropriate national standards have been followed. Calibration and maintenance plans are appropriate. The data management procedures are considered appropriate to fulfil the monitoring requirements of the methodology and to ensure that emission reductions can be verified.</p> <p>During site visit of ERM CVS team to Jarangala Sub-station, energy meters were inspected which are and will be used as monitoring equipment. At sub-station they had maintained daily monitoring report on paper. It has been confirmed by ERM CVS during the site visit and interaction with sub-station representative/IV6/</p> <p>The accuracy class of meters was not specified and the monitoring plan was not detailed enough in GSP PDD and hence CAR11 and CAR12 were raised. These are now closed further to receipt of revised PDD from PP addressing all monitoring and monitoring plan issues. Please refer Appendix B for further details.</p>	CAR11  CAR12	OK

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## Conclusion

Based on the validation activities performed, ERM CVS concludes that:

- (a) The monitoring plan is fully in compliance with the requirements of the methodology;
- (b) The monitoring arrangements described in the monitoring plan are feasible within the project design;
- (c) The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

The assessment conducted by ERM CVS is by means of review of the documented procedures, interviews with relevant personnel, project plans and physical inspections of the proposed CDM project activity site.

## 10 Validation Findings –Local Stakeholder Consultation and Environmental Impact

### 10.1 Environmental Impacts

As per VVS section M, ERM CVS evaluated whether an analysis of the environmental impacts of the project activity had been conducted in accordance with paragraph 37(c) of the CDM modalities and procedures.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.3.1	Confirm whether an analysis of the environmental impacts of the project activity has been conducted, including transboundary impacts, and if those impacts are considered significant by the PPs or Host Party?	<p>As per MoEF, EIA Notification 2006 a small hydroelectric power plant (&lt;25MW) doesn't require any environmental clearance from the regulating authority. However, an EIA is necessary for small hydroelectric power plants if any of the following conditions are applicable to the project:</p> <p>Project is located within 10km distance from the boundary of a Protected Wildlife Area, Critically protected area, Notified eco-sensitive zone or International boundary. – Not applicable in the project case since it doesn't lie within 10km radius from any of the above mentioned areas as confirmed during the site visit and review of DPR/2/.</p> <p>Expansion of existing unit results in generation of power beyond 25MW- Not applicable since project is not an expansion project</p> <p>If funding agency requires EIA as a precondition for funding, specially in case of international funding- Not required by funding agencies in India and project has been locally funded/16/</p> <p>ERM CVS, through a review of the applicable Environmental clearance regulations/62/, confirmed that there is no requirement for carrying out any Environmental impact assessment.</p> <p>Also, as the project activity is a small scale run-of-river type project, no adverse environmental impacts as well as trans-boundary impacts have been envisaged from this project activity.</p> <p>CAR14 was raised since the project referred to EIA notification of 2009 instead of 2006. Since the project had started applying for the consents and approval much before year 2009 reference to notification of year 2009 was not correct.</p> <p>As a response to the finding PP has now referred to EIA notification 2006/62/ which was applicable at the time of initiation of project implementation and hence accepted. The finding is closed. Refer Appendix B for further details.</p>	CAR14	OK

### Conclusion

It was confirmed that no environmental impact assessment is required by the host Party.

## 10.2 Local Stakeholder Consultation

As per VVS section N, ERM CVS evaluated whether the project participants have completed a local stakeholder consultation process and that due steps were taken to engage stakeholders and solicit comments for the proposed project activity.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.2.1	Have comments from relevant local stakeholders been invited prior to the publication of the PDD on the UNFCCC website?	The comments from the local stakeholders were invited by the PP prior to publication of the PDD on UNFCCC website.  This was confirmed through the site visit, interaction with local stakeholders/IV7/IV8/IV9 and PP representatives/IV1/IV2/IV5 and through review of feedback forms in the minutes of local stakeholder consultation meeting/37/	OK	OK
	Is the summary of comments received as provided in the PDD complete?	Yes the summary of comments as provided in PDD is complete. This has been confirmed by ERM CVS through the review of Summary of Comment Sheet and Stakeholder Attendance Sheet/37/  However In section E.2 of the PDD, the stakeholders that have made comments were not identified and hence CAR15 was raised. As a response to the finding PP clarified that lot of subjective feedback was received from multiple stakeholders (via feedback forms) and PP has just presented the summary of the comments received. The feedback forms/37/ have been reviewed by the team and it is noted that PDD covers the summary of feedback from all stakeholders and hence CAR15 is closed.	CAR15	OK
	Has due account been taken of any stakeholder comments received and is this adequately and clearly described in the PDD?	No adverse/negative comments were made by the local stakeholders and hence did not mandate any action for the PP.  This is adequately and clearly described in the PDD.	OK	OK

## Conclusion

Based on the document reviews undertaken and interviews with local stakeholders, ERM CVS concludes that relevant local stakeholders were invited to comment on the project prior to publication of the PDD on the UNFCCC website, and that the consultation undertaken is adequate in the context of the project. The stakeholders did not identify any serious concerns or significant negative impacts from the construction of the project.

ERM CVS has therefore validated that the local stakeholder consultation is adequate.

## 10.3 Public funding

ERM CVS evaluated whether the information relating to public funding in the PDD Annex 2 has been correctly presented.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.4.1	If the project involves public funding from an Annex 1 country, have the annex 1 parties involved provided an affirmation that such funding does not result in a diversion of official development assistance?	In PDD section A.5 it is stated that "No Public funding has been available for the project activity", however no evidence to support the claim has been made available for validation. Hence CAR3 was raised.  In response to CAR3, PP has provided a self-declaration letter/35/ stating that it has not any funding/ ODA (Official Development Assistance) from Annex-1 countries. The same has been validated by ERM CVS and found to be acceptable. The funding sources were also confirmed through the interview with top management of PP/IV1/IV2/ and it was noted that no public funding has been sourced for the project. The project is funded through debt from State Bank of	CAR3	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		<p>Patiala/16/ and equity.</p> <p>Hence CAR 3 has been closed. Refer to Appendix B for details</p>		
	Is the information provided on public funding (PDD, Annex 2) provided in compliance with the actual situation or planning as available by the PPs?	Please refer above comments	NA	NA

## **Conclusion**

ERM CVS has confirmed that there is no public funding from Annex 1 countries

## Appendix A: Documents and Interviewees

### A.1 DOCUMENT LIST

Reference number	Date	Document Title and version number (if applicable)
01	30 August 2012	<b>Project Design Document</b> for the proposed project Version 01 (for GSP)
	28 December 2012	Version 04 (final).
	01 July 2013	Version 04.1
02	August 2005	Detailed Project Report (DPR) for the Project -Prepared by Dr Hutarew & Partners, Delhi
03	05 Dec 2012 and Version 3	<b>IRR and ER calculation spreadsheet</b> (The IRR and ER sheets are combined in one spreadsheet)
04	07 Dec 2012 Version 3	<b>Benchmark calculation spreadsheet</b>
05	26 December 2012	<b>Host Country Letter of approval</b> for the proposed project issued by Ministry of Environment and Forest, Government of India, (NCDMA)
06	07 November 2012	<b>Modalities of Communication</b> for the proposed project.
07	24 October 2002	Implementation Agreement for Balij Ka Nala Hydroelectric Project of 3.5MW signed between Himachal Pradesh Government and Weizmann Limited
08	05 September 2003	Certificate of Change of Name issued by Registrar of Companies, Mumbai for Batot Hydro Power Private Limited that changed to Batot Hydro Power Limited (PP)
09	08 August 2003	Tripartite Agreement between Himachal Pradesh Government as first part, Weizmann Limited as Second Part and Batot Hydro Power Limited as third part for transfer of Implementation agreement dated on 24 October 2002 from Second part to Third Part
10	01 September 2003	No Objection Certificate (NOC) issued by Himachal Pradesh Public Work Department (HP PWD)
11	08 August 2002	No Objection Certificate (NOC) issued by Himachal Pradesh Irrigation and Public Health.
12	21 April 2003	No Objection Certificate (NOC) issued by Local Gram Panchayat
13	24 January 2003	Essentiality Certificate issued by Sub District Magistrate of Chamba, Himachal Pradesh
14	31 August 2004	LR 14 Approval Letter issued by Himachal Pradesh government to Batot Hydro Power Limited (PP)

Reference number	Date	Document Title and version number (if applicable)
15	23 August 2005	Copy of resolution passed at the Board of Director meeting to consider revenue from CDM
16	31 January 2006	Loan Sanction letter issued by State Bank of Patiala
17	16 March 2006	Contract Letter awarded to Kirloskar Brother Limited (KBL) for Electrical Mechanical equipment by PP
18	14 April 2006	Contract letter to Trust House for tunnel work issued by BHPL (PP)
19	08 November 2007	Contract termination letter to Trust House issued by BHPL (PP)
20	04 December 2007	Inter office correspondence advisory to keep CDM resgistration on hold issued by GN Kamath (Project Head) to Chetan Mehra
21	24 January 2008	Contract letter for tunnel work to Vinayak Construction issued by BHPL (PP)
22	18 November 2008	Contract Termination letter to Vinayak Construction issued by BHPL (PP)
23	27 January 2009	Contract letter to Sunrise Construction Company for tunnel work issued by BHPL (PP)
24	14 August 2009	Contract letter to Sunrise Construction Company for Civil works (includes Power House, Penstock Anchor Blocks, Saddle Supports, Tail Race Channel, Forebay Tank & Spillway) issued by BHPL (PP)
25	16 March 2009	Inter office correspondence advisory to initiate CDM registration process, issued by GN Kamath (Project Head) to Chetan Mehra
26	20 May 2010	Renewal Of Constent under Air Act & Water Act from Himachal Pradesh State Pollution Control Board (HPSPCB) to BHPL (PP) valid till 31/May/2011
27	21 December 2009	Petition Order issued by Himachal Pradesh Electricity Board & Himachal Pradesh Power Transmission Corporation Limited for power evacuation & transmission
28	June 2012	Joint meter reading report-June 2012 issued by HPSEBL (Himachal Pradesh State Electricity Board Ltd) on power evacuation at Jarangla substation  &  Internal Energy Generation and Losses Calculation sheet (also called Annexure –I of JMR) for month of June 2012
29	July 2012	Joint meter reading report-July 2012 issued by HPSEBL (Himachal Pradesh State Electricity Board Ltd) on power evacuation at Jarangla substation  &  Internal Energy Generation and Losses Calculation sheet (also called Annexure –I of JMR) for month of July 2012
30	23 July 2012	Financial Audited Report for FY 12 for BHPL (PP)
31	29 July 2011	Financial Audited Report for FY 11 for BHPL (PP)
32	14 July 2010	Financial Audited Report for FY 10 for BHPL (PP)
33	29 August 2012	Expense Certificate certified by Chartered Accountant for Batot Project
34	19 June 2012	Certificate of Commercial Operation issued by Himachal Pradesh State Electricity Board Limited (The date of commissioning is 16 June 2012 however the report is dated 19 June 2012)
35	28 September 2012	Self-Declaration from PP of not receiving ODA (Official Development Assistance) from

Reference number	Date	Document Title and version number (if applicable)
		Annex-1 countries
36		Projects Land Details certified by Public Notary
37	23 November 2009	Local Stakeholder Attendance Sheet & comment sheet/Feedback forms, minutes and photographs for the Local stakeholder meeting
38	04 September 2009	Engagement Letter awarded to CDM Consultant (Ernst & Young) for CDM Advisory services (In response to proposal dated 16 April 2009 from Ernst & Young Ltd)
39.	12 May 2009	Addendum to the initial Engagement Letter
40.	04 August 2009	Inter Office Correspondence for appointment of CDM consultant for Small Hydro Projects issued by Mr. G.N. Kamath
41	28 May 2010	Letter regarding sanction of finance support from MNRE
42	02 April 2007 23 April 2007	Request for proposal for the CDM advisory services sent by PP to Headway Capital Advisors.  Proposal for CDM advisory services from Headway Capital Advisors
43	16 February 2009	Proposal for CDM advisory services from CTran Consulting
44	March 2006  September 2007  December 2007  March 2008  November 2008  February 2009  June 2009	Project progress reports provided by PP to HIMURJA
45	16 January 2012	Requesting extension of scheduled commissioning date to HIMURJA
46	20 April 2005	Proposal for CDM advisory services from MITCON Consulting Services Pvt Ltd
47	01 September 2010	Requesting extension of completion period of Implementation Agreement to HIMURJA
48	27 November 2009	Meeting minutes of "District Level Single Window clearance & monitoring Committee" for SHP projects by HIMURJA Officer
49	17 February 2009	Letter from the PP to HIMURJA Officer explaining the reasons for delay in project
50		Layout for the Power Evacuation Scheme for the proposed project
51	04 February 2012	Requesting of withdrawal of contract with TUV NORD
52	04 January 2012	Short Term Power Purchase Agreement with Himachal Pradesh Electricity Board



Reference number	Date	Document Title and version number (if applicable)
		Limited
53	28 February 2007	Contract to Brighu Construction Private Limited for the civil works
54	14 March 2009	Contract to Lalit Thakur for the civil works
55		Summary of cost and finance sheet for similar hydro projects (Siul Baroti Hydro power project, Almi Hydro project, Joiner hydro project presented to State Bank of Patiala)
56	05 December 2012	Self-declaration from the PP on the year wise project expenditures
57	02 November 2010	Copy of contract signed with first DOE
58		Other Sampled Board meeting minutes dated  31 March 2005, 15 February 2006, 23 February 2006, 22 May 2006 (Loan Amount confirmed), 04 December 2007 (delay in tunnel work completion), 19 August 2008 (extra cost due to desilting tank and diversion weir due to rocky slopes, extra cost for tail race channel due to steep slopes, extra cost than estimated due to flood protection works on left bank, power channel length to be 1.6 times longer than tunnel to avoid steep slopes), 16 March 2009, 16 November 2011
59	26 May 2003	<b>National and state level policies applicable for the project</b>  The Electricity Act, 2003 (No 36 of 2003)  <a href="http://www.powermin.nic.in/acts_notification/electricity_act2003/pdf/The%20Electricity%20Act_2003.pdf">http://www.powermin.nic.in/acts_notification/electricity_act2003/pdf/The%20Electricity%20Act_2003.pdf</a>
	03 February 2005	National Electricity Policy  <a href="http://pib.nic.in/archieve/others/2005/nep20050209.pdf">http://pib.nic.in/archieve/others/2005/nep20050209.pdf</a>
	Notified on 12 February 2005	Tariff Policy  <a href="http://www.karmayog.org/redirect/strred.asp?docid=2176">http://www.karmayog.org/redirect/strred.asp?docid=2176</a>
		<a href="http://www.hpseb.com/hydro_policy.htm">http://www.hpseb.com/hydro_policy.htm</a>
	2003	Ministry of New and Renewable Energy Policy 2003 declaring subsidy for SHP (small hydro power) projects
60	01 January 2012	CO2 Baseline Database for the Indian Power Sector, User Guide Version 7.0

Reference number	Date	Document Title and version number (if applicable)
61	09 September 2005	Notification on minimum environmental flow issued by Department of Pollution control, Government of Himachal Pradesh, dated: 09/09/2005, Ref No. PC-F(2)-1/2005
62	14 September 2006	Notification by Ministry of Environment & Forests dated 14/09/2006
63	Various dates (see right)	<p>Reserve Bank of India Website</p> <p><a href="http://rbi.org.in/home.aspx">http://rbi.org.in/home.aspx</a></p> <p><u>Supporting for Risk free rate</u></p> <p>The Yield-To-Maturity (YTM) of SGL transactions in central government dated securities for 20 Yr Maturity at the end of May 2005 (Date of publish is 20 July 2005)</p> <p><a href="http://rbidocs.rbi.org.in/rdocs/Bulletin/PDFs/64804.pdf">http://rbidocs.rbi.org.in/rdocs/Bulletin/PDFs/64804.pdf</a></p> <p><a href="http://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=6808">http://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=6808</a></p> <p><u>Supporting for lending rate</u></p> <p><a href="http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/65424.pdf">http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/65424.pdf</a> (Published on 20 August 2005)</p> <p><a href="http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/65264.pdf">http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/65264.pdf</a> (Published on 13 August 2005)</p> <p><a href="http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/65134.pdf">http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/65134.pdf</a> (Published on 06 August 2005)</p>
64		<p>Bombay stock Exchange</p> <p><a href="http://www.bseindia.com">http://www.bseindia.com</a></p> <p><a href="http://beta.bseindia.com/">http://beta.bseindia.com/</a></p>
65	Various dates (see right)	<p>Applicable for rates for Financial Year 2005-06</p> <p><a href="http://www.ajaygarg.com/RATES%20OF%20INCOME%20TAX.doc">www.ajaygarg.com/RATES%20OF%20INCOME%20TAX.doc</a></p> <p>Schedule XIV of Companies Act 1956</p> <p>Income Tax Act 1961</p> <p>Power Ministry website</p> <p><a href="http://www.powermin.nic.in/acts_notification/generating_companies.htm">http://www.powermin.nic.in/acts_notification/generating_companies.htm</a></p>
66	11 May 2011	Mail from PP's consultant to TUV India Pvt Ltd asking for the meeting to discuss the project (and a series of mails in same context dated 27 April 2011)
67	19 August 2011	Mail from TUV India Pvt Ltd to PP asking for short closure of the project (along with short closure letter as attachment)
68	16 April 2009	Invitation to bid for CDM project sent to Zenith Energy by the PP

Reference number	Date	Document Title and version number (if applicable)
	17 April 2009	Mail from Zenith Energy to PP asking for more project details
69	26 May 2009	Proposal for CDM Advisory services from J.M. Environet P Ltd. In response to mail from PP (This is clearly mentioned in the offer letter)
70	25 May 2004	Approval from Ministry of Environment and Forest, Government of India for diversion of forest land for the project construction
71	July 2006 18 December 2007	Himachal Pradesh Electricity Regulatory Commission (HPERC) Order
72	January 2003  2005	Supporting for losses  Report to Power Finance Corporation by IRCA Limited  <a href="http://powermin.nic.in/reports/pdf/himachal%20pradesh.pdf">http://powermin.nic.in/reports/pdf/himachal%20pradesh.pdf</a>  Himachal Pradesh Electricity Regulatory Commission Notification  <a href="http://www.hperc.org/rules/sop.doc">http://www.hperc.org/rules/sop.doc</a>
73		Chapter IV "Generation – Small Hydro and Other Renewable Sources OF ENERGY"  <a href="http://www.ireda.gov.in/Compendium/Data/HP/HP%20%20SHPup%20to%205%20MW-03.pdf">http://www.ireda.gov.in/Compendium/Data/HP/HP%20%20SHPup%20to%205%20MW-03.pdf</a> (Refer Section 3.1 (v) on page 15 of 21)
74		Supporting for MNRE subsidy  <a href="http://www.ireda.gov.in/Compendium/Data/HP/HP%20%20SHPup%20to%205%20MW-03.pdf">http://www.ireda.gov.in/Compendium/Data/HP/HP%20%20SHPup%20to%205%20MW-03.pdf</a> (Refer Section 3.2 (a) on page 20 of 21 for the projects of capacity between 1MW to 25MW)
75		Estimating Risk Parameters, Aswath Damodaran Stern School of Business". By Aswath Damodaran  <a href="http://archive.nyu.edu/bitstream/2451/26906/2/wpa99019.pdf">http://archive.nyu.edu/bitstream/2451/26906/2/wpa99019.pdf</a>
76	29 March 2004	Central Electricity Regulatory Commission (CERC) Order dated 29/03/2004
77		For current inflation rates <a href="http://www.inflation.eu/inflation-rates/india/inflation-india.aspx">http://www.inflation.eu/inflation-rates/india/inflation-india.aspx</a>  For historic inflation rate <a href="http://www.inflation.eu/inflation-rates/india/historic-inflation/cpi-inflation-india.aspx">http://www.inflation.eu/inflation-rates/india/historic-inflation/cpi-inflation-india.aspx</a>
78	04 February 2012	Signed copy of short closure letter by PP to first DOE
79	16 April 2009 18 April 2009	Offer from CTRAN Consulting Services Ltd to PP for CDM consulting  Response from PP to CTRAN Consulting Services Ltd informing the scrutiny of their proposal.
80	01 June 2010	Central Electricity Regulatory Commission (CERC) Order dated 01/06/2010 confirming adoption of Renewable Energy Certificate (REC) regulations on 14 January 2010
81		Contract of PP with ERM CVS for CDM validation services
82	26 December 2012	Letter from PP stating the authorized signatories (and including their specimen signatures)

Reference number	Date	Document Title and version number (if applicable)
83	12 December 2006	Letter to MITCON Consultancy Services from PP informing about the delays in signing/finalization of CDM consultancy contract
84	23 & 24 February 2007	Meeting for review of hydro projects conducted with top management
85	14 & 16 August 2007	Meeting for review of hydro projects conducted with top management
86	14 & 15 March 2008	Inter office correspondence between the top management discussing progress made in tunnel work after appointing a new contractor for completion of tunnel work (Vinayak Construction)
87	22 & 23 August 2008	Inter office correspondence between the top management discussing performance of the new contractor (Vinayak Construction) on tunnel activities

## A.2 Similar Registered Hydro Power Projects in the Host Country

**Comparison with similar registered projects:** As one of the means of cross checking the key input parameters to the financial analysis, ERM CVS made a comparison between the proposed project and other similar projects in the same region that have previously been registered. The sample of projects was selected in order to represent the hydro projects within a similar size range.

According to the Tool for the demonstration and assessment of additionality, 'projects are considered similar if they are in the same country/region and /or rely on a broadly similar technology, are of similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, etc'. Therefore, ERM CVS collected previously registered hydro CDM projects in order to make a comprehensive comparison of the key input values of the proposed project.

The source of the data of comparable projects has been obtained from the registered validation reports publicly available on the website of the UNFCCC.

The projects compared to the project activity have been chosen based on the following criteria:

- +/-50% in capacity size (also varying slightly more than +/-50% in capacity size ). This range was considered reasonable based on ERM CVS's local and sectoral knowledge since very small projects and very large projects were excluded, since they could have very different cost levels based on the extent of economies of scale.
- Projects located in Himachal Pradesh and are connected to the grid using similar type of technology, i.e. hydro power. Only projects located in the same State were considered, since based on local and sectoral knowledge, the investment and regulatory climate varies significantly between states in India.

No.	CDM Reference Number	Project Title	Installed Capacity (MW)	Plant load factor (PLF)	Unit investment cost (INR Million/MW)	O&M cost (% of total investment cost)	Tariff (INR/kWh)
1	5089	Small Hydro Power Project by Kurmi Energy Private Limited	8	55.59%	81.81	1.5%	4.04
2	6239	Beas Mini Hydroelectric Project	2.25	66.86%	66.22	1.5%	2.50
3	5367	Dunali Run of river, small hydroelectric project	5	46.92%	58.59	1.5%	2.50
4	6048	Rukti-II Small Hydro-Electric project	5	53.95%	68.72	2.25%	2.87
5	5099	Luni Small Hydroelectric Project	4.5	50.28%	53.46	1.5%	2.50
		Iqu Small Hydroelectric Project	4.5	54.54%	58.82	1.5%	2.50
		Neogal Small Hydroelectric project	4.5	55.40%	60.77	1.5%	2.50

		(Bundle of three SHP projects)					
6	5004	2MW Kalm Small Hydro-Electric Project	2	60%	75.25	1.5%	2.5
	Project Activity		3.5	46%	66.57	1.5%	2.45

## A.2 INTERVIEWS

Reference	Name	Title & Organisation	Main topics discussed
IV1	Mr. G.N. Kamath	Head (Power Division) & Batot Hydro Power Limited	Decision Making process, Board resolutions, Organization structure, roles and responsibilities in project, Investment analysis, input values, choice of benchmark , project schedule, project chronology, project funding and project technology
IV2	Mr. Parvathinathan	Vice President (Project) & Batot Hydro Power Limited	Decision Making process of FGMHPC, Organization structure, roles and responsibilities in project, Investment analysis, input values, choice of benchmark , project schedule, project chronology, project funding and project technology
IV3	Mr. Vinay Kalra	Electrical Engineer (Project Manager) & Batot Hydro Power Limited	Investment analysis, input values, project technology
IV4	Mr. Rajnikanth	Electrical Engineer & Batot Hydro Power Limited	Investment analysis, input values, choice of benchmark and computation of emission reductions, project technology and local stakeholder consultation
IV5	Mr. P.L. Thakur	Retired Project Manager & Batot Hydro Power Limited	Investment analysis, input values, project technology, project chronology, project schedule and local stakeholder consultation
IV6	Mr. Desai	Substation Operator & Jarangla Substation, HPSEB	Project monitoring plan, measurement of net generation, procedure for joint meter reading and apportioning
IV7	Mr. Kamal	Local Stakeholders	Views on the project, environmental impacts, views on local stakeholder consultation process, local regulations impacting the project
IV8	Mr. Ghulam Rasul	Local Stakeholder	Views on the project, environmental impacts, views on local stakeholder consultation process, local regulations impacting the project
IV9	Mr. Shaifu	Local Stakeholder	Views on the project, environmental impacts, views on local stakeholder consultation process, local regulations impacting the project
IV10	Kapil Mehta	HIMURJA* Project Officer	Views on the project, environmental impacts, views on local stakeholder consultation process, local regulations impacting the project, project implementation chronology

\*HIMURJA- In order to give proper thrust to Integrated Rural Energy Programme (IREP) and to institutionalize the various Programmes of renewable energy , which are aptly suited for decentralized applications in the State of Himachal Pradesh (HP) India, HIMURJA (H.P. Energy Development Agency), an autonomous body registered under 'Societies Registration Act-1860' was established in February 1989 by Himachal Pradesh Government under the Chairmanship of Hon'ble Chief Minister.

Himachal Pradesh Govt. attaches significant importance to the development of renewable energy sources. Concerted efforts have been made by HIMURJA to promote and popularise various renewable energy technologies to provide solutions to a multitude of energy supply and demand challenges. Small Hydro Programme up to 5 MW transferred to HIMURJA from HPSEB in 1994. It is a nodal agency for monitoring the progress of SHP projects in Himachal Pradesh.

## Appendix B: Remediation Form

### Corrective Action Requests (CARs), Clarification Requests (CLs) and Forward Action Requests (FARs)

Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
<p><b>CAR1</b></p> <p>Section A.3 of the PDD is not in line with PDD Guidelines. Please note that the following details are not available in section A.3 of the PDD</p> <ol style="list-style-type: none"> <li>Information about the age and average lifetime of the equipment based on manufacturer's specifications and industry standards</li> <li>Information on the load factors and efficiencies</li> <li>Also each individual equipment/component is not described in detail and complete details are not provided in line with the DPR</li> <li>The monitoring equipments and their location in the systems are not included</li> <li>The description in A.3 of the PDD does not explain how the same types and levels of services provided by the project activity would have been provided in the baseline scenario.</li> <li>Description of baseline scenario</li> <li>Description of how the technologies and measures and know-how to be used are transferred to the host Party.</li> </ol> <p>Also all abbreviations are not defined in the PDD.</p>	<p>5.6.1,</p> <p>5.6.5,</p> <p>5.6.6,</p> <p>8.3.3</p>	<p>Section A.3 of the PDD has now been updated to be in line with PDD Guidelines. Following details are now available in section A.3 of the PDD :</p> <ol style="list-style-type: none"> <li>Information about the average lifetime of the project based on sector practices is added in the PDD. Most of equipment may have to be replaced or refurbished before 40 years and hence individual lifetime is not added.</li> <li>Information on the plant load factor</li> <li>Complete details for each key equipment/components is now described in detail in line with the DPR</li> <li>The monitoring equipments and their location in the systems have now been included</li> <li>The description in A.3 of the PDD has been revised to explain how the same types and levels of services provided by the project activity would have been provided in the baseline scenario.</li> <li>Description of baseline scenario now added</li> <li>Description of how the technologies and measures and know-how to be used are transferred to the host Party is not applicable since the technology to be installed is domestic this is now added in the PDD.</li> </ol> <p>Also all abbreviations are now defined in the PDD.</p>	<ol style="list-style-type: none"> <li>Overall project life is now mentioned as 40 years in the revised PDD and is consistent with the project implementation agreement with Government of Himachal Pradesh/07/ and hence accepted. Most of the equipment may have to be replaced or refurbished before 40 years and this was confirmed through interview with project engineers /IV3/IV4/ and Vice President for the BHPL/IV2/. Hence, PP has not mentioned life periods of individual equipment and is found to be correct.</li> <li>The updated PDD now mention plant load factor (PLF) as 46% which has been validated against the PLF value in Detailed Project Report (DPR)/02/. The DPR has been prepared by Dr. Hutarew &amp; Partner India Pvt Ltd which is a third party engineering firm and hence in line with PLF guidelines.</li> <li>The revised PDD have been reviewed and it has been found that individual equipment/component is described and the same has been validated against the details mentioned in the DPR/02/. The component values are in line with the values mentioned</li> </ol>

# Validation Report

Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
			<p>in the DPR.</p> <ol style="list-style-type: none"> <li>The monitoring equipment and its location has been mentioned in section B.7 of the PDD. PP has now cross referenced about monitoring equipment and its location in the PDD section A.3.</li> <li>In the revised PDD, explanation has been provided by the PP that how the same types and levels of services provided by the project activity would have been provided in the baseline scenario.</li> <li>A brief description of the baseline scenario has now been included in the updated PDD and the same is in line with applied methodology and hence accepted.</li> <li>The project will be using domestic technology and hence no technology transfer is expected, the same is specified in the revised PDD and confirmed from the contracts signed with equipment manufacturer/17/.</li> <li>All abbreviations now defined in PDD</li> </ol> <p>CAR1 is closed</p>
<p><b>CAR2</b></p> <p>LoA from the host country DNA &amp; MoC is not available for validation.</p>	<p>5.1</p> <p>5.2</p> <p>5.3</p>	<p>The LoA and MoC form has been attached for DOE's reference.</p> <p>PP name in PDD section A.3 has now been corrected to Batot Hydro</p>	<p>The validation team reviewed the LoA presented by the PP including:</p> <ul style="list-style-type: none"> <li>confirmation of the Party's ratification to the Kyoto Protocol</li> <li>voluntary participation</li> </ul>

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Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
<p>The PP name stated in section A.4 of PDD is "Batot Hydro Power Limited" and the one stated in section A.3 is "Weizman Ltd" which is inconsistent.</p> <p>In Appendix 1, the reference to website of <a href="http://www.weizmann.co.in">www.weizmann.co.in</a> is provided</p> <p>It is noted that one of the No Objection Certificate (NOC) issued by Himachal Pradesh Public Work Department (HP PWD) for the project activity is in the name of Weizmann Limited.</p>	5.4	<p>Power Limited (BHPL) appropriately. Further, Appendix 1 of the PDD has been updated to refer to the PP's company website.</p> <p>Initially, the PP company (BHPL) was a subsidiary of Weizmann Limited. Hence there some of the older clearances have been issued in the name of the parent company. However, PP would like to clarify the decision to invest in the project activity was taken by the board of BHPL only and the same company has implemented &amp; commissioned the CDM project activity under discussion. Hence , BHPL is the only PP involved in decision making and implementation of the subject CDM project activity.</p>	<ul style="list-style-type: none"> <li>the project activity's contribution to sustainable development of the country (host Party), and</li> <li>the precise title of the CDM project activity of the final PDD referenced.</li> </ul> <p>The LoA was noted as unconditional with respect to the above elements. The contents of the LoA and the signature of the authorised issuer were also compared with those of other approval cases issued by the host country DNA. Therefore, the team has confirmed the authenticity of the letter issued.</p> <p>The MoC has been received from the project participant . In accordance with the VVS paragraph 54, corporate and personal details in the MoC have been confirmed through directly review of letter from PP stating the authorized signatories/82/.</p> <p>The name of the project participant in the PDD, letter of authorization and MoC are confirmed to be consistent.</p> <p>.</p> <p>In the revised PDD, the PP name has been replaced to "Batot Hydro Power Limited". The recent name has been validated by ERM CVS against "Certificate of Change of Name"/8/ and the same has been found acceptable.</p> <p>The justification provided by the PP has been confirmed through the interviews with top management of the PP/IV1/IV2/ and found acceptable by ERM CVS.</p>



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			CAR 2 is closed
<b>CAR3</b>  It is stated in section A.5 of the PDD that "No public funding has been available for the project activity", however the evidence to support the claim has not been made available for validation.	9.4.1	PP has now provided a self-declaration to support this claim. DOE to refer to the same.	The self-declaration letter/35/ from PP to support this claim has been cross checked by ERM CVS and found to be acceptable. The funding sources were also confirmed through the interview with top management of PP/IV1/IV2/ and it was noted that no public funding has been sourced for the project. The project is funded through debt from State Bank of Patiala/16/ and equity.  Hence CAR 3 has been closed.
<b>CAR4</b>  The choice of the selected methodology is not justified in the PDD by showing that the project activity meets each applicability conditions of the selected methodology. Table 2 on the Applicability of AMS I-D, AMS I-A & AMSI-F based on project type is not included in section B.2 of the PDD.  Section B.2 of the PDD doesn't explicitly mention the hydro project type.  Also the documentation that has been used as a basis for justification of the methodology criteria are neither referenced in section B.2 nor detailed in Appendix 3.	6.1.1  6.2.1	PDD section B.2 has been updated now to justify the applicability of each of the version 17 of the selected methodology AMS.I.D.  Section B.2 of the PDD has been updated to explicitly specify that the project activity is a run of the river small hydro project.  Appropriate references have been specified in PDD section B.2	Section B.2 of the revised PDD now provides justification to all applicability criteria for AMS-I.D and justification to AMS-I.F and AMS-I.A based on project types.  The revised PDD has been updated to specify that the project activity is a run of river small hydro project which has been validated against the details mentioned in the DPR/02/ prepared by Dr. Hutarew & Partner (I) Pvt. Ltd, a third party engineering firm and confirmed to be acceptable. This was also verified during the site visit.  Appropriate references where relevant have now been added in the revised PDD section B.2.  In view of all above CAR4 is closed

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<p><b>CAR5</b></p> <p>The project boundary of the project activity is not defined in section B.3 of the PDD and only the project boundary diagram is provided.</p> <p>Also the flow diagram of the project boundary presented in section B.3 is not correct and in line with the applied methodology and also does not cover all components of the project.</p> <p>The flow diagram does not indicate the emission sources and GHGs included in the project boundary and the data and parameters to be monitored.</p>	6.3.2	<p>The project boundary of the project activity has now been defined in section B.3 of the PDD.</p> <p>Flow diagram of the project boundary presented in section B.3 has now been updated in line with the applied methodology and also covers all components of the project activity.</p> <p>The flow diagram has been updated to indicate the emission sources and GHGs included in project boundary. The data and parameters to be monitored have also been highlighted.</p>	<p>In the revised PDD, project boundary has been defined and is in line with the applied methodology AMS I.D "Grid Connected renewable electricity generation"</p> <p>In the revised PDD, PP has updated the flow diagram of the project boundary presented in the section B.3 and the same has been found in-line with "Guidelines for Completing The project Design Document for Small Scale CDM Project". The flow diagram now covers all relevant components of the project activity and is also in line with the layout observed during the site visit.</p> <p>In the revised PDD, PP has updated the flow diagram to indicate the emission sources and GHGs in the project boundary. The parameters that will be monitored have also been in added to the diagram and the section now complies to all requirements of small scale PDD guidelines.</p> <p>CAR5 is closed.</p>
<p><b>CAR6</b></p> <p>Not all relevant laws and policies have been stated in section B.5 of the PDD</p>	6.4.1	<p>Additional relevant laws and policies have now been added in PDD section B.5.</p>	<p>The revised PDD is reviewed and it is noted that PP has added all relevant laws and policies in section B.5 of the PDD. The information is reviewed from publicly available sources/59/ and confirmed to correct and hence CAR6 is closed.</p>
<p><b>CAR7</b></p> <p>1. From the detailed discussion held with PP's representatives during the site visit it was noted that the chronology of events presented in section B.5 of the PDD is not complete. Also following critical events are not presented in the</p>	<p>5.6.4</p> <p>7.1.1</p> <p>7.1.4</p>	<p>1. The chronology of events specified in PDD section B.5 have been updated to include all the key events now.</p>	<p>In the updated PDD,</p> <p>a. The PP has included the DPR date.</p> <p>b. The loan sanction date has been updated in the CDM chronology of the updated PDD by PP and the same has been validated against the loan sanction letter issued by the State Bank of</p>

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Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
<p>table</p> <p>a. DPR completion</p> <p>b. Loan date</p> <p>c. Project commissioning dates</p> <p>2. Inconsistency noted in the date of investment decision making as follows</p> <p>a. The date of investment decision is noted to be 23rd August 2005 from the review of the board meeting minutes provided for validation however the date mentioned in table is February 2006.</p> <p>b. The date of investment decision mentioned in the benchmark section of B.5 is 31 Jan 2006.</p> <p>3. Exact dates are not provided for all the events.</p> <p>4. Evidence to support the following timelines are not available for validation</p> <p>a. Discussions on delay in project implementation due to technical difficulty in completion of tunnel work and hence decision to defer CDM registration process till clarity is received on probability of completion of tunnel work- May 2007 to December 2008</p> <p>b. For all timelines from March 2009 to October 2011 as presented in the table</p>		<p>2. It was a typo. The date of investment decision has now been corrected appropriately and is made consistent across the PDD.</p> <p>3. Exact dates have been provided for all the events in the CDM chronology table in PDD section B.5</p> <p>4. Inter office correspondences have now been provided for DOE's perusal for ascertaining discussions on delays in project implementation</p>	<p>Patiala/16/.</p> <p>c. The project commissioning dates have now been mentioned in the revised PDD. The project commissioning dates have been validated against the Commercial Operation letter issued by Himachal Pradesh State Electricity Board Limited/34/ and found to be acceptable.</p> <p>2. In the updated PDD, PP has rectified the investment decision date to 23/08/2005 which has been validated against the original certified extract of board meeting minutes/15/ and the original board meeting minutes dated on 23/08/2005 during the site visit held at PP's main office and found to be acceptable.</p> <p>3. In the revised PDD, PP has updated exact dates of the events which are validated by ERM CVS against the list of supporting documents. Please refer to section 8 for details validation of project chronology.</p> <p>4. Original copy of the Inter office correspondence/20/ signed by authorised signatory was reviewed by the team during the site visit held at PP's main office. This was further confirmed from review of project progress reports presented to HIMURJA Officer stating the causes of delay in tunnel work /44/ and found to be acceptable. Evidence to support all timelines between March 2009 and October 2011 has now been provided by the PP. Please refer to section 8 for details of validation of project chronology.</p> <p>In view of all above the finding is closed.</p>

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Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
		Supporting evidences have now been provided for all events specified in chronology of events table.	
<p><b>CAR8</b></p> <p><b><u>Related to Benchmark</u></b></p> <p>From the review of benchmark computations it was noted that the input values were not assumed at the point of investment decision.</p> <p>Following inconsistencies on input values used for benchmark computations is noted</p> <p>The risk-free rate of return value is valid at November 2005 however the date of the investment decision is 23<sup>rd</sup> August 2005.</p> <p>The covariance for Reliance Infrastructure and Tata Power Co.Ltd is not correctly calculated using all available data. All beta data is valid at February 2006 however the date of the investment decision was 23<sup>rd</sup> August 2005.</p> <p>The BSE closing value taken for the calculation of market premium as shown in the CAPM calculation spreadsheet is valid at February 2006 however the date of the investment decision was 23<sup>rd</sup> August 2005.</p>	7.3.3 b	<p>All the input values assumed for the benchmark computations have now been corrected to be available at the point of investment decision viz. 23 August 2005. Revised PDD and financials have been submitted to DOE for review.</p> <p>Month-end Yield to Maturity of SGL Transactions in Central Government Dated Securities for 20 year maturities (May 2005 data published in July 2005) has now been considered as Risk-free rate of return. This was available at the time of investment decision.</p> <p>The covariance for Reliance Infrastructure and Tata Power Co. Ltd and all the other proxy companies has now corrected to use all available and relevant data in line with the date of the investment decision viz. 23<sup>rd</sup> August 2005.</p> <p>The BSE closing value has now been taken as on 31<sup>st</sup> July 2005 and the same is in line with the date of the investment decision viz. 23<sup>rd</sup> August 2005.</p>	<p>The revised documentation was reviewed /03/.</p> <p>All assumptions and input values used in benchmark computations are now valid at the time of the investment decision on 23 August 2005. The input values are validated in detail in section 8 of the validation report.</p> <p>The risk-free rate of return is now based on May 2005 data and is found to be consistent with the referenced source /63/. This data was published in July 2005, shortly before the date of the investment decision and hence applicable and valid at the time of investment decision and hence accepted.</p> <p>The covariance for Reliance Infrastructure and Tata Power Co. Ltd and all the other proxy companies has now been corrected to use all available and relevant data in line with the date of the investment decision viz. 23<sup>rd</sup> August 2005</p> <p>The BSE closing value used in the calculation of market risk premium is now valid at the time of the investment decision and has been verified with the publicly available information on BSE website/64/ and found to be acceptable.</p> <p>In view of all above CAR8 is closed</p>

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Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
<b>CAR9</b>  <b><u>Related to financial analysis</u></b>  1. Please provide evidence /reference for the following input values  a. Corporate Tax Rate-Applicable for financial year 2005-2006-33.66% b. Minimum Alternate Tax (MAT) Rate- Applicable for financial year 2005-2006-8.42% c. Depreciation rates  2. HPERC Order is referred for the following input values however the same has not been made available for validation.  a. O&M charges b. Escalation in O&M c. Escalation in Spares d. Interest rate on working capital e. Working Capital Calculations  3. The value of the MNRE subsidy in the investment analysis spreadsheet (31.875 Million INR) is not consistent with the value in the PDD (318.75 Million INR) and the one given in DPR (31.880 Million INR). Also the MNRE Policy of 2003 is not available for validation.  4. The break up of losses of 8% stated under the head "Auxiliary consumption and other losses" is not mentioned in	8.3.3.  7.3.7  7.3.9  7.3.11  7.3.12  7.1.14	1. Reference is as below: a. Corporate tax rate applicable for domestic companies during FY2005-06 can be verified from <a href="http://indiabudget.nic.in/ub2005-06/bh/bh1.pdf">http://indiabudget.nic.in/ub2005-06/bh/bh1.pdf</a> b. MAT rate applicable for domestic companies during FY2005-06 has now been added in PDD c. Supporting evidence has been submitted to DOE for Depreciation rates.  2. All of the following values have been sourced from the DPR for taking the investment decision: a. O&M charges b. Escalation in O&M c. Interest rate on working capital e. Working Capital Calculations  DOE can verify the appropriateness of these assumptions from Commission's Order on Small Hydro Power Projects Tariff & other issues dated December 18, 2007 ( <a href="http://www.hperc.org/orders/shpp.doc">www.hperc.org/orders/shpp.doc</a> )  3. The value of the MNRE subsidy in the investment analysis spread sheet (31.875 Million INR) is appropriate. The value specified in the PDD has now been corrected to 31.875 Million INR and hence made consistent. DPR specifies the same value rounded-off to two decimals. MNRE Policy 2003 (for subsidy) can be verified from ( <a href="http://www.infraline.com/power/RenewableEnergy/SHPMNRESubsidyProg.aspx">http://www.infraline.com/power/RenewableEnergy/SHPMNRESubsidyProg.aspx</a> )  4. The break-up of losses of 8% stated under the head "Auxiliary consumption and other losses" has now been mentioned in the PDD in line with the DPR  5. Residual value has now been calculated as total project cost less total depreciation and the same has now been not considered in the calculation of taxable income rather it has been considered as cash inflow in last year.  6. Typically the construction period for a hydro power project in India is two years. The capital expenditure hence is carried out in phases and not all within one year like wind power projects. Hence PP has assumed that 60% of the costs would be incurred in 1 <sup>st</sup> year of construction and balance 40% cost will be incurred in final year of construction. This is the technique followed by any power project (RE or non-RE) which has a gestation period of more than 1 year. Further, as per the actual	PDD section B.5 now correctly provides the source for Corporate Tax Rate, MAT rate and depreciation rates. These rates were verified with the publicly available information /65/ confirmed to be available and applicable during decision making and hence appropriate.  2. All the following values have been checked with the values mentioned in DPR/02/ and found to be acceptable:  a. O&M charges b. Escalation in O&M c. Interest rate on working capital e. Working Capital Calculations  Erroneous reference to HPERC Order has been removed from IRR spreadsheet now.  3. The value of the MNRE subsidy has been rectified in the updated PDD. The MNRE subsidy value has been crossed checked with value mentioned in the DPR/02/ and found to be acceptable. This is also cross checked from the letter sent by PP to MNRE on the 28/05/2010/41/ and hence accepted.  4. In the revised PDD, PP has updated the break-up of losses of 8% as 0.5% as Auxiliary Consumption, 0.5% as Transformation losses, 2% losses as transmission losses and 5% loss as outages. The values have been validated against the values mentioned in the DPR/02/ and found to be consistent. The losses were also compared with similar registered projects (refer table under A.2 in Appendix A) in the region and found to be reasonable. The losses were also confirmed through interview with project engineers/IV3/IV4/.  5. The revised documentation has been reviewed /03/. Residual value is now calculated for total investment costs. Residual value is no longer included in the calculation of taxable income in year 20. ERM CVS confirms that this is

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<p>the PDD in line with the DPR</p> <p>5. The calculation of residual value does not take into account all investment costs. Also please justify the inclusion of residual value in the calculation of taxable income in year 20</p> <p>6. From the review of P&amp;L sheet, it is noted that 60% of the equity costs are paid out in year -1 while the remaining 40% are paid out in -2 year. Evidence for the phased investment is not available for validation</p> <p>7. Please justify the depreciation calculations including the exclusion of financial charges and contingency charges from the depreciation calculations and the calculation of residual value considering remaining NBV at the end of the assessment period</p> <p>8. In the project cost sheet the figures for "Electrical &amp; Mechanical cost" do not match with those given in the DPR</p> <p>9. In the financial analysis the contingency costs are considered however no reference is stated for the same.</p> <p>10. The moratorium period considered in the financial analysis spreadsheet is 1 year however the same is stated as 3 years in the DPR.</p> <p>11. 'Spares' costs are included in the</p>		<p>expenditure on capital assets seen (refer PP's declaration), the PP has incurred expenditure over a 5-6 year period. Hence justified.</p> <p>7. Since the companies act and IT act specify depreciation rates for two major categories viz. Civil and Plant&amp;Machinery, all the other constituents of the project cost have been apportioned to both these categories as per their proportion in total project cost. Financial charges and contingency charges have also been added in the depreciation calculations now. Residual value is the value that the asset(s) is expected to receive at the end of its lifetime or whenever it is sold during its lifetime. Depreciation rate is determined based on the expected reduction (called depreciation) of market/sale value of any particular asset. Hence by subtracting the depreciated book value of the project assets from the initial total project cost gives one a realistic estimate of the project's residual or salvage value. Hence this approach is appropriate.</p> <p>8. All components of the project cost in the spreadsheet have been sourced from the DPR and hence are consistent with the same. The Production(E&amp;M) cost specified in the DPR is the one considered as E&amp;M in the spreadsheet. The value of E &amp; M inclusive of transmission is 700.20 lakhs or 70.02 million INR. Terminology has now been made consistent in spreadsheet to avoid further ambiguity.</p> <p>9. Contingency costs have now been dropped. All cost heads are in line with those specified in DPR now.</p> <p>10. A 3 year moratorium period has now been considered in the financial additionality spreadsheet in line with DPR.</p> <p>11. 'Spares' costs are now excluded in the calculations for working capital in line with DPR. Formula corrected to subtract 1 months O&amp;M costs to arrive at working capital required</p> <p>12. Although the financial analysis has been carried out for 30 years in the DPR, it has been limited to 20 years in PDD in line with the guidance # 3 of Guidance on assessment of investment analysis version 05 which states "In general a minimum period of 10 years and a maximum of 20 years will be appropriate". Since a period lesser than the lifetime of project activity has been taken for demonstration of additionality, a fair value (residual value) at the end of 20 years has been added.</p>	<p>reasonable and conservative. Please see item 12 of this CAR for further details on the validation of residual value.</p> <p>6.Further to clarification from PP, the team has reviewed the similar registered projects (refer table under A.2 in Appendix A) and confirmed that phasing of investment is found common for hydro projects which have a long gestation period. In actual investment pattern/56/ was reviewed and it was noticed that the phasing is distributed over 6 years and hence PP's assumption during the decision making is found reasonable and accepted.</p> <p>7. The revised documentation has been reviewed /03/. All investment costs are now depreciated, depreciation rates are correctly referenced and verified from publicly available sources /65/and residual value is clearly calculated. Please see item 12 of this CAR for further details on the validation of residual value.</p> <p>8. The cost sheet has been updated and the rectified figures for "Electrical &amp; Mechanical cost" now match with the figures mentioned in the DPR/02/.</p> <p>9. Exclusion of contingency costs is found to be conservative and hence acceptable</p> <p>10. The revised documentation has been reviewed /03/. The moratorium period is now 3 years, which is consistent with the DPR/02/.</p> <p>11. Spare cost has been removed from the updated PDD/01/ and the updated spreadsheet/03/. This is found to be conservative and hence accepted. The formulae used to calculate working capital and inherent interest also now excludes the reference to spare cost and are now correct.</p> <p>12. Acceptable since as per Guidance on assessment of Investment Analysis, a maximum of 20 years is appropriate for financial analysis. Residual value is included in the</p>

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Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
<p>calculations for working capital however the same is not in line with working capital calculations presented in the DPR. Also justify the addition rather than subtraction of 1 months O&amp;M costs to arrive at working capital required in the financial analysis spreadsheet</p> <p>12. From the review of Detailed Project Report it is noted that the financial analysis is carried out for 30 years and hence the duration considered in the financial analysis spreadsheet i.e. 20 years is not consistent.</p> <p>13. The loan portion of investment costs is not linked to the sensitivity analysis.</p>		<p>Thus the approach is appropriate. At the end of 20 years, PP has assumed a residual value equivalent to the non-depreciated book value of the assets. If it is assumed that the project was to be wound up or dismantled at the end of 20 years, as per Indian accounting practices, PP could expect to receive the book value of its assets on sale. As correctly pointed out by the validation team, there will be a potential for profit (or loss) on the realisation of the assets depending on how good the assets are maintained by the project developer. However, PP would like to state that impact of this notional profit or loss (if any) on the equity IRR would be negligible after taking into account the cost that the PP would have to incur in winding up and dismantling all the individual equipment. Hence PP had not assumed any such notional profit or loss in its cash flows at the time of taking investment decision.</p> <p>13. Loan portion of investment costs is now linked to the sensitivity analysis.</p>	<p>investment analysis. The estimated lifetime of the SHP is 40 years, there would be a requirement to perform Repair &amp; Maintenance (R&amp;M) expenses periodically (say after every 10 years) in order to ensure that the installed equipment runs with desired efficiency. After running the machine continuously for about 10 years, efficiency of the machine is reduced due to pitting of runner blades etc. The periodical repairs are essential to maintain the machine efficiency. Further, these periodical repairs can't be done from the provisions of annual O&amp;M provisions. Escalation proposed for O &amp; M provisions is just to meet the escalation in O &amp; M expenses. This is confirmed from the HPERC order/71/</p> <p>PP has not made provisions for periodical special repairs (Repair &amp; Maintenance expenses) in its cash flows and also no derating of machine is considered. The efficiency of unit is assumed as constant throughout the project life. Hence the approach in estimation of Salvage value is appropriate and conservative.</p> <p>13. The revised documentation has been reviewed /03/. The loan portion of investment costs is now linked to the sensitivity analysis.</p> <p>In view of all above CAR9 is closed</p>
<p><b>CAR10</b></p> <p>In section B.6.2 of the PDD, the description provided for <math>W_{BM}</math> is "Weightage of operating margin emissions factor"</p> <p>The description for the parameters <math>EF_{grid,BM,y}</math> &amp; <math>EF_{grid,OM,y}</math> are not in line with the "Tool to calculate the emission factor for an electricity system"</p>	6.5.1	<p>The description for the parameters <math>EF_{grid,BM,y}</math> &amp; <math>EF_{grid,OM,y}</math> are revised to be in line with the "Tool to calculate the emission factor for an electricity system"</p>	<p>In the revised PDD, the description for the parameters <math>W_{BM}</math>, <math>EF_{grid,BM,y}</math> &amp; <math>EF_{grid,OM,y}</math> are revised and the same has been validated and found to be in line with the "Tool to calculate the emission factor for an electricity system" and hence CAR10 is closed.</p>
<b>CAR11</b>	5.2.2		

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<p>The parameter stated in section B.7.1 of the PDD is "<b>EG<sub>BL,y</sub></b>" however this is not in line with the notation "<i>EG<sub>facility,y</sub></i>" given by the applied methodology.</p> <p>The accuracy class of the energy meters is not mentioned in the PDD</p> <p>Measurement method, procedure and the QA/QC procedure stated for the parameter "<b>EG<sub>BL,y</sub></b>" is not in line with that defined by the applied methodology</p>	8.2.3	<p>The parameter stated in section B.7.1 of the PDD ("<b>EG<sub>BL,y</sub></b>") is now renamed as "<i>EG<sub>facility,y</sub></i>" as per applied methodology.</p> <p>Accuracy class of energy meter is 0.2S and the same is specified in PDD section B.7.1 now.</p> <p>Measurement method, procedure and the QA/QC procedure stated for the parameter "<b>EG<sub>BL,y</sub></b>" (now renamed as <i>EG<sub>facility,y</sub></i>) has now been revised to be in line with that defined by the applied methodology.</p>	<p>In the revised PDD, the parameter stated in the section B.7.1 of the PDD has been revised and updated with the notation "<i>EG<sub>facility,y</sub></i>" as mentioned in the applied methodology and hence acceptable.</p> <p>The accuracy class of the energy meters has been mentioned in the revised PDD as 0.2S. Validation team has found that major of the recently registered CDM small scale hydro projects in the state (refer table under A.2 in Appendix A) have used 0.5s accuracy class meters and hence having higher accuracy class than required is found acceptable.</p> <p>The detailed procedure for measurement &amp; calculation of <i>EG<sub>facility,y</sub></i> has now been added in PDD.</p> <p>PP has used IPCC default values as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines and hence appropriate.</p>
<p><b>CAR12</b></p> <p>The details of the monitoring plan mentioned in the B.7.3 section of the PDD, the roles and responsibilities defined in B.7.3 are not in line with the monitoring practices observed during the site visit.</p> <p>Also it was noted that two other project developers will be supplying electricity to the same substation and their generation will be monitored by the same set of meters as of the project activity, however no apportioning/measurement/monitoring mechanism has been defined in the PDD</p>	8.2.3	<p>The details of the monitoring plan mentioned in the B.7.3 section of the PDD, the roles and responsibilities defined in B.7.3 have now been revised to be in line with the monitoring practices observed during the site visit.</p> <p>The mechanism that will be followed for estimating net energy supplied by project activity has now been illustrated in PDD section B.7.3</p>	<p>The details of the monitoring plan mentioned in the B.7.3 section of the PDD, the roles and responsibilities defined in B.7.3 have now been revised to be in line with the monitoring practices observed during the site visit.</p> <p>Sub-station name has now been made consistent with section A.3 of the PDD. PDD section b.7.3 has also been revised now.</p> <p>Apportioning mechanism that would be followed for estimating net energy supplied by project activity is standard and attached as annexure to the JMR (Joint meter reading) and this was confirmed through of sample copies of JMR/28/29/. The value for net energy supplied by project activity will be sourced directly from this annexure and hence no specific calculation procedure is added in PDD.</p>



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Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
			The finding is closed
<b>CAR13</b>  The project lifetime is stated as 20 years in PDD section C.1.2. however no supporting evidence for the same has been made available for validation.	5.6.4  8.3.3	Unlike wind power projects, there are multiple equipment in a hydro power plant (Turbine, Generator, etc). The project lifetime is not that of an individual equipment but determined overall for the whole hydro project. Typically a project lifetime of 40 years is assumed for hydro projects in India considering certain renovation & maintenance expenses during this period. Project lifetime has been revised to 40 years in section C.1.2	The project lifetime is now corrected to 40 years across the PDD. This is cross checked with the implementation agreement /7/ between PP & Himachal Pradesh Government and found to be consistent. The finding is closed.
<b>CAR14</b>  The project refers to EIA notification of 2009 however the project had started applying for the consents and approval much before year 2009. Please provide information on the correct notification applicable for the project activity.	9.3.1	EIA notification of 2006 which is the latest notification available and applicable at the time of project implementation has been referred to by the PP.	PP has now referred to EIA notification 2006/62/ which was applicable at the time of initiation of project implementation and hence accepted. The finding is closed.
<b>CAR15</b>  In section E.2 of the PDD, the stakeholders that have made comments have not been identified	9.2.1	As lot of subjective feedback was received from multiple stakeholders (via feedback forms), PP has just presented the summary of the comments received. Detailed feedback forms have been shared with DOE team for review.	The feedback forms/37/ have been reviewed by the team and it is noted that PDD covers the summary of feedback from all stakeholders and hence CAR15 is closed.
<b>CAR 16</b>  Parameter "NCV <sub>diesel</sub> " is not required by the applied methodology. ERM CVS has validated that diesel is planned to consumed only for emergency/backup purposes, hence this component should not be included in the project emissions, as per the methodology. Please correct the documentation.	7.3	Parameter NCV <sub>diesel</sub> has been removed from the PDD as it is not required by the applied methodology.	The methodology AMS-1.D clarifies that "For most renewable energy project activities, PE <sub>y</sub> = 0". The only sources of project emissions that should be accounted fir under the methodology are the following: "Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity / fossil fuel consumption); Emissions from water reservoirs of hydro power plants".  ERM CVS has validated that small quantities of diesel may be consumed for emergency/backup purposes. ERM CVS

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			<p>has confirmed that therefore the emissions from this source will not be significant, and will not be greater than 1% of overall emission reductions.</p> <p>ERM CVS therefore considers it correct that this parameter should not be included in the monitoring plan, since it is not in line with the methodology provisions.</p> <p>CAR closed</p>

Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
<b>CL1</b> In paragraph 1 of section A.1 of the PDD it is stated that the "The power thus generated is planned to be sold to Himachal Pradesh State Electricity grid" however in the same section there is also reference to NEWNE grid. The grid stated in B.2 is Northern. Please clarify the grid details/name to which the project would export the power.	5.6.1	As project activity is located in the state of Himachal Pradesh, it is a part of the Northern Grid of India which is in-turn a part of the NEWNE grid. To avoid ambiguity, PP has used NEWNE grid consistently throughout the PDD.	The grid name in the section B.2 paragraph 1 has been updated as NEWNE which is the appropriate name of the grid and which has been validated against the CO <sub>2</sub> Baseline database for Indian Power Sector, User Guide (Version 7)/60/ issued by Central Electricity Authority (CEA). CL1 is closed
<b>CL2</b> In section A.1 of the PDD the project location is near village "Kawari". This is also confirmed from the DPR of the project. However the project location stated in section A.2.3 is "Batot" and is inconsistent with details mentioned in A.1. Please clarify	5.6.2	Village "Kawari" also added now consistently throughout the PDD.	In the revised PDD, Village "Kawari" has been added in the section A.2.3. The same has been validated against DPR/02/ prepared by Dr. Hutarew & Partners (I) Pvt Ltd., a third party engineering consultancy firm. CL2 is closed.
<b>CL3</b> 1. During site visit, the turbine capacity mentioned on the turbines built by Kirloskar Brothers Limited mention the capacity as 1842kW each which is inconsistent with capacity of 1.75 MW stated in PDD section A.3. PP is	5.6.1	Generally turbines have max rating of +5% of its rated capacity. Hence the difference observed.	The max rating of turbines is cross checked from the technical specifications provided by the manufacturer/17/ and hence the reason provided by the PP is accepted. The project capacity of 3.5 MW and turbine capacity of 1.75 MW each is confirmed from the Certificate of Commercial Operation issued by the HPSEB/34/ and hence accepted.

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Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
<p>requested to clarify the inconsistency noted in the turbine capacity.</p> <p>2. Also the name of substation stated in section A.3 of the PDD is Gairola however during the site visit it was noted that power would be fed to Jarangla/Karian sub station. Please clarify</p>		Sub-station name corrected in PDD section A.3	Substation name made consistent across the PDD now and is consistent with that observed during the site visit and hence accepted.
<p><b>CL4</b></p> <p>During the site visit interactions with project technical staff it was noted that another small hydro project is coming up on upstream of Balij ka Nalla. PP to demonstrate that the project activity is not a debundled component of a large-scale project activity.</p>	6.2.3	As the project referred to by the Doe is being implemented by a different PP, that project cannot be considered as a debundled component of a large-scale project activity	Further to the clarification received from PP and interactions with top management representatives of PP/IV1/IV2/, it was confirmed that the other projects coming up on the stream are being implemented by different PPs and hence not applicable for the project activity. The finding is closed.
<p><b>CL5</b></p> <p>The tariff is fixed throughout the assessment period in the analysis. Please clarify further on the assumption that the electricity tariff will be fixed for the full assessment period</p> <p>During site visit discussions it was noted PP may opt for REC and APPC tariff however this is not discussed/presented in the PDD</p>	7.3.8	<p>PP has assumed a preferential tariff which is determined taking into account escalations in various costs like O&amp;M costs etc for a long period of time typically 20 years. Typically this tariff is estimated by calculating the cost of generation and by adding some return on equity. The cost of generation is higher during the first few years of operation when there is interest and loan repayment burden. However the cost of generation is low during the last few years. The levelized tariff is arrived at by using levelized cost of generation and hence is a fixed value for the entire assessment period say 20 years.</p> <p>As discussed earlier, PP had not considered REC revenues as that policy was not available and implemented at the time of investment decision in India. Also REC is an E- policy and hence should not be considered in demonstrating additionality.</p> <p>In actual scenario, PP is expected to opt for the APPC+REC tariff mechanism. Impact of the increased tariff revenues due to sale of RECs is simulated and presented for DOEs reference. As evident from the Equity IRR of ~7.5% , if the actual tariff (APPC+REC) and actual project cost are considered, the project activity still remains additional.</p>	<p>The reason provided by PP for the fixed tariff is confirmed to be acceptable and also the tariff assumed is in line with the hydro policy/59/ available at the time of investment decision making for the project.</p> <p>The tariff used in the financial analysis is in line with the DPR/02/ as prepared by the third party engineering firm and found to be OK.</p> <p>The tariff was also compared with similar registered projects (refer table under A.2 of Appendix A) in the region and noted to be consistent.</p> <p>As clarified by PP, REC was launched on 14 January 2010 and hence clearly an E- policy and hence need not be taken into account.</p> <p>Also it was confirmed that PP had assumed the grid tariff prescribed by state electricity board for the decision making.</p> <p>Even if PP considers the Average Pooled Power Cost (APPC) and REC and the actual cost/33/ incurred (Actual cost incurred</p>

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			by the PP is 438.83 Million INR. as against 232.60 Million INR estimated in DPR)the IRR is 7.49% and remains below the benchmark hence accepted.  In view of all above CL5 is closed.
<b>CL6</b>  The address of Batot Hydro Power Limited that has been mentioned in the PDD Appendix 1 is not consistent with the registered address that has been mentioned on the copy of the resolution passed at the Board of Directors meeting on 23rd August 2005. Please clarify	5.6.1	Batot Hydro Power Limited has a registered office at the address specified in the letter head used for printing the Board resolution extract. However, for administration purposes, most of the management works from the Fort address specified in the Appendix 1 of the PDD and hence PP would like to retain the same for effective communication purpose.	Based on the clarification received from PP and verification of the correspondence address by visit to PP's office, the finding is closed.

In addition some editorial and minor changes to the PDD were made by the PP that had no relevance on compliance with CDM requirements.

## Forward Action Requests

No FAR is raised

# Validation Report

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## Document template history

Date	Version Number	Change
09 February 2009	Version 1	Initial Adoption
06 December 2010	Version 2	Revision of sections relating to stakeholder comments, common practice analysis, project boundaries, elimination of baseline alternatives, financial analysis and technical aspects relating to projects at existing facilities
28 March 2011	Version 3	Revisions to include more detailed requirements to check consistency of equations, units and project specific information, and guidance on the level of detail required in project description
28 May 2011	Version 4	Revision of validation protocol to include further detail relating to paragraph 92 of the VVM
22 October 2011	Version 5	Content and structural updates including removal of the separate validation protocol and incorporations of relevant questions into the report, revision of question wording to improve clarity and to ensure question wording is in line with the VVM, reduction of repetition in the report
01 May 2012	Version 6	Revision of template to comply with the VVS, which replaces the VVM