



# VALIDATION REPORT

## **Report For:**

Renewable Energy Investment of South Africa (Pty) Ltd  
(REISA)

## **Validation of CDM project for**


“Kathu Grid Connected 100 MW Solar Park, South Africa”  
in  
South Africa

Report No. CCL0060/KGCSP/05102011

Revision No. 02, 30-11-2012

# VALIDATION REPORT

CDM VALIDATION REPORT N° CCL0060/KGCSP/05102011

<b>Project Title:</b> Kathu Grid Connected 100 MW Solar Park, South Africa		<b>Country:</b> South Africa		<b>Estimated CERs (tCO<sub>2</sub>e):</b> 238 080 annual average	
<b>Client:</b> Renewable Energy Investment of South Africa (Pty) Ltd (REISA)		<b>Client Contact:</b> Mr. Matteo Brambilla 7 West Quay Road West Quay Building, 1st Floor 106, Block A, Cape Town, RSA			
<b>Report No:</b> CCL0060/KGCSP/05102011		<b>Revision No:</b> 02		<b>Date of this report:</b> 30/11/2012	
<b>Approved by:</b>  Mr. Priyesh Ramlall 				<b>Date of approval:</b> 04/12/2012	
<b>Technical Reviewer:</b> Mr. Vikash Kumar Singh				<b>Date of approval:</b> 03/12/2012	
<b>Report Distribution:</b> <input type="checkbox"/> Unrestricted Distribution <input type="checkbox"/> Limited Distribution <input checked="" type="checkbox"/> No Distribution (without permission from the Client or responsible organisational unit)					
<b>Organisational Unit:</b> Carbon Check (Pty) Ltd				<b>Date of Approval:</b> 03/12/2012	
<b>Methodology</b>					
<b>Number:</b> ACM0002	<b>Version:</b> 13.0.0	<b>Title:</b> Consolidated baseline methodology for grid-connected electricity generation from renewable sources		<b>Scale:</b> Large	<b>SS:</b> 1 <b>TA</b> 1.2
<b>GHG reducing measure/technology:</b>	The GHG emission reduction would happen by displacement of grid electricity equivalent to the net renewable electricity supplied by the Solar power project.				
<b>Summary of validation process (Compliance of paragraph 147(a), (b) and 148 (a) of VVS version 02 /B01/):</b>					
Carbon Check Pty Ltd. (Carbon Check), commissioned by Renewable Energy Investment of South Africa (Pty) Ltd (REISA), have undertaken validation of the proposed project activity “Kathu Grid Connected 100 MW Solar Park, South Africa” in Republic of South Africa, with regard to the relevant UNFCCC requirements for CDM activities.					
The validation has been performed through a process of document review based on the project design document, /01/ initially submitted for validation and the subsequent revisions follow up interviews with the stakeholders, resolution of outstanding issues and issuance of the validation report.					
The project activity involves the installation of solar park with output capacity of 100 MW near the Town of Kathu, Northern Cape province. The purpose of the project activity is to generate electricity by utilizing the renewable solar potential available in the region, so there will be no GHG emissions. The project activity shall achieve GHG emission reductions by supplying the net electricity generated to the South African grid which is pre dominantly dependent on fossil fuel based power plants.					
The compliance to all requirements as set forth in Article 12 of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), the modalities and procedures for a CDM (CDM M&P) and relevant decisions of the Conference of the Parties, serving as meeting of the parties to the Kyoto protocol (COP/MOP) and the Executive Board of the CDM (CDM EB) have been evaluated and					

conformance to the validation requirements were confirmed based on the given information. A rule based approach was taken to conduct the validation and corrective action requests (CARs) and clarifications (CLs) which were raised for relevant actions to be taken by the Project Participant (PP).

Validation Team		Roles					
Full Name	Appointed for Sectoral scopes (Technical Areas)	Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Trainee	Technical Reviewer
Mr. Pankaj Kumar	1.1, 1.2, 3.1, 4.5, 13.1	X	X	X	X		
Mr. Ravi Shankar	1.2, 2.1, 2.2, 3.1, 13.1			X	X		
Mr. Barun Kumar	--					X	
Mr. Vikash Kumar Singh	1.2, 3.1, 13.1						X

**Validation Phases and Validation Status:**

- Desk Review     
  Follow up interviews     
  Resolution of outstanding issues  
 Corrective Actions / Clarifications Requested     
  Full Approval and Submission for Registration  
 Rejected

## **Executive Summary – Validation Opinion**

The Validation team assigned by the DOE (Carbon Check (Pty) Ltd.), here after called CCL, assigned by “Renewable Energy Investment of South Africa (Pty) Ltd (REISA)” to perform the validation of the project “Kathu Grid Connected 100 MW Solar Park, South Africa” in South Africa. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism. The scope of the validation is defined as an independent and objective review of the project design document, the project’s baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against CDM Validation and Verification Standard (Version 2.0), Kyoto Protocol requirements, CDM Executive Board/UNFCCC rules.

The report is based on the assessment of the project design document undertaken through Stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, site visit, and stakeholder’s interviews, review of the applicable methodology and its underlying formulae and calculations.

### Validation methodology and process

The validation has been performed as described in the VVS version 2.0 /B01/ and constitutes the following steps:

- Publication of the PDD /01/ on the UNFCCC website (15/12/2011 to 13/01/2012)
- Desk review of the PDD /01/ and the relevant documents
- On-site assessment (06/03/2012- 07/03/2012 & 24/08/2012-25/08/2012)
- Issuance of Validation Report

### Validation criteria

The following CDM requirements have been considered:

- Article 12 of the Kyoto Protocol,
- Modalities and procedures for CDM (Marrakech Accords)
- Subsequent decisions by the COP/MOP and CDM Executive Board
- Host country criteria
- Criteria given to provide for consistent project operations, monitoring and reporting.

The host party is South Africa and Host party fulfils the participation criteria and have approved /07/ the project and authorized the project participant, Renewable Energy Investment of South Africa (Pty) Ltd (REISA). The DNA of South Africa confirms /07/ that the project assists in achieving sustainable development

The project correctly applies the baseline and monitoring methodology ACM0002, version 13.0.0, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” /B02/.

The project results in reductions of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards South Africa.

The monitoring plan provides for the monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is CCL's opinion that the project participants are able to implement the monitoring plan.

By installing the new grid connected solar power plant, the project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

The total emission reductions from the project are estimated to be 2 380 798 t of CO<sub>2</sub>e over a 10 year (fixed) crediting period, averaging 238 080 t of CO<sub>2</sub>e annually. The emission reduction forecast /04/ has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not alter.

The validation protocol describes a total of 22 findings which include:

10 Corrective Action Requests (CARs); 11 Clarification Requests (CLs); and all findings have been closed satisfactorily. One (01) FAR has been raised during course of validation, which will be closed during the 1st periodic verification by the verifying DOE.

CCL concludes that the CDM Project Activity "Kathu Grid Connected 100 MW Solar Park, South Africa" in South Africa, as described in the PDD /02/, meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board.

The selected baseline and monitoring methodologies (ACM0002 ver.13.0.0) /B02/ are applicable to the project and correctly applied. The CCL therefore requests the registration of the project as a CDM project activity with UNFCCC.

## Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CC	Cross Check
CCL	Carbon Check (Pty) Ltd
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH <sub>4</sub>	Methane
CL	Clarification Request
CO <sub>2</sub>	Carbon dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EIA	Environmental Impact assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
I	Interview or any follow up action
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoV	Means of Verification
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-Governmental Organization
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PLF	Plant Load Factor
PP(s)	Project Participant(s)
PS	Project Standard
Ref.	Document Reference
RSA	Republic of South Africa
SD	Sustainable Development
SS(s)	Sectoral Scope(s)
TDDR	Technical Due Diligence Report
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

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## 1 INTRODUCTION

The project participant (PP) Renewable Energy Investment of South Africa (Pty) Ltd (REISA) has commissioned Carbon Check (Pty) Ltd, herein after referred to as “Carbon Check”, to carry out the validation of the project activity “Kathu Grid Connected 100 MW Solar Park, South Africa” in South Africa.

This report summarizes the findings of the validation of the project activity, performed on the basis of UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

### Objective

The objective of the validation is to have an independent evaluation of a project activity by a Designated Operational Entity against the requirements of the CDM as set out in decision 3/CMP.1, its annex and relevant decisions of the COP/MOP and CDM-EB, the present annex, subsequent decisions made by the COP/MOP and CDM-EB on the basis of the project design document. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC requirements and Host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project activity and its intended generation of Certified Emission Reductions (CERs). The Validation follows the requirements of the current version of the CDM validation and verification standard (CDM VVS) to ensure the quality and consistency of the validation work and the report.

### Scope

The scope of validation is an independent and objective review of the project design. Review of the PDD is conducted against the requirements of the Kyoto Protocol, the CDM M&P and relevant decisions of the COP/MOP and the CDM-EB. Carbon Check follows a rule-based approach in the validation focusing on the identification of significant risks for project implementation and generation of CERs. Validation is not meant to provide any consulting towards the PP, however, the corrective actions requests (CARs) and clarifications (CLs) might provide input for improvement of the project design.

## 2 METHODOLOGY

Validation was conducted using Carbon Check procedures in line with the requirements specified in the CDM Modalities and Procedures the latest version of the CDM Validation and Verification Standard, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

The validation consisted of the following three phases:

- Document review
- Follow-up actions
- The resolution of outstanding issues and the issuance of the final validation report

The following sections outline each step in more detail.



## Document Review

The PDD, version 01 of 08/11/2011 /01/ initially reviewed. Carbon check has assessed in particular the applicability of the methodology, the baseline determination, the additionality of the project activity, the starting date of the project and the monitoring plan. The emission reduction calculations provided in the form of a spread sheet /03/, /04/, were assessed as part of the validation.

Through the process of the validation, the PDD and the supporting documents of the same were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by Carbon Check. The documents reviewed by Carbon Check are listed below. Carbon Check reviewed the final version of the PDD Version 03 dated 08/10/2012 to confirm that all changes agreed had been incorporated.

The following table lists the documentation that was reviewed during the validation:

S. No.	Reference list
/01/	Webhosted CDM-PDD for project activity “Kathu Grid Connected 100 MW Solar Park, South Africa” , version 1.0 of 08/11/2011
/02/	Validated CDM-PDD for project activity “Kathu Grid Connected 100 MW Solar Park, South Africa” , version 3 of 08/10/2012
/03/	CER & GEF calculation spread sheet corresponding to /01/
/04/	CER & GEF calculation spread sheet corresponding to /02/
/05/	IRR spread sheet corresponding to /01/
/06/	Evidence for First-of-its Kind project: Appendix to Eskom Integrated report, Divisional Report, Power station commercial capacities, download file situated under “Excel downloads”, <a href="http://financialresults.co.za/2012/eskom_ar2012/integrated-report/popup-downloads.php">http://financialresults.co.za/2012/eskom_ar2012/integrated-report/popup-downloads.php</a> <a href="http://financialresults.co.za/2012/eskom_ar2012/divisional-report/downloads/power-station-commercial-capacities.xls">http://financialresults.co.za/2012/eskom_ar2012/divisional-report/downloads/power-station-commercial-capacities.xls</a>
/07/	Letter of approval from the host country DNA dated 24/04/2012
/08/	Modalities of communication
/09/	<ul style="list-style-type: none"> <li>• Technical Due Diligence Report Photovoltaic Project – Kathu-I, 75MW South Africa dated October 2011 prepared by Fichtner GmbH &amp; Co. KG. (third party engineering consultancy contracted by PP)</li> <li>• Certificate provided by FICHTNER GmbH &amp; Co KG dated 27/12/2012 for (the forecast production generated) for the Kathu-II 27 MW PV power plant.</li> </ul>
/10/	Savannah Environmental Pty Ltd, Final Environmental Impact Report for a proposed Kathu Solar Energy Facility Northern Cape Province, January 2011.
/11/	Statutory clearances: a) Department of Environmental affairs, Republic of South Africa: Environmental authorization, 26/09/2011. b) Amendment of the Environmental Authorization dated 29/02/2012 c) Department of Energy, Republic of South Africa: Letter of No Objection, 08/02/2012 ;
/12/	Contract between BWC and Renewable Energy Investment of South Africa (Pty) Ltd for CDM project development services of 27/07/2011
/13/	Contract of Validation: Contract of Validation between Carbon Check and Renewable Energy Investment of South Africa (Pty) Ltd dated 27/07/2011
/14/	Letter of undertaking from PP on no ODA involvement dated 20/08/2012

/15/	EPC contract between Renewable Energy Investment of South Africa (Pty) Ltd (REISA) and WBHO BUILDING ENERGY (Pty) Ltd. dated 05/11/2012
/16/	Documents pertaining of local stakeholders consultation: EIR report dt. January, 2011 by Savannah Environmental Pty Ltd
/17/	Copy of evidence related to grid connectivity with RSA grid for the export of electricity produced from the solar power project to comply with requirement of applied meth (grid connected Cp p-3 applicability criteria, §1):  1. Renewable Energy Independent Power Producer Procurement Programme document issued by Department Of Energy, RSA  2. PPA signed between Renewable Energy Investment of South Africa (Pty) Ltd (REISA) and Eskom holdings SOS Ltd. dated 05/11/2012
/18/	Technical specification of the PV to be installed in the project activity i.e. solar (Cp section A.4.3 of the PDD) including the proof of project life time. a. Fichtner GmbH & Co. KG (Fichtner); Certification Report for Kathu II, 27MW South Africa; 27/02/2012. (Technical specification) b. The data from the manufacturer of PV panels (Trina Solar) - Evidence for operational life time & EN Trina Solar Warranty (Life time of the project Activity) which confirms to EU: Study on PV panels supplementing the impact assessment for a recast of the weee directive, Final report, 14/04/2011 <b>Ref doc:</b> Technical Due Diligence Report Photovoltaic Project -- Kathu-I, 75MW South Africa dated October 2011 prepared by Fichtner GmbH & Co. KG and Certificate provided by FICHTNER GmbH & Co KG dated 27/02/2012 for (the forecast production generated) for the Kathu-II 27 MW PV power plant
/19/	Proof of GPS co-ordinate of the project site including the postal details: <b>Ref doc:</b> Technical Due Diligence Report Photovoltaic Project -- Kathu-I, 75MW South Africa dated October 2011 prepared by Fichtner GmbH & Co. KG and Certificate provided by FICHTNER GmbH & Co KG dated 27/02/2012 for (the forecast production generated) for the Kathu-II 27 MW PV power plant
/20/	Confirmation email dated 18/09/2012 by DNA of RSA on the authenticity of the LoA.

Background investigation and other referred documents/websites:

/B01/	CDM Validation and Verification Standard (Version 2.0) CDM Project Standard (Version 01)
/B02/	Approved baseline and monitoring methodology ACM0002 Version 13.0.0 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".
/B03/	Tool to calculate the emission factor for an electricity system, version 02.2.1
/B04/	1. Tool for the demonstration and assessment of additionality (version 06.1.0), annex 20, EB 69 2. Glossary of terms, Version 06 3. Guidelines for completing the project design document (CDM-PDD) form, Version 1.0. 4. Guidelines on additionality of first-of-its-kind project activities" (Version 02.0)
/B05/	Website referred: <a href="http://cdm.unfccc.int">cdm.unfccc.int</a>

	<a href="http://financialresults.co.za/2010/eskom_ar2010/downloads/eskom_ar2010.pdf">http://financialresults.co.za/2010/eskom_ar2010/downloads/eskom_ar2010.pdf</a> <a href="http://www.nersa.org.za/">http://www.nersa.org.za/</a> <a href="http://www.energy.gov.za/files/esources/kyoto/2012/CDM%20Projects%20Portfolio%2029%20February%202012.pdf">http://www.energy.gov.za/files/esources/kyoto/2012/CDM%20Projects%20Portfolio%2029%20February%202012.pdf</a> <a href="http://www.solar-tracking.com/">http://www.solar-tracking.com/</a>
/B06/	<p>Website used for the validation of Grid Emission Factor:</p> <a href="http://www.eskom.co.za/live/content.php?Item_ID=4226">http://www.eskom.co.za/live/content.php?Item_ID=4226</a> <a href="http://financialresults.co.za/2010/eskom_ar2010/downloads/eskom_ar2010.pdf">http://financialresults.co.za/2010/eskom_ar2010/downloads/eskom_ar2010.pdf</a> <a href="http://www.eskom.co.za/content/calculationTable.htm">http://www.eskom.co.za/content/calculationTable.htm</a> <a href="http://www.financialresults.co.za/eskom_ar2009/ar_2009/downloads.htm">http://www.financialresults.co.za/eskom_ar2009/ar_2009/downloads.htm</a> <a href="http://www.bethlehemhydro.co.za/carbon.html">http://www.bethlehemhydro.co.za/carbon.html</a>
/B07/	IPCC 2006

## Follow-up actions

On 06/03/2012 – 07/03/2012 Carbon Check team visited the consultant and PP to resolve questions and issues identified during the document review. Additional audit and a site visit to the project site at the town of Kathu in Northern Cape Province was undertaken on 24/08/2012 – 25/08/2012 by the audit team to interview relevant stakeholder and confirm the information provided in the PDD.

The key personnel interviewed and the main topics of the interviews are summarized in the table below:

	Date	Name and Role	Organization	Topic
/a/	06/03/2012 07/03/2012	Joost Van Lier (Director)	Blue World Carbon	Project concept and Design
/b/	07/03/2012	Andrea Braccialarghe (VP Business Development)	Building Energy	Project Concept, planning, and implementation, CDM benefits and barriers
/c/	24/08/2012 25/08/2012	Ilya Goryashin (Chief CDM Consultant)	Blue World Carbon	Discussion on the project description, baseline scenario, applicability compliance of the project with the meth, additionality, monitoring, ER estimation, LSC and environmental impacts.
/d/	24/08/2012 25/08/2012	Tinus Mans	Land Owner	Local Stakeholders consultation

## Resolution of outstanding issues

The objective of this phase of the validation is to resolve the request for corrective actions and clarification and any other outstanding issues which needed to be clarified prior to

Carbon Check’s positive conclusion on the project design. Ten (10) corrective action requests and Eleven (11) clarification requests and 01 FAR (Forward Action Request) raised by Carbon Check were resolved during communication between the client and Carbon check’s validation team. In order to ensure the transparency of the validation process, the concerns raised and responses that have been given are summarized in Section 3 of this report and documented in more detail in the table 3 of the validation protocol in Appendix A.

The validation protocol consists of four tables; the different columns in these tables are described in the figure below (see Figure 1). The completed validation protocol is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

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

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during validation 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, CLs and FARs identified are included in the validation protocol in Appendix A of this report.

Figure 1 Validation protocol tables

Validation Protocol, Table 1 - Mandatory Requirement		
Requirement	Reference	Conclusion
The requirements the project must meet.	Makes reference to the documents where the answer to the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) is being raised in case of a requirement not being met. A Request for Clarification (CL) is used when the validation team has identified a need for further clarification and a Forward Action Request (FAR) is being raised to highlight issues which require review during the first verification of the project activity.

Table 2 is for the draft report; any updates in the final report are discussed in Table 3.

Validation Protocol, Table 2 - Requirement Checklist					
Checklist Question	Ref.	MoV	Comments	Draft Conclusion	Final Conclusion
The various requirements in Table 1 are linked to checklist	Makes reference to document(s)	Explain how conformance with the checklist question has been investigated.	The discussion on how the conclusion has been	OK is used if the information and evidence provided is	OK is used if the information and evidence provided is

questions which the project should meet. The checklist is organized in five different sections.	where the answer to the checklist question or item is found.	Examples are document review (DR), interview or any other follow-up actions (I), cross checking (CC) with available information relating to projects or (N/A) means not applicable.	arrived at and the conclusion on the compliance with the checklist question so far.	adequate to demonstrate compliance with CDM requirements. For CAR, CL and FAR see the definitions above.	adequate to demonstrate compliance with CDM requirements.
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Validation Protocol, Table 3 - Resolution of Corrective Action Requests and Clarification Requests

Corrective Action Request and/or Clarification Request	Reference to Table 2	Response by project participant(s)	Validation Conclusion
The CAR(s) and/or CL(s) raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participant(s) to address the CAR(s) and/or CL(s).	The validation team's assessment and final conclusion of the CAR(s) and/or CL(s).

Validation Protocol, Table 4 - Forward Action Requests

Forward Action Request	Reference to Table 2	Response by project participant(s)	Validation Conclusion
The FAR(s) raised in Table 2 is/are repeated here.	Reference to the checklist question number in Table 2 where the FAR is explained.	Response by the project participant(s) on how forward action request(s) will be addressed prior to first verification.	If any

## Internal quality control

**Before the assessment begins, members of the team covering the technical area(s), sectoral scope(s) and relevant host country experience for evaluating the CDM PoA/CPA are appointed. The validation report including the validation findings underwent a technical review. A technical reviewer qualified in accordance with Carbon Check's qualification scheme for CDM validation and verification performed the technical review. Validation team and the technical reviewer(s)**

The validation team and the technical reviewer consist of the following personnel:

Validation Team		Type of Involvement						
Full Name	Appointed for Sectoral scopes (Technical Areas)	Supervision of work	Desk review	Site visit & Interview	Report & protocol writing	Technical Expert input	Reporting support	Technical Reviewer
Mr. Pankaj Kumar	1.1, 1.2, 3.1, 4.5, 13.1	X	X		X	X		
Mr. Ravi Shankar	1.2, 2.1, 2.2, 3.1, 13.1			X		X		
Mr. Barun Kumar	--		X		X		X	
Mr. Vikash Kumar Singh	1.2, 3.1, 13.1							X

### 3 VALIDATION FINDINGS

This section provides an overview of the validation activities undertaken by Carbon Check in order to arrive at the final validation conclusions and opinion. It includes general conclusions based on the Clean Development Mechanism Validation and Verification Standard, version 02.0.

The validation requirements, the means of validation and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

#### Approval and Participation

The project has currently been proposed as a unilateral CDM project and the Annex 1 party has not yet been identified. In line with the provision of paragraph 57 of the 18<sup>th</sup> meeting of the CDM EB registration of the project activity can take place without an Annex I Party being involved at the stage of registration. The project's host Party is Republic of South Africa. The project participant is Renewable Energy Investment of South Africa (Pty) Ltd (REISA) and is a private entity; since project is a unilateral project and hence the host country is the only Party involved in the proposed project activity. Republic of South Africa is the host party and fulfils the requirements to participate in the CDM, having ratified the Kyoto Protocol on 31/07/2002. The name of the DNA is the "Department of Energy" as per the UNFCCC website. The letter of approval /07/ was found to be unconditional with respect to § 39 (a) to (d) VVS, ver. 02 /B01/. This letter of approval confirms the contribution of the proposed project activity to the sustainable development of Republic of South Africa.

The project participant is correctly listed in table A.3 of the PDD/02/ and the information is consistent with the contact details provided in Annex 1 of the PDD /02/. Participation in the project activity of the PP has been authorized, as confirmed in the LoA issued by the DNA of the party concerned. Validation team considers that the submitted LoA is authentic and thus confirms to the requirement of § 42 VVS, ver. 02 /B01/. In line with the requirements of § 41 and § 42 of VVS, ver. 02 /B01/, the following table summarize the details of the LoA:

<b>Project participant /07/</b>	Renewable Energy Investment of South Africa (Pty) Ltd (REISA)
<b>Party involved /07/</b>	Republic of South Africa (Host Country)

<b>Project activity title /07/</b>	Kathu Grid Connected 100 MW Solar Park, South Africa
<b>APPROVAL</b>	
LoA received /07/	Yes
Date of LoA /07/	24/04/2012
LoA /07/ received from	PP
Validation of authenticity	The LoA was received from the project participant. The Validation team does not doubt authenticity of LoA, but DoE further cross verified the authenticity by means of communication /20/ with the DNA as required in § 42 VVS, ver. 02 /B01/.
Validity of LoA	Yes, validation team considers the LoA in accordance with § 39 to 42 VVS, ver. 02 /B01/
Additional information	No, LoA does not contain any additional specification of the project activity like PDD version number etc.
<b>PARTICIPATION</b>	
Party is party to Kyoto Protocol	Yes. Republic of South Africa has ratified the Kyoto Protocol on 31/07/2002
Voluntary participation	Yes, stated in the LoA /07/
Diversion of official development aid towards host country	No. There is no Annex I country involved.
Project contribution to SD	Yes, stated in the LoA /07/

The validation of approval and participation has been done on the basis of § 39-42 and §46-48 of VVS ver. 02 and validation team confirms that the proposed project activity by Renewable Energy Investment of South Africa (Pty) Ltd meets the requirement of § 38 and § 45 of VVS ver. 02.

## Validation of ODA

The validation did not reveal any evidence that this Project activity can be seen as a diversion of ODA. The same has also been confirmed by the declaration /14/ provided by the PP.

## Confirmation of MoC

The Modalities of Communication (MoC) /08/ was received from the PP through email on 29/11/2012 and hence confirms to the requirement of § 54(a) of VVS version 02 /B01/. As required in Procedures for Modalities of Communication between Project Participants and the Executive Board, the Validation Team has verified that the name of authorised signatory for future communication related to the corresponding scope of authority with UNFCCC. The MoC has been checked as per the requirement of § 53 and §57 of VVS ver. 02 and found correct. The Validation Team confirms that the signatory and contact details on the MoC /08/ is authorized and credible and hence confirms to the requirement of §53 of VVS ver. 02.

Based on above assessment requirement of §58 of VVS ver. 02 /B01/ has been met.

## Project design document

The PDD /01/ for the project activity submitted by the Renewable Energy Investment of South Africa (Pty) Ltd (REISA) has been the basis for the validation process. The PDD /01/ hosted for GSC was in VVM track later on during the course of validation PP has shifted to VVS

track and changed the PDD in VVS track format. This shift of VVM to VVS is allowed as per UNFCCC rules as verified from the Implementation timeline<sup>1</sup> available on UNFCCC website.

Referring to paragraphs 62 – 63, VVS version 02.0 /B01/, Carbon Check confirms that the PDD /02/ is based on the currently valid PDD template and is completed in accordance with the applicable guidance document “Guidelines for completing the project design document (CDM-PDD) form”, version 01.0 under VVS /B04/. This confirms the compliance of § 62 and 63 of VVS version 02.

## Project Design

Referring to paragraphs 62 – 69, VVS version 02.0

Starting date of project	Expected operational lifetime	project	Crediting period
05/11/2012 (Date of signing of EPC contract /15/). This can be treated as the earliest date on which the PP has committed expenditures related to project specific implementation and construction as per the Glossary of CDM Terms and § 67 of EB 41 meeting report.	25 years /18-b/		10 years starting from 01/01/2014 or the effective date of registration, whichever is later.

The project activity is a grid connected Greenfield renewable energy solar power plant which is designed to supply 100 MW and the same has been verified from the provided TDDR /09/. The project shall be connected to the energy system of the RSA /09/, /17/ (through state-owned company Eskom in charge of generation, transmission and distribution of power to end-users). The project activity will be implemented in two phase. In phase - I 75MW of capacity will be implemented whereas in Phase – II 25 MW will be implemented. The total installation of a grid connected solar power project of total output capacity of 100 MWp and the same has been verified from the provided TDDR /09/. Thus the generated electricity from the project will be supplied /09/ /17/ to the grid with a PPA signed between the PP and ESKOM to sell electricity. This will displace the fossil fuel based power generation and thereby reduce the GHG emissions. The project description including the total installed capacity of the project activity is provided in section A.1 and A.3 of the PDD /02/. The start date of the project is 05/11/2012 (the date of signing of EPC contract) /15/. PP has also signed PPA /17-2/ with ESKOM Holdings SOC Limited on 05/11/2012, to sell and supply electricity to the grid, checked and confirmed by the validation team. The solar park is expected to be commissioned by the 01/01/ 2014. In the context of project implementation as per PDD /02/, FAR-01 is raised.

The details provided for the location of the project activity of solar park were confirmed as vicinity of the town of Kathu in the Northern Cape Province of the RSA and the same has been verified from the provided TDDR /09/ and EIA Report /10/. The representative GPS coordinate of the project activity is geographical latitude: 27.5981° S. and geographical longitude: 22.9122° E. Time zone: UTC+2, as verified from the PDD /02/ and TDDR /09/.

<sup>1</sup> [http://cdm.unfccc.int/Reference/Manuals/VVM\\_and\\_VVStimeline.pdf](http://cdm.unfccc.int/Reference/Manuals/VVM_and_VVStimeline.pdf)



The expected quantity of net electricity generation to be supplied by the project (on average during the duration of PPA) is estimated as 182 663 MWh for Phase-I and 59 622 MWh<sup>2</sup> for phase-II per year /02/, /04/. Validation team confirms that the 0.8% degradation/year sourced from TDDR /09/ which is in line with the requirements of annex 11 of EB 48.

The generated electricity will be sold/supplied to the South African grid (under PPA) through Eskom. The project activity will thus reduce Greenhouse Gas (GHG) emissions associated with the RSA grid, which is connected with predominantly fossil fuel based power plants. The emission reductions, due to the project activity, works out to be 238 080 tCO<sub>2</sub>e per year (on average) /02/, /04/.

The solar park will be equipped with a cluster of photovoltaic (PV) panel arrays (polycrystalline modules) /02/, which will be installed with tracking system, which was confirmed by validation team during interview with PP. Type of polycrystalline module will be of TSM-PC05 modules manufactured by Trina Solar Limited for this project. The type of module and other technical specification confirmed with TDDR /09/ and Solar warranty provided by Trina Solar /18-b/.

During the process of validation, Carbon Check confirmed (based on document review) the capacity, unique identification of the project activity by means of project site, estimated power generation, arrangement for evacuation of electricity generated, technical specifications, expected date of commissioning, future arrangements for O&M and necessary clearances for setting the project activity. The documents reviewed during the course of the validation are presented under the list of documents.

The description of the project activity has been confirmed through the Interview with the PP. The technology used in the project is indigenously available in South Africa and hence there is no transfer of technology. However, the solar power project employs environmentally sound and safe features.

The PP had also submitted approvals /11/ for the installation of solar park. The accuracy and completeness of the project description was validated by document review including Environmental Impact Assessment report /10/, Technical Due Diligence Review /09/ and the documents which are available in public domain and interviews with PP.

The project participant has chosen a fixed crediting period of 10 years, starting on 01/01/2014 or the effective date of registration of the project activity with CDM EB, whichever is later. Operational life time of 25 years is chosen as per technical specification provided by proposed technology supplier /18/

The validation team has verified that the project has not received any public funding and /or Official Development Assistance (ODA). An undertaking /14/ also provided by PP that no ODA funding will be used for the project activity.

Carbon Check confirms that the description of the proposed CDM project activity, as contained in the PDD /02/ sufficiently covers all relevant elements, is accurate and complete and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity. The PDD complies with the relevant methodology, tools, forms and guidance at the time of PDD submission for registration.

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<sup>2</sup> This is an average over the 20 year estimation period, taking into account a yearly degradation of 0.8%.

# VALIDATION REPORT

CDM VALIDATION REPORT N° CCL0060/KGCSP/05102011

The main changes between the PDD /01/ published for the 30 days stakeholder commenting period and the final version /02/ submitted for registration are presented in the below table as follows:

Subject	Webhosted PDD /01/	Validated PDD /02/	Assessment
Project title	Kathu Grid Connected 100 MW Solar Park, South Africa	Kathu Grid Connected 100 MW Solar Park, South Africa	No change
Parties	Republic of South Africa (Host Party)	Republic of South Africa (Host Party)	No change
Project participants	Renewable Energy Investment of South Africa (Pty) Ltd (REISA)	Renewable Energy Investment of South Africa (Pty) Ltd (REISA)	No change
Project location	The proposed project is located 16 km North-West of the town of Kathu situated in the Northern Cape Province of the RSA	The proposed project is located 16 km North-West of the town of Kathu situated in the Northern Cape Province of the RSA	No change
Scope	I – Energy industries (renewable - / non-renewable sources)	I – Energy industries (renewable - / non-renewable sources)	No change
Methodologies and tools applied ( scope and version numbers)	ACM0002, version 12.2.0	ACM0002, version 13.0.0	PP has updated the minor version of methodology in the revised PDD /02/. Refer CAR 3.
Amount of emission reductions (tCO <sub>2</sub> )/year	190 407	238 080	The PLF in the webhosted PDD does not take into account the tracking system, At the time of publication of PDD for GSC, PP was not sure about PLF values. Now PP has claimed that this tracking system will be installed, so PLF went up and Emission reduction is also increased. Please refer CAR 7.
Additionality:	Bench mark(pre-	Investment barrier	Since the additionality

(benchmark / input values/analysis type/project start date/IRR or NPV values etc)	tax): 12.5%  Project (pre-tax): - 3.47%	removed from final PDD, hence benchmark, IRR no more applicable	demonstration in the revised PDD is changed to Barrier analysis, this comparison is not possible.
Monitoring (parameters)	Quantity of net electricity generation supplied by the solar park to the grid in year y	Quantity of net electricity generation supplied by the solar park to the grid in year y	No change
Crediting period ( type / start date)	7 years (Renewable), 01/03/2014 or the date of registration of the CDM project activity, whichever is later	10 years (fixed), 01/01/2014 or the date of registration of the CDM project activity, whichever is later	Start date of crediting period modified in final PDD and more realistic date mentioned.
<p>Please refer to Appendix A of this report for details of each change between webhosted PDD /01/ and the final PDD /02/ for submission. The Validation Team has carried out the validation process based on the Webhosted PDD and raised CARs/CLs against the project by issuing the validation protocol. With the updated information and corrections done on final PDD, the PP has addressed all the CARs /CLs that were raised by the Validation Team.</p> <p>It is concluded that the Validation Team has reviewed the project in line with the VVS (version 02) and all the evidence, corrections, justifications and updating done on the final PDD with respect to CARs /CLs raised are accepted and closed by the Validation Team, issuing the positive validation opinion for project registration.</p>			

## Application of selected baseline and monitoring methodology

Referring to paragraphs 70 – 76, VVS version 02.0

The project applies the Approved consolidated baseline and monitoring methodology ACM0002, version 13.0.0 /B02/, which also uses the “Tool to calculate the emission factor for electricity an electricity system” version 02.2.1 /B03/.

The selected version of the methodology at the time of hosting of PDD /01/ was ACM0002, version 12.2.0 /B02/, however PP has updated the minor version of the methodology to version 13.0.0 in the revised PDD /02/. The applied version of methodology is the latest version of methodology.

Applicability criteria for the baseline methodology /B02/ are assessed by the validation team by means of document review and interview. It is agreed in the validation team’s opinion that the project activity fully met the criteria as described below:

Applicability criteria as per methodology /B02/	Means of Validation
<i>This methodology is applicable to grid-connected renewable power generation project</i>	The project activity is a Solar power project of total output capacity of 100 MW

<p><i>activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).</i></p>	<p>and has been checked from the document review /02/, /09/, /10/, /15/, /17/ hence validation team confirms that the project activity is a new power plant /02/, /09/, /10/, /15/, /17/ at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant); The electricity generated by the project activity will be supplied to the RSA grid through Eskom and this has been checked from the provided documents /02/, /09/, /10/, /15/, /17/ which explicitly reveals the fact that the generated electricity from the project activity will be sold to the RSA grid.</p>
<p><i>The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, <b>solar power plant/unit</b>, wave power plant/unit or tidal power plant/unit;</i></p>	<p>The project activity is a Greenfield power plant, the same has been checked from the document review /02/, /09/, /10/, /15/ and from the validation visit interviews.</p>
<p><i>In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter <math>EG_{P,J,y}</math>): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity. In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.</i></p>	<p>The project activity is a Greenfield power plant, the same has been checked from the document review /02/, /09/, /10/, /15/ and from the interviews, and hence this paragraph of methodology is not applicable for the subject project.</p>
<p><i>In case of hydro power plants, one of the following conditions must apply:</i></p>	<p>The present CDM project activity is not a hydro power plant; hence this paragraph</p>

<p><i>The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or</i></p> <p><i>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>; or</i></p> <p><i>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>.</i></p>	<p>is not applicable for the subject project case.</p>
<p>In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m<sup>2</sup> all the following conditions must apply:</p> <p>The power density calculated for the entire project activity using equation 5 is greater than 4 W/m<sup>2</sup>;</p> <p>Multiple reservoirs and hydro power plants located at the same river and where are designed together to function as an integrated project that collectively constitute the generation capacity of the combined power plant;</p> <p>Water flow between multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;</p> <p>Total installed capacity of the power units, which are driven using water from the reservoirs with power density lower than 4 W/m<sup>2</sup>, is lower than 15MW;</p> <p>Total installed capacity of the power units, which are driven using water from reservoirs with power density lower than 4 W/m<sup>2</sup>, is less than 10% of the total installed capacity of the project activity from multiple reservoirs.</p>	<p>The present CDM project activity is not a hydro power plant; hence this paragraph is not applicable for the subject project case.</p>

<p><i>The methodology is not applicable to the following:</i></p> <ul style="list-style-type: none"> <li>• <i>Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;</i></li> <li>• <i>Biomass fired power plants;</i></li> <li>• <i>Hydro power plants<sup>3</sup> that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m<sup>2</sup>.</i></li> </ul>	<p>The subject project is a Greenfield grid connected Solar power project as verified from the provided documents /02/, /09/, /10/, /15/. The present CDM project activity neither involve switching from fossil fuels to renewable energy sources or biomass fired power plant or a hydro power plant, hence this paragraph is not applicable for the subject project case.</p>
<p><i>In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”.</i></p>	<p>The subject project is a Greenfield grid connected Solar power project as verified from the provided documents /02/, /09/, /10/, /15/ and from the interviews. Validation team confirms that it is not a case of retrofits, replacements, or capacity addition; hence this paragraph is not applicable for the subject project case.</p>

The selected baseline and monitoring methodology is an approved methodology. Based on above assessment, Carbon Check confirms that the project activity meets the applicability conditions of the methodology and concludes that the project activity correctly applies the approved baseline and monitoring methodology ACM0002, version 13.0.0 /B02/.

Carbon Check Confirms the requirement laid down in § 70, §73 to §76 of VVS version 02 /B01/. The above assessment also complies with the requirement of §77 of VVS version 01 /B01/.

## **Project boundary and baseline identification**

Referring to paragraphs 82 – 87 & 88- 95 VVS version 02.0

### **3.1.1 Project boundary**

As per the methodology /B02/, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project is connected to. In line with the requirement of the applied meth, the project boundary encompasses the physical and geographical site of the 100 MW Solar power project and the grid. The spatial extent of the project boundary is clearly defined /02/ as the site of project activity and all power plants connected physically to the national grid of Republic of South Africa. The defined project boundary is in line with ACM0002 (version 13.0.0) /B02/.

<sup>2</sup>Project participants wishing to undertake a hydroelectric project activity that result in a new reservoir or an increase in the existing reservoir, in particular where reservoirs have no significant vegetative biomass in the catchments area, may request a revision to the approved consolidated methodology.

The validation team was able to confirm that all the identified emission sources which are impacted by the project activity are addressed by the approved methodology /B02/ and can be seen in the Table below. Hence a clarification of revision to or deviation from the approved methodology /B02/ is not requested.

The sources and gases of greenhouse gas identified in the PDD/02/ are deemed to be appropriate and assessed below:

<b><u>Emissions</u></b>	<b>GHGs involved</b>	<b>Justification / Explanation</b>
Baseline emissions	CO <sub>2</sub>	Major emission source, which is emitted from the electricity generation by fossil fuel-fired power plants connected to the Eskom (South African national grid).
Project emissions	NA	Project emission is regarded as zero as the project is a renewable energy (solar power) project.
Leakage	NA	As per the applied methodology /B02/, the main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected, hence leakage is not considered for this project activity and acceptable to the validation team.

In summary, the project boundary was correctly identified in accordance with the methodology ACM0002, ver. 13.0.0 /B02/. All greenhouse gas emissions occurring within the proposed project activity boundary as a result of the implementation of the proposed CDM project activity have been appropriately addressed in the PDD /02/.

The identified project boundary and selected sources of emissions are justified for the project activity. The validation of the project activity did not reveal other greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed project activity which are expected to contribute more than 1% of the overall expected average annual emission reduction, with respect to the methodology applied.

Based on the review of supporting documented evidence provided by the project participant, Carbon Check can confirm that the project boundary and emission sources described in the PDD /02/ are accurate and complete, and also that the selected sources and gases are justified for the proposed project activity.

### 3.1.2 Baseline identification

The identified baseline scenario (since the project activity is an installation of a new grid-connected renewable power plant), in line with the methodology ACM0002, version 13.0.0

/B02/, is the scenario where 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, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”. Equivalent electricity that would in absence of the project activity, have been generated by the operation of the grid-connected power plants belonging to the Eskom (South African grid).

Validation team confirms that the identified baseline scenario in the PDD /02/ confirms to the requirement of applied meth /B02/.

In the baseline scenario the electricity delivered from the project activity to the grid would have been generated by fossil fuel grid-connected power plants and by the addition of new generation sources. This is reflected in the combined margin (CM) – the weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor. The weightings are set to be respectively 75% and 25%, which are the default values stipulated by “Tool to calculate the emission factor for an electricity system”, version 2.2.1 for Solar projects. The South African grid is dominated by coal-fired power plants /B06/.

Carbon Check was able to verify all the documented evidence during the validation process and can confirm that:

- Carbon Check was able to verify all the documented evidence during the validation process and can confirm that all the assumptions and data used by the project participants are listed in the PDD /02/, including their references and sources
- all documentation used referred to under section 2.1, is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD /02/
- assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable

Carbon Check confirms that the approved baseline methodology /B02/ has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

### 3.5.3 GHG Emission Reductions:

#### Determination of Baseline Emission

The electricity baseline under the adopted methodology /B02/ include only CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants.

The baseline emissions are to be calculated as follows:

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

Where:

BE<sub>y</sub> = Baseline emissions in year y (tCO<sub>2</sub>/yr)

EG<sub>PJ,y</sub> = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)



$EF_{grid,CM,y}$  = Combined margin CO<sub>2</sub> 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<sub>2</sub>/MWh)

As per the methodology if the project activity is the installation of a new grid-connected renewable power plant/unit (which is the case of subject project) at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

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

Where:

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

$EG_{facility,y}$  = Quantity of net electricity generation supplied by the project plant/unit to the grid in year  $y$  (MWh/yr)

The above equations as provided by the applied methodology /B02/ have been transparently provided in the PDD /02/, checked by the validation team.

A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the ‘Tool to calculate the emission factor for an electricity system’.

The validation team has checked the calculation of the combined margin grid emission factor and confirmed that the applied value of the emission factor follows the tool /B03/ and the data used to calculate OM and BM as provided in the PDD /02/ is taken from publically available database i.e. Eskom data base (<http://www.eskom.co.za/content/calculationTable.htm>)

Following steps (step numbers correspond to tool to calculate emission factor of an electricity system, version 02.2.1) demonstrate the calculation of combine margin emission factor in accordance with “Tool to calculate emission factor of an electricity system”, version 02.2.1.

**Step 1** - Electricity generated by the proposed project activity will be supplied to the national grid of the RSA. Since, DNA of RSA has not delineated the project electricity system, PP has defined this national grid as project electricity system and this delineation is appropriately explained in the PDD /02/, which is also in line with tool to calculate emission factor (which defines the national grid as a project electricity system by default Cp p 4 of 33 of the tool /B03/). The national grid of the RSA is managed by the state-owned company Eskom which is the only company in South Africa in charge of generation, transmission and distribution of power to end-users.

The project activity is connected to national grid of RSA and hence for the purpose of estimation of baseline emission factor the consideration of National grid of RSA Grid is appropriate and correct and is in line with the requirements specified in the tool /B03/

**Step 2** - of the tool gives an option to include off-grid power plants in the project electricity system. Eskom data base /B06/ has provided data for only grid connected power plants. Hence PP has correctly considered only grid connected power plants for the calculation of grid emission factor and the same is in line with the tool /B03/; acceptable to the validation team.

**Step 3** - Simple OM method, out of the four methods provided in the tool /B03/ for calculating the operating margin ( $EF_{grid,OM,y}$ ) is selected. The tool /B03/ (Cp p 5 of 33 of the tool) specifies that the simple OM method can only be used if the low-cost/must-run resources constitute less than 50% of total grid generation in :1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production. The Simple OM method selected is by the PP in the PDD /02/ and justified and appropriate as the average proportion of low-cost/must run resources is less than 50% in RSA grid, checked by referring Eskom data base /B06/ and acceptable to the validation team.

The ex-ante option for determining the simple OM is opted by the PP /02/, which is as per the tool /B03/.

**Step 4** – The simple OM emission factor is calculated as the generation-weighted average CO<sub>2</sub> emissions per unit net electricity generation (tCO<sub>2</sub>/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

As per the tool /B03/, the simple OM may be calculated by one of the following two options:

Option A: Based on the net electricity generation and a CO<sub>2</sub> emission factor of each power unit; or

Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

PP has considered /02/, the Option A (A for coal-fired power plants/units, as data on fuel consumption and electricity generation for each coal-fired power unit  $m$  is available and option B for gas turbine power plants as for gas turbine power plants data on fuel consumption are not available and only data on electricity generation is presented in the public domain) for the calculation of simple OM, which is in line with the requirement of tool /B03/. All the data base explained in Section B.6.2 & Annex 4 of the PDD /02/ which are sourced from Eskom website (The PP has considered the national published data (Eskom data base <http://www.eskom.co.za/content/calculationTable.htm> & Eskom Annual Report

2010, page 298( [http://financialresults.co.za/2010/eskom\\_ar2010/](http://financialresults.co.za/2010/eskom_ar2010/) ). All the data used for simple OM calculation described in Annex 4 of the PDD and also cross checked by Grid emission factor calculation spread sheet /04/ and found that PP has correctly calculated the generation weighted average value and this is in line with the tool /B03/ and arrived at following summary:

Parameter	Unit	Value
Total net electricity generation of power units <i>m</i> for the 3 most recent reporting years	MWh	651 882 496
Total CO <sub>2</sub> emissions of power units <i>m</i> for the 3 most recent reporting years	tCO <sub>2</sub>	659 052 985
<b>Simple operating margin CO<sub>2</sub> emission factor</b>	<b>tCO<sub>2</sub>/MWh</b>	<b>1.011</b>

Based on above assessment, validation team confirms that the PP has correctly followed the guidelines of tool to calculate emission factor and by using database provided by Eskom (South African National Grid) and the  $EF_{grid,OM}$  for the South African National grid is calculated based on option 'A' of the step 4 of the "Tool to calculate emission factor of an electricity system, version 02.2.1 /B03/

Since ex-ante option has been opted for the simple OM and only grid power plants has chosen, PP has used a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation. This is in compliance of tool to calculate emission factor **(Cp p 5 of 33 of the tool)**.

**Step 5** – PP has chosen option 1 and calculated build margin emission factor ex ante based on the most recent information available on units already built for sample group *m* at the time of PDD submission to the DoE for validation.

PP has considered option (b) the set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently and the same has been selected in the PDD /02/.

Validation team checked independently and confirm that the selection of the options is correct. The identification of BM plants follow (b) of SETP 5 of the tool and validation team confirms that the  $AEG_{SET \geq 20\%} > AEG_{SET-5-units}$  for the RSA grid and hence consideration of  $AEG_{SET \geq 20\%}$  for the set sample is a correct approach. PP has fixed the Build Margin emission factor as ex-ante for the whole crediting period.

The validated BM value for the year 2010 (latest data available at the time of start of validation) comes to 0.920 tCO<sub>2</sub>/MWh and found the same to be correct and in line with the tool.

**Step 6** of the tool /B03/ requires calculation of the combined margin emission factor as per the following equation:

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

According to the tool /B03/ on selecting alternative weights, the default weights applicable for solar power projects are  $w_{OM} = 0.75$  and  $w_{BM} = 0.25$  for the first crediting period have been applied. The combined margin emission factor has been calculated as:  $EF_y = 0.988$  tCO<sub>2</sub>/MWh.

The CM for the first crediting period is fixed ex-ante. Hence the validation team confirms that the PP has correctly calculated the combined margin grid emission factor and is in line with the tool to calculate emission factor, version 02.2.1 /B03/.

Validation team further compared the arrived value of OM and BM with other CDM registered renewable energy project (though it for different data vintage, hydro project – UNFCCC ref no 2692) and found that the OM and BM values are comparable with this project.

Assessment of assumptions used in Baseline Emissions

Parameter	Value Applied	Unit	Source of Information	DOE Conclusion
<b>BASELINE EMISSIONS</b>				
Rated Capacity of the plant	100	MWp	Technical Due Diligence Report /09/ and EIA report /10/	Cross checked with Technical Due Diligence Report /09/ and EIA report /10/ and found correct.
PV specific production	182 663(Phase -I) & 59622 (Phase-2) <sup>4</sup>	MWh/a	Technical Due Diligence Report /09/ and Fichtner Certification for Kathu Phase 2, 27 February 2012	The expected quantity of net electricity generation to be supplied by the project is cross checked by referring the third party report /09/. Validation team confirms that in line with the requirements of annex 11 of EB 48.
Combined margin for the RSA grid	0.988	tCO <sub>2</sub> /MWh	GEF calculation spread sheet	Crosschecked with GEF calculation spread sheet /04/ and found correct.

Calculation of Electricity Generation phase wise:

### Phase 1 Yield

The plant yield for Phase 1 was obtained from Fichtner, Technical Due Diligence Report, Photovoltaic Project - Kathu, 75MW, South Africa, 10 October 2011, Table 5-5, page 5-6 /09/. The information given in /09/ is the plant yield per year for the first 20 years of its operational lifetime for the full 75 MW. Since this portion of the plant is built in two stages, namely 25 MW and 50 MW, the yearly yield has to be adjusted proportionately. To make things clearer, the two portions have been given separate calculations in the excel sheet /04/, namely 'Phase 1 (25 MW)' and 'Phase 1 (50 MW)'.

### Sub-stage 1 of Phase 1 (25 MW)

The 25 MW portion will start operation on 01/01/2014, therefore for the first year of operation (2014), one third (25MW out of the total 75MW) of the yearly yield is produced. In other

<sup>4</sup> This is an average over the 20 year estimation period, taking into account a yearly degradation of 0.8%.

words in the first year of operation (2014) for the 25 MW portion the yield will be calculated as follows:

$$196,935 \text{ MWh} \times (25 \text{ MW} / 75 \text{ MW}) = 65,645 \text{ MWh}$$

Similarly these calculations have been done for each of the following years and their respective yields given in the TDDR /09/.

### **Sub-stage 2 of Phase 1 (50 MW)**

The second portion of phase 1 is 50 MW and will begin operation on 01/07/2014. Therefore only 6 out of 12 months of the first year's yield will be in 2014, with the remaining 6 months' yield being in 2015. Therefore for 2014 the total yield from this portion of the plant will be based on a 50 MW proportion for the period from 01/07/2014 – 31/12/2014 as follows:

$$196,935 \text{ MWh} \times (50 \text{ MW} / 75 \text{ MW}) \times (184 \text{ days} / 365 \text{ days}) = 66,185 \text{ MWh}$$

The remaining 6 months yield (01/01/2015 – 30/06/2015) will go towards the 2015 electricity production along with the first half of the second years yield, and is calculated as follows:

Remaining first years yield + first half of second years yield =

$$196,935 \text{ MWh} \times (50 \text{ MW} / 75 \text{ MW}) \times (181 \text{ days} / 365 \text{ days}) + 195,360 \text{ MWh} \times (50 \text{ MW} / 75 \text{ MW}) \times (184 \text{ days} / 365 \text{ days}) =$$

$$65105.45 + 65655.23 = 130\,761 \text{ MWh}$$

And therefore the total yield for Phase 1 for 2014 and 2015 respectively will be as follows:  
2014:

$$\text{Sub-stage 1 of Phase 1 (25 MW)} + \text{Sub-stage 2 of Phase 1 (50 MW)} = 65,645 \text{ MWh} + 66,185 \text{ MWh} = 131,860 \text{ MWh}$$

2015:

$$\text{Sub-stage 1 of Phase 1 (25 MW)} + \text{Sub-stage 2 of Phase 1 (50 MW)} = 65,120 \text{ MWh} + 130,761 \text{ MWh} = 195,881 \text{ MWh}$$

### **Phase 2 Yield**

The plant yield for Phase 2 was obtained from Fichtner Certification for Kathu Phase 2, 27 February 2012, Table 1.3, Forecast Annual Generation at Delivery Point: P50 /09/. The information given in this document is the plant yield per year for the first 20 years of its operational lifetime for the full 25 MW.

Phase 2 will start operation on 01/11/2014, therefore for the first year of operation; only 2 months of yield will contribute to the year 2014, with the remaining yield contributing to the 2015 yield. Therefore the respective calculations for 2014 and 2015 will be as follows:

2014:

$$64,280 \text{ MWh} \times (61 \text{ days} / 365 \text{ days}) = 10,743 \text{ MWh}$$

2015:

$$64,280 \text{ MWh} \times (304 \text{ days} / 365 \text{ days}) + 63,766 \times (61 \text{ days} / 365 \text{ days}) = 53537.3 + 10656.8 = 64,194 \text{ MWh}$$

Similarly these calculations have been done for each of the following years and their respective yields given in this TDDR /09/.

## Total Yield (100 MW)

The total yield is given by the addition of the yields for Phase 1 and Phase 2 for each respective year as follows:

2014:

131,860 MWh + 10,743 MWh = 142,572 MWh

2015:

195,881 MWh + 64,194 MWh = 260,075 MWh

With similar calculations for each of the following years and average annual electricity generation is calculated as 240 972 MWh/ year

The GHG emissions reduction calculations are transparently documented and appropriate assumptions regarding the expected amount of electricity generated have been used to forecast emission reductions.

While the leakage is not applicable for the project as per the applied meth /B02/ and project emission are zero, the baseline emissions are equal to the emission reductions due to the project activity.

The emissions reductions due to the project activity were estimated ex-ante to be 238 080 tCO<sub>2</sub>e average annual value in the PDD /02/ and calculated as follows:

$$ER_y = BE_y = EG_{\text{facility},y} * EF_{\text{grid,CM},y} = 240,972 \text{ MWh} * 0.988 \text{ tCO}_2\text{e/MWh} = 238,080\text{tCO}_2\text{e}$$

(rounded down value)

In summary, the calculation of emission reductions was correctly demonstrated by the PP according to the methodology ACM0002 (version 13.0.0) and the referred tool “Tool to calculate the emission factor for an electricity system (Version)” version 02.2.1. The summary of GHG emission reduction is as follows:

All assumptions made for estimating GHG are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD /02/ Section B.6
All data used by project participants are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD /02/ Section B.6
Their references and sources are also listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD /02/ Section B.6
Formulas, parameters, values are complete, accurate, transparent and conservative	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD /02/ Section B.6
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD /02/ Section B.6
Methodology has been applied correctly to calculate project emissions, baseline emissions, leakage emissions and emission reductions	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per ACM0002, Version 13.0.0 /B02/ and methodological tool, “Tool to calculate the emission factor for an electricity system” (Version 02.2.1) /B03/.

All the emissions of baseline emissions can be replicated using information provided in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per ACM0002, Version 13.0.0 /B02/ and methodological tool, "Tool to calculate the emission factor for an electricity system" (Version 02.2.1) /B03/.
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### 3.6 Additionality

The project is a large scale project. Therefore, in accordance with ACM0002, version 13.0.0, the additionality of the project has been demonstrated based on the valid version of the "Tool for demonstration and assessment of additionality" (Ver. 06.1.0) and Guidelines on additionality of first-of-its-kind project activities" (Version 02.0)

#### 3.6.1 CDM consideration

The start date of the project activity is on 05/11/2012 (dated of signing of EPC contract) and Power Purchase Agreement also signed with Eskom on 05/11/2012. The PDD /01/ was web-hosted for public comments on 15/12/2011 i.e. before the start date of the project activity. Since the start date of the project activity is after PDD was web-hosted, as per paragraph 105 of VVS 02 project participant is not required to demonstrate prior consideration of CDM.

The start date of the project activity is on 05/11/2012 as verified from the provided EPC contract /15/ and signed PPA /17/.

In conclusion, in accordance with the requirements of the VVS /B01/, Carbon Check can confirm that the CDM was considered seriously in the decision to implement the project activity.

#### 3.1.2 Identification of alternatives

This is a solar power project and is based on the Methodology ACM0002. The methodology states, "If the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following: 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, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

Paragraph 115 of VVS, (ver. 02) states that PDD is required to identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required. Since the approved methodology ACM 0002, (ver.13.0.0) on which the project activity is based on, prescribes the baseline scenario, no further analysis of alternatives is required for the project activity.

*Validation Team, therefore, concludes that the PDD and the validation report conforms to the guidance given by EB vide paragraph 113 of VVS (Ver.02).*

### 3.1.3 Investment analysis

PP has not opted for investment analysis in revised PDD /02/, hence not applicable

### 3.1.4 Barrier due to prevailing practice

Project developer has demonstrated that the project is first-of-its-kind (FOIK) in the geographical region. The project involves the generation and supply of electricity (output) to the grid (Eskom, National grid of South Africa), using solar energy (technology) in the country (geographical region i.e. Republic of South Africa) and has opted for a fixed crediting period (10 years with no renewal). The measure involved under the project activity falls under paragraph 2 (b) of annex 06 of EB 69, i.e. Power generation based on renewable energy, checked and confirmed to be appropriate for the project activity. It is verified /06/ that there was no large scale grid connected solar PV Project operational as on 31/03/2012 i.e. before the start date GSC which is earlier date between the start date and start of GSC in RSA. Project web hosted for GSC on 15/12/2011 and start date of project activity is 05/11/2012/15/, hence PP has correctly considered date of GSC (which is earlier than the start date of the project) as the reference point for the demonstration of FOIK, which is in line with the requirements of annex 06 of EB 69 and hence acceptable to the validation team.

The PP has cited reference of publically available data source i.e. Appendix to Eskom Integrated report, Divisional Report, Power station commercial capacities, download file situated under “Excel downloads”, [http://financialresults.co.za/2012/eskom\\_ar2012/integrated-report/popup-downloads.php](http://financialresults.co.za/2012/eskom_ar2012/integrated-report/popup-downloads.php) /06/ to support the claim that there is no solar project in South Africa connected to grid. Validation team confirms the data source inline with the requirement of annex 06 of EB 69 foot note 02, reiterated below:

*“While identifying other technologies, project participants may also use publically available information, for example from government departments, industry associations, international associations on the market penetration of different technologies etc.”*

Validation team confirms that such evidence is valid for demonstrating barriers as per additinality tool as well, relevant text is re-iterated below:

*“42. In applying Sub-steps 3a and 3b, provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternatives are prevented by these barriers. Anecdotal evidence can be included, but alone is not sufficient proof of barriers. The type of evidence to be provided should include at least one of the following:*

*(a) Relevant legislation, regulatory information or industry norms;*

*(b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions, industry associations, companies, bilateral/multilateral institutions, etc;*

*(c) Relevant statistical data from national or international statistics;*

*(d) Documentation of relevant market data (e.g. market prices, tariffs, rules);*



(e) Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools and training centres), industry associations and others.”

Validation team confirms that the document provided from the Eskom (National grid of South Africa) falls under the bullet(c) of the above list as it is a relevant statistical data from national statistics.

Since there was no large scale solar power project as on 31/03/2012 (after 15/12/2011 i.e. start of GSC) and hence based on this it can be confirmed that proposed project activity is FOIK.

Based on the above validation team concludes that the project fulfils the criteria laid down for ‘first-of-its-kind’ vide Annex 20, EB69 read with annex 06 of EB 69.

### **3.1.5 Common practice analysis**

As per additionality tool “Unless the proposed project type has demonstrated to be first-of-its kind (according to Sub-step 3a), and measures different from those listed in paragraph 6 the above generic additionality tests shall be complemented with an analysis of the extent to which the proposed project type (e.g. technology or practice) has already diffused in the relevant sector and region. This test is a credibility check to complement the investment analysis (Step 2) or barrier analysis (Step 3).”

The PP has demonstrated the subject project as FOIK, assessed as above; hence demonstration of common practice analysis is not required, and hence acceptable to the validation team.

### **3.1.6 Conclusion**

In the above background, Validation Team concludes that the project is not a business-as-usual scenario and is additional.

Carbon Check confirms that all data, rationales, assumptions, justifications and documentation provided by the project participant(s) to support demonstration of additionality are credible and reliable.

In conclusion, the proposed project activity complies with all criteria of “Tool for the demonstration and assessment of additionality” and “Guidelines on additionality of first-of-its-kind project activities, ver. 2.0” and the proposed project is additional.

## **Monitoring Plan**

Referring to paragraphs 131 – 133, VVS version 02.0.

The approved baseline and monitoring methodology “ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, ver. 13.0.0 /B02/ has been applied.

The monitoring plan is in accordance with the monitoring methodology; the monitoring plan will give opportunity for real measurement of achieved emission reductions.

Carbon Check has verified that the parameters presented in the monitoring plan against the requirements of the methodology and concludes that no deviations relevant to the project activity have been found.

Carbon Check confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

Carbon Check has verified all the parameters presented in the monitoring plan against the requirements of the methodology and concludes that no deviations relevant to the project activity have been found.

Carbon Check confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

### **3.1.7 Parameters determined ex-ante**

The combined margin emission factor is determined ex ante based on the most recent information available at the time of PDD was submitted for validation, the detailed calculations of the combined margin emission factor are described in the earlier section 3.5.

Following data and parameters used for the calculation of OM and BM are listed (along with values and source in tabular form) in the section B.6.2 of the PDD /02/, checked and found correct and hence acceptable to the validation team.

- Amount of fossil fuel type  $i$  consumed by power plant/unit  $m$  in year  $y$  ( $FC_{i,m,y}$ )
- Net calorific value (energy content) of fossil fuel type  $i$  in year  $y$  ( $NCV_{i,y}$ )
- CO<sub>2</sub> emission factor of fossil fuel type  $i$  used in power unit  $m$  in year  $y$  ( $EF_{CO_2,i,y}$ )
- Average net energy conversion efficiency of power unit  $m$  in year  $y$  ( $\eta_{m,y}$ )
- Net quantity of electricity generated and delivered to the grid by power unit  $m$  in year  $y$ ,  $EG_{m,y}$
- Net quantity of electricity generated and delivered to the grid by power unit  $n$  in year  $y$   $EG_{n,y}$
- Amount of fossil fuel type  $i$  consumed by power unit  $n$  in year  $y$  ( $FC_{i,n,y}$ )

The verified (ex-ante fixed) value for OM, BM and CM are listed in below table:

<b>Data and Parameters</b>	<b>Unit</b>	<b>Ex ante Determined value</b>
Operating Margin of South African grid (OM)	tCO <sub>2</sub> /MWh	1.011
Build margin of South African grid (BM)	tCO <sub>2</sub> /MWh	0.920
Combined margin emission factor of South African grid (CM)	tCO <sub>2</sub> /MWh	0.988

### 3.1.8 Parameters monitored ex-post

According to ACM0002, the net electricity exported to Eskom (South African grid) is the parameter monitored ex-post. The quantity of net electricity generation supplied by the project plant  $EG_{facility,y}$  could be calculated from the electricity exported and imported to the grid ex-post. Electricity generation will be measured continuously and recorded on a monthly basis. This data will be cross checked against the receipts from power grid.

The GHG indicators, parameters, monitoring methods, frequencies and the measurement equipment were considered to be reasonable and appropriate. The parameter,  $EG_{facility,y}$ , will allow the calculation of the baseline emissions in a proper manner as there are no project emissions and leakage in the proposed project activity..

### 3.1.9 Management system and quality assurance

The project's monitoring plan includes:

- A description of the responsibilities and authorities for project management;
- Procedures for training;
- A description of the installation of metering equipment;
- Procedures for the calibration of metering equipment;
- Monitoring of the net electricity delivered to the RSA Grid;
- Data quality control;
- Quality assurance and quality control;
- Data management system;
- Reporting and verification.

Detailed procedures have been elaborated in the PDD. These will be maintained and implemented to enable subsequent verification of emission reductions.

The application of the monitoring methodology is transparent and Carbon check considers the project participants able to implement the monitoring plan.

In Carbon Check's opinion the project participant's ability to implement the monitoring plan is adequate in order to measure and demonstrate its compliance as per the applied methodology.

### **3.2 Sustainable Development**

The host party's DNA, Department of Energy, Republic of South Africa has confirmed the contribution of the project to the sustainable development in RSA according to the Letter of Approval for the Project /07/, which was checked by the validation team to be valid.

The project activity is in compliance with all current applicable legislations. As the project activity does not lead to generation of liquid or gaseous effluents and will partly displace fossil fuel based electricity generation, there are only benefits derived out of the project and no adverse effects are envisaged. Moreover, the location of the project activity is in remote and economically backward region and hence largely contributes to the social well-being of the region.

In conclusion, the Validation Team is of the opinion that the project activity is in full compliance with all applicable requirements for the CDM by leading to emission reductions additional to what would have otherwise occurred, providing for reliable and measurable emission reductions with sustainable development in Republic of South Africa through improvement of environmental condition, reduction of air pollutants.

### **Environmental Impacts**

Referring to paragraphs 134 – 137, VVS version 02.0

The requirements of the environmental impacts in the Host Country come under the purview of National Environmental Management Act 107 of 1998, amended in June 2010, which governs Environmental Impact Assessment (EIA) and requires a scoping assessment and EIA or Basic Assessment (BA) depending on the nature of the activity.

Based on the law of the host country the PP analysed the effect of the project activity on environment and carried out a detailed EIA, including trans boundary impacts.

The potential environmental impacts on air, noise, water and solid waste, telecommunication, ecosystem, etc. have been sufficiently identified. No significant environmental impacts are expected from the project activity.

The conclusion of the analysis has been described in the PDD /02/, and no significant environmental impacts are expected from the project activity.

### **Local stakeholders consultation**

Referring to paragraphs 138 – 140, VVS version 02.0

Prior to the publication of the PDD on the UNFCCC website the PP considered the opinion of local stakeholders as of prime importance and conducted many rounds of formal and informal stakeholder consultations of which the one conducted during October and November 2010 are noteworthy and well documented. PP considered and identified everyone as a relevant stakeholder as well as invited the local stakeholders for consultation on the proposed CDM project activity (both phases) through local Newspaper Kathu Gazette on 20/11/2010. Invitations to review the project activity were also sent via email to relevant identified stakeholders on 16/11/2010. The project description was made public available at prominent places in the city like Kathu library, Dibeng library as well as private websites like [www.savannahsa.com](http://www.savannahsa.com). The meeting was conducted on 29/11/2010 in local language (English) at VIP Lounge of Sishen Golf Club in Kathu.

The stakeholders' opinions and suggestions were invited and collected during the meetings. The summary of comment is complete and provided in the PDD /02/. The important issue raised during the meeting is that the neighbours were apprehensive of stock theft during the implementation phase of the project activity; the issue was resolved by agreeing to provide a fence along the site and then carry out the implementation of the project activity. Accordingly all issues identified are resolved.

The evaluation of the comments received indicated good support from the local people. The validation team assessed and verified the related documents and also interviewed some stakeholders' like Mr. Tinus Mans, the Land owner. The team confirms that local stakeholder consultation was done adequately and there was no unresolved issue.

## **4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS**

The PDD version 01, 08/11/2011 was made publicly available on the CDM UNFCCC website and Parties, stakeholders and NGOs have been invited through the CDM website (<http://cdm.unfccc.int/Projects/Validation/DB/4V2BHOUR8YWI1ZKB8VXZMN3ZLC6FHX/view.html>) to provide comments during a 30 days period from 15 Dec 11 - 13 Jan 12 " No comments" were received during the GSC period.

# **APPENDIX A**

## **VALIDATION PROTOCOL**

## VALIDATION REPORT

**TABLE 1 MANDATORY REQUIREMENTS**

Requirement	Reference	Conclusion
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reductions commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non Annex I Parties contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2	OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art.12.5a CDM Modalities and Procedures §40a	OK
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the Host Country thereof.	Kyoto Protocol Art.12.2 CDM Modalities and Procedures §40	OK
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance (ODA) and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7 CDM Modalities and Procedures Appendix B §2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The Host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities and Procedures §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. 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.	CDM Modalities and Procedures §43	OK
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art.12.5b	OK
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
13. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to	CDM Modalities and Procedures §40	OK

## **VALIDATION REPORT**

<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>
comment on the validation requirements for a minimum of 30/45 days, and the project design document and comments have been made publicly available.		
14. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel.	CDM Modalities and Procedures §37e	OK
15. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §47	OK
16. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords, and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK



## VALIDATION REPORT

**TABLE 2 REQUIREMENTS CHECKLIST**

Checklist Question		Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
<b>A Description of Project Activity</b>						
<b>A.1 Title of the project activity</b>						
A.1.1.	Title of the project activity, revision number and date of PDD (section A.1). State the clearly identifiable title of the project activity, the version number and the date of the PDD.	/01/,	DR, CC		<del>To be compared and confirmed from LoA.</del>	OK
A.1.2	Does the project comply with the applicable requirements for completing the PDDs?	/01/, /B04/	DR, CC	YES the project complies "Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)"	OK	OK
<b>A.2 Description of the proposed project activity</b>						
A.2.1	Does the PDD contain an accurate description of the project activity and provide the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? How was the design of the project assessed?	/01/,	CC, DR, I	The project is a large scale 100 MW greenfield power project generating electricity from renewable resource (solar), using Photovoltaic solar panels. Start of Construction and installation works project activity is 01/07/2012. The project was reviewed by interviewing the Project proponent and technology manufacturer	<del>GL1</del> <del>GL2</del>  <del>FAR 1</del>	OK

<sup>5</sup> MoV: DR document review, I interview, CC cross checking

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
			<p>&amp; supplier and reviewing the design and feasibility study.</p> <p>CL 1 Sec. A.2 also discussed about providing employment opportunity to 80-110 persons during construction but reference has not been provided in the PDD. DNA of South Africa also laid down criteria for sustainable development for approval of CDM project but this document has not been referred in sec. A. 2 of the PDD.</p> <p>CL 2 During site visit the discussion on project design indicated that the output of the system is 100 MW, whereas web hosted version PDD indicates an installed capacity of 100 MW. Please clarify and accordingly clarify the estimated emission reductions</p>		
A.2.2	Does the project activity involve alteration of existing installations? If yes, have the differences between	/01/,	DR, SV Proposes project activity is greenfield project	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
pre-project and post-project activity been clearly described in the PDD?			activity and does not involve any alteration of existing installation.		
A.2.3 Does the project activity describes the contribution of project activity to sustainable development is in line with the criteria laid down by the Host country?	/01/,	DR, I	Yes, the project activity explicitly describes the contribution of project activity to sustainable development criteria laid down by the host country.	OK	OK
<b>A.3 Project participants</b>					
A.3.1 Have the Parties and project participants participating in the project been listed in tabular form in Section A.3 and are they consistent with the information detailed in Annex 1 of the PDD?	/01/,	DR, I	Republic of South Africa is the Host Party and Renewable Energy Investment of South Africa (Pty) Ltd is the project participant. Information is consistent in section A.3 and Annex 1 of PDD.	OK	OK
A.3.2 Do all participating Parties fulfil the participation requirements as follows: (a) Party has ratified the Kyoto Protocol (b) Party has a Designated National Authority (c) The assigned amount has been determined	/01/,	CC, DR	Republic of South Africa is the only party identified and participating (Host country). RSA has ratified Kyoto Protocol on 31/07/2002 and The DNA is represented through the "Department of Energy" as per the	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			UNFCCC website.			
A.3.3	Have the letters of approval have been issued?	/01/	DR	Host Country approval (LoA) has Not been provided to DOE for Validation	CAR-1	OK
A.3.4	Do the letters of approval meet the following requirements? (a) LoA confirms that the Party has ratified the Kyoto Protocol; (b) LoA confirms that participation is voluntary (c) The LoA confirms that the project contributes to the sustainable development of the Host Country? (d) The LoA refers to the precise project activity title in the PDD (e) The LoA was received directly by the DNA of the PP In case of doubt regarding the authenticity of the LoAs, describe how it was verified that the letter of approval is authentic.	/01/	DR	Confirm the requirements	Depends on closure of CAR-1	OK
A.3.5	Have all private/public project participants been authorized by a Party to the Kyoto Protocol?	/01/	DR	Project participant is a private entity which is clearly mentioned in sec. A.3 of the PDD.  Second evaluation: There is only one PP which was authorized by a Party to the Kyoto Protocol (RSA)	OK	OK
<b>A.4 Technical description of the project</b>						
A.4.1	Is the project location clearly defined?	/01/	DR, CC, I	Geographical Coordinates provided in	CAR-2	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			the PDD and verified through publically available satellite imagery data system like Google Earth does not confirm and represent indicated project site			
A.4.2	Does the project describes the category and type of the project activity using the categorization of Appendix B to the simplified modalities and procedures for small scale CDM project activities	/01/	DR, CC, I	The category and type of the project activity has been specified using the categorization of Appendix B to the simplified modalities and procedures for small scale CDM project activities	OK	OK
A.4.3	Does the project design engineering reflect current good practices? Would the technology result in a significantly better performance than any commonly used technologies in the host Country? Is any transfer of technology from any Annex I Party involved?	/01/	DR, I	Yes, the proposed technology in the project activity is sound technology and reflects good practice and would result in GHG reduction in host country.	OK	OK
A.4.4	Does the project describe the total estimated amount of emission reductions over the chosen crediting period?	/01/	DR	Yes, the project describes the total estimated amount of emission reduction over the chosen crediting period.	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
A.4.5	If public funding from Parties included in Annex I is used for the project activity, have these Parties provided an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?	/01/,	DR, I The PP has affirmed that no diversion of official development assistance will be used for this project. However an undertaking from the PP is required substantiating that no ODA funding has been used in the proposed project activity.	<del>CL-3</del>	OK
<b>B. Application of a baseline and monitoring methodology</b>					
<b>B.1 Methodology applied</b>					
B.1.1	Does the project activity apply an approved methodology and the correct version thereof?	/01/, /B02/	CC, DR, I The project has applied Approved consolidated baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources of methodology”, version 12.2.0 which is valid for RFR until July 2012. Also during the course of validation referenced tool in the methodology has been updated. Accordingly PP is requested to apply the latest version of the methodology and associated tools.	CAR-3	OK

## VALIDATION REPORT

Checklist Question		Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
B.2 Applicability criteria of the methodology/tools						
B.2.1	How was it validated that the project activity complies with the applicability criteria?	/01/, /B02/	CC, DR, I	The project is grid-connected renewable power generation project activity that installs a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity ( <b>greenfield plant</b> ); The project activity is the installation of solar power plant/unit. PP need to revise and justify all applicability criteria as per latest corrected version of methodology.	CAR-4	OK
B.2.2	Is the selected baseline one of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/01/, /B02/	CC,DR,I	The selected baseline is "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, as reflected in the combined margin (CM) calculations described in the tool to calculate the emission factor for an	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
			electricity system". Which is one of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology		
<b>B.3 Project boundary</b>					
B.3.1	Is the project boundary area clearly defined and in accordance with the applied methodology?	/01/, /B02/	DR, I Yes, in sec. B.3 of the PDD, flow diagram of the project boundary physically delineating the project activity is in line with "Guidelines for completing the CDM-PDD, Ver. 7"	OK	OK
B.3.2	What are the project's system boundaries (components and facilities used to mitigate GHGs)?	/01/, /B02/	DR, I The spatial extent of the project boundary includes the (PV solar park) project power plant and all power plants connected physically to the electricity system (grid) that the CDM project power plant is connected to.	OK	OK
B.3.3	Which sources are identified for the project? Does the identified project boundary cover all possible sources linked to the project activity?	/01/, /B02/	DR, I Project Emission and leakages are not related to this project. All sources	OK	OK



## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
			<p>of baseline emission identified. As all power plants connected physically to the Grid (electricity system) to which CDM project power plant is connected. This covers all possible sources linked to the project activity.</p> <p>Second evaluation: All GHG sources identified and included into the project boundary are complete and in line with the applied methodology, which is provided in Section B.3 of the PDD version 02</p>		
B.3.4	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute by more than 1% to the estimated emission reductions of the project?	/01/, /B02/	DR, I	OK	OK
<b>B.4 Baseline scenario identification</b>					
B.4.1	Which baseline scenarios have been identified? Is the list of the baseline scenarios complete?	/01/, /B02/	DR, I	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
			delivered to the grid by the project activity would have been 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) calculation described in the “ Tool to calculate emission factor for an electricity system”		
B.4.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/01/, /B02/	DR,I As per para 4 of the “Tool for the demonstration and assessment of additionality” ver . 6.0, in context of approved consolidated methodology ACM 0002, PP only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity. In the absence of project activity, electricity would have been generated by the operation of grid connected power plants and by the addition of	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
			new generation sources and grid is only feasible alternative for the project activity.		
B.4.3	What is the baseline scenario? Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/01/, /B02/	DR, I  The baseline scenario is “Continuation of the current situation (situation prior to the project activity)” that is : Electricity delivered to the grid by the solar park would have otherwise been generated by the operation of grid-connected Eskom’s power plants and by the addition of new generation sources. The baseline scenario is in accordance with the guidance described in the methodology. This is one of the baseline scenarios’ based on the applicability condition in the methodology	OK	OK
B.4.4	Has the baseline scenario been determined using conservative assumptions? Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/01/, 2 /B02/	DR, I  The baseline is evaluated based on conservative assumptions using local / regional available conservative value,	<del>GL4</del>	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
			<p>IPCCC default values which are in line with applied "Tool to calculate the emission factor for an electricity system".</p> <p>However CL 4 It is not evident if baseline scenario sufficiently takes into account relevant national and/or sectoral policies, macro-economic trends and political aspirations. Please clarify</p>		
<b>B.5 Additionality determination</b>					
B.5.1	What tool does the project use to assess additionality? Is this in line with the methodology?	/01/, /B02/	DR, I "Tool for the demonstration and assessment of additionality" (Version 06.0.0) is applied to assess and demonstrate additionality of the project activity.	OK	OK
B.5.2	What is the project additionality mainly based on?	/01/, /B02/	Section B.5 of PDD demonstrates additionality based on Investment barrier based on benchmark analysis, and relevant tools and guidelines has been applied appropriately for demonstration of additionality in section	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			B.5 of the webhosted PDD.			
<b>B.5.3</b>	<b>Prior consideration of CDM</b>					
B.5.3.1	What is the starting date of the proposed project activity?	/01/, /B02/	DR, I	<p>The project start date is 01/07/2012</p> <p>The PDD was published for global stakeholder consultation on 15/12/2011 which is prior to the starting date of the project activity. As per "Guidelines on the demonstration and assessment of prior consideration of the CDM" Ver. 4, EB 62.</p> <p>Notification to UNFCCC and DNA is not required if PDD has been published for global stakeholder consultation before the project activity start date.</p>	OK	OK
B.5.3.2	What is the evidence for serious consideration of CDM prior to the time of decision to proceed with the project activity?	/01/, /B02/	DR, I	<p>The PDD has been web hosted prior to the start date of project activity.</p> <p>This confirms the serious consideration of CDM.</p>	OK	OK
B.5.3.3	What initiatives were taken by the project participants from the starting date of the project activity to the start	/01/, /B02/	DR, I	<p>The project is under validation prior to its start</p>	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
			(physical implementation).		
B.5.3.4	/01/, /B02/	DR, I	Refer B.5.3.3 above	OK	OK
B.5.4	Investment analysis				
B.5.4.1		/01/, /B02/	<p>DR, I</p> <p>Investment barrier opted to demonstrate that proposed project activity is not economically viable without the revenue from the sale of certified emission reductions and to demonstrate investment barrier, benchmark analysis Chosen. PP has chosen prime lending rate provided by South African Reserve Bank which is post tax. As IRR calculated pre tax, benchmark also adjusted pre tax. Benchmark chosen is in line with para 12 of “ Guidelines on the assessment of investment analysis” EB 62, Annex 5</p> <p>However, CAR 5 The chronology of the</p>	CAR-5	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
B.5.4.2	What financial indicator is used?	/01/ /B02/	DR, I	<p>event has not been specified in the PDD</p> <p>Project IRR is used as financial indicator. As project is still in bidding stage, it presumed that entire project is funded by equity then why project IRR is more conservative financial indicator than equity IRR?</p>	<del>CAR 6</del>	OK
B.5.4.3	<p>Cross-check of main parameters used in the financial analysis: electricity generation, electricity tariff, investment costs, operating and maintenance costs, taxes, other costs.</p> <p>(The main parameters can be changed for the different project category.)</p>	/17/	DR	<p>CAR 7</p> <p>The following have not been provided for validation or considered:</p> <ul style="list-style-type: none"> <li>a) Supporting documents for total investment cost and PLF</li> <li>b) Breakup of project cost</li> <li>c) The page link of prime rate in the RSA</li> <li>d) Other relevant cost like Insurance cost (operation and construction), General expenses, operational expenditure, amount donation to local community etc.</li> <li>e) sources of all input values as per paragraph 6 of EB62, Annex 5.</li> </ul> <p>CAR 8</p>	<p><del>CAR 7</del></p> <p><del>CAR 8</del></p> <p><del>CL 5</del></p> <p><del>CL 6</del></p>	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
			<p>The following inconsistencies have been found in the Excel sheet, the PDD and supporting documents:</p> <p>a) Power generation in the document titled "TDD Phase 1-Kathu report" mentions 196935 GWh/a, while in financial analysis it is considered as 196935MWh</p> <p>b) PLF mentioned in PDD and financial calculation is not consistent</p> <p>c) PP has considered first year financials only for 6 months, which translate in to 19.50 years of operation, while operational period assumed by PP in the PDD is 20 years</p> <p>d) Tariff mentioned in PDD is 0.6585 ZAR/kWh, while in excel sheet it is considered as 0.6066 ZAR/kWh</p> <p>CL 5 Kindly clarify how assumed escalation in electricity tariff compliments with observed "increase in</p>		



## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			<p>electricity tariff “ of the order of 30% for a year in past few years also why two different escalation rates in tariff</p> <p>CL 6 Kindly clarify why the anticipated and published REFIT (tariff) of 2.311 ZAR/kWh as indicated in the PDD was not applied for the financial model</p>			
B.5.4.4	Sensitivity analysis: have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified?	/01/, /B02/, /B04/	DR	Sensitivity analysis has been carried out for investment cost, income from electricity sale and O&M cost which is in line with “Guidelines on investment analysis” EB 62, Annex 5.	OK	OK
B.5.4.5	Sensitivity analysis: is the range of variations is reasonable in the project activity?	/01/, /B02/, /B04/	DR	Yes, range of variation is reasonable and as per “Guidelines on investment analysis” EB 62, Annex 5	OK	OK
B.5.4.6	Have the key parameters been varied to reach the benchmark and the likelihood of this happening been justified to be small?	/01/, /B02/, /B04/	DR	No, likelihood of reaching the benchmark for all the parameters covered in sensitivity analysis not discussed in the PDD.	<del>CAR-9</del>	OK
<b>B.5.5 Barrier analysis</b>						

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
B.5.5.1	/01/, /B02/	DR, I	Additionality has been demonstrated based on Investment barrier and investment analysis has been opted to demonstrate additionality. Barrier analysis has not been opted.	OK	OK
B.5.5.2	/01/, /B02/	DR, I	Pending on resolution of CAR 6 & 7	<del>Pending on resolution of CAR 6 &amp; 7</del>	OK
B.5.5.3	/01/, /B02/,	DR, I	Refer CAR 6 & 7	<del>Pending on resolution of CAR 6 &amp; 7</del>	OK
B.5.5.4	/01/, /B02/	DR, I	Technological Barrier has not been put forward or demonstrated	OK	OK
B.5.5.5	/01/, /B02/	DR, I	Technological Barrier has not been put forward or demonstrated	OK	OK
B.5.5.6	/01/, /B02/	DR, I	PP has demonstrated Investment barrier based on benchmark analysis, and it was concluded in the sec. B.5 of the PDD that no common practice available in the region. Details of common	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			practice analysis are described in the PDD. As per latest tool for demonstration and assessment of additionality, PP demonstrated that at present there is no any solar park in South Africa.			
B.5.5.7	Is the project activity prevented by the barriers due to prevailing practice and is at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/01/	DR	The analysis reveals that fossil fuel based power plant connected to grid is common and does not face any barrier.	OK	OK
B.5.5.8	How were the other barriers assessed to be real? How does CDM alleviate the other barriers?	/01/	DR	Only investment barrier has been opted. Other barriers not been discussed.	OK	OK
B.5.5.9	Is the project activity prevented by the other barriers and is at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/01/	DR	The analysis reveals that fossil fuel based power plant connected to grid is common and does not face any barrier.	OK	OK
<b>B.5.6 Common practice analysis</b>						
B.5.6.1	What are the geographical scopes and scope of technology of the common practice analysis?	/01/, /B02/	DR	The proposed project will be a newly-built 100 MW photovoltaic	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
			power plant in the Northern Cape Province in South Africa, and the electricity generated from the proposed project will be supplied to South African National Grid. Therefore, the selected geographical area for the similar project is South Africa		
B.5.6.2	How many similar non-CDM-projects exist in the region within the scope?	/01/, /B02/	DR	Common practice analysis has been included in the section B.5 of the PDD and data provided suggests that there are no similar non-CDM projects in the region within the scope.	OK
B.5.6.3	What is the data source(s) used for the common practice analysis?	/01/, /B02/	CC, DR	Eskom Annual Reports is the official source used for the assessment and details of common practice analysis has not been explained in the PDD and information also provided in Annex 3-2 of the PDD.	OK
<b>B.5.7 Conclusion on the additionality assessment</b>					

## VALIDATION REPORT

Checklist Question		Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
B.5.7.1	What is the conclusion with regard to the additionality of the project activity?	/01/	DR	Refer CAR 6 & 7	<del>Conclusion of additionality depends on closure of CAR 6 &amp; 7</del>	OK
<b>B.6 Calculation of GHG emission reductions</b>						
<b>B.6.1 Baseline emissions</b>						
B.6.1.1	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/01/, /B02/	DR	In section B.6 of PDD latest version of the approved methodology and tool to calculate emission factor is not correctly applied to calculate baseline emission PP is requested to use correct version of methodology and tool to calculate emission factor. PP has provided the excel spread sheet of CER calculation the effect of latest version of methodology and tool (if any) on emission calculations are not evident, complete/transparent.	<del>CAR 10</del>	OK
B.6.1.2	Have conservative assumptions been used when calculating the baseline emissions and are the uncertainty estimates properly addressed?	/01/, /B02/	DR	Emission factor calculated based on Eskom annual reports and conservative assumptions has been used for all parameters.  Uncertainties related to	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			baseline emission calculation in emergency situations has been also addressed in the PDD			
<b>B.6.2 Project emissions</b>						
B.6.2.1	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/01/, /B02/	DR	Project emission is not applicable for the project activity.	OK	OK
B.6.2.2	Have conservative assumptions been used when calculating the project emissions and are the uncertainty estimates properly addressed?			Project emission is not applicable for the project activity.	OK	OK
<b>B.6.3 Leakage</b>						
B.6.3.1	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/01/, /B02/	DR	As per the applied methodology no leakage is to be considered	OK	OK
B.6.3.2	Have conservative assumptions been used when calculating the leakage and are the uncertainty estimates properly addressed?	/01/, /B02/	DR	As per the applied methodology no leakage is to be considered	OK	OK
<b>B.6.4 Emission reductions</b>						
B.6.4.1	Has the methodology been correctly applied to calculate the emission reductions and can this be replicated by the data provided in the PDD and supporting files to be submitted for registration?	/01/, /B02/	DR	The methodology has been correctly applied to calculate the emission reductions and also replicated by the data provided in the PDD. PP	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			has submitted excel sheet for CER calculation.			
<b>B.6.5 Data and parameters that are available at validation and that are not monitored</b>						
B.6.5.1	How were the parameters available at validation verified?	/01/, /B02/	DR, I	Combined emission factor fixed ex ante and available at the time of validation. All other parameters used to calculate emission factor which were available at the time of validation and have been included in section B.6.2 of the PDD	OK	<b>OK</b>
<b>B.7 Monitoring plan</b>						
<b>B.7.1 Data and parameters monitored</b>						
B.7.1.1	Does the monitoring plan described in the PDD comply with the requirements of the methodology?	/01/, /B02/	DR, CC	Yes, the monitoring plan described in the PDD complies with the requirements of the methodology ACM 0002. But the version of methodology used is not correct.	<del>Depends on resolution of CAR 3</del>	OK
B.7.1.2	Does the monitoring plan contain all necessary parameters and are they clearly described?	/01/, /B02/	DR	Section B.7.1 of the CDM-PDD completing guidelines (Version 7.0) states, " where data or parameter are supposed to be measured, specify	<del>CL7</del>	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
			the measurement methods and procedures, including a specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person/ entity that should undertake the measurements and what is the measurement interval". The accuracy class of meters and frequency of calibration of meters not mentioned in section B.7.1 of the PDD.		
B.7.1.3	Is the measurement equipment described? Is the accuracy of the measurement equipment addressed and deemed appropriate? Are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate?	/01/, /B02/	DR	The metering instruments shall be installed in accordance with the requirements of the Grid and the applied methodology at the point of supply	OK
B.7.1.4	Is the monitoring frequency adequate for all	/01/, /B02/	DR,I	As described in section	OK



## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
monitoring parameters? Is it in line with the monitoring methodology?			B.7 of PDD that provision is made for continuous measurement and at least monthly recording of Net electricity supplied to grid.		
B.7.1.5 Is the recording frequency adequate for all monitoring parameters? Is it in line with the monitoring methodology?	/01/, /B02/	DR	As described in section B.7 of PDD that provision is made for continuous measurement and at least monthly recording of Net electricity supplied to grid.	OK	OK
<b>B.7.2 Monitoring of sustainable development indicators/environmental impacts</b>					
B.7.2.1 Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/04/, /B02/		NA	OK	OK
B.7.2.2 Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/04/, /B02/		NA	OK	OK
B.7.2.3 Are the sustainable development indicators in line with stated national priorities in the host country?	/04/, /B02/		NA	OK	OK
<b>B.7.3 Management, quality assurance and quality control</b>					
B.7.3.1 How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/01/, /B02/	DR,I	Only one parameter, Net electricity supplied by the project to the grid is required to be measured as per the applied methodology. Energy meter having the capacity to measure the same are	OK	

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			available in the host country			
B.7.3.2	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/01/	DR	Yes section B.7 describes the procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	OK	
B.7.3.3	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/01/, /B02/	DR, I	<p>The description of monitoring plan as provided in section B.7.2 of PDD and interview with PP confirms that the data management, quality assurance and quality control procedures are sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified</p> <p>CL 8 It is not clear that “test verification” means in Section B.7.2. Please clarify</p>	<del>CL 8</del>	OK
B.7.3.4	Will all monitored data required for verification and	/01/, /B02/	DR,I	Yes, The document	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion
issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?			review and interview with PP confirmed that all monitored data required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later		
<b>C. Duration of the project activity and crediting period.</b>					
<b>C.1 Start date of project activity</b>					
C.1.1	What is the expected starting date of the project activity and how has been determined? When was the first construction activity?	/01/, /B02/, /B04/	<p>DR,I</p> <p>In section C.1.1 of the PDD, expected date of Construction is 01/07/2012.</p> <p>In section C.1 of the PDD, the starting date of the project activity, is in line with definition of the same provided in "Glossary of CDM terms (ver. 5)".</p> <p>Second evaluation: In section C.1.1 of the PDD, expected date of Construction is 01/11/2012. The starting date was confirmed through interview with PP.</p>	OK	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			In section C.1 of the PDD, the starting date of the project activity, is taken as the expected start date of construction which is in line with definition of the same provided in "Glossary of CDM terms (ver. 5)".			
C.1.2	What is the expected operational lifetime of the project activity? Is it reasonable?	/01/, /B02/		Though reference for operational life time of the project provided in PDD but the document has not been submitted for validation.	<del>GL-9</del>	OK
<b>C.2 Start date of crediting period</b>						
C.2.1	What is the expected starting date of the proposed project activity? Does the crediting period start eight weeks after the request for registration?	/01/, /B02/	DR, I	The start date of project 01/07/ 2012 and the crediting period activity is 01/03/2014 or the date of registration whichever is later.	OK	OK
C.2.2	What is the length of the crediting period? Is it clearly defined and reasonable?	/01/, /B02/	DR,I	Renewable crediting period of 7 years renewable twice is opted for the project.	OK	OK
<b>D. Environmental Impact</b>						
D.1.1	Has an analysis of the environment impacts of the project activity been undertaken? Is it clearly and sufficiently described in the PDD?	/01/, /16/, /B04/	DR	Yes the Analysis of Environmental Impact is recorded and presented in PDD. However PP	<del>GL-10</del>	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			needs to submit the EIA report for this proposed project.			
D.1.2	Will the project create any adverse environmental effects? Are transboundary environmental impacts considered in the analysis?	/01/, /16/, /B04/	DR, I	Refer CL 10	<del>Depends on closure of CL 10</del>	OK
D.1.3	Is the analysis of the environmental impacts required by the legislation of the Host Country? If yes, has the EIA has been approved by local Government? Does the approval contain any conditions that need monitoring?	/01/, /16/, /B04/	DR,	Environmental Impact is required to be assessed as per National Environmental Management act 1998 and its amendments. Environmental Authorization dt. 26/09/2011 issued by Deptt. Of Environment Affairs, Republic of South Africa has been provided.	OK	OK
D.1.4	Is the project in line with the current environmental legislation in the Host Country?	/01/, /16/, /B04/	DR	Yes the project is in line with current environmental legislation	OK	OK
<b>E. Local stakeholder consultation</b>						
E.1.1	Were the local stakeholders invited by the PP prior to the publication of the PDD to the UNFCCC website?	/01/, /16/, /B04/	DR	Yes the local stakeholders were invited prior to the publication of PDD to UNFCCC	OK	OK
E.1.2	Were the local stakeholders invited to comment on the proposed project activity?	/01/, /16/, /B04/	DR, I	Local stakeholders were invited to discuss CDM during the EIA	<del>CL 11</del>	OK

## VALIDATION REPORT

Checklist Question	Reference	MoV <sup>5</sup>	Comments	Draft Conclusion	Final Conclusion	
			consultation process. However PP is required to submit evidence for invitation of Local stakeholders.			
E.1.3	Is the summary of the comments received from the stakeholders, provided in the PDD complete?	/01/, /16/, /B04/	DR	Yes summary of comments received are provided in section E of the PDD.	OK	OK
E.1.4	Has due account been taken by the project participants of any stakeholder comments received?	/01/, /16/,	DR, I	Refer CL 11	<del>Depends on closure of CL 11</del>	OK
E.1.5	If a stakeholder consultation process is required by regulations/laws in the Host Country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/B04/	DR, I	Additional Stakeholder consultation process is undertaken by the DNA. The PP on request of the LOA has to submit the signed DVR by DOE. The DNA then performs LSC by uploading the PDD via the DNA's website. Stakeholder comments can only be taken into consideration on the FVR.	<del>Depends on closure of CAR4</del>	OK

**TABLE 3 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS**

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Corrective Action and/or Clarification Requests	Reference to Table 2	Response by project participant(s)	Validation Conclusion
<b>CAR 1</b>			
Host Country approval (LoA) has not been provided to DOE for Validation	A.1.1 A.3.3 A.3.4 E.1.5	The LoA dated 24/04/2012 has been submitted to the DOE.	LoA by the DNA of the host country (South Africa) dated 24/04/2012 for the project activity provided /07/, /22/. Host country DNA confirms that project contributes to sustainable development.  CAR closed.
<b>CAR 2</b>			
Geographical Coordinates provided in the PDD and verified through publically available satellite imagery data system like Google Earth does not confirm and represent indicated project site.	A.4.1	The following corrections have been introduced in Section A.2.4 of the PDD: <i>Geographical latitude: 27° 35' 53" S</i> <i>Geographical longitude: 22° 54' 44" E</i>	The geographical coordinated, as represented in the modified PDD, cross-checked with the supporting documents and confirmed by the site visit are correct.  CAR 2 is closed
<b>CAR 3</b>			
The project has applied Approved consolidated baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources of methodology”, version 12.2.0 which is valid for RFR until July 2012. Also during the course of validation referenced tool in the methodology has been updated. Accordingly PP is requested to apply the latest version of the methodology and	B.1.1 B.7.1.1	During the course of validation new Validation and Verification Standard was approved by EB 65, accordingly BWC voluntary and proactively updates the PDD, applied methodology, all associated tools to latest versions to align with the new standard, rules and regulations.  The following are changed: a) the format of the PDD to “F-CDM-PDD Version 04.1” b) version of ACM0002 to 13.0.0 c) version of “Tool to calculate the emission factor for an electricity system” to 02.2.1	The PP has changed the format of the PDD as per VVS track which is in line with EB 65 Active version of ACM0002 (version 13.0.0) has been applied, associated tools like “Tool to calculate the emission factor for an electricity system” has been updated to the latest version. As PDD, methodology and applied tools are all latest and active versions.

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associated tools.			CAR 3 is closed
<b>CAR 4</b>			
The project is grid-connected renewable power generation project activity that installs a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity ( <b>greenfield plant</b> ); The project activity is the installation of solar power plant/unit. PP need to revise and justify all applicability criteria as per latest corrected version of methodology	B.2.1	Additional clarification that the project will be connected to the national grid of the RSA was inserted. information was added in section B.2: Grid and Grid connectivity was not evaluated and identified, but this has been now been done.	During validation the version of applied methodology changed and PP has updated and evaluated the applicability criteria with respect to latest version 13.0 of methodology. This is found to be correct.  CAR 4 is closed
<b>CAR 5</b>			
The chronology of the event has not been specified in the PDD	B.5.4.1	The project chronology was inserted into Section A.3 of the PDD version 02.	The detailed chronology of events has been provided in Section A.3 of the PDD  CAR 5 is closed
<b>CAR 6</b>			
Project IRR is used as financial indicator. As project is still in bidding stage, it presumed that entire project is funded by equity then why project IRR is more appropriate financial indicator than equity IRR?	B.5.4.2 B.5.5.2 B.5.5.3 B.5.7.1	The investment analysis (step 2) was removed from Section B.5 of the PDD. At the same time Step 3 was inserted. It is demonstrated in the revised PDD that the proposed project is the first-of-its-kind.	As PP has opted to demonstrate additionality based on First-of-its-kind barrier, reference of guideline on investment analysis removed from revised PDD.  CAR closed
<b>CAR 7</b>			
In Section B.5 of PDD, the following have not been provided for validation or considered: a) Supporting documents for total investment cost and PLF b) Breakup of project cost	B.5.4.3 B.5.5.2 B.5.5.3 B.5.7.1	The investment analysis (step 2) was removed from Section B.5 of the PDD. At the same time Step 3 was inserted. It is demonstrated in the revised PDD that the proposed project is the first-of-its-kind. The PLF in the webhosted PDD does not take	As PP has opted to demonstrate additionality based on First-of-its-kind barrier, reference of guideline on investment analysis removed from revised PDD.



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c) The page link of prime rate in the RSA d) Other relevant cost like Insurance cost (operation and construction), General expenses, operational expenditure, amount donation to local community etc. e) sources of all input values as per paragraph 6 of EB62, Annex 5		into account the tracking system, since when at the time of publication of PDD for GSC PDD was webhosted, PP was not sure about PLF values. Now PP has claimed that this tracking system will be installed, so PLF corrected in revised PDD.	Justification provided by PP for increase in PLF as compare to webhosted PDD, found to be appropriate. CAR closed
<b>CAR 8</b>			
The following inconsistencies have been found in the Excel sheet, the PDD and supporting documents: a) Power generation in the document titled "TDD Phase 1-Kathu report" mentions 196935 GWh/a, while in financial analysis it is considered as 196935MWh b) PLF mentioned in PDD and financial calculation is not consistent c) PP has considered first year financials only for 6 months, which translate in to 19.50 years of operation, while operational period assumed by PP in the PDD is 20 years d) Tariff mentioned in PDD is 0.6585 ZAR/kWh, while in excel sheet it is considered as 0.6066 ZAR/kWh	B.5.4.3	The investment analysis (step 2) was removed from Section B.5 of the PDD. At the same time Step 3 was inserted. It is demonstrated in the revised PDD that the proposed project is the first-of-its-kind.	As PP has opted to demonstrate additionality based on First-of-its-kind barrier, reference of guideline on investment analysis removed from revised PDD.  CAR closed
<b>CAR 9</b>			
Likelihood of reaching the benchmark for all the parameters covered in sensitivity analysis was not discussed in the PDD.	B.5.4.6	The investment analysis (step 2) was removed from Section B.5 of the PDD. At the same time Step 3 was inserted. It is demonstrated in the revised PDD that the proposed project is the first-of-its-kind.	As PP has opted to demonstrate additionality based on First-of-its-kind barrier, reference of guideline on investment analysis removed from revised PDD.  CAR closed
<b>CAR 10</b>			
In section B.6 of PDD latest version of the	B.6.1.1	The calculations were corrected as per the	The calculations are based on

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approved methodology and tool to calculate emission factor is not correctly applied to calculate baseline emission PP is requested to use correct version of methodology and tool to calculate emission factor. PP has provided the excel spread sheet of CER calculation the effect of latest version of methodology and tool (if any) on emission calculations are not evident, complete/ transparent.		latest version of ACM0002 (version 13.0.0) and tool to calculate the emission factor for the electricity system (version 2.2.1) for 10-year crediting period. The PDD and the CER calculation sheet were modified accordingly.	the latest version of the methodology and the tool and found to be correct.  CAR 10 is closed
<b>CL 1</b>			
Sec. A.2 of the PDD, also discussed about providing employment opportunity to 80-110 persons during construction but reference has not been provided in the PDD. DNA of South Africa also laid down criteria for sustainable development for approval of CDM project but this document has not been referred in sec. A. 2 of the PDD.	A.2.1	This has been changed to 30-200 jobs as per the excel sheet that has been sent to the DOE. This is in line with the IPP procurement program (Appendix T submitted to the DOE) as shown in the attached Excel sheet under section "100 Job Creation" row "100-SR-04".	The job opportunities have been elaborated and substantiated by excel sheet /26/, which was evaluated during different stages of the project like EIA, Application of Bid.  CL 1 is closed.
<b>CL 2</b>			
During site visit the discussion on project design indicated that the output of the system is 100 MW, whereas web hosted version PDD indicates an installed capacity of 100 MW. Please clarify and accordingly clarify the estimated emission reductions.	A.2.1	The project will be implemented in two phases: 1) Phase one will have the output capacity of 75 MW (installed capacity will be 80.985 MW). The construction of phase 1 will be in two stages starting on 01/11/2012. The first stage of 25 MW will start commercial operation on 01/01/2014, second stage of 50 MW – on 01/07/2014. 2) The second phase of the project will have the output capacity of 25MW (installed capacity will be 26.883 MW). The construction will be started on 01/09/2013. The second phase will start commercial operation on 01/11/2014.	The project consists of two phases. The installed capacity of phase 1 is 80.985 MW /09/ and of phase 2 is 26.883 MW /09/. The output of two phases (75 MW + 25 MW) is equivalent to 100 MW.  CL 2 is closed.
<b>CL 3</b>			
The PP has affirmed that no diversion of	A.4.5	Signed declaration dated 20/08/2012	Declaration of no ODA was

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official development assistance will be used for this project. However an undertaking from the PP is required substantiating that no ODA funding has been used in the proposed project activity.		submitted to DOE.	provided by PP /14/.  CL 3 is closed
<b>CL 4</b>			
It is not evident if baseline scenario sufficiently takes into account relevant national and/or sectoral policies, macro-economic trends and political aspirations. Please clarify	B.4.4	The required explanation is inserted into Section B.4 of the revised PDD	The PP has provided the sufficient explanation and justification on the relevant topic in Section B.4 of the PDD CL 4 is close
<b>CL 5</b>			
Kindly clarify how assumed escalation in electricity tariff compliments with observed “increase in electricity tariff “ of the order of 30% for a year in past few years also why two different escalation rates in tariff	B.5.4.3	The investment analysis (step 2) was removed from Section B.5 of the PDD. At the same time Step 3 was inserted. It is demonstrated in the revised PDD that the proposed project is the first-of-its-kind.	As PP has opted to demonstrate additionality based on First-of-its-kind barrier, reference of guideline on investment analysis removed from revised PDD.  CAR closed
<b>CL 6</b>			
Kindly clarify why the anticipated and published REFIT (tariff) of 2.311 ZAR/kWh as indicated in the PDD was not applied for the financial model	B.5.4.3	The investment analysis (step 2) was removed from Section B.5 of the PDD. At the same time Step 3 was inserted. It is demonstrated in the revised PDD that the proposed project is the first-of-its-kind.	As PP has opted to demonstrate additionality based on First-of-its-kind barrier, reference of guideline on investment analysis removed from revised PDD.  CAR closed
<b>CL 7</b>			
Section B.7.1 of the CDM-PDD completing guidelines )Version 7.0) states, “ where data or parameter are supposed to be measured, specify the measurement methods and procedures, including a specification which accepted industry standards or national or international	B.7.1.2 B.7.1.4 B.7.1.5 B.7.3.1 B.7.3.2	Additional information was added in section B.7.1: “ <i>Measurement by means of electricity meters (accuracy class 0.2)</i> ” Since the new version of the “Guidelines For Completing The Project Design Document Form” Version 01.0 is used, it does not require	Project was published for GSC in VVM mode , later on PP shifted from VVM to VVS new version of “Guidelines For Completing The Project Design Document Form” Version 01.0 is used and correction made in sec.B.7 of

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standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person/ entity that should undertake the measurements and what is the measurement interval". The accuracy class of meters and frequency of calibration of meters not mentioned in section B.7.1 of the PDD.		the frequency of calibration to be mentioned here, it is however mention in section B.7.2. point 3: <i>"The Chief Engineer of the solar park is responsible for timely calibration of all measuring instrumentation in accordance with the manufacturer's requirements and requirements of the South African Bureau of Standards which requires calibrations at least every 5 years."</i>	revised PDD.  The PP has provided the sufficient explanation and justification on the relevant topic in Section B.7.1 of the PDD  CL 7 closed
CL 8			
It is not clear that "test verification" means in Section B.7.2. Please clarify	B.7.3.3	The "test verification" was changed to "audit"	More appropriate phrase "audits" was introduced to replace "test verification"  CL 8 closed
CL 9			
Though reference for operational life time of the project provided in PDD but the document has not been submitted for validation.	C.1.2	The project lifetime was changed to 25 years as per the supporting document: EU: Study on PV panels supplementing the impact assessment for a recast of the weee directive, Final report, 14/04/2011	Cross checked and verified from EU: Study on PV panels supplementing the impact assessment for a recast of the weee directive, Final report, 14/04/2011 which confirms with the data from the manufacturer of PV panels (Trina Solar) & EN Trina Solar Warranty (Life time of the project Activity)/18/  The assumed value is conservative and accepted.  CL Closed
CL 10			

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Analysis of Environmental Impact is recorded and presented in PDD. However PP need to submit the EIA report for this proposed project.	D.1.1 D.1.2	The EIA dated January 2011 has been submitted to the DOE.	The Impacts for the project has been evaluated in accordance with the applicable law. A copy of EIA has been provided for validation. CL Closed.
CL 11			
Local stakeholders were invited to discuss CDM during the EIA consultation process. However PP is required to submit evidence for invitation of Local stakeholder's consultation meeting.	E.1.2 E.1.4	"Appendix D1: Advert and proof for the Draft EIA Report" and "Appendix D2 Stakeholder Letter" from the EIA have been submitted to the DOE.	It is evidenced that CDM forms a point of discussion in the EIA Report, accordingly the discussion of CDM during the EIA is well established and documented. CL is closed.

Forward Action Request	Reference to Table 2	Response by project participants	Validation Conclusion
FAR 01 During the Validation stage, the project is in early stage of its implementation and the commissioning of project expected in 2013 this stage. Referring to paragraph 27 of VVS version 02, during 1st periodic verification, verifying DOE shall check/review the project implementation in accordance with the PDD.	A.2.1	OK, project implementation will be cross checked at 1 <sup>st</sup> verification by DoE engaged by PP.	During the first verification, the DOE needs to review the project implementation in accordance with paragraph 27 of VVS version 02.

**Appendix B**

**Certificate of Competence**

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