

VALIDATION REPORT

Bethlehem Hydro (Pty) Ltd

Bethlehem Hydroelectric Project

SGS Climate Change Programme

SGS United Kingdom Ltd
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Summary:			
<p>Bethlehem Hydro (Pty) Ltd has commissioned SGS to perform the validation of the project: Bethlehem Hydroelectric Project. Methodology Used: AMS 1 D Version and Date: Version 13 EB 36</p> <p>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 Kyoto Protocol requirements, UNFCCC rules and applicable CDM requirements.</p> <p>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, follow up actions (e.g. site visit, telephone or e-mail interviews) and also the review of the applicable simplified methodology and underlying formulae and calculations.</p> <p>The report and the annexed validation describes a total of 11 findings which include:</p> <p>3 Corrective Action Requests (CARs);</p> <ul style="list-style-type: none"> • 8 Clarification Requests (CLs); • 0 Forward Action Requests (FARs); and <p>All findings have been closed satisfactorily. The project:</p> <ul style="list-style-type: none"> – <input checked="" type="checkbox"/> Will be recommended to the CDM Executive Board with a request for registration OR – <input type="checkbox"/> Negative Validation Opinion will be issued and the validation report shall be sent to the CDM Executive Board.(state the open CAR/CI numbers) 			
Subject:		Document Distribution	
CDM Validation			
Validation Team:		<input checked="" type="checkbox"/> No Distribution (without permission from the Client or responsible organisational unit)	
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Abbreviations

AMS	Approved Methodology Small Scale
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
DBSA	Development Bank South Africa
CL	Clarification request
DNA	Designated National Authority
DOE	Designated Operational Entity
EIA	Environmental Impact Assessment
ERPA	Emission Reduction Purchase Agreement
ESKOM	Electricity Supply Commission
FAR	Forward action request
FS DTEEA	Free State Department of Tourism, Environment and Economic Affairs.
GHG	Greenhouse Gas(es)
GWH	Giga Watt Hour
IPCC	Intergovernmental Panel on Climate Change
KV	Kilo Volt
LHWP	Lesotho Highland Water Project.
MP	Monitoring Plan
MW	Mega Watt
NERSA	National Energy Regulator of South Africa
ODA	Official Development Assistance
PDD	Project Design Document
ROD	Record of Decision
SGS	Société Générale de Surveillance
SSC	Small Scale
UNFCCC	United Nations Framework Convention on Climate Change

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1. Validation Opinion

SGS United Kingdom Ltd has been contracted by Bethlehem Hydro Pty Ltd to perform a validation of the project: Bethlehem Hydroelectric Project in South Africa.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM), Validation and Verification Manual version 1 and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

By hydro power for generation of electricity 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. A review of the financial barrier demonstrates that the proposed project activity was 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 project is already being implemented and is likely to achieve the estimated amount of emission reductions i.e. 34,712 tCO₂e per annum. The project activity will result in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

In our opinion, the project meets all relevant UNFCCC, CDM criteria and all relevant host country criteria. The project correctly applies methodology AMS 1 D *version 13*. 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 total emission reductions from the project are estimated to be 228,816 t of CO₂e over a 7 year crediting period, averaging **32,688 tCO₂e** annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

The project will hence be recommended by SGS for registration with the UNFCCC.

Signed on Behalf of the Validation Body by Authorized Signatory



Signature:

Name: Siddharth Yadav

Date: 8th October 2009

2. Introduction

2.1 Objective

Bethlehem Hydro Pty Ltd has commissioned SGS to perform the validation of the project: Bethlehem Hydroelectric Project with regard to the relevant requirements for Clean Development Mechanism (CDM) project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

2.2 Scope

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 Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

2.3 GHG Project Description

The purpose of the project activity is to generate hydroelectricity, which will be distributed into the South African grid. The project involves the development and operation of 7.0 MW of hydro generation capacity and will generate 37 GWH per annum. It is comprised of two generation facilities. The water resource in the As River is artificially fed from the Lesotho Highlands Water Project (LHWP). Water from the project is currently transferred from the Katse Dam in Lesotho to South Africa via the transfer tunnel and the delivery tunnel. During the transfer it is used to generate electricity for Lesotho in the Muela hydropower plant situated between the two tunnels. After driving the turbines the water flows to South Africa via the delivery tunnel, the outfall of which is located in the upper reaches of the As River (a tributary of the Liebenbergsvlei River). The flow rate in the river is therefore not seasonally dependent and remains almost constant throughout the year and over time.

Baseline Scenario:

In the baseline scenario the water is transferred from Lesotho in the one catchment to the Vaal river system in South Africa by means of the transfer tunnels. On the exit side it is released into the As river and run along the normal river system to the Vaal dam.

Project Scenario:

The project scenario is the installation of 2 small scale hydro electric power plants in the As river downstream of the exit point of the transfer scheme. The water will pass through the hydro plants and continue to the Vaal river. The project does not consume water, but merely uses its force and energy to generate electricity. The electricity is distributed into the national grid.

Leakage:

There is no leakage as all the equipment used will be new installations.

Environmental & Social Impacts:

Environmental impact assessments were done and all impacts were addressed and mitigated. The public participation process formed part of the EIA process and was authorised by the provincial authorities. The

project was seen as being beneficial to the environment and an environmental management plan was given for the construction phase. There were no negative social impacts identified for the project.

2.4 The Names and Roles of the Validation Team Members

Name	Role	Affiliate
Dr Jochen Gross	Lead Assessor	SGS Germany
Cornelis van den Berg	Local Assessor	SGS South Africa

3. Methodology

3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project design documents PDD version 2 from 04/01/2007 and PDD version 05 dated 03/03/2008 and the subsequent versions (ref 3a to 3d) dated 11/03/2008; 25/06/2008; 13/02/2009; 07/10/2009 (final version).

A previous version of PDD (15/09/2005) with different design of Bethlehem Hydro Plant was web hosted in 2005 (<http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=32>), The CDM approval process was interrupted in 2006.

Based on a new project design and new project participants, the validation was started again in June 2007 based on new contract for the recent validation. Only this validation is reported hereafter.

The assessment is performed by trained assessors using a validation protocol attached as Annex 2 Table 2.

The site visit was performed on 16/03/2007 by the local assessor to verify assumptions in the baseline. Additional information was obtained from public sources, Internet, through telephone and face-to-face interviews with key stakeholders (including the project developers and Government and NGO representatives in the host country). The results of this local assessment are summarized in Annex 1 to this report. Local staff were also involved to confirm other statements in the PDD through review of documents and direct contacts with key stakeholders.

3.2 Use of the Validation Protocol

The validation protocol used for the assessment is designed in accordance with the Validation and Verification Manual, Version 1 dated 28 November 2008. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation (reporting).

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of Verification (MoV)	Comment	Conclusion/ CARs/CLs
The various requirements are linked to checklist questions the project should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

The completed validation protocol for this project is attached as Annex 2 to this report

3.3 Findings

As an outcome of the validation process, the team can raise different types of findings

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

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR)**. A CAR is issued, where:

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

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of an CL may also lead to a CAR.

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.

Corrective Action Requests and Clarification Requests are raised in the draft validation protocol and detailed in a separate form (Annex A.3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to CLs and FARs.

3.4 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team. Findings can be raised at this stage and client must address them within agreed timeline.

4. Validation Findings

4.1 Approval

Approvals from the host and sponsor Party are in place. Both Letter's of Approval (LoA) were sent to SGS by the Project Participant (PP). The recent LoA from the host Party South Africa is signed on 17/01/2009 (ref. /4a/) by Director General Sandile Nogxina of Department of Minerals and Energy. This was crosschecked with the UNFCCC home page. It is verified that the LoA is authentic and from the DNA of South Africa. The initial LoA is older than 2 years (18/01/2006) and no longer valid.

The host country South Africa confirmed that the project will contribute to sustainable development. The validity is limited to 24 month after signature of document.

The Annex 1 Country involved is the Netherland. A Letter of Approval is obtained (ref /5/) dated 06/12/2007. It is valid until 06/12/2009.

SenterNovem has sent the LoA in the name of the Dutch DNA (Ministry of housing, spatial planning and the environment (VROM) to the PP Statkraft Markets BV.

4.2 Participation Requirements

South Africa as host country is a signatory of the Kyoto protocol as a non-annex 1 country. The DNA is appointed and written approval from the DNA confirms voluntary participation in the project. Bethlehem Hydro (Pty) Ltd is the authorised project participant, see ref /4a/ from 17/01/2009. Statkraft Markets BV is authorized as Annex 1 country participant to the project activity. This was accepted.

4.3 Project Design Document including Project Description

The project is easily identifiable by the title and the description in the PDD is transparent and clear and gives a good overview of the project activity.

The project is designed to reduce GHG emissions through the replacing of mainly coal burning electricity generation with hydro electric power stations.

CL #8 was raised to clarify inconsistent information about the capacity of the plant (3 plus 4 MW). In response to CL #8, the PP issued a revised PDD version 7. This was checked and verified by the assessment team and found to be acceptable.

CL #8 was closed out.

Two stations will be built with a combined output of 7 MW.

- One site is a run of river site located on the As River (4 MW), midway between Bethlehem and Clarens; and,
- The other to be located at the existing concrete wall of the Sol Plaatje Dam (3 MW), in the town of Bethlehem. The Sol Plaatje Dam supplies water to the town and is not used for hydropower generation so far.

Both sites will be connected to the Grid. Construction started on the 15th December 2006 and is scheduled for twelve months. It was expected to be fully operational by November 2008 due to several delays in the construction phase.

Construction on the project was delayed due to a delay in receiving the loan from the Development Bank of South Africa. It has now been sorted out. Commissioning should be February 2009. The Local Assessor has verified this information by means of a telephone interview with the project developer and this was confirmed by email (ref 26). Both sites have been visited in 2006 and construction was in progress at both sites.

All social and environmental impacts and benefits of the project were identified during the design phase and were incorporated into the Environmental impact study that was done.

The length of the crediting period is correctly chosen for 7 years, but the start date of the crediting period and the utilization of tables for the prediction of generation and emission reductions were wrong and revised several times.

Consequently **CL #9 was raised**. In response to CL #9, the PP presented a revised PDD version 7 revision 2. The start date of the crediting period is 30/03/2009 or date of registration if registration is after 30/03/2009. The first crediting period is 7 years long and can be renewed twice.

CL #9 was closed out.

The project start date was validated by document review and site visit in line with the VVM paragraph 97 respective the glossary of CDM terms which is introduced by the § 97. The date when the construction work began was taken by PP as start date of the project activity initially. This is in compliance with the basic definition in the glossary option 2 from the Glossary of CDM terms (Version 04): *"The starting date of a CDM project activity is the earliest date at which either: (option 1) the implementation or (option 2) construction or (option 3) real action of a project activity begins."*

Nevertheless, inline to the above guidance (option 3) the revised project start date with the Commencement Notice dated 28/11/2006 was validated finally (Ref 32- "... To commence the execution of the Works within 14 days of the commencement date").

The site visit by local assessor took place in early 2007, after construction start on 15/12/2006. Therefore the information on start date of the construction was verified as plausible by physical site inspection of SGS. This direct inspection is supported with the actual payment certificate for civil works dated 15/12/2006 (Ref 31- attached with this response; The payment had to be made at start of construction).

4.4 Eligibility as a Small Scale Project

The project is eligible as a small scale project because the installed capacity is below 15 MW. The hydro project consists of two sites with a total installed capacity of 7 MWe. The project applies AMS 1D which is specific to the small scale project scenario as sketched. **CL #2 was raised** as the earlier version of the PDD did not have a description in this regard. In response to CL #2, the PP revised section B." and B.4 of the PDD version 4. This was checked and verified by the assessment team and found to be acceptable.

CL#2 was closed out on 06/06/2007

4.5 Applicability of selected methodology to the project activity

The project uses the approved small scale methodology AMS 1.D version 13. The specific technology for the CDM project is hydropower as a substitute for existing fossil fuel power. It involves a grid connected renewable energy plant with the sale of electricity into the national grid, which is the only option open to the project developer and corresponds with category 1.D.

AMS 1D is the most applicable methodology for this project. The project will not lead to any GHG emission.

4.6 Project Boundary

According to methodology, the boundary is identified as the physical, geographical site of the generation source. The physical sites were verified during site visits and observations on site crosschecked with information from feasibility study (ref /7/) and water use license (ref /11/).

The identified boundary and the selected sources of GHG emissions and gases (CO₂ only) are confirmed.

4.7 Baseline Selection and Additionality

For the selection of the baseline, the project uses the approved baseline and monitoring small scale methodology AMS 1.D version 13. The specific technology for the CDM project is hydropower as a substitute for existing fossil fuel power from the grid. It involves a grid connected renewable energy plant with the sale of electricity into the national grid.

The only baseline option applicable under AMS 1D version 13 for this project is “electricity production by the grid” which is equal to continuation with current practice.

Initially the section in the PDD on baseline was left empty. Consequently **CL #2 was raised** to get the information on the baseline. In response to CL #2, the PP presented the relevant information about the baseline in the revised PDD (V 4 and higher). This was checked and verified by the assessment team and found to be acceptable.

CL #2 was closed out.

CAR #10 was raised to ensure a revision of the incorrect date for the application of the baseline methodology in Section B 8 of the PDD. In response to CAR #10, the PP provided a revised PDD version 7 with the correct date of baseline application. This was checked and validated by the assessment team and found to be acceptable.

CAR #10 was closed out.

AMS ID version 13 is correctly applied and the identified baseline represents what would occur in the absence of the proposed hydro project.

The baseline calculation using data with regard to ESKOM's (South Africa's national electricity supplier) current generation mix and the emissions associated. The data from ESKOM has been verified from the audited annual report which is publicly available on its website. The calculations are on the basis of the information received from their generation facilities which make up in the region of 95% of South Africa's installed capacity (Source: <http://www.dme.gov.za/energy/electricity.stm>). The remaining 5% of power generation is from municipal plants and large industries which use their own generators for self consumption. Out of the 95% ESKOM power, less than 10% is generated by means other than coal, and mainly constitute nuclear and large hydro scheme.

The current project activity is verified from ESKOM's data (annual reports, ref 14). It will be a small hydro project that is to be connected to the grid whereas the other small hydro plants are for self consumption. This was verified from the statistics published by NERSA (Supply Statistics 2004: <http://www.nersa.org.za/UploadedFiles/Publication/ESS2004.pdf>). Hence it can be concluded that from the above validated documents that in the absence of the project activity; in the baseline scenario the power displaced by the project would have been generated by the ESKOM grid which largely comprises of coal based power plants. Hence the power produced by the project activity would in fact displace the power produced from grid and thus the approved small scale methodology AMS ID baseline is applicable.

The emission reductions generated will be calculated as followed: The kWh produced by the renewable generating unit multiplied by the combined margin grid emission factor of the current generation mix.

4.7.1 Additionality

The additionality of the proposed project is demonstrated based on a barrier analysis according to EB 35 Annex 34 (Non-binding best practice examples to demonstrate additionality for SSC project activities, barrier (a) investment barrier and (d) Barrier due to prevailing practice).

For more details about the additionality assessment see 4.7.5 below.

The initial PDD does not provide direct links to the information sources. Consequently **CL # 7 was raised**. In response to CL #7, the PP provided the necessary links or copies. The links were included in version 7 of the PDD and were checked by the assessment team and found to be acceptable.

CL #7 closed out.

4.7.2 Prior Consideration of the Clean Development Mechanism

The history of CDM consideration goes back to 2005. At that time the project design was different (Project had 3 MW generation capacity, the PP included the World Bank and baseline and monitoring methodology AMS ID dated 25/02/2005 was applied).

The first validation started in June 2005, with Gareth Philips as Lead Assessor, Irma Lubrecht as Expert and John Mills as Technical Reviewer. The international stakeholder consultation took place from 20/09/2005 to 19/10/2005. The initial validation was started but never finalized due to significant changes in the project.

The SGS validation team changed in 2007. The previous team members were no longer working for SGS.

Several changes with respect to the PP and design as well as revision of methodology took place. The World Bank was no longer involved. It took a while to find new project participants for the continuation of the CDM project and the project was on hold over half a year until the middle of 2006. The contract for the purchase of carbon credits was signed at the end of 2006 after Statkraft Markets BV from Netherland were found as new project participants. This was the key to continuing with the CDM project. Project generation capacity was increased to 7 MW. Several updates of the project documents have been prepared along with revisions of methodologies and tools. The construction started immediately after signature of ERPA (Ref 27), the Loan agreement with DBSA (Ref 26) was signed one year earlier.

The project has seriously considered the CDM for development of this project activity before construction start. The main proof for the prior consideration of CDM is the initial validation contract with SGS on 01/07/2005, more than one year before the project start date.

Additional to this assessment the timeline presented on page 9 in the revised PDD (Ref 3d, version 7 rev4), expresses that Loan Agreement (Ref 26, dated 06/06/2005) and ERPA (Ref 27, dated 01/12/2006) were signed before construction start. The first PDD was prepared in 2005, the initial International Stakeholder Consultation Process took place from 20/09/2005 to 19/10/2005. This is seen as additional proof for the prior consideration of CDM.

As pointed out above, in the eyes of the assessment team it was sufficiently evidenced by the project participant that awareness of CDM prior to the start date was in place and that the benefits of the CDM were a decisive factor in the decision process. As main evidences are seen first validation activities in 2005 and Loan agreement which were signed before construction start.

After the definition of § 98 VVM (1) the project is an existing project activity with start date before 02/08/2008.

Further to approve the prior consideration of CDM and the timeline and milestones, SGS has reviewed the following documents:

- Ref 7 Technical feasibility Report
- Ref 9 Record of Decision on EIA, dated 5 July 2004 (Environmental Impact Assessment approval)
- Ref 11 BH Water use license. Ref B2/2/16 (5058) (4573) dated 26/5/2005 (Water use licence awarded)
- Ref 26 Loan agreement between Bethlehem Hydro and the Development Bank of South Africa (Loan Agreement Signed)
- Ref 27 Emission reductions purchase agreement between Bethlehem hydro and Statkraft Markets GmbH (signed)
- Ref 29 Power generation license (awarded)
- Ref 30 Power Purchase Agreement (signed)
- Ref 31 Payment Certificate for civil works (15/12/2006)

Ref 32 Commencement of civil works notice (28/11/2006)

To demonstrate that continuously real action were taken to secure CDM status, the chronology of relevant validation steps and milestones is repeated below. This table does not present the validation steps taken by the previous validation team of SGS in 2005. The SGS contract history and the history of ISHCs is seen as proof for the early consideration of CDM and the progress between 2005 and 2009 is evidence for real actions to secure CDM status (table 1).

Table 1: CDM chronology and project timelines

Dates	Activities/ events
2003 May	Technical Feasibility study
2005 June	Loan agreement
2005 July	Contract with SGS for validation
2005 Sept - Oct	Initial International stakeholder consultation
2006 Nov - Dec	ERPA signed
2006 Nov 28	Project start date
2006 Dec 15	Construction start Recent project design
2007 Jan	Contract with validator was signed.
2007 June.	Validation started Now the Project generation capacity is 7 MW. Project Participants were changed. The World Bank was no longer involved and Statkraft Markets BV from Netherland were new participants. It took a while to get Letter of approval from the Dutch government.
2007 June - July	International stakeholder consultation no 1 (new project design)
2008.	Due to the long time span the methodology expired PDD revised and the whole project revalidated.
2008 March - April	International stakeholder consultation no 2 (new project design) Validation re-started
2009 April	Generation unit 1 will start production
2009 December	Generation unit 2 will start production

The exact dates when the ERPA and the loan agreements were signed are reported in section B.5 of the revised PDD version 7 rev 4 on page 9. The loan agreements was signed on 06/06/2005 and the ERPA on 28/11/2006. The documents Ref /26/ and Ref /27/ are seen as evidence and found okay. Both documents are signed and show the relevant dates exactly.

The recent version 7 rev 4 of the PDD does not reflect the earlier work that was done from the first validation Team from 2005.

4.7.3 Identification of alternatives (if applicable)

The methodology AMS ID version 13 does not request identification of alternatives.

4.7.4 Investment analysis (if applicable)

Investment analysis is not applied to demonstrate additionality of the project.

4.7.5 Barrier analysis (if applicable)

Additionality is argued on two barriers mainly the prevailing practice barrier and the investment barrier. The prevailing practice barrier is argued on the basis of the monopoly ESKOM holds in the market and the inability of the private developers for hydro schemes to enter the market due to the prevailing practice. Some 5% of South Africa's generation capacity comes from non ESKOM sources (ESKOM annual report 2006 ref 14; ref 24). These are all either municipally owned plants or generators imbedded in large industrial operations supplying primarily for their own internal use.

Bethlehem Hydro will be the first new (not refurbished) Independent Power Plant to be constructed in South Africa for the sole purpose of selling power commercially and not for internal use. The ability of new generators to break into this market is difficult as a result of a number of factors including the ability to negotiate access to the grid, the need for an Independent Power Producers license from the national regulator and the price paid for electricity. To date no other new IPP could compete with the low cost of power produced by ESKOM. Statistics published by NERSA for 2005, Table 3.3 indicate a total of 10 hydro stations for South Africa with a combined output of 661MW. Six of these are the larger stations owned by ESKOM. There are three small municipal plants with a combined output of 4 MW and one privately owned licensed plant with an output of 2 MW. This private plant is for private use only. Therefore Bethlehem would be the first small private owned plant to connect to the national grid.

The investment barrier is clearly demonstrated by the financial constraint which diminishes the ability of small and independent hydro power plants to obtain loans without the benefit of CDM. This was verified from the loan agreement between Bethlehem Hydro and DBSA. The document clearly states that a minimum price commitment of US\$3/ ton CO₂ is required from a purchaser is needed to secure the financial viability of the project. This is as per clause 10 of the Suspensive Terms and Conditions (Loan agreement between Bethlehem Hydro and the Development Bank of South Africa ref 26).

The emission reduction purchase agreement (ERPA) was verified and it could be concluded that the proponent would not have secured a loan or started the project without CDM funds being committed into the project at an early stage (ERPA ref 27). This was crosschecked with condition 10 of the Loan Agreement from the Development Bank of Southern Africa (DBSA, Ref 26). DBSA requires income from sale of Carbon Credits: Condition 10 Loan Agreement (Ref 26): "Commitment by a purchaser or the greenhouse gas emission reductions resulting from the Project, at a minimum tariff of US\$3/ton of CO₂ and review of exchange rate, at that stage, as well as confirmation of the financial viability of the Project." If the project does not secure income from the sale of the CERs it will not be financially viable in the eyes of the bank and the DBSA would not grant a loan. The construction work started immediately after signature of ERPA.

Without the income from the carbon revenue, the project would not generate sufficient cash flow to meet the minimum debt service coverage ratio requirements of the Development Bank of Southern Africa (DBSA). An attractive DSCR is 2.00 in the eyes of DBSA (page 11 ref 28).

The Debt Service Cover Ratio (DSCR) is calculated as follow:

$$\text{DSCR} = \frac{\text{Cash Available for Debt Service}}{\text{Principal} + \text{Interest}}$$

In this scenario, small scale projects will not be able to survive financially if it is not for the help from Carbon funding (loan agreement ref 26). The high capital installation cost of small hydro plants and the low cost of electricity provided by ESKOM against whom the hydro plants have to compete in the market forms a financial barrier that will prevent the project from happening unless it is for the additional funds resulting from the CDM market. The amount ESKOM is prepared to pay for the electricity is far less that what is needed to make this a viable option without CDM. Referring to the relative low cost of production of 95% of electricity by ESKOM itself, ESKOM will not pay more for small private hydro schemes to "buy in" more electricity into the grid (ESKOM annual reports 2006 and 2007, ref 14).

CL #6 was raised to get clearance on public funding and ODA. To close this request an interview with PP was carried out. Mr Olivier confirmed the statement in Annex 2 of PDD version 7 that no diversion of funds takes place and **CL #6 was closed out**.

From the above the additionality has mainly been demonstrated using the prevailing practice barrier followed by the investment barrier. This has been verified and it can be concluded that the project activity is additional and would not have occurred in the absence of flexible Kyoto mechanism CDM.

4.7.6 Common practice analysis

Common practice is assessed based on publicly available information and by expertise of the Local Assessor. Common practice in South Africa is 85 to 90% of power generation using coal as fuel, 5 to 10 % by nuclear and large hydro plants. These capacities are owned by monopolist ESKOM. The remaining 5% of power generation is from municipal plants and large industries which use their own generators for self consumption. (Source : <http://www.dme.gov.za/energy/electricity.stm>).

The Bethlehem Hydro project is different from common practice, it is not a coal fired power plant nor nuclear or large hydro plant.

4.8 Application of Baseline Methodology and Calculation of Emission Factors

Initially the PP used a default grid emission factor from ESKOM. This was not in compliance with AMS ID and **CAR #1 was raised** to ensure a revision of the baseline information and calculations. In response to CAR #1 the PP provided a revision of the PDD version 7 and associated spreadsheets (ref 18) and makes use of the combined margin EF calculation according to the "Tool to calculate the emission factor for an electricity system" v 1.1 (ref 18). The revision of the PDD was found to be sufficient by the assessment team

CAR #1 was closed out.

The baseline methodology AMS 1.D version 13 is correctly applied and the determination of the baseline is explained transparently in the PDD v 7 and ref 16. All facts are published on the website by ESKOM (ref 17). The figures used for baseline calculation are taken from the ESKOM website (date 28. Feb. 2008) for the years 2003 to 2005, which leads to a weighted average emissions factor (in kg CO₂e/KWh) of the current generation mix EF_{grid} of 1.02 t CO₂e/MWh. The EF_{grid} remains fixed ex-ante. There is no reason to believe there has been any material change to this figure.

The baseline calculation using data with regard to ESKOM's (South Africa's national electricity supplier) current generation mix and the emissions associated with this. The data from ESKOM is produced for their publicly produced annual report and is therefore audited. The calculation is made on the most recent basis of the information 2003 to 2005 (<http://www.dme.gov.za/energy/electricity.stm> last assessed on 04/05/2009) received from their generation facilities which make up in the region of 95% of South Africa's installed capacity. The remaining 5% of power generation is made up by municipal plants and large industries with their own generators for own use. Of the 95% ESKOM power, less than 10% is generated by other means than coal, such as nuclear and large hydro scheme.

4.9 Application of Monitoring Methodology and Monitoring Plan

Monitoring is in line with the methodology applied. It is a small scale project and the measuring only consists of metering the electricity generated and provided to the grid. It is an automated system and data is logged on computers. The monitoring plan (Annex 4 to PDD) describes the responsibilities of the persons capturing the data and the details of data and the frequency of data collection. Bethlehem Hydro (Pty) Ltd is responsible for capturing the data and to prepare Emission Reduction monitoring reports.

4.10 Environmental Impacts

An environmental impact assessment is required for such projects in South Africa. A full environmental impact assessment Ref EM 1/1(a)/03/95 was done and submitted to the provincial authority of the Free State Province for authorisation. The official approval from the competent authority is the Record of Decision (ROD) (Ref 9). The Record of Decision on EIA, dated the 5th July 2004, from the department was obtained giving guidance on certain issues. Recommendations were taken into account and mitigation measures installed. The process was transparent and formal correspondence to amendments is available. Correspondence is also available on the delegation of responsibilities with regard to environmental safeguarding.

CL #4 was raised to get the relevant documents as evidence and more information about mandatory monitoring of environmental indicators. In response to CL #4, the PP provided the EMP for the construction phase. This document made clear that the monitoring of environmental indicators is only relevant during construction and not relevant for monitoring during the crediting period.

CL #4 was closed out.

CL #5 was raised to get a copy of the water use licence. This document was provided by the PP (ref 11) and found to be sufficient.

CL#5 was closed out.

4.11 Local Stakeholder Comments

Local stakeholder consultation was done as part of the EIA process. According to South African legislation, stakeholder participation forms an integral part of EIAs. Stakeholder participation was therefore done by the independent consultants doing the EIA for the project. It followed the prescribed requirements of the EIA regulations. The process includes media advertising, on site advertising, and public meeting and direct consultation with authorities. The public participation meeting was held on 5th June 2003 in Bethlehem. Some issues identified by the stakeholders include:

- The requirements that the project would be subject to in terms of the licensing requirements of the Department of Water Affairs and Forestry;
- The actual benefits that would accrue to the community from such a project;
- What employment opportunities would actually be created by the project;
- The nature of the diversions to be created as part of the project;
- A request for an archaeological impact assessment report; and,
- Discussions with regard to the alternatives associated with the project.

Issues raised by stakeholders are documented in the EIA document, it is evaluated by the governing department and any further requirements are captured in the "Record of Decision" that is issued by the department and serves as authorisation of the project.

As the process was done under the EIA process, all due actions were considered by the relevant authority to grant the Record of Decision. The ROD was considered in the validation by the local assessor. A stakeholder committee was formed, of whom the local assessor met some members during an informal meeting at the site visit. The ROD was studied during the validation process and is included in reference list in section 7.

After the information from PP and section E.1 PDD on local stakeholder consultation (PDD version 7 rev 4) the project design document was posted on the South African DNA website for comments for the period 24/10/2005 to 23/11/2005. It was possible to verify that the project was posted on the DNA website from 24/10/2005 to 23/11/2005 directly by access of the following web page http://www.dme.gov.za/dna/PDD_archive_2006.stm

The initial ISHC took place at the same time from 20/09/2005 to 19/10/2005. The LoA from the DNA of the host Party is seen as indirect evidence that no critical comments from the public are pending from previous stakeholder consultations.

5. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

5.1 Description of How and When the PDD was Made Publicly Available

The Project Design Document for the current project was made available on the SGS website on two occasions for public comments, see below (public website)

15/6/2007 to 14/7/2007 (ISHC methodology expired during validation)

<http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=292>

No Comments.

12/3/2008 to 10/4/2008 (ISHC with recent methodology)

<http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=462>

No Comments were received

Comments were invited through the UNFCCC CDM homepage

5.2 Compilation of all Comments Received

Comment Number	Date Received	Submitter	Comment
1	-	-	-

5.3 Explanation of How Comments Have Been Taken into Account

No comments were received during the international stakeholder consultation period.

6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
16/3/2007 to 25/6/2008	Anton-Louis Olivier	Nu Planet	PDD, clarifications, new information requests and corrective actions.
16/3/2007	Rudolph Notnagel	Bethlehem Municipality	Background information on current situation and project arrangements, contracts.
24/4/2007	Mr Lepaku	DNA Office	Progress regarding issuing of Letter of approval.
16/3/2007	Mr CD Naude	Land Owner	Lease and sale of property
16/3/2007	Ms T Hadebe	Director: Community Development Dihlabeng Local Municipality	Economic impact of project and benefit to local community
16/3/2007	Mr D Williams	Director: Public Works Dihlabeng Local Municipality	Power off take agreement
16/3/2007	Mr P Ballantine	Project Engineer Ninham Shand	Project viability
16/3/2007	MR J Naude	Land Owner	Lease and sale of property
16/3/2007	Mr B Smit	EIA Consultant	EIA scoping report progress
16/3/2007	Mr P Ferreira	Eskom Western Region (national utility)	Interconnection of power lines into national grid contract
16/3/2007	Ms E Teljeur	National Energy Regulator of South Africa	Power Generation Licence process
16/3/2007	Mr W van der Westhuizen	Engineer: Department of Water Affairs and Forestry	Water Use Licence process
16/3/2007	Ms L Tyani	Director: Designated National Authority	CDM host county approval
16/3/2007	Mr J Grundlingh	Project Manager Development Bank of Southern Africa	Debt finance to the project appraisal

7. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

- /1/ Project Design Document, Version 2; 4 January 2007
- /2/ Project Design Document version 4, 24 August 2007
- /3/ Project Design Document version 5, 03 March 2008 (web hosted)
- /3a/ Project Design Document version 6
- /3b/ Project Design Document version 7, 25 June 2008
- /3c/ Project Design Document version 7 rev3 13 February 2009.
- /3d/ Project Design Document version 7 rev4 - 07 October 2009.
- /4/ Letter of Approval from host country, 21 June 2007
- /4a/ Update LoA from host country 17/01/2009
- /5/ Letter of Approval from Annex 1 country 6 Dec. 2007
- /6/ Modalities of communication version 2, 12 September 2008

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

- /7/ Technical feasibility Report.
- /8/ Request for amendment to Letter of approval.
- /9/ Record of Decision on EIA, dated 5 July 2004.
- /10/ DEAAT Record of Decision amendment.
- /11/ BH Water use license. Ref B2/2/16 (5058) (4573) dated 26/5/2005
- /12/ EIA consultants monitoring letter.
- /13/ Contractors Acceptance of responsibility.
- /14/ ESKOM annual reports 2006 and 2007, (eskom.co.za 2003-2005 grid information.pdf; B5 reference power sector 2004 NERSA.pdf)
- /15/ AMS 1 D Methodology for small scale power generation v 13
- /16/ Tool for additionality
- /17/ Calculation of the emission factor for Eskom.pdf
- /18/ Bethlehem Hydro EF calcs.xls
- /19/ CDM.VAL0897_emission reduction calculation sheet 20080111.xls
- /20/ BH ER table A4.3 & B6.4.xls
- /21/ Bethlehem Hydro EMP May 2007
- /22/ Tool to calculate the Emission Factor for electricity system.
- /23/ <http://www.dme.gov.za/energy>
- /24/ <http://www.nersa.org.za>
- /25/ BH 1 output
- /26/ Loan agreement between Bethlehem Hydro and the Development Bank of South Africa.
- /27/ Emission reductions purchase agreement between Bethlehem hydro and Statkraft Markets GmbH.
- /28/ The role of project finance in obtaining sufficient funding for successful completion of your project.doc
- /29/ Power generation license (awarded)
- /30/ Power Purchase Agreement (signed)
- /31/ Payment Certificate for civil works (15/12/2006)
- /32/ Commencement of civil works notice (28/11/2006)



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A.1 Annex 1: Local Assessment

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document for Bethlehem Hydroelectric project.

It serves as a “**reality check**” on the project that is completed by a local assessor from SGS South Africa

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
1. Confirm equipment /site matching is optimal	Addressed in Feasibility study	Feasibility /Study DR	No
2. Verify the statement regarding flow rates in the river system.	Feasibility study and websites indicate positive flow rates.	Feasibility /Study & Interview DR	No
3. Please contact the DNA and ask for their confirmation that there is no public funding associated with this project	The project was validated before, but the LoA stated the output as 4MW. And the older version of the PDD was used. Update of LOA and revised PDD was provided to SGS.	LoA DR	CL 3 CL 3 closed based on evidence provided No
4. Confirm EIA conditions	Conditions captured in PDD	PDD DR	No
5. Verify the location of the sites is the only suitable sites and that it is not part of a de-bundled project.	Only sites with suitable structures to develop.	Site visit.	No

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
6. Check that necessary permits and licenses are in place eg Water users license, power generation etc.	Water use licence could not be shown to SGS. CL 5 was raised to get a copy. Water use Licence received.	PDD DR	CL 5 CL 5 closed based on evidence provided. No
7. Confirm meetings with municipality. Verify the buyer of the electricity. Long term contracts for sustainability. How is electricity delivered to the grid monitored?	Municipality. Confirmed Meters installed for monitoring and for billing purposes.	Site visit Interviews	No
8 Confirm ownership of the CERs and who does the trading.	Bethlehem Hydro Pty Ltd	DR Interviews	No

A.2 Annex 2: Validation Checklist

- Table 1 Participation Requirements for Clean Development Mechanism (CDM) Project Activities (Ref PDD, Letters of Approval and UNFCCC website)

Requirement	Reference	Comments	Conclusion/C ARs/ CLs
<p>1. All Parties involved have approved the project activity</p> <p>1.1. Has the DNA of each Party involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval which confirms</p> <p>1.1.1. The country is a Party to the Kyoto Protocol</p> <p>1.1.2. Participation is Voluntary</p> <p>1.1.3. The Host Party confirming that the proposed CDM project activity contributes to sustainable development of the country Non-Annex 1 Party shall submit a letter of approval</p> <p>1.1.4. It refers to the precise proposed CDM project activity title in the PDD being submitted for registration</p>	<p>Annex 3, Clean Development Mechanism, Validation and Verification Manual, Version 01 (from this point forwarded referenced as VVM) - 49a-d /54a-b/125</p> <p>Paragraph 37 CDM Modalities and procedures</p> <p>/4/ /4a/ /5/</p>	<p>Initially LoAs were missing. CL#3 was raised. After receipt of LoAs from both Parties CL#3 was closed finally.</p> <p>LoAs from both Parties are available. Update LoA from host country South Africa 17/01/2009</p> <p>Letter of Approval from Annex 1 country The Netherlands 6 Dec. 2007</p>	<p>Y</p> <p>CL#3 closed</p>
1.2. The letter/s of approval are unconditional with respect to 1.1.1 to 1.1.4 above	VVM Para. 49/54	Yes, the LoAs are unconditional	Y

Requirement	Reference	Comments	Conclusion/C ARs/ CLs
2. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for a minimum of 30 days, and the project design document and comments have been made publicly available	VVM Para. 128 Marrakech Accords, CDM Modalities, §40	The project was published before, but with the changes in scope and methodology it is re-evaluated and re-published twice. http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=292 15/6/2007 to 14/7/2007 No Comments. http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=462 12/3/2008 to 10/4/2008	Y
3. The project design document is in accordance with the applicable CDM requirements for completing PDDs.	VVM Para. 57 Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	CDM-SSC-PDD version 3 is used and in conformance with the UNFCCC CDM- PDD format Headline of Annex 3 PDD is double Please delete. CAR11 Corrected in revised PDD version 7	Y
4. The project participants shall submit a letter on the modalities of communication (MoC) before submitting a request for registration	EB-09 F_CDM_REG form	Project participants listed in A3 of PDD, Bethlehem Hydro (Pty) Ltd and Statkraft Markets BV are mentioned in MoC. It contains details of the people signing it but no contact details. Both LoA & PDD refer to the name as Bethlehem Hydroelectric Project and MoC refer only to Bethlehem Hydro Project.	Y

Table 2PDD

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A. General Description of Project Activity				
A.1. Project Title				
A.1.1. Does the used project title clearly enable the reader to identify the unique CDM activity?	VVM Para.56 Guidelines for completing a CDM-PDD (PDD) section A.1 /3b/	DR	Yes it refers to the location and type of project. It can easily be located and is distinctive on site.	Y
A.1.2. Is there an indication of a revision number and the date of the revision?	VVM Para.56 PDD section A.1 /3b/	DR	Yes, date and revision number are shown in PDD. For example: revision 7 of the PDD dated 25 June 2008	Y
A.2. Description of the Project Activity				
A.2.1. Does the description of the proposed CDM project activity as contained in the PDD sufficiently cover all relevant elements accurately?	VVM Para.59 PDD section A.2 see also A.4, A.4.3 and B.3 /3b/	DR	Section A2 of the PDD give clear information on the purpose of the activity and the contribution to sustainable development in the region.	Y
A.2.2. Does the information provide the reader with a clear understanding of the proposed CDM activity?	VVM Para.60 PDD section A.2 see also A.4, A.4.3 and B.3		Yes, the design of the proposed hydro plants is clearly expressed in the PDD.	
A.2.3. Is all information	VVM Para.64	DR	The description in the PDD reflects what is planned according to the feasibility studies,	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
provided consistent and in compliance with the actual situation or planning?	PDD section A.2 see also A.4, A.4.2 and B.3 /3b/		quotations and orders for equipment to be used, and monitored. Local Assessor visited the site again on 22/11/2007 to confirm construction progress. Initial planning is not in compliance with project status end of 2008 due to several delays during construction phase.	
A.2.4. Is all information provided consistent with details provided in further chapters of the PDD?	VVM Para.64 PDD section A.2 /3b/	DR	Yes the project description is consistent with what is used in the rest of the document for the baseline and emission reduction purposes.	Y
A.3. Project Participants				
A.3.1. Is the table required for the indication of project participants correctly applied?	VVM Para. 51 PDD section A.3 /3b/	DR	Table for the indication of project participants is correctly applied. The parties mentioned in column 1 are not project participants and therefore not included in the MoC.	Y
A.3.2. Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	VVM Para. 51 PDD section A.3 /3b/	DR	Project participants and their details are clearly indicated in Annex 1 to the PDD.	Y
A.4. Technical Description of the Project Activity				
A.4.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)? Are the latitude and longitude of the site	VVM Para.64 PDD section A.4 /3b/	DR	Information provided give clear indication of the location of the two sites involved and give coordinates and a map. The local assessor could easily locate the sites.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
indicated (decimal points)				
A.4.2. Does the proposed CDM project activity involve the alteration of existing installations or process?	VVM Para.64 PDD section A.4		There was no hydro power generation at the sites before the project. After implementation there are two hydro power plants connected to the grid. Information provided should clearly state the alterations made and the differences resulting from the project activity compared to the pre-project operation.	Y
A.4.3. Do the project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites?	VVM Para.64 PDD section A.4 /3b/	DR	The project received environmental authorization in the form of a Record of Decision. Ref EM 1/1(a)/03/95 and it also received water use licenses as required by law. Ref B 2/2/16 (5058) (4573). NERSA license to generate electricity: NERSA/G/BET-IPP.	CL 5 CL5 Closed Y
A.4.4. Is the category(ies) of the project activity correctly identified?	VVM Para.64 PDD section A.4 /3b/	DR	Category is correctly identified as small scale renewable hydro energy that supply to a grid and methodology AMS 1 D is used.	Y
A.4.5. Is all information provided in compliance with actual situation or planning as available by the project participants?	VVM Para.64 PDD section A.4 /3b/	DR	Planning is in line with what is discussed in the PDD. On site construction facilities are done by subcontractors who have officially taken responsibility for the conditions set in the ROD of the EIA. Ref letter: 401126/WW/4080/0-0060 9May 2007. Permits and authorizations are in place. Initial planning is not in compliance with project status end of 2008 due to several delays during construction phase. Project design is in compliance with PDD.	Y
A.4.6. Is the table required for the indication of projected emission reductions correctly applied?	VVM Para.64 PDD section A.4 /3b/	DR	Yes. It is a hydro scheme without any project emissions and is replacing electricity from coal fired power stations.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A.5. Debundling				
A.5.1. Is the small-scale project activity a debundled component of a large scale project activity	VVM Para. 134c		No, it is not a debundled large scale project. There are no other small hydro projects in SA.	Y
A.5.2. If the project is a debundled component of a larger project, does the larger project fall within the limits for small-scale CDM project activities	VVM Para. 134c		N.A:	NA
A.6. Public Funding				
A.6.1. Does the information on public funding provided conform to the actual situation or planning as presented by the project participants?	PDD section A.4.4 /3b/	DR	There is no public funding for the project. The Netherlands provided assistance for feasibility studies and EIAs but are not claiming any CERs for their involvement.	Y
A.6.2. Is all information provided consistent with details provided by further chapters of the PDD (in particular annex 2)?	PDD section A.4.4 /3b/	DR interview	CL 6 raised for omissions to the Annex 2 of the PDD Confirmation of non diversion of ODA funding as indicated in Annex 2 of the PDD Information regarding assistance is described in Annex 2 of the revised PDD v7, and is consistent with the rest of the report. CL closed	CL 6 CL closed
A.6.3. In case of public funding from Annex I Parties is it confirmed that such funding does	PDD section A.4.4 /3b/	DR	All funds from the Netherlands were for the initial feasibility and the EIA and are separate to the project funds. It is confirmed in Annex 2 that no public funds are used for the generation of CERs.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
not result in a diversion of official development assistance				
B. Baseline and Monitoring Methodology				
B.1. Choice and Applicability				
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?	VVM Para.68 PDD section B.1 /3b/	DR	The PDD version 7 of the project uses methodology AMS 1 D version 13 which is the correct methodology and the latest version.	Y
B.1.2. Has the methodology (incl. the tools) been altered from the original version as referenced in the PDD?	VVM Para.69 PDD section B (B.1-B.2)		AMS I D v 13 is used and is most recent. Back to 2005 the methodology was altered several times.	Y
B.1.3. Does the project activity qualify as small scale project?	VVM Para. 134a		Yes, the project qualifies as small scale project. The installed capacity is below 15 MW. It is total 7 MW. This was verified by local assessment along with ref 7, ref 25, ref 26	Y
B.1.4. Is the category(ies) of the project activity correctly identified in accordance with Appendix B to the simplified modalities and procedures for small-scale CDM project activities?			Yes, the category is correctly identified. It is Type (i): Renewable energy projects what fits with AMS I D.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.1.5. Is the selected simplified methodology applicable to the project activity in the PDD?	VVM Para.75/66a/68/73 PDD section B (B.1-B.2)		Yes AMS ID is most applicable. The applicability criteria is: Renewable energy generation with supply to a grid.	Y
B.1.6. Does the project activity conform to one of the approved small-scale categories?	VVM Para. 134b		Yes, see B 1.3 above	Y
B.1.7. Is the project activity a bundle of several small scale activities and if so does it contain any sub-bundles?			No, see A 5.1 above. The project consists of 2 small hydro plants.	Y
B.1.8. If the project activity is a bundle of several small scale activities, does the sum of the total bundle (including any subbundles) fall within the limits for small scale projects			N.A.	NA

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.1.9. If the project activity is a bundle of several small scale activities, has the form with information related to the bundle been submitted and is it correctly used			N.A.	NA
B.1.10. Is the discussion in the PDD in conformance with all applicability criteria of the applied methodology?	VVM Para.75/66b/68 PDD section B (B.1-B.2)		Yes. See above	Y
B.2. Project Boundary				
B.2.1. Are all emission sources and gases related to the baseline scenario, project scenario and leakage clearly identified and described in a complete and transparent manner? Is there information on GHG emissions in proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to	VVM Para.79/76 /67a PDD section B.3 /3b/	DR	According to methodology, the boundary is identified as the physical site geographical site.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.				
B.2.2. In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with the tool to calculate emission factor of electricity system (wherever applicable) and the underlying methodology?	VVM Para.79 PDD section B.3 /3b/	DR	It is connected to national grid. There is only one national grid	Y
B.2.3. Does the project boundary include the physical delineation of the proposed CDM project activity?	VVM Para.78/79 PDD section B.3 also see section A.4.2		Yes, the physical delineation is included in the project boundary. Project boundaries according to methodology are the geographical boundaries of the site.	Y
B.2.4. Are the project's geographical boundaries and the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	VVM Para.76/79 PDD section B.3 also see section A.4.2 /3b/	DR	Yes, boundaries are clearly defined. Project boundaries according to methodology are the geographical boundaries of the site. System boundary around project components and facilities is identical with geographical boundaries.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.3. Identification of the Baseline Scenario				
B.3.1. Does the PDD discuss the identification of the most likely baseline scenario? Does the PDD follow the steps to determine the baseline scenario required by the methodology and is the application of the methodology and the discussion and determination of the chosen baseline transparent?	VVM Para.67b.80/82/86 PDD Section B.4/B.5 /3b/ /23/	DR	As described in par 9 (b) of AMS 1D. It gives a choice between the combined margin approach or the Weighted Average method. Inconsistency: Value EF 0.987 in PDD v5 and 0,978 in Eskom report identified. CAR 1 was raised. Figures changed and recalculated in revised PDD v6. CAR 1: It is not transparent if the grid EF is calculated as weighted average as required by AMS ID. Please provide the calculation and evidence which shows that the EF is calculated as weighted average as required. Reply to CAR 1 shows the calculation of EFgrid as required after AMS ID v 13. changed to the "Combined Margin Approach" as the input data required for both approaches was almost identical and the combined margin approach is seen to be more rigorous. Section B4 of the PDD refers to Combined Margin approach while section B6 refer to Weighted average.	CAR 1 Closed
B.3.2. Are all tools/procedures in the methodology correctly applied to identify the most reasonable baseline scenario? This includes all potential realistic and credible baseline scenarios in the discussion taking into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	VVM Para.81/82/86a- d/83/84 PDD Section B.4/B.5 /3b/	DR	Yes. Consideration of the baseline is based on scenario of common practice. In establishment of the baseline, the combined margin approach is used.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.3.3. Is the choice of the baseline compatible with the available data?	VVM Para.86b-c/95 PDD Section B.4/B.5 /3b/	DR	The combined margin approach is used. Data is publicly available. Presented in Annex 3 to PDD	Y
B.3.4. Is conservativeness addressed in the way of identifying the baseline?	VVM Para.90 PDD Section B.4/B.5 /3b/ /15/	DR	According to the methodology ASM 1D The combined margin approach is considered to be conservative.	Y
B.3.5. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	VVM Para.90/91 PDD Section B.4/B.5 /3b/	DR	The selected baseline uses the kWh of the renewable energy plant multiplied by the emission factor as prescribed by the methodology. It is based on the combined margin approach and is the most likely scenario and It is a conservative method.	Y
B.3.6. Is there a verifiable description of the baseline scenario? Does this include a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	VVM Para.86e/85 PDD Section B.4/B.5	DR	Yes, baseline scenario is verifiable. Power supply by the existing grid.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.4. Additionality				
B.4.1. Does the PDD clearly demonstrate the additionality using the approach as specified in the methodology and by following all the required steps?	VVM Para.67d/95 PDD Section B.1/B.4/B.5 /3b/	DR	<p>Additionality is discussed with reference to the barriers the project faced. The project enters into a market in which ESKOM, who owns the grid have an absolute monopoly by producing 96% of the electricity supplied. From the PDD it is argued the barrier of getting into the market. It is known that in South Africa the market is dominated by ESKOM. It is a parastatal with the government holding 100% shares (available in annual report) They also own the National grid. With the monopoly in the production and distribution networks they also dictate the price.</p> <p>The PDD does not provide direct links to the information sources. Consequently CL 7 was raised and reply from PP provides the necessary links or copies.</p> <p>Links was included in version 7 of the PDD.</p>	<p>CL 7</p> <p>CL 7 Closed</p> <p>Y</p>
B.4.2. In case of using the additionality tool: Is the 'Additionality Tool' used in the PDD latest version? If an earlier version has been used, do the changes impact the discussion in the PDD? Are all steps followed in a transparent manner?	PDD Section B.1/B.4/B.5 /3b/ /16/	DR	Additionality is discussed according to Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM Project Activities.	Y
B.4.3. Has all information been backed up with references, sources and certification? Is the data presented credible and reliable with complete transparency to all available data and	VVM Para.93/91 PDD Section B		Yes, all information has been backed up with evidence. The grid information are public available. Evidence for the financial barrier are references 26 to 28.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
documentation?				
B.4.4. Is the discussion on additionality and the evidence provided consistent with the starting date of the project? If the project activity start date is prior to the validation is it discussed how the CDM was taken into account in the decision to go ahead with the project activity	VVM Para.102b PDD Section B.5 /3b/ Site inspection	Site insp DR	<p>SGS published the PDD with the project in the current design two times for public comments, see below (public website)</p> <p>http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=292 15/6/2007 to 14/7/2007 No Comments.</p> <p>http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=462 Due to expired methodology it is revalidated and the new version 7 of the PDD does not reflect the earlier work that was done although the construction has started in before this validation.</p> <p>Section C1.1. Indicate the starting date at 28 November 2006.</p> <p>The prior consideration of CDM was assessed seriously. The main proof for the prior consideration of CDM is the initial validation contract with SGS on 01/07/2005, more than one year before the project start date. The SGS contract history and the history of ISHCs is seen as proof for the early consideration of CDM and the progress between 2005 and 2009 is evidence for real actions to secure CDM status.</p> <p>Additional to this assessment the timeline presented on page 9 in the revised PDD (Ref 3d, version 7 rev4), expresses that Loan Agreement (Ref 26, dated 06/06/2005) and ERPA (Ref 27, dated 01/12/2006) were signed before actual construction start. The first PDD was prepared in 2005, the initial International Stakeholder Consultation Process took place from 20/09/2005 to 19/10/2005. This is seen as additional proof for the prior consideration of CDM.</p>	Y
B.4.5. If an investment analysis has been used, has it been shown that the proposed project activity is economically	VVM Para. 106, 107, 109 112a-c PDD Section B.5 /3b/	DR	A Barrier analysis is used. Prevailing practice and investment barrier.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
or financially less attractive than at least one other alternative without the revenue from the sale of CERs?				
B.4.6. If a benchmark is used, is it ensured that it is selected in accordance with the requirements of the tool /methodology and it represents standard returns in the market (not linked to the subjective profitability expectation or risk profile of a particular project developer).	VVM Para. 110 PDD Section B.5		N.A:	N.A:
B.4.7. If a barrier analysis has been used, has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have prevented the implementation of at least one of the alternatives?	VVM Para. 114 115a-b/116 PDD Section B.5 /3b/	DR	Barriers are discussed and refer to the prevailing practice. The PDD give reference to websites where evidence is publicly available on the electricity generation situation in South Africa. Prevailing practice is predominantly coal and hydro schemes area therefore additional. It also discusses the investment barrier with reference to the low cost of ESKOM electricity and the monopoly it has in the national grid. It is therefore rather unlikely that a small hydro plant can enter the market as individual private operator.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.4.8. Is the discussion on additionality consistent with the identification of all plausible and credible baseline scenarios?	VVM Para. 105 PDD Section B.5 /3b/ /23/	DR	Additionality is addressed under the barriers the project faced. Firstly prevailing practice in South Africa is that 95% of the electricity generated is from coal. Secondly the financial barrier to get into the market that is dominated by ESKOM. ESKOM owns and operate the national grid and is producing all the power at low cost.	Y
B.4.9. Do the identified baseline scenarios include technologies and practices that include outputs or services comparable with the proposed CDM project activity. Do they also abide by the same applicable laws and legislations?	VVM Para. 105 PDD Section A.4.2/B.5 /3b/ /23/	DR	Additionality is addressed under the barriers the project faced. Firstly prevailing practice in South Africa is that 95% of the electricity generated is from coal. Secondly the financial barrier to get into the market that is dominated by ESKOM. ESKOM owns and operate the national grid and is producing all the power at low cost.	Y
B.4.10. Has it been shown that the project is not common practice?	VVM Para. 119a/b PDD Section B.5 /3b/ /23/	DR	The description of the barrier faced with prevailing practice indicates that it is not common practice. Evidence is given in the PDD with reference to various websites where it is clear that common practice for electricity generation is coal power stations.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.4.11. What are the key distinctions between the project activity and any similar projects that are widely used as common practice?	VVM Para. 118, 119c/d PDD Section B.5		It is verified by official information sources and SGS expertise that the key distinctions are the private owned small scale hydro plant with grid connection. There are no other private owned, grid connected small HPP in SA. Single small HPP are not connected to the grid.	Y
B.5. Application of the Simplified Methodology				
B.5.1. Has the simplified methodology been applied correctly for determining baseline emissions ?	VVM Para. 91d PDD Section B (B.6.1 -B.71) /3b/ /15/ /22/	DR	Yes. The methodology gives two options for the calculation of the baseline, of which the combined margin is selected. The PDD states the equations for the calculation of the baseline as it is in the methodology. $EF_{grid,CM,y} = EF_{grid,OM,y} * w_{OM} + EF_{grid,BM,y} * w_{BM}$	Y
B.5.2. Has the simplified methodology been applied correctly for determining project emissions ?	VVM Para. 90/91d PDD Section B (B.6.2-B.71) /3b/ /15/	DR	The methodology AMS 1D is applied correctly. It is a hydro plant constructed with all new equipment and therefore there are no project emissions.	Y
B.5.3. Has the simplified methodology been applied correctly for determining leakage ?	VVM Para. 91d PDD Section B (B.6.2 -B.71)	DR	The methodology AMS 1D is applied correctly. It is a hydro plant constructed with all new equipment and therefore there leakage.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
	/3b/ /15/			
B.5.4. Where applicable, has the simplified methodology been applied correctly for the direct calculation of emission reductions ?	VVM Para 88/91d PDD Section B (B.6.2 -B.71) /3/	DR	<p>The PDD states the calculation of the emission reductions as simply the annual electricity generated by each plant multiplied by the emission factor. In section B6 the, combined margin value is used in the weighted average calculation CAR 1</p> <p>Corrected in the Revised PDD v7. The Combined Margin Baseline Calculation was used in place of the weighted average. Refer to Section B4 and Annex 3</p> <p>CAR closed.</p>	CAR 1 Closed
B.5.5. Where there is an option between different equations or parameters, has the methodological choices for the project been explained, have they been properly justified and are they correct?	VVM Para.89/90/91 PDD Section B (B.6.2 -B.71) /3/	DR	<p>PDD refer to both the combined margin and the Weighted average</p> <p>Corrected in the Revised PDD v7. The Combined Margin Baseline Calculation was used in place of the weighed average. Refer to Section B4 and Annex 3</p>	CAR 1 CAR 1 closed
B.5.6. Are uncertainties in the GHG emissions estimates properly addressed in the	PDD Sections B.5-C /3/	DR	. Pending CAR 1 CAR 1 closed	CAR 1 Closed

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
documentation?				
B.6. Ex-ante Data and Parameters Used				
B.6.1. Are the data provided in compliance with the methodology?	VVM Para. 91/67c PDD Section B.6.3/B.6.4 /3/ /25/	DR	Ex ante calculations is the combined generation of the two plants multiplied by the emission factor. Emission factor is pending CAR 1 Capacity of the plants is determined by the turbines. These are specified in the tender documents.	Pending CAR 1 Closed
B.6.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted?	VVM Para. 91a/b PDD Section B.6.3/B.6.4 /3/ /14/ /17/ /23/ /24/	DR	Data is derived from official sources and are quoted in the PDD	Y
B.6.3. Is the vintage of the baseline data correct?	PDD Section B.6.3/B.6.4 /3/	DR	Data for the year 2005 to 2007/08 is used.	Y
B.6.4. Is all the data appropriate and correctly applied to the CDM project activity?	VVM Para. 91c PDD Section B.6.3/B.6.4	DR	Yes, calculations are based on reliable information. The predicted generation is calculated based on turbine supplier's assumptions. Ref 25: BH1 output.pdf Values presented by supplier are higher than the values used to calculate predicted generation, this is conservative. The calculations are based on average historical rainfall and river flow data provided by	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			DWAF. The figures are seen as most reliable date but effect of weather cycles on the flow of water has not been taken into account.	
B.6.5. Are data and parameters that are not being monitored and remained fixed throughout the crediting period appropriately assessed, correct, and will they result in conservative estimates?	VVM Para. 90 PDD Section B.6.3/B.6.4	DR	The CM grid EF will be fixed over the crediting period. All information sources for the calculation of CM EF are reliable. The grid information was assessed during validation and is correct	Y
B.7. Calculation of Emissions Reductions				
B.7.1. Has the simplified methodology been applied correctly for determining emission reductions ?	VVM Para. 91d PDD Section A.4.3/B.6 /3/	DR	Yes, AMS 1D v 13 is correctly applied	Pending CAR 1 Closed
B.7.2. Are the emission reduction calculations documented in a complete and transparent manner?	VVM Para. 91e PDD Section B.6 /3/	DR	The PDD describes the equations applied to calculate emission reductions. CAR1 closed.	Pending CAR 1 Closed
B.7.3. Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	PDD Section B.6 /3/	DR	Yes, same procedures are used throughout	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.7.4. Is the calculation of the emission reduction correct?	VVM Para. 91e PDD Section B.6 /3/	DR	Spreadsheets are provided. Corrected in the Revised PDD v7. CAR closed	Pending CAR 1 Closed
B.8. Emission Reductions				
B.8.1. Is the form/table required for the indication of projected emission reductions correctly applied?	PDD Section A.4.3/ Section B.6 /3/	DR	The table correctly applies the method for calculating emission reductions as it simply measuring the annual output with the emission factor.	Y
B.8.2. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	PDD Section A.4.3/ Section B.6 /3/	DR Interview	The crediting period of 7 years is realistic. The completion of the project is delayed to February 2009.	Y
B.9. Monitoring Methodology				
B.9.1. Does the monitoring methodology provide a consistent approach in the context of all parameters to be monitored and further information provided by the PDD? Are all parameters and data that are available	VVM Para. 67e PDD Section B.7- B.8 see also Annex 4 /3c/ /15/	DR	Monitoring shall consist of metering the electricity generated by the renewable technology. This methodology will be applied to the two hydropower generating facilities that constitute the project. Separate remote monitored electricity meters will be installed at each generation unit. Data will be transmitted daily via a GPRS (cell phone) connection and recorded electronically. It provides a consistence approach with the methodology.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
at validation consistent with the simplified methodology. Has this data been interpreted and applied correctly?				
B.9.2. Does the monitoring methodology apply consistently the choice of the option selected for monitoring both of project and baseline emissions?	PDD Sections B and C /3c/ /15/	DR	Monitoring is done by an electricity meter only and is consistent with the methodology. AMS 1D and with Annex 4 of the PDD	Y
B.10. Data and Parameters Monitored				
B.10.1. Does the monitoring plan in the PDD comply with the simplified methodology? Provide for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	VVM Para. 91a/91d/121/79 PDD Section B.7-B.7.2 /3c/	DR	Meters are installed at each of the sites data is transmitted electronically to the server on a daily basis.	Y
B.10.2. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the	PDD Section B.7-B.7.2/B.6.2 /3c/	DR	PDD describes the choice of indicators as the metering of electricity as required by AMS 1D	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
simplified methodology applied?				
B.10.3. Will it be possible to determine the specified project GHG indicators?	PDD Section B.6.2-B.8 /3c/	DR	Monitoring data is transmitted electronically and stored on a server. Indicators are the metering of electricity as is required by AMS 1 D and is verifiable for this parameter.	Y
B.10.4. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	PDD Section B.6.2-B.7.1 /3c/	DR	According to monitoring methodology only electrical meters required. It is possible to verify at each site.	Y
B.10.5. Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or intended or unintended changes in data records?	PDD Section B.6.2-B.7.1 /3c/	DR	Data is presented in a spreadsheet that describes the beginning reading, end reading and the electricity generated per site. It is stored electronically and verifiable. .	Y
B.10.6. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	PDD Section B.5-B.7.2 /3c/	DR	Quality of the data determined by the quality of equipment used and described in monitoring plan.	Y
B.10.7. Are all formulae used to	PDD Section	DR	The formula is very simple by deducting the one reading from the other and is in	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
determine project emission clearly indicated and in compliance with the monitoring methodology.	B.6.2-B.7.1 /3c/		compliance with the methodology.	
B.11. Quality Control (QC) and Quality Assurance (QA) Procedures				
B.11.1. Is the selection of data undergoing quality control and quality assurance procedures complete?	VVM Para. 121 Refer to all data within the PDD Inc. B.6.2-B.7.1 /3c/	DR	All data included in the monthly statement and undergo quality control. Monitoring plan describes the quality control measures of the data. It is collected continuous and transmitted on a daily basis. Procedures exist to ensure quality data.	Y
B.11.2. Is the belonging determination of uncertainty levels done correctly for each ID in a correct and reliable manner?	Refer to all data within the PDD Inc. B.4/B.7.2/Annex 4 /3c/	DR	Only measuring of electricity ID. Monitoring plan describes the quality control measures of the data. It is collected continuous and transmitted on a daily basis. Procedures exist to ensure quality data.	Y
B.11.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	VVM Para 121 /3c/	DR	Monitoring plan describes the quality control measures of the data. It is collected continuous and transmitted on a daily basis. Procedures exist to ensure quality data.	Y
B.11.4. Is it ensured that data will be bound to national or internal reference standards?	VVM Para. 86d /3c/	DR	Data is automatically collected by calibrated meters and send electronically. It is captured in normal excel spreadsheet.	Y
B.11.5. Is it ensured that data provisions will be free of	VVM Para. 19	DR	Data is stored electronically and verified by the operational manager on a monthly basis. Meters are continuous reading and accumulate the reading over time. It is	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
of potential conflicts of interests resulting in a tendency of overestimating emission reductions?	/3c/		therefore verifiable that data cannot be manipulated.	
B.12. Operational and Management Structure				
B.12.1. Is the authority and responsibility of project management clearly described?	PDD Section B.8/Annex 1 /3c/	DR	Responsibilities are with the operational manager and the managing director. Responsibilities described in monitoring plan.	Y
B.12.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD Section B.8/Annex 1 /3c/	DR	Responsibilities are with the operational manager and the managing director. Responsibilities described in monitoring plan.	Y
B.12.3. Are procedures identified for training of monitoring personnel?	PDD Section B.8/Annex 1 /3c/	DR	Due to the nature of the project and its monitoring needs there is no need for specific or specialised training of personnel for monitoring. The data which will be collected is also collected for general plant operational and financial administration	Y
B.13. Monitoring Plan (Annex 4)				
B.13.1. Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity?	VVM Para. 122a /3c/	DR	Monitoring plan is specific for the project. And address the specific needs.	Y
B.13.2. Does the monitoring plan completely describe all measures	VVM Para. 122b	DR	According to the AMS 1D only the electricity generated is required to be measured. The monitoring describes how this is done at both sites.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	/3c/			
B.13.3. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	VVM Para. 122b /3c/	DR	Only monitoring equipment required by the methodology is the electricity generated and is supplied by the monitoring plan.	Y
B.13.4. Are procedures identified for calibration of monitoring equipment?	VVM Para. 122a-c /3c/	DR	Procedures identified and the equipment to be calibrated annually.	Y
B.13.5. Are procedures identified for maintenance of monitoring equipment and installations?	VVM Para. 122a-c /3c/	DR	Maintenance procedures coincide with the calibration of the meter.	Y
B.13.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	VVM Para. 122a-c /3c/	DR	Procedures describe it as being collected and transmitted electronically on a daily basis.	Y
B.13.7. Are procedures	VVM Para.	DR	Procedures describe the adjustment of data should it be necessary.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
identified for dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems?	122a-c /3c/			
B.13.8. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	VVM Para.122a-c /3c/	DR	No internal audit procedures deemed necessary for the operational requirements.	Y
B.13.9. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	VVM Para. 122a-c /3c/	DR	Monitoring describes the procedures for the verification and compiling of data prior to data is submitted.	Y
B.13.10. Describe the ability of the project participants to implement the monitoring plan.	VVM Para. 122c	DR	The PP is able to implement the MP. The MP is simple.	y
B.14. Baseline Details				
B.14.1. Is there any indication of a date when determining the	PDD Section B.8/Annex 3	DR	Update to v 13 could not be before 14. Dec 2007. Please revise B.8. Wrong date 10.01.2007.	CAR 10 CAR 10

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
baseline?	/3c/		CAR 10 Corrected and revised PDD. Section B8 indicates 11/3/2008. It is in line with version 13 of the methodology that apply from 14 December 2007	closed
B.14.2. Is this consistent with the time line of the PDD history?	Also see revision history of the PDD /3c/	DR	It is consistent with PDD timeline.	Y
B.14.3. Is all data required provided in a complete manner by annex 3 of the PDD?	PDD Annex 3 /3c/	DR	Data is updated in rev 3 of the PDD and latest data for 2008 is used.	Y
C. Duration of the Project / Crediting Period				
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	VVM Para. 102a-c PDD Section C.1.1/C.1.2 /3b/	DR	Starting date is indicated as 15 December 2006 initially. That is the date construction started. To comply with § 97 VVM (1) the starting date was revised with update to PDD version 7 rev 4 (Ref 3d). The start date is the date of Commencement Notice dated 28/11/2006 what is 17 days before construction start date. This is seen as the date when real action was taken to implement the project activity (Ref 32- attached with the response; Clause 3: "... To commence the execution of the Works within 14 days of the commencement date"). Operational lifetime is indicated as in excess of 20 year and is reasonable for a hydro project.	Y
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed	VVM Para. 102a PDD Section C.2/C.2.1/C.2.2 /3b/	DR	The crediting period is 7 years. Please revise spreadsheet A 4.3 and B 6.4 in the PDD accordingly. CL 9 Revised PDD version 7 state starting date after registration	CL 9 CL 9 Closed Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
crediting period of max. 10 years)?				
C.1.3. Does the project's operational lifetime exceed the crediting period	VVM Para. 102a PDD Section C.1.2/C.2.1.1/C.2.1.2 /3b/	DR	The PDD reflects the expected lifetime of the project as in excess of 20 years and the first crediting period as 7 years.	Y
C.1.4. Does the start date indicate whether this is a new project activity or a pre-existing project activity?	VVM Para. 102a/ 98 PDD Section C.1.1/C.2.1.1		After § 98 VVM (1) the project is an existing project activity with a start date before 02/08/2008	Y
D. Environmental Impacts				
D.1.1. Does the project comply with environmental legislation in the host country?	VVM Para. 131/134d PDD section D /11/	DR	A copy of the water license should be provided as indicated in section D of PDD. Copy of water licence provided. CL closed	CL 5 CL closed Y
D.1.2. Has an analysis of the environmental impacts of the project activity been sufficiently described?	VVM Para. 131 PDD section D PDD v 4 EMP	DR	Reference is made to EMP & EMS in the environmental section D of the PDD. These documents are not yet available. It is not transparent to LA if the monitoring of the environmental impact and the mitigation measures are only relevant during construction phase or also during the lifetime of the project. CL 4 The interpretation and reference to an EMS was wrongfully made. It should have referred in all cases to an EMP. There is an EMP for the construction phase integrated into the contractor's specifications and agreements. Corrected in the revised PDD v4.	CL 4 CL 4 Closed

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			Copy of EMP provided to SGS. Additional information on EMP received. Environmental monitoring is scheduled there. This monitoring is seen outside the CDM monitoring requirements. CL 4 closed	
D.1.3. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	VVM Para. 131 PDD section D /3b/ /9/	DR	Yes it is a host country requirement and it was done. The ROD for the approval was issued.	Y
D.1.4. Will the project create any adverse environmental effects?	VVM Para. 131 PDD section D /3b/ /9/	DR	No. There will be no adverse environmental impacts and all the impacts can be mitigated.	Y
D.1.5. Are trans-boundary environmental impacts considered in the analysis?	VVM Para. 131 PDD section D /3b/	Site visit	Trans-boundary impacts are not applicable in this project.	Y
D.1.6. Have identified environmental impacts been addressed in the project design?	VVM Para. 131 PDD section D /3b/	DR site visit	Yes. Environmental aspects were identified and mitigated. Design measures were changed to accommodate a nearby wetland area and to rehabilitate access routes after construction.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
E. Stakeholder Comments				
E.1.1. Have relevant stakeholders been consulted?	VVM Para. 128a PDD Section E.1 /3b/ /9/	DR	In the host country it is an EIA requirement to do stakeholder consultation. The EIA was done and the ROD for it was issued. This would imply that the government was satisfied with the stakeholder consultation that took place. The project was posted on the DNA website from 24/10/2005 to 23/11/2005. Verified by access of the following web page http://www.dme.gov.za/dna/PDD_archive_2006.stm The LoA from the DNA of the host Party is seen as indirect evidence that no critical comments from the public are pending from previous stakeholder consultations.	Y
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	VVM Para. 128a PDD Section E.1 /3b/	DR	Site notices were displayed during May 2005 and it was advertised in local newspapers during May 2003. During June 2003 a public meeting was held in Bethlehem.	Y
E.1.3. Is the undertaken stakeholder process described in a complete and transparent manner?	VVM Para. 128b PDD Section E.1 /3b/	DR	Stakeholder notices was placed in public media where all has access to it.	Y
E.1.4. Is a summary of the stakeholder comments received provided?	VVM Para. 128b PDD Section E.2 /3b/	DR	Stakeholder comments is included in the PDD and reflects requirements that the project would be subject to in terms of the licensing requirements of the Department of Water Affairs and Forestry; <input type="checkbox"/> The actual benefits that would accrue to the community from such a project; <input type="checkbox"/> What employment opportunities would actually be created by the project; <input type="checkbox"/> The nature of the diversions to be created as part of the project; <input type="checkbox"/> A request for an archaeological impact assessment report; and, <input type="checkbox"/> Discussions with regard to the alternatives associated with the project.	Y



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
E.1.5. Has due account been taken of any stakeholder comments received?	VVM Para. 128b PDD Section E.3 /3b/ /9/ /11/	DR	An archeological study was done and included as part of the EIA process. Water licenses were acquired as requested. Employment is arranged through local stakeholder forum	Y



References

See section 7 above.

A.3 Annex 3: Overview of Findings

Findings Overview

Findings from validation of Bethlehem Hydroelectric project

Each Table below represents a finding from the validation assessment. The findings are numbered consecutively, approximately in the order that they have been identified and irrespective of the nature of the findings, for eg.: CAR #1, CAR #2, CL #3, FAR #4 etc.

Description of Table:

Type	Findings are either Corrective Action Requests (CARs), Clarification Requests (CLs), and Forward Action Request (FARs). A corrective action request (CAR) is raised if one of the following occurs: I. The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions; II. The CDM requirements have not been met; III. There is a risk that 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.
Lead Assessor Comments	Details the content of the finding
Ref	Refers to the item number in the Validation Protocol
Response	Please insert response to finding, starting with the date of entry.

Please Note: This is an open list and more findings may be added as validation progresses.

Responses to each Finding and relevant associated documentation should be recorded in this form by the Client and send back to the Lead Assessor in one submission to SGS (exception of finding linked to Letter of Approval, which can be submitted separately).

SGS reserves the right to review the associated fees and timeline if:

- more than one response submission is received from the Client
- a finding (CL/CAR), raised by the Lead Assessor prior to Technical Review stage, is not closed within 30 days of notification to the Client by SGS.

Rows for comments and further response will be appended to the table until the Findings has been addressed to the satisfaction of the Lead Assessor.

Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	3	8	0

Date:	24/4/2007			Raised by:	Jochen Gross		
No.:	1	Type:	CAR	Issue:	The default value EF used in the calculations has some of the digits switched around from the values published by Eskom annual report.	Ref.:	B3.1
Lead Assessor Comment					Date: 06/03/2008		
<p>Date: 6/6/2007 Cornelis van den Berg, Jochen Gross</p> <p>The section in the PDD was revised. It was an initial typing error. Values were recalculated and adjusted accordingly.</p> <p>06.03.2008 Jochen Gross</p> <p>A new issue was identified during document review. It is not transparent if the grid EF is calculated as weighted average as required by AMS ID. Please provide the calculation and evidence which shows that the EF is calculated as weighted average as required..</p>							
Project Participant Response:					Date : 25/06/2008		
<p>25/06/2008 Comment PP</p> <p>Corrected in the Revised PDD v7. The Combined Margin Baseline Calculation was used in place of the weighed average. Refer to Section B4 and Annex 3</p>							
Cornelis van den Berg.					Date: 30/9/2008		
<p>Section B4 of the PDD refer to the combined margin approach and section B6.1 refer to the weighted average for calculating the emission factor in PDD v 7.</p> <p>The calculation document in annex 3 is outstanding.</p> <p>There are also two versions of the PDD version 7. One dated 25/6/2008 and the other 9/9/2008.</p>							
Project Participant Response:					Date: 23/10/2008		
<p>Corrected in the Revised PDD v7 rev1. The Combined Margin Baseline Calculation was used in place of the weighed average. Refer to Section B 6.1</p>							
Project Participant Response:					Date: 13/02/2009		
<p>extract from the National Energy Regulator of South Africa (NERSA; BH PDD Extract from NERSA 2005 statistics.pdf) Electricity supply statistics for 2005 (latest available). The complete Document is 16MB. Please note the following regarding the claim that Bethlehem Hydro is the first new and private (IPP) small hydro power plant to be constructed in SA in 21 years:</p> <p>Table 3.3 p 14</p> <p>No of Private Hydro power plants = 1</p> <p>This is the 3MW Friedenheim Plant also referred to at the bottom of table 3.4 p 18.</p> <p>The 3 municipal (I.e not privately owned) hydro power plants referred to in table 3.3 p14 all date back to the 1960's.</p> <p>Please confirm that this is sufficient motivation for the statement in the PDD that Bethlehem Hydro is the first Independent small hydro Power project to be constructed in SA since 1988.</p>							
Acceptance and Close out by Lead Assessor:					Date: 13/02/2009		
<p>Information Provided:</p> <p>Revised documents show the calculation of CM grid EF transparently as required.</p> <p>Information Verified: PDD version 7 rev 1 and rev 3</p> <p>Document review</p>					<p>Verified Document Reference:</p> <p>PDD v 7 rev 1 from 23/10/2008</p> <p>PDD v 7 rev 3 from 13/02/2009</p>		

Reasoning for not acceptance or acceptance and close out: CAR 1 closed. Based on the finding raised and response provided by project participant

Date:	24/4/2007			Raised by:		Jochen Gross			
No.:	2	Type:	CL	Issue:	The description of the Baseline information was left out.			Ref.:	B1.3
Lead Assessor Comment						Date: : 6/6/2007			
Please provide the missing section.									
Project Participant Response:						Date: 6/6/2007			
Revision of PDD									
Acceptance and Close out by Lead Assessor:						Date: : 6/6/2007			
Information Provided: The section was inserted in the revised PDD rev 4.						Verified Document Reference: PDD v 4			
Information Verified: Document Review.									
Reasoning for not acceptance or acceptance and close out: CL 2 closed based on the section that was inserted in PDD									

Date:	24/4/2007	Raised by:		Jochen Gross					
No.:	3	Type:	CL	Issue:	No letter of approval (HCA)			Ref.:	A2 1.3
Lead Assessor Comment							Date: 24/4/2007		
Draft validation report provided to client.									
Project Participant Response:							Date: 27/6/2007		
The South African DNA requests a draft validation report before they issue the Letter of approval. It is not posted on the DOE website yet because a letter of approval has not been received. All other aspects of the project has been validated and a draft opinion been formed.									
Acceptance and Close out by Lead Assessor:							Date: : 27/6/2007		
Information Provided: LOA received and approved. Information Verified: Copy of HCA provided.							Verified Document Reference: Copy of HCA Dated 21/6/2007		
Reasoning for not acceptance or acceptance and close out: Based on the evidence provided the CL is closed out.									
TR Comment							Date: 12/01/2009		
LoA expired									
Project Participant Response:							Date: 05/03/2009		
Updated LoA sent to SGS									
Acceptance and Close out by Lead Assessor:							Date: : 06/03/2009		
Information Provided: LOA received and approved. Information Verified: Copy of HCA provided.							Verified Document Reference: Ref 4a LoA		

Reasoning for not acceptance or acceptance and close out:
Based on the evidence provided the CL#3 is closed out again

Date:	24/4/2007	Raised by:	Jochen Gross				
No.:	4	Type:	CL	Issue:	Reference is made to EMP & EMS in the environmental section D of the PDD. These documents are not yet available.	Ref.:	D1.2
Lead Assessor Comment					Date: 6/3/2008		
A new issue was identified during document review. It is not transparent to LA if the monitoring of the environmental impact and the mitigation measures are only relevant during construction phase or also during the lifetime of the project. Are environmental indicators clearly defined and able to be monitored quantitative? Please provide additional information about the indicators, monitoring and timing of the monitoring and a copy of the EMP.							
Project Participant Response:					Date: 6/6/2007		
Revision of PDD v4 The interpretation and reference to an EMS was wrongfully made. It should have referred in all cases to an EMP. There is an EMP for the construction phase integrated into the contractor's specifications and agreements. The operational EMP is still in draft form as the construction phase will take a year. This could only be verified during verification.							
Acceptance and Close out by Lead Assessor:					Date: : 25/3/2008		
Information Provided: Corrected in the revised PDD. Refer to Section D.1. Copy of EMP provided to SGS. Additional information on EMP received. Environmental monitoring is scheduled there. This monitoring is seen outside the CDM monitoring requirements.					Verified Document Reference: PDD v 4 Bethlehem Hydro EMP May 2007		
Information Verified: PDD v 4 Bethlehem Hydro EMP							
Reasoning for not acceptance or acceptance and close out: CL4 Closed based on evidence provided and explanation given.							

Date:	24/4/2007	Raised by:	Jochen Gross				
No.:	5	Type:	CL	Issue:	A copy of the water license should be provided as indicated in section D of PDD.	Ref.:	D1.1
Lead Assessor Comment					Date: 24/4/2007		
Please provide as requested.							
Project Participant Response:					Date: 6/6/2007		
Additional documentation. Copy of water licence provided to SGS.							
Acceptance and Close out by Lead Assessor:					Date: :		
Information Provided: Water licence					Verified Document Reference:		
Information Verified:					BH Water use licence. Ref		
Licence Reviewed.					B2/2/16 (5058) (4573) dated 26/5/2005		

Reasoning for not acceptance or acceptance and close out:
CL 5 Closed based on evidence provided.

Date:	24/4/2007	Raised by:	Jochen Gross				
No.:	6	Type:	CL	Issue:	Confirmation of non diversion of ODA funding as indicated in Annex 2 of the PDD	Ref.:	A5.2
Lead Assessor Comment					Date: 24/4/2007		
Please provide information as requested.							
Project Participant Response:					Date: 6/6/2007		
Revised PDD provided Rev 6. Revised PDD provided Rev 7							
Acceptance and Close out by Lead Assessor:					Date: :		
Information Provided:					Verified Document Reference:		
Annex 2 of the PDD formally contains a statement that no ODA funding is diverted to the project. The statement in the PDD annex 2, referring to confirmation that no diversion of funds took place, was misleading as it appeared that some form of document is still outstanding. The wording in the statement was therefore changed in version 4 and 5 of the PDD to avoid this anticipation of documents. The confirmation was given verbal by Mr Olivier and stated in annex 2.					PDD rev 7. 25 June 2008		
Information Verified: The project participant Mr A Olivier was interviewed and verbal confirmation received that no ODA funds were used. Document review of PDD rev 7.							
Reasoning for not acceptance or acceptance and close out: CL 6 Closed: Based on the finding raised and response provided by project participant.							

Date:	7/3/2008	Raised by:	Jochen Gross				
No.:	7	Type:	CL	Issue:	Please provide evidence for the assessment of the barriers discussed under B 5 PDD (Barrier due to prevailing practice and financial resources).	Ref.:	B5.5
Lead Assessor Comment					Date: 7/3/2008		
The arguments sound good but objective evidence must be available for validation and has to be part of the document package for registration. The PDD does not provide direct links to the information sources.							
Project Participant Response:					Date: 25/6/2008		
Corrected in revised PDD v7. References for objective evidence provided.							
Acceptance and Close out by Lead Assessor:					Date: : 25/6/2008		

<p>Information Provided: Information sources presented in revised PDD v7 are reliable and confirm the arguments used for the barrier analysis.</p> <p>Information Verified: Document review of information sources.</p>	<p>Verified Document Reference: PDD v 7</p>
<p>Reasoning for not acceptance or acceptance and close out: CL 7 Closed based on the new information provided by PP.</p>	

Date:	11/3/2008			Raised by:	Jochen Gross		
No.:	8	Type:	CL	Issue:	PDD tells on page 13 that a 2.2 MW mini hydro power station at the As River site will be constructed. This is different from the 4 MW station which is discussed in the PDD too. Please revise the PDD and clarify the difference.	Ref.:	A 4.7
Lead Assessor Comment					Date: 11/3/2008		
Please clarify							
Project Participant Response:					Date: 25/6/2008		
Revised PDD version 7							
Acceptance and Close out by Lead Assessor:					Date: : 25/6/2008		
<p>Information Provided: Revised PDD Information Verified: Revised PDD v 7 shows 4 MW New information was corrected in PDD</p>					<p>Verified Document Reference: PDD version 7</p>		
<p>Reasoning for not acceptance or acceptance and close out: CL 8 Closed based on corrections made to PDD version 7</p>							

Date:	11/3/2008			Raised by:	Jochen Gross		
No.:	9	Type:	CL	Issue:	The crediting period is 7 years. Please revise spreadsheet A 4.3 and B 6.4 in the PDD accordingly.	Ref.:	C1.2
Lead Assessor Comment					Date: 11/3/2008		
Please revise start of crediting period under C 2.11. Start date must be after date of registration.							
Project Participant Response:					Date: 25/6/2008		
Corrected in Revised PDD							
Local Assessor Comment					Date: 22/10/2008		
<p>Construction on the project was delayed due to a delay with the loan from the Development Bank of South Africa. It has been sorted out. Commissioning should be February 2009.</p> <p>I have verified this information by phone interview of project developer and confirmed with email (ref 26). Both sites have been visited initially in 2006 and construction was in progress at both sites. The extend of the delay I can only take the developers word for it.</p>							

Project Participant Response:	Date: 19/11/2008
Start date of crediting period corrected in Revised PDD v7 rev 2 to 30/03/2008	
Acceptance and Close out by Lead Assessor:	Date: : 19/11/2008
Information Provided: Revised PDD v 7 rev 2 Starting date 30/03/2009 or registration. Information Verified: Revised PDD v 7 rev 2 from 19/11/2008	Verified Document Reference: Ref 3c: PDD version 7 rev 2
Reasoning for not acceptance or acceptance and close out: CL 9 Closed based on the changes made to PDD v 7 rev 2	

Date:	11/3/2008	Raised by:	Jochen Gross
No.:	10	Type:	CAR
Issue:	Update to v 13 could not be before 14. Dec 2007. Please revise B.8. Wrong date 10.01.2007.		Ref.:
Lead Assessor Comment		Date: 11/3/2008	
Please correct PDD section B8			
Project Participant Response:		Date: 25/6/2008	
Corrected in Revised PDD version 7			
Acceptance and Close out by Lead Assessor:		Date: : 25/6/2008	
Information Provided: Corrected and revised PDD. Section B8 indicates 11/3/2008. It is in line with version 13 of the methodology that apply from 14 December 2007 Information Verified: Document review of the changes made to the PDD		Verified Document Reference: PDD version 7	
Reasoning for not acceptance or acceptance and close out: CAR 10 closed based on the changes made.			

Date:	11/3/2008	Raised by:	Jochen Gross
No.:	11	Type:	CAR
Issue:	Headline of Annex 3 PDD is double. Please delete.		Ref.:
Lead Assessor Comment		Date: 11/3/2008	
Please address editorial errors			
Project Participant Response:		Date: 25/6/2008	
Corrected in Revised PDD.			
Acceptance and Close out by Lead Assessor:		Date: : 25/6/2008	
Information Provided: Requested changes were made in revised PDD v7. Information Verified: Revision of revised PDD version 7		Verified Document Reference: PDD version 7	
Reasoning for not acceptance or acceptance and close out: CAR 11 closed based on editorial corrections made to PDD			



A.4 Annex 4: Team Members Statements of Competency

Statement of Competence

Name: Dr. Jochen Gross

SGS Affiliate: SGS Germany GmbH

Status

- Product Co-ordinator ☐
- Operations Co-ordinator ☐
- Technical Reviewer ☒
- Expert ☒

Validation

Verification

- Local Assessor ☒
- Lead Assessor ☒
- Assessor ☒
- / Trainee Lead Assessor ☒

Scopes of Expertise

1. Energy Industries (renewable / non-renewable) ☒
2. Energy Distribution ☐
3. Energy Demand ☐
4. Manufacturing ☒
5. Chemical Industry ☐
6. Construction ☐
7. Transport ☐
8. Mining/Mineral Production ☐
9. Metal Production ☒
10. Fugitive Emissions from Fuels (solid,oil and gas) ☐
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride ☐
12. Solvent Use ☐
13. Waste Handling and Disposal ☐
14. Afforestation and Reforestation ☐
15. Agriculture ☐

Approved Member of Staff by Siddharth Yaddav

Date: 16 May 2007

Statement of Competence

Name: Cornelis Van Den Berg

SGS Affiliate: South Africa

Status

- Product Co-ordinator ☐
- Operations Coordinator ☐
- Technical Reviewer ☐
- Expert ☐

Validation

Verification

- Local Assessor ☒
- Lead Assessor ☐
- Assessor ☐
- / Trainee Lead Assessor

Scopes of Expertise

1. Energy Industries (renewable / non-renewable) ☐
2. Energy Distribution ☐
3. Energy Demand ☐
4. Manufacturing ☐
5. Chemical Industry ☐
6. Construction ☐
7. Transport ☐
8. Mining/Mineral Production ☐
9. Metal Production ☐
10. Fugitive Emissions from Fuels (solid,oil and gas) ☐
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride ☐
12. Solvent Use ☐
13. Waste Handling and Disposal ☐
14. Afforestation and Reforestation ☐
15. Agriculture ☐

Approved Member of Staff by Marco van der Linden

Date: 25/07/2006