VALIDATION REPORT

COROBRIK (PTY) LTD

FUEL SWITCH AT COROBRIK'S DRIEFONTEIN BRICK FACTORY IN SOUTH AFRICA

Report No: 09CDMZA110001 - 10/054

Date: 2012-10-22

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Validation Report:	***Report No.***	***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
	09CDMZA110001 - 10/054 V01	0	2012-06-25	2012-10-22
Project:	***Title:***		***Initial PDD Version:***	***Final PDD Version***
	Fuel Switch at Corobrik's Driefontein Brick Factory in South Africa		2010-02-01 (v03)	2012-10-10 (v11)
Client:	Corobrik (Pty) Ltd		***Client ref:***	John Anthony
Project Participant(s):	***Host Party:***		***Other involved parties:***	
	Republic of South Africa		N/A	
Applied methodology/ies:	***Title:***		***No.:***	***Scope / TA:***
	Switching fossil fuels		AMS III.B ver 15	1 / 1.1
Validation team / Technical Review and Final Approval	***Validation Team:***		***Technical review:***	***Final approval:***
	Saalmann Martin (TL) Grzegorz Kochaniewicz (TM) Stefan Winter (TM) Davinah Milenge (TM)		Rainer Winter Katja Beyer	Rainer Winter
Expected Emission reductions: [t CO_2e]	***Expected emission reductions over the first crediting period:***		***(Expected) project starting date:***	
	259,918 t CO_{2e}		2007-06-11	
Confidential content:	☐ Yes		☒ No	
Summary of Validation Opinion:	☒ Positive validation opinion		☐ Negative validation opinion	
	In detail the conclusions can be summarised as follows: ☒ The project is in line with all relevant host country criteria (Republic of South Africa) and all relevant UNFCCC requirements for CDM. Project activity approval have been obtained from DNA of Republic of South Africa vide the Letter of Approval (HCA) dated 2012-01-06 ☒ The project additionality is sufficiently justified in the PDD. ☒ The monitoring plan is transparent and adequate. ☒ The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 259,918 tCO_2e are most likely to be achieved within the (1st renewable) crediting period. ☒ The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.			
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Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
DNA	Designated National Authority
EB	CDM Executive Board
EIA	Environmental Impact Assessment
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
PDD	Project Design Document
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

Table of Contents *Page*

1 OBJECTIVE / SCOPE

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

- the requirements of Article 12 of the Kyoto Protocol;
- the CDM modalities and procedures as agreed in the Marrakech Accords under decision 3/CMP.1
- the annex to the decision;
- subsequent decisions made by COP/MOP & CDM Executive Board and
- other relevant rules, including the host country legislation and sustainability 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 on the quality of the project and its intended generation of certified emission reductions (CERs).

The validation scope is given as a thorough independent and objective assessment of the project design including especially: the correct application of the methodology, the project's baseline study, additionality justification, local stakeholder commenting process, environmental impacts and monitoring plan, which are included in the PDD and other relevant supporting documents, to ensure that the proposed CDM project activity meets all relevant and applicable CDM criteria.

The information included in the PDD and the supporting documents were reviewed against the requirements as set out by the UNFCCC. The validation team has, based on the requirements in the Validation and Verification Manual[/VVM/], carried out a full assessment of all evidences to assess the compliance of the project with the key areas as outlined in section V.E. and V.F. of the VVM (version 01.2, EB 55).

The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

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

2 GHG PROJECT DESCRIPTION

2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

Item	Data		
Project Title	Fuel Switch at Corobrik's Driefontein Brick Factory in South Africa		
Project Size	☐ Large Scale ☒ Small Scale		
Project Scope *(according to UNFCCC sectoral scope numbers for CDM)*	☒	1	Energy Industries (renewable- /non-renewable sources)
	☐	2	Energy distribution
	☐	3	Energy demand
	☐	4	Manufacturing industries
	☐	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 hexafluoride
	☐	12	Solvents use
	☐	13	Waste handling and disposal
	☐	14	Afforestation and Reforestation
	☐	15	Agriculture
Applied Methodology	AMS III.B: Switching fossil fuels ver 15		
Technical Area(s)	K: Fuel switch 1.1: Thermal Energy Generation		
Crediting period	☒ Renewable Crediting Period (7 y) ☐ Fixed Crediting Period (10 y)		
Start of crediting period	2012-07-15 or registration date		

2.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

Table 2-2: Project Parties and project participants

Characteristic	Party	Project Participant
Host party	Republic of South Africa	Corobrik (Pty) Ltd
Other involved party/ies	N/A	

2.3 Project Location

The details of the project location are given in table 2-3:

Table 2-3: Project Location

No.	Project Location
Host Country	Republic of South Africa
Region:	North West Province
Project location address:	Portion 23/27 Driefontein Farm District Ngaka Modiri Molema North West Province
Latitude:	26º21'08 S
Longitude:	27º31'43 E

2.4 Technical Project Description

The fuel switch project at Driefontein Brick Factory entailed the conversion of conversion of fuel from coal to natural gas in the clay brick-firing tunnel kiln. It involved the extension of the Sasol Gas pipeline to Driefontein to facilitate gas supply, and the installation of a combustion system to replace the coal gasifiers.

The technical key data are provided in table 2-4 below

Table 2-4: Technical data of the project activity

Parameter	Unit	Value
Gas consumption	GJ	423,341
Gas emission factor (EF_{CO2})	tCO2 /TJ	154.19
Gas consumption per bricks	GJ/1000 bricks	8.02
Fuel consumption	Nm3	11,569,860
Calorific value	TJ/Nm3	0.000037

3 METHODOLOGY AND VALIDATION SEQUENCE

3.1 Validation Steps

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the project design document (PDD)
- Desk review of the PDD and supporting documents
- Validation planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and its contractors
- Draft validation reporting
- Resolution of corrective actions (if any)
- Final validation reporting
- Technical review
- Final approval of the validation

The sequence of the validation is given in the table 3.1 below:

Table 3.1: Validation sequence

Topic	Time
Assignment of validation	2009-11-20
Submission of PDD for global stakeholder commenting process	2010-02-09
On-site visit	2010-02-08 to 2010-02-10
Draft reporting finalised	2010-10-10
Final reporting finalised	2012-10-22
Technical review on final reporting finalised	2012-10-22

3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the validation can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities, a validation team, consisting of one team leader and 4 additional team members, as well as the Technical Review personnel were appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

Table 3-2: Involved Personnel

	Name	Company	Function [1)]	Qualification Status [2)]	Scheme competence [3)]	Technical competence [4)]	Host country Competence	Team Leading Competence	On-site Visit
☒ Mr. ☐ Ms.	Saalmann Martin	TN CERT GmbH	TL	SA	☒		☐	☒	☐
☒ Mr. ☐ Ms.	Grzegorz Kochaniewicz	TN South Africa	TM	A	☒		☒	☐	☒
☒ Mr. ☐ Ms.	Stefan Winter	TN CERT GmbH	TM	SA	☒	K/1.1	☐	☒	☒
☐ Mr. ☒ Ms.	Davinah Milenge	TN South Africa	TM	ETE	☐		☒	☐	☐
☒ Mr. ☐ Ms.	David Lubanga	TN CERT GmbH	OT	T	☐		☐	☐	☐
☐ Mr. ☒ Ms.	Katja Beyer	TN CERT GmbH	TR[3)]	LA	☒		☐	☒	☐
☒ Mr. ☐ Ms.	Rainer Winter	TN CERT GmbH	TR/FA[3)]	SA	☒	1.1	☐	☒	-

[1)] TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR, FA: Final approval

[2] GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

[3] No team member

[4] As per S01-MU03 or S01-VA070 A2 (such as A, B, C.....), according to the Accreditation Standard (Version 01.1)
[5] As per S01-MU03 or S01-VA070 A2 (such as TA 1.1, TA 1.2 ...), according to the Accreditation Standard (Version 2)

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Technical Experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

In order to qualify further personnel the project team was accompanied by observers and/or trainees as indicated in the table above. They are usually not considered as team members.

Statements of competence for the above mentioned team members are enclosed in annex 6 of this report.

3.4 Consideration of Public Stakeholder Comments

Acc. to the modalities and procedures the draft PDD, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the validation activity commenced. Stakeholders have been invited to comment on the PDD within the 30 days public commenting period.

In case comments are received, they are taken into account during the validation process. The comments and the discussion of the same are documented in annex 5 of this report.

3.5 Validation Protocol

In order to ensure consideration of all relevant assessment criteria, a validation protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of validation and the results from pre-validating the identified criteria. The validation protocol reflects the generic CDM requirements each CDM project has to meet as well as project specific issues as applicable. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements that a CDM project is expected to meet;
- It ensures a transparent validation process where the validating entity will document how a particular requirement has been validated and the result of the determination.

The validation protocol is described in Figure 1.

Validation Protocol Table A-1: Requirement checklist				
Checklist Item	***Validation Team Comment***	***Reference***	***Draft Conclusion***	***Final Conclusion***
The checklist items in Table A-1 are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further sub-divided as per the requirements of the topic and the individual project activity.	*The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the validation team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.*	*Gives reference to the information source on which the assessment is based on*	*Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft validation stage.*	*In case a corrective action or a clarification the final assessment at the final validation stage is given.*

Figure 1: Validation protocol table

The completed validation protocol is enclosed in Annex 1 to this report.

3.6 Review of Documents

The published PDD and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

3.7 Follow-up Interviews

The validation team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for CDM.

During validation the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 3-3.

Table 3-3: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives Project consultant	- Chronological description of the project activity with documents of key steps of the implementation. - Current status of plant design

Interviewed Persons / Entities	Interview topics
	- Technical details of the project realization, project feasibility, designing, operational life time, monitoring of the project - Host Government Approval - Approval procedures and status - Monitoring and measurement equipment and system. - Financial aspects - Crediting period - Project activity starting date - CER allocation / ownership - Baseline study assumptions - Additionality - Sustainable development issues - Monitoring - Analysis of local stakeholder consultation - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting - National Legislation - Editorial issues of the PDD

A comprehensive list of all interviewed persons is part of section 7 'References'.

3.8 Project comparison

The validation team has compared the proposed CDM project activity with similar projects or technology that have similar or comparable characteristics and with similar projects in the host country in order to achieve additional information esp. regarding:

- Project technology
- Additionality issues
- Reasons for reviews, requests for reviews and rejections within the CDM registration process.

3.9 Resolution of Clarification and Corrective Action Requests

3.9.1 Definition

A **Corrective Action Request (CAR)** will be established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,

- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

3.9.2 Draft Validation

After reviewing all relevant documents and taken all other relevant information into account, the validation team issues all findings in the course of a draft validation report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

3.9.3 Final Validation

The final validation starts after issuance of the proposed corrective action (CA) of the CARs, CLs and FARs by the project proponent. The project proponent has to reply on those and the requests are "closed out" by the validation team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first verification. The validation team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation opinion can be issued by the validation team.

The CAR(s) / CL(s) / FAR(s) are documented in chapter 4.

3.10 Technical review

Before submission of the final validation report a technical review of the whole validation procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the validation team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.11 Final approval

After successful technical review of the final report an overall (esp. procedural) assessment of the complete validation will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

Only after this step the request for registration can be started (in case of a positive validation opinion).

4 VALIDATION FINDINGS

In the following table the findings from the desk review of the published PDD, visits, interviews and supporting documents are summarised**:**

Table 4-1: Summary of CARs, CLs and FARs issued

Validation topic [1)]	No. of CAR	No. of CL	No. of FAR
General description of project activity (A) - Project specification - Technical project description - Participation - Contribution to sustainable development - PDD editorial aspects - Technology to be employed	3	1	0
Project Baseline, Additionality and Monitoring Plan (B) - Application of the Methodology - Project Boundary - Baseline identification - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Additionality determination - Monitoring Methodology - Monitoring Plan - Project management planning	15	2	0
Duration of the Project / Crediting Period (C)	1	0	0
Environmental impacts (D)	0	0	0
Stakeholder Comments (E)	1	0	0
SUM	**20**	**3**	**0**

[1)] The letters in brackets refer to the validation protocol

Table 4-2: PDD versions used for assessments

Version Nr.	Assessment Round
PDD v. 3 (Published)	DOE Assessment #1
PDD v. 4	DOE Assessment #2
PDD v. 5	DOE Assessment #3
PDD v. 6 (basis TR1)	DOE Assessment #4
PDD v. 7	DOE Assessment #5
PDD v. 8 (basis TR2)	DOE Assessment #6
PDD v. 9 (basis TR3)	DOE Assessment #7
PDD v. 10. (basis for final TR)	DOE Assessment #8
PDD v. 11. (basis for Incomplete)	DOE Assessment #9

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all validation items it should be referred to the validation protocols (see Annex 1).

The findings of validation process are summarized in the tables below.

Finding	A1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	LoA from the host country DNA/HCA/ is pending. Project participant should provide written approval from Host country.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The application form (*Submission of CDM project PDD for Approval by DNA*) has been submitted to the South African DNA.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	LoA of host country is still pending.		
Corrective Action #2	Host country approval can only be acquired when a signed validation report is submitted (See email: "***RE Applicaton for Corobrik's Driefontein Brick Factory Fuel Switch CDM project approval by the host country.msg***": *"The DNA noted the projected submitted. The validation report is not signed and does not show the DOE. As such the DNA is unable to start with the evaluation until our concerns are addressed as agreed. Note that an acknowledgement letter will not be sent under the circumstance.")*		
DOE Assessment #2	LoA of host country is still pending. Will be issued based on positive validation opinion by DOE.		

DOE Assessment #3	The host country Letter of Approval (LoA) dated 11.10.2011 from the South African DNA (Department of Energy) has been submitted for validation and deemed appropriate. However, the PP is mentioned as Corobrik only while in the PDD Corobrik (Pty) Ltd is stated. Clarification and correction of the respective document is requested.
Corrective Action #3	
DOE Assessment #5	The corrected host country Letter of Approval[/HCA/] dated 06.01.2012 from the South African DNA (Department of Energy) has been submitted for validation. The HCA is deemed appropriate for the following reasons • The DNA is confirmed correct from the UNFCCC as the Department of Energy • It confirms that the Republic of South Africa has ratified the Kyoto Protocol • It is confirmed that the participation is voluntarily • It is confirmed that the project contributes to Sustainable Development in South Africa • The exact name of the PP as Corobrik (Pty) Ltd and the exact project title is referenced • The LoA is unconditional • The information about the PP is consistent with the PDD and all PPs listed in the PDD are mentioned in the HCA (Corobrik (Pty) Ltd) • No other PPs are listed in the PDD • TÜV NORD CERT GmbH as the DOE has a contractual relationship with the PP.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	A2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section E of the PDD has to be completed in accordance with the guidelines for completing simplified project design document (CDM-SSC-PDD) version 05.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section E in the PDD was revised.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	In the chapter E.1. the process of consultation of stakeholders was described. In chapter E.2 the summary of comments were given and in the chapter E.3 the summary of responses to comments were provided. The Chapter E was revised accordingly. The project complies with the requirements. CAR closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	A3		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Main criteria of the applied new technology have to be provided in Section A.2 of the PDD.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	See expansion of section A.2 in the PDD		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The section was revised but still the main criteria of the applied new technology were not provided as requested. Additional please explain the meaning of the sentence "The gasifiers will be dismantled and removed from site during the crediting period to avoid potentially safety risks from developing." Included in the section A2.		
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The basic description already provided, together with more detailed information on the technologies implemented has been provided in section A4. The above mentioned sentence has been replaced with the following: The original coal gasifiers, used in the project baseline, have been decommissioned and are no longer operational.		
DOE Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok. The description of the project activity and involved technology has been revised accordingly. Prior to the project activity coal was combusted under-stoichiometric and a producer gas was generated. This producer gas is substituted by natural gas in the project activity. The gasifiers are shut down and at time of onsite visit under deconstruction which is confirmed by onsite visit. Therefore CL is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	A4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	On the job training was conducted for employees. The content of the training on the job conducted after the fuel switch and the list of participants was provided. Nevertheless detailed information about maintenance and training has to be provided in the PDD.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section A.2. in PDD was revised to include detailed information about maintenance and training.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The description of training on job with content of the training was provided by way of Training attendance Register[TRAI/], showing the March 2009 training and topics covered. The project complies with the requirements. Therefore this CAR is closed.		

Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Methodology applicability criteria No.4, 10, and 11 should be further substantiated with documented evidence; further description is requested. Besides further specification is requested w.r.t. criterion 12 justification is requested to prove that the project qualifies as a small scale project especially why it will not exceed the threshold of 60 ktCO2e per year in any case.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section B.2. in the PDD, no.4. has been revised.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Section B.2 was updated accordingly with regards to criterion No. 4. The description was revised and clarifies that the PA is a fuel switch and not a energy efficiency PA. However supporting document should be provided for the stated specific energy consumption by the brick kiln of 7.8 – 8.3 GJ/1000 bricks. Finally no changes could be identified w.r.t. criteria No. 10 and 11. Farther justification is requested to prove that the project qualifies as a small scale project especially why it will not exceed the threshold of 60 ktCO2e per year in any case (criterion 12).		

Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	**Criterion No 4**: In addition there is no change in the specific energy consumption by the brick kiln as it stayed constant from 2005 to 2008 within a 95% confidence level between 6.66 and 9.47 GJ/1000 bricks. Supporting documentation is provided in the Excel document – Driefontein Fuelswitch Emission Reductions Calculations, the sheet 'Brick production' in the graph 'Average Energy consumption (GJ) per production of 1000 bricks before (2005-2007) and after (2008) project implementation' which can be found from row 77 downwards. **Criterion No: 10**: Supporting documentation to prove the previously used fuel (coal) neither the new fuel (Natural Gas) are against regulations: document 16b, environmental approval for the installation of the Sasol Natural Gas pipeline to Corobrik confirms that Natural Gas is allowed to be used. Furthermore, this environmental approval states the previous use of coal, which means that the Department of Agriculture, Conservation and Environment was aware and approved of the use of coal at Corobrik. Supporting documentation to prove that regulations do not require the use of Natural Gas in Brick production facilities is the letter from the Claybrick association which states that only a minority of the Clay brick factories within South Africa make use of Natural gas in their brick production process (Supporting document 28). **Criterion No: 11**: As described in applicability criteria 4, the kiln operates the same and with the same energy efficiency. The process description as contained in the PDD was Validated by the DoE on their side visit. **Criterion No: 12**: Excel document– Driefontein Fuelswitch Emission Reductions Calculations.xls in the sheet 'emission reductions', show that yearly reductions are 41,865 tCO_2 yearly.

DOE Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Criterion 4: Ok. Corresponding clarification has been provided and related supporting document has been submitted. The ER spreadsheet contains a calculation of the specific energy demand of the latest three years prior to project implementation and for the first project year 2008. The DOE has recalculated the values and found correct. Besides the input values for the brick production and for consumed energy have been checked against summary of historic documents e.g. invoices and production records/HIST/. Criterion 10: It is further specified that regulations do not constrain the facility from using either coal or natural gas as evidenced by environmental approval of the gas pipeline/EIA/ and the letter from Claybrick association/COMP/. However the numbering of supporting documents in PDD should be clarified. Criterion 11: Ok. Further specification has been provided. The DOE can confirm by onsite visit that the tunnel kiln was not newly installed only related gas burners have been exchanged due to change from producer gas to natural gas. According to PDD there is a slight increase in efficiency by the proposed project activity. This means efficiency in baseline scenario would be lower and therefore higher energy input would be required to produce same output and finally result in higher baseline emissions. Therefore applying the same efficiency and specific energy consumption as per project scenario (8.02GJ/100 bricks) is conservative and deemed reasonable by the DOE. Criterion 12: Ok. Further specification has been provided. Besides as the Emission Reduction is directly depending on the brick production the small scale limit of 60 ktCO_2 per year would be reached at a brick production of 83,795,556. This is 1.56 times higher than the maximum brick production seen in year 2007/XLS/, /HIST/. The average brick production during the years 2005 to 2008 has been 51,779,752/XLS/, /HIST/. Therefore it is highly unlikely that the emission reduction will reach the small scale limitation of 60ktCO_2 in any year of the crediting period. Nevertheless please provide supporting evidence in regards to maximum capacity of the kiln.
Corrective Action #3	**Criterion 10**: numbering has been removed from references in PDD **Criterion 12**: Please find attached a self declaration statement from the factory manager of Corobrik – Driefontein which explains the limiting factors regarding maximum capacity of the kiln (*vonWillich (21-06-2011) Self Declaration Kiln Production Capacity*). An additional supporting document is attached which gives a graphical overview of the kiln (*Corobrik-Driefontein Kiln Overview (10-06-2011)*). This is done to clarify some of the terms used in the self declaration statement. A total of 54,101,409 bricks can be considered as the design capacity of this tunnel kiln.
DOE Assessment #3	**Criterion 12:** A signed self declaration from the Corobrik Factory Manager stating the maximum production capacity of 54,101,409 bricks, of the kiln at Driefontein, and dated 21.06.2011 has been provided for validation and deemed acceptable by the DOE. CAR B1 is resolved
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B2		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Figure 2 in the PDD a diagram is used to show the project boundary. However it does not include items listed in section B.3. in the PDD under "Project boundary consists of:" whereas these are equipment/installations or processes affected by the switching which delineates the project boundary as per the applied methodology. Figure 2 in the PDD should be revised in accordance to listing of "Project boundary consists of:" Furthermore all related GHG emissions should be clearly indicated. CAR B2 was raised.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Figure 2 in Section B.3 of the PDD was revised.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The diagram was revised and all relevant sources of GHG emissions under the control of the project, in line with the description on B.3, were included. Nevertheless the use of nomenclature: "Sasol gas" and "natural gas" has to be clarified.		
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Changed to "Sasol owned natural gas pipeline".		
DOE Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok. The project boundary is the physical, geographical site where the switching of fuel takes place. It includes all installations, processes or equipment affected by the switching, the producer gas plant (coal gasifier), and the natural gas pipeline by SASOL. Further the tunnel kiln, the main equipment for brick production, where the energy generated is consumed. The listing is now consistent with the provided Figure A.2, therefore this CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Evidences for the justification of the barrier and elimination of the alternatives should be provided. The consideration of the baseline has to be justified using evidences. A step should be included to show that identified alternatives are consistent with all related national or regional mandatory laws and regulations in accordance to the Clarifications on the use of national and/ sectoral policies in the consideration of baseline scenarios (EB 22 Annex 3). Further, PP should explain why the list of alternatives in section B.4 of the PDD includes the project activity.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section B.4 in the PDD has been revised. 2011-02-17 response: Mainly the data which was originally presented in a table was presented more extensively outside the table		

DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Detailed description of all alternative baseline scenarios and an elimination of the scenarios was provided in the revised PDD. Nevertheless the evidences for lack of renewable biomass for fuel switch as well as the source of the provided evidences for HFO price has to be clarified. Citation of statement from Clay Brick Association of South Africa has to be corrected.
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. A statement from Renewable Energy Company Eecofuels about the lack of biomass for a biomass fuel switch in the Driefontein area replacing the energy amount required for the Corobrik fuel switch has been attached. 2. The quote from Sasol on a HFO price has been attached in PDF form 3. Citation of statement from Clay Brick Association has been corrected.
DOE Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. Ok. Renewable energy source biomass is excluded due to unavailability of sufficient resources in the project region. This is evidenced by an independent third party Eecofuels /INVA/. According to that the project would require about 43,500 tons of biomass to satisfy the energy demand. DOE has checked the letter and found as reliable as Eecofuels is an independent company developing renewable energy projects in the host country. According to values as per ER spreadsheet /XLS/, the minimum energy demand in 2006 was 750,113 GJ. Assuming a NCV if biomass of 18 GJ/t as per Eecofuels letter this would result in minimum of 41,673 tons of demanded biomass. 2. Not ok. A quote from SASOL /INVA/ has been provided, however the price as stated in PDD could not be identified in the quote. Therefore further clarification and specification is requested. 3. Ok. The citation of statement from Clay Brick Association has been corrected accordingly.
Corrective Action #3	In the barrier analysis section of the PDD, a Heavy Fuel Oil price of R86.30 per GJ is mentioned. An explanation of the deduction and sources on which this price is based has been included in the PDD: This price has been calculated based on the following data: • 353 c/l (Supply of Sasol Fuel Oil 150, S. Mabena, Principal Energy Advisor Sasol Fuel Oil (28-02-2008)) • 1.01 kg/l (http://www-static.shell.com/static/aus/downloads/fuels/msds/heavy_fuel_oil_20060905.pdf) • 40.5 MJ/kg (http://www.cefic.be/sector/shared/ecoprofile/appendix/a04.htm) The relevant calculation can be found in the document 'Driefontein Investment Analysis' and sheet 'investment calcs'. The document Supply of Sasol Fuel Oil 150, (28-02-2008), states the following on page 1: '*The road delivered price of Sasol HFO at Beatrix mine will be 353.48 c/L excluding VAT*'. This equals the 3.53 R/l as described in the investment analysis document.
DOE Assessment #3	OK. The calculations are transparent and one of the input value cross-checked with the said source /INVA-H/ and found to be correctly applied. However, both web links provided are neither available nor accessible. The PP is requested to provide up-to-date references

Corrective Action #4	The Renewable Fuels Agency (or RFA) is a UK Government non-departmental public body, created by the Department for Transport to implement the Renewable Transport Fuel Obligation. From this institution, new LHV and density of heavy fuel oil data was obtained, as the links provided previously were indeed no longer accessible. The lower heating value of heavy fuel oil stayed the same, but the density changed from 1.01 kg/l to 0.97kg/l, which slightly changed the NPV value of the heavy fuel oil alternative scenario (from R -233,681,923 to R -242,645,653). The lower heating value and density of heavy fuel oil can be found on page 22, table 7 and is referred to as 'HFO' in the attached document (*Renewable Fuels Agency (2008), Carbon and sustainability reporting within the renewable transport fuel obligation*). PDD version 9 After revisions the NPV value for HFO is now -263,481,419
DOE Assessment #4	OK. The PP has provided appropriate reference/REN/ to the information provided and the changes in the input values are reflected in the calculations and included in the PDD. Verification has been done to satisfactorily close CAR B3.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.5 shall be revised to provide a clear explanation of how the barriers identified prevent the implementation of the project activity and how the CDM alleviates such barriers shall be provided. The demonstration of additionality is not well substantiated.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section B.5 in the PDD has been revised - the barrier analysis was replaced with an investment analysis.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Investment analysis was conducted. 1. Step 2 should include Sub-step 2a, 2b and 2c of EB39 Annex 10 and relate Sensitivity Analysis in PDD to Sub-step 2d as per EB39 Annex 10. 2. Justification why project scenario 5 is not applicable for investment analysis. 3. Correction of use of different values for costs of fuel is requested. The prices should all have the same base (ZAR/GJ) 4. Evidences for values provided, e.g. ZAR30 million for the extension of the Sasol Gas Pipeline, and ZAR11,370,178 of fuel switch related costs or prices (fuel, steel, …) etc. Best provide all input data for Investment analysis in tabular form and add in last column related specific "source" for a clear and transparent assessment. 5. Sensitivity analysis should include description in accordance to EB 51 Annex 58 §§17 and 18. 6. Sensitivity analysis should also cover variation of related NCV of fuels 7. Why was only coal and gas price subject to variation but not the other fuels/scenarios?		

	8. Clarification is requested why investment to each scenario was not subject to variation and excluded from sensitivity analysis. 9. Clarification is requested why cash flow is subject to variation and included in sensitivity analysis. 10. Common practice analysis under Step 4 should be substantiated with credible evidence. 11. Prior consideration, Table on key events should be updated according to the following: - Dates should be further specified. The exact day should be provided where applicable e.g. first payment to Sasol to be consistent with section C.1.1 - Additional column should be provided which names the related source or supporting document for the corresponding key event. - Besides include dates when related onsite technology changes have been designed, conducted, equipment purchased (if any) and commenced.
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. And 5. Step 2a, 2b and 2c have been included as described in EB39 Annex 10, as well as the sensitivity analysis following EB 51 Annex 58 2. The biomass scenario (5) is not included in the investment analysis as not enough biomass is available in the area. See supporting documentation letter from Eecofuels send in an email to Tuev Nord on 21 February 2011. 3. The different fuel types have also been presented on the same base (ZAR/GJ) in the PDD. 4. All input data in the investment analysis section in the PDD have been presented in a table which also mentions the relevant supporting documentation. 6. A sensitivity analysis on NCV of the different fuels has been excluded as the Net Calorific values are not expected to vary significantly for the fuels presented (as could have been the case for biomass) 7. Sensitivity Analysis: Other fuels are included 8. Investment analysis is included 9. Cash flow results were presented under the sensitivity analysis to give more insight in the investment analysis results. They have been removed from the PDD, but can still be found in the attached excel spreadsheet. 10. For credible evidence for common practices, we refer to document 28- Letter from Claybrick Association, which states that Natural Gas usage in kilns for brick production is not a common practice within South Africa 11. The Prior Consideration table has been updated and specified exact dates and document sources. All documents have been send to Tuev Nord on a CD and was signed for on 28-7-2010. Documents specifically used as evidence for timelines can be found in the map 'timeline supporting documents' on this CD. The table mentions the time of implementation of the project and when equipment was purchased.
DOE Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.)*	1. Ok. Related steps in accordance to EB 39 Annex 10 have been integrated in the demonstration of additionality. 2. Ok. Justification for the exclusion of project scenario $5^{/EXC/}$ has been provided. The replacement of biomass is not applicable as not sufficient biomass is available in the project area. This scenario was already excluded as a baseline scenario in section B.4 of the PDD.

shall be added.	Non availability of biomass is evidenced by a letter of an independent third party consultant experienced in developing renewable energy projects in the host country/INVA/. Based on that the exclusion of this scenario is deemed reasonable and plausible. 3. Ok. Related revision has been provided. The actual value with related unit has been provided next to a price converted to currency per GJ for clear and transparent comparison along with justification. The values have been checked by DOE and confirmed to be correctly recalculated. 4. OK, Input data in the investment analysis in the PDD have been crosschecked and found correct.For a detailed assessment of all financial parameters, see Table A-3 in Annex 3 of this report. 5. Not ok. The sensitivity analysis on coal, natural gas, electricity, heavy fuel oil and diesel price as well as investment cost has been provided in the PDD. Clarification is requested why the range of applied parameter variation for the fuel prices is only to one direction and how this complies with EB51 Annex 58 §18. Further, in the beginning of Sub-step 2d investment cost are indicated whereas in the following sensitivity analysis for gas investment and electricity investment is provided. Clarification and specification is requested especially why investment cost for other scenarios is not included in the sensitivity analysis. The Maintenance cost has no material impact on the analysis which is checked by DOE by recalculation of the NPV analysis. No standard range for parameter variation is applied which should be clarified. 6. Insufficient. All types of fuels for the different scenarios are fossil fuels besides electricity. Therefore based on sectoral knowledge and experience it is highly unlikely that the NCV of coal, diesel, natural gas, HFO will vary significantly and therefore DOE considers the exclusion from sensitivity analysis as a reasonable and plausible arguement. However, proof that the NCV of coal an NG remain relatively constant is pending. 7. Ok. the sensitivity analysis covers now all types of alternative energy sources but biomass which is excluded due to none availability. 8. Not ok. see point 5 above. 9. OK as deleted. 10. Not ok. Further specification is requested w.r.t. common practice analysis as per related tool EB60 Annex 7 outlined under Step 4 is requested. The geographical area of the common practice analysis should be clarified and defined. The common practice analysis is further based on other brick producing companies and using similar technology or fuel type (coal). DOE considers it reasonable to conduct the common practice analysis within the same industry sector producing the same final product and using the same fuel or technology which is in line with EB60 Annex 7. However specification is requested w.r.t. the statement in PDD "The majority of kilns are operated on coal". 11. Prior consideration has been included and substantiated with evidencein section B.5 of the PDD. Dates have been further specified and corresponding date for starting date is consistent with section C.1.1. A column with corresponding supporting document has been provided in the PDD. Related update w.r.t. technology has been provided. Nevertheless the evidence for first payment and therefore for project starting date needs to be further substantiated. 12. Besides, in section B.4 baseline alternatives are excluded via simple

	price comparison whereas additionality in section B.5 is demonstrated by excluding same scenarios applying NPV comparison. Clarification requested especially why a simple price comparison of alternative energy sources is eligible.
	13. Following issues w.r.t. provided financial analysis spreadsheet have been identified: • Reference for 5 Mio Rand in project case should be clarified. • Why are costs for gasifier demolition and steel from demolished gasifier added in the last year of the calculation as it could be assumed that the gasifier is demolished when the fuel switch is conducted? • Why was the value when alternative scenario is equal to baseline scenario not calculated in all cases? • The recalculation of the break even when coal scenario (baseline) is equal to project scenario resulted in an increase in 108.48% which is inconsistent to PDD which states 107%. For diesel the recalculation resulted in a value of minus 82.1% and not 70%. Clarification is requested. • Why are capital costs for all other scenarios beside base and project case considered identical?
Corrective Action #3 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	5: – Clarification on why the range of applied parameter variation for the fuel prices in the sensitivity analysis is only applied to one direction: *Originally, only one direction sensitivity analysis were applied because the purpose of the sensitivity analysis was to determine when alternative fuels would compete with the proposed project fuel (natural gas). A 10% alternative direction of sensitivity analysis has however now been included in the PDD.* – Clarification of why investment costs were not specified for alternative scenarios in the sensitivity analysis: *it was assumed that the fuel switch costs, which are mostly related to burner replacement, is the same for the alternative fuels specified in the PDD (as a burner replacement is always required) and therefore all investment costs for alternative fuels were assumed to be the same. As can be seen in sensitivity analysis 6b in the PDD, project NPV is relatively insensitive to changes in investment costs. The most profitable alternative fuel switch option after natural gas is a fuel switch to electricity. As a conservative assumption, only the burner costs of a natural gas fuel switch have been assumed to be the capital costs for all other alternative fuel switch options. The sensitivity analysis shows that a 20% investment cost reduction on an electricity fuel switch project doesn't make it more profitable than the natural gas fuel switch; for this reason all other fuel switch scenarios have been excluded from investment sensitivity analysis.* - Clarification on why maintenance parameter variation has been excluded from the sensitivity analysis: *In the base case, yearly maintenance costs on the coal gasifier are included in the calculation. For the alternative project scenarios, these costs were incurred for the first year as it was assumed that the coal gasifier would still be used in the year of the fuel switch taking place. After the fuel switch has taken place, these gasifier maintenance costs are omitted.* 6. Proof of NCV of coal and natural gas being relatively constant: *average coal NCV data of 3 years was used (see document 21: 'coal analysis report 2004-2007' as submitted at time of the first response (28-07-2010)).*

	Sasol natural gas invoices (documents 17-17j: 'Sasol natural gas invoice February – November 2008' as submitted at time of the first response (28-07-2010)) show the NCV of natural gas to be very constant. Average NCV over that time has been used in the energy use calculations. 4.1 8. OK, Investment analysis has been done for the base case as well as possible alternatives to the project activity via NPV comparison. The sensitivity analysis conducted is robust, in the context of the scenarios that would make the alternatives less attractive than natural gas. Hence, sensitivity analysis is assessed as sufficient. 10. Specification is requested with regard to the statement in PDD 'the majority of kilns are operated on coal': *See statement from the Claybrick association (At Coetzee, 4 march 2010, Claybrick association): 'the claybrick association represents about 80% of the 135 clay brick factories in South Africa, which in turn produce between 80&90% of all clay bricks manufactured. Only about six (6) of these factories are firing on gas, the rest are firing on coal and heavy furnace oil.' This has been added to the relevant statement in the PDD.* 11. *Invoice from Sasol is provided with the third response (Sasol Invoice to Corobrik-Driefontein (30-06-2007))* 13: ○ Reference for 5 Mio Rand in project case should be clarified: *Please find again attached the document 'Addendum to gas supply agreement with Sasol, 26-09-2006' This document states that 'R5,000,000 will become due and payable upon the completion of the pipeline extension and commissioning of the relevant customer meter station located at Corobrik Driefontein'. The total pipeline extension costs are R30,000,000 which payment is split into R25,000,000 and R5,000,000.*
	○ Why are costs for gasifier demolition and steel from demolished gasifier added in the last year of the calculation as it could be assumed that the gasifier is demolished when the fuel switch is conducted? *This was a conservative assumption, as the NPV value is lower the later this income is obtained. The gasifier demolition and associated costs and income (net income) has now been moved to the year of the fuel switch taking place, which had a very small impact on the NPV.* ○ Why was the value when alternative scenario is equal to baseline scenario not calculated in all cases? *This has been corrected: all breakeven points have been calculated and included in the PDD.* ○ The recalculation of the break even when coal scenario (baseline) is equal to project scenario resulted in an increase in 108.48% which is inconsistent to PDD which states 107%. For diesel the recalculation resulted in a value of minus 82.1% and not 70%. Clarification is requested. *All breakeven points have been again calculated and updated.* – Why are the capital costs for all other scenarios beside base and project case considered identical? *It was assumed that the fuel switch costs, which are mostly related to burner replacement, are the same for the alternative fuels specified in the PDD. A burner replacement is always required in the case of a fuels switch and makes up majority of the fuel switch costs. As can be seen in sensitivity analysis 6b in the PDD, project NPV is relatively insensitive to changes in investment costs. As a conservative assumption, only the burner costs of a natural gas fuel switch have been assumed to be the capital costs for all other alternative fuel switch options.*

DOE Assessment #3 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	5. OK. The sensitivity analysis in this project cost comparison was meant to demonstrate in what situations natural gas would compete with other alternative fuels. This has been well elaborated and deemed appropriate. The assumption that the investment costs are the same for fuel switch is acceptable for application in the sensitivity analysis. Furthermore, it has been demonstrated that project NPV shows little or no variation with investment costs for electricity and gas, and this is reasonable as per DOE validation. The clarification for the basis for the assumptions made on maintenance costs is sufficient. Maintenance costs also don't have a material impact on NPV and this issue is now closed. Point 8 is also now closed with the inclusion pf Invetment and sensitivity analysis as per EB 51 Annex 58 §17 and 18 6. OK. PP has provided evidence that NCV of coal remains relatively constant with the report Coal Alaysis Report 2004-2007/21/and natural gas via *Sasol natural gas invoices*/17-17j/. The same is confirmed used in the IRR calculations. It is concluded that variations in NCV for coal and NG are not large enough to be subjected to sensitivity analysis. 10. OK. The letter from the Claybrick association of South Africa dated March 4, 2010, confirming the common practice among majority of Brick Factories of firing kilns on coal and Heavy Furnace Oil has been adequately backed-up. 11. OK. A raised invoice against Corobrik with respect to contribution to the gas pipeline and dated 30.06.2007 has been provided and supports the aforementioned starting date. 13. OK. Errors in the calculations for the break even points have been corrected accordingly in the excel sheet. The explanation for the natural gas as a basis for capital costs for all other alternative scenarios is acceptable to the validation team. See point 5. CAR is closed. PDD version 9, 2012-04-20 11. The starting date of the project activity has been revised to 2007-06-11, when construction of the Sasol pipeline began/MPM/ (Ref technical review comments).
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B5		
Classification	☒ CAR	☐ CL	☐ FAR

Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	*The following documents should be forwarded for validation:* 1. Coal analysis 2. Ash analysis 3. Maintenance record of gasifier 4. Evidence that gasifier did not have any accident during operation which was reducing its lifetime 5. Investment invoice on newly purchased replaced equipment at gasifier 6. Evidences for prior consideration of CDM as per table in section B.5 should be provided. E.g. Email by Statkraft, NuPlanet, etc. 7. Manufacturer notice on lifetime of equipment and further documents which substantiate and proof remaining lifetime of gasifier is longer than crediting period. 8. Records on historic data, data for tar and duff is pending 9. Technical data sheet of relevant involved equipment 10. Gas contract 11. Evidence on common practice for coal use in brick factories to satisfy energy demand 12. Contract with Sasol on NG investment 13. Proposal to revamp the kiln to operate on NG for board members 14. Evidence on operational lifetime of the project activity should be provided 15. Statement by association of brick companies on common use of coal, diesel, HFO, biomass and electricity to satisfy their energy demand (References for table "Alternative scenarios" in section B.4 should be provided and indicated) 16. References for the emission coefficients as per table Alternative scenarios" in section B.4 should be provided and indicated 17. Evidence on input data for investment analysis a. Coal price b. Duff price c. Tar price d. Maintenance costs e. Invoices or contract on technology to evidence total and actual investment costs of PA f. Energy costs and related parameters (HFO, Diesel) g. Inflation rate by www.sarb.co.za 18. EIA management plan and scooping 19. Approval of EIA 20. Statement that energy content of NG by Sasol is invoiced on gross CV not NCV. Beside what is the difference between GCV and NCV? Sasol gas specification. 21. Evidence to substantiate that onsite coal ash last for approximately 40 years of brick production 22. Proof that the same amount of coal ash was added to the bricks before and after the fuel switch
Corrective Action #1	Response 2011-02-17 to comments above by Promethium Carbon: All the

This section shall be filled by the PP. It shall address the corrective action taken in details.	required and above mentioned documents were sent to the DOE on a CD at the time of 1st response on the 28th of July, 2010 by Courier. The package was signed for by Melanie at 9:32AM 28-07-2010. In response to comments: 1. Coal analysis data have been submitted at the time of the 1st response (28-07-2010). The relevant documents were referred to as 21- Coal Analysis Report, 2004-2007, 21b-Coal Analysis Report, 09-10-2007, 21c-Central Laboratory coal Analysis, 15-03-2002, 22- Coal analysis Report, 30-05-2005, 22b-Coal analysis Report, 31-07-2006, 22c- Coal analysis Report, 29-03-2007 2. Ash analysis data have been submitted at the time of the 1st response (28-07-2010). The relevant documents were referred to as 21b-Coal Analysis Report, 09-10-2007 and 22- Coal analysis Report, 30-05-2005 3. Maintenance information has been submitted at the time of the 1st response (28-07-2010). The relevant documents were referred to as 1- Maintenance Invoice, 20-01-2006, 2- Maintenance Invoice, 15-11-2005, 3- Maintenance Invoice, 20-07-2005, 4-Maintenance Invoice, 23-05-2006 and 34- Maintenance Report. These are invoices supplied by Foster Thermal for gasifier maintenance at Corobrik – Driefontein. Document 34 is the maintenance report. These supporting evidences prove that the gasifier was well maintained and could have supplied the furnace with gas in the baseline scenario. 4. For evidence that the gasifier did not have any incidents during operation which might have reduced its lifetime please refer to documents 24- Corobrik Fuel and Production History, 24b-Reason for dip in production rates 1999, 24c- Production History, 24d- Production history, 24e- Production History, 24f- Plan of action, 26-Lifetime of Equipment_Expert Opinion, as submitted at the time of the 1st response (28-07-2010). These documents prove that Corobrik-Driefontein has maintained its production levels except for the period (1999) where there was a decrease in demand for bricks and production volumes were reduced. 5. For investment invoices on newly purchased replaced equipment at gasifier please refer to documents 1- Maintenance Invoice, 20-01-2006, 2- Maintenance Invoice, 15-11-2005, 3- Maintenance Invoice, 20-07-2005, 4-Maintenance Invoice, 23-05-2006 as submitted at the time of the 1st response (28-07-2010). These supporting evidences prove that the gasifier was well maintained and could have supplied the furnace with gas in the baseline scenario. 6. Prior consideration supporting documents can be found in the folder 'timeline supporting documents' as submitted at the time of the 1st response (28-07-2010). Additionally an invoice from Sasol is provided (Sasol invoice to Corobrik-Driefontein (30-06-2007)). 7. An independent expert (from Industrial Combustion Systems (pty) Ltd.) confirmed the theoretical remaining lifetime of the gasifier to exceed the 21 years of the CDM project. This document was submitted at the time of the 1st response (28-07-2010) and referred to as 26-Lifetime of Equipment_Expert Opinion. 8. Historic duff data was based on duff invoices, which can be found as documents 8-Duff Supply Invoice, November 2006, 8b-Duff Supply Invoice, January-March 2007, 8c-Duff Supply Invoice, April-May 2007 and 27c-Duff sold June 2007 as submitted at the time of the 1st response (28-07-2010). Tar produced has been calculated based on document 27d - Tar of series of SA coal types (Average value from

	Slaghuis, Johan H; Raijmakers, Natasja. 2003. The use of thermogravitmetry in establishing the fischer tar of a series of South African coal types).
	9. A technical data sheet giving an overview of the kiln is submitted with the third response (Corobrik-Driefontein kiln overview (10-06-2011)) 10. The contract between Sasol and Corobrik–Driefontein for the extension of the gas pipeline and for supply of gas has been submitted at the time of the 1st response (28-07-2010) and referred to as 10- Addendum to Gas Supply Agreement with Sasol, 26-09-2006. 11. Evidence on common practice for coal use in brick factories has been submitted at the time of the 1st response (28-07-2010) and referred to as 28-Letter from Claybrick Association, 04-03-2010. 12. The contract between Sasol and Corobrik state specifically the investment costs contributed by Corobrik on the extension of the natural gas pipeline. This contract has been submitted at the time of the 1st response (28-07-2010) and referred to as 10- Addendum to Gas Supply Agreement with Sasol, 26-09-2006 13. For the proposal to the board member to do a fuel switch and operate the kiln on natural gas, please refer to document 6b- attached document for Meeting of Directors, 28-03-2007 as submitted at the time of the 1st response (28-07-2010). 14. Evidence for the operational lifetime of the project activity has been submitted at the time of the 1st response (28-07-2010) and referred to as 32- Evidence for operational lifetime of project activity. 15. Evidence on common practice for coal use in brick factories has been submitted at the time of the 1st response (28-07-2010) and referred to as 28 on the CD: letter from the Claybrick Association (04-03-2010) 16. The table has been replaced with the descriptions of the scenarios. That is why table was deleted; however the same information is presented just in different format. 17. a. For a coal price reference we refer to document 30-Cost of coal as submitted at the time of the 1st response (28-07-2010)/INVA/. b. For a duff price reference we refer to documents 8-Duff Supply Invoice, November 2006, 8b-Duff Supply Invoice, January-March 2007, 8c-Duff Supply Invoice, April-May 2007 as submitted at the time of the 1st response (28-07-2010) c. For a tar price reference we refer to document 7-Tar Sales, March 2007 as submitted at the time of the 1st response (28-07-2010) d. The relevant documents were referred to as 1- Maintenance Invoice, 20-01-2006, 2- Maintenance Invoice, 15-11-2005, 3-Maintenance Invoice, 20-07-2005, 4-Maintenance Invoice, 23-05-2006 and 35-Inhouse maintenance costs as submitted at the time of the 1st response (28-07-2010). e. Sasol's invoice for the extension of the natural gas pipeline is submitted together with the 3rd response (Sasol Invoice to Corobrik-Driefontein (30-06-2007). f. Please find document 12- Supply of Sasol Fuel Oil 150, submitted as a pdf document with the 3rd response. g. Inflation rate by www.sarb.co.za Though historical inflation rates have been between 6-10%, the South African Reserve Bank has set a target for the SA Consumer Price Index (CPI, "inflation rate") of between 3% and 6% per annum. The model has therefore been updated to an average forecasted inflation rate of 4.5%.

	The following 2 supportive documents are submitted with the 3rd response: Cobbett, J. (2008-10-21) Manuel, Mboweni agree on inflation target, Moneyweb. Mngoma, B. (2008-04-01) Inflation targeting a moving target,The Skills Portal.
	18. The EIA management plan and scoping report have been submitted at the time of the 1st response (28-07-2010) and referred to as documents 19-Sasol Environmental Scoping Report, 8-11-2005 and 20-Sasol Environmental Management Plan. 19. The EIA approval can be found as document 16b-Department of Agriculture, Conservation and Environment, 13-02-2007 as submitted at the time of the 1st response (28-07-2010). 20. The gas supplied by Sasol to Corobrik-Driefontein is invoiced based on Gross Calorific Value as confirmed by Pieter Nieuwenhuizen, Market Sector Manager at Sasol. A confirmation email has been submitted together with the 3rd response (Nieuwenhuizen, P.(30-06-2011)RE_NCV_GCV Natural Gas. In the excel document 'Driefontein Fuelswitch Emission Reductions Calculations', sheet 'Carbon_Energy_Balances', cells C141-C151, it can be found that the GCV was used, after which it was converted to NCV, as the emission factor is based on tCO2/GJ(NCV). The relation NCV/GCV was obtained from the document Sasol Gas Technical data, as submitted as document 27i at the time of the 1st response (28-07-2010) 21. The excel document 'Ash use' presents an overview of moisture and ash content brick data and calculates yearly ash use based on current production numbers. The following supporting documentation is additionally provided: - Ash & moisture content of bricks (from 2008 to 2011) - Brick weight (see brochure obtained from the Corobrik website (export – international catalogue): pg 7 contains the weights of the Driefontein manufactured bricks) - Ash weight http://www.simetric.co.uk/si_materials.htm Additionally the previously provided ash stockpile volume (supporting document 31has been used to make the calculation provided in the excel document 'ash use'. As can be seen in the calculations, it is expected that the current stockpile contains enough ash to fulfil the requirements for the coming 31 years. As the project applies for credits for 21 years, this amount is sufficient to cover this project period. 22. SABS standard tests were provided. The bricks are tested and have to be the same quality before and after fuel switch to conform to SABS standards. The process has to add the same ash before and after to have the same quality to conform to SABS. Ref doc: "33 - SABS Test Report - evidence for same amount of ash before and after switch.pd
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. Coal analysis reports from 2004-2007/COAL/ have been furnished to the DOE as requested and the dates confirmed 2. Ash analysis data for 2005 and 2007/COAL/ as part of the coal analysis reports have been furnished to the DOE as requested and the dates confirmed 3. Ok. Copies of the said maintenance invoices supplied by Foster

	Thermal and dated 20-01-2006, 15-11-2005, 20-07-2005, 23-05-2006 as well as in-house maintenance costs and the maintenance report are in possession of the validation team/MP/ 4. The excel document 24 - Corobrik Fuel and Production History has been checked and the PP contention confirmed to be correct as depicted. Production history documents 24 c,d,e have also been supplied and correspond to the input values. 5. Ok, as evidence in point 3 of CAR B5 6. Email correspondences from Statkraft, dated 04 June 2007/COR/, and from NuPlanet/COR/, dated 13 January 2009 have been provided. A signed invoice from Sasol dated 30.06.2007 has also been availed among other vital supporting documents. 7. The lifetime of the gasifier has been independently confirmed by an independent entity to be in excess of expected project lifetime, through the document 26 - Lifetime of Equipment_Expert Opinion submitted for validation/REMLIF/ 8. 8-Duff Supply Invoice, November 2006, 8b-Duff Supply Invoice, January-March 2007, 8c-Duff Supply Invoice, April-May 2007 and 27c-Duff sold June 2007 have been submitted for validation. Tar produced has been calculated based on document 27d and the input values confirmed. 9. Okay, the Corobrik-Driefontein kiln overview dated 10-06-2011/KLO/ has been checked as per request. Technical information can be inferred from the functionality of different parameters in the system 10. The contract between Sasol and Corobrik–Driefontein/GASCON/ for the extension of the gas pipeline and for supply of gas has been submitted and referred to as 10- Addendum to Gas Supply Agreement with Sasol, 26-09-2006. 11. Evidence on common practice for coal use in brick factories has been submitted in the form of 28-Letter from Claybrick Association, 04-03-2010/COMP/. 12. The contract between Sasol and Corobrik state specifically the investment costs contributed by Corobrik on the extension of the natural gas pipeline. As submitted in point 10. 13. For the proposal to the board member to do a fuel switch and operate the kiln on natural gas, the document 6b- attached document for Meeting of Directors, 28-03-2007 was submitted/BORD/ 14. Evidence for the operational lifetime of the project activity has been submitted and referred to in the document '32- Evidence for operational lifetime of project activity/REMLIF/,. 15. Evidence on common practice for coal use in brick factories has been submitted by way of letter from the Claybrick Association (04-03-2010) 16. OK. As confirmed. 17. a. For a coal price reference we refer to document 30-Cost of coal is submitted/INVA/. b. For a duff price refer to point 8 as confirmed with the invoices/INVA/ c. For a tar price reference document 7-Tar Sales, March 2007 as submitted for validation/INVA/. d. Ok, as submitted by documents in point 8 e. Sasol's invoice for the extension of the natural gas pipeline is confirmed submitted to DOE/GASCON/ f. The document 12- Supply of Sasol Fuel Oil 150, was re-submitted as signed and stamped as requested.

	g. OK. The documents have been confirmed and the application of 4.5 % inflation rate considered reasonable and conservative/sarb//statssa/. 18. The EIA management plan and scoping report have been submitted to OE as documents 19-Sasol Environmental Scoping Report, 8-11-2005 and 20-Sasol Environmental Management Plan/EIA/. 19. The EIA approval document 16b-Department of Agriculture, Conservation and Environment, dated 13-02-2007 as submitted for validation/EIA/. 20. The gas supplied by Sasol to Corobrik-Driefontein is invoiced based on Gross Calorific Value as confirmed by an email from Pieter Nieuwenhuizen/EP/, Market Sector Manager at Sasol RE_NCV_GCV Natural Gas. Input values in the ER calculations in the excel sheet are deemed to be correctly applied. 21. The excel document 'Ash use' has been checked and confirmed to have ash analysis in % dry weight and moisture content of bricks from 2008-2011/XLS/. - Brick weight PDF document has also been checked as confirmed by 'the international Selection' catalogue provided by PP. The provided ash stockpile volume is confirmed to have enough ash to fulfil the requirements of the 21 years project lifetime. 22. SABS. Ref doc: "33 - SABS Test Report – as evidence for same amount of ash before and after switch. The SARBS standard test documents are confirmed and deemed acceptable, as the project proponent asserts. Hence, CAR B5 is closed
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B6		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	In Section C.1.1. no evidences for the chosen starting date were provided. According to the CDM glossary of terms "the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins....shall be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity". Documentary evidence to justify start date should be provided.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	See supporting documentation for proof of payment in June 2007 ("*date on which the project participant has committed to expenditures related to the implementation of the project activity*").		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Evidence in form of Email from Sasol to Corobrick was provided. But the invoice is missing. Provide the original invoice to substantiate the starting date.		

Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Please refer to Supporting document: "10 – Addendum to Gas Supply Agreement with SASOL, 26-09-2006.pdf" (supplied again in email). This is a signed contract between Sasol and Corobrik, costs included, on the construction of the pipeline and supply of Natural Gas by SASOL to Corobrik. Since this is a signed contract, it should be sufficient evidence to prove the expenditures have taken place on the date specified.
DOE Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The data was available at time of management decision and also used for the investment decision. The contract was accepted as input data evidence. Nevertheless signing a contract does not mean that a payment is triggered. Please provide respective invoice to further substantiate that the contract has been followed 100%. Furthermore, the contract only becomes legally binding once all conditions precedent are met, that is, environmental record of decision and all required licenses, Only the environmental record of decision criteria was met during 2007, clarify
Corrective Action #3 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The Sasol contract was available at time of management decision (17th of January 2007). The payment was made six months after the management decision (30th of June 2007). Sasol's invoice for the extension of the natural gas pipeline is submitted at the time of the 3rd response (Sasol Invoice to Corobrik-Driefontein (30-06-2007). Despite the conditions precedent not being met, the parties agreed to continue with the project. This resulted in an invoice being raised on the 1st of June 2007 and the payment being raised on the 30th of June 2007. The first real action on the project was therefore on the date of the invoice as argued in the PDD and this therefore represents the project start date.
DOE Assessment #3 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The provided Sasol invoice has been cross-checked against the reported starting date of 30.06.2007 and accepted by the DOE. The CAR B6 is now closed. PP has clarified that despite all the conditions not being met, the parties agreed to continue with the project. Hence this is accepted by the validation team <u>PDD version 9, 2012-04-20</u> Based on technical review feedback and submission of minutes of progress/MPM/. The starting date of the project activity has been revised to 2007-06-11, when construction of the Sasol pipeline began and now supported by documentary evidence based on recorded minutes of progress held on 2007-06-20 by key officials of Sasol, Corobrik and third parties. This date is in accordance with the CDM Glossary of Terms. CAR is closed
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B7		
Classification	☒ CAR	☐ CL	☐ FAR

Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The start of project implementation is stated in Section A.2 of PDD as January 2007 whereas the Board meeting regarding decision to proceed with the project took place in March 2007. The PDD has to be updated accordingly.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section A.2 in PDD has been updated accordingly to state that the decision to develop the project under the CDM was made at the Board Meeting on 28 March 2007 where the project activity received the final approval from the Directors.
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The decision of implementation of fuel switch was taken by the board of directors on 28 March 2007 (evidence Meeting of Directors 2007). This decision was based on the cost analysis with and without carbon revenue components. The evidence, Note from meeting of directors on 28 March 2007, was provided. Therefore this CAR is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B8		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	According to the table of milestone in the PDD under subtitle "Prior Consideration", in January 2007 prior to the reported starting date of the project activity the project participant were discussing the possibility of CDM revenue. But the preparation of fuel switch started long before in November 2005. References for prior consideration of CDM key events should be provided. Furthermore the date of GSC should be added to the project milestone list.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	PDD has been updated to include a timeline in section B.5.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The requested timeline was updated accordingly. The project started before the 2 August 2008 hence the prior consideration from January 2007 was done in line with requirements. Also the start of GSC was included in to the timeline of the project. Therefore this CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B9		
Classification	☒ CAR	☐ CL	☐ FAR

Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Monthly historical data for coal, tar and duff/HISTD/ in the emissions reduction calculation was used. However some of the data for coal used in the calculation are different from the original hand written records. No original data for tar and duff for the years 2005, 2006 and 2007 were presented during the onsite visit. Additionally some of the data used in the calculation couldn't be found on the presented invoices. The origin of data for tar and duff used in the emissions reduction calculation has to be provided to the DOE. The historical data for coal consumption used in the calculation has to be corrected and the proof of evidences has to be provided to DOE.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The data for coal consumption, tar and duff were revised in the calculation worksheet and the PDD was adjusted accordingly.
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	No evidences to substantiate the revision of the data were provided. The origin of data for tar and duff used in the emissions reduction calculation has to be provided to the DOE. The historical data for coal consumption used in the calculation has to be corrected and the proof of evidences has to be provided to DOE.
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	**Coal Data**: original coal use data presented in the emission reduction calculations were validated by the DOE on their site visit. The DOE found a few data inputs to be wrong and requested correction. These data points were changed and can be checked with site visit documentation of the DOE. **Duff Data**: duff data was available for 6 months (Jan to June 2007). See documents 8b, 8c and 27c as supporting documentation. Based on this data a 'duff sold per tonne coal' factor was calculated and used furthermore. **Tar Data**: percentage tar in South African coal obtained from literature: supporting document 27d - Tar of series of SA coal types (Average value from Slaghuis, Johan H; Raijmakers, Natasja. 2003. The use of thermogravitmetry in establishing the fischer tar of a series of South African coal types).
DOE Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	**Coal data:** Updated ER spreadsheet has been checked against original coal use data and no remaining/following mistakes have been found/XLS/, /INV/. **Duff data:** Following related supporting documents have been checked and no remaining/following mistakes have been found. The values applied in the ER calculation are applied correct and consistent. All available data was used for the ER calculation. For times where no historic data was available a factor was applied based on weighted average historical data of duff and corresponding used coal. The factor has been recalculated by DOE and found correctly calculated and applied. Therefore DOE considers the application as reasonable and plausible. **Tar data:** Only one invoice is available on tar produced/HISTD/. Therefore reference is made to corresponding literature. The reference has been checked by the DOE and the value applied is for the type of coal as used in the project activity. The type of fuel used is checked by onsite visit, invoices/INV/ and coal analysis/COAL/. Further DOE confirms that the value is consistent with the source and correctly applied to the ER calculation/XLS/. The value from literature is more conservative than the value obtained from the invoice. CAR B9 is closed

Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B10		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.6.2 the comment for FC_{BSL} should be revised as heat losses are not mentioned for description of energy balance. Further clarify what is an energy flowrate.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The calculation worksheet has been updated and the results incorporated in the PDD.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The comment for parameter FC_{BSL} has been deleted. Therefore it is not further necessary to clarify the energy flow rate and revision w.r.t. heat losses. CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B11		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.6.3.: corresponding units for all parameters should be included.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Parameter units were included in the calculation tables in section B.6.3 of the PDD.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The parameter units in section B.6.3 were updated accordingly. Therefore this CL is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B12		
Classification	☒ CAR	☐ CL	☐ FAR

Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.7.1. Q_y is not a monitored parameter but calculated hence further explanation on how Q_y is calculated should be provided in the appropriate section of the PDD.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The calculation of Q_y has been included in section B.6.1 of the PDD.
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Related calculation procedure for Qy has been provided in section B.6.1 of PDD. Qy is the calculated by multiplying the amount of fossil fuel (natural gas) used in the proposed project activity with the corresponding net calorific value of natural gas divided by a conversion factor from Joule to Watt. DOE has assessed the equation and found to be correct. However clarification is requested w.r.t. whether Qy is identical to QBSL,y as per methodology the Net energy output in the project activity in year y.
Corrective Action #2	Q_y should have been $Q_{PJ,y}$ and is not identical to $Q_{BSL,y}$ This has been changed in the PDD and ER calculation spreadsheet.
DOE Assessment #2	Ok. Related revision to PDD and ER spreadsheet has been conducted. Q_y has been updated to $Q_{PJ,y}$ and related descriptions are clear and consistent to related methodology. Therefore this CAR is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B13		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The provided lifetime of the project activity is unreasonable. Proper description and proof should be provided w.r.t remaining lifetime of equipment. The remaining lifetime should be demonstrated in accordance of EB50 Annex 15.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section B.2. in the PDD, no.5 has been revised. In accordance with the "*Tool to determine the remaining lifetime of equipment*" an expert evaluation has been obtained.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The remaining lifetime was evaluated by expert in line with the "Tool to determine the remaining lifetime of equipment" EB 50,in expert opinion: "this type of plant …could continue to operate …indefinitely". The expert opinion was provided to substantiate the claim the gas plant operational lifetime excide the length to the project activity. The CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B14		
Classification	☒ CAR	☐ CL	☐ FAR

Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The following issues have been identified w.r.t. the emissions reduction calculation spreadsheet. 1. NCV and ash content of coal should be revised in accordance with the original values of the analysis. If not available the benchmark value for quality assurance should be applied for conservativeness. 2. Weighted average for relation tar and coal consumption should be used. 3. Latent heat of producer gas should be taken into account in the energy balance. 4. NCV of ash, the value of crusher ash should be used as this is the actual ash leaving the gasifier as bin and stockpile ash is containing ash which is up to 30 years old. 5. Value on energy consumption for January 2008 should be calculated using the average specific energy consumption of the real data multiplied by the real brick production for this month as actual value from invoice is not applied. Applying the average from remaining year is neither appropriate nor conservative. 6. The calculation of energy loss and energy content of producer gas should be revised and further substantiated. 7. Several inconsistencies for the input values used to calculate ER have been identified during onsite validation. Hence values and data as per original references shall be used. 8. Source of data for producer gas sheet e.g. composition is required.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Calculation worksheet has been revised and resubmitted to the DOE.

DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. No change could be identified in updated spreadsheet. As reference for NCV the coal analysis report, 2004 – 2007 is provided. Therefore clarification is requested whether the value stated is the average value obtained from these reports. For the ash content only one report is mentioned. PP should therefore justify that this value is representative for the applied years of baseline calculation (2005 – 2007). 2. The determination of tar production from gasifier has been changed. Value based on scientific report is used to calculate tar production from ash-free coal. Therefore calculation of related relation is not necessary anymore. However PP should clarify why he changed this approach and PP should clarify the usage of tar in baseline scenario (e.g. if this was sold, invoices could be used to obtain related data). 3. The updated ER spreadsheet did not take latent heat into account. It is e.g. assumed that the temperature of producer gas from gasifier from baseline is identical to temperature of natural gas. Besides the baseline temperature for the energy balance is not provided (ambient temperature or zero °C or Kelvin). Related clarification is requested. 4. No change in updated PDD could be identified. Therefore further clarification is requested. 5. The gas consumption for January 2008 was revised accordingly. 6. Related revision was conducted. The energy content of producer gas is now determined based on real data available from natural gas consumption in year 2008 and brick production in corresponding periods. The energy loss is the difference in all input and output streams. 7. Related revision has not been conducted in all cases. Hence this issue remains open. 8. Related sources have been provided. 9. The approach to determine the amount of producer gas consumed during baseline scenario is that the amount of energy consumed during project scenario (natural gas and related NCV) is equivalent to that during baseline scenario. The amount of energy consumed via natural gas is recalculated taking into account the amount of bricks produced during project scenario year 2008 and related to average during years 2005 to 2007 (equivalent to gas consumption per 1000 bricks). This considers that in both scenarios the efficiency is the same. PP should therefore ensure that no efficiency increase or decrease took place when switch the fuel. 10. Besides several clarifications w.r.t. way of calculation and approach of calculation are requested, e.g. density of producer gas specific energy of producer gas etc. 11. Following documents should be provided: - Slaghuis, Johan H; Raijmakers, Natasja. 2003. The use of thermogravitmetry in establishing the fischer tar of a series of South African coal types - PERRY, R.H., Chemical Engineers' Handbook, 5th Edition, Section 3.

Corrective Action #2	1. The average NCV value was calculated and used. It was decided during the site visit that an ash content of 16% is used as this is the most conservative value (max amount useable). 2. Tar used to be sold in the baseline situation. Following extensive search only one invoice could be presented, as revenue from tar sales was insignificant and handled through petty cash. Initial tar calculations were based on the only tar invoice which was available (document 7 – Tar sales, March 2007). This invoice mentioned 107 ton/month. Based on the literature document used now (as changed after the validation visit), higher tar data is calculated which leads to lower emission reductions and is therefore the most conservative option. We calculated a 20% tar increase to lead to 1.6% lower emission reduction and 20% tar reduction to 1.6% higher emission reductions. Tar data is therefore not material to the emission reduction calculations. 3. As can be seen in the sheet 'Vol of Producer Gas' in the Emission reductions excel document, latent heat of the gas from the gasifier has been included in the baseline calculations. Supporting document 27g shows the average producer gas temperature to be 291˚C when it reaches the kiln. Assuming an ambient temperature of 15˚C made for ΔT 276. This temperature has been used to calculate the total amount of producer gas used in the baseline. 4. It was requested that the NCV of ash is changed to the NCV of Crusher ash. As can be seen in the emission reduction calculations xls document, the sheet 'carbon_energy_balances', the NCV was changed from (as in the ER calculations during verification) 9.94 GJ/ton to 7.32 GJ/ton after validation. This new NCV value is the average value of 3 measurements (one every year for 3 years) of crusher ash. See document 22 as supporting document. The right NCV value of crusher ash is now also updated in the PDD (page 16). 5. Closed out 6. Closed out 7. All data has been updated as discussed / requested during the site visit. We kindly ask the DOE to specify which revisions are still outstanding. 8. Closed out 9. We refer here to Finding B1 – CAR#2 10. All calculations and formulas with regard to producer gas (specific energy, density, etc) can be found in the Emission Reduction xls. Document in the sheet 'NCV of producer gas'. 11. *Slaghuis, Johan H: Raijmaker, Natasja. 2003. The use of thermogravitmetry in establishing the fischer tar of a series of South African coal types* has been submitted to the DOE as document 27d on the CD send. PERRY, R.H. Chemical Engineers' Handbook, 5th Edition, Section 3 is unfortunately too large to send to the DOE. We therefore refer to the following link for more information on the credibility of the used source or for the DOE to obtain it: http://www.amazon.com/Perrys-Chemical-Engineers-Handbook-Robert/dp/0070498415/ref=sr_1_2?ie=UTF8&s=books&qid=1299747716&sr=1-2

DOE Assessment #2	1. Ok. Clarification has been provided. W.r.t. the ash content the maximum value from the coal ash reports from 2004 to 2007 has been applied due to conservativeness. This is conservative for ER as the emission reductions will be lower as well as for the financial calculation as the ash is sold and the higher the ash content the higher related revenues. The value applied is correct and consistent with the stated evidence and considered plausible. 2. Ok. Only one invoice is available on tar produced. Therefore reference is made to corresponding literature. The reference has been checked by the DOE and the value applied is for the type of coal as used in the project activity. The type of fuel used is checked by onsite visit, invoices/INV/ and coal analysis/COAL/. Further DOE confirms that the value is consistent with the source and correctly applied to the ER calculation/XLS/. DOE confirms that the value from literature is more conservative than the value obtained from the invoice. 3. Ok. ER spreadsheet has been checked. Latent heat is now included by following way: $(NCV_{PG} + q_{PG}) \times m_{PG} = ENERGY_{baseline}$ and $q_{PG} = Cp \times (\Delta T)$. The equation applied is correct, q_{PG} represents the latent heat which is confirmed by DOE based on sectoral knowledge and experience. Base temperature has been provided and found reasonable and plausible. Further now the actual temperature of producer gas is considered. 4. Ok. NCV of ash has been changed to the value of the actual type of ash based on result from interview with PP/IM01/. The ER calculation was revised accordingly and is now correct. Related supporting document has been checked and values have been found to be correctly applied. 5. Ok. Already closed during assessment #1. 6. Ok. Already closed during assessment #1. 7. Ok. Inconsistencies for the input values used to calculate ER have been corrected. 8. Ok. Already closed during assessment #1. 9. Ok. Further specification has been provided. The DOE can confirm by onsite visit that the tunnel kiln was not newly installed only related gas burners have been exchanged due to change from producer gas to natural gas. According to PDD there is a slight increase in efficiency by the proposed project activity. This means efficiency in baseline scenario would be lower and therefore higher energy input would be required to produce same output and finally result in higher baseline emissions. Therefore applying the same efficiency and specific energy consumption as per project scenario (8.02GJ/100 bricks) is conservative and deemed reasonable by the DOE. 10. Ok. Related specifications has been provided in the ER spreadsheet/XLS/. The equations have been checked and found correct. This has been checked based on sectoral knowledge and experience of DOE. Related evidences have checked and have been correctly applied. 11. Not ok. Reference "Slaghuis" has been provided. W.r.t. the second named reference it is sufficient to provide the cover page and the related section/page/table where the related/used information is found. It is not any case required to send the entire document.
Corrective Action #3	11. The reference and specific heat data was changed from Perry to data provided on engineeringtoolbox.com. The updated 'Emission Reduction Calculations' excel document contains, in sheet 'Vol of Producer Gas', the updated numbers and detailed references of specific heat values for all the different components of producer gas.

DOE Assessment #3	11. Insufficient. The online source for the specific heat of the gases has been checked and confirmed to be correctly applied in the excel calculations. Please clarify why the change in reference was made and why the cover page of Perry's book and the relevant source page cannot be provided. Also, please explain why the online source is reliable.
Corrective Action #3	11. We contacted engineeringtoolbox.com about their references, but unfortunately did not yet get a reply. Therefore we changed the specific heat value's (Cp) back to data found in Perry, though a newer version of Perry was used (7th edition). Please find attached the front and cover page of Perry's chemical engineers handbook as well as the pages with the formulas to calculate the Cp values for CO, CO_2, CH_4, N_2 and H_2. These formulas were used to calculate the Cp values of these compounds and can be found in the Emission Reductions Calculations excel document in the sheet 'volume of producer gas' (as attached). These specific heat values were almost identical to the ones obtained from engineeringtoolbox.com and therefore the emission reductions only changed slightly (from 38,058 tCO2/yr to 38,062 tCO2/yr). Since the NPV value of a heavy fuel oil project (alternative scenario) and overall emission reductions slightly changed, an updated PDD is attached.
DOE Assessment #4	***A.*** OK. Specific Heat of the gases have been obtained from credible source/SH/ and appropriate references sent to the DOE. The values have been cross-checked for proper application in the ER calculations and the updated PDD ver.5, and found to be correctly applied. CAR closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B15		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The Monitoring Plan in Section B.7.2. of the PDD is not in accordance with the applied methodology. It does not describe how the monitoring of the fossil fuel use (*FCy*) and output of element process *i* after the project activity has been implemented (*QPJ,y*) will be done. The monitoring plan in the PDD should be revised according to methodology and further substantiated according to SSC Guidance.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section B.7 in the PDD has been revised.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The description of FCy was revised. QA/QC procedures for the FCy were added. However QPJ,y is missing.		

Corrective Action #2	$Q_{PJ,y}$ is calculated using FCy, NCV and CFpower (see formula 1b in section B.6.1.). As $Q_{PJ,y}$ is not monitored but calculated based on the above mentioned variables which are monitored and described in section B.7 of the PDD, direct monitoring of $Q_{PJ,y}$ is not possible.
DOE Assessment #2	1. $Q_{PJ,y}$ is identical to Q_y which is calculated as per PDD section B.6.1 in accordance to monitored parameters FC_y and NCV of natural gas. 2. Besides further clarification is requested why EF_{CO2} is a monitoring parameter as a default value as per IPCC guidelines is applied. Description of measurement method should be updated in accordance to corresponding methodology §18.
Corrective Action #3	*EF_{CO2} has been removed from section B.7 and presented in B.6.2 of the PDD as it is indeed not monitored, but an IPCC default factor is used.*
DOE Assessment #3	1. OK. $Q_{PJ,y}$ is not a directly monitored parameter but calculated as per the methodology. 2. OK. EF_{CO2} has been moved to B.6.1 of PDD ver. 5, and default IPCC values used for its determination. CAR is closed
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B16		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Some of the QA/QC are missing. The monitoring plan has to be improved.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Tables in section B.7 of the PDD were updated.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The QA/AC procedures for all monitoring parameter were revised. The CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B17		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The applied version 2.2 of combined tool to identify the baseline scenario and demonstrate additionality has been outdated 14 April 2011 and therefore a valid version thereof shall be applied.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Instead of the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality" (Version 02.2, EB 28) originally used to identify the baseline scenario, Version 0.3.0 (EB 60) has been applied in the Updated PDD due to the validation extending past 14 April 2011.		

DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The new version of the methodological tool has been correctly applied and appropriate sections B.1, B.4 and B.5 of the PDD updated accordingly
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	C1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section C.2.1.1. Starting date of the first crediting period should be revised in accordance to a realistic date.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section C.2.1.1. has been updated. However, the date of registration is not under the control of the project participant and will be updated in the final version prior to requesting registration.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The starting date of the first crediting period has been revised to 03/09/2011. This date might have to be changed prior to requesting registration The starting date of the first crediting period has been revised to 15/07/2012 (PDD version 10).		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	E1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The process of identifying local stakeholders was not given. It can't be clearly justify if the process of local stakeholder's consultation was conducted accordingly. A clear and total description of stakeholder identification and the stakeholder consultation process has to be provided.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section E in PDD has been revised to explain the identification of stakeholders and the consultation process.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The process of identification of the stakeholder was described on the updated PDD. Also summary of comments in the section E2 was included. Therefore this CAR is closed.		

Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

5 VALIDATION ASSESSMENT SUMMARY

5.1 General Description of the Project Activity

5.1.1 Participation

LOA

Letter of Approval dated 2012-01-06 from the Department of Energy[/LOA/]; the South Africa DNA has been verified and found to be valid as per the UNFCCC website. The LoA also confirms the exact project title Fuel Switch at Corobrik's Driefontein Brick Factory in South Africa as the PDD and that participation in the fuel switch from coal to natural gas project is voluntary and contributes to sustainable development. Refer also CAR A1.

Project Participants

The project participants are listed in tabular form in section A.3 of the final PDD and this information is consistent with the contact details provided in annex 1 of the PDD. Corobrik (Pty) Ltd as the sole project participant is also confirmed by the LoA[/LOA/].

5.1.2 Contribution to Sustainable Development

Paragraph five point (c) in the LoA dated 2012-01-06 confirms that the project contributes to the sustainable development in the Republic of South Africa.

5.1.3 PDD editorial Aspects

The PDD has been prepared in the approved format (CDM –SSC-PDD) Version 03 in effect as of 22 December 2006. The PDD has been duly filled in accordance with the 'Guidelines for Completing the Simplified Project Design Document (CDM-SSC-PDD)', Version 05. CAR A2 was raised during validation in this regard and successfully closed.

5.1.4 Technology to be employed.

The description of the project in the PDD is complete and accurate. The project activity involves the switch of a thermal fuel from coal to natural gas in Driefontein Brick Factory.

The pre-project scenario was the use of coal to generate thermal energy for brick-firing in the tunnel kilns. The fuel switch entailed the extension of the Sasol owned Natural Gas pipeline and the installation of a combustion system, and the decommissioning of the initial coal gasifiers/PDD/.

The technology employed will replace a more carbon intensive fuel in coal with natural gas, a less carbon intensive alternative that is environmentally safe and sound/EIA/ /COMP/

5.1.5 Small Scale Projects

The emission reductions resulting from the fuel switch are less than 60 kt CO2 equivalent annually. The latest Excel document – Driefontein Fuelswitch Emission Reductions Calculations.xls in the sheet 'emission reductions' dated 2012-04-23, and the PDD works out emission reductions of 37,131 tCO_2 per annum.

The correct methodology *AMS III.B ver 15: Switching Fossil Fuels*, has been applied and the *'Tool to determine the remaining lifetime of equipment (Ver. 01)'*, as well as the 'Tool for the demonstration and assessment of additionality *(Ver 05.2)*'. The project is confirmed not to be a debundled part of a large scale project.

Corrective requests in the application of the methodology and tool to determine the remaining lifetime of equipment were raised in CAR B1 and B13 and satisfactorily closed.

5.2 Project Baseline, Additionality and Monitoring Plan

5.2.1 Application of the Methodology

The project applies the approved small scale methodology AMS III.B ver 15: 'Switching Fossil Fuels', which is still a valid version. The *'Tool to determine the remaining lifetime of equipment (Ver. 01)'* to confirm that the expected lifetime of the decommissioned gasifiers in the baseline scenario exceed the expected project lifetime, as well as the 'Tool for the demonstration and assessment of additionality *(Ver 05.2)*' All applicability conditions have been met and elaborated on in the PDD section B.2 with appropriate evidence, and the project stipulations are in line with the applied methodology and tools as confirmed from the UNFCCC website. No leakage is accounted for under § 21 of the methodology and significant project emissions from natural gas are appropriately accounted for. Corrections in the applicati0on of

the methodology and tool to determine the remaining lifetime of equipment were raised in CAR B1 and B13 and closed.

5.2.2 Project Boundary

According to the methodology AMS III.B ver 15, the project boundary is the physical, geographical site where the switching of energy source takes place. It includes all installations, processes or equipment affected by the switching. For the proposed project, the boundary consists of the tunnel kiln, the Sasol owned natural gas pipeline, the coal used prior to the switch, the duff coal and tars sold, the ash generated, the natural gas used post the switch, and the decommissioned producer gas plant.

5.2.3 Baseline Identification

The validation team confirms that the procedure contained in the methodology and additionality tool to identify the most reasonable baseline scenario has been correctly applied, and the description of baseline identification in the PDD is transparent and verifiable. According to applied methodology AMS III.B., the baseline scenario is amount of fossil fuel used (coal) to produce an equivalent amount of thermal energy in the pre-project scenario. As the project activity is the switch from coal to natural gas, the most plausible baseline scenario has also been identified through the elimination of credible alternatives as per paragraph 105 of the VVM[/VVM/]. CAR B3 was raised as regards to identification and elimination of alternatives to the project activity, and successfully closed.

5.2.4 Calculation of GHG Emission Reductions

The emission reduction calculations are conducted as per applied methodology AMS III.B. ver 15. Correct equations and parameters have been cross-checked.

The baseline equation, parameters (FC, EF, NCV, Q) and notations are found to be correct in the PDD section B.6.1 as per the methodology.

The project emissions (PE) from combustion of natural gas are well applied and the emission factor, NCV all used according to CDM guidelines. No leakage is determined as par 21 of the methodology excludes this value.

Emission reductions (ER) are finally determined from the difference between baseline emissions (coal) and project emissions (natural gas). The estimated emission reductions are plausible and the input data found to be correct[/PDD/XLS/]. CAR B5 was raised and closed during validation

5.2.5 Additionality Determination

Consideration of CDM in decision making (if project start before validation)

The starting date is defined as 2007-06-11 which is before 2008-08-02, and is the date on which the construction of the natural gas Sasol pipeline commenced/MPM/.. This is the most appropriate date in accordance with the CDM Glossary of Terms.

As per § 6 and 7 of EB 62 Annex 13, the serious consideration of CDM is mentioned in the PDD. The project participants provided a transparent, verifiable, and chronological presentation of the milestones for project implementation and CDM consideration in the PDD, section B.5. The information provided have been substantiated and corroborated with documented evidences as verified by the validation team. The documents have been assessed as authentic/COR/CS//PRIOR/ to the satisfactory of DOE. CAR B4 and CAR B17 were raised and successfully resolved. Hence, PP has shown awareness and consideration of CDM in the decision-making process.

Application of methodology / methodological tools

The project is a Small scale project. Project applied an approved and applicable small scale CDM methodology AMS III.B version 15 which is still a valid version. This is now in line with §§ 67 (d), 94-95 of VVM version 1.2.

Alternatives

Section B.5 of the PDD contains six realistic alternative scenarios to the project activity including an analysis of the project scenario without CDM as well as the continuation of the current situation. All the options are within legal and regulatory requirements, and the basis for elimination of the PA as a non-CDM activity is investment comparison analysis (NPV). In relation to this, CAR B3 was raised and concluded

Investment analysis

The project participant has demonstrated additionality of the CDM project activity using investment comparison analysis as par stipulations of § 27 of the additionality tool.

The investment comparison analysis has also been done using the Net Present Values as the financial indicator in all plausible alternative scenarios to the project activity (§ 3 sub-step 2b EB 39 report, Annex 10). The use of coal for thermal energy in brick-firing is found to be the most economically attractive option (less negative NPV of ZAR -71,375,864) due to its lower investment cost, available technology, and fuel availability in the region/PDD/XLS/. Compared to natural gas (ZAR -123,963,718). All calculations are assessed to be correct in the finalized documents and input parameters and their sources plausible at the time of decision-making.

Sensitivity Analysis

To confirm the veracity of the applicability of NPV as the financial indicator, a sensitivity analysis was also carried out; confirming that the base case remains the best cost effective option among the alternatives considered including the switch to natural gas as per the proposed project.

Common practice analysis

The Geographical region is appropriate since the use of coal for thermal purposes including electricity generation is common practice and least costly. The use of coal for brick-firing is the most preferred and the use of natural gas is not common practice as confirmed by the letter procured from the Claybrick Association of South Africa which states that Natural Gas usage in kilns for brick production is not a common practice within South Africa/COMP/.

Summary

PP has demonstrated with evidences the additionality of the project relative to the baseline scenario. The use of NPV in the investment comparison analysis follows guidelines as per additionality too, and the alternatives outlined in the PDD are considered plausible and in accordance with the laws and regulations of the host country. It has been established through the provided evidences that coal in South Africa is the predominant fuel for thermal applications in clay brick firing, and due to its abundance in the Republic of South Africa, is the most cost effective fuel and associated investment, technological, and logistical costs. The project NPV analysis along with sensitivity analysis confirms that the fuel switch project activity is not financially attractive without CDM benefits.

5.2.6 Monitoring Methodology

The monitoring plan is in compliance with the applied monitoring methodology AMS III.B ver. 15. *"Switching Fossil Fuels".* All parameters fixed and monitored are included in the monitoring plan as per applied methodology and tools.

5.2.7 Monitoring Plan

The assessment team has checked and confirmed that the monitoring plan described in the final PDD section B.7 and B.7.2 cover all the monitoring parameters as per the applied methodology AMS III.B ver 15 and prescribed CDM tools. All the required parameters (NCV of natural gas, FC_y, temperature and net energy output $Q_{PJ,y}$) are clearly described and the means of monitoring to be implemented including QA/QC procedures are described in the plan feasible within the project design and project boundary. CAR B15 was raised w.r.t monitoring plan and closed.

5.2.8 Project Management Planning

The operational and management structure that the project proponent will implement in order to monitor emission reductions is described/PDD/. The quantity of natural gas consumed will be recorded and checked with the monthly invoices from Sasol, and the calorific value (CV) will be monitored, recorded, and stored by the Factory manager and Assistant Factory Manager.

5.2.9 Crediting Period

The choice of the renewable crediting period is unambiguously given in the final PDD. The starting date of crediting is revised to 2012-07-15 in the final PDD, which is realistic and appropriate for the SSC project activity. CAR C1 was raise and successfully closed.

5.2.10 Environmental Impacts

An EIA is required from the host country. The project proponent carried out an environmental management plan and scoping report in accordance with section 21, 22 and 26 of the Environmental Conservation Act (Act No.73 of 1989), and the EIA approval document 16b-Department of Agriculture, Conservation and Environment, 13-02-2007 submitted to the DOE for validation.

5.2.11 Comments by Local Stakeholders

All relevant stakeholders living around the project area and along the proposed Sasol pipeline extension to Driefontein were identified and invited through newspapers advertisements in the area, notices and through meetings with local councillors. Consultations were done in accordance with the requirements of the National Environmental Management Act. Section E.1 of the PDD gives an outline, names and comments received from them. Also, responses to the issues raised were included transparently in the PDD and mitigation steps were included.

CAR A2 and CAR E1 were raised and successfully closed during the validation

6 VALIDATION OPINION

Corobrik (Pty) Ltd has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "Fuel Switch at Corobrik's Driefontein Brick Factory in South Africa" with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board

In the course of the pre-validation 20 Corrective Action Requests (CARs) and 3 Clarification Requests (CLs) were raised and successfully closed.

The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (Republic of South Africa) and all relevant UNFCCC requirements for CDM. Project activity approval have been obtained from DNA of the Republic of South Africa vide the Letter of Approval (HCA) dated 2012-01-06
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 37,131 tCO_2e are most likely to be achieved within the 1st renewable crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

Essen, 2012-10-22

Saalmann Martin
TÜV NORD JI/CDM CP
Validation Team Leader

Essen, 2012-10-22

Rainer Winter
TÜV NORD JI/CDM CP
Final Approval

7 REFERENCES

Table 7-1: Documents provided by the project participant

Reference	Document
/**ADDS**/	Newspapers advertisements 13 – Krugersdorp News, 10-03-2006 13b – Carletonville Herald, 24-02-2006 to 02-03-2006 13c – Carletonville Herald, 20-02-2009 13d – Carletonville Herald, 20-02-2009
/**BORD**/	6 - Decisions making (Minutes from board March 2007), dated 28-03-2007
/**CC**/	11 – Conversion to Natural Gas Project Cost 11b - Cost code 32BS.1650 for conversion
/**COAL**/	Coal analysis 2004-2007 21 – Coal Analysis Report, 2004-2007 21b - Coal Analysis Report, 09-10-2007 21c – Central Laboratory Coal Analysis, 15-03-2002 22 – Coal Analysis Report, 30-05-2005 22b – Coal Analysis Report, 31-07-2006 22c – Coal Analysis Report, 29-03-2007
/**COMP**/	28 - Letter from Claybrick Association of South Africa (*At Coetzee, 4 march 2010*) (Common Practice)
/**CONTNG**/	Statement that energy content of NG by Sasol is invoiced on GCV not NCV.
/**COR**/	STEF1 - Email from statkraft about the development of the project STEF2 - Early cosideration of Driefontein becoming a CDM Project EC - NuPlanet confirmation Driefontein CDM site visit
/**CS**/	Corobrik Statement on Board meeting 28-03-2007, dated 11-01-2012 from financial Director
/**DEM**/	36 - Demolition of redundant gasifiers 37 - Demolishing of gas producers
/**EIA**/	Sasol gas pipeline EIA comments. 19 – SASOL Environmental Scoping Report, 08-11-2005 20 - SASOL Environmental Management Plan (EMP), 03-07-2006 16b - Department of Agriculture, Conservation and Environment 48 - RoD - Record of Decision for the EIA for the pipeline e
/**EP**/	43 - Nieuwenhuizen P (30-06-2011)RE_ NCV _ GCV Natural Gas

Reference	Document
/**ESR**/	Plan of Study for Scoping Environmental Scoping Report.
/**EXC**/	40 - Corobrick Driefontein-Eecofuels Statement
/**GASCON**/	10 - Addendum to gas supply agreement from Sasol, dated 26-09-2006
/**HCA**/	Host country Letter of approval from the Department of Energy (South Africa DNA), dated 06-01-2012
/**HFO**/	Supply of Sasol fuel oil 150 (HFO 150). For the investment analysis.
/**HIST**/	Summary of records on historic data used in the emissions reduction calculation. 24 - Corobrik Fuel and Production History 24c - Production history 24d - Production history 24e - Production history
/**HISTD**/	7 – Tar sales, March 2007 8 – Duff Supply Invoice, November 2006 8b – Duff Supply Invoice, January-March 2007 8c – Duff Supply Invoice, April-May 2007 27 – Historic Coal Data, 2004-2006 27b - Historic Coal, Tar, and Duff Sale Data, 2007 27c - Duff sold June 2007
/**INV**/	Invoices (17-17j) • Invoices for maintenance of the equipment (for remaining life time of the equipment) Nr. 1-4 • Invoice for the coal from March and February 2007 • Invoice for the duff from March and February 2007 • Invoices for maintenance costs in 2006 • Sasol invoices for February 2008 to November 2007 for natural gas. • Investment invoice on newly purchased replaced equipment at gasifier
/**INVA**/	Evidence on input data for investment analysis 23. Coal price 24. Duff price 25. Tar price 26. Maintenance costs 27. Invoices or contract on technology to evidence total and actual investment costs of PA (pending, not checked) 28. Energy costs and related parameters (HFO, Diesel) 29. Inflation rate by www.sarb.co.za/sarb/ 30. Supply of SASOL Fuel oil 150 (HFO 150) 28-02-2008 (signed)

Reference	Document
/**KLO**/	41 - Corobrik-Driefontein kiln overview (10-06-2011)
/**LIC**/	Operational Licence from the National Energy Regulator of South Africa (NERSA), dated 12-11-2010
/**LoA**/	• Letter of Approval from the Department of Energy (DNA) dated 2012-01-06
/**LSP**/	• Minutes of a meeting with Merfong City Municipale Councillors • Email from Sasol; Minutes of a meeting held at edenwale on Wendsday 23 January
/**MASH**/	Moisture and Ash Content, (03-02-2011; 12-02-2008, 21-02-2010, 31-01-2010, 18-02-2008, 12-02-2008)
/**MOC**/	Modalities of Communication, dated 16-11-2011
/**MP**/	1_(&25) - Maintenance Invoice, 20-01-2006 2_(&25) - Maintenance Invoice, 15-11-2005 3_(&25) - Maintenance Invoice, 20-07-2005 4_(&25) - Maintenance Invoice, 23-05-2006 34 - Maintenance Report, dated December, 2006 35 - Inhouse maintenance cost
/**MPM**/	Minutes Progress Mtg 3 held 20 June 2007
/**NG**/	Contract with Sasol on NG investment (checked) 25 Mio
/**OP**/	32 - Evidence for operational lifetime of project activity
/**PDD**/	**Draft PDD** Project Design Document named "Fuel Switch at Corobrik's Driefontein Brick Factory in South Africa version 3 dated 01.02.2010, hosted from 09/02/2010 – 10/03/2010 **Final PDD** Project Design Document, "Fuel Switch at Corobrik's Driefontein Brick Factory in South Africa" version 11 2012-10-10
/**PDD-T**/	Project Design Document Form (CDM PDD) - Version 03
/**PRIOR**/	• Corobrik meeting to discuss progress of the Driefontein CDM Project (2008-01-23) • First draft of the Driefontein PDD by NuPlanet (2007-10-23) • First Payment of R25 million for the Sasol Pipeline (2007-06-30)

Reference	Document
	• Record of Decision for the EIA for the pipeline (2007-02-12) • Minutes progress meeting pipeline construction (2007-06-20) • Email sent to Nu Planet , CDM developer (2007-09-25) • Email: Corobrik contacts Promethium Carbon to work on Driefontein project (2008-09-15) • Email: Quote received from SGS (2009-04-07) • Email: TÜV NORD quote is accepted by Corobrik (2009-11-13) • Updated quote received from TÜV NORD (2009-10-20)
/**PROJ**/	Summary "Conversion to natural gas. Project cost". + all invoices form the summary.
/**PSD**/	Sasol Invoice to Corobrik-Driefontein (2007-06-30)
/**REMLIF**/	• Statistical data for factory managers. (Remaining life time of the equipment). • Evidence that gasifier did not have any accident during operation which was reducing its lifetime • Expert opinion/26/ from independent expert (Industrial Combustion Systems) based on past use (maintenance report/MP/) and ongoing expenditure confirming that the remaining lifetime of the decommissioned gasifier exceeds the project lifetime.
/**REN**/	Renewable Fuels Agency (2008), Carbon and sustainability reporting within the renewable transport fuel obligation).
/**SD**/	46 – Self Declaration dated 21-06-2011
/**SGTD**/	27i - Sasol gas technical data, dated 08-07-2008
/**SH**/	PERRY, R.H. Chemical Engineers' Handbook, 7th Edition, Section 3: pages 162, 163, 165, and cover/front pages, for Specific heat of gases
/**SHCP**/	Stakeholder consultation process evidences: Questionnaires
/**TRAI**/	Training attendance register.
/**XLS**/	1. Ash use 2. Emission reduction calculation spreadsheet, dated 22-07-2011 3. Emission reduction calculation spreadsheet, dated 27-02-2012 4. Driefontein Investment Analysis dated 2011-07-19

Reference	Document
	5. Driefontein Fuelswitch Emission Reductions Calculations dated 2011-07-22 6. Emission reduction calculation spreadsheet, dated 23-04-2012 7. Driefontein Investment Analysis, dated 2012-04-23

Table 7-2: Background investigation and assessment documents

Reference	Document
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/EB 22 Annex 3/	Clarifications on the consideration of National and/or sectoral polices and circumstances in baseline scenarios (version 02)
/EB 39 Annex 10/	Tool for the demonstration and assessment of additionality (version 05.2)
/EB 50 Annex 15/	Tool to determine the remaining lifetime of equipment (Version 01)
/EB 54 Annex 13/	Guidelines on assessment for debundling for SSC project activities (ver.03)
/EB 62, Annex 5/	Guidelines on the assessment of Investment Analysis
/EB 62, Annex 13/	Guidelines on the demonstration and assessment of prior consideration of the CDM
/EB 63 Annex 12)	Guidelines for Common Practice
/ECA/	South African Environmental Conservation Act (Act No.73 of 1989)
/GCP/	UNFCCC: Guidelines for completing CDM-PDD and CDM-NM
/GLOS/	CDM Glossary of Terms ver. 05
/IPCC/	• IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000 • Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual
/onsite/	Onsite visit carried out from 2010-02-08 to 2010-02-10

Reference	Document
/**PDD-T**/	Project Design Document Form (CDM PDD) – Version 03
/**KP**/	Kyoto Protocol (1997)
/**MA**/	Decision 3/CMP. 1 (Marrakesh – Accords & Annex to decision (17/CP.7))
/**METH**/	AMS III. B ver 14: Switching Fossil Fuels AMS III. B ver 15: Switching Fossil Fuels
/**TA**/	Tool for the demonstration and assessment of additionality (Ver. 4 – Ver. 5.2).
/**VVM**/	Validation and Verification Manual (Version 01.2, Annex 1, EB 55)

Table 7-3: Websites used

Reference	Link	Organisation
/**cd4cdm**/	www.cd4cdm.org	UNEP Riso Centre
/**clay**/	www.claybrick.org.za	Clay-Brick Association of South Africa
/**dme**/	http://www.dme.gov.za/energy/historyprice07.stm	Department of Energy
/**ipcc**/	www.ipcc-nggip.iges.or.jp	IPCC publications
/**sarb**/	www.sarb.co.za	South African Reserve Bank
/**etb**/	http://www.engineeringtoolbox.com	Online Engineering Toolbox
/**eskom**/	http://www.eskom.co.za	Electricity Supply Commission
/**nersa**/	http://www.nersa.org.za/	National Energy Regulator of South Africa
/**sim**/	http://www.simetric.co.uk/si_materials.htm	Simetric
/**statssa**/	http://www.statssa.gov.za/keyindicators/CPI/CPIHistory_rebased.pdf	Statistics Online South Africa
/**maps**/	http://maps.google.com/	Google Maps

Reference	Link	Organisation
/**wiki**/	http://en.wikipedia.org/wiki/Diesel_fuel	Wikipedia

Table 7-4: List of interviewed persons

Reference	Mol[1]		Name	Organisation / Function
/**IM01**/	**V**	☒ Mr. ☐ Ms	J. M Anthony	Technical Manager, Corobrik (Pty) Ltd
/**IM02**/	**V**	☒ Mr. ☐ Ms.	A.B. van der Merwe	Carbon Advisor, Promethium (consultant)
/**IM03**/	**V**	☐ Mr. ☒ Ms.	S. P. Nartje	Carbon Advisor, Promethium (consultant)
/**IM04**/	**V**	☐ Mr. ☒ Ms.	H. Immink	Carbon Advisor, Promethium (consultant)
/**IM05**/	**V**	☒ Mr. ☐ Ms.	H. von Wielligh	Factory manager, Corobrik (Pty) Ltd

[1)] Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

ANNEX

A1: Validation Protocol

A2: Assessment of Baseline Identification

A3: Assessment of Financial Parameters

A4: Assessment of Barrier analysis

A5: Outcome of the GSCP

A6: Appointment certificates of the team members

ANNEX 1: VALIDATION PROTOCOL

Table A-1: Requirements Checklist

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
A. General Description of Project Activity				
A.1. Approval *The written approval of the parties involved is a mandatory requirement*				
A.1.1. Has the project provided written approvals of all parties involved? (EB 55 Annex 1, § 44) *Indicate whether a letter of approval has been received, with a clear reference to the supporting documentation.* *Indicate whether this letter was provided to the DOE by the project participants or directly by the DNA*	*Description:* LoA from the host country DNA is pending. *Justification of evidences:* *Conclusion:* Project participant should provide written approval from Host country.	/LoA/	~~CAR A1~~	OK
A.1.2. Are the approvals issued from orgainsations listed as DNAs on the UNFCCC CDM website? (EB 55 Annex 1, §§ 44, 47, 48, 49 (b), 49 (c), 53) *Indicate the means of validation employed to assess the*	*Description:* Refer to A.1.1. *Justification of evidences:*	/LoA/	~~CAR A1~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
authenticity, i.e. in case of doubt whether LoA has been verified with the DNA. Further describe which entity submitted the LoA for validation.	*Conclusion:*			
A.1.3. Do the written approvals confirm that the corresponding party is a Party to the Kyoto Protocol? (EB 55 Annex 1, § 45(a))	*Description:* Refer to A.1.1. *Justification of evidences:* *Conclusion:*	/LoA/	~~CAR A1~~	OK
A.1.4. Do the written approvals confirm that the participation is voluntary? (EB 55 Annex 1, § 45(b))	*Description:* Refer to A.1.1. *Justification of evidences:* *Conclusion:*	/LoA/	~~CAR A1~~	OK
A.1.5. Does the written approval from the host country confirm7 that the project contributes to the sustainable development in the country? (EB 55 Annex 1, § 45(c))	*Description:* Refer to A.1.1. *Justification of evidences:* *Conclusion:*	/LoA/	~~CAR A1~~	OK
A.1.6. Do the written approvals refer to the precise project title in the PDD submitted for registration or an additional specification of the	*Description:* Refer to A.1.1.	/LoA/	~~CAR A1~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
project activity, e.g. PDD version number? (EB 55 Annex 1, §§ 45(d), 50)	*Justification of evidences:* *Conclusion:*			
A.1.7. Are the written approvals unconditional with regard to A.1.3 to A.1.6? (EB 55 Annex 1, § 46)	*Description:* Refer to A.1.1. *Justification of evidences:* *Conclusion:*	/LoA/	~~CAR A1~~	OK
A.1.8. Is the information regarding the project participants listed in section A3 and in Annex 1 of the PDD internally consistent to each other? (EB 55 Annex 1, § 51)	*Description:* The same Project participant (Corobrik (Pty) Ltd) is listed in both section A3 and Annex 1. *Justification of evidences:* checked PDD *Conclusion:*	/PDD/	OK	OK
A.1.9. Are all project participants listed in the PDD approved at least by one Party involved? (EB 55 Annex 1, § 51) *Indicate whether the participation of the project participant(s) has been approved by a Party to the Kyoto Protocol.* *Describe the means of validation employed to draw this conclusion.*	*Description:* Awaiting LoA *Justification of evidences:* *Conclusion:*	/LoA/	~~CAR A1~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
A.1.10. Are any other project participants approved but not listed in the PDD? (EB 55 Annex 1, § 52)	*Description:* Refer to A.1.1. *Justification of evidences:* *Conclusion:* CAR A1	/LoA/	~~CAR A1~~	OK
A.1.11. Does the DoE have a direct contractual relationship with the PP? (EB 55 Annex 1, § 51; EB 50 Annex 48, §§ 7–9) *Check whether the PPs listed in the published PDD are still listed in the PDD going to be submitted to request for registration.*	*Description:* The DOE has direct contractual obligation with the PP. *Justification of evidences:* The contract is compared with the PP mentioned in the PDD. *Conclusion:* Awaiting the PDD version to be submitted for registration to check if the PP(s) listed is the same.	/PDD/ contract	OK	OK
A.2. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*				
A.2.1. Has the host country confirmed that the project assists it in achieving sustainable development? (EB 55 Annex 1, §§ 125–127) *Contains a statement confirming whether the letter of*	*Description:* Awaiting LoA *Justification of evidences:*	/LoA/ /IM01/	~~CAR A1~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
approval by the DNA of the host party confirmed the contribution of the project to the sustainable development of the Host Party.	*Conclusion:* CAR A1			
A.2.2. Will the project create other environmental or social benefits than GHG emission reductions? (EB 55 Annex 1, §§ 125–127) *Describe the other positive aspects not related to GHG emission reduction on the environment.*	*Description:* The project activity will create benefits beyond GHG emission reductions such as: Economic: The project will contribute to foreign reserve earnings from carbon credit sales revenue. Environmental: A cleaner work environment – there is a reduction of air particulate levels at the plant resulting as a result of elimination of coal combustion. Social: Corobrik employees have benefited from the creation of a healthier work environment with the elimination of coal combustion. They were re-deployed to the furnaces and there were no job losses. They received on-the-job training. *Justification of evidences:* By means of PDD and on-site assessment. *Conclusion:* The PA created other environmental and social benefits other than GHG emission reduction.	/PDD/ /IM01/ /IM02/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
A.3. PDD editorial aspects *The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.*				
A.3.1. Has the latest version of the PDD form been applied? (EB 55 Annex 1, § 55)	*Description:* The PDD form used is the: Clean Development Mechanism Project Design Document Form (CDM-SSC-PDD) Version 03 - in effect as of: 22 December 2006. *Justification of evidences:* By means of PDD and cross-checked latest version on: (http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html) *Conclusion:* The latest version of PDD form was used.	/PDD/ /unfccc/	OK	OK
A.3.2. Has the PDD been duly filled in accordance with the latest guidance(s)? (EB 55 Annex 1, §§ 56–57)	*Description:* The PDD template was duly filled in accordance with the latest guidance(s) except for the section E. *Justification of evidences:* By means of PDD and the Guidelines for completing the simplified project design document CDM-SSC-PDD. *Conclusion:* Section E of the PDD has to be completed in accordance with the guidelines for completing simplified project design document (CDM-SSC-PDD) version 05.	/PDD/ /GCP/	~~CAR A2~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
A.4. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The DOE should ensure that environmentally safe and sound technology and know-how is used.*				
A.4.1. Does the PDD contain a clear, accurate and complete project description? (EB 55 Annex 1, §§ 58–59, 64) *The PDD shall contain a clear description of the project activity which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.* *Pl. consider esp.* chapters *A.2, A.4.2 and A.4.3 (in case of LSC PDD) for assessment.* *§64 (a) Describe the process undertaken to validate the accuracy and completeness of the project description.* *§64 (b) Contain the DOE's opinion on the accuracy and completeness of the project description.*	*Description:* The Project Activity involved a fuel switch conversion of the thermal fuel used in the clay brick-firing tunnel kiln at Driefontein Brick Factory. The fuel conversion was from coal to natural gas and involved the extension of the Sasol Gas pipeline and the installation of a combustion system. *Justification of evidences:* During on-site visit, the validation team assessed that there was an installation of a gas pipeline to connect Driefontein to the natural gas pipeline; the installation of kiln burners and related equipment as described in the PDD. *Conclusion:* Main criteria of the applied new technology have to be provided in Section A.2 of the PDD.	/PDD/ /IM01/ /IM02/	~~CL A3~~	OK
A.4.2. Is this description in accordance with the real situation or (in case of greenfield projects) is it most likely that the project will be implemented acc to the project description?	*Description:* Corobrik (Pty) Ltd has been using the gas to fire its clay tunnel kilns since 2008. The coal gasifiers were decommissioned and partly demolished. Gas piplen was connected to the plant. The kilns are now fired by natural gas.	/PDD/ /IM01/ /IM02/	OK	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
	Justification of evidences: By means of PDD and onsite assessment. *Conclusion:* The project is implemented according to project description.			
A.4.3. In case the project involves alteration of the existing installation or process, is a clear description available regarding the differences between the project and the pre-project situation? (EB 55 Annex 1, §§ 63–64) *Describe the steps taken to validate this issue.*	*Description:* The project will build on existing plant. The project activity is a switch from producer gas to natural gas. For this purpose a pipeline and a new combustion system was built. The section A.2 of the PDD gives a description of the project activity and the pre-project scenario. *Justification of evidences:* The description given in the PDD was further evidenced during onsite assessment (gas fired kilns are in place and the coal gasifiers have been decommissioned. *Conclusion:* However main criteria of the applied new technology has to be provided in Section A.2 of the PDD	/PDD/ /IM01/ /IM02/	~~CL A3~~	OK
A.4.4. Does the project design engineering reflect current good practices? *Consider the equipment specifications, literature (e.g. EU BREF papers) and professional experiences. Describe the process undertaken to assess the engineering.*	*Description:* The technology description given in Section A.2. of the PDD does not provide details of the technology used in the project activity. *Justification of evidences:* By means of PDD and technical expertise.	/PDD/	~~CL A3~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
	Conclusion: Hence CAR A3 was raised.			
A.4.5. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country? *Describe the process undertaken to assess the state of the art technology.*	*Description:* The commonly used thermal fuel for clay brick making in South Africa is coal. The use of gas is energy efficient and results in fewer emissions. *Justification of evidences:* By means of onsite assessment and PDD. *Conclusion:* The switch from coal to gas in clay brick making kilns is considered state of the art technology in the host country. Nevertheless the evidences to substantiate this assumption have to be provided.	/PDD/ /IM01/ /IM02/	~~CAR B5~~	OK
A.4.6. Does the project make provisions for meeting training and maintenance needs? *Describe the process undertaken to assess the maintenance and training needs.*	*Description:* Corobrik (Pty) Ltd conducted on the job training for its employees during the installation of the fuel switch. *Justification of evidences:* The content of the job training conducted after the fuel switch and the list of participants was provided during on-site visit.	/PDD/	~~CAR A4~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	Conclusion: However detailed information about maintenance and training has to be provided in the PDD.			
A.5. Small scale project activity *It is assessed whether the project qualifies as small-scale CDM project activity*				
A.5.1. Does the project qualify as a small scale CDM project activity as defined in decision 4 / CMP.1 annex II? (EB 55 Annex 1, §§ 135–136 (a))	*Description:* The emission reductions resulting from the fuel switch average 41,865 tCO_2e annually which is below the limit set in UNFCCC decision -/CMP.2, para 28 (b) for type III projects (i.e. 60$ktCO_2e$/yr). However no evidence to substantiate this statement is made. *Justification of evidences:* By means of PDD and approved methodology. *Conclusion:* Evidence to prove the project qualifies as a small scale project has to be provided in the PDD.	/PDD/ /unfccc/	~~CAR B1~~	OK
A.5.2. Does the project apply one of the approved small scale categories and any methodology and tool referred therein? (EB 55 Annex 1, § 136 (b)) *Check, if applicable the expiry dates of the applied*	*Description:* The Methodology "*Type III.B. Switching Fossil Fuels*" (Version 14) was selected. *Justification of evidences:* By means of PDD and methodology type AMS III. B. Version 14 and checked its validity on UNFCCC website	/PDD/ /unfccc/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
methodology. Further, take into consideration the general guidance to the methodologies[1], which provide guidance on equipment capacity, equipment performance, sampling and other monitoring related issues.	(http://cdm.unfccc.int/methodologies/DB/23SWBG37RQX8WCDJVK73U475DOQ0B0/view.html). *Conclusion:* The project applies an approved valid methodology.			
A.5.3. Is the small scale project activity not a debundled component of a larger project activity? (EB 55 Annex 1, § 136 (c)) *Describe the steps taken to validate this issue. PI refer to the Compendium of guidance on debundling (EB ~~36, Annex 27~~ 54, Annex 13).*	*Description:* As per evidences provided and onsite assessment the validation team concluded that project is not a small scale project activity that is part of a larger scale project. The PP does not have a registered and/or intends to apply to register another small scale project activity within two years, in the same project category, the technology/measure and in the same area. The project does not share a boundary with any small scale CDM project or any project for that matter. *Justification of evidences:* By means of PDD and evidences presented during on-site visit; and the Guidelines on assessment for debundling for SSC project activities (ver.03). *Conclusion:* The project is not a debundled component of a large scale project.	/PDD/ /IM01/ /IM02/ /EB 54 Annex 13/	OK	OK
A.5.4. Is an assessment of the environmental impacts of the proposed SSC CDM project activity required by the host Party? (EB 55 Annex 1, § 136 (d))	*Description:* The South African Environmental Conservation Act (Act No.73 of 1989) requires an EIA to be undertaken for activities deemed to have substantial detrimental effect on the enviroment such as land use and transformation. *Justification of evidences:* As per South African Environmental Conservation Act.	/ECA/ /PDD/	OK	OK

[1] http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	Conclusion: The extension of the gas pipeline the project site is considered land transformation in South Africa and hence requires an EIA.			
B. Project Baseline, Additionality and Monitoring Plan				
B.1. Application of the Methodology				
B.1.1. Does the project apply an approved and applicable CDM methodology and a valid version thereof? (EB 55 Annex 1, § 65) *Describe the steps taken to validate this issue.*	*Description:* Refer to A.5.2. *Justification of evidences:* By means of PDD and methodology. *Conclusion:* OK	/PDD/ /METH/	OK	OK
B.1.2. Is the applied CDM methodology identical with the version available on the UNFCCC website? (EB 55 Annex 1, §§ 65, 70) *Describe the steps taken to validate this issue.*	*Description:* Refer to A.5.2. *Justification of evidences:* *Conclusion:*	/PDD/ /unfccc/	OK	OK

<table>
<tr><th>Checklist Item
(incl. guidance for the validation team)</th><th>Validation Team Comments
(justification and substantiation of information, data and evidences)</th><th>Ref.</th><th>Draft Concl.</th><th>Final Concl.</th></tr>
<tr><td>B.1.3. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled?

(EB 55 Annex 1, §§ 66(a)–(b), 68, 71, 76)
Describe for <u>each</u> applicability criterion listed in the selected approved methodology the steps taken to assess the information contained in the PDD.</td><td>Description: The methodolody type III B ver 14 has the following criteria and from the evidences presented and onsite visit, the validation team assessed the project are presented below against each criterion:

<table>
<tr><th>Type AMS III.B. ver 14 technology/measure</th><th>PP Justification</th><th>Validation Assessment</th></tr>
<tr><td>1. This methodology comprises fossil fuel switching in industrial, residential, commercial, institutional or electricity generation applications1 (e.g. fuel switch from fuel oil to natural gas in an existing captive electricity generation, or replacement of a fuel oil boiler by a natural gas boiler).</td><td>The project activity incorporated a switch from coal to natural gas in an industrial application.</td><td>The project is in line with methodology criterion.</td></tr>
<tr><td>2. Fuel switch may be in a single element process or may include several element processes within the facility. Multiple fossil fuel switching in an element process however is not covered under this methodology.</td><td>The fuel switch is in a single element process and is a switch from coal to natural gas.</td><td>The project is in line with methodology criterion.</td></tr>
<tr><td>3. This methodology is applicable for new facilities as well as for retrofit or replacement of existing installations.</td><td>The fuel switch required a modification of the kiln at Driefontein.</td><td>The project is in line with methodology criterion.</td></tr>
</table>
</td><td>/PPD/
/METH/
/IM01/
/IM02/</td><td>~~CAR B1~~</td><td>OK</td></tr>
</table>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)			Ref.	Draft Concl.	Final Concl.
	4. Fuel switching may also result in energy efficiency improvements. If the project activity primarily aims at reducing emissions through fuel switching, it falls into this methodology. If fuel switching is part of a project activity focussed primarily on energy efficiency, the project activity falls under a Type II methodology.	The project activity aimed at reducing emissions through fuel switching. There is energy efficiency as a result of the fuel switch.	The PP does not provide evidences to substantiate the claim.			
	5. New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the General Guidance for SSC methodologies. The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the General Guidance for SSC methodologies. If the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e. the time when the affected systems would have been replaced in the	Driefontein is an existing brick factory. The estimated lifetime of the decommissioned gasifiers exceeds the project lifetime.	The project is not a Greenfield project. It is operational.			

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)			Ref.	Draft Concl.	Final Concl.
	absence of the project activity.					
	6. This methodology is not applicable to project activities that propose switch from fossil fuel use in the baseline to renewable biomass, biofuel or renewable energy in the project scenario. A relevant Type I methodology shall be used for such project activities that generate renewable energy displacing fossil fuel use. This methodology is also not applicable to project activities involving the use of waste gas; these project activities might be eligible under AMS III.Q.	The project activity is not a switch from fossil fuel used in the baseline to renewable biomass, biofuel or renewable energy in the project scenario.	The project is in line with methodology criterion.			
	7. The facility may involve grid connected elemental processes however this methodology does not cover emission reductions on account of shift from use of grid electricity.	The emission reductions are claimed for a shift from coal to natural gas and not a shift away from grid electricity.	The project is in line with methodology criterion.			
	8. This category is applicable to project activities where it is possible to directly measure and record the energy use/output (e.g., heat and electricity) and consumption (e.g., fossil fuel) within the project boundary.	The energy use/output and consumption of the fuel can be measured and recorded directly.	The project is in line with methodology criterion.			

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)			Ref.	Draft Concl.	Final Concl.
	9. Heat or electricity produced under the project activity shall be for on-site captive use and/or export to other facilities included in the project boundary. In case energy produced by the project activity is delivered to another facility, or facilities, within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into specifying that only the facility generating the energy can claim emission reductions from the energy displacement.	The energy is used on site.	The project is in line with methodology criterion.			
	10. Regulations do not constrain the facility from using the energy sources cited in paragraph 1 before or after the fuel switch. Regulations do not require the use of low carbon energy source (e.g., natural gas or any other fuel) in the element processes.	Natural gas and electricity will be used in the project activity after the fuel switch.	The PP does not respond to the criterion appropriately.			
	11. The project activity does not result in integrated process change. The purpose is to exclude measures that affect other characteristics of the process besides switch of energy sources e.g., operational conditions, type of raw material processed, use of non-energy additives, change in type or	The project does not involve an integrated process change.	No evidence to substantiate the claim that the project does not involve an integrated process change is			

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)			Ref.	Draft Concl.	Final Concl.
	quality of products manufactured etc.		given.			
	12. Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually.	The emission reductions resulting from the fuel switch are less than 60 kt CO2 equivalent annually.	No evidence to prove that project is small scale i.e. that it will result in ER of less than or equal to 60 kt CO_2 equivalent annually.			
	Justification of evidences: By means of PDD, applied methodology and onsite assessment. *Conclusion:* Applicability criteria No. 4, 10, 11 and 12 have to be further substantiated with documented evidences and hence CAR B1 was raised.					

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
B.1.4. In case one or more applicability criteria have not been met, has the validation team requested clarification to, revision of or deviation from the methodology in accordance with the latest guidelines? (EB 55 Annex 1, §§ 72–75)	*Description:* Refer to B.1.3. *Justification of evidences:* *Conclusion:*	/PDD/ /METH/	~~CAR B1~~	OK
B.1.5. Is the project in accordance with every other stipulation or requirement mentioned in all sections of the methodology and in guidances for approved methodologies provided by the CDM EB? (EB 55 Annex 1, § 69, 71) *Describe the steps taken to check whether the proposed project activity meets all the other possible stipulations and /or limitations mentioned in all sections of the approved methodology selected.*	*Description:* The project addresses all the other requirements of the methodology namely: boundary identification, baseline, project emissions, leakage, emission reductions, and monitoring. *Justification of evidences:* By the means of PDD and applied methodology. *Conclusion:* The project is in accordance with the other requirements of the methodology. The errors therewith identified by the validation team are discussed in the relevant sections of this Checklist.	/PDD/ /METH/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.2. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project*				
B.2.1. Are the project's spatial boundaries (geographical) clearly defined? (EB 55 Annex 1, §§ 67(a), 78–80) *Provide information on how the validation of the geographical boundary has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.*	*Description:* Figure 2 in the PDD a diagram is used to show the project boundary. However it does not include items listed in section B.3. in the PDD under "Project boundary consists of:", whereas these equipment/installations are affected by the switching and delineate the project boundary as per the applied methodology. *Justification of evidences:* By means of PDD and applied methodology. *Conclusion:* Figure 2 in the PDD should be revised in accordance to listing of "Project boundary consists of:" Furthermore all related GHG emissions should be clearly indicated. CL B2 was raised.	/PDD/ /METH/	~~CL B2~~	OK
B.2.2. Are all sources and GHGs included in the project boundary as required in the applied methodology? (EB 55 Annex 1, §§ 67(a), 78–80) *Provide information on how the validation of the GHGs and sources has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.*	*Description:* The applied methodology does not specify explicit sources of GHG emissions. The PP includes only emissions from CO2. During onsite visit no other sources of GHG emissions were identified. *Justification of evidences:* By means of methodology, PDD and onsite assessment. *Conclusion:* OK, the project complies with the requirement.	/PDD/ /METH/ /IM01/	OK	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
B.2.3. In case the methodology allows to choose whether a source and/or gas is to be included, is the choice sufficiently explained and justified? (EB 55 Annex 1, §§ 67(a), 78–80) *Confirm if the justification provided by the PPs is reasonable, based on assessment of supporting documented evidence provided by the PPs or by onsite observations.*	*Description:* N/A *Justification of evidences:* *Conclusion:*			
B.3. Baseline Identification *The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.*				
B.3.1. What possible baseline scenarios have been considered? (EB 55 Annex 1, §§ 67(b), 83) *Fill in all alternatives in table A-2.*	*Description:* The baseline scenario of this project activity was developed through the identification of alternative scenarios and barrier analysis. Six alternatives were identified: the use of coal, the replacement of coal with natural gas, diesel, HFO, renewable biomass or electricity. The elimination of alternatives was based on identification of barriers. *Justification of evidences:* By means of PDD and applied methodology.	/PDD/ /METH/	~~CAR B3~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
	Conclusion: However evidences for the justification of the barrier and elimination of the alternatives are missing.The consideration of the baseline has to be justified using evidences as well as national policies that may influence the decision to implement the project. Further the project activity (the use of natural gas) is also listed as an alternative. Hence CAR B3 was raised.			
B.3.2. Is the list of alternatives complete? (EB 55 Annex 1, §§ 67(b), 83) *Describe how it was validated that all alternatives are plausible and no plausible alternative is excluded from the consideration*	☒ All plausible alternative scenarios listed in the approved methodology have been considered. In the course of document review and site visit, it has been validated that no other alternatives which supply comparable outputs and / or services are to be taken into consideration. Thus no plausible scenario has been omitted. ☐ The following alternative scenarios/options have been omitted. Corresponding CAR(s)/CL(s) has /have been issued	/PDD/ /METH/	OK	OK
B.3.3. What has been identified as the baseline scenario? (EB 55 Annex 1, §§ 81–82, 86) *Describe the chosen BL scenario, taking into consideration the technology that would be employed and / or the activities that would take place in the absence of the proposed CDM project activity.*	*Description:* The use of coal is identified as the baseline scenario. It is stated as the common practice in the host country. The continued use of coal gasifiers would have taken place in the absence of the project activity. *Justification of evidences:* By means of PDD and onsite assessement. *Conclusion:* The use of coal as the common practice in clay brick	/PDD/ /IM01/ /IM02/	~~CAR B4~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	facilities in the Host country is not evidenced. It is included in CAR B5 raised for missing documentary evidences which have to be presented for validation.			
B.3.4. Has the baseline scenario been determined according to the methodology? (EB 55 Annex 1, §§ 82, 87(e)) *Describe how it is validated that the identification of the most plausible baseline scenario is carried out in accordance with the applied methodology and applied methodological tools. Please refer to table A-2.*	For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2. ☐ The determination has been carried out as per the procedure contained in the applied methodology. ☒ The following CARs / CLs have been identified with respect to the selection of the baseline scenario:	/METH/ /PDD/ /XLS/	~~CAR B3~~ ~~CAR B4~~	OK
B.3.5. Has any plausible alternative scenario been excluded? (EB 55 Annex 1, § 83) *Describe how it is validated that no plausible alternative scenario has been excluded.*	For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2. ☒ No plausible baseline scenario has been excluded. Nevertheless see CAR B3 and CAR B5. ☐ The following plausible baseline scenarios have been excluded though no adequate justification has been provided for elimination. The following CARs / CLs have been issued:	/METH/ /PDD/	~~CAR B3~~ ~~CAR B4~~	OK
B.3.6. Is the identified baseline scenario reasonable and has the baseline scenario been determined using conservative assumptions where possible, including relevant references and sources? (EB 55 Annex 1, §§ 84–86(a)–(c)) *Describe whether the choice of the identified baseline*	☐ The baseline scenario is reasonable and has been determined using conservative assumptions where possible. Please refer to comments in table A-2 and sections B.3.2 to B.3.5 above. ☒ The following CARs / CLs have been issued because assumptions used in the baseline determination have been assessed to be not conservative Refer to CAR B3 and CAR B4	/METH/ /PDD/ /XLS/	~~CAR B3~~ ~~CAR B4~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
scenario is reasonable by validating the key assumptions, calculations and rationales used in the PDD. Describe whether these are listed, relevant and conservatively interpreted in the PDD.				
B.3.7. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations? (EB 55 Annex 1, §§ 85, 87(d)) *Describe whether the PP has shown that all relevant policies and circumstances have been identified and correctly considered in the PDD in accordance with the guidance by the Board. Pl. consider the guidance EB 22 annex 3 (regarding E+ and E- policies).*	*Description:* Section B.4 of the PDD gives a description of the baseline scenario but it does not make reference to any national and sectoral polices that may give comparative advantage to use/none use of less emission intensive technologies as required by the guidance on the consideration of national policies in baseline scenarios. *Justification of evidences:* By means of PDD and the Clarifications on the consideration of National and/or sectoral polices and circumstances in baseline scenarios version 02. *Conclusion:* Missing information on national and sectoral polices have to be provided. Refer to CAR B5.	/PDD/ /EB 22 Annex 3/	~~CAR B5~~	OK
B.3.8. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced? (EB 55 Annex 1, § 87(a)–(c)) *Describe whether the documents and sources referred to in the PDD are correctly quoted and clearly referenced.*	*Description:* The baseline scenario determination is not properly referenced. No evidences are provided. *Justification of evidences:* By means of PDD. *Conclusion:* Missing data and other evidences to substantiated the baseline scenario have to be provided. Refer to CAR B5.	/PDD/	~~CAR B5~~	OK
B.3.9. Does the PDD contain a *verifiable* description of the identified baseline scenario, including a	*Description:* Section B.4. step 2b of the PDD contains a description of the identified baseline scenario as the continued use of coal fired	/PDD/	~~CAR B5~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
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. (EB 55 Annex 1, § 86)	tunnel kilns. *Justification of evidences:* By means of PDD evidences are not stated in the PDD. *Conclusion:* Missing evidences have to be provided. Refer to CAR B5.			
B.4. Additionality Determination *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*				
B.4.1. Methodology				
B.4.1.1. Does the PDD describe how the project is additional and does the additionality justification follow the requirements of the applied methodology and/or methodological tools? (EB 55 Annex 1, §§ 67(d), 94–95) *Describe how it is validated that additionality justification is carried out in accordance with the applied methodology and/or applied methodological tools. Further focus your assessment on the reliability and credibility of data, rationales and assumptions, justifications and documentations provided by the PP.*	*Description:* The tool for demonstration and assessment of additionality (Version 05.2) was used. Investment analysis was not conducted. Barrier analysis: investment barrier, technology barrier, prevailing practice barrier and market barrier were listed and discussed. The same approach in baseline and in additionality was used. However some of the assumptions do not explain why the presented barrier would prevent the implementation of the project activity without the additional revenue. The project activity also increases energy efficiency and may be attractive without additional revenue. *Justification of evidences:* By means of PDD, Tool for the	/PDD/ /TA/	~~CAR B4~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	demonstration and assessment of additionality (ver 05.2). *Conclusion:* A clear explanation of how the barriers identified prevent the implementation of the project activity and how the CDM components makes it additional has to be provided. The demonstration of additonality should be further substantiated and an NPV (simple cost analysis) calculation of all alternatives which are consistent with related laws and regulations should be included and related spreadsheet should be provided.			
B.4.2. Consideration of CDM before project start				
B.4.2.1. Is the project starting date reported in accordance with the CDM glossary of terms? (EB 55 Annex 1, § 104(a)) *Assess why the chosen starting date can be considered as the earliest date at which either the implementation or construction or real action of a project has begun or will begin.* *Check that no other activities related to the project that happened before the identified start date can be considered as start date. In this context please also take into consideration infrastructural expenses if they are relevant (in terms of costs and importance for the project implementation) in the specific context of the project activity.*	*Description:* Section C.1.1 of the PDD gives details related to payment for the extension of the Sasol Pipeline done on 30/06/2007 as the starting date of the project activity. The starting date of the project activity is in accordance to the CDM glossary of terms, which states that "*the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins....shall be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity."* However no evidences for the chosen project starting date were provided. *Justification of evidences:* By means of PDD, CDM glossary of terms and onsite document assessment. *Conclusion:* Documentary evidences to support the starting date have to be provided.	/PDD/ /GLOS/	~~CAR B6~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.4.2.2. In case the project start date is on or after 2nd August 2008 has the PP informed the DNA and UNFCCC about the intension to seek CDM status? (EB 55 Annex 1, §§ 99–101) *Describe whether such a notification has been provided by the project participants within six months of the project activity start date; if NOT it shall be determined that the CDM was not seriously considered.*	*Description:* N/A - The start date is before 2nd August 2008 *Justification of evidences:* *Conclusion:*	/PDD/ /GLOS/ /NG/	~~CAR B6~~	OK
B.4.2.3. In case the project start date is before commencing of validation and 2nd August 2008, was the incentive from the CDM seriously considered and are details given in the PDD? (EB 55 Annex 1, §§ 100, 102) *Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.*	*Description:* The PDD under "Prior consideration" subtitle, contains a quote from the Board Minutes with evidence that the PP considered the contribution of CDM revenues to project cost reduction in the decision to start the conversion. However the following inconsistences were identified: 1. The start of project implementation is stated in Section A.2 of PDD as January 2007 whereas the Board meeting regarding decision to proceed with the project was in March 2007 (CAR B7). 2. Further, the table highlighting project milestones indicates that plans of pipeline feasibility study were considered in November 2005. Futhermore, the milestone list should include the date for Global stakeholder consultation (CAR B8). *Justification of evidences:* By means of PDD and Corobrik (Pty) Ltd	/PDD/ /BM/ /PRIOR/	~~CAR B7~~ ~~CAR B8~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	Board minutes. *Conclusion:* The PDD has to be improved accordingly.			
B.4.2.4. How and when was the decision to proceed with the project taken? *Describe the steps taken to validate the starting date.*	*Description:* The decision to proceed with the project was taken by the Board of Corobrik (Pty) Ltd in March 2007. The minutes of the Board meeting were presented to the validation team. However Section A.2 states that the implementation of the project started in January 2007. *Justification of evidences:* By means of PDD and Corobrik (Pty) Ltd Board minutes. *Conclusion:* Hence CAR B7 was raised.	/PDD/ /BM/	~~CAR B7~~	OK
B.4.2.5. Is the project start date consistent with the available evidences? (EB 55 Annex 1, § 102) *Describe the evidence assessed regarding the prior consideration of the CDM (if necessary). Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.*	*Description:* Refer to B.4.2.1 *Justification of evidences:* *Conclusion:*	/PDD/	~~CAR B6~~	OK
B.4.2.6. Was the decision to proceed with the project taken by a person which has the	*Description:* The decision to proceed with the project was taken by the Corobrik (Pty) Ltd.	/PDD/ /BM/	OK	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
authority to do so? (EB 55 Annex 1, § 102(a) *Describe the steps taken to validate this issue.*	*Justification of evidences:* By means of PDD and Corobrik (Pty) Ltd Board minutes. *Conclusion:* The Board is a decision making authority at Corobrik (Pty) Ltd.			
B.4.2.7. How was the CDM involved in the decision making process? (EB 55 Annex 1, § 102) *Describe why CDM was a decisive factor in the decision making process.*	*Description:* The Corobrik (Pty) Ltd Board meeting of 28 March 2007 made the decision to proceed with the after determining that estimated CDM revenue would bring down the cost of the coal to gas convention from R 11.1 million to R 5.1 million. *Justification of evidences:* By means of PDD and Board minutes. *Conclusion:* The validation team determined that evidence presented prove that CDM was a decisive factor for the project to proceed.	/PDD/ /BM/	OK	OK
B.4.2.8. Do the evidences provided doubtlessly prove that continuous and real actions were taken in order to secure the CDM status? (EB 55 Annex 1, § 102; EB 49 Annex 22 § 7)	*Description:* The table of milestones presented in the PDD under "Prior Consideration" subtitle outlines actions taken to secure CDM status. However the evidence of emails referred to in the table was not presented to the validation team. *Justification of evidences:* By means of PDD.	/PDD/	~~CAR B5~~ ~~CAR B8~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	Conclusion: The evidence of emails refered has to be presented. Refer to CAR B5 & CAR B8			
B.4.2.9. Is the gap of documented evidences to secure the CDM status less than 3 years and are the evidences relevant for substantiating the action taken, credible, reliable and complete? (EB 49 Annex 22 § 8)	*Description:* As per evidences presented to validation team and the table listing project milestones, the gap of documented evidences to secure CDM is less than 3 years although some of the evidences i.e. emails were not presented and are listed in CAR B5 for missing documents. *Justification of evidences:* By means of Board meeting minutes, and PDD. *Conclusion:* The validation team determined that the evidences relevant for substantiating actions taken to secure CDM were credible. Nevertheless see CAR B5	/PDD/ /BM/	~~CAR B5~~	OK
B.4.2.10. Did implementation of the project ceased after its commencement and did implementation recommence after consideration of the CDM? (EB 62 Annex 5, § 7) *Describe the reasons for ceasing the project and explain why the incentive from CDM was necessary to recommence the implementation.*	*Description:* N/A – Project implementation has not ceased. *Justification of evidences:* PDD, Onsite visit, Interviews *Conclusion:* Project is in progress	/PDD/ /onsite/ /IM01/	OK	OK
B.4.2.11. Can the CDM involvement in the decision assessed as serious?	*Description:* Refer to B.4.2.9.	/PDD/ /BM/	OK	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
(EB 55 Annex 1, § 104(b)–(c)) *Describe whether or not the project would have been undertaken without the incentive of the CDM.*	*Justification of evidences:* *Conclusion:*			
B.4.3. Identification of alternatives Step 1 (in case of SSC projects pl. skip steps 1 and 2 if appropriate)				
B.4.3.1. Does the list of alternatives contain the status-quo situation, the project not undertaken as a CDM project as well as all other viable means of supplying the outputs or sevices that are to be supplied by the proposed CDM project activity? (EB 55 Annex 1, §§ 105–107) *Describe the steps taken to validate this issue on the basis of your local and sectoral knowledge.*	*Description:* List of the alternatives contains a status quo situation, i.e, the continuation of the existing scenario, as well as replacement of coal with natural gas in the project without CDM project as well as other plausible alternatives as per approved methodology. *Justification of evidences:* PDD, METH *Conclusion:* All plausible alternatives as per the approved methodology were considered by the PP. Detail assessment is given in table A-2 of this report.	/PDD/ /METH/	~~CAR B3~~	OK
B.4.3.2. Have all realistic alternatives been identified to the project? (EB 55 Annex 1, §§ 105–107) *Describe whether the list of alternatives is credible and complete. Describe how it is validated that the alternatives are realistic.*	*Description:* All realistic alternatives to the project activity are considered. *Justification of evidences:* PDD, METH *Conclusion:* All plausible alternatives as per the approved methodology were considered by the PP	/PDD/ /METH/	~~CAR B3~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.4.3.3. Do all identified alternatives comply with enforced legislations? (EB 55 Annex 1, §§ 106(c)) *Describe the steps taken to validate this issue. Refer to the legislations.*	*Description:* All alternatives comply with enforced legal and regulatory requirements. *Justification of evidences:* PDD, National Energy Regulator of South Africa, EIA *Conclusion:* Detail assessment is given in table A-2 of this report.	/PDD/ /nersa/ /EIA/	~~CAR B3~~	OK
B.4.4. Investment analysis Step 2 *In case the investment analysis as per step 2 is chosen to justify the additionality Annex 3 "Assessment of Financial Parameters" has to be used to provide additonal details of the the calculation parameters..*				
B.4.4.1. Does the PDD provide evidence that the project would not be the most economically or financially attractive alternative or economically / financially feasable without the revenues from the sale of CERs? (EB 55 Annex 1, § 108)	*Description:* The PDD provides evidence to the effect that the project activity is not financially attractive without CER revenues *Justification of evidences:* Excel worksheet providing the detailed computation of levelised cost, Annex 5, EB 62 and Annex 1, EB 55 *Conclusion:* Evidence to the effect that the project activity is not financially attractive has been provided.	/PDD/ /XLS/	~~CAR B5~~	OK
B.4.4.2. Is an appropriate analysis method chosen for the project (simple cost analysis,	*Description:* Investment comparison analysis using NPV as financial indicator was appropriately used for comparison of the	/PDD/	CAR	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
investment comparison analysis or benchmark analysis)? (EB 55 Annex 1, § 108; EB 39 Annex 10) *Describe why the selected analysis method is appropriate under consideration of potential revenues and costs, potential project alternatives and potential available benchmark values.*	project alternatives *Justification of evidences:* Excel worksheet, providing detailed computation of cost, Annex 5, EB 62 and Annex 1, EB 55 *Conclusion:* Investment comparison analysis is considered appropriate for this project, in line with the additionality tool	/XLS/		
B.4.4.3. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation? (EB 55 Annex 1, § 110; EB 51, Annex 58, §8) *Describe the steps taken to validate this issue.*	☒ Yes, a clear, viewable and unprotected Excel spreadsheet is available. ☐ No, a respective Excel spreadsheet needs to be made available for investment calculation. In this context the following additional findings have been identified: N/A	/XLS/	OK	OK
B.4.4.4. Does the period chosen for the investment analysis reflect the technical lifetime of the project activity or in case a shorter period is chosen, is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 3 – 4) *Describe how the technical lifetime / period chosen for calculating financial parameter(s) is reviewed and which documents were utilised in the course of review. Describe*	*Description:* The period chosen for investment analysis is 10 years which is shorter than expected lifetime of the gasifiers. Gasifier technical lifetime as per expert opinion is indefinite[/26/] 'if maintained in a reasonable manner' *Justification of evidences:* the PDD and NPV calculations have been checked as well as Expert opinion on equipment lifetime. *Conclusion:* Financial analysis has been carried out for 10 years, nd a reasonable fair value considered in the final year for each case as per guidelines.	/PDD/ /XLS/ /INVA/ /OP/	~~CAR B5~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
furthermore the approach used to check the inclusion of a potential fair value.				
B.4.4.5. Is the (remaining) technical lifetime of existing or project equipment defined in accordance with the guidance of the *Tool to determine the remaining lifetime of equipment*? (EB 50 Annex 15)	*Description:* the remaining technical lifetime of existing or project equipment is defined in accordance with the guidance of the Tool to determine the remaining lifetime of equipment *Justification of evidences:* Lifetime of Equipment Expert Opinion *Conclusion:*Complies with EB 50, Annex 15 Section II (b)	/PDD/ /INVA/	~~CAR B5~~	OK
B.4.4.6. Is the fair value calculated in accordance with local accounting regulations (where available) or international best practice? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 4) *State the accounting regulations applied for calculating the fair value and describe why these are applicable under the project specific circumstances. Describe potential mismatches between regulations and the approach applied for calculating the fair value.*	*Description:* Depreciation has not been considered in the NV calculations. Nonetheless, the fair value calculated in s accordance with international best practice. The fair value of the decommissioned gasifier is determined by computing the amount of steel recovered and the price less the estimated demolition costs, adjusted for expected annual inflation. *Justification of evidences:* Document 37 (Demolishing of gas producers), NPV calculations *Conclusion:* The fair value is calculated from the estimates of the decommissioned gasifiers. Since the project scenario does not included gasifiers, the fair value of the demolished gasifiers was added at the end for the project case as revenue	/DEM/ /XLS/	OK	OK
B.4.4.7. Is the book value as well as the	*Description:* See B.4.4.6 above	/DEM/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
expectation of the potential profit or loss included in the fair value calculation? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 4)	*Justification of evidences:* *Conclusion:*	/XLS/		
B.4.4.8. Are depreciation and other non-cash related items only considered in the tax calculation and not as cash outflow? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 5)	*Description:* Depreciation is not considered in the calculation of the NPV. However, the fair value of the decommissioned gasifiers is added at the end of assumed project life. Hence, the value of the steel at end of life. NPV is considered only for pre-tax comparisons. *Justification of evidences:* Investment analysis calculations *Conclusion:* Taxation is excluded in the calculation of NPV	/DEM/ /XLS/	OK	OK
B.4.4.9. Is taxation excluded in the investment analysis or is the benchmark intended for post tax comparisons? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 5)	*Description:* Taxation is excluded in the calculation of NPV as investment analysis is a pre-tax comparison. *Justification of evidences:* Investment analysis calculations (XLS) *Conclusion:* Taxation is excluded in the calculation of NPV	/PDD/ /XLS/	OK	OK
B.4.4.10. Were the input values used in the investment analysis valid and applicable at the time of the investment decision? (EB 55 Annex 1, § 109,112; EB 62 Annex 5, § 6) *In case the basis for input values is a Feasibility Study Report (FSR) describe how it has been ensured that the period in time between the finalisation of the FSR and the investment decision is sufficiently short so that it is unlikely that input values would have*	*Description:* Input values used in the investment analysis were based on historical data realized as well as prevailing conditions at the time of investment decision. For a detailed assessment of the input values, please consult Annex 3. *Justification of evidences:* PDD, XLS	/PDD/ /XLS/	~~CAR B4~~ ~~CAR B5~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
materially changed. Further confirm the consistency of values in FSR and PDD.	*Conclusion:* Since the investment decision was taken in March 2007, the input values were valid at the time of investment decision. For a detailed analysis, please see Annex 3 of this report.			
B.4.4.11. Is the plant load factor (PLF) chosen in a conservative manner, taking into account that the PLF may be different in the framework of demonstrating additionality and calculating the ex-ante ER? (EB 48, Annex 11)	*Description:* Not Applicable *Justification of evidences:* *Conclusion:*	/PDD/	OK	OK
B.4.4.12. In case of project IRR: Are the costs of financing expenditures (loan repayments and interests) excluded from the calculation of project IRR? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 9)	☒ N/A ☐ Yes, the costs of financing expenditures have been included. ☐ No, this requirement is not met. In this context the following additional findings have been identified: N/A	/XLS/ /PDD/	OK	OK
B.4.4.13. In cases where a post-tax benchmark is applied please ensure that actual interest payable is taken into account in the calculation of income tax. (EB 62 Annex 5, § 11) *As per the guidance it is recommended to select a pre tax benchmark in order to Describe the steps taken in assessing this requirment.*	☒ N/A ☐ Yes, the interest has been taken into account. ☐ No, this requirement is not met. In this context the following additional findings have been identified: N/A	/XLS/ /PDD/	OK	OK
B.4.4.14. In case of equity IRR: Is the part of the	☒ N/A	/XLS/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
investment costs, which is financed by equity considered as net cash outflow and is the part financed by debt excluded in net cash outflow? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 10)	☐ Yes, in- and outflows have been considered correctly. ☐ No, this requirement is not met. In this context the following additional findings have been identified: N/A	/PDD/		
B.4.4.15. Is the type of benchmark chosen appropriate for the type of IRR calculated (e.g. local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR)? (EB 55 Annex 1, § 111; EB 62 Annex 5, §§12 – 15) *In case risk premiums are applied precisely describe its suitability to reflect the risks associated with the project activity, considering the project type and market situation.*	*Description:* N/A *Justification of evidences:* *Conclusion:*		OK	OK
B.4.4.16. Is the benchmark value suitable for the project activity and is it reasonable to assume that no investment would be made at a rate of a lower return than the benchmark? (EB 55 Annex 1, § 109; EB 62 Annex 5, §§13 – 15) *Describe whether it is reasonable to assume that a lower rate of return would consequently result in the baseline scenario.*	*Description:* N/A *Justification of evidences:* *Conclusion:*		OK	OK
B.4.4.17. Is it ensured that the project cannot be	*Description:* N/A		OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
developed by other developers than the PP? (EB 55 Annex 1 § 109; EB 62 Annex 5, §§ 13 – 14) *Describe why the benchmark does not include the subjective profitability expectations or risk profile of the project developer. If applicable assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects.*	*Justification of evidences:* *Conclusion:*			
B.4.4.18. Was the benchmark consistently used in the past for similar projects with similar risks? (EB 55 Annex 1, § 112(c))	*Description:* N/A *Justification of evidences:* *Conclusion:*		OK	OK
B.4.4.19. Does the PDD and related spreadsheets contain a sensitivity analyis and does the same contain variation of parameters which may vary throughout the project lifetime, (EB 55 Annex 1, §§ 109–110(e); EB 62 Annex 5, § 17–18) *Describe relevance of parameters used in the sensitivity analysis as well as their likeliness to vary during the project's lifetime. Parameters which are fixed on the basis of contracts, PPAs etc. may not be subject to variation and not adequate.*	*Description:* Section B.5 of the PDD contains investment cost sensitivity analysis, and price sensitivity analysis for all fuel alternatives to the baseline scenario. Price of fuel is based on fuel cost escalation of 4.5% as conservatively derived in the host country. *Justification of evidences:* PDD, and Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1, EB 55 *Conclusion:* Please refer to Annex 3 of this report for further details.	/PDD/	OK	OK
B.4.4.20. Were only variables that constitute more	*Description:* No. Investment cost and fuel cost variables were	/PDD/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
than 20% of either total project costs or total project revenues subjected to reasonable variation? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 17)	determined to constitute more that 20% of *Justification of evidences:* Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1, EB 55 *Conclusion:*	/XLS/		
B.4.4.21. Have parameters, constituting less than 20% of total project costs or revenues, been identified with potential material impact on the financial parameter? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 17) *Describe whether those parameters are considered in the sensitivity analysis?*	*Description:* Variable that constitute less than 20% of total project cost were also subjected to reasonable variation *Justification of evidences:* Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1, EB 55 *Conclusion:* Fuel costs have also been subjected to sensitivity analysis.	/XLS/ /PDD/	OK	OK
B.4.4.22. Is the range of variation reasonable in the specific context of the project activity, taking into consideration historic trends in the business sector? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 18) *Describe whether the range of variation is appropriate with focus on historic developments, e.g. price of oil / labour etc., energy potential in the region in question.*	*Description:* Range of variation (20%) considered is reasonable for the project activity considering the historic trends *Justification of evidence*: Excel worksheet providing detailed calculations of investment comparison analysis, Annex 5, EB 62 and Annex 1, EB 55 *Conclusion:* The variation considered is appropriate for the business sector.	/PDD/ /XLS/	OK	OK
B.4.5. **Barrier analysis Step 3 or SSC additionality assessment**				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.4.5.1. Are there any barriers given which have a clear and direct impact on the financial returns of the project? (EB 55 Annex 1, §§ 115, 134, 137) *In case of LSC projects those issues cannot be considered as barriers and shall be assessed in the investment analysis. In case of SSC projects the same fundamentals as for LSC projects shall apply, i.e. the assessment of the investment barrier according to EB 62 Annex 5.*	*Description:* Barrier analysis has not been used to demonstrate additionality. Instead, investment comparison analysis is used *Justification of evidences:* PDD and Excel calculations *Conclusion:* There are no barriers which have a clear and direct impact on the financial returns of the project.	/PDD/ /XLS/	~~CAR B4~~	OK
B.4.5.2. Are the barriers described risk related (e.g technology failure, other performance related risks)? (EB 55 Annex 1, §§ 116, 134, 137) *Are there other barriers or barriers due to prevailing practice existent which would have led to higher emissions?*	*Description:* Six alternative scenarios to the project activity were identified and described in the PDD. Risk related to investment, supplier/technology and related to the management practices were described. Issues related to contractual risk were presented as technological barrier. *Justification of evidences:* By means of PDD and onsite assessment. *Conclusion:* No precise and plausible technology barrier was presented. Investment and prevailing practice barrier were not evidenced. Determine, justify and provide clear evidences for the presented barriers.	/PDD/ /IM01/ /IM02/	~~CAR B3~~ ~~CAR B4~~	OK
B.4.5.3. Has the unavailabilty of means of finance for the proejct been described and adequately substantiated? Do evidences	*Description:* The unavailability of means of finance for the project are not adequately described in the PDD.	/PDD/	~~CAR B4~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
doubtlessly prove that the financing of the project was assured only due to the benefit of the CDM? (EB 55 Annex 1, §§ 116, 137, EB 50 Annex 13, § 9)	*Justification of evidences:* By means of PDD. *Conclusion:* Refer to CAR B4			
B.4.5.4. How is it justified and evidenced that the barriers given in the PDD are real? (EB 55 Annex 1, § 116(a))	*Description:* Refer to B.4.1.1. *Justification of evidences:* *Conclusion:*		~~CAR B3~~	OK
B.4.5.5. How is it justified that one or a set of real barriers prevent(s) the implementation of the project activity and do not prevent the implementation of at least one of the alternatives? (EB 55 Annex 1, § 116(b))	*Description:* Refer to B.4.1.1 *Justification of evidences:* *Conclusion:*	/PDD/	~~CAR B3~~	OK
B.4.5.6. Does the review of relevant background information on the nature of the company(ies) and entitiy(ies) involved in the financing and implementation of the project sufficiently justify that the barriers related to the lack of access to capital, technologies and skilled labour are real? (EB 50 Annex 13, § 4)	*Description:* Corobrik was established in Durban in 1902. It is the largest manufacturer, distributor and exporter of bricks and allied building products in Africa. Corobrik owns factories in Avoca, Driefontein, Glencoe, Lawley, Midrand, Odendaalsrus, Phesantekraal, Polokwane, Rietvlei, Springs and Witbank and employs over two thousand people countrywide. Following barriers were identified: • Investment barrier,	/PDD/	~~CAR B5~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
	The conversion from coal to natural gas is cost intensive and can lead to production losses during the conversion. • Technological barrier, Especially the construction of pipeline for natural gas was described as a technological barrier. • Prevailing practice, The common practice in the brick manufacturing in South Africa is the use of coal. *Justification of evidences:* By the means of PDD and technical expertise. *Conclusion:* Following evidences has to be provided. • Gas contract • Contract with Sasol on NG investment • Evidence on common practice for coal use in brick factories to satisfy energy demand • Statement by association of brick companies on common use of coal, diesel, HFO, biomass and electricity to satisfy their energy demand (References for table "Alternative scenarios" in section B.4 should be provided and indicated)			
B.4.5.7. Has it been demonstrated in an objective	*Description:* Refer to B.4.1.1.		~~CAR~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
way how the CDM alleviates each of the identified barriers to a level that the project is not prevented anymore from occurring by any of the barriers? (EB 50 Annex 13, § 5)	*Justification of evidences:* *Conclusion:*		~~B3~~	
B.4.5.8. Would provision of additional financial means lead to the mitigation of the barrier(s) demonstrated? (EB 50 Annex 13, § 7) *Describe why provision of additional financial means would not lead to mitigation of the barrier(s) demonstrated and hence analysing the project's additionality within the framework of an investment analysis is inappropriate. .*	*Description:* Refer to B.4.1.1. *Justification of evidences:* *Conclusion:*		~~CAR B3~~	OK
B.4.6. Common practice analysis Step 4 (in case of SSC projects skip this step)				
B.4.6.1. Is the defined region for the common practice analysis appropriate for the technology/industry type? (EB 55 Annex 1, § 120(a)) *Describe why the project activity is not common practice in a transparent and unambiguous manner. If a region other than the entire host country is chosen, describe why this region is more appropriate.*	*Description:* The project activity is not common in South Africa. The majority of brick factories use coal for firing kilns. This is confirmed through a letter from the Claybrick Association stating that only about 6 out of all factories are firing on gas or heavy fuel oil. The clay brick association represents 80% of the 135 brick factories in South Africa, hence deemed representative. *Justification of evidences:* PDD ver 5 and Letter from Claybrick Association	/PDD/ /COMP/	~~CAR B4~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	Conclusion: CAR B4 was raised and closed			
B.4.6.2. To what extent similar projects have been undertaken in the relevant region? (EB 55 Annex 1, § 120(b))	*Description:* The letter from Claybrick Association confirms that only about 6 (4.4%) of the 135 brick factories in South Africa fire their kilns using natural gas. *Justification of evidences:* PDD and Letter from Claybrick Association *Conclusion:* CAR B4 was raised and successfully closed	/PDD/ /COMP/	~~CAR B4~~	OK
B.4.6.3. In case similar projects are identified, are there any key differences between the proposed project and existing or ongoing projects and what kind of differences are observed? (EB 55 Annex 1, § 120(c))	*Description:* The Lawley fuel switch was registered by the same PP in 6 March 2006 and was the first project in South Africa to receive carbon credits (13 June 2008) *Justification of evidences:* PDD and UNFCC website *Conclusion:* There are no any key differences between the two projects.	/PDD/ /UNFCCC/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.5. Ex-Ante Calculation of GHG Emission Reductions *It is assessed whether the ex-ante calculations of project emissions, baseline emissions, leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified. Furthermore calculation of emission reductions shall be assessed.*				
B.5.1. Are the equations applied correctly according to the applied approved methodology? (EB 55 Annex 1, §§ 67(c), 89–90, 92) *Describe clearly the steps taken to assess whether the methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions. Further take into consideration that all estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.*	☐ The equations applied for calculation are correctly applied according to the approved methodology. ☒ The following mistakes have been identified in this context: *Description:* The applied methodology equations are used in the PDD as follows for baseline emission: $BE_y = EF_{BSL} \times Q_{PJ,y}$ for Projection emission: $PE = FC_y \times EF_{CO2} \times NCV$; and for Emission Reduction: $ER = BE_y - PE_y$. Monthly historical data for coal, tar and duff in the emissions reduction calculation was used.However some of the data for coal used in the calculation are different from the original hand written records. No original data for tar and duff for the years 2005, 2006 and 2007 were presented during the onsite visit. Additional some of the data used in the calculation couldn't be found on the presented invoices. *Justification of evidences:* By means of PDD, methodology and	/PDD/ /METH/ /IM01/ /IM02/ /INV/	~~CAR B9~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	onsite document review. *Conclusion:* The origin of data for tar and duff used in the emissions reduction calculation has to be provided to the DOE. The historical data for coal consumption used in the calculation has to be corrected and the proof of evidences has to be provided to DOE.			
B.5.2. In case the methodology allows for different methodological choices, are the equations applied properly justified and have they been used reflecting the other methodological choices (i.e. baseline identification)? (EB 55 Annex 1, §§ 90–91) *Assess the correct selection and application of methodological choices. Describe whether proper justification has been provided (based on the choice of the baseline scenario, context of the project activity and other evidence provided) and whether the correct equations have been used reflecting the relevant methodological choices.*	*Description:* N/A – the methodology does not allow for different methodological choices *Justification of evidences:* AMS III.B ver 14 *Conclusion:* Complies with requirements	/METH/	OK	OK
B.5.3. Have conservative assumptions been used when calculating the project emissions? (EB 55 Annex 1, §§ 90–91) *Describe clearly the steps taken to assess whether all the assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.*	*Description:* Projection emission: PE = FC_y x EF_{CO2} x *NCV*. The following parameter were used in the calculation of project emissions: **FC_y** Amount of fossil fuel (natural gas) consumed for captive energy generation in the project activity in year y. Data from Sasol invoices are used. **EF_{CO2}** CO_2 emission factor for fossil fuel (natural gas) used in the	/PDD/ /METH/ /INV/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	project case from IPCC. **NCV** Net calorific value for the fossil fuel (natural gas) used in the project case from Sasol invoices. *Justification of evidences:* By the means of PDD, approved methodology and *Conclusion:* The data used in the calculation of project emission was assessed as correct and conservative.			
B.5.4. Does the implementation of the project activity lead to GHG emissions within the project boundary which are expected to contribute more than 1% of the overall expected average annual emission reductions, which are not addressed by the methodology? (EB 55 Annex 1, § 77)	*Description:* The major activity in the implementation of the project activity involves the installation of the gas pipeline. It is not expected to contribute emissions that are more than 1% of ER. *Justification of evidences:* By means of PDD, methodology and onsite assessment. *Conclusion:* Project implementation does not contribute emissions of more than 1% of ER.	/PDD/ /IM01/ /IM02/ /METH/	OK	OK
B.5.4.1. Has a plant load factor (PLF) been defined ex-ante and considered for determination of baseline emissions? (EB 48 Annex 11, §§ 1, 3–4) *Describe why the PLF is conservative in the framework of calculating emissions reductions and whether the PLF is the same*	*N/A*		OK	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
in the framework of demonstrating additionality by applying the investment analysis. Note, in order to be conservative in both cases the PLF may be different.				
B.5.5. Are all data sources and assumptions appropriate and parameters which remain fixed throughout the crediting period correct, applicable to the project and will lead to a conservative estimation of emission reductions? (EB 55 Annex 1, § 91) *Describe clearly the steps taken to assess whether the values used for the fixed parameters are considered reasonable, correct and applicable in the context of the project activity. Check esp. chapter 6.2 of the PDD.*	*Description:* The validation team made the following observations: CAR B10 - Section B.6.2: the comment for FC_{BSL} heat losses are not mentioned for description of energy balance. What an energy flowrate is, is not clarified; CAR B11 - Section B.6.3: not all corresponding units for all parameters are provided; CAR B12 - Section B.7.1. Q_y is not a monitored parameter but calculated hence further explanation on how Q_y is calculated should be provided in the appropriate section of the PDD; CAR B13 - The remaining lifetime of equipment is not evidenced. Further, the following missing information/errors were identified in the spreadsheet for emissions reduction calculation (CAR B14): 1. NCV and ash content of coal should be revised in accordance with the original values of the analysis. If not available the benchmark value for quality assurance should be applied for conservativeness. 2. Weighted average for relation tar and coal consumption should be used. 3. Latent heat of producer gas should be taken into account in the energy balance. 4. NCV of ash the value of crusher ash should be used as this is the actual ash leaving the gasifier as bin and stockpile ash is containing ash which is up to 30 years old. 5. Value on energy consumption for January 2008 should be calculated using the average specific energy consumption of the real data multiplied by the real brick production for this month. 6. The calculation of energy loss and energy content of	/PDD/ /METH/ /XLS/ /EB 50 Annex 15/	~~CAR B5~~ ~~CAR B10~~ ~~CAR B11~~ ~~CAR B12~~ ~~CAR B13~~ ~~CAR B14~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	producer gas should be revised and further substantiated. 7. Several inconsistencies for the input values used to calculate ER have been identified during onsite validation. Hence values and data as per original references shall be used. *8.* Source of data for producer gas sheet e.g. composition is required. *Justification of evidences:* By means of PDD, ER calculation spreadsheet and document review. *Conclusion:* The PDD has to be improved in relation to the above mentioned corrective action requests. Further, missing documents related to ER calculation listed in CAR B5 have to be presented to the DOE for validation. The remaining lifetime of equipment should further described and related evidences demonstrated in accordance with EB 50 Annex 15.			
B.5.6. Are all ex-ante calculation values for monitoring parameters (as defined as per chapter B.7.1) reasonable? (EB 55 Annex 1, § 91) *Describe clearly the steps taken to assess whether the values used for the monitoring parameters are considered reasonable, applicable and conservative in the context of the project activity*	☐ All "Values of data to be applied for the purpose of calculating expected emissions reductions" are considered to be reasonable, applicable and conservative. ☒ The following mistakes have been identified in this context: Refer to B.5.5.	/PDD/ /XLS/	~~CAR B5~~ ~~CAR B10~~ ~~CAR B11~~ ~~CAR B12~~ ~~CAR B13~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
			~~CAR B14~~	
B.5.7. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change. *Describe the steps taken to validate this issue.*	*Description:* The emission reductions are real and measurable. *Justification of evidences:* By the means of PDD, ER calculation and onsite visit. *Conclusion:* OK, nevertheless there are issues related to ER calculation. Please refer to B.5.5.	/PDD/ /XLS/	~~CAR B5~~ ~~CAR B10~~ ~~CAR B11~~ ~~CAR B12~~ ~~CAR B13~~ ~~CAR B14~~	OK
B.6. Monitoring of Emission Reductions *It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.*				
B.6.1. Are all monitoring parameters required by the applied methodology contained in the	*Description:* The Monitoring Plan in Section B.7.2. of the PDD is not in accordance with the applied methodology. It does not describe how the monitoring of the fossil fuel use (*FCy*) and output of	/PDD/ /METH/	~~CAR B15~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
monitoring plan? (EB 55 Annex 1, §§ 67(e), 121, 123(a), 124) *Assess whether all applicable parameters listed in the methodology are included in the monitoring plan.* *Pl. check further whether the selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.* *In case of different approaches can be chosen acc. to the methodology assess whether the selection of parameters is justified and correct.*	element process *i* after the project activity has been implemented (*QPJ,y*) will be done. Further, although monitoring parameters were provided in clear tabular form, some of the QA/QC are missing. *Justification of evidences:* By means of PDD, methodology and guidelines for completing CDM-SSC-PDD. The missing QA/QC should be provided *Conclusion:* The monitoring plan and the QA/QC in the PDD should be revised according to methodology and further substantiated according to SSC Guidance.		~~CAR B16~~	
B.6.2. Are the means of monitoring of all parameters contained in the monitoring plan feasible and in accordance with the requirements of the applied methodology? (EB 55 Annex 1, § 123(a)–(b), 124) *Assess whether the provided information for all parameters w.r.t.* *a) Label (name of the data / parameter)* *b) data unit* c) *description* d) *source of data*	*Description:* Refer to B.6.1. *Justification of evidences:* *Conclusion:*	/PDD/ /METH/	~~CAR B15~~ ~~CAR B16~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
e) *measurement equipment / method / procedure* f) *monitoring frequency* g) *QA/QC procedures* *are appropriately described and in compliance with the requirements of the methodology..*				
B.6.3. Have all means of implementing the monitoring plan, e.g. equations necessary for ex-post emission reduction calculation, been described clearly and in line with the methodology? (EB 55 Annex 1, §§ 123(b), 124) *Check whether all necessary equations have been provided in the PDD. Pl. consider that ex-post and ex-ante calculations might be different.* *Please consider that additional equations might be necessary to calculate auxiliary parameters.*	*Description:* All menas of implementing the monitoring plan were described. But the detailed description of the monitoring plan is missing. *Justification of evidences:* By the means of PDD. *Conclusion:* Refer to B.6.1.	/PDD/ /METH/	~~CAR B15~~ ~~CAR B16~~	OK
B.6.4. Is it likely that the monitoring arrangements described in the PDD can properly be implemented in the context of the project activity? (EB 55 Annex 1, § 124(c)) *Assess whether the described monitoring arrangements are sufficient and realistic to enable a thorough monitoring. Pl. consider also special monitoring conditions, e.g. downtimes*	*Description:* Refer to B.6.1. *Justification of evidences:* *Conclusion:*	/PDD/ /METH/	~~CAR B15~~ ~~CAR B16~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
of monitoring equipment etc.				
B.6.5. Are the QA/QC procedures appropriate sufficient to ensure the emission reductions achieved from the project activit can be reported ex-post and verified? (EB 55 Annex 1, § 124(b)) *Please consider the description given in section B.7.2. Describe which QA/QC provisions are considered. Address Quality Management System provisions, calibration and maintenance of equipment. Address further any review procedures.*	*Description:* In Section B.7.1. of the PDD, not all QA/QC procedures are stated. *Justification of evidences:* By means of PDD and methodology. *Conclusion:* The monitoring plan and Section B.7.1 have to be improved accordingly. (CAR 16)	/PDD/	~~CAR B16~~	OK
B.6.6. Are procedures identified for data management? (EB 55 Annex 1, § 124(b)) *Check whether appropriate provisions are considered for data management including responsibilities, what records to keep, storage area of records and how to process performance documentation* *Check further the data archiving provisions for the project activity and ensure that provisions are made to archive data for the whole crediting period + 2 years.*	*Description:* The monitoring management was briefly mentioned. The electronic data will be recorded and stored it the Head Office. Electronic records are kept at Driefontein facility. *Justification of evidences:* PDD and onsite assessment. *Conclusion:* The monitoring structure is not clear, see CAR B16.	/PDD/ /IM01/ /IM02/	~~CAR B16~~	OK
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the*				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
project are clearly defined.				
C.1. Is the project's starting date clearly defined and evidenced? (EB 55 Annex 1, § 99) *Check whether the starting date is correct. Apply the definition of the project starting date as per the "Glossary of CDM terms".*	*Description:* Different starting dates for the start of the project activity were given in the PDD as 2007/06/11, but not evidenced. *Justification of evidences:* By the means of PDD and onsite visit. *Conclusion:* In Section C.1.1. no evidences for the chosen starting date were provided. According to the CDM glossary of terms "the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins....shall be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity". Documentary evidence to justify start date should be provided. The start of project implementation is stated in Section A.2 of PDD as January 2007 whereas in the section C.1.1 the Jun of 2007 was given. According to the provided evidences the Board meeting regarding decision to proceed with the project was in March 2007. The PDD has to be updated accordingly (CAR B6, CAR B7).	/PDD/ /MPM/	~~CAR B6~~ ~~CAR B7~~	OK
C.2. Is the project's operational lifetime clearly defined and evidenced? *Check whether the project lifetime is correctly defined. Consider the guidance on the assessment of investment analysis (annex to the additionality tool).* *Check in case of phased implementation this has been reflected throughout the whole PDD incl. the financial*	*Description:* The provided lifetime of the project activity is unreasonable. *Justification of evidences:* By means of PDD. *Conclusion:* Proper description and proof should be provided w.r.t	/PDD/	~~CAR B13~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
assessment, if applicable.	remaining lifetime of equipment. The remaining lifetime should be demonstrated in accordance of EB50 Annex 15. Therefore revision is requested and evidence should be provided (CAR B13).			
C.3. Is the start of the crediting period clearly defined and reasonable? *Check whether the envisaged starting date of the crediting period is realistic, taking into consideration the times needed for validation and registration.*	*Description:* See section C.2. Starting date of the first crediting period is not realistic. *Justification of evidences:* By means of PDD. *Conclusion:* Section C.2.1.1. should be revised in accordance to a realistic date. CAR C1 was raised		~~CAR C1~~	OK
D. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the DOE.*				
D.1.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)? (EB 55 Annex 1, §§ 131–133) *Check the host party regulations, regarding EIA.*	*Description:* The South African Environmental Conservation Act (Act No.73 of 1989) requires an EIA to be undertaken for activities deemed to have substantial detrimental effect on the environment such as land use and transformation. *Justification of evidences:* South African Environmental Conservation Act. *Conclusion:* The EIA is required for the project activity. CAR B5	/ECA/	~~CAR B5~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
D.1.2. In case an Environmental Impact Assessment (EIA) is requested by the host party, has it been carried out and if applcable duly approved? (EB 55 Annex 1, §§ 131–133) *Check the EIA and its approval, if applicable.*	*Description:* Section D.1. states that EIA was carried out for extension of the pipeline to the project site however no evidence is presented and no information related to its approval by the host country is given. *Justification of evidences:* By means of PDD. *Conclusion:* Hence the EIA management plan and scooping and the approval of EIA were included in CAR B5 outlining missing documentary evidences.	/PDD/	~~CAR B5~~	OK
D.1.3. Has an analysis of the environmental impacts of the project activity been sufficiently described and in line with the host party environmental legislation? (EB 55 Annex 1, §§ 130–132) *Check the PDD (section D). Check whether the project will create any adverse environmental effects.* *Check the relevant national environmental legislation.*	*Description:* Refer to D.1.2. *Justification of evidences:* *Conclusion:*	/PDD/	~~CAR B5~~	OK
D.1.4. Are transboundary environmental impacts considered in the analysis? (EB 55 Annex 1, §§ 131–133) *Check the documents and local official sources / expertise regarding transboundary environmental impacts.*	*Description:* Refer to D.1.2. *Justification of evidences:* *Conclusion:*	/PDD/	~~CAR B5~~	OK
E. Stakeholder Comments				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
The DOE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.				
E.1. Have relevant local stakeholders been invited to consultation prior to the publication of the PDD? (EB 55 Annex 1, § 128) *Check by means of document review and interviews with local stakeholders if and when a local stakeholder consultation process has been carried out.*	*Description:* An advertisement introducing the project was published in English and Africans in the local newspapers. But no comments were received. The description of the project activity in the ads was made correctly. The public was invited and a period of 40 days for public comments was stated. Nevertheless the process of identification of local stakeholders was not given. *Justification of evidences:* By means of PDD and onsite assessment. *Conclusion:* Therefore it can't be clearly justify if the process of local stakeholder's consultation was conducted accordingly. A clear and total description of identification of stakeholder as per real actions taken and the whole process of consultation should be provided. CAR E1	/PDD/ /IM01/ /IM02/	~~CAR E1~~	OK
E.2. Can the local stakeholder consultation process be assessed as adequate? (EB 55 Annex 1, § 129(a)–(c)) *Describe what assessment steps have been undertaken to assess the adequacy of the stakeholder consultation process. Give a final opinion on the adequacy.*	*Description:* Refer to E.1. *Justification of evidences:* *Conclusion:*	/PDD/	~~CAR E1~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidences)	**Ref.**	**Draft Concl.**	**Final Concl.**
Please consider the following requirements in this context: *(a) Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited;* *(b) The summary of the comments received as provided in the PDD is complete;* *(c) The project participants have taken due account of any comments received and have described this process in the PDD.*				

ANNEX 2: ASSESSMENT OF BASELINE IDENTIFICATION

Table A-2: Assessment of Baseline Identification (EB 55 Annex 1 §§83 – 86)

☐	Baseline is not identified
☒	Assessment of baseline see below

Baseline Alternatives identified	Inline with the Methodology?	Eliminated	Reasons for elimination / non-elimination from list of alternatives	Evidence used	DOE Assessment	
					Appropriateness of elimination	Assessment of validation team (results and means of assessment)
The use of coal to produce gas for the energy needed for brick-firing	☒	☐	This was the pre-project scenario and hence considered the baseline scenario as per AMS III B version 15 § 15.	/clay/ /corobrik/	☐	This is the continuation of the business as usual scenario and is common practice in South Africa due to abundance of coal and technology. It is within the laws and regulations of the host country, hence, this is a plausible alternative.

ANNEX 3: ASSESSMENT OF FINANCIAL PARAMETERS

Table A-3: Assessment of Financial Parameters (EB 55 Annex 1, §§ 111, 112, 114/ in case financial parameters stem from FSR §113,)

☐	No financial parameters are used for additionality justification
☒	Assessment of all financial parameters see below

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
Inflation rate	4.5	%	www.sarb.co.za http://www.statssa.gov.za/keyindicators/CPI/CPI History_rebased.pdf	/sarb/ /Statssa/	☒	4.5% inflation rate was derived from the average of between 3-6% South African inflation rates. Sarb is the South African Reserve Bank and evokes a high level of assurance. Inflation rate was also checked from the using the Stats Online South Africa official statistics website and confirmed that at the time of investment decision (march 2007), inflation rate was at 6.1% Hence, the figure of 4.5% is conservative
Prime Lending Rate	10.5	%	www.sarb.co.za http://www.statssa.gov.za/keyindicators/CPI/CPI History_rebased.pdf	/sarb/ /Statssa/	☒	10.5% PLR was derived from South African Reserve Bank which is the Central Bank of the Republic of South Africa. Hence, evokes a high level of assurance. The PLR of 10.5% is confirmed by the Stats South Africa website which officially keeps historical economic data for the government.
Capital Cost	11,370,178	ZAR	Conversion to Natural Gas Project Cost; 11b - Cost code	/CC/	☒	Breakdown Cost estimates by Driefontein factory. Expenses summary/11b/ as well as bank transfer statement/11/ have been compared and the figures are consistent and traceable. The

☐	No financial parameters are used for additionality justification
☒	Assessment of all financial parameters see below

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
			32BS.1650 for conversion			same value is applied to the other fuel alternatives as part of capital costs. It is assumed that costs incurred for switching to any of the plausible alternative fuels are the same ignoring annual inflation. Thus, the capita cost aggregate are assessed to be conservative at the time of decision making
Maintenance during conversion	461,541	ZAR	Maintenance worksheet	/MP/	☒	Obtained from Corobrik Inhouse Maintenance report 2006 and corrected for inflation. These are **actual expenses** in 2006 and verified as authentic from the documents cost breakdown. PP assumed the same costs would be incurred in the project case as well as in the case of the other plausible alternatives.
Base Case - Coal						
Coal Consumption	29,324	Ton/p.a	Plant Records	/HISTD/	☒	Calculated average of year 2005, 2006, 2007. As the baseline is based on historical data, the value is assessed as accurate and authentic for the base case; the averages include consumption years prior to the investment decision.
Price of Coal	12.46	ZAR/GJ	Cost of coal (26-03-2007) 'Coal Analysis Report, 2004-2007'	/INVA/ /COAL/	☒	Cost of coal (26-03-2007), as obtained from internal order database - Based on calorific value of Coal obtained from 'Coal Analysis Report, 2004-2007' Cost of coal applied as at the time of investment decision and calorific values computed from average empirical data over 4 years. Based on this it is assessed as a correct approach.

☐	No financial parameters are used for additionality justification
☒	Assessment of all financial parameters see below

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
Duff Sold	1,113	Ton/p.a	Duff Supply Invoices 2005 to March 2007	/HISTD/	☒	The final value is determined through average duff sales of year 2005, 2006, 2007 as per documents presented by PP. The use of actual values including in the years prior to investment decision is accepted as representing the real situation as well as conservative in the context of the project activity.
Duff Price	35	ZAR/Ton	Duff Supply Invoices 2005 to March 2007	/HISTD/	☒	Calculated average duff sales of year 2005, 2006, 2007. Used actual values incurred by PP and includes verified values prior to 2007 hence conservative.
Tar Sold	1,411	Ton/p.a	Tar sales, March 2007	/HISTD/	☒	Tar sales for March 2007, as per invoicing in the month of decision making and hence represents actual situation
Tar Price	390	ZAR/Ton	Tar Sales, March 2007	/HISTD/	☒	Invoice raised by Corobrik to FFs Refiners dated March, 2007 at the time of decision making
Maintenance Cost (one off)	217,500	ZAR	Maintenance Invoice, 23-05-2006	/MP/	☒	Maintenance Invoice incurred from Foster Thermal dated May 2006 not adjusted for inflation or price increase by contractor.
Regular Maintenance	441,666	ZAR	In-house maintenance cost	/MP/	☒	Derived from In-house maintenance records of Corobrik factory The values used for the year 2006 are not adjusted for possible inflation as a conservative principle.
Natural Gas						
Capital Costs	36,370,178	ZAR	Calculated from the Adendum to Gas Supply Agreement and Conversion to Natural gas Project Cost.	/GASCON/ /CC/	☒	ZAR 25,000,000 derived from Addendum to Gas Supply Agreement with SASOL (also confirmed via Sasol Invoice[/45/] and ZAR 11,370,178 as assessed under general costs above. .

☐	No financial parameters are used for additionality justification
☒	Assessment of all financial parameters see below

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
Price of Natural Gas	26	ZAR/GJ	Addendum to Gas Supply Agreement with SASOL, 26-09-2006	/GASCON /	☒	Natural gas price of September, 2006 as set out by Sasol in the contract agreement is hereby applied and considered without adjustment to inflation. Assessed as correctly applied in the computations.
Cost of demolition of old gasifiers)	541,414	ZAR	Brinkman, J. (2009) Demolition of redundant gasifiers	/DEM/	☒	Quote from jet Demolition (Pty) for demolition of redundant gasifiers dated 2009/06/26. The value is applied in determining the end value of steel and assumed uniformly across all alternatives as net value of burners at end of project. PP received only two offers but opted for a higher demolition cost in return to more revenue from gasifier steel price by the same demolishers that would significantly offset the net deconstruction costs of the estimated 1000 tons of scrap steel.
Fuel Consumption	423,341	GJ	Calculated from consumption records/Sasol invoices	/XLS/ /INV/	☒	Fuel consumption has been calculated and converted using actual Sasol invoices, for 2007 and 2008, technical data and IPCCC values. Cross-checked for consistency. Represents actual quantity consumed by plant.
Net Value of burners at end of life	2,133,557	ZAR	Calculated		☒	Calculated from the steel tonnage recovered and the prevailing market price adjusted for inflation and inflation factor, less scrapping costs. This value is assumed as cash inflow conservatively at the time of investment decision-making as the same value for the recovered gasifier steel at end of life.
HFO						

☐	No financial parameters are used for additionality justification
☒	Assessment of all financial parameters see below

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
Fuel Oil Consumption	423,341	GJ	Calculated from consumption records/Sasol invoices	/XLS/ /INV/	☒	Fuel consumption has been calculated and converted using actual Sasol invoices, for 2007 and 2008, technical data and IPCCC values.. Quantity of HFO consumed assumed to be equal to quantity of natural gas consumed as per energy balance calculations,
Price of HFO	89.90	ZAR/GJ	Supply of Sasol Fuel Oil 150 (HFO 150)	/INVA/	☒	HFO price (R/l) was obtained from document Supply of Sasol Fuel Oil 150 (HFO 150) (document # 30). Average density and Lower Heating Value of HFO from the Renewable Fuels Agency - January 2008, Carbon and sustainability reporting within the renewable transport fuel obligation. Calculations can be found in Driefontein Investment Analysis.xls, sheet 'Energy Cost'
Electricity						
Electricity Consumption	117,595	MWhr	Calculated from fuel consumption per hour	/XLS/ /INV/	☒	Calculated and converted using standard Sasol invoices and technical data and IPCCC values.
Price of Electricity	66.8	ZAR/GJ	Tariffs for 2008: www.nersa.org.za Eskom's average tariff adjustment for the last	/nersa/ /eskom/	☒	Calculated using Eskom tariff adjustment for the preceding 15 years. Eskom generates, transmits and distributes 95% of electricity in South Africa hence this is correct source. The same is confirmed by the government energy regulator

☐	No financial parameters are used for additionality justification					
☒	Assessment of all financial parameters see below					
Parameter	**Value applied**	**Unit**	**Source of Information (please indicate document and page)**	**Reference**	**DOE ASSESSMENT**	
					Correctness of value applied	**Comment**
			15 years: http://www.eskom.co.za/live/content.php?ItemID=937 Calculations can be found in Driefontein Investment Analysis.xls, sheet 'Energy Cost'			NERSA.
Diesel						
Diesel Consumption	423,341	GJ	Calculated from consumption records/Sasol invoices	/XLS/ /INV/	☒	Fuel consumption has been calculated and converted using actual Sasol invoices, for 2007 and 2008, technical data and IPCCC values. Quantity of diesel consumed assumed to be equal to quantity of natural gas consumed as per energy balance calculations
Price of Diesel	151.10	ZAR/GJ	Calculated with values obtained from: - http://www.dme.gov.za/energy/historyprice07.stm http://en.wikipedia.org/wiki/Diesel_fuel	/dme/ /wiki/	☒	Diesel price (R/l) was obtained from the website of Department of Energy of South Africa http://www.dme.gov.za/energy/historyprice07.stm. Average density of diesel was obtained from http://en.wikipedia.org/wiki/Diesel_fuel. LHV from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2: Energy, Chapter 1: Introduction, Table 1.2, pg 1.18. Calculations can be found in 2011-02-21-Driefontein

☐	No financial parameters are used for additionality justification
☒	Assessment of all financial parameters see below

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						Investment Analysis.xls, sheet 'Energy Cost'
Steel from Demolished Gasifiers	1,000	Tons	Carswell, R. (2010) Demolishing of gas producers	/DEM/	☒	1,000 tons total estimated recovery of redundant gasifiers as per assessment and offer by Jet demolishers for the scrapping of the gasifiers.
Steel Cost	364,320	ZAR	Carswell, R. (2010) Demolishing of gas producers	/DEM/ /IM01/	☒	This was the higher scrapping cost from only two offers received by Corobrik. However, PP opted for Jet demolishers due to their high recovery price of ZAR 1800 per ton from the scrap steel from the gasifiers. It is however from the recalculations, the assessment team has established that the costs and revenues from steel have negligible impact on the additionality (NPV) of the project.
Steel price	2,675	ZAR/Ton	Carswell, R. (2010) Demolishing of gas producers	/DEM/	☒	R1800 tons recovery as per estimate offer by Jet demolishers for the scrapping of the gasifiers, and adjusted for inflation factor. Parameter values utilized are based on the 2010 actual values in the revised NPV calculation.

ANNEX 4: ASSESSMENT OF BARRIER ANALYSIS

Table A-4: Assessment of Barrier Analysis (EB 55 Annex 1, §118)

☒	No barrier parameters are used for additionality justification
☐	Assessment of barriers see below

Kind of Barrier (invest, tech, other)	Description of Barrier	Evidence used	Assessment of validation team	
			Appropriateness of information source	Explanation of final result
			☒	

ANNEX 5: OUTCOME OF THE GSCP

Table A-5: Outcome of the Global Stakeholder Consultation Process

(§§ 40-42, VVM Version 1.2)

☒	No comments were received during the global stakeholder consultation period
☐	Comments were received during the global stakeholder consultation period. The comments (in unedited form) and the consideration/response of the validation team are presented below:

Comment No.:	Comment by:	Inserted on:	Subject	Comment *)	Action taken by the validation team to take due account on the comment *)	Conclusion (incl. CARs CLs or FARs)

*) In case clarifications have been requested by the validation team corresponding rows shall be added

ANNEX 6: STATEMENTS OF COMPETENCE OF ALL INVOLVED PERSONNEL

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Martin Saalmann

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2013-03-31
JI	Senior Assessor Technical Reviewer	2013-03-31
VCS	Senior Assessor Technical Reviewer	2013-03-31

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable energies	1.2.4 Solar
13.1	Waste management and disposal	13.1.1 Waste management 13.1.2 Waste water management

022 – Rev. 3, Date: 2011-10-08

022_S01-F003_2011-10-08_rev3 S01-F003 rev1 / 2011-08-02

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Grzegorz Kochaniewicz

SCHEME	STATUS	VALID UNTIL
CDM Validation	Assessor	2013-11-03
VCS	Assessor	2013-11-03

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
14.1	Forestry

173 – Rev. 0, Date: 2011-03-20

173_S01-F003_2011-03-20 S01-F003 rev0 / 2010-04-19

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Stefan Winter

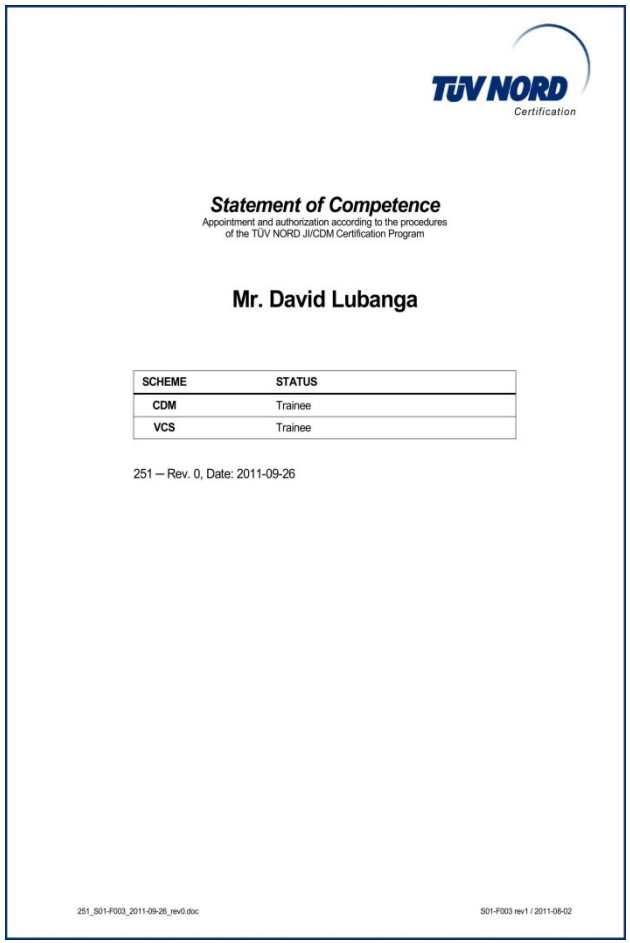
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2014-06-30
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2014-06-30

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal energy generation	
1.2	Renewable Energy	1.2.1 Hydro 1.2.2 Wind 1.2.3 Goethermal 1.2.4 Solar 1.2.5 Tidal
2.2	Heat distribution	
3.1	Energy demand	
13.1	Waste handling and disposal	13.1.1 Waste management 13.1.2 Waste water management
13.2	Animal waste management	
15.2	Animal waste management	

163 – Rev. 2, Date: 2011-08-10

163_S01-F003_2011-08-10_rev2 S01-F003 rev1 / 2011-08-02



TÜV NORD Certification

Statement of Competence

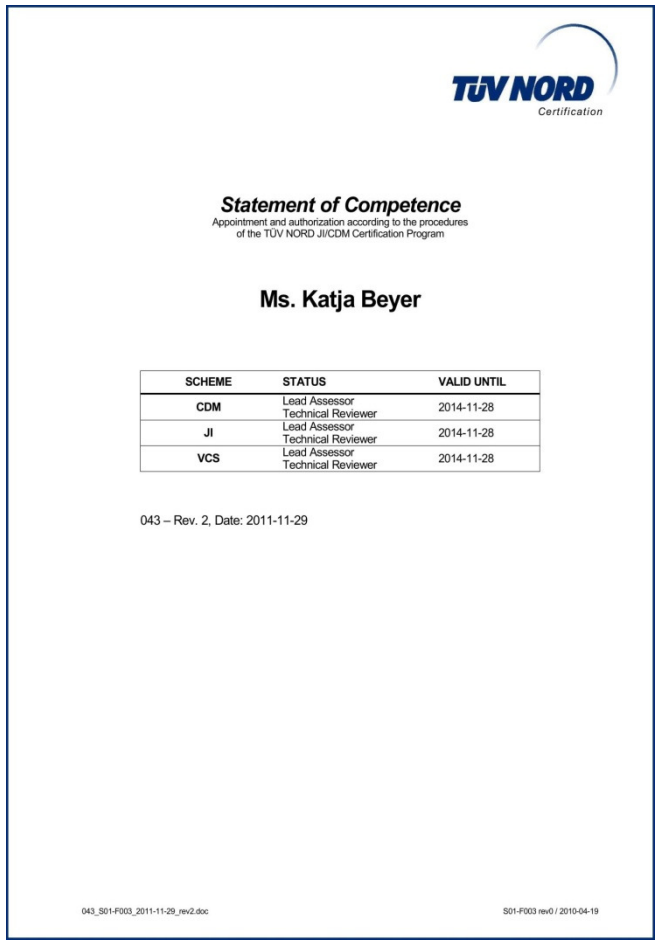
Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. David Lubanga

SCHEME	STATUS
CDM	Trainee
VCS	Trainee

251 – Rev. 0, Date: 2011-09-26

251_S01-F003_2011-09-26_rev0.doc S01-F003 rev1 / 2011-08-02



TÜV NORD Certification

Statement of Competence

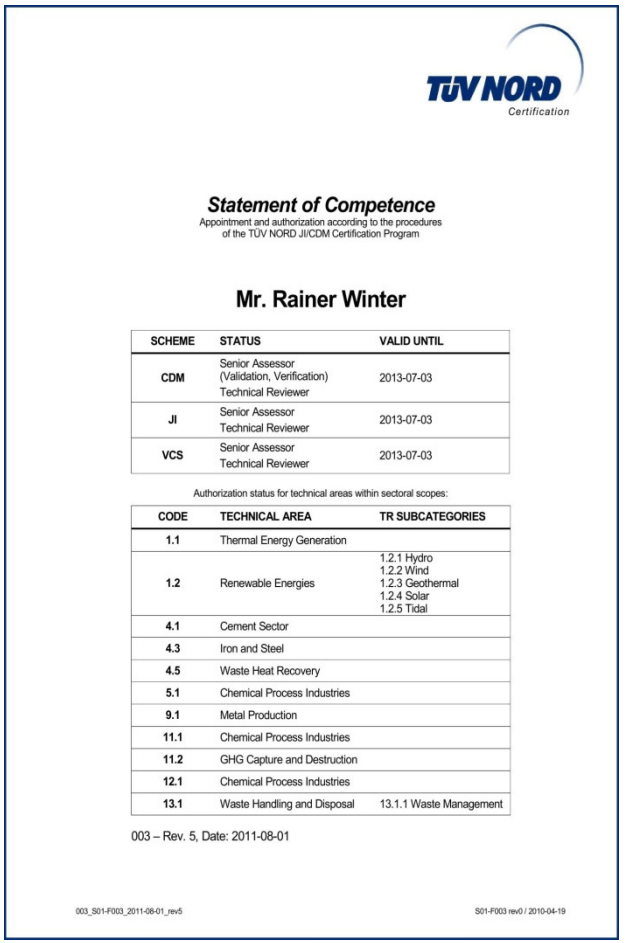
Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Ms. Katja Beyer

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor Technical Reviewer	2014-11-28
JI	Lead Assessor Technical Reviewer	2014-11-28
VCS	Lead Assessor Technical Reviewer	2014-11-28

043 – Rev. 2, Date: 2011-11-29

043_S01-F003_2011-11-29_rev2.doc S01-F003 rev0 / 2010-04-19



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Rainer Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2013-07-03
JI	Senior Assessor Technical Reviewer	2013-07-03
VCS	Senior Assessor Technical Reviewer	2013-07-03

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal Energy Generation	
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal
4.1	Cement Sector	
4.3	Iron and Steel	
4.5	Waste Heat Recovery	
5.1	Chemical Process Industries	
9.1	Metal Production	
11.1	Chemical Process Industries	
11.2	GHG Capture and Destruction	
12.1	Chemical Process Industries	
13.1	Waste Handling and Disposal	13.1.1 Waste Management

003 – Rev. 5, Date: 2011-08-01

003_S01-F003_2011-08-01_rev5 S01-F003 rev0 / 2010-04-19