



VALIDATION REPORT

Reduction in Clinker Usage in the Production of Cement Through the Increase in the Use of Additives at Lafarge Malayan Cement Berhad (LMCB)

REPORT No. 44410106

REVISION No. 01



VALIDATION REPORT

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Client: Lafarge Malayan Cement Berhad	Client ref.: Mr Mohammad Dit

Project Name: Reduction in Clinker Usage in the Production of Cement Through the Increase in the Use of Additives at Lafarge Malayan Cement Berhad (LMCB)

Country: Malaysia

Methodology: ACM0005

Version: 03

GHG reducing Measure/Technology: Reduction in clinker usage in the production of cement through the increase in the use of additives.

ER estimate: 3 729 301 tCO₂e over seven years or 532 757 tCO₂e annually.

Size

☒ Large Scale

☐ Small Scale

Validation Phases:

☐ Desk Review

☐ Follow up interviews

☒ Resolution of outstanding issues

Validation Status

☒ Corrective Actions Requested

☒ Clarifications Requested

☒ Full Approval and submission for registration

☐ Rejected

In summary, it is DNV's opinion that the "Reduction in Clinker Usage in the Production of Cement Through the Increase in the Use of Additives at Lafarge Malayan Cement Berhad (LMCB)", as described in the PDD of 4 March 2008, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0005, version 03. DNV thus requests the registration of the project as a CDM project activity.

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Report title: Reduction in Clinker Usage in the Production of Cement Through the Increase in the Use of Additives at Lafarge Malayan Cement Berhad (LMCB)		
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Key words:

Climate Change

Kyoto Protocol

Validation

Clean Development Mechanism

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Abbreviations

BC	Blended cement
BM	Build Margin
CAR	Corrective Action Request
C&CA	Cement and Concrete Association of Malaysia
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH ₄	Methane
CL	Clarification request
CM	Combined Margin
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
COD	Chemical Oxygen Demand
DNV	Det Norske Veritas
DNA	Designated National Authority
EF	Emission factor
GBFS	Granulated Blast Furnace Slag
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LMCB	Lafarge Malayan Cement Berhad
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N ₂ O	Nitrous oxide
NCV	Net Calorific Value
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OPC	Ordinary Portland Cement
PDD	Project Design Document
PFA	Pulverised Fly Ash
PPC	Pozzolanic Portland Cement
UNFCCC	United Nations Framework Convention on Climate Change



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1. EXECUTIVE SUMMARY – VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the “Reduction in Clinker Usage in the Production of Cement Through the Increase in the Use of Additives at Lafarge Malayan Cement Berhad (LMCB)” Project in Malaysia. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host Party criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The host Party is Malaysia and the Annex I Party is France. Both Parties fulfil the participation criteria and have approved the project and authorized the project participants. The project is likely to assist in achieving sustainable development of Malaysia. This has been confirmed by the DNA of Malaysia. LoA from DNA of Malaysia dated 19 September 2007 has expired, and a new LoA dated 1 July 2008 has been issued.

The project correctly applies ACM0005 “Consolidated Monitoring Methodology for Increasing the Blend in Cement Production”, version 3 dated 19 May 2006.

By reducing the clinker content for general purpose type cements, the project will result in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be on the average 532 757 tCO₂e per year over the selected 7 year crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan is in line with the approved monitoring methodology ACM0005. It makes sufficient provision for monitoring relevant project and baseline emission indicators. Detailed responsibilities and authorities for project management, monitoring and reporting and QA/QC procedures have also been envisaged.

In summary, it is DNV’s opinion that the “Reduction in Clinker Usage in the Production of Cement Through the Increase in the Use of Additives at Lafarge Malayan Cement Berhad (LMCB)” Project in Malaysia, as described in the PDD version 8 of 4 March 2008, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0005. DNV thus requests the registration of the project as a CDM project activity.



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2. INTRODUCTION

Lafarge Malayan Cement Berhad has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the “Reduction in Clinker Usage in the Production of Cement Through the Increase in the Use of Additives at Lafarge Malayan Cement Berhad (LMCB)” project in Malaysia. This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

2.1. Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

2.2. Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0005, version 3 /5/. The validation team has, based on the recommendations in the Validation and Verification Manual /4/ employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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



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3. METHODOLOGY

The validation consists of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

3.1. Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ Lafarge Malayan Cement Berhad: *“Reduction in Clinker Usage in the Production of Cement Through the Increase in the Use of Additives at Lafarge Malayan Cement Berhad (LMCB)”* version 2 dated 6 December 2006 and final version 8 dated 4 March 2008.
- /2/ Conservation and Environmental Management Division, Ministry of Natural Resources and Environment (DNA of Malaysia): *Letter of Approval dated 19 September 2007 which has expired, and new Letter of Approval dated 1 July 2008.*
- /3/ Mission Interministérielle de l’Effet de Serre (DNA of France): *Letter of Approval dated 13 November 2007, and revised Letter of Approval dated 18 October 2008*
- /4/ International Emission Trading Association (IETA) & the World Bank’s Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>
- /5/ CDM Executive Board: *“Consolidated Monitoring Methodology for Increasing the Blend in Cement Production”*, ACM0005, version 03, dated 19 May 2006.
- /6/ CDM Executive Board: *“Tool for the demonstration and assessment of additionality”*. version 4 of EB36.
- /7/ Malaysia Energy Centre : *“Study on Grid Connected Electricity Baselines in Malaysia-Year 2005”*, January 2008.
- /8/ CDM Executive Board: *“Consolidated baseline methodology for grid-connected electricity generation from renewable sources”*, ACM0002, version 06, dated 19 May 2006.
- /9/ IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (2006).
- /10/ Government of Malaysia: *“Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 1987”*.
- /11/ Cement and Concrete Association of Malaysia: *“Domestic sales & market shares for years 2004”*.
- /12/ Spreadsheet for CER calculations by LMCB.
- /13/ Malaysian Grid emission factor calculation.
- /14/ Minutes of monthly industrial meeting (MIM) dated 18 May 2006.



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- /15/ Customer complaint reports regarding the quality of blended cements.
 List of cement consumers that received free blended cement samples.
 Historical de-burdening records for Mill#4 of the Rawang Plant.
 Early strength test results for blended cements.
 PFA purchase agreements.

3.2. Follow-up Interviews with Project Stakeholders

	Date	Name	Organization	Topic
/16/	2007-03-28	Dr. Nadzri Yahya,	DNA of Malaysia	<ul style="list-style-type: none"> ➤ Common practice with regards to increasing additives in cement. ➤ Incentives in place to invest in carbon reduction technologies. ➤ Process of obtaining host country approval for CDM projects in Malaysia and the status for this project. ➤ Sustainable development priorities. ➤ Legal compliance and existing / emerging requirements. ➤ Stakeholder consultation process. ➤ Official government funding. ➤ EIA requirement for facilities.
/17/	2007-04-13	Dr Tahsin Choudhury, Mr B. Thayanathan	EcoSecurities Ltd	<ul style="list-style-type: none"> ➤ Estimated emission reductions. ➤ Assumptions in baseline determination. ➤ Stakeholder consultation process. ➤ Provisions for training, operation and maintenance. ➤ Technology applied and operational lifetime ➤ Project funding sources.
/18/	2007-04-16 to 2007-04-18	Mr Mohammad Dit, Mr Ismail Yusuf, Mr Soo	Lafarge Malayan Cement Berhad (LMCB)	<ul style="list-style-type: none"> ➤ Historical additives content in general purpose cement.



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		Thong Phor, Ms Yee Kien Ling, Mr Yap Foo Chong		<ul style="list-style-type: none"> ➤ Historical production capacities. ➤ Sources of PFA and GBFS. ➤ Monitoring, reporting and record keeping procedures. ➤ Calibration, internal audit and corrective action procedures. ➤ Provisions for training, operation and maintenance. ➤ Compliance with existing environmental regulations.
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3.3. Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues which need be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a validation protocol is customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the Reduction in Clinker Usage in the Production of Cement Through the Increase in the Use of Additives at Lafarge Malayan Cement Berhad (LMCB) Project is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- i) mistakes have been made with a direct influence on project results;
- ii) CDM and/or methodology specific requirements have not been met; or
- iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

The initial validation identified 2 corrective action requests and 6 requests for clarifications. To guarantee the transparency of the validation process, the concerns raised and responses given are documented in the validation protocol in Appendix A.



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Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities				
Requirement	Reference	Conclusion		
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK), a Corrective Action Request (CAR) of risk or non-compliance with stated requirements or a request for Clarification (CL) where further clarifications are needed.</i>		

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a corrective action request (CAR) due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.</i>

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Figure 1: Validation protocol tables



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3.4. Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3.5. Validation Team

Role/Qualification	Last Name	First Name	Country
Team leader, CDM validator	Lai	Chee Keong	Malaysia
GHG Auditor	Cheong	Tse Wei	Malaysia
GHG auditor	Muniandy	Kamala Devi	Malaysia
Sector expert	Jayaram	Santhosh	Sri Lanka
Technical Reviewer (Applicant)	Biswas	Soumik	India
Technical Reviewer (Applicant)	Brinks	Hendrik	Norway
Technical Reviewer	Telnes	Einar	Norway

The qualification of each individual validation team member is detailed in Appendix B to this report.

4. VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A. The final validation findings relate to the project design document version 8 dated 4 March 2008.

4.1. Participation Requirements

The project participants are Lafarge Malayan Cement Berhad (LMCB) of Malaysia and Lafarge S.A of France. The Parties involved, i.e. Malaysia as the host Party and the France as the participating Annex I Party, meet the requirements to participate in the CDM. Written approvals of voluntary participation from the DNA of France have been obtained/3/. Written approval from DNA of Malaysia has expired on 19 December 2007 /2/, and a new LOA dated 1 July 2008 has been issued.

4.2. Project Design

The objective of the proposed project activity is to reduce greenhouse gas emissions by increasing the use of additives in the production of general purpose cement beyond the current practices in Malaysia. There are currently two subtypes of general purpose cement, which are Ordinary Portland Cement (OPC) and Pozzolanic Portland Cement (PPC). OPC is composed of 95% clinker, while PPC is produced by increasing the proportion of additive materials such as pulverized fly ash (PFA), granulated blast furnace slag (GBFS) and limestone in the cement mix, hence reducing the clinker content of the cement.

The reduction of clinker in the general purpose cement type production will be achieved by increasing the production of PPC while reducing OPC production. PPCs with various blends



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of additives at different percentages were developed to cover the many potential applications of general purpose cement.

The project activity will be carried out at four cement plants operated by LMCB:

1. Langkawi Plant
2. Kanthan Plant
3. Rawang Plant, and
4. Pasir Gudang Plant.

Cement produced by the Langkawi plant is exported, and is thus not included in the emission reduction calculations. However, the Langkawi plant supplies 100% of the clinker required by the Pasir Gudang plant, which is only a grinding unit. PFA consumed by the project activity will be sourced from coal-fired power plants in Malaysia, while GBFS will be imported from Japan, China or South Korea.

The minutes of the meeting held on 18 May 2006 was sighted, the decision was made to engage a CDM consultant for cement blended project was seen as the decision to consider CDM /14//15/. The signing of PFA supply agreement serves as the starting date of this project, on 14 June 2006 /15/. Project has an estimated operational lifespan of 30 years. The crediting period is anticipated to start in 1 September 2008 or on the date of registration of the CDM project activity, whichever is later.

By reducing the quantity of clinker required for producing general purpose cement, the project is likely to contribute to sustainable development in Malaysia. This was confirmed by the DNA of Malaysia through its letter of approval for this project.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards the government Malaysia.

4.3. Baseline Determination

The project applies the approved baseline methodology ACM0005 “Consolidated Baseline Methodology for Increasing the Blend in Cement Production”, version 03 of 19 May 2006 /5/. The project fulfils the following conditions under which ACM0005 is applicable.

- It will not result in a shortage of additives related to the lack of blending materials. The quantity of fly ash required by the project activity is approximately 69% of the total PFA production in Malaysia. Consumption of PFA combined with other industry, only take up 80% of total PFA in Malaysia. GBFS is produced from iron slag, which is a waste material from the steel industry. It was substantiated that only 50% of iron slag in the world is converted to Granulated Blast Furnace Slag (GBFS), while the other 50% remains as waste material. This indicates that the project’s GBFS consumption will not result in a shortage of GBFS.
- The plants included in the project only supply cement to the domestic market.
- Data on cement types available in the market were obtained from the Cement and Concrete Association of Malaysia (C&CA). Audited C&CA cement production figures for 2004 were used in the baseline determination /11/.

The PDD has selected the national market as the geographical region for the baseline clinker percentage estimation. The approach of clinker content determination resulting in the lowest clinker percentage of 86.35 was by using the “mass percentage of clinker in the relevant cement type produced in the proposed project activity plant before implementation of the



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CDM project activity". The project has as required by the methodology incorporated a 2% annual increase in additives compared to the percentage of additives at the start of the project activity.

4.4. Additionality

The additionality of the project has been demonstrated using the "Tools for the demonstration and assessment of additionality" version 4 /6/.

The minutes of the meeting held on 18 May 2006 was sighted, the decision was made to engage a CDM consultant for cement blended project was seen as the decision to consider CDM /14//15/. The signing of PFA supply agreement serves as the starting date of this project, on 14 June 2006 /15/. Hence, CDM was deemed seriously considered in the decision to proceed with the project activity.

Step 1: The baseline scenarios considered in the PDD are as follows:

- 1) The project activity, an increase in the share of additive in the production of the general purpose cement type, not taken as a CDM activity,
- 2) Continuation of the current level of additive usage in the production of the general purpose cement,
- 3) Production of the general purpose cement with lower share of additives.
- 4) A switch to production of other types of cement (e.g. Portland Blast Furnace Slag Cement) to replace the general purpose cement.

Option 4 is not a likely baseline scenario as it would require import of much larger quantity of GBFS than for option 1, while producing a cement type which would not be able to substitute general purpose type in the market.

Option 3 would result in higher GHG emissions as compared to the continuation of current level of additive usage. This option is thus not considered as a baseline alternative. This is conservative.

All potential baseline scenarios comply with existing laws and regulations which have been confirmed with the DNA /16/.

Step 2: This step has not been selected.

Step 3: Barrier Analysis

Operational, technological, infrastructural, market, and prevailing practice barriers were identified and discussed in step 3 of the additionality assessment.

Operational Barriers:

The project activity will require an increase in the frequency of full de-burdening of materials in the cement mill prior to changeover to the production of a different cement subtype. De-burdening is necessary in order to avoid cross contamination of various blended cements, which would adversely affect the quality of the cement produced. Historical de-burdening records were reviewed (/15/), and it was confirmed that the frequency of de-burdening has increased compared to the baseline scenario. New standard operating procedures were also developed to reduce product contamination.

Similarly, the common cement mill feeding system had to be replaced with individual feeding systems to allow for simultaneous packaging of different PPCs. Individual feeding systems is



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necessary to reduce the likelihood of product contamination during the packaging of blended cements.

Technological Barrier:

The characteristics of existing blended cements in the country do not allow it to be used as general purpose cement under all conditions. This is because the early strength of existing blended cements are lower than that of OPC, which limits the applicability of blended cement as a general purpose cement.

Cement consumers in Malaysia are familiar with the characteristics of OPC as general purpose cement. Therefore, for blended cements to gain market acceptance as general purpose cement, LMCB had to develop blended cements with similar characteristics as OPC. This involved significant research and development works in order to develop blended cement mixes with early strength that is comparable to OPC. Early strength test results for the blended cements developed by the project activity were reviewed, and were found to be comparable to that of OPC. R&D efforts are ongoing as LMCB continues to address complaints from their customers regarding the quality of their blended cements.

Similarly, in order to improve the performance of the blended cements to be of equivalent quality as OPC, specially designed grinding aids were developed. These proprietary grinding aids were developed by LMCB in collaboration with BASF and Fosroc at a significant cost to LMCB.

Finally, a new cement testing technique is needed to be implemented for blended cements. The micro-concrete technique allows monitoring and measurement of the quality of the cements as perceived by LMCB's customers and users. This will allow LMCB to identify quality issues with blended cements that could not be detected by standard cement tests.

Infrastructure Barriers:

LMCB purchases PFA from two coal-fired power plants in Malaysia. The purchase agreement between the power plants and LMCB were reviewed, and it was confirmed that LMCB is required to pay for all of the PFA that is generated by the power plants (/15/), as the generation of PFA is dependent on the fluctuating production of the coal fired power plant. As a result of this agreement, LMCB had to invest in additional PFA buffer storage facilities in order to cater for the fluctuations in PFA generation rates. In addition, the Tanjung Bin power plant requires LMCB to transport 70% of the purchased PFA by ship. As a result, LMCB was required to invest in the construction of a jetty and storage facility at the power plant. A dedicated ship was chartered and modified in order to transport the PFA from the power plant to the Pasir Gudang Plant.

The terms of the agreement between LMCB and the coal-fired power plants poses a infrastructure barrier to the project activity

Market Barriers:

The lack of a minimum price floor for cement allows OPC to be sold at a lower price in order to compete with additive blended general purpose cement. Blended cements are not able to lower their prices to compete with OPC due to the substantial R&D costs associated with their development.

In addition, cement consumers in Malaysia have the perception that PPC is a lower quality cement compared to OPC, particularly when used as a general purpose cement. This was verified through a review of the customer complaints that were received by LMCB regarding



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their blended cements (/15/). The customers' primary complaints are related to the behavior of blended cements, and its perceived deficiencies compared to OPC.

The poor market perception of blended cement was also evident through the quantity of free blended cement samples that was given away by LMCB. The quantity of free samples that were provided by LMCB was verified through a review of the list of cement consumers which received free samples (/15/). It was also observed that most potential customers were still conducting lab/production trials and have not fully incorporated blended cements into their daily operations. This has been evident from the internal records sighted during the site visit /15/.

Barriers due to Prevailing Practice:

The production of PFA and GBFS blended cement of a similar quality as general purpose cement is not conducted by other cement manufacturers in Malaysia. Blended cements produced by the other cement manufacturers are only sold for specific applications, such as for dam construction. This demonstrates that the production of blended cement as general purpose cement is not the prevailing practice in Malaysia.

Step 4: The baseline clinker content level represent the common practice in the cement industry in Malaysia. There is only one other cement plant that produces blended cement. However the blended cement produced is of very limited application and specific purpose. The project activity, which increases the quantity of additive used in general purpose cements, is the first of its kind in Malaysia. As such, the project activity is not a common practice in Malaysia.

Sufficient justification was provided to demonstrate that technological, infrastructural, operational, market and prevailing practices barriers faced by the project are significant. Thus, the project activity cannot be considered as business-as-usual scenario and hence additional.

4.5. Monitoring

The project correctly applied the approved monitoring methodology ACM0005 "Consolidated Baseline Methodology for Increasing the Blend in Cement Production", version 3 of 19 May 2006 /5/.

4.5.1. Parameters determined ex-ante

The following data and parameters are available during the validation and will remain fixed *ex-ante* throughout the crediting period:

- CO₂ emission factors for fossil fuels (heavy fuel oil (3.126 CO₂/te) , petrol coke (3.170 CO₂/te), diesoline (3.185 CO₂/te), coal (2.668 CO₂/te) and palm kernel shells (0 CO₂/te)),
- Emission factor for grid electricity for Peninsular Malaysia which connects all the plants (0.622 CO₂/MWh),
- Fuel consumption of vehicles transporting the additives (0.213 kg fuel/km),
- Fuel consumption of ships transporting GBFS (0.546 tons/day), and
- Quantity of additives transported per vehicle (25 tonnes/vehicle trip).

The project uses 2006 IPCC default values for the emission factors of fossil fuels as local values are not available.

Fuel consumptions of vehicles have been standardized for all three plants at 4 km/liter of diesel which is deemed typical for lorries/trucks using diesel fuel. The data for fuel



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consumption of ship has been taken from the statistics from the Food and Agricultural Organization of The United Nations. These fuel consumptions are deemed conservative and acceptable.

4.5.2. Parameters monitored ex-post

The baseline and project emission parameters that are monitored *ex-post* are indicated in Section B.7.1 of the PDD. The list of parameters shown below is in line with the requirements of ACM0005, and allows for the accurate measurement of project and baseline emission sources:

1. Production of blended cement (kton) – measured ;
2. Calcination of calcium carbonate and magnesium carbonate (%)– measured;
3. Consumption of fossil fuel for clinker production (ton of fuel) – measured;
4. Quantity of clinker raw material (kton) – measured;
5. Quantity of clinker used by production by LMCB (kton) – measured;
6. Quantity of each type of fossil fuel used in the production of clinker – measured;
7. Consumption of additives (kton) – measured ;
8. Grid electricity for clinker production (MWh) – measured;
9. Grid electricity for grinding BC (MWh) – measured;
10. Share of clinker per tonne of blended cement of blended cement (Tonnes of clinker / tonne of BC) - ,measured;
11. Electricity consumption of the additive conveying system (MWh) – measured.

The monitoring of self-generated electricity has been excluded from the monitoring plan as none of the LMCB plants generate electricity on-site. Electricity for the plants is obtained solely from the national electricity distribution grid which connects all three plants. In addition, no additional electricity is required for the preparation of the PFA as it does not need to be grinded prior to blending with clinker. GBFS will be grinded together with the blended cement, and emissions generated by this process are measured by the monitoring plan.

Leakage emissions from the following sources are also included in the monitoring plan:

- Transportation of PFA from the coal-fired power plants to the project sites;
- Shipping of GBFS from suppliers in Japan to Pasir Gudang Port;
- Transportation of additives, including limestone, via conveyor systems at the project sites;
- Quantity of GBFS that is diverted from existing uses due to the project activity.

As required by the monitoring methodology, the electricity consumption of the conveyor system will be measured instead of calculated.



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No diversion of PFA is expected as LMCB was the first company to sign long term PFA purchase agreements with the power plants. Prior to the agreement, the PFA were unutilised and disposed in ash ponds. As such, the monitoring of the diversion of PFA from existing uses due to the project activity is not necessary.

The GHG indicators, monitoring methods, monitoring frequencies and equipments indicated in the monitoring plan are acceptable and will give opportunity for real measurements of achieved emission reductions.

4.5.3. Management system and quality assurance

The General Manager of the Alternative Fuels / Environment Department will be responsible for the overall project management. The measurement of all monitoring data at the plants is currently conducted daily as part of the normal cement manufacturing operations. Relevant personnel have been trained to measure and record these parameters.

Some of the procedures required for proper project management include procedures for (a) addressing erroneous data measurements, (b) handling of day-to-day records, (c) handling of emergencies situations, (d) internal review of monitoring data, and (e) corrective actions. The project proponent has indicated that these procedures will be fully developed and implemented prior to the commencement of the project activity. The procedures have since been revised accordingly.

LMCB is currently certified to ISO 9001:2000 standard, so existing procedures should be revised or independent procedures should be established to include the proposed project activity. Training will be given to relevant personnel before the commencement of the project with regard to the new procedures.

All monitoring data will be kept for at least two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

4.6. Estimate of GHG Emissions

The formulas and factors used in the project's emissions calculations are in accordance to the approved baseline methodology ACM0005, version 03 of 19 May 2006 /5/.

The calculations consider emissions resulting from:

- calcinations of limestone;
- combustion of fossil fuel for clinker production;
- electricity used for clinker production;
- electricity used for grinding of blended cement.

The emission reduction calculations are transparently presented in the calculation spreadsheets.

The data for grid emission factor calculation has been sourced from Study on the Grid Connected Electricity report carried out by the National Energy Centre (PTM) January 2008 /7/. ACM0002 Version 06 /8/ was used to calculate the grid emission factor using data from the years 2003 to 2005 and IPCC2006 /9/. The calculation has been checked (/13/), Peninsular Malaysia's EF_{OM} was calculated to be equivalent to 0.600 CO₂/MWh and EF_{BM} equivalent to 0.645 tCO₂/MWh, giving EF_{grid} of 0.622 tCO₂/MWh. The emission factor values have been evaluated and DNV was able to confirm that it is correctly calculated.



VALIDATION REPORT

The trend for increasing additives by 2% annually from the selected percentage in the base year is applied over the projected crediting period. This is in line with the historical reduction in clinker content in the national market from the year 2003 to 2005.

Leakage due to the transportation of limestone, PFA and GBFS has been incorporated into the emission reduction calculations. The transportation emissions takes into account that 70% of the PFA supplied to the Pasir Gudang Plant will be transported by ship. A conservative estimation of the electricity consumed by the additive conveyor system was included in the leakage emission calculations. Calculation of emission due to the conveyor system was estimated based on the assumption that they will be operating for 8760 hours a year, which is deemed to be conservative. This leakage emission will be measured ex-post, as required by the methodology.

The project's total emission reduction has been calculated by subtracting the project emissions and leakages from the baseline emissions. This has been calculated to be 3 729 301 tCO₂e over the first 7 years of the renewable crediting period selected by the project activity.

The projections on clinker production during the crediting period are deemed conservative, as it assumes the cement output for the plants would not increase from the year 2012 to 2015. However, actual emissions reductions achieved will be dependent on the actual PPC produced and sold in the domestic market as general purpose cement.

4.7. Environmental Impacts

Full EIA's were completed at the time of construction of the cement plants and also under go annual inspection and are granted licenses to be operated by the relevant Malaysian Authorities. EIAs are not required as these pre-existing facilities /16/. No significant environmental impacts are expected from the project activity beyond the additional consumption of fossil fuel for PFA and GBFS transportation. The increase in the quantity of fly ash used will result in greater quantity of fines handled at each plant. However, control measures are in place to minimize the impact of dust on the surrounding area.

4.8. Comments by Local Stakeholders

Representatives from local councils, schools, community leaders, NGOs, political parties and relevant government agencies were invited to comment on the project activity. Letters containing details of the project were mailed to the local stakeholders. No negative comments were received.

The local stakeholder consultation process was carried out through questionnaire survey. Positive responses were obtained from the surveys that were mailed out to the local stakeholders. Only positive responses were obtained from the local stakeholders, and the responses have been included in the PDD.

It has been confirmed during follow up interview with the DNA that although the project proponent was encouraged to perform a face-to-face consultation with the local stakeholders, no face-to-face consultation was carried out. However this has been accepted by the Malaysian DNA /16/.

The local stakeholders' comments process is deemed appropriate and in line with national requirements.



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4.9. Comments by Parties, Stakeholders and NGOs

The PDD of 9 February 2007 was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 8 March to 6 April 2007.

No comments were received.



VALIDATION REPORT

APPENDIX A

CDM VALIDATION PROTOCOL



VALIDATION REPORT

Table 1. Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

Requirement	Reference	Conclusion
About Parties		
The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2. (Table 2, Section A.3)	OK
The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a The Letters of Approval from the DNA of Malaysia and France are pending.	CAR-1 OK
The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a Confirmation from the DNA of Malaysia is pending.	CAR-1 OK
In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2 The project does not involve any public funding from an Annex I Party. The validation did not reveal any information that indicates that the project can be seen as	OK

* MoV = Means of Verification, DR= Document Review, I= Interview



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Requirement	Reference	Conclusion
	a diversion of official development assistance (ODA) funding towards Malaysia.	
Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29 The Ministry of Natural Resources and Environment is the DNA of Malaysia. Mission Interministérielle de l'Effet de Serre is the DNA of France.	OK
The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a Malaysia ratified the Kyoto Protocol on 4 September 2002. France ratified the Kyoto Protocol on 31 May 2002.	OK
The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK
About Additionality		
Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK

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Requirement	Reference	Conclusion
About forecast emission reductions and environmental impacts		
The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
For large-scale projects only		
Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
About stakeholder involvement		
Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
Other		
The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK



VALIDATION REPORT

Requirement	Reference	Conclusion
The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK



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Table 2: Requirements Checklist

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?	/1/	DR	Yes. The project is located at LMCB cement plants at the following locations: <ul style="list-style-type: none">- Rawang Plant, Selangor,- Kanthan Plant, Perak ,- Langkawi Plant, Kedah, and- Pasir Gudang Plant, Johor.		OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR I	The project's system boundaries include the clinker manufacturing process, the clinker silos, PFA blowers, cement grinding unit, clinker hopper and the conveyor system.		OK
A.2. Participation Requirements <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					

* MoV = Means of Verification, DR= Document Review, I= Interview



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CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
* MoV = Means of Verification, DR= Document Review, I= Interview						
A.2.1.	Which Parties and project participants are participating in the project?	/1/	DR	Malaysia and France are the participating Non-Annex 1 and Annex 1 parties respectively. LMCB of Malaysia and Lafarge S.A of France are the project participants.		OK
A.2.2.	Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/	DR	Letters of Approval from DNA of Malaysia and France are still pending.	CAR-1	OK
A.2.3.	Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	/1/	DR	Malaysia (Non-Annex 1 Party): - Ratified the Kyoto Protocol on 4 September 2002. - Letter of Approval from the DNA of Malaysia is pending. - The Ministry of Natural Resources and Environment is the DNA of Malaysia. France (Annex 1 Party): - Ratified the Kyoto Protocol on 31 May 2002. - Letter of Approval from the DNA of France is pending. - Mission Interministérielle de l’Effet de	CAR-1	OK

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VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				Serre is the DNA of France.		
A.2.4.	Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/	DR	The project does not involve any public funding from an Annex I Party and the validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Malaysia.		OK
A.3. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>						
A.3.1.	Does the project design engineering reflect current good practices?	/1/	DR	The project activity involves increasing the use of additive in general purpose cement production at various LMCB plants in Malaysia. The project does not involve any major changes with regards to the manufacturing technology and reflects current good practice.		OK
A.3.2.	Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used	/1/	DR	The research and development of PPC conducted by LMCB will allow for the utilization of additives beyond the current		OK

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VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
technologies in the host country?			average blend levels in Malaysia.		
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/	DR I	The project’s training and maintenance needs are similar to the needs of the existing cement plant. Provisions are in place to meet these training and maintenance needs.		OK
A.4. Contribution to Sustainable Development <i>The project’s contribution to sustainable development is assessed.</i>					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/1/	DR I	Confirmation from the DNA of Malaysia is pending.	CAR-1	OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	The project activity will reduce the quantity of fly ash that needs to be disposed, and increase the lifespan of existing limestone reserves.		OK
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					



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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/1/	DR	The project applies the approved baseline methodology ACM0005 “Consolidated methodology for increasing the blend in cement production”, version 3 dated 19 May 2006.		OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/	DR I	ACM0005 is applicable to the project activity as the project aims to increase the share of additives in the production of cement types beyond the current practice in the country. It has been demonstrated that the project activity: <ul style="list-style-type: none">- will not result in a shortage of additives related to the lack of blending materials. The quantity of fly ash required by the project activity and other cement plants in Malaysia was shown to be less than the quantity generated by coal fired power plants in Malaysia. Further elaboration is required to demonstrate that the project activity will not result in a shortage of GBFS.- The plants included in the project only supply cement to the domestic market.- Data on cement types available in the	CL4	OK



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			market were obtained from the Cement and Concrete Association of Malaysia (C&CA). The reference material for the production figures should be provided to DNV for verification. - The clinker content of blended cements from other manufacturers was determined through random sampling. However, the results from these analyses were not used in the baseline calculations. Instead, the values used in the baseline calculations are based on estimations. The clinker content determined from the analysis should be used in this calculation.		
B.2. Baseline Scenario Determination <i>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.</i>					
B.2.1. What is the baseline scenario?	/1/	DR	The baseline was determined to be the continuation of the current level of additive usage in the production of the general purpose cement.		OK
B.2.2. What other alternative scenarios have been	/1/	DR	The baseline scenarios considered by the		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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considered and why is the selected scenario the most likely one?			<p>project design are as follows:</p> <ol style="list-style-type: none">1. The project activity, an increase in the share of additive in the production of the general purpose cement type, not taken as a CDM activity,2. Continuation of the current level of additive usage in the production of the general purpose cement,3. Production of general purpose cement with lower share of additives.4. A switch to production of other types of cement (e.g. Portland Blast Furnace Slag Cement) to replace the general purpose cement. <p>Option 4 is not a likely baseline scenario as it would require the importation of large quantity of GBFS, while producing cement which would not be able to substitute general purpose cement type in the market.</p> <p>Option 3 would result in higher GHG emissions as compared to the continuation of current level of additive usage. This option is thus not considered as a baseline alternative.</p> <p>Base on Step 3 of the additionality analysis,</p>		



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			the continuation of the current level of additive usage in the production of the general purpose cement was determined to be the baseline scenario.		
B.2.3. Has the baseline scenario been determined according to the methodology?	/1/	DR	Yes. The baseline discussion and determination was conducted in accordance to ACM0005.		OK
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Yes. The baseline does not consider CH ₄ and N ₂ O as the changes in the emission of these gasses are considered negligible and are not taken into account. This is conservative. The project design has chosen the national market to establish the baseline share of clinker in the particular cement type produced.		OK
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR I	Yes. The baseline scenario has accounted for the lack of any restrictions in the quantity of additives that is allowable in cement. PPC manufactured in Malaysia must comply with the official standard MS 1227.		OK
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	Baseline was determined based on data obtained from the Cement and Concrete Association of Malaysia (C&CA). The	CL-1	OK

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			reference material for the production figures should be provided to DNV for verification. Literature sources are clearly referenced.		
B.2.7. Have the major risks to the baseline been identified?	/1/	DR	No risks to the baseline have been identified.		OK
B.3. Additionality Determination <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?	/1/	DR I	<p>The project additionality was demonstrated though the use of the latest “<i>tool for the demonstration and assessment of additionality</i>”, version 4.</p> <p>Step 0: The project does not wish to claim credits before the date of registration.</p> <p>Step 1: The alternatives to the project activity were described in Section B.2.2. The two likely alternatives are the continuation of current practices and the project activity undertaken as a non-CDM project. Both alternatives are consistent with the current laws and regulations.</p>	CAR-2	OK



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			<p>Step 3: Barrier Analysis</p> <p>Technological barriers, market barriers and barriers due to prevailing practices were identified and discussed in step 3 of the additionality assessment.</p> <p><u>Technological Barriers:</u></p> <p>The technological barriers identified in the PDD include:</p> <ul style="list-style-type: none">a. The need for installing vibrators and maintaining/calibrating a weigh feeder system. Additional explanation is required to justify this as a technological barrier, as this equipment is used in the baseline scenario for blended cement production.b. The need for careful production planning and an increase in the frequency of de-burdening. Further clarification is sought with regards to the applicability of this statement as a technological barrier.c. The need to conduct significant research and development to develop PPCs that		



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			<p>are comparable to existing general purpose cements. In the baseline scenario, the early strength of PPCs was found to be too low to allow them to be used as general purpose cements. This barrier needs to be further substantiated, as the early strength characteristics are dependent on the area of application of the concrete.</p> <p>d. The existence of an official standard on the quality for blended cement. Further clarification is requested with regards to the technological barriers faced by the project participant in complying with the SIRIM standard for PPC (MS 1227).</p> <p>e. The need to develop, manage and maintain an infrastructure for supplying the plants with additives. The technological barriers faced by the operation of the additive supply chain were not clearly described in the PDD.</p> <p><u>Market Barriers:</u></p>		



VALIDATION REPORT

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			<p>The lack of a minimum price cap for cement allows general purpose cement to be sold at a lower price in order to compete with additive blended general purpose cement. However, some high-additive cements produced by LMCB (such as Avantcrete and Phoenix) are sold as premium cements. Further justification should be presented to demonstrate that the lack of a price floor for cement in Malaysia will be a barrier to the implementation of the project activity.</p> <p><u>Barriers due to Prevailing Practice:</u></p> <p>The production of PFA and GBFS blended cement of a similar quality as general purpose cement is not conducted by other cement manufacturers in Malaysia. PPC produced by the other cement manufacturers are only sold for specific applications, such as for dam construction. This demonstrates that the project activity is not the prevailing practice in Malaysia.</p>		



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			<p>The barriers identified in step 3 are related primarily to the production and marketing of blended cements. The PDD does not clearly identify the barriers faced in increasing the production of blended cement above the baseline scenario. Relevant documents should be referenced to substantiate the claims made in the barrier analysis.</p> <p>Step 4: The project activity, which increases the quantity of clinker used in general purpose cements, is the first of its kind in Malaysia. The baseline levels represent the common practice in the industry.</p> <p>Step 5: CDM registration will generate additional revenue required for research and marketing of the new cement products. Registration will also contribute towards evidence of the commitment of LMCB's parent company to reducing GHG emissions.</p>		
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/	DR I	The assumptions related to the technological and market barriers are stated transparently. Further justification and supporting	CAR-2	OK



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			documents are should be referenced to support the assumptions made. Please refer to B.3.1.		
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR I	Further justification and supporting documents are should be referenced to support the assumptions made in the barrier analysis. Please refer to B.3.1.	CAR-2	OK
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	/1/	DR	The starting date of the project activity is 1 January 2007, which is before the date of validation. (Note: The starting date of the project has been revised to 14 June 2006, which is the date of the signing of PFA supply agreement.)		OK
C. Calculation of GHG Emissions by Source <i>It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.</i>					
C.1. Calculation of GHG Emission Reductions – Project emissions					



VALIDATION REPORT

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<i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
C.1.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Project emissions calculations were documented in accordance to ACM0005. The calculations are complete and transparent.		OK
C.1.2 Have conservative assumptions been used when calculating the project emissions?	/1/	DR I	Assumptions made in the project emissions calculations are based on historical data and LMCB’s cement production projections up to 2011. The CaO and MgO content used in the calculations were based on estimates. Historical records of these values for each plant are available and should be used in the calculations.	CL1	OK
C.1.3 Are uncertainties in the project emission estimates properly addressed?	/1/	DR I	No major uncertainties are foreseen in the project emissions calculations.		OK
C.2. Calculation of GHG Emission Reductions – Baseline emissions <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where</i>					



VALIDATION REPORT

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<i>applicable – is justified.</i>					
C.2.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Baseline emissions calculations were documented in accordance to ACM0005. The calculations are complete and transparent.		OK
C.2.2. Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	Assumptions made in the baseline emissions calculations are based on historical data, average clinker composition data and LMCB’s cement production projections up to 2011. The CaO and MgO content used in the calculations were based on estimates. Historical records of these values for each plant are available and should be used in the calculations.	CL-1	OK
C.2.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	No major uncertainties are foreseen in the baseline emissions calculations.		OK
C.3. Calculation of GHG Emission Reductions – Leakage <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
C.3.1. Are the leakage calculations documented according to the approved methodology and in a	/1/	DR	Leakage due to transportation of PFA and GBFS and the electricity consumption of the	CL-2	OK

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VALIDATION REPORT

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complete and transparent manner?			conveyor system were calculated. It was determined that a ship will be used to transport 70% of the PFA that will be supplied to the Pasir Gudang Plant. This should be reflected in the leakage calculations. In addition, emissions due to the transportation of limestone that is used as additives should also be included in the leakage emissions.		
C.3.2. Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	Conservative values were assumed for the distance between the coal fired power plants and the project sites. The operating hours for the conveyance system was conservatively assumed to be 8760 hours per year.		OK
C.3.3. Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	There are no major uncertainties regarding the leakage emission calculations.		OK
C.4.Emission Reductions <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					

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C.4.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR	The project is estimated to reduce 3 730 911 tCO _{2e} over its seven year crediting period. (This has been revised in the latest PDD dated 4 March 2008 to 3 729 301 tCO _{2e}).		OK
D. Monitoring Plan <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).</i>					
D.1. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Yes. The project applies the approved monitoring methodology ACM0005 “Consolidated methodology for increasing the blend in cement production”, version 3 dated 19 May 2006.		OK
D.1.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs	/1/	DR	The archiving period for all monitoring data was not indicated in the PDD. The project design has only specified the archiving duration for InCaO _y .	CL-3	OK

* MoV = Means of Verification, DR= Document Review, I= Interview



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
later?			All monitoring data should be kept for at least two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.		
D.2. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	The monitoring plan provides for the collection of all relevant project emissions data.		OK
D.2.2. Are the choices of project GHG indicators reasonable and conservative?	/1/	DR	Project emissions per tonne of blended cement (ton CO ₂ / ton of BC) was chosen as the GHG indicator		OK
D.2.3. Is the measurement <i>method</i> clearly stated for each GHG value to be monitored and deemed appropriate?	/1/	DR	Yes. Measurement methods are specified in the Monitoring Plan, B.7 in the PDD. However,		OK
D.2.4. Is the measurement <i>equipment</i> described and deemed appropriate?	/1/	DR	Measurement equipments are listed in the Monitoring Plan and are deemed appropriate.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview



VALIDATION REPORT

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D.2.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	The accuracy of the equipment used for the monitoring of project emissions was indicated in the project design. Procedures for addressing erroneous measurements have not been identified. The project proponent is requested to incorporate the same in the project design.	CL 4	OK
D.2.6. Is the measurement <i>interval</i> identified and deemed appropriate?	/1/	DR	Measurement intervals for the monitoring parameters are in accordance with the methodology.		OK
D.2.7. Is the <i>registration, monitoring, measurement and reporting</i> procedure defined?	/1/	DR I	The monitoring, measurement and reporting of all relevant project emission data is part of the normal operations at all LMCB plants.		OK
D.2.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR I	Calibrations of the monitoring equipment are conducted according to manufacturers' recommendations.		OK
D.2.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR I	Critical data from the cement manufacturing process is currently recorded by all plants. The record handling procedures that are in place should be modified to ensure that CDM monitoring data is kept in accordance to the requirements of the monitoring plan.	CL 4	OK

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VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.3. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	Yes. The monitoring plan provides for the collection of all relevant baseline emissions data.		OK
D.3.2. Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	The baseline is evaluated ex-post for each crediting year and the emissions due to calcinations, fossil fuel combustion and electricity consumption are considered.		OK
D.3.3. Is the measurement <i>method</i> clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	Yes. Measurement methods are specified in the Monitoring Plan, B.7 in the PDD.		OK
D.3.4. Is the measurement <i>equipment</i> described and deemed appropriate?	/1/	DR	Measurement equipments are listed in the Monitoring Plan and are deemed appropriate		OK
D.3.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	The accuracy of the equipment used for the monitoring of project emissions was indicated in the project design. Procedures for addressing erroneous measurements have not been identified. The	CL 4	OK

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VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			project proponent is requested to incorporate the same in the project design.		
D.3.6. Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/1/	DR	Measurement intervals addressed in the Monitoring Plan are in accordance with the methodology.		OK
D.3.7. Are the <i>registration, monitoring, measurement and reporting</i> procedures defined?	/1/	DR I	The monitoring, measurement and reporting of all relevant baseline emission data is part of the normal operations at all LMCB plants.		OK
D.3.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR I	Calibration of the monitoring equipment will be conducted according to manufacturers' recommendations.		OK
D.3.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR I	Critical data from the cement manufacturing process is currently recorded by all plants. The record handling procedures that are in place should be modified to ensure that CDM monitoring data is kept in accordance to the requirements of the monitoring plan.	CL-4	OK
D.4. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data	/1/	DR	The monitoring plan provides for the collection of relevant leakage emissions data.	CL-2	OK

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VALIDATION REPORT

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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necessary for determining leakage?				However, the monitoring plan does not provide for the monitoring of: <ul style="list-style-type: none">- the quantity of additives (PFA and GBFS) diverted from existing uses due to the project activity, and- the emissions due to the transportation of limestone used as additives. The electricity consumption of all additive conveyance systems will be monitored during the crediting period.		
D.4.2. Are the choices of project leakage indicators reasonable and conservative?		/1/	DR I	Emissions due to the transportation of PFA and GBFS, and the electricity consumed for the conveyance of additives within the premises were considered. However, the emissions due to the transportation of limestone used as additives were not included in the monitoring plan. The monitoring plan calculates the electricity consumption of the conveyance system by multiplying its power rating with its operating hours. As per ACM0005, the electricity consumption should be measured	CL-2	OK



Validation Report

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			instead of calculated.		
D.4.3. Is the measurement <i>method</i> clearly stated for each leakage value to be monitored and deemed appropriate?	/1/	DR I	The measurement methods were clearly stated and are deemed appropriate.		OK
D.5.Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
D.5.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	There is no specific requirement from the approved methodology nor the local DNA.		OK
D.6.Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.6.1. Is the authority and responsibility of overall project management clearly described?	/1/	DR	Yes, the General Manager of the Alternative Fuels / Environment Department will be responsible for the overall project management.		OK
D.6.2. Are procedures identified for training of monitoring personnel?	/1/	DR I	The measurement of all monitoring data at the plants is currently conducted daily as part of the normal		OK

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VALIDATION REPORT

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				cement manufacturing operations. Relevant personnel have been trained to measure and record these parameters.		
D.6.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR I		No such emergencies were identified in the monitoring plan. It is not clear if such emergencies are likely to occur.	CL-4	OK
D.6.4. Are procedures identified for review of reported results/data?	/1/	DR I		The procedures for reviewing reported data were not identified in the Monitoring Plan. The project proponent is requested to implement the relevant procedures prior to the operation of the project activity.	CL-4	OK
D.6.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR I		Corrective action procedures were not included in the PDD. The project proponent is requested to incorporate the same in the project design.	CL-4	OK
E. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>						
E.1.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/1/	DR		Yes. The project is expected to start in 1 January 2007, and the project is estimated to have an operational lifetime of 30 years.		OK

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VALIDATION REPORT

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				Note: The project start date has been reviewed and revised to 14 June 2006. This is deemed appropriate since it is the date of the signing of the supply of the PFA for the project		
E.1.2.	Is the start of the crediting period clearly defined and reasonable?	/1/	DR	A 7 year renewable crediting period starting on 1 April 2007 has been selected. The start date of the crediting period shall not be prior to project registration and the start date needs to be changed to a date after anticipated project registration. (Crediting period has been amended based on PDD version 85 dated 4 March 2008, to start on 1 September 2008 or on the date of registration of the CDM project activity, whichever is later)	CL-5	OK
F. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>						
F.1.1.	Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	No significant environmental impacts are expected from the project activity beyond the additional consumption of fossil fuel for PFA		OK

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VALIDATION REPORT

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			and GBFS transportation.		
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR I	EIA is not necessary as the storage facilities as these are pre-existing facilities.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	The increase in the quantity of fly ash used will result in greater quantity of fines handled at each plant. However, control measures are in place to minimise the impact of dust on the surrounding area.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	There are no adverse transboundary environmental impacts.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	Yes, the environmental concerns regarding the handling of fly ash have been addressed in the project design.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	Yes.		OK
G. Stakeholder Comments <i>The validator should ensure that stakeholder comments have been</i>					



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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<i>invited with appropriate media and that due account has been taken of any comments received.</i>					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR	Representatives from local councils, schools, community leaders, NGOs, political parties and relevant government agencies were consulted.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	Questionnaire surveys containing details of the project were mailed to local stakeholders. This complies with the host country's requirements for stakeholder consultation.		OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR I	The stakeholder consultation process has been verified with the DNA during follow up interview, it was accepted by the DNA and the project proponent was encouraged to perform a meeting (face to face) consultation with the local stakeholders. The written confirmation from the local DNA is pending	CL-4	OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR I	Positive responses were obtained from the questionnaire surveys that were mailed out to the local stakeholders. However, this was not reflected in the PDD. The comments received should be included in the PDD.	CL-6	OK

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Validation Report

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G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	The project did not receive any negative comment.		OK

VALIDATION REPORT

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CAR 1:</p> <p>The Letters of Approval from the DNA of Malaysia and France are pending.</p>	<p>Table 1</p> <p>A.2.2</p> <p>A.2.3</p> <p>A.4.1</p> <p>G.1.3</p>	<p>Letter of Approval has been obtained and submitted</p>	<p>The Letter of Approval from the DNA of France was received on 13 November 2007. A revised Letter of Approval dated 18 October 2008 has been re-submitted due to project participant name error.</p> <p>The Letter of Approval from the DNA of Malaysia was received on 19 September 2007 which has since expired. A new LOA dated 1 July 2008 has been reissued,</p> <p>CAR is closed.</p>
<p>CAR 2</p> <p>Justification on project additionality is found to be weak and further justifications in the following areas are needed to demonstrate the project additionality:</p> <p>1) It was said that the project requires the installation of vibrators and the maintenance and calibration of weight feeder systems. Additional explanation is required to justify this as a technological barrier, as this</p>	<p>B.3.1 until</p> <p>B.3.3</p>	<p>1) This has been removed as further investigation revealed that these equipments are used in the baseline scenario.</p>	<p>1) OK. It was confirmed that the vibrators and weight feeder systems are part of the baseline and thus not a technological barrier. This barrier has been correctly removed from the additionality assessment.</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
equipment is used in the baseline scenario for blended cement production as well.			

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>2) It was said that the project activity requires careful production planning and an increase in the frequency of de-burdening. Further clarification is sought with regards to the applicability of this statement as a technological barrier.</p> <p>3) It was said that significant research and development was required to develop PPCs that are comparable to existing general purpose cements. In the baseline scenario, the early strength of PPCs was found to be too low to allow them to be used as general purpose cements. This barrier needs to be further substantiated, as the early strength characteristics are dependent on the area of application of the concrete.</p>		<p>2) It is actually an operational barrier as contamination of material between the various PPC sub-type cements could affect the quality of the cement produced. This is clearly explained in pg 26 barrier as contamination of material under operational barrier.</p> <p>3) Regardless on the area of application the current OPC subtype cement users are already accustomed with the existing OPC's early strength and LMCB's approach is to produce PPC's which are comparable with OPC. In certain cases such as for Avancrete a considerable amount of effort has been put in to develop an early strength which is much higher than OPC in order to penetrate the general purpose market for brick laying purposes where there is a need to have a cement which has a higher early strength than the normal OPC subtype. Further explanation is given under technological barrier in</p>	<p>2) OK. The requirements for frequent de-burdening are now correctly classified as an operational barrier, which has been verified and deemed acceptable.</p> <p>3) OK. Cement customers in Malaysia are accustomed to the characteristics of OPC when used as general purpose cement for most areas of application. In order for blended cements to replace OPC as general purpose cement, it will be necessary for it to have similar early strength characteristics. It has been also been confirmed that the project proponent had to carry out substantial amount of research and development activities to ensure that the early strength of blended cement is comparable with the early strength of OPC.</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		page 27 of the PDD.	

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>4) Compliance with SIRIM standards for blended cement was presented as a technological barrier. Further clarification is requested with regards to the technological barriers faced by the project participant in complying with the standards.</p> <p>5) The technological barriers faced by the operation of the additive supply chain were not clearly described in the PDD.</p> <p>6) It was indicated that some high-additive cements produced by LMCB (such as Avantcrete and Phoenix) are sold as premium cements. Further justification should be presented to demonstrate that the lack of a price floor for cement in Malaysia will be a barrier to the implementation of the project activity.</p> <p>7) The barriers identified in step 3 are related primarily to the production and marketing of blended cements. The PDD does not clearly</p>		<p>4) This has been removed at it was discovered that the MS 1227 specifies minimum standard for early strength and additive content for PPC and LMCB's PPC produced in the baseline scenario meets this minimum standard.</p> <p>5) This has been explained in detail under section B5 substep 3a under subsection 3 infrastructure barrier(page28-29) in the PDD</p> <p>6) Justification provided under section B5 substep 3a(barrier analysis) subsection 4a(market barriers), pg 30 in the PDD</p> <p>7) The barriers faced in increasing the production of PPC above the baseline</p>	<p>4) OK. This barrier has been correctly removed.</p> <p>5) OK. The barrier due to the operation of the additive supply chain is now clearly described as part of the infrastructural barriers faced by the project activity</p> <p>6) OK. Sufficient justifications are now provided to justify the market barriers faced by the project activity due to the lack of a price floor for cement.</p> <p>7) OK. The PDD now clearly indicates the barriers faced in increasing the</p>

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
indicate the barriers faced in increasing the production of blended cement above the baseline scenario. Relevant documents should be referenced to substantiate the claims made in the barrier analysis.		scenario is further elaborated in the barrier analysis (pg 25-31) in the PDD. Documents are available and could be sighted upon request.	production of blended cement above the baseline scenario. CAR is closed.
<p>CL 1</p> <p>(a) Further elaboration is required to demonstrate that the project activity will not result in a shortage of GBFS.</p> <p>(b) The PDD states that cement production figures for Malaysia were obtained from the Cement and Concrete Association of Malaysia (C&CA). However, some variance was observed between the C&CA's production figures and the figures used in the PDD. Clarification for this variation should be provided.</p>	<p>B.1.2</p> <p>B.2.6</p> <p>C.1.2</p> <p>C.2.2</p>	<p>a) The justification is given in section B2 1), pg 11 in the PDD.</p> <p>b) The reference document has been shown to DNV for verification purpose.</p>	<p>a) OK. It is demonstrated that only 50% of the world's iron slag is granulated to produce GBFS, while the remainder is considered as waste. It is thus justified that there is an excess supply of GBFS, and the project activity will not result in a shortage of GBFS.</p> <p>b) OK. The variations between the C&CA figures and the figures used in the PDD have been corrected.</p>

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>(c) Random sampling and analysis of blended cements produced by other manufacturers was conducted to determine their clinker content. However, the results from these analyses were not used in the baseline calculations. Instead, the values used in the baseline calculations are based on estimations. The clinker content determined from the analysis should be used in this calculation.</p> <p>(d) The CaO and MgO content used in the calculations were based on estimates. Historical records of these values for each plant are available and should be used in the calculations.</p>		<p>c) The random sampling and analysis of blended cements produced by other manufacturers were not conducted for all the OPC/PPC type of cements. Instead the audited reports from C&CA were used for the baseline calculations.</p> <p>d) The records from the plants have now been used and the calculations have been updated.</p>	<p>c) OK. The clinker contents of blended cements produced by other manufacturers are now taken from C&CA's audited cement production report for 2004.</p> <p>d) OK. Historical records of CaO and MgO contents are now used in the calculations.</p> <p>CL is closed.</p>
<p>CL 2</p> <p>(a) It was determined during the site visit that 70% of the PFA that will be supplied to the Pasir Gudang Plant will be transported by ship. This should be reflected in the leakage calculations.</p> <p>(b) Emissions due to the transportation of limestone that is used as additives should also</p>	<p>C.3.1 D.4.1 D.4.2</p>	<p>a) The leakage as a result of the transportation by ship has been reflected in the relevant calculations. This has also been taken into account in the monitoring plan under section B7.1 table B56 pg 63 in the PDD.</p> <p>b) This has been included in the leakage calculation and also included in the</p>	<p>a) OK. The transportation emissions for the PFA supplied to Pasir Gudang Plant via ship are now included in the emission calculations.</p> <p>b) OK. Emissions from limestone transportation is now included in the</p>

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>be included in the leakage emissions calculations.</p> <p>(c) The monitoring plan does not provide for the monitoring of:</p> <ul style="list-style-type: none"> - the quantity of additives (PFA and GBFS) diverted from existing uses due to the project activity, and - the project emissions due to the transportation of limestone used as additives. 		<p>monitoring plan under sec B7.1 table B51 page 61.</p> <p>c) Justification was given on the non diversion of the PFA from any existing use under section B6.1 c) ii) in pg 34 of the PDD.</p> <p>For the GBFS the actual world production of iron slag and the GBFS traded worldwide has to be monitored. against the GBFS consumption by Lafarge(as iron slag which is a waste material from the steel industry is converted to GBFS). Any excess in iron slag production demonstrates that there is no diversion of the GBFS from any other existing use. This has been included in the monitoring plan under section B7.1 table B58 pg 64 in the PDD.</p>	<p>emission calculations.</p> <p>c) OK. It is justified that the PFA supplied to the project activity would not result in a diversion from existing use. The monitoring of the quantity of GBFS that is diverted from existing users is now included in the monitoring plan, to use the World GBFS and Iron Slag Statistics from Onestone and IISI. The monitoring of emissions from limestone transportation has also been included.</p>

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
(d) The monitoring plan calculates the electricity consumption of the conveyance system by multiplying its power rating with its operating hours. As per ACM0005, the electricity consumption should be measured instead of calculated.		d) A separate meter will be installed to ensure that the electricity consumption of the conveying system can be accurately measured. This has been covered in section B7.1 table B50 pg 60 in the PDD	d) OK. The electricity consumed by the additive conveyance system will be measured, as required by ACM0005. CL is closed.
CL 3 The archiving period for all monitoring data was not indicated in the PDD.	D.1.2	This has been added into the PDD as the crediting period + 2 years. This has been put into all the tables in the relevant section of the PDD.	OK. The archiving period is now clearly stated in the PDD. CL is closed.
CL 4 LMCB is currently certified to ISO 9001:2000 standard. The existing procedures should be revised or independent procedures should be established to include the proposed project activity. Training should be given to relevant personnel before the commencement of the project with regard to: a. Procedures for addressing erroneous measurements, b. Procedures for day-to-day record	D.2.5. D.2.9. D.3.5. D.3.9. D.6.3 until D.6.5.	LMCB have been made aware of this and will ensure that the issues raised will be addressed except for the procedure for handling of emergencies situations where the justification of not having such procedures is presented in the PDD section B7.2 page 65.	OK. General descriptions of the procedures were described in section B.7.2 of the amended PDD. These procedures have been fully documented and implemented. The implementation of such procedures should be verified during the verification process. CL is closed.

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>handling,</p> <ul style="list-style-type: none"> c. Procedure for handling of emergencies situations, d. Procedure for review of reported results/data, and e. Procedures for corrective actions in order to provide for more accurate future monitoring and reporting. 			
<p>CL 5</p> <p>The start date of the crediting period shall not be prior to project registration and the start date needs to be changed to a date after anticipated project registration.</p>	E.1.2	This has been changed in the PDD to 1st September 2008.	<p>OK. The start of the crediting period has been amended to a date after the anticipated project registration.</p> <p>CL is closed</p>
<p>CL 6</p> <p>Positive responses were obtained from the questionnaire surveys that were mailed out to the local stakeholders. However, this was not reflected in the PDD. The comments received should be included in the PDD.</p>	G.1.4	Responses were received from two of the stakeholders and these were positive. The comments have been summarized in the PDD.	<p>OK. The responses received by the local stakeholders are now included in the PDD.</p> <p>CL is closed.</p>

APPENDIX B

CERTIFICATES OF COMPETENCE

CERTIFICATE OF COMPETENCE

Einar Ternes

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1, 2, 3 6 & 10		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-IA-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0030	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0031	Yes
ACM0004, ACM0012	Yes	AM0032	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0035	Yes
ACM0007	Yes	AM0038	Yes
ACM0008	Yes	AM0041	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0034	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0043	
AM0009, AM0037	Yes	AM0046	
AM0013, AM0022, AM0025, AM0039, AMS-III.H, AMS-III.I	Yes	AM0047	
AM0014	Yes	AMS-II.A-F, AM0044	Yes
AM0017	Yes	AMS-III.A	Yes
AM0018	Yes	AMS-III.E, AMS-III.F	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007



Einar Ternes
Director, International Climate Change Services



Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Santhosh Jayaram

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

<i>GHG Auditor:</i>	Yes		
<i>CDM Validator:</i>	Yes	<i>JI Validator:</i>	--
<i>CDM Verifier:</i>	--	<i>JI Verifier:</i>	--
<i>Industry Sector Expert for Sectoral Scope(s):</i>	Sectoral scope 4 (cement)		

Høvik, 6 November 2006



Einar Telnes
Director, International Climate Change Services



Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Hendrik Brinks

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1, 2, 3 & 12		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS- III.I	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	ACM0006, AM0007, AM0015, AM0036, AM0042	Yes
ACM0004, ACM0012	Yes		

Høvik, 30 October 2007



Michael Lehmann

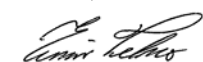
Technical Director, International Climate Change Services

Lai Chee Keong

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 6 November 2006



Einar Telnes

Director, International Climate Change Services



Michael Lehmann

Technical Director

CERTIFICATE OF COMPETENCE

Tse Wei Cheong

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1)

<i>GHG Auditor:</i>	Yes		
<i>CDM Validator:</i>	--	<i>JI Validator:</i>	--
<i>CDM Verifier:</i>	--	<i>JI Verifier:</i>	--
<i>Industry Sector Expert for Sectoral Scope(s):</i>	--		

Høvik, 5 February 2007



Einar Telnes
Director, International Climate Change Services



Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Kamala Devi Muniandy

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

<i>GHG Auditor:</i>	Yes		
<i>CDM Validator:</i>	--	<i>JI Validator:</i>	--
<i>CDM Verifier:</i>	--	<i>JI Verifier:</i>	--
<i>Industry Sector Expert for Sectoral Scope(s):</i>	--		

Høvik, 5 February 2007



Einar Telnes
Director, International Climate Change Services



Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Soumik Biswas

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

<i>GHG Auditor:</i>	Yes		
<i>CDM Validator:</i>	Yes	<i>JI Validator:</i>	--
<i>CDM Verifier:</i>	Yes	<i>JI Verifier:</i>	--
<i>Industry Sector Expert for Sectoral Scope(s):</i>	--		

Høvik, 30 October 2007

Michael Lehmann

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Technical Director, International Climate Change Services