VALIDATION REPORT

Mitsubishi UFJ Securities Co, Ltd

Siam Quality Starch Wastewater Treatment and Energy Generation Project in Chaiyaphum, Thailand

SGS Climate Change Programme
SGS United Kingdom Ltd
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Date of Issue:	**Project Number:**
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Project Title:	
Siam Quality Starch Wastewater Treatment and Energy Generation Project in Chaiyaphum, Thailand	
Organisation:	**Client:**
SGS United Kingdom Limited	Mitsubishi UFJ Securities Co, Ltd
Publication of PDD for Stakeholders Consultation	
Commenting Period:	26th September 2007 – 25th October 2007
First PDD Version and Date:	Version 1, 31st August 2007
Final PDD Version and Date:	Version 1.3, 30th March 2009

Summary:

Mitsubishi UFJ Securities Co, Ltd has commissioned SGS to perform the validation of the project: Siam Quality Starch Wastewater Treatment and Energy Generation Project in Chaiyaphum, Thailand.

Methodology used: (AM0013 Version 4 and AMS IC Version 12)

Version and Date: (Version4 dated 22nd December 2006 and Version 12 dated 10th August 2007)

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The report is based on the findings of document reviews, the stakeholder consultation process and responses from the project participants to the findings raised in this report.

The report and the annexed validation describes a total of ten findings which include:

- Nine Corrective Action Requests;
- One New Information Requests; and
  - Will be recommended to the CDM Executive Board with a request for registration.

Subject:		
CDM Validation		
Validation Team:		
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2	-	-

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CIGAR	Covered In-Ground Anaerobic Reactor
CO2	Carbon Dioxide
COP/MOP	Conference of Parties serving as the Meeting of Parties to Kyoto Protocol
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EIA	Environment Impact Assessment
GHG	Greenhouse Gas(es)
GWh	Giga Watt hour
I	Interview
IEE	Initial Environmental Evaluation
IPCC	Intergovernmental Panel on Climate Change
ISHC	International Stakeholder Consultation
kWh	Kilo Watt hour
LOA	Letter of Approval
LSC	Local Stakeholder Consultation
MoV	Mean of Validation
MP	Monitoring Plan
MT	Metric Tonne
MW	Mega Watt
MUS	Mitsubishi UFJ Securities Co, Ltd
NIR	New Information Request
NGO	Non Government Organisation
NOC	No Objection Certificate
ODA	Official Development Assistance
PDD	Project Design Document
PLF	Plant Load Factor
PMP	Project management Plan
SQS	Siam Quality Starch
UNFCCC	United Nations Framework Convention for Climate Change

Table of Content

Annexes:

1. Validation Opinion

SGS United Kingdom Ltd has been contracted by Mitsubishi UFJ Securities Co, Ltd to perform a validation of the project: Siam Quality Starch Wastewater Treatment and Energy Generation Project in Chaiyaphum, Thailand in Thailand.

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

SGS reviewed of the project design documentation, using a risk based approach and conducted follow-up interviews.

The project activity is to treat wastewater using a Covered In-Ground Anaerobic reactor. The organic compounds are broken down in the digester with the help of anaerobic bacteria. The wastewater is treated approximately ten to fifteen days in the CIGAR and the COD load will be reduced to approximately 80% and the biogas is extracted before the wastewater is discharged for further treatment into the existing lagoons. The biogas recovered is then used for energy generation and thereby displace Furnace oil which was previously used for operations. A provision of biogas flaring has also been designed to ignite any excess biogas in case of over-pressure of biogas to the boilers. The project activity will result in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project correctly applies methodology AM0013 version 4 and SSC methodology AMS I C Version 12. 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 983,720 tCO2e over a ten year crediting period, averaging **98,372 tCO2e** annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

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

Signed on Behalf of the Validation Body by Authorized Signatory

Signature: 

Name: Siddharth Yadav

Date: 15th April 2009

2. Introduction

2.1 Objective

Mitsubishi UFJ Securities Co, Ltd has commissioned SGS to perform the validation of the project: Siam Quality Starch Wastewater Treatment and Energy Generation Project in Chaiyaphum, Thailand with regard to the relevant requirements for CDM project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Certified Emission Reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

2.2 Scope

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

2.3 GHG Project Description

The project activity is to treat wastewater using a Covered In-Ground Anaerobic reactor. The organic compounds are broken down in the digester with the help of anaerobic bacteria. The wastewater is treated approximately ten to fifteen days in the CIGAR and the COD load will be reduced to approximately 80% and the biogas is extracted before the wastewater is discharged for further treatment into the existing lagoons. The biogas recovered is then used for energy generation and thereby displace Furnace oil which was previously used for operations. A provision of biogas flaring has also been designed to ignite any excess biogas in case of over-pressure of biogas to the boilers. The project activity will result in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

2.4 The Names and Roles of the Validation Team Members

Name	Role	Affiliate
Kamesh Iyer	Lead Assessor	SGS India
Kaviraj Pradhan	Expert	SGS India
Pitipoom Tungsirisuteekul	Local Assessor	SGS Thailand
Nattarin Thunsiri	Local Assessor	SGS Thailand

3. Methodology

3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

A site visit is usually required to verify assumptions in the baseline.

A site visit was conducted by the Mr. Kamesh Iyer, Mr. Pitipoom Tungsirisuteekul and Miss Nattarin Thunsiri to check the baseline, PDD related documents, CDM consideration, additionality and applicability and the results are summarised in Annex I: Local Assessment checklist. The local assessors were involved in verifying all necessary documents on site in the local language (Thai) and also confirmed other statements in the PDD through review of documents direct contacts with key stakeholders.

3.2 Use of the Validation Protocol

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the validation of CDM projects. It serves the following purposes:

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

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

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

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

3.3 Findings

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

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR).** A CAR

is issued, where:

I. mistakes have been made with a direct influence on project results;

II. validation protocol 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 verified.

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

Observations may be raised which are for the benefit of future projects and future verification or validation actors. These have no impact upon the completion of the validation or verification activity.

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

3.4 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

4. Validation Findings

4.1 Participation Requirements

The host party for this project is Thailand. Thailand has ratified the Kyoto protocol on 28th August 2002. A Letter of Approval from Thailand DNA was not submitted by the project proponent. CAR2 was raised asking project proponent to submit the Letter of Approval from Thai DNA. The Letter of Approval from the host country (Thailand) was submitted in response and this was verified. From the letter of approval it was clear that Thailand has ratified the Kyoto Protocol on 28th August 2002, the project activity is a voluntary activity, project and contributes to sustainable development in Thailand. The translations were checked by the local assessors pro-efficient in Thai and hence, CAR2 was closed.

Japan has been identified as Annex 1 country and has ratified the Kyoto Protocol on 4th June 2002 but the Letter of Approval has not been submitted by the Japanese DNA. CAR1 was raised asking project proponent to submit the Letter of Approval from Japanese DNA. The Japanese Letter of Approval was been received and from the approval letter that the Japanese government approved the project activity and authorized voluntary participation of Mitsubishi UFJ Securities Co, Ltd as per Article 12.5(a) and 9 of the Kyoto Protocol to the UNFCCC. The English version was checked by SGS counterpart in Japan against the original Japanese letter of approval and upon due satisfaction of translation, CAR1 was closed.

4.2 Project Design

The project activity title is “Siam Quality Starch Wastewater Treatment and Energy Generation Project in Chaiyaphum, Thailand” and is unique. The Project design is clearly explained in the PDD version 1.2 dated 28th February 2008 and this is consistent with the timeline of the project history. The exact project activity location is on 222 Moo 10, Suranarai Road, Kokroengrom, Bumnet-Narong, Chaiyaphum 36160.

The project activity is to treat wastewater using a CIGAR (Covered In-Ground Anaerobic Reactor) along with a methane recovery system. The captured methane is then used in boilers in the SQS starch unit. The CIGAR has a usable volume of 90,000 m^3 and the digester is lined with HDPE to prevent both biogas and wastewater from leaking. The wastewater is treated in the anaerobic digester where the organic compounds are broken down releasing methane as a by-product. This activity reduces the chemical oxygen demand by almost 80% with a residence time of around 10 – 15 days; along with recovery of methane. The details were checked against the design of the CIGAR and waste water system and found OK. The wastewater is then sent to the open lagoons for further treatment. This was observed during the site visit. The process flow diagram and physical site visit confirmed the wastewater flow path and no diversions were found. The recovered methane is used in the boilers and the burners (capacity: 2 x 5,234kW) are retrofitted to co-fire fuel oil and biogas. A provision for flaring is in place in the event any excess biogas is produced or is not utilised in the boilers.

NIR3 was raised as the location of the project activity was not clear as more details were required possibly a GPS co-ordinate or physical address of the activity under A.4.1.4 of the PDD version 1. This was responded by the project proponent by incorporating the physical address of the project activity location in PDD version 1.2. This was then verified based on site visit observations and confirmations from local assessors. Hence, NIR3 was closed.

4.3 Baseline Selection and Additionality

The project activity is based on the following methodologies AM0013 Version 4 “Avoided Methane emissions from organic waste-water treatment” and AMS 1 C Version 12 “Thermal energy for the user with or without electricity”.

The project activity is applicable as in the baseline scenario the existing wastewater from the SQS starch plant was an open lagoon type system with an anaerobic condition where the depth of the lagoon is 4.5 meters. This was verified by looking into the lagoons design and also through fixed inverted scales in the lagoons. These scales were prominent and were used for flow control. The temperature in Chaiyaphum, Thailand is more than 10°C through out the year. This was validated against the website www.weather.com and it was found that the temperature range for all months are well beyond the 10°C range. and the

residence time for the organic matter was 30 days and above. This was checked with the lagoons design and found OK. . The depth of the seven existing lagoon in both the baseline and the project scenario was verified on site and this is also been monitored by the project proponent using a scale. The sludge produced in the project activity is given to nearby farmers and this was verified through interviews on site by local assessors and confirmed.

For the applicability of AMS I C version 12 the total thermal generation of the system is 17.068 MWth which is well below the threshold limit of 45 MWth. The total thermal generation is the installed burner capacity of the system. The methodology requirement for capping the fossil fuel (i.e. the quantity of Fuel Oil consumed in the year y) at 140.6 TJ was verified. This was based on the three year historical records and these have been validated on SQS's SAP system and are conservative

As mandated by the methodology AM0013 Version 4 the project participants have identified the baseline scenario and demonstrated additionality by using Version 3 of the "Tool for demonstration and assessment of additionality"

The list of possible realistic and credible alternatives for the treatment of the sludge were

- Wastewater treatment using the CIGAR and the open lagoon system and biogas utilisation without the project being considered a CDM activity
- Wastewater treatment using CIGAR and the open lagoon system without biogas utilisation
- Wastewater treatment using aerobic/anaerobic system other than CIGAR and open lagoon system
- Wastewater treatment using the open lagoon system
- Wastewater treatment using open lagoon system in short and medium term and then later upgrading with CIGAR

All above options were consistent with mandatory Thai laws and regulations and realistic.

Eventually, the wastewater treatment using the open lagoon system is identified as the most plausible scenario where there would be uncontrolled methane emissions due to the continuation of the current practice. Also, in the event of the current situation there would not be any energy generation as a system of capture is absent.

The equity IRR is chosen as an indicator to determine additionality. As SQS is benefited in the project through fuel savings simple cost analysis was not considered. The project proponents have established a benchmark of 15 % as a conservative benchmarking. It is derived from two factors one is from SQS internal policies and factors where a benchmark of 20% was considered during 2003 when the project consideration was truly undertaken. There is no national benchmark in particular to the starch industry; however a benchmark of 23% is considered as a hurdle rate by the National Energy Policy Office's study "Biomass based Power generation and Co-generation with small rural Industries for Thailand" and this study covers the energy generation in context with the rural food industries. This was validated with SQS internal records and the National Energy Policy Office's Study undertaken. Hence the benchmark of 15 % appeared conservative and was accepted. The calculations, comparisons and assumptions for the equity IRR determined was examined which also included all assumptions undertaken during decision making. The IRR for the project activity stood at 8.68% which is well below the benchmarking.

The sensitivity analysis carried out was validated for the following assumptions.A 20% increase in biogas is based on the target SQS is trying to achieve through maximisation of the quality and stability of the biogas captured and it was verified that the IRR with this target achievement was 14.79%. SQS is also trying to cut down its O & M costs and achieve a realistic target reduction of 10% but even with this achievement the IRR was 10.40%. An increase of 4% in fuel is envisaged by the average annual price rise as per last five year period trend and the IRR with this change was 14.51%. Thus it was found that even with the sensitivity analysis without CDM the project's equity IRR did not cross the benchmark. Hence, the equity IRR confirmed that the project would not have taken place without CDM consideration.

The common practice analysis was demonstrated by the PP and was validated based on native starch which results in waste recovery and with capacity distinction. However for the purpose of the review this has been further validated to ensure complete transparency in addition to the response as a means of cross validation.

Step 01 Identification of Tapioca Starch factories in Thailand:

A total of 87 factories (77 starch +10 sweetener factories) have been considered for the purpose of the expanded analysis, we have also included the 10 sweetener factories, as the sweetener factories also have wastewater characteristics that are suitable for biogas recovery and are members of the Topioca starch association (TTSA). Out of these 13 factories have insufficient information and hence the DOE was unable to validate due to lack of data. This list was then narrowed based on type of starch product where it is a common knowledge that only Native starch is suitable for biogas recovery. Based on this TTSA list, 59 factories were found to have conditions suitable for biogas recovery, apart from the Siam Quality Starch factory by eliminating the Modified Starch Industries .

Step 02:
The next step carried out was the identification of all tapioca starch factories at the time of validation, was known to have constructed, were constructing or planning construction of an anaerobic wastewater treatment system with biogas capture capabilities.

Based on TTSA list, which listed the technologies used by each factory, of the 59 factories, 22 factories were identified as having, and an additional 10 factories as constructing or planning for an anaerobic wastewater treatment system. A total of 32 factories remain under consideration after this step apart from Siam Quality Starch Co. Ltd (SQS) [Sr. No 4 table A].

As can be seen in Table A below are the various projects, of the 32 factories (apart from SQS) with biogas projects, 21 projects are being implemented as CDM projects and are at various stages of the CDM cycle and another 9 projects received funding from The Energy Conservation (ENCON) Fund, which the SQS Project did not have access to. A further 2 projects were not considered similar as it was found that their systems malfunctioned and are no longer in operation.

Table A: Status of projects comparable to the project activity

Sr. No.	Company	Factory Size (HP)	Status of Biogas System as per TTSA list	Note
1	Sanguan Wongse Industry Co., Ltd.	30,505	Existing	Registered as CDM project (Project 1040)[1]
2	Eiamheng Tapioca Flour Industry Co., Ltd.	21,130	Existing	In Thailand Greenhouse Gas Management Organization (TGO) list (obtained LoA)[2]
3	Eiamburapa Co., Ltd.	15,821	Existing	Financial support from ENCON Fund (as per Project 2110)[3]
4	Siam Quality Starch Co., Ltd.	14,773	Existing	The project activity (Project 1993)
5	V.P.Starch (2000) Co.,Ltd	11,237	Existing	Financial support from ENCON Fund (as per Project 2110 PDD)[3]
6	Ban Pong Tapioca Flour Industry Co.,Ltd.	11,045	Existing	Applying for CDM as per Telecon with respective PP
7	Chon jaroen Co.,Ltd	10,530	Existing	Financial support from ENCON Fund (as per Project 2110 PDD)[3]

[1] http://cdm.unfccc.int/Projects/DB/KPMG1175141470.89/view

[2] http://www.tgo.or.th/index.php?option=com_content&task=view&id=36&Itemid=29[2]http://cdm.unfccc.int/Projects/Validation/DB/A8JT0K03JKGLSDSV1O1Y0JISTYYNHN/view.html

[3] http://www.thaibiogas.com/book/Book_46.html (refer to PDD for UNFCCC No2110)

Sr. No.	Company	Factory Size (HP)	Status of Biogas System as per TTSA list	Note
8	Chok Yien Yong Industry Co.,Ltd.	8,925	Construction	Under validation[4]
9	Roi Et Flour Co.,Ltd.	8,757	Existing	Financial support from ENCON Fund (as per Project 2110 PDD)[3]
10	Korat Starch Industry Co.,Ltd.	8,445	Construction	Already applied for HCA as per telecon with respective PP
11	P.V.D. International Co.,Ltd.	8,151	Construction	Financial support from ENCON Fund (as per Project 2110 PDD)[3]
12	Chok Chai Starch Co.,Ltd.	8,129	Existing	Under validation[5]
13	Chaiyaphum Phietphol Co.,Ltd	8,045	Existing	Financial support from ENCON Fund (as per Project 2110 PDD)[3]
14	Northeastern Strach (1987) Co.,Ltd.	7,921	Existing	Financial support from ENCON Fund (as per Project 2110 PDD)[3]
15	Somdej Starch Co.,Ltd.	7,460	Existing	Applying for CDM as per telecom
16	Chantaburi Starch Co.,Ltd	7,060	Construction	Under validation[6]
17	Chakangrao Starch Co.,Ltd.	5,652	Construction	No biogas recovery due to poor performance[7]
18	Thanawat Pietphol Ltd.Part.	5,453	Existing	No biogas recovery due to poor performance
19	Bangna Tapioca Flour Co.,Ltd	5,030	Existing	Financial support from ENCON Fund (as per Project 2110 PDD)[3]
20	Sima Inter Product Co.,Ltd.	4,088	Existing	Under validation[8]
21	Sima Inter Product Branch 2 Co.,Ltd	4,088	Existing	Under validation[9]
22	Jiratpattana Co.,Ltd.	3,847	Existing	(Project 2144)
23	Siam Product (1994) Co.,Ltd.	2,575	Existing	Under validation[10]
24	Kitroonruan Flour Factory Part., Ltd.	2,475	Existing	Under validation[11]
25	Asia Modified Starch Co.,Ltd.	2,475	Existing	Registered (Project 2110)
26	Kaen Jaroen Co.,Ltd.	240	Existing	Applying for CDM
27	Charoensuk Tapioca Flour (2005) Co., Ltd.	Unknown	Construction	Under validation[12]
28	Isan Tapioca Flour Co.,Ltd.	Unknown	Existing	Financial support from ENCON Fund (as per Project 2110 PDD)[3]
29	Corn Product Amdamus Co.,Ltd.	Unknown	Construction	Under validation[13]

[4] http://cdm.unfccc.int/Projects/Validation/DB/CJ3ULV7ZWM37O2RLKFUVD41ZJHOOOF/view.html

[5] http://cdm.unfccc.int/Projects/Validation/DB/LQTJF5681NVDBMDZ353AK88VQOJ0YS/view.html

[6] http://cdm.unfccc.int/Projects/Validation/DB/2G1DSV4WSX3GOMWVT86O0ZS6Z834R0/view.html

[7] http://cdm.unfccc.int/Projects/Validation/DB/JJY1ZBR4P44QH9K2WD9ALQQFTT4E15/view.html

[8] http://cdm.unfccc.int/Projects/Validation/DB/KCLB3MVY6XFO3ICV70LLY0B8X6IVVK/view.html

[9] http://cdm.unfccc.int/Projects/Validation/DB/OG3TBFCTFNDI96MLK50YUO6UXSCHN3/view.html

[10] http://cdm.unfccc.int/Projects/Validation/DB/D7GX65CTGLH8Y7WW6EQSD567Q6TYNJ/view.html

[11] http://cdm.unfccc.int/Projects/Validation/DB/EMVWWRZQUBBJ97FX1D3I9SA6CWJEP2/view.html

[12] http://cdm.unfccc.int/Projects/Validation/DB/JJY1ZBR4P44QH9K2WD9ALQQFTT4E15/view.html

[13] http://cdm.unfccc.int/Projects/Validation/DB/577FGXFHP9SZENI4QQNQS4I51GPWV0/view.html

Sr. No.	Company	Factory Size (HP)	Status of Biogas System as per TTSA list	Note
30	Chaodee Starch Co.,Ltd.C	Unknown	Construction	Under validation[14]
31	N.E. Industry Co.,Ltd	Unknown	Construction	Under validation[15]
32	Chor Charoen Marketting Co.,Ltd.	Unknown	Existing	Applying for CDM Telecon with respective PP
33	Chao Khun Kaset Plant Product Co., Ltd.	Unknown	Construction	On going CDM registration (Project 2138)

Hence from the above table it can be concluded that funds from CDM/carbon credits are essential forms of financial assistance required for projects of any size and are crucial factors for the running of similar systems. Hence it can further be concluded that the project activity is not a common practice.

CAR6 was raised for issues of additionality. The additionality had to be supplemented by documented evidence as it is not very evident from the PDD for the following reasons:

- The IRR spreadsheet and its assumptions had to be justified by documentary evidence.
- The IRR with consideration of CDM was not detailed in the PDD Version 1
- The barrier analysis was not clear as it speaks of technological barrier. Clarify.
- The benchmarking of the IRR was not clear and had to be substantiated by documentary proof.

The proponent responded by providing documents such as Purchase receipts for major equipments to justify the project cost, In-house COD measurements, which justify the COD load of 15kg/m3, Internal email citing actual O&M costs for the SQS facility in the years before project implementation, The actual O&M costs, between 5.7% and 7.9%, formed the basis for SQS's estimation of an O&M cost for the project activity, which was set at 5% of capex, Email and invoice showing the cost of chemicals, which justifies the figure of 5.5 baht/m3 effluent; Fuel oil analysis results to justify the heat value of 41MJ/l.

The above documents were verified alongside assumptions made and calculations undertaken and were found OK. The proponent submitted three (3) sets of records for in-house training for the operation of the anaerobic digester, biogas handling and burner operation, to show that an upgrading of skills was essential due to the complexity of the new system and further clarified that in order to avoid confusion they had removed the step 3 from section B.5. The training records were verified and it was found that training programs were conducted in house for the project activity. For the benchmarking of IRR the PP submitted the National Energy Policy Office's study "Biomass based Power generation and Co-generation with small rural Industries for Thailand" and this study covers the energy generation in context with the rural food industries. This was validated with SQS internal records and the Study undertaken. Hence, the substantiation for CAR6 was accepted and CAR6 was closed.

CAR4 was raised as the baseline scenario determination was not clear in the PDD version 1 and was not accordance with the methodology; as the Step 2 defined in AM0013 Version 4 has been omitted and Step 4 not clear. The project proponent in response to the CAR incorporated the following steps making the baseline scenario determination more transparent and this was verified against the PDD Version 1.3. The clarity was achieved and the assumptions were validated against the methodology requirement and found OK. Hence, CAR4 was closed.

CAR5 was raised for serious CDM consideration and the timelines. The project proponent clarified the issue during the site visit by submitting the following evidences which also provided consistent timelines of the decision making and due serious consideration of CDM. It is to be noted that all these evidences were retrieved from archived records of SQS which were stored as a part of ISO 9001 practices. This was

[14] http://cdm.unfccc.int/Projects/Validation/DB/LPCZTTNZ8ZSJYJP4BOCATXSGM75XVL/view.html

[15] http://cdm.unfccc.int/Projects/Validation/DB/DBQJEP01EIC0PUEJCPTNCOQI6Z2YUC/view.html

validated on-site from SQS archived data. The documents in Thai were verified by the local assessors who are pro-efficient in Thai and English.

All the above factors were verified and serious CDM consideration and delay was justified by the project proponent and hence, CAR5 was closed.

Timeline – 2003 to 2005
The perspective in which the validation was concluded has aspects more on Thailand's industry scenario, nature of the starch industry and the carbon market in Thailand and the nascent stages of CDM and Thai DNA.

As defined by EB41 Annex 46 and as validated and explained in the Validation Report (VR) the project conceptualization/Sr.NO 1 table B/ started in 2003 with SQS and its former partners executing plans for Wastewater treatment facility and subsequent rejections/Sr.NO 2 table B/ based on feasibility. It was only after Waste Solutions/Sr.NO 3 table B/ executed a proposal which included carbon factoring (Financial and Technical) did SQS make a decision on going ahead with the project activity/Sr.NO 4 table B/.

Waste Solutions credentials as technical consultants for CDM projects can be ascertained by
1. UNFCCC Registered Projects - UN1040 and UN2076;
2. Extract from a report on Business Opportunities for New Zealand Clean technologies by Baker and McKenzie (Australia) for the NZ Ministry for the Environment. Waste Solutions was one of three case studies of NZ firms working in the CDM field. The overall report is currently a draft and confidential and not yet available. It will be post on the NZ MfE website in its final version.
3. http://www.wastetechnz.com/Project_Showcase/Waste_To_Energy/)
4. Mr. Chris Hearn – Senior Engineer who worked on SQS project – Short CV with contact details.

The parallel actions in securing CDM status was observed in the technical advancements for monitoring in compliance with requirements as carried out by waste solutions. (Document: P & I for monitoring). Also, a bearing was considered that Waste solutions are neither PDD writers nor traders.

Timeline 2005 - 2006
The following facts were verified from emails and public facts
MUS were contacted by SQS/Sr.NO 6 table B/ on 20/12/2005 formally for the purpose of undertaking the PDD and CER transaction. This action is in Sync with the PP opting to a generic approach of strengthening their technical aspects of the project activity as during that period there was no real progress on Thailand's political stand on CDM.
Simultaneous ambiguity can also be observed on the Thai political front where the CDM initial consent occurred only in 20th July 2005 and the Thai cabinet approving CDM regulations in August 2006.

The influence and actions do raise a question however with other projects which were webhosted, but the PP logic behind not appointing a validator and a consultant for PDD and CDM transaction was to negotiate the contract to have the desired financial impact as laid out by Waste Solutions. This can be noticed with the considerable delay in finalizing MUS can be related to the almost a nine month negotiation between MUS and SQS. Nearly 80 odd emails were exchanged. (Screen shot of the email trails attached as Appendix R4).
The proposal and contract with MUS was finally signed in December 2006/Sr.NO 10 table B/.

The purpose of this response is to bring out underlying facts that were validated which led to the DOE in issuing a positive opinion in line with the overall scenario. The reason of pointing out DNA is not to hide behind the drapes but to positively indicate as suggested by the CDM EB to assess each project in its form a fair assessment considering the Socio-economic, demographic and financial decision of the project.

Please find below the verified and validated timelines by SGS that complies with EB 41 Annex 46

Table B: Chronology of Events

Sr. No.	Date	Event	Verified Info and evidence
1	14/11/2003	Due to the planned expansion of the factory capacity, a review	Meeting minutes produced by Avebe, SQS' former company partner

Sr. No.	Date	Event	Verified Info and evidence
		of the wastewater treatment method discussion.	(Already submitted during request for registration: refer Appendix 6)
2	19/09/2004	Email communication from the mail archiving systems which states the decision that after running a pilot scale biogas operation the Project will not be viable without the extra revenue	SQS Internal email report to the Managing Director (Already submitted during request for registration: refer Appendix 4)
3	29/10/2004	SQS invited and received a proposal from a technology provider / consultant that included the CDM/Carbon Credit component	The proposal from Waste solutions was verified (Already submitted during request for registration: refer Appendix 7)
4	20/01/2005	Contract Signing between SQS and Waste Solutions	The contract was verified (Already submitted during request for registration: refer Appendix 5)
5	31/03/2005	SQS ordered the linings for the Project, commencing the project activity	This was considered as the start date and was verified through the purchase orders. The steps before the start date are a clear indication of the awareness of SQS to go ahead with the project with prior knowledge of CDM.
6	20/12/2005	SQS contacting MUS for consultancy services	Email communication was verified (Already submitted during request for registration: refer Appendix 1)
7	24/03/2006	Formal CDM consultancy proposal from MUS after extensive discussions.	Proposal excerpts were verified. Appendix 2.1
8	31/03/2006 – 19/05/2006	Acceptance of the initial proposal by SQS	Email between SQS and MUS was verified The email trail was verified from 31st March to 19th May 2006
9	23/06/2006	Email from the Lawyer to MUS on the contract conditions	Email between Pakdee Paknara and MUS
10	05/10/2006 – 29/12/2006	Finalisation of agreement after deliberation by Lawyers as stated	Email Trail
11	13/10/2006	Email Sent to UNFCCC by MUS for extension of deadline in the context of Thai projects	This shows the delay in the Thai approval process and MUS knowledge of the local situation
12	30/01/2007	Thai cabinet approves first batch of projects	This was verified by the Local assessors. The first batch of projects were approved on January 30,2007. The LoA for ATB, which was one of the 7 projects approved at this time.
13	08/06/2007	MUS enquires with ONEP regarding the new approval process	Email communication was verified
14	06/07/2007	Thailand Greenhouse Gas Management Organization (TGO) established with a view to taking over approval process from cabinet	This point is important to understand the changing varsity in the Thai scenario where it shows the development of DNA and the slow movement
15	11/07/2007 & 01/08/2007	SQS receives formal quotes for IEE in response to new rules	Formal proposal and contract was validated during validation process
16	26/07/2007	MUS requests SGS proposal	

Sr. No.	Date	Event	Verified Info and evidence
		for Validation	

While taking the EB41 Annex 46 the above chronology of events clearly points out to the fact an ongoing effort was undertaken by the project proponent and MUS in parallel to the activities.

The timeline has been verified with objective evidence such as contracts, and emails along with interviews. The evidence provided in the whole list has been found reliable and credible.

The point of the nascent state of the Thai DNA also has been taken into consideration as the decisions and timelines also rest with the parity of the national situation of Thailand

As per AM0013 Version 4; no leakage is associated with the project activity. Also, leakage against AMS IC Version 12 was examined and it was found that leakage is not associated with the project activity in accordance with AMS I C version 12.

Based on the above validated factors with respect to the Tool of additionality (Version 3) and the satisfactory closure of CARs; it is concluded that the project is not the most likely baseline scenario and additional.

4.4 Application of Baseline Methodology and Calculation of Emission Factors

The project activity is based on the following methodologies AM0013 Version 4 “Avoided Methane emissions from organic waste-water treatment” and AMS 1 C Version 12 “Thermal energy for the user with or without electricity”. As required by AM0013 methodology EB 28; Annex 13; Tool to determine project emissions from flaring gases containing methane has also been used to determine project emissions. As per AM0013 Version 4; no leakage is associated with the project activity.

As per methodology requirements the applicability of the methodology on parameters such as depth of the anaerobic lagoon, ambient temperature shall be monitored. Constants related to calculate one of the most important parameter i.e. Methane Correction Factor (MCF) for waste water has been applied as per AM0013 Version 4. Also, as per the methodology requirement the quantity of Fuel Oil consumed in the year y is capped at 140.6 TJ. This is based on the three year historical records and these have been validated on SQS’s SAP system. And values were found accurate.

CAR7 was raised as the initial worksheet provided by the project proponent did not have complete details on baseline emissions, project emissions. The project proponent responded by submitting an updated worksheet. These were verified against AM0013 Version 4 monitoring Methodology; “Tool to determine project emissions from flaring gases containing methane” Version 2; AMC 1C version 12. The assumptions and actual data was verified against plant records and found OK. Hence CAR7 was closed.

The calculation of emission factors as verified based on the baseline methodologies and the flaring tool to determine project emissions is conservative as IPCC 2006 values and national data would be used to calculate emission reductions.

4.5 Application of Monitoring Methodology and Monitoring Plan

The application of monitoring methodology and monitoring plan for the project activity is based on the following methodologies AM0013 Version 4 “Avoided Methane emissions from organic waste-water treatment” and AMS 1 C Version 12 “Thermal energy for the user with or without electricity”. As required by AM0013 methodology EB 28; Annex 13; Tool to determine project emissions from flaring gases containing methane has also been used to determine monitoring of the project emissions.

CAR8 was raised for section B.7 with respect to the source of data and measurement methods which needed more clarification when assessed against the PDD version 1. The proponent responded by revision of the section B.7 of the PDD in Version 1.3. This was verified against the monitoring methodologies, the flaring tool requirements to ensure high levels of data accuracy and reliability and found OK. Hence CAR 8 was closed.

CAR9 was raised for justification as the PMP is not adequately defined in the Annex 4 of the PDD on the following points

- Management and Organisational structure
- Roles and responsibility
- Training of monitoring Personnel
- Emergency preparedness
- Maintenance and calibration procedures
- Day-to day handling and storage of records
- Procedures for review, Internal Audits, performance review and Corrective Action.

The proponent responded by stating that all monitoring methods and plan would be incorporated in ISO 9001:2000 procedures and SQS would be following them. Based on this statement and observation of ISO 9001 procedures on site for various parameters as mentioned above it is reasonable that during verification SQS will maintain records as per ISO 9001. Hence, this was accepted and CAR9 was closed. Section B.7 also defines the above parameters.

4.6 Choice of the Crediting Period

The crediting period chosen by the project participant is the fixed crediting for 10 years. The start date of the project activity as indicated in the PDD Version 1.2 is the latter of the two date's i.e.1st of June 2008 or the date of registration of the project which ever is later. This is mentioned in PDD in section C.2. The project start date is 31-03-2005 when the first purchase order for the project activity was placed.

CAR10 was raised as Operational lifetime is unclear as the activity according to IRR calculations in PDD Version 1 is 12 years and section c.1.2 stated 10 years. The project proponent responded by stating that it was a typo error. From the project's design and interviews with plant personnel this was confirmed that all major equipment would stand for a bit more than 12 years. Hence this was accepted and CAR10 was closed.

4.7 Environmental Impacts

The project activity does not require an EIA or any equivalent requirements as per Thai regulations. This was confirmed by the local assessor, through interviews with the key stakeholders.

The project has the following positive impacts such as Improvement in Odour in the local and surrounding areas, less pollution due to avoidance of fuel Oil and protection of ground water resources. The EMP was verified and SQS will strive for continuous improvement by monitoring the environmental indicators as per ISO 14001.

4.8 Local Stakeholder Comments

There is no required by the Thai regulations to conduct a stakeholder consultation. SQS as apart of CDM process had conducted this stakeholder consultations by inviting invited key stakeholders (local leaders including the management and committee members of the Khokrerngrom and Khokphechrphattana Tambol Administrative Councils and a Kamnan and Village Head from the Khokrerngrom area) to inspect its factory premises on May 2, 2006. the invitation letters in Thai were verified by the local assessor. A total of 38 persons, attended the session. This was verified from the attendance list also in native language (Thai). Interviews were conducted by the local assessor in Thai on site to verify the process that SQS had conducted. Based on the interviews and Minutes of meeting which was verified for the local stakeholder comments received and documented in a transparent manner and no anomalies were detected.

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5. Comments by Parties, Stakeholders and NGOs

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

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

The Project Design Document for this project was made available on the SGS website http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=348 and was open for comments from 26-09-2007 until 25-10-2007. Comments were invited through the UNFCCC CDM homepage

5.2 Compilation of all Comments Received

No comments were received during ISHC process

5.3 Explanation of How Comments Have Been Taken into Account

No comments were received during ISHC process

6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
28/09/07	Mr. Sumate S	Managing Director	Project Conceptualisation CDM consideration Project Financials
28/09/07	Mr. Veerasit Mahattanakoon	Assistant manager	Project Management Monitoring Plan EMP and local regulation Local Stakeholder Consultation
28/09/07	Ms. Kyoko Tochikawa	Consultant	PDD development, Baseline Monitoring methodology and Additionality
28/09/07	Mr. Prasit Vaiyavatjamai	Consultant	PDD development, Baseline and Additionality
28/09/07	Dech Damapong	Kamnan of Tambon Khokrerngrom	Local Stakeholder Consultation
28/09/07	Watcharasak Thaiarsa	Head of civil devision,	Local Stakeholder Consultation

7. Document References

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

/1/ PDD Version 1 dated 31/08/2008
/2/ PDD Version 1.1 dated 20/01/2008
/3/ PDD Version 1.2 dated 28/02/2008
/4/ AM0013 Version 4 dated 22nd December 2006
/5/ AMS I C Version 12 dated 10th August 2007
/6/ Japanese DNA Letter of Approval dated June 10, 2008
/7/ Thai DNA Letter of Approval dated July 16, 2008
/7a/ PDD Version 1.3 dated 30/03/2009

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

/8/ An excerpt of the AVEBE meeting minutes (English), file “Nov16 Meeting minutes (14Nov03).pdf
/9/ Original email from September 19, file “Site visit Internal email of (19Sep04).pdf
/10/ Translated email of the above (English), file “Site visit Internal email of (19Sep04) translation.doc
/11/ Technology provider proposal from October 2004 (English), file “Nov16 Waste Solutions proposal to SQS (summary version w appendix).pdf
/12/ Purchase receipts for major equipments
/13/ Spreadsheet showing in-house COD measurements between 2002 and 2006 (English), file “Nov 16 COD Inhouse.xls
/14/ Email citing O&M costs (English), file “Oct8 Email re O&M.msg
/15/ Invoices for the cost of chemicals.
/16/ Jan7 Fuel heat value.pdf
/17/ In House training records
/18/ Report showing industry benchmark (English), file “NEPO IRR benchmark
/19/ ISO 9001 certificate
/20/ IRR Spreadsheet
/21/ Emission Reduction calculation sheet
/22/

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A.1 Annex 1: Local Assessment

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document

It serves as a "**reality check**" on the project that is completed by a local assessor from SGS

Issue	**Findings**	**Source/Means of Verification**	**Further Action / Clarification / Information Required?**
Host Country Approval	Pending	LoA's of Japan and Thailand	CAR1 and CAR2 have already been raised LoA of both Japan and Thailand have been received and found OK.
Project participants ownership and licenses	The project participants have the necessary licences as the project activity is well within the premises of SQS. This has been checked on-site and also IEE has been submitted	Physical land boundary, IEE	None
Actual project Status	The actual project is in compliance with the details presented in the PDD version 1.	Physical inspection of the project site	NA
Evidence is required to be submitted that the technology used would not be changed during the crediting period Project technology	SQS does not intent to substitute the project's technology for the entire crediting period	A self – declaration from SQS top management	NA
Evidence for no use of ODA	The project has been implemented based on the internal accruals of SQS and no funding from Annex 1 country has been received for the project activity. This was checked during the discussion with project proponent.	Financial records of SQS	NA

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Technical specifications for the project activity	The project design has been checked along with the burner and flare specification.	PO copies and burner and flare specification	NA
Initial training and maintenance	SQS is an ISO 9001 certified and follows all training records as per manual.	ISO 9001 documents	NA
Data compliance with respect with the existing Methodology	The historic data records have been checked against the values used in the PDD and the data is used as specified in the methodology	MIS records and archives	NA
Determination of ER	The methodology has been correctly applied and the calculations follow the AM0013 methodology	AM0013 V4 methodology and ER worksheet	NA
The media used to invite the local stakeholders	The invitation letters were verified and found Ok	Interviews and invitation letter copies	NA
1. MoM of local stakeholder consultation is required. Discussion with the local stakeholders is required during the site visit	The SHC agenda and minutes of the meeting were verified and found OK	SHC Agenda, Interviews and MoM	NA
Evidence against no EIA requirement for the project activity	As per Thai regulation only IEE is required no EIA is required	IEE	NA
Evidence for start date of the project activity.	PO copies for the linings	PO copies	NA
QA/QC procedures for data monitoring or ISO certificates for the company (if applicable)	ISO 9001/ISO 14001 certified company	ISO9001/ISO14001 training records	NA

A.2 Annex 2: Validation Protocol

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

Requirement	Reference	Comments	Conclusion
1. All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects	Marrakech Accords, CDM Modalities §30	The parties that are identified for the project activity are Thailand and Japan. Thailand had ratified the KP on 28th August 2002 (www.maindb.unfccc.int/public/country.pl?country=TH)and Japan has ratified the KP on 4th June 2002 (www.maindb.unfccc.int/public/country.pl?country=JP)	Y
2. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 and be entered into voluntarily.	Marrakech Accords, CDM Modalities §29 and §30	Japan has been identified as the Annex I party for the project activity. The project participant has to submit a LoA from Japan. Hence, CAR1 is raised.	CAR1 LoA has been received CAR1 closed.
3. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	Marrakech Accords, CDM Modalities §29 and §30 Kyoto Protocol Art. 12.2, Marrakech Accords, CDM Modalities §40a	Thailand has been identified as the Non - Annex I party for the project activity. The project participant has to submit a LoA from Thailand. Hence, CAR2 is raised.	CAR2 LoA has been received and CAR 2has been closed

Requirement	Reference	Comments	Conclusion
4. 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	Marrakech Accords, CDM Modalities, §40	The project was listed on SGS climate change website from 26th September 2007 to 25th October 2007 http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=348 This was web-hosted through the UNFCCC interface http://cdm.unfccc.int/Projects/Validation/DB/D7PRHX6GP9MLNAH5VD41GI3DS2R3O4/view.html No comments were received	Y
5. The project design document shall be in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	The project has correctly applied the PDD template	Y
6. The project participants shall submit a letter on the modalities of communication (MoC) before submitting a request for registration	EB-09 F_CDM_REG form	To be checked	Pending The MoC has been received from the project proponent dated the 18th April 2008 and has been signed by both parties
7. For AR projects, the host country shall have issued a communication providing a single definition of minimum tree cover, minimum land area value and minimum tree height. Has such a letter been issued and are the definitions consistently applied throughout the PDD?		NA	NA

Table 2 PDD

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A. General Description of Project Activity					
A.1. Project Title					
A.1.1. Does the used project title clearly enable to identify the unique CDM activity?	1	DR	The project title is unique" Siam Quality Starch Wastewater Treatment and Energy Generation Project in Chaiyaphum, Thailand". This will be checked against the LoAs	Pending CAR1 and CAR2	Y
A.1.2. Are there an indication of a revision number and the date of the revision?	1	DR	The PDD clearly indicates the version no and date of revision	Y	Y
A.1.3. Is this in consistency with the time line of the project's history?	1	DR	The consistency has been maintained with the timeline of the project history	Y	Y
A.2. Description of the Project Activity					
A.2.1. Is the description delivering a transparent overview of the project activities?	1	DR	The project activity is to treat wastewater using a covered In-ground Anaerobic reactor thereby avoiding methane emissions and to utilise the biogas generated for heat generation.	Y	Y
A.2.2. Is all information provided in compliance with actual situation or planning?	1	DR	To be checked during Site Visit	Pending	Y
A.2.3. Is all information provided consistent with details provided in further chapters of the PDD?	1	DR	The information provided seem to be consistent with details provided in further chapters of the PDD	Y	Y
A.3. Project Participants					
A.3.1. Is the table required for the indication of project participants correctly applied?	1	DR	The table has been applied correctly and two project participants are clearly identified i.e. Siam Quality Starch Co. Ltd. And Mitsubishi UFJ Securities Co., Ltd	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.3.2. Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	1	DR	The information provided is consistent with the details provided in Annex I of the PDD version 1.2. All relevant details for the project participants have been provided.	Y	Y
A.4. Technical Description of the Project Activity					
A.4.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	1	DR	The location of the project activity is unclear as more details are required possibly a GPS co-ordinate or physical address of the activity under A.4.1.4 of the PDD version 1.	NIR3	Y
A.4.2. Do the project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites?	1	DR	To be checked on site	Pending	Y
A.4.3. Does the description of the technology to be applied provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance and is the explanation how the project will reduce greenhouse gas emission transparent and suitable?	1	DR	The project activity is to treat waste water with a Covered In Ground Aerobic Reactor (CIGAR) where the organic compounds in the wastewater would be broken down with the help of anaerobic bacteria. This reduces the COD by around 80% and the biogas is recovered. The generated methane is sent to the boilers which were earlier using Fuel oil for thermal energy. The technology employed thus has an impact in capture and using methane as an energy source and thereby also reducing usage of fuel oil. Excess methane in the system has the provision of flaring	Y	Y
A.4.4. Does the project design engineering reflect current good practices?	1	DR	The CDM project activity uses a CIGAR and the design conditions do reflect current good practices. Will also be checked during SV	Y	Y
A.4.5. Is all information provided in compliance with actual situation or planning as available by the project participants?	1	DR	TBC during SV	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.4.6. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	1	DR	The project activity does use technology which would result in significantly better performance	Y	Y
A.4.7. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1	DR	TBC during SV	Pending	Y
A.4.8. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1	DR	TBC during SV	Pending	Y
A.4.9. Does the project make provisions for meeting training and maintenance needs?	1	DR	TBC during SV	Pending	Y
A.4.10. Is a schedule available on the implementation of the project and are there any risks for delays?	1	DR	TBC during SV	Pending	Y
A.4.11. Is the table required for the indication of projected emission reductions correctly applied?	1	DR	The table required for indication of project emission reductions are correctly applied	Y	Y
A.5. Public Funding					
A.5.1. Does the information on public funding provided conform with the actual situation or planning as presented by the project participants?	1	DR	The project funding is totally on equity as per the PDD.	Pending	Y
A.5.2. Is all information provided consistent with details provided by further chapters of the PDD (in particular annex 2)?	1	DR	The information provided looks consistent with details provided in Annex 2. Will be also checked during SV	Pending	Y
A.5.3. In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance	1	DR	The seem to be no public funding involved. Will be also checked during SV	Pending	Y
A.6. Debundling					
A.6.1. Is the small-scale project activity a debundled component of a large scale project activity	1	DR	Not Applicable. The project activity is a large scale activity	NA	NA

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.6.2. If the project is a debundled component of a larger project, does the larger project fall within the limits for small-scale CDM project activities	1	DR	Not Applicable. The project activity is a large scale activity	NA	NA
B. Baseline and Monitoring Methodology					
B.1. Choice and Applicability					
B.1.1. Is the project using an approved simplified methodology?	1	DR	The project activity is based on methodologies (AM0013 Version 4 and AMS 1C Version 12) and is a large scale activity. Both methodologies are currently applicable	Y	Y
B.1.2. Does the project activity qualify as small scale project?	1	DR	The project activity is a large scale project activity	NA	NA
B.1.3. Is the category(ies) of the project activity correctly identified in accordance with Appendix B to the simplified modalities and procedures for small-scale CDM project activities?	1	DR	The project activity is a large scale project activity	NA	NA
B.1.4. Is the project activity a bundle of several small scale activities and if so does it contain any sub-bundles	1	DR	The project activity is a large scale project activity	NA	NA
B.1.5. If the project activity is a bundle of several small scale activities, does the sum of the total bundle (including any subbundles) fall within the limits for small scale projects	1	DR	The project activity is a large scale project activity	NA	NA
B.1.6. If the project activity is a bundle of several small scale activities, has the form with information related to the bundle been submitted and is it correctly used	1	DR	Not Applicable	NA	NA
B.2. Project Boundary					
B.2.1. Has the project boundary of the project activity been based on the guidance of the applicable project category?	1	DR	The project boundary for the project activity looks appropriate and is based on the guidance of the applicable project category	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.2.2. In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with EB guidance and the underlying methodology?	1	DR	The project activity is not a grid connected	NA	NA
B.2.3. Are the project's spatial boundaries (geographical) and the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	1	DR	Pending NIR.	Pending NIR	Y
B.3. Identification of the Baseline					
B.3.1. Does the PDD discuss the identification of the most likely baseline?	1	DR	The PDD does discuss the identification of the most likely scenario which for this project activity would be the continuation of the existing scenario where the wastewater would be sent to the open lagoons for treatment.	Y	Y
B.3.2. Is the discussion and determination of the chosen baseline transparent and supported by the available data?	1	DR	The baseline scenario determination is not clear in the PDD version 1 and is not accordance with the methodology as the Step 2 defined in AM0013 Version 4 has been omitted and Step 4 of is not clear.	CAR4	Y
B.3.3. Is conservativeness addressed in the way of identifying the baseline?	1	DR	Pending CAR	Pending	Y
B.4. Additionality					
B.4.1. Is the discussion on additionality and the evidence provided consistent with the starting date of the project	1	DR	The start date of the project activity as stated in section C.1.1 is 31st march 2005. It is not clear from the PDD version 1 on how the project conceptualisation started for the CDM activity. Kindly elaborate (with timeline(s)) using documentary evidence.	CAR5	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
▪ Is the discussion on additionality based on a comparison with realistic and credible alternatives?	1	DR	The additionality has to be supplemented by documented evidence as it is not very evident from the PDD for the following reasons: • The IRR spreadsheet and its assumptions have to be justified by documentary evidence. • The IRR with consideration of CDM is not detailed in the PDD Version 1 • The barrier analysis is not clear as it speaks of technological barrier. Clarify. • The benchmarking of the IRR is not clear and has to be substantiated by documentary proof.	CAR6	Y
B.4.2. Does the discussion on additionality take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations??	1	DR	Pending CAR	Pending	Y
B.4.3. Has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have prevented the implementation of at least one of the alternatives?	1	DR	Pending CAR	Pending	Y
B.4.4. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario	1	DR	Pending CAR	Pending	Y
B.5. Application of the Simplified Methodology					
B.5.1. Has the simplified methodology been applied correctly for determining **baseline emissions**?	1	DR	From the PDD project emission determination looks Ok, however calculation spreadsheets along with documentary evidence need to be provided so as this can be confirmed.	CAR7	Y
B.5.2. Has the simplified methodology been applied correctly for determining **project emissions**?	1	DR	Pending CAR7	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.5.3. Has the simplified methodology been applied correctly for determining **leakage**?	1	DR	There is no leakage as the project activity uses AM0013 version 4	Y	Y
B.5.4. Have all the methodological choices been explained, have they been properly justified and are they correct	1	DR	The methodological choices that have been adopted as per AM0013 Version 4 and AMS IC version 12 have been explained and look OK as per PDD. These factors shall also be examined during the SV	TBC	Y
B.5.5. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	1	DR	The methodology AM0013 Version 4 is well defined and addresses all necessary guides. As per for the GHG estimates due to flaring as per the guidelines laid in the methodology the flaring tool has been used. This shall also be examined during the SV	TBC	Y
B.6. Ex-ante Data and Parameters Used					
B.6.1. Are the data provided in compliance with the simplified methodology?	1	DR	The parameters are in compliance with the methodology AM0013 Version 4 and AMS I C version 12. To be checked during the Site visit w.r.t actual situation available on site	TBC	Y
B.6.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted?	1	DR	The data that will be used from official sources include the emission factor from the Grid and the COD discharge values. These parameters have been correctly quoted	Y	Y
B.6.3. Is the vintage of the baseline data correct?	1	DR	The vintage of the baseline data is correct and the most recent data has been used	Y	Y
B.7. Calculation of Emissions Reductions					
B.7.1. Has the approved methodology been applied correctly for determining **emission reductions**?	1	DR	The approved methodology has been applied correctly for determining the emission reductions. This will also be checked during the SV	TBC	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.7.2. Are the emission reduction calculations documented in a complete and transparent manner?	1	DR	The emission reductions have been documented in a complete and transparent manner. The PDD and the worksheet submitted have been verified and the calculations are reproducible.	Y	Y
B.7.3. Have conservative assumptions been used to calculate emission reductions?	1	DR	TBC during Site Visit against plant data used	TBC	Y
B.7.4. Is the projection based on provable input parameter?	1	DR	TBC during Site Visit against plant data used	TBC	Y
B.7.5. Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	1	DR	The procedures are clearly documented and are consistent	Y	Y
B.7.6. Is the calculation of the emission reduction correct?	1	DR	TBC	TBC	Y
B.8. Emission Reductions					
B.8.1. Will the project result in fewer GHG emissions than the baseline scenario?	1	DR	As per the calculations carried out and the project activity the project will result in fewer GHG emissions than in the baseline scenario.	Y	Y
B.8.2. Is the form/table required for the indication of projected emission reductions correctly applied?	1	DR	The table has been correctly applied for the indication of projected emission reduction	Y	Y
B.8.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	1	DR	The projection seems to be in line with the envisioned time schedule	Y	Y
B.9. Monitoring Methodology					
B.9.1. Does the monitoring methodology provide a consistent approach in the context of all parameter to be monitored and further information provided by the PDD?	1	DR	The project meets the applicability criteria listed in the monitoring methodology as per PDD version 1. However section B.7 the source of data and measurement methods needs to be clarified.	CAR8	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.9.2. Does the monitoring methodology consistently apply the choice of the option selected for monitoring both of project and baseline emissions?	1	DR	Pending CAR	Pending	Y
B.10. Data and Parameters Monitored					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	1	DR	The PMP is not adequately defined in the Annex 4 of the PDD. Justify • Management and Organisational structure • Roles and responsibility • Training of monitoring Personnel • Emergency preparedness • Maintenance and calibration procedures • Day-to day handling and storage of records • Procedures for review, Internal Audits, performance review and Corrective Action.	CAR9	Y
B.10.2. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the simplified methodology applied?	1	DR	Pending CAR	Pending	
B.10.3. Will it be possible to determine the specified project GHG indicators?	1	DR	Pending CAR	Pending	Y
B.10.4. Will the indicators enable comparison of project data and performance over time?	1	DR	Pending CAR	Pending	Y
B.10.5. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	1	DR	Pending CAR	Pending	Y
B.10.6. Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or intended or unintended changes in data records?	1	DR	Pending CAR	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.10.7. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	1	DR	Pending CAR	Pending	Y
B.10.8. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	1	DR	Pending CAR	Pending	Y
B.11. Quality Control (QC) and Quality Assurance (QA) Procedures					
B.11.1. Is the selection of data undergoing quality control and quality assurance procedures complete?	1	DR	All relevant data selected have QA/QC procedures defined	Y	Y
B.11.2. Is the belonging determination of uncertainty levels done correctly for each ID in a correct and reliable manner?	1	DR	The uncertainty levels for each ID are reasonable and follow the methodologies used	Y	Y
B.11.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	1	DR	Pending CAR	Pending	Y
B.11.4. Is it ensured that data will be bound to national or internal reference standards?	1	DR	Pending CAR	Pending	Y
B.11.5. Is it ensured that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions?	1	DR	The conflict of interest factor is relatively low. This shall also be examined during the site visit	TBC	Y
B.12. Operational and Management Structure					
B.12.1. Is the authority and responsibility of project management clearly described?	1	DR	Pending CAR	Pending	Y
B.12.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	1	DR	Pending CAR	Pending	Y
B.12.3. Are procedures identified for training of monitoring personnel?	1	DR	Pending CAR	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.13. Monitoring Plan (Annex 4)					
B.13.1. Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity?	1	DR	Pending CAR	Pending	Y
B.13.2. Does the monitoring plan completely describes all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	1	DR	Pending CAR	Pending	Y
B.13.3. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	1	DR	Pending CAR	Pending	Y
B.13.4. Are procedures identified for calibration of monitoring equipment?	1	DR	Pending CAR	Pending	Y
B.13.5. Are procedures identified for maintenance of monitoring equipment and installations?	1	DR	Pending CAR	Pending	Y
B.13.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	1	DR	Pending CAR	Pending	Y
B.13.7. Are procedures identified for dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems??	1	DR	Pending CAR	Pending	Y
B.13.8. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	1	DR	Pending CAR	Pending	Y
B.13.9. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	1	DR	Pending CAR	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.14. Baseline Details					
B.14.1. Is there any indication of a date when determine the baseline?	1	DR	The baseline was determined in April 2007 by Clean Energy Finance Committee Mitsubishi UFJ Securities Co., Ltd. Tokyo, Japan Phone: +81-3-6213-6331	Y	Y
B.14.2. Is this in consistency with the time line of the PDD history?	1	DR	The baseline determination seems to be consistent with the timeline of the PDD	Y	Y
B.14.3. Is all data required provided in a complete manner by annex 3 of the PDD?	1	DR	All required data has been determined in section B.6 and this has been stated in Annex 3. Will also be checked during SV	TBC	Y
***C.* Duration of the Project / Crediting Period**					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	1	DR	The project start date is stated as 31st March 2005 Operational lifetime is unclear as the activity according to IRR calculations in PDD Version 1 is 12 years and section c.1.2 states 10 years. Explain Also, the projects operational lifetime does not exceed the crediting period. Please clarify.	CAR10	Y
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	1	DR	The crediting period for the project activity is chosen as 10 years. Pending CAR10	Pending	Y
C.1.3. Does the project's operational lifetime exceed the crediting period	1	DR	Pending CAR10	Pending	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
D. Environmental Impacts					
D.1.1. Does the project comply with environmental legislation in the host country?	1	DR	The analysis of the environmental impacts has been sufficiently described. However EMP will be checked.	TBC	Y
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	1	DR	There is no requirement for EIA as per Thai regulations	Y	Y
E. Stakeholder Comments					
E.1.1. Have relevant stakeholders been consulted?	1	DR/I	The local stakeholder has been invited to visit the plant with comments related to project proponent on May 02, 2007.	Y	Y
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	1	DR/I	The appropriate media has been used to invite comments by local stakeholders as official invitation letter issued dated April 25, 2007.	Y	Y
E.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	No, as per Thai regulations SHC is not mandated by law. However the SHC is conducted as per the CDM process	Y	Y
E.1.4. Is the undertaken stakeholder process described in a complete and transparent manner?	1	DR	TBC on site	TBC	Y
E.1.5. Is a summary of the stakeholder comments received provided?	1	DR/I	All comments have been summarized as provided in PDD regarding to runoff discharge and odour.	Y	Y
E.1.6. Has due account been taken of any stakeholder comments received?	1	DR/I	Due account has been taken and measures are on-going	Y	Y

A.3 Annex 3: Overview of Findings

Findings Overview

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Date:	27/09/2007			Raised by:	Kamesh Iyer		
No.:	1	Type:	CAR	Issue :	LoA from Japan DNA (Annex -1)	Ref.:	AU4 Table 1, Point 2
Lead Assessor Comment					Date: 27/09/2007		
The proponent is required to submit the LoA from the Japan DNA (Annex – 1) as per CDM modalities.							
Project Participant Response:					Date: 17/04/2008		
We are currently awaiting LoA from Japan DNA.							
Acceptance and Close out by Lead Assessor: No					Date: 17/04/07		
Information Provided: N/A Information Verified: N/A						Verified Document Reference: N/A	
Reasoning for not acceptance or acceptance and close out: LoA from Japan DNA has to be provided, CAR1 stands							
Project Participant Response:					Date: 09/07/2008		
Letter of Approval is attached along with translated English copy							
Acceptance and Close out by Lead Assessor:					Date: 09/07/2008		
Information Provided: Japan letter of Approval Information Verified: The LoA was verified with the help of SGS Japan counterpart for assessment of English translation and found OK						Verified Document Reference: 6	
Reasoning for not acceptance: The letter of Approval from Japanese DNA was verified in English translation and was found OK. Hence CAR1 is closed.							

Date:	27/09/2007			Raised by:	Kamesh Iyer		
No.:	2	Type:	CAR	Issue :	LoA from Thailand DNA	Ref.:	AU4 Table 1, Point 3
Lead Assessor Comment					Date: 27/09/2007		
The proponent is required to submit the LoA from the Thailand DNA as per CDM modalities.							
Project Participant Response:					Date: 17/04/2008		
We are currently awaiting LoA from Thailand DNA.							
Acceptance and Close out by Lead Assessor: No					Date: 17/04/07		
Information Provided: N/A Information Verified: N/A						Verified Document Reference: N/A	
Reasoning for not acceptance: **LoA from Thailand DNA has to be provided, CAR2 stands**							
Project Participant Response:					Date:25/07/2008		
LoA from Thai DNA is provided.							

Acceptance and Close out by Lead Assessor:	Date: 28/07/2008
Information Provided: Thailand letter of Approval Information Verified: The LoA was verified with the help of SGS Thailand local assessors for assessment of English translation and found OK	Verified Document Reference: 7
Reasoning for not acceptance: The letter of Approval from Thai DNA was verified in English translation and was found OK. Hence CAR2 is closed.	

Date:	27/09/2007			Raised by:	Kamesh Iyer		
No.:	3	Type:	NIR	Issue :	Project Location	Ref.:	A.4.1
Lead Assessor Comment					Date: 27/09/2007		
The location of the project activity is unclear as more details are required possibly a GPS co-ordinate or physical address of the activity under A.4.1.4 of the PDD version 1.							
Project Participant Response:					Date: 29/02/2008		
Section A.4.1.4 has been revised to show the exact physical address, which is 222 Moo 10, Suranarai Road, Kokroengrom, Bumnet-Narong, Chaiyaphum Province, Thailand.							
Acceptance and Close out by Lead Assessor:					Date: 17/04/2008		
Information Provided: PDD Version 1.2 Information Verified: PDD Version 1.2 Site visit					Verified Document Reference: 2, 3		
Reasoning for acceptance and close out: The postal Address has been verified by Local Assessors and hence, **NIR3 is closed out**							

Date:	27/09/2007			Raised by:	Kamesh Iyer		
No.:	4	Type:	CAR	Issue :	Baseline Scenario	Ref.:	B.3.2
Lead Assessor Comment					Date: 27/09/2007		
The baseline scenario determination is not clear in the PDD version 1 and is not accordance with the methodology as the Step 2 defined in AM0013 Version 4 has been omitted and Step 4 of is not clear.							
Project Participant Response:					Date: 29/02/2008		
In response to the CAR, Step II (Check for consistency with mandatory laws and regulations) has been added to Section B.4, in line with the methodology. In addition, Step IV (Confirmation by applying the latest version of the “Tool for demonstration and assessment of additionality”) has been added to Section B.4. It is noted that both steps are carried out in Section B.5.							
Acceptance and Close out by Lead Assessor:					Date: 17/04/2008		
Information Provided: Changes have been reflected in revised PDD. Information Verified: AM0013 Version 4 (Pg 3) Step 4 for the identification of the baseline scenario, PDD Version 1.2					Verified Document Reference: 2, 4,		

Reasoning for not acceptance:
AM0013 Version 4 (Pg 3) Step 4 for the identification of the baseline scenario states a requirement for comparing IRR of different scenarios which should also explicitly state the following parameters

- Incremental investment Cost
- & M Cost and
- All other cost of implementing the technology of the each alternative option
- All revenues generated by the implementation of the technology except carbon revenues

The PDD version 1.2 does not compare economic attractiveness as directed by the methodology.
CAR4 is open for justification

Project Participant Response:	Date: 25/04/2008

(Insert Response)
It is noted that Step 4 of AM0013 (p3), which states: "Compare the economic attractiveness without revenues from CERs for all alternatives that are remaining by applying Step 2 of the latest version of the "Tool for demonstration and assessment of additionality"… The economic investment analysis shall use the IRR analysis…"

The methodology refers to alternatives that remain from Step 3 of the baseline assessment. As stated in Step III on p12 of the PDD, the only remaining alternative is the continuation of current practice, and is therefore by default the most cost-effective baseline scenario.

For further clarity, the relevant section has been changed as follows:

"Step IV. Compare economic attractiveness of remaining alternatives

In this step, it is necessary to compare the economic attractiveness without revenues from CERs for all alternatives that are remaining by applying Step 2 of the latest version of the "Tool for demonstration and assessment of additionality". As identified in Step III above, the only remaining alternative is Alternative D, the continuation of current practice. As the only remaining alternative, an economic comparison is not conducted.

For the economic investment analysis of Alternative A (the CDM project activity), which has already been ruled out, please refer to Section B.5. For clarity, it is noted that the investment analysis in B.5 is separate to the economic analysis referred to here, in Step IV."

Acceptance and Close out by Lead Assessor:	Date: 25/04/2008

Information Provided: PDD Version 1.2 Information Verified: AM0013 Version 4 (Pg 3) Step 4 for the identification of the baseline scenario, PDD Version 1.2	Verified Document Reference: 3, 4

Reasoning for acceptance:
The inclusion of Step 4 has been validated based on the methodology requirements and section B.5 has verified and found OK. CAR4 is closed

Date:	27/09/2007			Raised by:	Kamesh Iyer		
No.:	5	Type:	CAR	Issue :	Serious CDM Consideration	Ref.:	B.4.1

Lead Assessor Comment	Date: 27/09/2007

It is not clear from the PDD version 1 on how the project conceptualisation started for the CDM activity. Kindly elaborate (with timeline(s)) using documentary evidence.

Project Participant Response:	Date: 29/02/2008

The timeline was clarified during the site visit, which is further explained as follows.

- 14 November 2003. Due to the planned expansion of the factory capacity, a review of the

wastewater treatment method was discussed. Meeting minutes produced by Avebe, SQS' then partner, was shown to the DOE during the site visit. An excerpt of the meeting minutes is provided.

- 19 September 2004. It was decided after running a pilot scale biogas operation that the Project will not be viable without the extra revenue from the sale of carbon credits. A time stamped email was shown to the DOE during the site visit. The English translation of the said email is also provided.
- October 2004. SQS invited and received a proposal from a technology provider / consultant that included the CDM component. The proposal is provided. SQS eventually decided to retain this technology provider / consultant.

31 March 2005. SQS ordered the linings for the Project, commencing the project activity.

Acceptance and Close out by Lead Assessor:	Date: 17/04/2008

Information Provided:	Verified Document Reference:
• An excerpt of the AVEBE meeting minutes (English), file "Nov16 Meeting minutes (14Nov03).pdf" • Original email from September 19 (Thai), file "Site visit Internal email of (19Sep04).pdf" • Translated email of the above (English), file "Site visit Internal email of (19Sep04) translation.doc" • Technology provider proposal from October 2004 (English), file "Nov16 Waste Solutions proposal to SQS (summary version w appendix).pdf" • SQS further approached MUS during the construction phase on December 20, 2005 for proceeding with the CDM consultancy. This was verified via email sent to MUS by the oversees co-ordinator on 20th December 2005. • 24th April 2006 was when SQS commissioned the CIGAR system. • The agreement between MUS and SQS finally was signed on 22nd November 2006 after delibrations on both sides by lawyers. These details were verified by the email communications that took place. • Further it was also explained by the Project Proponents that there was a significant lapse between the time of project implementation and start of validation due to the long period of non-approval of projects by the Thai DNA. This prompted MUS and SQS to wait to contract a DOE. To substantiate MUS' intimate knowledge of the progress of the Thai DNA approval at the time, a response was submitted which included a letter to UNFCCC EB by MUS on behalf of all Thai project proponents sent on October 13, 2006 for request for special extension of deadline for Thai retroactive credits. SQS however does not feature in the list as they were not under any agreement with MUS till that date. The first batches of projects were approved in early 2007 and the second batch in late 2007, it was explained by the Project Proponents that the DNA approval remains a significant delaying factor Information Verified: AM0013 Version 4 monitoring Methodology Email archives in the plant by SGS Thailand had been verified along with the chronology and order of events and it was found that serious CDM consideration was present well before the project activity and the delay is justified.	8, 9, 10, 11

Reasoning for acceptance and close out:
The email archives were verified and the Thai translations were checked by the local assessors who confirmed that translated copies were OK. Hence based on the proofs submitted and observed during site visit **CAR5 is closed**.

Date:	27/09/2007			Raised by:	Kamesh Iyer		
No.:	6	Type:	CAR	Issue :	Additionality	Ref.:	B.4.1

Lead Assessor Comment	Date: 27/09/2007

The additionality has to be supplemented by documented evidence as it is not very evident from the PDD for the following reasons:

- The IRR spreadsheet and its assumptions have to be justified by documentary evidence.
- The IRR with consideration of CDM is not detailed in the PDD Version 1
- The barrier analysis is not clear as it speaks of technological barrier. Clarify.
- The benchmarking of the IRR is not clear and has to be substantiated by documentary proof.

Project Participant Response:	Date: 29/02/2008

In response to the CAR, the following documents have been provided. In addition, relevant sections of the PDD have been revised to reflect the additional information.

- In response to the DOE comment: “The IRR spreadsheet and its assumptions have to be justified by documentary evidence”,
  - (a) Purchase receipts for major equipments to justify the project cost.
  - (b) In-house COD measurements, which justify the COD load of 15kg/m3.
  - (c) Internal email citing actual O&M costs for the SQS facility in the years before project implementation. The actual O&M costs, between 5.7% and 7.9%, formed the basis for SQS’s estimation of an O&M cost for the project activity, which was set at 5% of capex.
  - (d) Email and invoice showing the cost of chemicals, which justifies the figure of 5.5 baht/m3 effluent.
  - (e) Fuel oil analysis results to justify the heat value of 41MJ/l.
- In response to the DOE comment: “The IRR with consideration of CDM is not detailed in the PDD Version 1”,
  - (f) The IRR calculation spreadsheet, which shows the IRR with CDM income at 27.03%. It is noted that whilst Version 02 of the Tool for demonstration and assessment of additionality (additionality tool), as part of step 5, required the IRR with CDM income to be shown in the PDD, subsequent versions of the additionality tool does not require this to be shown in the PDD. Nevertheless, it is included in the IRR calculation spreadsheet.
- In response to the DOE comment: “The barrier analysis is not clear as it speaks of technological barrier. Clarify.”,
  - (g) Three (3) sets of records for in-house training for the operation of the anaerobic digester, biogas handling and burner operation, to show that an upgrading of skills was essential due to the complexity of the new system.

  It is noted that, in order to avoid confusion to the reader, Step 3 (barrier analysis) has been removed from Section B.5, as the main barrier is financial, which is dealt with in Step 2 (investment analysis). Nevertheless, it remains true that technical difficulties compounded the financial problems SQS faced.
- In response to the DOE comment: “The benchmarking of the IRR is not clear and has to be substantiated by documentary proof.”,

The document “Biomass-Based Power Generation and Cogeneration Within Small Rural Industries of

Thailand" produced by the government entity National Energy Policy Office (now Energy Policy and Planning Office), which shows an acceptable IRR "hurdle rate" of 23%. This report has relevance to the project as it deals with small rural industries using biogenic fuels for power generation. It is noted that all projects cited are in the food industry, the same rural industry that SQS also belongs to. The PDD explains that SQS' internal benchmark was 20% but adopted a benchmark of 15% for conservatism. The NEPO report stipulating a benchmark of 23% justifies both SQS' internal benchmark and the final benchmark, as both conservative and realistic	
Acceptance and Close out by Lead Assessor:	Date: 17/04/2008
Information Provided: • Purchase receipts for major equipments • Spreadsheet showing in-house COD measurements between 2002 and 2006 (English), file "Nov 16 COD Inhouse.xls" • Email citing O&M costs (English), file "Oct8 Email re O&M.msg" • Email and invoice showing the cost of chemicals (Thai), files "Nov 16 chemical cost 1.jpg", "Nov 16 chemical cost 2.jpg", and "Nov 16 chemical cost 3.jpg" • Fuel oil analysis results, "Jan7 Fuel heat value.pdf" • Calculation spreadsheet (English), file "SQS Wastewater project calcs 6Oct07 (rev28Feb08).xls" • In-house training records, files "Nov16 Inhouse training (AD).jpg", "Nov16 Inhouse training (biogas).jpg", and "Jan27 Inhouse training (burner).pdf" • Report showing industry benchmark (English), file "NEPO IRR benchmark Information Verified: IRR Spreadsheet AM0013 Version 4 monitoring Methodology, "Tool to determine project emissions from flaring gases containing methane" Version 2 AMC 1C version 12	Verified Document Reference: 12, 13, 14, 15, 16, 17, 18
Reasoning for acceptance: The information verified co-relates with the data provided by Project Proponent. The data has been verified and provides clarity on establishing the financial additionality of the project. Hence CAR is closed.	

Date:	27/09/2007			Raised by:	Kamesh Iyer		
No.:	7	Type:	CAR	Issue :	Baseline calculation	Ref.:	B.5.1
Lead Assessor Comment					Date: 27/09/2007		
Calculation spreadsheets need to be provided to determine baseline, projects emission and emission reduction calculations.							
Project Participant Response:					Date: 29/02/2008		
An updated spreadsheet that includes the baseline emission, project emission and emission reduction calculations has been provided. This replaces the previous spreadsheet provided on 26 September 2007.							
Acceptance and Close out by Lead Assessor: **Yes**					Date: 17/04/2008		

Information Provided: Emission Reduction Calculation spreadsheet Information Verified: Calculation Spreadsheet, AM0013 Version 4 monitoring Methodology, "Tool to determine project emissions from flaring gases containing methane" Version 2 AMC 1C version 12	Verified Document Reference: 4, 5, 21
Reasoning for acceptance and close out: The spreadsheet has been verified and the calculations are in order as per the approved methodologies of AM0013 Version 4, AMS I C Version 12 and "Tool to determine project emissions from flaring gases containing methane" Version 2. The conservative approach as suggested by the methodologies and flaring tool has been addressed and hence based on the spreadsheet and information verified **CAR7 is closed**.	

Date:	27/09/2007			Raised by:	Kamesh Iyer		
No.:	8	Type:	CAR	Issue :	Monitoring Methodology	Ref.:	B.9.1

Lead Assessor Comment	Date: 27/09/2007
The project meets the applicability criteria listed in the monitoring methodology as per PDD version 1. However section B.7 the source of data and measurement methods needs to be clarified.	
Project Participant Response:	Date: 29/02/2008
In response to the CAR and comments received during the site visit, the PDD has been revised to clarify the source of data and measurement methods for a number of parameters. For details, please refer to the revised PDD.	
Acceptance and Close out by Lead Assessor:	Date: 17/04/2008
Information Provided: PDD Version 1.2. Information Verified: PDD Version 1.2 AM0013 Version 4 Monitoring Methodology "Tool to determine project emissions from flaring gases containing methane" Version 2 AMS 1C version 12 Monitoring Methodology	Verified Document Reference: 2, 3, 4, 5
Reasoning for acceptance and close out: The PDD Version 1.2 has followed the AM0013 Version 4 Monitoring methodology, "Tool to determine project emissions from flaring gases containing methane" Version 2 and AMS 1C Version 12. Hence **CAR is closed.**	

Date:	27/09/2007			Raised by:	Kamesh Iyer		
No.:	9	Type:	CAR	Issue :	Monitoring Methodology	Ref.:	B.10.1

Lead Assessor Comment	Date: 27/09/2007
The PMP is not adequately defined in the Annex 4 of the PDD. Justify Management and Organisational structure Roles and responsibility Training of monitoring Personnel Emergency preparedness Maintenance and calibration procedures Day-to day handling and storage of records Procedures for review, Internal Audits, performance review and Corrective Action.	
Project Participant Response:	Date: 29/02/2008

Annex 4 has been revised to define the PMP. It is noted that SQS will follow procedures set out in ISO9001, which it is accredited for. It is noted that the DOE confirmed during the site visit that SQS is accredited for ISO9001, ISO 14001, and ISO 18001.	
Acceptance and Close out by Lead Assessor:	Date: 17/04/2008
Information Provided: PDD version 1.2. Information Verified: PDD version 1.2. ISO 9001 certificate and procedures	Verified Document Reference: 19
Reasoning for acceptance and close out: SQS is accredited for ISO 9001 and its apex manual has set procedures for PMP which has been verified during site visit. This shall also be verified during verification. Based on this, **CAR is closed**.	

Date:	27/09/2007			Raised by:	Kamesh Iyer		
No.:	10	Type:	CAR	Issue :	Operational Lifetime	Ref.:	C.1.1
Lead Assessor Comment					Date: 27/09/2007		
Operational lifetime is unclear as the activity according to IRR calculations in PDD Version 1 is 12 years and section c.1.2 states 10 years. Explain Also, the projects operational lifetime does not exceed the crediting period. Please clarify.							
Project Participant Response:					Date: 29/02/2008		
The operational lifetime is clarified as 12 years. There were typos in Section C, where the operational lifetime of the project (12 years) and the length of the crediting period (10 years) were reversed. These typos have been rectified in the revised PDD. It is also noted that the expected operational lifetime of the Project was based on the respective lifetime estimates provided to SQS by equipment suppliers for the major equipments, and SQS engineers' own estimates.							
Acceptance and Close out by Lead Assessor:					Date: 17/04/2008		
Information Provided: PDD Version 1.2 Information Verified: Equipment suppliers mail						Verified Document Reference:	
Reasoning for not acceptance: The information has been verified and it is found that the systems can exceed the length of 12 years, however 12 years is based on respective estimates and has been found adequate and does not affect length of the project activity as SQS has provided an undertaking stating that it will not substitute the technology till the end of the crediting period.							

A.4 Annex 4: Team Members Statements of Competency

Statement of Competence

Name: Kamesh Iyer SGS Affiliate: India

Status

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

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

Scopes of Expertise

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

Approved Member of Staff by: Siddharth Yadav Date: 06.04.2008

Statement of Competence

Name:Kaviraj Singh Pradhan SGS Affiliate:SGS India Pvt. Ltd.

Status

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

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

Scopes of Expertise

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

Approved Member of Staff by Siddharth Yadav Date: 8th October 2007

Statement of Competence

Name: Pitipoom Tungsirisuteekul SGS Affiliate:SGS (Thailand) Ltd.

Status

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

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

Scopes of Expertise

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

Approved Member of Staff by Shivananda Shetty Date: 09th July 2008

Statement of Competence

Name:Nattarin Thunsiri SGS Affiliate:SGS (Thailand) Ltd.

Status

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

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

Scopes of Expertise

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

Approved Member of Staff by Shivananda Shetty Date: 09th July 2008