

VALIDATION REPORT

MITSUBISHI SECURITIES CO., LTD.

VALIDATION OF THE
PNOC EC PAYATAS
LANDFILL GAS TO ENERGY PROJECT
IN THE PHILIPPINES



REPORT No. 9105022444-01

REVISION No. 00

CDM - Project title	PNOC EC Payatas Landfill Gas to Energy Project in the Philippines
Host country	Philippines
Activity type	CDM – Validation (full-scale)
Client	Mitsubishi Securities Co., Ltd.
Project No.:	01 997 9105022444
Validation Team	Dr. M. Brinkmann, M. Honda, J Yasumoto (TUV Rheinland Japan Ltd.) Ms. Sh. Rubico, E. Santos (TUV Rheinland Philippines Ltd.)
Report No.	01 997 9105022444-01
Revision:	First Issue, 2004-03-19
Distribution:	No distribution without permission from the Client or responsible organisational unit

Summary:

TÜV Rheinland Japan Ltd., member of TÜV Rheinland Group, has performed a validation of the “PNOC EC Payatas Landfill Gas to Energy Project in the Philippines”. The CDM Project activity will utilize landfill gas (LFG) recovered from the Payatas landfill sites in Quezon City, Philippines. It is intended to use the landfill gas for electricity generation by means of modular gensets (total ca. 1 MW), and to supply the electricity to the Luzon grid. Excess LFG is to be flared.

The validation has been performed following the UNFCCC procedures for validation of CDM projects and the “Validation and verification Guidelines V2.0”, with exception of the public stakeholder comment process and with the following steps:

- Desk review of preliminary PDD (version of 2003-Dec.)
- Host country visit (2004-02-24 to 27)
- Issue of Checklist with corrective action requests (CARs)
- Review of proposed corrections

The review of the project design documentation and additional information material as well as the results of interviews performed during the host country visit result in the following conclusion:

Denial of validation at the present time

The reason for this lies in the selection and application of the baseline methodology as discussed in section 3.2 of this report. The selected baseline methodology is essentially not followed to demonstrate additionality, but rather another approved methodology implemented. It is understood that these methodologies are under review for consolidation by the CDM Methodology Panel, and that the project proponents wish to await the results of that process before establishing a detailed response to the corresponding Corrective Action Request. In case the additionality demonstrations follows IRR approach, conservativeness of the calculation remains to be demonstrated.

Otherwise, the CAR’s have mostly been dealt with satisfactorily. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria (even though a formal confirmation by the host country that the project activity assists it in achieving sustainable development is not yet available due to the status of DNA establishment).

Abbreviations

CARs	Corrective Action Requests
CEFs	Carbon Emission Factors
CDM	Clean Development Mechanism
COP/MOP	Conference of the Parties / Meeting of the Parties
DENR	Department of Environmental and Natural Resources
DOE	Department of Energy
GHG	Greenhouse Gases
IEA	International Energy Agency
IETA	International Emission Trading Association
IRR	Internal Rate of Return
LFG	Landfill Gas
LGU	Local Government Unit
MERALCO	Manila Electric Company
MSW	Municipal Solid Waste
PDD	Project Design Document
PNOC	Philippine National Oil Company
PNOC EC	Philippine National Oil Company – Exploration Corporation
POG	Payatas Operations Group
QC	Quezon City
RA9003	Republic Act 9003
WB/PCF	World Bank / Prototype Carbon Fund

Explain any abbreviations that have been used in the report here.

Conversion Factors and Definitions

Insert and describe any conversion factors used in the report here. In addition, define any specific terminology used in the report.

Table of Contents		Page
1	INTRODUCTION	4
1.1	Objective	4
1.2	Scope	4
1.3	GHG Project Description	5
2	VALIDATION METHODOLOGY	5
3	VALIDATION FINDINGS.....	8
3.1	Project Design	8
3.2	Baseline	9
3.3	Monitoring Plan	10
3.4	Calculation of GHG Emissions	11
3.5	Environmental Impacts	11
3.6	Comments by Local Stakeholders	12
3.7	Other	12
4	COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS.....	12
5	VALIDATION OPINION.....	12
6	REFERENCES	14

Appendix A: Validation Protocol

1 INTRODUCTION

1.1 Objective

In the context of the Ministry of Environment's CDM Validation Model Project 2003, the client has commissioned TÜV Rheinland Japan Ltd. to validate the CDM project described in section 1.3 below against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

Validation is defined in the CDM Modalities and Procedures as *“the process of independent evaluation of a project activity by a designated operational entity against the requirements of the CDM as set out in decision 17/CP.7 [(including Annex G)] and relevant decisions of the COP/MOP, on the basis of the project design document, ...”*.

The validation thus serves as independent third party design verification, and is a prerequisite for registration of all CDM projects. In particular, the selection, justification and application of the baseline and monitoring methodologies as well as the expected Emission Reductions are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Further, the project's compliance with relevant UNFCCC and host country criteria are assessed. UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities as agreed in the Bonn Agreement and the Marrakech Accords.

Validation results shall finally provide information to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation has been performed with the following steps:

- Desk review
- Host country visit
- Issue of Checklist with corrective action requests (CARs)
- Review of proposed corrections

A risk-based approach has been employed in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs. Given the nature as a capacity building project, a call for public comments regarding the project has not been posted.

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.

1.3 GHG Project Description

The CDM Project activity will recover landfill gas developed within the (“old” and “new”) Payatas landfill sites located at Quezon City, Luzon, Philippines. The LFG will be utilized for electricity generation using modular generators (internal combustion engines, totalling 1 MWel capacity), and excess LFG is to be flared. The electricity will be sold to the Manila Electricity Company (MERALCO) and thus supplied as base load electricity into the Luzon grid. The project is thus categorized into the CDM sectoral scope 13 (*Waste handling and disposal*).

The selected project duration and crediting period is 10 years. The estimated emission reductions of 427,314 tons CO₂eq mainly stem from the combustion of methane in the generators and flares. Another portion is due to the displacement of electricity generated from fossil fuels.

2 VALIDATION METHODOLOGY

Validation Methods and Tools follow the “Validation and verification Guidelines V2.0”¹ (VVM) Parts 1 and 2, as established by WB/PCF and IETA, using the corresponding Validation Protocol. The following steps have been performed:

- A. Desk review, based on the following project-related documents and additional information:
 - PDD dated 2004-02-17 including annexes,
 - Baseline and monitoring methodology NM0010,
 - IPPC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, Chapter 5 – Waste
 - Revised 1996 IPPC Guideline for National Greenhouse Gas Inventories: Reference Manual, Chapter 6: Waste
 - Yolando T. Velasco, “Philippines” in “Confronting Climate Change – A Climate of Trust Report”
 - Philippines Country Analysis Brief (<http://www.eia.doe.gov/emeu/cabs/philippi.html>)
- B. Host country visit during 2004-02-24 to 27, to confirm correctness of information made in the PDD and to gather additional information to resolve issues raised during desk review. See attached Validation schedule and Topic list for details.
- C. Issue of Validation Protocol with corrective action requests (attached);
- D. Review of proposed corrections to the project documentation

The following validation team members of TÜV Rheinland Japan Ltd. were involved in the validation process:

- Mr. Jun Yasumoto: overall organization, contact person
- Dr. Manfred Brinkmann: Validation Team Leader
- Mr. Manabu Honda: Validation Team Member

¹ (see http://www.ieta.org/VVM/VVM_4.htm)

As part of the desk review, the validation protocol has been amended by the applicability criteria for the applied baseline and monitoring methodology, as well as by project-specific issues as indicated in the specific topic list. The completed validation protocol, consisting of three tables as explained in Figure 1, is enclosed in Appendix A to this report. Corrective Action Requests (CAR) were issued, where:

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

The findings and open questions arising from desk review have been discussed and mostly resolved during the host country visit and subsequent discussions. The project participants have submitted responses and proposals how to deal with the findings, however the the project documentation has not yet been updated accordingly. The overall conclusion and validation opinion is based on the assumption of proper implementation of these reponses.

However, a positive validation opinion can not be issued at this time since the assumptions and applicability criteria of the selected baseline methodology (NM0010) are not fulfilled in this project. More specifically, the additionality test follows an approved baseline methodology (AM0003) different from the stated one. These methodologies are currently under review by the CDM Methodology Panel for consolidation; it is understood that the project participants choose to await the outcome of this process before taking further decisions to close the corresponding corrective action request.

Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.</i>	<i>Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.</i>

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification is used when the validation team has identified a need for further clarification.</i>

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

Figure 1 Validation protocol tables

3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. Where relevant, reference is made to CAR's as listed in the Validation Protocol in Appendix A. The final validation findings relate to the project design as documented and described in the project design documentation, and to responses to CAR's submitted after on-site visit.

3.1 Project Design

The Philippines have not yet formally established a DNA, thus an endorsement of the host country's DNA is not yet available. However, during the host country visit representatives of DENR and DoE expressed their opinion that the project is likely to meet the country's future criteria for sustainable development; it is therefore deemed likely that the project would find the support of the future DNA.

It is currently assumed that the project will be financed by the project developer's equity; it is claimed that official development aid is not funneled into this project. The validation team inquired potential financial support from authorities (DoE, DENR); however, according to these parties such a support is not provided or likely to occur.

The nature of the project certainly provides for an advance in the host country's landfill management and promotes sustainable development by

- gathering experience with technology needed for the operation of 'sanitary landfills'
- reducing environmental impacts arising from the project sites
- promoting the use of renewable energies in order to reduce the country's dependence on imported fossil fuels.

The project is still in an early planning phase. So far, feasibility studies including the installation and operation of test wells have been performed. A more comprehensive test run with a 100kW generator is scheduled for 2004-April to September. It is understood that the outcome of this test will determine the final design. Information regarding the collection technology as well as specifications of engine modules (noise / NOx emissions) and flare efficiencies can only be evaluated after the design phase is completed, however, during the interviews the project planners made reference to well-known equipment manufacturers.

As far as the planning status allows for a conclusion, the project configuration and applied technology in principle correspond to common practice in industrialized countries. It is not expected that the selected type of equipment will be replaced during the crediting period due to technological changes.

The social impacts of the project activity have been addressed during the host country visit. The envisaged closure of the site for 2007 may displace scavenger communities and thus affect their livelihood. However, this closure is rather a result of legal requirement enforcement, and it is not directly related to the CDM project itself. Certain activities to mitigate the impacts of the closure, such as provision of micro-loans and educational measures, are envisaged by the city government.

With the transfer to a 'controlled landfill', the scavenger communities have been organized in associations, which have been involved in the stakeholder comment process. During the host country visit, the validation team interviewed representatives of several associations with respect to their position towards the project: The project is

generally supported, but also the expectation to participate in the benefits from the project such as site illumination was raised.

The crediting period is selected as 10 years. Given that the landfill sites are already closed respectively will be closed soon after begin of the project, it can be expected that the project duration will not substantially extend beyond this period since the amount of LFG will decrease over time. Furthermore, the lifetime of equipment is not likely to extend substantially beyond that timeframe.

3.2 Baseline

The draft PDD claims to apply the approved (though not yet finally formatted and published) new methodology NM0010 (Durban Landfill Gas to Electricity). This methodology is so far the only one out of five approved LFG-related methodologies that includes the feeding of electricity to a grid, allowing for further emission reductions due to the displacement of fossil-fuel generated electricity.

However, this methodology is based on the assumption/condition that the project proponents purchase “a significant amount of electricity [...] from electricity suppliers at predetermined prices”, and uses long run marginal cost of electricity purchase to demonstrate additionality of a project.

Contrary to this, in this project the condition of electricity purchase by project proponents is not fulfilled (nor checked as part of the baseline application), and an Investment Return Rate (IRR) calculation as suggested by the approved methodology AM0003 is used instead to demonstrate additionality. The baseline methodology is thus not properly applied, if applicable at all. The situation was summarized as CAR #6. It is understood that these (and other) approved methodologies related to LFG destruction are currently under review by the CDM Methodology Panel for consolidation. The outcome of this process pending, it is understood that the project participants choose to await the outcome of this process before taking further decisions in this context.

Additionality of the project is demonstrated also in terms technological barriers and in going beyond the legal requirements for controlled landfills. While tapping of renewable energies including landfill gas is part of the national energy policies, there is limited prospect that these policies can be implemented on a broad scale and become baseline scenario in the short term (verbal information from DoE).

The baseline (conversion to a controlled landfill without LFG recovery) appears to be reasonable and conservative. It has been confirmed with DENR that neither air quality standards nor other requirements require at least partial LFG flaring at this time or in foreseeable future. Monitoring of legal changes during the project period is deemed sufficient to account for any such changes.

In the available PDD, actual alternatives to the baseline scenario and the project had not been developed and dismissed as required in the baseline methodology (see CAR#1). The project proponents’ response is only partially satisfactory (see Validation Protocol). However, this is rather a formal issue and is likely to be refined.

While an earlier version of the PDD had assumed a constant grid emission factor, the current version uses an annual update of emission factors as part of the monitoring plan. This amendment should account for the potentially fluent energy supply situation in the Philippines in the years to come.

In the PDD it is not demonstrated that the Luzon grid base load is more emission intensive than peak load (requirement stems from the use of average grid emission factor in the baseline/monitoring meth.), however, it could be confirmed with DoE that this is indeed the case: the stated reason is that hydropower in Luzon grid is somewhat scarce and therefore used for peak load rather than as 'must-run'. According clarifications are pledged in the CAR-responses.

3.3 Monitoring Plan

The selected monitoring methodology is approved and appears appropriate and comprehensive for this type of project. It determines directly the emission reductions and not baseline emissions.

However, applicability of this methodology is restricted to the corresponding baseline methodology, whose applicability is discussed in section 3.2 above. Again, a final conclusion is only meaningful after the scheduled recommendation by the Methodology Panel.

With respect to the LFG recovery, the Monitoring methodology is comprehensively applied by the monitoring plan. Only the formula to determine the "proportion of LFG combusted" is regarded as not being plausible (CAR #3). While correction of this formula is pledged, correctness of the revision cannot yet be confirmed (open). Leakage in the sense of the CDM M&P is not expected in a significant amount, but the monitoring plan and maintenance procedures should place more emphasis on potential uncontrolled LFG losses.

Initially, the monitoring plan did not consistently refer to the application of net electricity delivered to the grid for grid electricity displacement, and a grid emission factor constant over 10 years was assumed (CAR#2). It is expected that revisions to the PDD already implemented or pledged in the MSCL response are suitable to rectify the finding (see also section 3.4 of this report).

Envisaged flare technology and the operating effectiveness factor used are deemed suitable to consider the possibility of LFG flares being blown out by the wind.

3.4 Calculation of GHG Emissions

The project boundaries, including the electricity grid, are appropriately selected and described. All relevant sources of GHG emissions are properly accounted for.

The methods and assumptions leading to the calculated and stated emission reductions of 427,314 tCO₂eq over the crediting period of 10 years are described in a feasibility study available to the validation team. The model used to predict LFG generation is consistent with e.g. the IPCC Guidelines for National GHG Inventories. The parameters of the first order decay model are relatively high but supported by preliminary measurement and operating experience from other landfills. Considering that the actual emission reductions are measured directly and that a further 7-9 months test run is under preparation, the accuracy of the parameter selection and the calculation of LFG generation is deemed sufficient. However, an additional uncertainty and sensitivity analysis with respect to assumptions made in the determination of expected emission reductions should be considered.

It should also be noted that the calculation of emission reductions is based on the Monitoring methodology NM0010 as available before the 9th meeting of the Methodology Panel (see <http://cdm.unfccc.int/EB/Panels/meth/meth09rep.pdf>). The according meeting report includes, in section 9, a recommendation to the Executive Board to revise LFG-related methodologies such that "CO₂ equivalent emissions reductions should be calculated as [GWP_{CH4} -2.75] times the amount of combusted CH₄". As a result the calculated emission reductions would be reduced by approximately 12%. The PDD should be updated accordingly.

LFG combustion by flares is considered only for the initial period when there is an excess of LFG beyond generator capacity. Power Plant Operation is assumed as 8000h/a, not the theoretical 8800h/a. The LFG to be combusted in flares in the 800h/a is not considered in the calculation - this can be regarded a conservative assumption.

Calculation of emission reductions arising from electricity supply to the grid previously assumed a constant grid emission factor over time, however, meanwhile an annual updating of grid emission factors has been included into the monitoring plan to account for the future development on the Philippines. The determination of the grid emission factor itself is transparent and sources for reference data are provided. Furthermore, it is planned to switch to official grid emission factors as soon as such data is available.

3.5 Environmental Impacts

In the Philippines, a formal EIA is not required in case of a 1MW powerplant; however, according to DoE an IEE (initial environmental assessment) is to be performed (CAR #9). Such an evaluation is still pending at this stage, but the MSCL reponse pledged to have such a study performed.

Overall the project helps to reduce environmental impacts related to the landfills, mainly LFG that would otherwise be released, leachate and odor control. However, impacts arising from the project (emission of noise, NO_x) are not discussed.

3.6 Comments by Local Stakeholders

A summary of local stakeholder consultation is provided (no negative comments). The invitation has been provided to representatives of the various institutions. Minutes of the consultation are attached to the PDD and have been confirmed during the host country visit. See section 3.1 for details.

3.7 Other

Project Management Planning is not sufficiently described at this stage (CAR #8), however, it is expected that the situation will be refined with the detailed project planning after conduct of the 7-9months test runs.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

This validation activity being part of a capacity building project, the project design document has not been made publicly available. Comments from Parties, stakeholders and UNFCCC accredited non-governmental organisations could thus not be received nor published.

5 VALIDATION OPINION

TÜV Rheinland Japan Ltd., member of TÜV Rheinland Group, has performed a validation of the “PNOEC Landfill Gas to Energy Project in the Philippines”. The validation was performed on the basis of UNFCCC criteria, host country criteria, the selected baseline and monitoring methodology as well as criteria given to provide for consistent project operations, monitoring and reporting. However, this validation being part of a capacity building project, the stakeholder comment process required for actual CDM projects has not been performed.

The review of the project design documentation and additional information material as well as the results of interviews performed during the host country visit result in the following conclusion:

Denial of validation at the present time

The reason for this lies in the selection and application of the baseline methodology as discussed in section 3.2 of this report. The selected baseline methodology is essentially not followed to demonstrate additionality, but rather another approved methodology implemented. It is understood that these methodologies are under review for consolidation by the CDM Methodology Panel, and that the project proponents wish to await the results of that process before establishing a detailed response to the corresponding Corrective Action Request. In case the additionality demonstrations follows IRR approach, conservativeness of the calculation remains to be demonstrated.

Otherwise, the CAR's have mostly been dealt with satisfactorily. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria (even though a formal confirmation by the host country that the project activity assists it in achieving sustainable development is not yet available due to the

status of DNA establishment). The project will could be recommended for validation once the above issue is resolved.

By capturing and destroying methane gas as well as by displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the investment and technological barriers demonstrates that the proposed project activity is not a likely baseline scenario.

The validation is based on the information made available to us and the engagement conditions detailed in this report. TÜV Rheinland Japan Ltd. cannot guarantee the accuracy or correctness of this information. Hence, TÜV Rheinland Japan Ltd. cannot be held liable by any party for decisions made or not made based on the validation opinion.

6 REFERENCES

Category 1 Documents:

List 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). These should have been used as direct sources of evidence for the validation conclusions, and are usually further checked through interviews with key personnel.

- /1/ Project Design Document: PNOEC Payatas Landfill Gas to Energy Project in the Philippines, Mitsubishi Securities – Clean Energy Finance Committee, December 2003
- /2/ Feasibility Study for Payatas Gas Extraction Project, PNOEC, 2004-01

Category 2 Documents:

List background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents should have been used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews.

- /3/ Project Design Documents “Durban Landfill Gas to Energy Project” (NM0010-rev) including Attachments and Meth Panel Recommendation 2003-09-08 to 09
- /4/ IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, Chapter 5 Waste
- /5/ Revised IPCC Guidelines for National Greenhouse Gas Inventories, workbook and reference manual (each Chapter 6 Waste)
- /6/ Philippines Country Analysis Brief, US Energy Information Administration, <http://www.eia.doe.gov/emeu/cabs/philippi.html>
- /7/ Philippine Energy Plan

Persons interviewed:

List persons interviewed during the validation, or persons contributed with other information that are not included in the documents listed above.

- /08/ Mr. E. S. Garcia, Dr. S. E. Chua
Philippine National Oil Company Exploration Corporation (PNOEC)
- /09/ Mr. J. M. Jaymalin
Payatas Operations Group
- /10/ Ms. L.C. Fernandez, Mr. H.L. Tapia-dela Cruz, Mr. M.S. Lagang
Department of Energy (DoE)

- /11/ Ms. J. Goco
Department of Environment and Natural Resources (DENR)
- /12/ Mr. R.F. Senga, Mr. J. S. Manlapaz
WWF Philippines
- /13/ Ms. A.M. Ramos, Mr. A.A. del Rosario
Mitsubishi Securities Co., Ltd. (Philippines)

End of report

CDM VALIDATION PROTOCOL

Introduction

This document contains a generic Validation Protocol for CDM projects, which must be seen in conjunction with the *Validation and Verification Guidelines* and the *Validation Report Template*.

This validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet; and
- It ensures a transparent validation process by inducing the validator to document how a particular requirement has been validated and which conclusions have been reached;

This protocol contains two tables with generic requirements for validation projects. Table 1 shows the requirements that the GHG emission reduction project will be validated against. Table 2 consists of a checklist with validation questions related to one or more of the requirements in Table 1. The checklist questions may not be applicable for all investors, and should not be viewed as mandatory for all projects. Where a finding is issued, a corrective action request or clarification request are stated. The resolution and final conclusions of these requests should be described in Table 3 of this protocol.

Before this generic validation protocol can be applied to validate a specific project, the validator must review and adjust/amend the protocol to make it applicable to individual project characteristics and circumstances as well as individual investor criteria. The application of the validator's professional judgement and technical expertise should ensure that checklist amendments cover all necessary specific project requirements that have impact on project performance and acceptance of the project. Given the above, the checklist part of the protocol is neither exhaustive nor prescriptive.

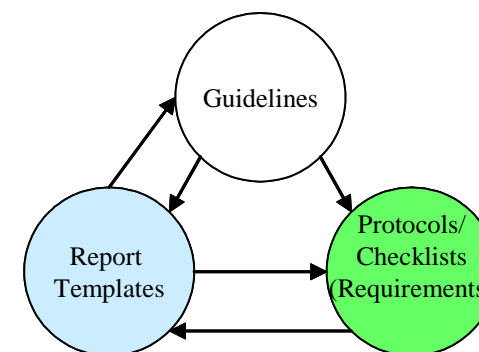


Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
1. Assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	OK	Table 2, Section E.4
2. Assist non-Annex I Parties in achieving sustainable development and the project has obtained confirmation by the host country that the project assists in achieving sustainable development	Kyoto Protocol Art. 12.2, Marrakesh Accords, CDM Modalities §40a	OK Confirmation by host country pending.	Table 2, Section A.3
3. Assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	OK	Table 2, Section E.4
4. The project has the written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a	Pending, no DNA established in Philippines yet.	
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	Generally OK.	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, Marrakesh Accords, CDM Modalities §43	At this stage, additionality is deemed likely, though the baseline methodology is not followed to confirm this.	Table 2, Section B.2
7. Potential public funding for the project from Parties in Annex I is not a diversion of official development assistance	Marrakech Accords	OK	
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakech Accords,	No DNA established in	

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
	CDM Modalities §29	Philippines yet	
9. The host country is a Party to the Kyoto Protocol	Marrakech Accords, CDM Modalities §30	OK	
10. Comments by local stakeholders are invited, a summary of these provided and how due account was taken of any comments received	Marrakech Accords, CDM Modalities §37b	OK	Table 2, Section G
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, has been submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party has been carried out.	Marrakech Accords, CDM Modalities §37c	Environmental impact evaluation pending	Table 2, Section F
12. Baseline and monitoring methodology is previously approved by the CDM Methodology Panel	Marrakech Accords, CDM Modalities §37e	Approved, but not yet finalized, but selected baseline methodology is not followed	Table 2, Section B.1.1 and D.1.1
13. Provisions for monitoring, verification and reporting are in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	Marrakech Accords, CDM Modalities §37f	OK Project Management planning weak	Table 2, Section D
14. Parties, stakeholders and UNFCCC accredited NGOs 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	Not yet opened	
15. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, CDM Modalities, §45c,d	Baseline scenario is reasonable but did not follow the baseline meth in that alternatives	Table 2, Section B.2

This validation protocol must be seen in conjunction with the Validation Guidelines and the Validation Report template.

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
		are not really developed from the outset.	
16. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	OK	Table 2, Section B.2
17. The project design document is in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	OK	

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	A.4.3	DR	OK, both old and new Payatas dumpsites	OK	
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?		DR I	LFG capture and destruction OK, though the specs of engines / flares are not yet decided. It is understood that electricity is fed into Luzon grid, which is connected to another island grid though currently no net influx occurs; thus the grid factor for Luzon is OK, also conservative since other grid is less carbon intensive.	OK	
A.1.3. Is the project category suitably defined?	A.4.2	DR	Reference to small-scale project activities in section A.4.2 of the PDD is inappropriate since the project falls into the sectoral scope 13 (Waste handling and disposal); this section should be revised accordingly.	CAR 5	Closed

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.2.1. Does the project design engineering reflect current good practices?			Yes, LFG capture and use for electrical energy is advanced technology for the Philippines (though legal requirement in Europe). Final design is not yet completed.	OK	
A.2.2. 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?	PNOC	I	LFG capture / destruction widely unknown in the host country, first commercial LFG usage in host country; tests results (vertical wells inappropriate) are plausible. Stated effectiveness of horizontal wells to be investigated and substantiated further, see Feasibility study. Specifications of engines and flares are not yet available, but reference to European manufacturers is made.	OK	OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?		DR	Not foreseeable, alternatives could be turbines (fuel cell could have higher electrical efficiency but is problematic for LFG and nowhere used to our knowledge). Given the lifetime of engines, probably no replacement within the crediting period.	OK	
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?		DR	Training efforts perhaps not so high, extensive maintenance beyond common practice is not expected. See section D.6 regarding Project	OK	

This validation protocol must be seen in conjunction with the Validation Guidelines and the Validation Report template.

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
		I	Management Planning 6 month trial with test engine should provide sufficient experience with the technology.		
A.2.5. Does the project make provisions for meeting training and maintenance needs?		DR	PDD has but vague statements on maintenance, none on training; see section D.6	OK	Accepted
A.3. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.3.1. Is the project in line with relevant legislation and plans in the host country?		DR I I I/ PNO	Project goes beyond current requirements on 'controlled landfills' in that LFG capture&destruction is planned. Conduct of IEE still pending Emission values for engines: NOx is regulated but engines are expected to clear the requirement.	OK	Accepted
A.3.2. Is the project in line with host-country specific CDM requirements?		I, DENR /DoE	Yes, it supports self-sufficiency of energy supply and independence of imported fuels (though marginally). No objection from authorities and NGO.	OK	
A.3.3. Is the project in line with sustainable development policies of the host country?			Dto.	OK	
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?		DR I/ LGU	Yes, partial leachate collection / recirculation, and odor control; Projected closure of dumpsite is related to legal requirements, environmental impacts and	OK	

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			limited capacity, but not directly to the project itself. It would improve unbearable working / living conditions but deprive workers from their subsidence. Vague plans to support scavengers after closure exist and are regarded realistic in terms of economic and political situation.		
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?		DR	Claims to use NM0010 ‘Durban’, approved but not yet finalized and public. (reference should be updated after formatting of NM0010).	OK	
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified? The methodology is applicable to project activities that recover additional methane from landfill (additional to that recovered in baseline e.g. in fulfilment of national policy) for electricity generation.			It is the only LFG meth that accounts for electricity supply to the grid. Similarity to the project justifies application on the technical level, but selection from various options is not justified. Applicable in the sense of condition on the left; BUT see below.	CAR 6	Open
The baseline situation regarding the electricity generation part is based average grid emission factor which is only relevant if base load is more emission intensive than peak load;		DR, I (DoE)	Average grid emission factor is used. According to DoE, the Luzon grid peak load is generated by hydropower whereas base load is mainly coal / oil.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			After recent natural gas power plants in operation, there are no more commissioned except transformation of a mothballed oil power plant to nat. gas in 2005. Currently no incentives for renewables except tax / duty exemptions.		
The baseline situation regarding the biogas collection part is based on the local legislation. If current practice / contractual agreement goes beyond the local regulation then the first should be used as the basis for the baseline setting.			Local legislation for 'controlled landfill' does not require LFG capture & destruction. Current practice is uncontrolled dumpsite, no flaring. No contractual conditions and air quality requirements that might make (partial) flaring a necessity.	OK	
Minor changes required			OK see feasibility study		OK
The methodology applies to a land fill/methane project activity where the baseline for electricity generation can be based on average grid emission factor (see section A. I. (a) (i)). The cost of project shall be higher than baseline project- based on Long Run Marginal Costing . The methodology encompass methane recovery (above the current minimum methane already being recovered in order to comply with local regulation) and use of the methane in electricity generation. The methodology is based on the rationale that if project costs (including biogas recovery costs) are higher than the Long Run Marginal Costs of continued electricity generation based on the fossil fuel, the project activity would not have gone ahead in the absence of CDM.			Par 48b) is applied as in NM0010, but this baseline methodology is not followed in that economic attractiveness does not use LRMC but IRR. No justification is provided except that 'IRR is more appropriate' in this case. For the IRR, only the assumptions and results are presented, but it is not transparent. Given the financial un-attractiveness and national policies, would the project proceed in any case? Can CER's make it viable?		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<p>The key assumptions are:</p> <ul style="list-style-type: none"> - The LRMC of electricity generation by the local grid will be lower than for the project during crediting period.). The ex-post monitoring will check this assumption - The buyer (i.e. the municipality in the project case) would have bought cheaper electricity from the interconnected grid. 			<p>See above, these assumptions are not followed.</p>		
<p>The methodology uses the current and future electricity price paid by the decision maker. The project would not be implemented and thus is not part of the baseline scenario if the autogeneration costs exceed expected market prices.</p> <p>Conditions:</p>			<p>See above, the electricity price is not the issue.</p>		
<p>A) The set of plausible alternative scenarios is comprised of two alternatives only: (1) the proposed auto-generation of electricity, and (2) the BAU scenario or an investment option unrelated to power generation.</p>			<p>There are 2 credible scenarios, the project and BAU. A real analysis of alternatives has not been performed, the Scenarios A and C belong logically together.</p> <p>The question is rather what will happen after closure of Payatas? Are there enough alternative sites for Quezon City’s wastes? Incineration is prohibited by law! Or is it possible that Payatas will NOT be closed?</p> <p>Environmental, legal and capacity pressure as well as various alternative sites under consideration support that closure is likely.</p> <p>Still possibility of continuation beyond 2007 persists.</p>	<p>CAR 1</p>	<p>Partially open</p>
<p>B) Purchase of a significant amount of electricity by the project proponent from electricity suppliers (e.g.</p>			<p>This is not the case, see above.</p>		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
national utility) at predetermined electricity prices, e.g. a power purchase agreement.					
C) The baseline and monitoring methodologies are complementary in the sense that monitoring identifies relevant elements of the baseline scenario that are not (fully) determined <i>ex ante</i> and described for the baseline scenario, such as future regulations and electricity prices.			OK, given the technical similarity of the projects.	OK	
The below questions only apply when the validator is reviewing the baseline methodology prior to submission to the CDM EB (Two Steps Approach):					
B.1.3. Is the discussion and selection of the baseline methodology transparent?					
B.1.4. Is the proposed baseline methodology in line with one of the approaches outlined in Paragraph 48 of the Marrakech Accords?					
B.1.5. Does the baseline methodology specify data sources and assumptions?					
B.1.6. Does the baseline methodology sufficiently describe the underlying rationale for algorithm/formulae (e.g. marginal vs. average, etc.)					
B.1.7. Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)?					

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.1.8. Does the baseline methodology specify the spatial level of data (local, regional, national)?					
B.1.9. Does the baseline methodology specify an approach to define the additionality of the project?					
B.2. Baseline Determination <i>The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.</i>					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?			It is deemed likely that the sites will be transformed into 'controlled landfills' due to legal pressure, but the baseline scenario development and selection is deficient (e.g., closure of the new site by 2007 may not occur in case of lacking alternative disposal sites). see CAR.1	CAR.1	Partially open
1. Confirm that the above conditions are fulfilled. 2. Determine the relevant boundaries for the establishment of the baseline. 3. Produce a comprehensive list of all possible alternative scenarios including the proposed project, alternative investment options, and the BAU scenario (if relevant). 4. Identify the conditions, such as legislation, cost, technology, etc., that might influence the realization of any of the listed options. 5. Based on 4, eliminate those options whose implementation is not plausible. 6. In keeping with condition A, establish that the set of plausible alternative scenarios is only comprised of the proposed project and one other alternative. 7. Calculate the expected cost (US\$/kWh) of electricity generation by the proposed autogeneration project. 8. Identify the relevant price of the electricity that the autogenerator would			1. This was apparently not done 2. OK 3. No, scenario 1 & 3 are same, others oare not considered 4. Legislation and cost are considered 5. No serious elimination due to 3) 6. Only these 2 scenarios from the beginning. 7. electricity generation cost is not used here, see above 8. dto. 9. not done, IRR instead. 10. 10a) OK, 10b) not followed	Dto.	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<p>have to purchase in the absence of the project and, if possible, the likely future price trends. As an alternative, future price levels can be monitored on a continuous basis and used to update the baselines scenario. Methodologies to identify price trends are discussed below.</p> <p>9. Comparing the project's expected kWh costs with the relevant electricity price paid by the autogenerator (and the future price trend) conclude that the project is either:</p> <p>a. economically not attractive and thus unlikely to be implemented as part of the baseline scenario (generation costs higher than the electricity price). This confirms that the alternative scenario is the most likely future development and therefore the relevant baseline scenario. Or,</p> <p>b. economically at least as attractive as the alternative and hence can be expected to be implemented as part of the baseline scenario (generation costs equal to or lower than the electricity price). In this case, the baseline and the project scenarios are identical: the project would not yield additional emission reductions and is therefore not environmentally additional.</p> <p>10. Describe the baseline scenario and its expected development over time, identifying key baseline aspects that need to be monitored as per condition C above, such as developments in the following areas:</p> <p>a. relevant legislation, policies and practices affecting the baseline scenario or the project,</p> <p>b. electricity prices paid by the self-generators and/or comparable electricity buyers (see note below).</p> <p>11. Determine that, in comparison with baseline scenario, the project scenario will have lower emissions and that, therefore, the project is environmentally additional (cf. No. 6 below).</p>			<p>11. OK, though the calculation needs to be substantiated.</p>		
<p>B.2.2. Has the baseline been determined using conservative assumptions where possible?</p>			<p>Baseline scenario: OK. Currently no requirement for 'curtain wells' or odor protection exist, nor are they forecasted by DENR.</p> <p>Enclosed flares are to be used, 97% efficiency used, should be OK</p>	<p>OK</p> <p>OK</p>	

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
Incentives / pressures on PNOC to fulfill government policies to tap domestic energy sources:			Policies are in place but currently no official funding available, except tax & duties exemptions. Project is first commercial LFG usage in host country, therefore can be regarded as additional	OK	
B.2.3. Has the baseline been established on a project-specific basis?			OK	OK	
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?			OK (no requirement for LFG capture / destruction for controlled / closed landfill) Possibly changing grid factor is considered within monitoring plan.	OK	
B.2.5. Is the baseline determination compatible with the available data?			See feasibility study and Phil. Energy Plan.	OK	
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?			It seems likely but real alternatives have not been assessed.		
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario (e.g. through demonstrating investment barriers, technology barriers, barriers to prevailing practices, and/or other barriers or through quantitative evidence that the project would otherwise not be implemented)?			OK		
B.2.8. Have the major risks to the baseline been identified?			No such risks identified, except possibly changing legislation that would make LFG capture mandatory also for 'controlled landfills'.		OK
B.2.9. Is all literature and sources clearly referenced?			References are generally given.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Sources for values in Table 3 should be referenced and justified, demonstrating conservativeness of assumptions.	CAR.5	Closed
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?			Starting within 2004. Calculation of CER's from the project start should be OK after COP 9 Decision on articles 12/13 CDM M&P	OK	
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)?			10 years,, corresponds to expected engine lifetime and fact that the landfills are closed resp. will close down soon.	OK	
D. Monitoring Plan <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).</i>					
D.1. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Is the monitoring methodology previously approved by the CDM Methodology Panel?			Uses the approved monitoring meth as in NM0010,		
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?			Due to the similarities of project: Yes,	CAR 6	Open

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			but see below		
<p>The methodology is applicable in the case of monitoring landfill gas recovered in addition to an amount specified for the baseline situation and fed into auto-generation plant. It can monitor landfill gas fed into a power plant selling electricity to the grid.</p> <p>This monitoring methodology is applicable only to project activities eligible for using the baseline methodology above.</p>			<p>OK,</p> <p>OK</p> <p>OK if the baseline meth can be used also with IRR, but see the differences in section B1 above!</p>		
<p>The methodology can be applied to all land fill where new project will be more costly to invest compared to current and future fossil based generation projects. (see also section A. II (a) (i) above).</p>		I, PNO	<p>ERC: base reference is the best-run coal power plant, which should be less than or equal to 5US cent / kWh, whereas the project would amount to 8 US cent / kWh.</p>	OK	
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?			<p>OK in principle. NGs:</p> <p>Formula on page 29 (top) is not plausible and need to be revised.</p> <p>Net amount of electricity delivered to the grid is not yet provided for, as remark on page 30 says.</p> <p>Compliance to the RA9003 with respect to closure of the site and availability of alternative dumpsites need to be included into the monitoring plan to confirm the validity of the baseline scenario.</p>	<p>CAR 3</p> <p>CAR 2</p> <p>CAR 4</p>	<p>Open</p> <p>Accepted</p> <p>Accepted</p>
D.1.4. Is the discussion and selection of the monitoring methodology transparent?			OK		
Regarding grid-displacement:			According to DoE, there is negligible influence	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<p>The methodology assumes that each kWh generated by the project and delivered to the grid or consumed by an auto-generator results in an average equivalent reduction in generation by gridconnected power plants. The methodology is considered a conservative approach for base load displacing projects in countries, where base load is more emission intensive than peak load.</p> <p>The methodology can, in principle, be applied to provincial as well as national grids. In the application of the methodology, the choice of the grid should be justified.</p>			<p>of other grids into Luzon; Luzon itself is mainly coal / oil fired plants for base load, and hydro for peak load (not enough capacity for hydro to be must-run). Thus base load can be regarded as more carbon-intensive than peak load.</p> <p>Meralco is the distribution company, but does not itself run power plants. 1MW at most is not regarded as influencing the other contracts. Also there is a predicted shortage for 2005 (DoE).</p>		
<p>The below questions only apply when the validator is reviewing the monitoring methodology prior to submission to the CDM EB (Two Steps Approach):</p>					
<p>D.1.5. Does the monitoring methodology provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?</p>					
<p>D.1.6. Is the selected monitoring methodology supported by the monitored and recorded data?</p>					
<p>D.1.7. Are the monitoring provisions in the monitoring methodology consistent with the project boundaries in the baseline study?</p>					
<p>D.1.8. Have any needs for monitoring outside the project boundaries been evaluated and if so, included as applicable?</p>					
<p>D.1.9. Does the monitoring methodology allow for conservative, transparent, accurate and complete calculation of the ex post GHG</p>					

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
emissions?					
D.1.10. Are formulas used for calculations stated and calculations incorporated or referenced?					
D.1.11. Do the methodologies for calculating emission reductions comply with existing good practice?					
D.1.12. Is the monitoring methodology clear and user friendly?					
D.1.13. Does the methodology mitigate possible monitoring errors or uncertainties addressed?					
D.2. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?			OK for LFG capture & destruction, Test run already used enclosed flares, which should not be extinguished by wind, also assume a 97% efficiency to be conservative Annual review of (calculated) grid emission factor and turning to official values accounts for any changes over time.	OK	
D.2.2. Are the choices of project GHG indicators reasonable?			OK, following the meth and previous projects.	OK	
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?			OK as far as indicated, some amendments may be necessary.	OK	
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?			Yes, direct measurements of electricity, generator heat factor, methane content, and LFG flared, including QA-calculation.	OK	
D.2.5. Will the indicators enable comparison of project			Yes.	OK	

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
data and performance over time?					
D.3. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?			Substantial leakage is not expected, as discussed in the baseline approval, however, maintenance and measurement program should be amended to identify uncontrolled loss of LFG. Section D4 should be amended in line with Durban PDD (section E.2)	CL 3	OK
D.3.2. Have relevant indicators for GHG leakage been included?			Not applicable, see above.	N/A	
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?			Quality control (counter-calculation) of ER's is included, though.	OK	
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?			Should be possible (e.g., mass balance, CH4 measurement, etc.)	OK	
D.4. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?			Is not applicable since the methodology determines directly the ER's.	OK	
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?			The baseline scenario is deemed plausible and likely, however, there remains a possibility that operations at payatas continue (illegally or tolerated) beyond 2007. To confirm the baseline	CAR 4	Accepted

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>scenario, section D.5 of the PDD needs to include the compliance status regarding RA9003, as well as availability of alternative disposal sites.</p> <p>Updating of legal information to observe changes in baseline are provided, though a little vague. This should not only refer to required flaring, but also air quality control and/or mandatory/common energetic use of LFG in line with national policies.</p>	OK	
D.4.3. Will it be possible to monitor the specified baseline indicators?			Yes (as far as applicable).	OK	
<p>D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts</p> <p><i>It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.</i></p>					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?			No, needs amendment in this point.	CAR8	Accepted
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?			<p>Environmental: the project truly provides for environmental and economic sustainability.</p> <p>Indicators for social sustainability / benefits should be developed.</p> <p>Closure of dumpsite is not directly related to the project itself but rather reaction to legal, environmental and capacity pressures.</p>	OK See above	
D.5.3. Will it be possible to monitor the specified sustainable development indicators?			N/A yet		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?			Tapping domestic energy sources incl. Renewables is among the national policies.		
D.6. Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.6.1. Is the authority and responsibility of project management clearly described?			PNOC as developer and project facility operator. Quezon LGU as owner / operator of the dumpsite.	OK	
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?			OK, operation is controlled by PNOC, though not yet detailed.	OK	
D.6.3. Are procedures identified for training of monitoring personnel?			No	CAR 8	Accepted
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?			No	Dto.	
D.6.5. Are procedures identified for calibration of monitoring equipment?			Vaguely covered in the monitoring plan but not detailed.	Dto.	
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?			Vaguely covered in the monitoring plan but not detailed.	Dto.	
D.6.7. Are procedures identified for monitoring, measurements and reporting?			No detailed procedures yet.	Dto.	
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)			No	Dto.	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?			No	Dto.	
D.6.10. Are procedures identified for review of reported results/data?			No	Dto.	
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?			No	Dto.	
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?			No	Dto.	
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?			No	Dto.	
E. Calculation of GHG Emissions by Source <i>It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.</i>					
E.1. Predicted Project GHG Emissions <i>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.</i>					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?			OK in principle: CH4 from LFG and CO2 from fossil fuel electricity generation.	OK	
E.1.2. Are the GHG calculations documented in a complete and transparent manner?			Not transparent in the previous form, parameter values to be confirmed (see Feasibility study)		OK

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Grid replacement still uses gross electricity production instead of net delivery (though obviously corrected in the worksheets)		Accepted
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?			Direct monitoring of ER's. Source and conservativeness of parameters still to be determined, PDD should reference them and demonstrate conservativeness!? (See feasibility study!)	CAR 7	Accepted
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?			Uncertainties of measured data are considered low.	Dto.	
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?			Yes, CH4 from LFG and CO2 from fossil fuel power plants.	OK	
E.2. Leakage <i>It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.</i>					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?			No relevant leakage effects expected.	OK	
E.2.2. Have these leakage effects been properly accounted for in calculations?			N/A		
E.2.3. Does the methodology for calculating leakage comply with existing good practice?			N/A		
E.2.4. Are the calculations documented in a complete and transparent manner?			N/A		

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.2.5. Have conservative assumptions been used when calculating leakage?			N/A		
E.2.6. Are uncertainties in the leakage estimates properly addressed?			N/A		
E.3. Baseline Emissions <i>The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.</i>					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?			N/A: Baseline GHG emissions are not calculated due to the nature of the baseline / monitoring meth.	N/A	
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?			OK	OK	
E.3.3. Are the GHG calculations documented in a complete and transparent manner?			N/A	N/A	
E.3.4. Have conservative assumptions been used when calculating baseline emissions?			N/A	N/A	
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?			N/A	N/A	
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?			See E.1	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?			Yes, definitely , mainly from LFG destruction.	OK	
F. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?			Positive impacts (LFG capture, leachate and odor control) OK; NOx should be within limits of Clean Air Act, reference to German / Austrian Manufacturers. Enclosed generators should not exceed current noise level. Placement between old and new dumpsite: very limited impact.	OK	
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?			Claims no EIA necessary if plant capacity not more than 1MW, which is (just) the case; EIE is pending.		Accepted
F.1.3. Will the project create any adverse environmental effects?			Very limited noise and exhaust gas emissions (NOx); engine spec should be detailed and compared to state-of-the-art equipment	OK	
F.1.4. Are transboundary environmental impacts considered in the analysis?			Dto.	OK	
F.1.5. Have identified environmental impacts been addressed in the project design?			Limited impacts only, but should be discussed in PDD.	CAR 9	Accepted

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
F.1.6. Does the project comply with environmental legislation in the host country?			LFG capture OK though, it goes beyond requirements.	OK	
G. Stakeholder Comments <i>The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.</i>					
G.1.1. Have relevant stakeholders been consulted?		DR I	Yes, summary of comments is provided (no negative comments), Confirmed during interview with r stakeholder representatives.	OK	
G.1.2. Have appropriate media been used to invite comments by local stakeholders?			By letter and personal talk	OK	
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?			N/A	OK	
G.1.4. Is a summary of the stakeholder comments received provided?			Yes (see above)	OK	
G.1.5. Has due account been taken of any stakeholder comments received?			No negative comments, minutes available. Advantages from project itself are seen in site stabilization, reduced fire hazard, less toxic emissions. Scavenger groups expect certain benefits from the project (e.g. access to electricity, site illumination) Vague plans exist to establish microloan system, educational measures to establish a new	OK	

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

This validation protocol must be seen in conjunction with the Validation Guidelines and the Validation Report template.

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			livelihood and thus to avoid displacement. WWF regards such plans as realistic, given the current political situation and recent experience.		

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

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CAR 1 The scenarios A and C developed in the PDD (section B.3) form one possible variant of BAU scenarios, but cannot be regarded as separate scenarios. Except for the legal requirements (which are obviously difficult to enforce), it is not demonstrated why the projected closure of Payatas landfill is likely to occur. In the current description, the stated lack of alternative disposal sites and treatment methods (incineration is banned!) rather make appear the continuation of Payatas landfill beyond 2007 a likely scenario.</p>	<p>B.2.1</p>	<p>MSCL response:</p> <p>We still maintain that Scenarios A & C in PDD involve 2 distinct solid waste treatment & disposal facilities: the existing Payatas dumpsite and a new sanitary landfill. From our point of view, they represent very different socio-economic circumstances. Please explain more fully why they cannot be regarded as separate scenarios.</p> <p>Revised PDD will develop 2 other scenarios:</p> <ul style="list-style-type: none"> • Payatas facility, currently being converted from an open to controlled dumpsite, will not close in 2007 • Incineration facility 	<p>Validation Team Response</p> <p>Scenario A does not indicate what will happen to the municipal waste from Quezon city after a closure in 2007. Scenario C could be one possible option, though it is plausibly dismissed. Scenarios A and C complement each other in that they describe the manner of waste disposal before and after 2007, i.e. throughout the crediting period.</p> <p>During the host country visit the validation team obtained the impression that a more likely scenario would be the use of sanitary landfills outside of Quezon city after closure of Payatas. It is understood that some landfill capacities exist or are under planning, though no new sites or disposal contracts are established at this time. The remaining uncertainty should be weighed against the probability of the other perceivable scenario, i.e. continuation of Payatas landfill despite the legal and political situation, due to lack of alternatives or excessive costs.</p> <p>Validation Team Conclusion.</p> <p>Partially open in the context of scenarios A & C, Development of 2 further scenarios accepted</p>

Open: response not suitable to close the CAR

Accepted: response deemed likely to close the CAR, to be verified after implementation

Closed: response suitable to close the CAR

<p>CAR 2 Calculation of electricity displacement (PDD section E5, p. 33f) is to be amended for the following:</p> <ul style="list-style-type: none"> • Determination and use of “net electricity supplied to the grid” instead of “electricity generated by the project” • Usage of official grid emission factors as soon as available, instead of “weighted average of the grid” (calculated from fuel mix and IPCC default values). 	<p>D.1.3</p>	<p><u>MSCL response:</u></p> <p>Revised PDD will change terminology to “net electricity supplied to the grid”. Actually the computations already reflect net electricity – see pp. 34 & 66.</p> <p>Revised PDD will reiterate in D.3 what was already stated in B.2, p. 12 “In the Philippines, no such data is available in the same form from comparable sources (i.e., CEFs). While the Department of Energy provides data on the fuel mix for the major Philippine grids, it does not determine CEFs.” The following statement will also be added “In the future, if and when CEFs are officially established by the Department of Energy, the official data will be used to calculate electricity baseline emissions instead of the weighted average emissions of the current generation mix.”</p>	<p>Validation Team Response It is expected that the consistent implementation of the MSCL response will rectify the finding.</p> <p>Validation Team Conclusion. Accepted.</p>
<p>CAR 3 The formula to calculate the “Proportion of LFG combusted” (PDD section E5, p. 33 top) is not plausible and needs to be revised.</p>	<p>D.1.3</p>	<p><u>MSCL response:</u></p> <p>There was a typographical error in the formula; a minus sign will be substituted for a plus sign - the LFG volume channelled to flares should be subtracted, not added in the formula. Revised PDD will reflect this.</p>	<p>Validation Team Response Revised formula should be submitted for verification, perhaps with indication of the various items in the flow chart of page 12 of PDD.</p> <p>Validation Team Conclusion. Open</p>
<p>CAR 4 Compliance to the RA9003 with respect to closure of the site and availability of alternative dumpsites need to be included into the monitoring plan to confirm the validity of the baseline scenario.</p>	<p>D.1.3, D.4.2</p>	<p><u>MSCL response:</u></p> <p>Revised PDD will reflect compliance with RA9003 with respect to closure of the site and availability of alternative dumpsites.</p>	<p>Validation Team Response It is expected that the consistent implementation of the MSCL response will rectify the finding.</p> <p>Validation Team Conclusion. Accepted.</p>

Open: response not suitable to close the CAR

Accepted: response deemed likely to close the CAR, to be verified after implementation

Closed: response suitable to close the CAR

<p>CAR 5 Reference to small-scale project activities in section A.4.2 of the PDD is inappropriate since the project falls into the sectoral scope 13 (Waste handling and disposal); this section should be revised accordingly.</p>	<p>A.1.3</p>	<p><u>MSCL response:</u></p> <p>Sectoral scope 13 (Waste handling and disposal) referred to by TUV <u>applies to OE accreditation and not PDD template</u>. According to cdm.unfccc.int/DOE/scopes.html , “The link between a methodology and a sectoral scope is purely for the purpose of conducting witnessing opportunities whose purpose is to confirm conclusions of the on-site assessment regarding the operational skills of an applicable entity with regard to scope.”</p> <p>As of 16 April 2004 there was still no list of categories of project activities and of registered CDM project activities by category on the UNFCCC CDM website; thus we still prefer to use as reference the “Simplified Modalities and Procedures for CDM Small-scale Project Activities”. However, in line with a recent EB decision (EB12, Annex 2 Para. 6), “Methane recovery and avoidance” used in the PDD will be changed to “Methane recovery”.</p>	<p>Validation Team Response Implementation of this item is indeed handled differently in various PDDs published so far: some refer to sectoral scopes, others define the category freely. Public comments on this issue have not (yet) resulted in a recommendation by the Meth Panel (see http://cdm.unfccc.int/EB/Panels/meth/meth09report1.pdf, section A.4.2). Further guidance expected at EB14 meeting (see http://cdm.unfccc.int/EB/Meetings/013/eb13report.pdf, phrase 17)</p> <p>Validation Team Conclusion. Closed</p>
--	---------------------	---	--

Open: response not suitable to close the CAR

Accepted: response deemed likely to close the CAR, to be verified after implementation

Closed: response suitable to close the CAR

<p>CAR 6 Justifications for the choice of Baseline and Monitoring Methodologies (sections B2 and D2 of the PDD) do not demonstrate</p> <ul style="list-style-type: none"> • fulfillment of the methodologies' applicability criteria, • that the chosen methodologies are the most appropriate ones. 	<p>B.1.2, D.1.1</p>	<p><u>MSCL response:</u></p> <p>Justification for the choice of baseline methodology is based on the conditions under which NM0010 is applicable to other potential CDM project activities. Meth Panel Recommendation states in A.I.a.i NM0010 Baseline Methodology "is applicable to project activities that recover additional methane from landfill (additional to that recovered in baseline e.g. in fulfilment of national policy) for electricity generation." As stated in the PDD, we are fully aware that there are some differences between our PDD and NM0010, which is used as the approved methodologies for the project. However, where the PDD deviates from NM0010, it relies on relevant sections of another approved landfill-related methodology (NM0005 which is now AM0003) and official guidelines. In view of the EB's express interest in avoiding unwarranted proliferation of methodologies as well as the Meth Panel's plan to develop recommendations on the consolidation of approved methodologies for landfill gas project activities (MP9 minutes, Para. 6), the minor discrepancies should not necessitate the development of new baseline and monitoring methodologies. We propose to revisit this CAR after more deliberations by the Meth Panel and EB on the issue.</p> <p>There is no national requirement to recover methane from open nor from controlled dumpsites (RA 9003, Rule XIII, Section 1 & Section 2). Thus, national policy on methane recovered from open or controlled can be deemed as zero and methane recovered by the Project is deemed additional to national policy. This is already stated in section B.3 #8. Revised PDD will state this more explicitly in section B.2.</p>	<p>Validation Team Response Response does not address the question why NM0010 is considered the appropriate methodology if indeed AM0003 is applied to demonstrate additionality; this discrepancy should not be considered 'minor'. The fact alone that AM0003 does not account for emission reductions arising from electricity displacement does not automatically disqualify that method. However, it is reasonable to await the results of the consolidation process regarding LFG-related baseline methodologies.</p> <p>Validation Team Conclusion. Open, to be revisited after consolidation of LFG methodologies.</p>
---	--------------------------------	--	--

Open: response not suitable to close the CAR

Accepted: response deemed likely to close the CAR, to be verified after implementation

Closed: response suitable to close the CAR

		<p>Revised PDD will also demonstrate that base load of the Luzon grid is more emission intensive than peak load.</p> <p>Use of LRMC vs. IRR: Meth Panel recognized potential weakness of NM0010 and states that “LRMC analysis may not be available in some cases”. This is the case in the Philippines - it is very difficult to establish LRMC due to on-going deregulation & privatization in the energy sector. LRMC requires information that is not publicly available. It is very highly unlikely that NPC and the various IPPs would reveal information about their project & operational costs to other project developers. Given this situation in the Philippines, IRR is an alternative financial analysis to LRMC. Approved baseline methodology AM0003 uses IRR for simplified financial analysis for landfill gas capture projects.</p> <p>The Project IRR is lower than the conservatively acceptable IRR (12% benchmark rate for 10-year Philippine government bonds) – B.3 #6. Revised PDD will correct some typographical errors.</p>	
--	--	--	--

Open: response not suitable to close the CAR

Accepted: response deemed likely to close the CAR, to be verified after implementation

Closed: response suitable to close the CAR

<p>CAR 7 Sources for parameters listed in Table 3 of the PDD are not referenced, conservativeness of these parameters is not demonstrated.</p>	<p>E.1.3 / 4</p>	<p><u>MSCL response:</u> Revised PDD will reference source of Table 3 (Feasibility Study for Payatas Gas Extraction project, PNOC EC, January 2004) and demonstrate conservativeness. It is noted that the GHG emission estimation calculated on the basis of these assumptions will be used for reference purposes only and will in no way affect the actual CER calculations.</p>	<p>Validation Team Response It is expected that the consistent implementation of the MSCL response will rectify the finding. Validation Team Conclusion. Accepted.</p>
<p>CAR 8 Provisions for Project Management Planning (e.g., authorities and responsibilities, requirements for measurement and registration, etc.) are not yet established.</p>	<p>D.6.3 - 13</p>	<p><u>MSCL response:</u> PNOC EC is still waiting for 7-9 months results from 100kw test plant which will determine final design and specifications of the 1MW Plant. Detailed Project Management Planning is not yet described but will be developed prior to project commencement. Please provide official references about how detailed project management plans must be developed by what timing for the sake of the PDD and its validation.</p>	<p>Validation Team Response Applicable requirement is CDM Modalities and Procedures, section 53e). A detailed project management plan is not needed in this stage; however, the vague description of maintenance and calibration is deemed insufficient to meet the requirement. Emission reductions from the first monitoring period may be at risk unless suitable provisions are made before the begin of project operation. Validation Team Conclusion. Accepted.</p>
<p>CAR 9 The (limited) adverse environmental impacts are not indicated in the PDD.</p>	<p>F.1.5</p>	<p><u>MSCL response:</u> During validation visit with DENR, it was clarified that notwithstanding the provisions of MOU between DENR & PDOE exempting 1 MW power plants from formal EIA, IEE (Initial Environmental Examination) still required. PNOC EC will complete this requirement and revised PDD will reflect results.</p>	<p>Validation Team Response It is expected that the consistent implementation of the MSCL response will rectify the finding. Validation Team Conclusion. Accepted.</p>

Open: response not suitable to close the CAR

Accepted: response deemed likely to close the CAR, to be verified after implementation

Closed: response suitable to close the CAR