



# VALIDATION REPORT

**Report for:**

City of Windhoek

**Validation of CDM Project:**

“Methane Recovery and Power generation at the Kupferberg Landfill in  
Namibia”

**Report No:**


CCL0131/MRPGKL/07022012

**Revision No:**

02, 30/11/2012

# VALIDATION REPORT

CDM VALIDATION REPORT N° CCL0131/MRPGKL/07022012

<b>Project Title:</b> Methane Recovery and Power generation at the Kupferberg Landfill in Namibia		<b>Country:</b> Namibia	<b>Estimated CERs (tCO<sub>2</sub>e):</b> 9 341 annual average	
<b>Project Participant:</b> City of Windhoek.		<b>Project Participant Contact Details:</b> Ms. Analdinah Chipeio City of Windhoek, 80 Independence Avenue, Windhoek, Khomas, Namibia		
<b>Report No:</b> CCL0131/MRPGKL/07022012		<b>Revision No:</b> 02		<b>Date of this report:</b> 30/11/2012
<b>Technical Reviewer:</b> Vikash Singh			<b>Date of approval:</b> 01/12/2012	
<b>Approved by:</b> Priyesh Ramlall 			<b>Date of approval:</b> 05/12/2012	
<b>Organisational Unit:</b> Carbon Check (Pty) Ltd				
<b>Report Distribution:</b> <input type="checkbox"/> Unrestricted Distribution <input type="checkbox"/> Limited Distribution <input checked="" type="checkbox"/> No Distribution (without permission from the Client or responsible organisational unit)				
<b>Methodology</b>				
<b>Number:</b> AMS III. G	<b>Version:</b> 7.0	<b>Title:</b> Landfill Methane Recovery	<b>Scale:</b> Small	<b>SS:</b> 13 <b>TA:</b> 13.1
AMS I.D.	17.0	Grid connected renewable electricity generation	Small	<b>SS:</b> 1 <b>TA:</b> 1.2
<b>GHG reducing measure/technology</b>	The GHG emission reduction would happen by displacement of grid electricity equivalent to the net electricity supplied by the gas based power plant and flaring/destruction of landfill gas (methane) which would have been released to atmosphere in the absence of project activity.			
Summary of validation process (Compliance of paragraph 173 (a), (b) and 174 (b) of VVM, version 1.2 / B01/:				
Carbon Check Pty Ltd. (Carbon Check), commissioned by the City of Windhoek has performed the validation of the project activity "Methane Recovery and Power generation at the Kupferberg Landfill in Namibia" in Namibia with regard to the relevant requirements for CDM activities.				
In the opinion of Carbon Check (Pty) Ltd. PDD version 3 dated 13/11/2012 meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodologies Grid connected renewable electricity generation, AMS-I.D. ver. 17.0. Landfill Methane Recovery, AMS-III G, Version 7.0.				
Carbon Check (Pty) Ltd. thus requests the registration of proposed project activity.				

## Validation Team

Validation Team		Roles					
Full Name	Appointed for Sectoral scopes (Technical Areas)	Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Trainee	Technical Reviewer
Mr. Pankaj Kumar	1.1,1.2, 3.1, 4.5, 13.1	X			X		
Mr. Ravi Shankar	1.2,2.1, 2.2, 3.1, 13.1		X	X			
Mr. Barun Kumar	--					X	
Mr. Vikash Kumar Singh	1.2, 3.1, 13.1						X

**Validation Phases and Validation Status:**

- Desk Review       Follow up interviews       Resolution of outstanding issues  
 Corrective Actions/Clarifications Requested       Full Approval and Submission for Registration  
 Rejected

**Executive Summary – Validation Opinion**

The validation team assigned by the DOE (Carbon Check (Pty) Ltd.), here after called CCL, has been assigned by “City of Windhoek” to perform the validation of their project “Methane Recovery and Power generation at the Kupferberg Landfill in Namibia”. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism. 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 CDM Validation and Verification Manual (Version 01.2), Kyoto Protocol requirements, CDM Executive Board/UNFCCC rules.

The report is based on the assessment of the project design document undertaken through Stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, site visit, stakeholder’s interviews, review of the applicable methodology and its underlying formulae and calculations.

Validation methodology and process

The validation has been performed as described in the VVM version 01.2 and constitutes the following steps:

- Publication of the PDD /01/ on the UNFCCC website (05/04/2012 – 04/05/2012)
- Desk review of the PDD /01/ and the relevant documents
- On-site assessment (15/05/2012 – 16/05/2012)
- Issuance of Validation Report

Validation criteria

The following CDM requirements have been considered:

- Article 12 of the Kyoto Protocol,
- Modalities and procedures for CDM (Marrakech Accords)
- Subsequent decisions by the COP/MOP and CDM Executive Board
- Host country criteria
- Criteria given to provide for consistent project operations, monitoring and reporting.

The host party is Namibia and the host party fulfil the participation criteria and have approved and authorized the project and the project participant. The DNA of Namibia confirms that the project assists in achieving sustainable development.

The project correctly applies the baseline and monitoring methodologies AMS-I.D., version 17, “Grid Connected Renewable Electricity Generation” and Version 7 of AMS-III.G “Landfill Methane Recovery.

The project results in reductions of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Republic of Namibia.

The monitoring plan provides for the monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is CCL's opinion that the project participant is able to implement the monitoring plan.

By collection, flaring and power generation from LFG gas, the project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

The total emission reductions from the project are estimated to be 93, 406 t of CO<sub>2</sub>e over a 10 year fixed crediting period, averaging 9 341 t of CO<sub>2</sub>e 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 alter.

The validation protocol describes a total of 24 findings which include:

11 Corrective Action Requests (CARs);

12 Clarification Requests (CLs);

01 Forward Action Request (FAR);

All findings have been closed satisfactorily

CCL concludes that the CDM Project Activity "Methane Recovery and Power generation at the Kupferberg Landfill in Namibia" in Namibia, as described in the PDD /02/, meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board.

The selected baseline and monitoring methodologies (AMS-I.D., Version 17 & AMS-III.G, version 7) are applicable to the project and correctly applied. The CCL therefore requests the registration of the project as a CDM project activity with UNFCCC.

## Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CC	Cross Check
CCL	Carbon Check (Pty) Ltd
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH <sub>4</sub>	Methane
CL	Clarification Request
CO <sub>2</sub>	Carbon dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EIA	Environmental Impact assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
I	Interview or any follow up action
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
LFG	Landfill gas
MoV	Means of Verification
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-Governmental Organization
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PLF	Plant Load Factor
PP(s)	Project Participant(s)
Ref.	Document Reference
OX	Oxidation factor
SD	Sustainable Development
SS(s)	Sectoral Scope(s)
SWDS	Solid Waste Disposal Site
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual
MCF	Methane correction factor
DOC	Degradable Organic content

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## 1 INTRODUCTION

The organization “City of Windhoek” has commissioned Carbon Check (Pty) Ltd, herein after referred to as “CCL”, to carry out the validation of the project activity “Methane Recovery and Power generation at the Kupferberg Landfill in Namibia”. This report summarizes the findings of the validation of the project activity, performed on the basis of UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. The term “UNFCCC criteria” refers to Article 12 of the Kyoto Protocol, the CDM modalities and procedures or the simplified modalities and procedures for small scale CDM project activities (as applicable) and the subsequent decisions by the CDM Executive Board.

### 1.1 Objective

The objective of the validation is to have an independent evaluation of a project activity by a Designated Operational Entity against the requirements of the CDM as set out in decision 3/CMP.1, its annex and relevant decisions of the COP/MOP, on the basis of the project design document. In particular, the project’s baseline, monitoring plan, and the project’s compliance with relevant UNFCCC requirements and Host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project activity and its intended generation of Certified Emission Reductions (CERs).

### 1.2 Scope

The validation scope is defined as an independent and objective review of the PDD (Project Design Document) against the UNFCCC criteria for CDM.

UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, “the simplified modalities and procedures for small-scale CDM project activities” and the subsequent decisions by the CDM Executive Board. The validation team, based on the recommendation in the Validation & Verification Manual employed (version 01.2) a rule based approach, focussing on the identification of significant risks for project implementation and the generation of CERs.

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

## 2 METHODOLOGY

Validation was conducted using CCL procedures in line with the requirements specified in “the simplified modalities and procedures for small-scale CDM project activities”, the latest version of the CDM Validation and Verification Manual, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

The validation consisted of the following three phases:

1. Desk review of the project design documents
2. On site visit and follow up interviews with project stakeholders
3. The resolution of outstanding issues and the issuance of the final validation report and opinion

The following sections outline each step in more detail.

## 2.1 Document Review

The following table outlined the documents reviewed during the validation:

Reference	Document	Date of Document (DD/MM/YYYY) In case irrelevant put “_”
/01/	PDD [for global stakeholder commenting] version 01.	02/04/2012
/02/	PDD [final version], version 03.	13/11/2012
/03/	Letter of Approval issued by DNA of Namibia	23/08/2012
/04/	Modalities of Communication.	24/10/2012
/05/	<ul style="list-style-type: none"> <li>• Authorization letter from City of Windhoek to Envitech Solutions (Pty) Ltd for signing contract with DoE</li> <li>• Validation contract between DOE and Client.</li> <li>• Addendum to LoE</li> </ul>	05/03/2012  16/03/2012 05/12/2012
/06/	<ul style="list-style-type: none"> <li>• Spread sheet for emission reduction calculation and Grid Emission Factor corresponding to corresponding to /01/</li> <li>• Spread sheet for emission reduction calculation and Grid Emission Factor corresponding to corresponding to /02/</li> </ul>	— --
/07/	<p>Relevant proofs of local stakeholder consultation:</p> <ol style="list-style-type: none"> <li>1. Newspaper advertisements:                             <ul style="list-style-type: none"> <li>• The Namibian: 16/02/ 2012 &amp; 24/02/ 2012</li> <li>• Republikein: 15/02/2012 &amp; 23/02/2012</li> <li>• New Era: 15/02/ 2012 &amp; 23/02/ 2012</li> </ul> </li> <li>2. Minutes of meetings dated 01/03/2012</li> <li>3. Attendance sheet dated 01/03/2012</li> </ol>	--
/08/	<p>Statuary clearances:</p> <ol style="list-style-type: none"> <li>1) Environmental Clearance.</li> <li>2) Letter of No Objection from Department of Environment &amp; Tourism.</li> </ol>	05/07/2012 27/01/2010
/09/	Declaration for no ODA funding for the project activity by City of Windhoek.	28/03/2012
/10/	Proof for GPS co-ordinates of the Project Activity submitted by PP i.e. page no 06 in EIA report.	May 2012
/11/	Final EIA report prepared by Matrix Consulting services	May 2012
/12/	Landfill gas assessment report by Envitech solutions	March, 2009
/13/	Landfill gas pumping trial report by Envitech solutions	Nov.2010
/14/	Declaration from Department of Infrastructure, Water & Waste Management regarding grid connectivity	30/08/2012
/15/	<p>Evidence for First-of-its-kind project :</p> <ol style="list-style-type: none"> <li>a) Declaration from Department of Infrastructure, Water &amp; Waste Management</li> <li>b) Re confirmation letter from Department of economic development and environment</li> </ol>	08/12/2011  30/11/2012



/16/	Certificate of useful life time issued by Organics	05/06/2012
/17/	Implementation Bar chart provided by the PP	--
/18/	Contract signed between Envitech and the City of Windhoek (to authorise the implementation of a landfill gas project)	09/12/2011

Background investigation and other referred documents/websites:

/B01/	CDM Validation and Verification Manual (Version 01.2)
/B02/	Approved Baseline & Monitoring Methodology: <ol style="list-style-type: none"> <li>1. AMS-I.D.: Grid connected renewable electricity generation --- Version 17.0</li> <li>2. AMS –III.G : Landfill Methane Recovery, version 7.</li> </ol>
/B03/	<ol style="list-style-type: none"> <li>1. Tool to calculate the emission factor for an electricity system”-Version 02.2.1</li> <li>2. Emissions from solid waste disposal sites version 6.0.1</li> <li>3. Tool to determine project emissions from flaring gases containing methane’ ver.1.0</li> </ol>
/B04/	<p>Relevant CDM requirements (CDM M &amp; P; Simplified CDM M&amp;P and decision by the CMP and documents released by CDM EB) published on the UNFCCC CDM website in particular the following:</p> <ol style="list-style-type: none"> <li>a) Guidelines for Completing the Project Design Document (CDM-SSC-PDD) and the template for the CDM-SSC-PDD.</li> <li>b) General guidance for SSC-CDM project activity, Version 17, Annex 21, EB 61.</li> <li>c) Glossary of CDM Terms</li> <li>d) Guidelines of De bundling, Annex. 13, EB 54</li> <li>e) ‘Guidelines on the demonstration of additionality of small scale project activities’ ver. 9.0</li> <li>f) Guidelines on assessment of debundling for SSC project activities’ (Version 03) EB 54 Annex 13</li> <li>g) Guidelines on additionality of First-of-its-kind activities, ver. 2.0, EB 69, Annex. 7</li> <li>h) Simplified Modalities and Procedure for Small-Scale</li> </ol>
/B05/	<p>Web sites referred:</p> <ol style="list-style-type: none"> <li>a) <a href="http://www.cdm.unfccc.int">www.cdm.unfccc.int</a> (for referring to applicability latest guidelines)</li> <li>b) <a href="http://cdm.unfccc.int/DNA/view.html?CID=149">http://cdm.unfccc.int/DNA/view.html?CID=149</a> (for DNA)</li> <li>c) <a href="http://www.googleearth.com">www.googleearth.com</a> (for crosschecking the location of project site)</li> <li>d) <a href="http://www.uneprisoe.org">www.uneprisoe.org</a></li> <li>e) <a href="http://www.nampower.com.na/index.asp">http://www.nampower.com.na/index.asp</a></li> <li>f) <a href="http://www.ipcc.ch">www.ipcc.ch</a></li> </ol>
/B06/	<p>Documents &amp; weblinks referred for calculation of Grid Emission Factor:</p> <ul style="list-style-type: none"> <li>• Eskom annual report: Eskom Holdings SOC Limited, 2011.</li> <li>• <a href="http://www.nampower.com.na/index.asp">http://www.nampower.com.na/index.asp</a></li> <li>• IPCC Report, 2006</li> <li>• Data obtained from NamPower. (2011). Annual Report 2011, Annual Report 2010, Annual Report 2009.</li> <li>• The Southern African Power Pool, 2007, Interconnector limits, <a href="http://www.sapp.co.zw/viewinfo.cfm?id=74&amp;linkid=12&amp;siteid=1">http://www.sapp.co.zw/viewinfo.cfm?id=74&amp;linkid=12&amp;siteid=1</a></li> <li>• All NamPower annual reports available from: <a href="http://www.nampower.com.na/Pages/annual-report.asp">http://www.nampower.com.na/Pages/annual-report.asp</a></li> </ul>

	<ul style="list-style-type: none"> <li>• Eskom Holdings SOC Limited. (2012). CDM Calculations. Retrieved October 04, 2012, from Eskom: <a href="http://www.eskom.co.za/c/article/236/cdm-calculations/">http://www.eskom.co.za/c/article/236/cdm-calculations/</a></li> <li>• Eskom Holdings SOC Limited. (2012). Annual Report 2012.</li> <li>• <a href="http://www.simetric.co.uk/si_liquids.htm">http://www.simetric.co.uk/si_liquids.htm</a>, accessed 04 October 2012, published 8 September 2007</li> <li>• Website: <a href="http://www.simetric.co.uk/si_liquids.htm">http://www.simetric.co.uk/si_liquids.htm</a>, accessed 04 October 2012, published 8 September 2007</li> <li>• Document available from website: <a href="http://recruitment.eskom.co/live/content.php?Category_ID=60">http://recruitment.eskom.co/live/content.php?Category_ID=60</a></li> <li>• Document available at: <a href="http://www.erc.uct.ac.za/jesa/volume22/22-4jesa-spaldingfecher.pdf">http://www.erc.uct.ac.za/jesa/volume22/22-4jesa-spaldingfecher.pdf</a></li> <li>• Document available at: <a href="http://www.eskom.co.za/content/GS_0001GasTurbAcaciaPortRexRev6~1~1.pdf">http://www.eskom.co.za/content/GS_0001GasTurbAcaciaPortRexRev6~1~1.pdf</a></li> <li>• Eskom Holdings SOC Limited. (2011). CDM Calculations. Retrieved October 04, 2012, from Eskom: <a href="http://www.eskom.co.za/c/article/236/cdm-calculations/">http://www.eskom.co.za/c/article/236/cdm-calculations/</a></li> <li>• Document available at: <a href="http://recruitment.eskom.co.za/content/GS_0003AnkerIGouriTechBrochRev1~1.pdf">http://recruitment.eskom.co.za/content/GS_0003AnkerIGouriTechBrochRev1~1.pdf</a></li> </ul>
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## 2.2 Follow-up actions

On 15/05/2012 - 16/05/2012, validation team of Carbon Check visited the office of the project participant to perform interviews with PPs and visit to the site (where the project will be implemented). Validation of the proposed project activity has been carried out by reviewing available designs, reports and by interviewing the project participant.

The key personnel interviewed and the main topics of the interviews are summarized in the table below:

	Date	Name and Role	Organization	Topic
/a/	15/05/2012	Olavi Makuti, Environmentalist	City of Windhoek	Environmental Impact & Stakeholders consultation
/b/	15/05/ 2012	Chris Ailonga, Environmental Consultant	Matrix Consulting Services	Environmental Impact & Stakeholders consultation
/c/	15/05/2012	Maya Chipeio	City of Windhoek	Discussion on the project implementation and decision making process
/d/	15/05/ 2012	Benny Amuenje	City of Windhoek	Project concept and Design
/e/	16/05/2012	Harmke Immink, Carbon Advisor	Promethium Carbon	Discussion on the project description, baseline scenario, applicability compliance of the project with the methodology,
/f/	16/05/2012	Katie Ross, Carbon Advisor	Promethium Carbon	Additionality, monitoring, ER estimation, LSC and environmental impacts.
/g/	16/05/2012	Hasheela Fillemon	Matrix Consulting Services	Local stakeholders consultation

## 2.3 Resolution of outstanding issues

The objective of this phase of the validation is to resolve any outstanding issues which need to be clarified for CCL's conclusion on the project design.

To guarantee transparency a validation protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of four tables; the different columns in these tables are described in the figure below (see Figure 1). The completed validation protocol is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

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

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

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration. CARs, CLs and FARs identified are included in the validation protocol in Appendix A of this report.

Figure 1 Validation protocol tables

Validation Protocol, Table 1 - Mandatory Requirement		
Requirement	Reference	Conclusion
The requirements the project must meet.	Makes reference to the documents where the answer to the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) is being raised in case of a requirement not being met. A Request for Clarification (CL) is used when the validation team has identified a need for further clarification and a Forward Action Request (FAR) is being raised to highlight issues which require review during the first verification of the project activity.

Table 2 is for the draft report; any updates in the final report are discussed in Table 3.

Validation Protocol, Table 2 - Requirement Checklist					
Checklist Question	Ref.	MoV	Comments	Draft Conclusion	Final Conclusion
The various requirements in Table 1 are	Makes reference to	Explain how conformance with the checklist	The discussion on how	OK is used if the information	OK is used if the information

linked to checklist questions which the project should meet. The checklist is organized in five different sections.	document(s) where the answer to the checklist question or item is found.	question has been investigated. Examples are document review (DR), interview or any other follow-up actions (I), cross checking (CC) with available information relating to projects or (N/A) means not applicable.	the conclusion has been arrived at and the conclusion on the compliance with the checklist question so far.	and evidence provided is adequate to demonstrate compliance with CDM requirements. For CAR, CL and FAR see the definitions above.	and evidence provided is adequate to demonstrate compliance with CDM requirements.
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Validation Protocol, Table 3 - Resolution of Corrective Action Requests and Clarification Requests

Corrective Action Request and/or Clarification Request	Reference to Table 2	Response by project participant(s)	Validation Conclusion
The CAR(s) and/or CL(s) raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participant(s) to address the CAR(s) and/or CL(s).	The validation team's assessment and final conclusion of the CAR(s) and/or CL(s).

Validation Protocol, Table 4 - Forward Action Requests

Forward Action Request	Reference to Table 2	Response by project participant(s)	Validation Conclusion
The FAR(s) raised in Table 2 is/are repeated here.	Reference to the checklist question number in Table 2 where the FAR is explained.	Response by the project participant(s) on how forward action request(s) will be addressed prior to first verification.	If any

## 2.4 Internal quality control

Before the assessment begins, members of the team covering the technical area(s), sectoral scope(s) and relevant host country experience for evaluating the CDM PoA/CPA are appointed. The validation report including the validation findings underwent a technical review. A technical reviewer qualified in accordance with Carbon Check's qualification scheme for CDM validation and verification performed the technical review.

## 2.5 Validation team

The validation team and the technical reviewer consist of the following personnel:

Validation Team		Type of Involvement						
Full Name	Appointed for Sectoral scopes (Technical Areas)	Supervision of work	Desk review	Site visit & Interview	Report & protocol writing	Technical Expert input	Reporting support	Technical Reviewer
Mr. Pankaj Kumar	1.1,1.2, 3.1, 4.5, 13.1	X	X	X	X			
Mr. Ravi Shankar	1.2,2.1, 2.2, 3.1, 13.1			X		X		
Mr. Barun Kumar	--		X		X		X	
Mr. Vikash Kumar Singh	1.2, 3.1, 13.1							X

## 3 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements) the means of validation and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

During the course of validation a total of 11(Eleven) Corrective Action Requests (CARs) and 12 (Twelve) Clarification Requests (CLs) and 01 (One) FARs were identified on webhosted PDD/01/. Upon evaluation of responses provided by the Project Participant all the identified issues were successfully closed.

The final validation findings related to the project design as documented and described in the revised and resubmitted project design documentation.

### 3.1 Approval and Participation

The project has currently been proposed as a unilateral CDM project and the Annex 1 party has not yet been identified. In line with the provision of paragraph 57 of the 18th meeting of the CDM EB registration of the project activity can take place without an Annex I Party being involved at the stage of registration. The project's host Party is the Republic of Namibia.

The project participant is City of Windhoek and is a public entity (For further details please refer to CAR 2 and its closure). The project is a unilateral project and hence the Host Country is the only Party involved in the proposed project activity. Namibia fulfils the requirements to participate in the CDM, having ratified the Kyoto Protocol on 04/09/2003 and the name of the DNA is the "Ministry of Environment & Tourism" as per the UNFCCC website /B06/. A letter for approval from the host country dated 23/08/2012 has been provided in the list of documents. The letter of approval /03/ was found to be unconditional with respect to § 45 to 48 of VVM, ver. 1.2 /B01/. This letter of approval confirms the contribution of the proposed project activity to the sustainable development of Republic of Namibia.

The proposed project does not involve any public funding from an Annex I Party, and the validation did not reveal any information that indicated that the project could be seen as a diversion of official development assistance (ODA) funding towards the Host Country.

The below table summarizes the project participant and party involved. The authenticity of the letters of approval has been validated by CCL validation team. LoA is therefore regarded as valid and meeting the requirements.

In line with the requirements of § 47 and § 48 of VVM, ver. 01.2/B01/, the following table summarize the details of the LoA:

<b>Project participant /03/</b>	City of Windhoek
<b>Party involved /03/</b>	Republic of Namibia (Host Country)
<b>Project activity title /03/</b>	Methane recovery and power generation at the Kupferberg Landfill in Namibia
<b>APPROVAL</b>	
LoA received /03/	Yes
Date of LoA /03/	23/08/2012
LoA /03/ received from	PP
Validation of authenticity	The LoA was received from the project participant. The Validation team does not doubt authenticity of LoA, hence did not further cross verified the authenticity by means of communication with the DNA as required in § 48 VVM, ver 01.2/B01/.
Validity of LoA	Yes, validation team considers the LoA in accordance with § 46 to 49 of VVM, ver. 02 /17/
Additional information	No, LoA does not contain any additional specification of the project activity like PDD version number etc.
<b>PARTICIPATION</b>	
Party is party to Kyoto Protocol	Yes. Republic of Namibia has ratified the Kyoto Protocol on 04/09/2003
Voluntary participation	Yes, stated in the LoA /03/
Diversion of official development aid towards host country	No. There is no Annex I country involved.
Project contribution to SD	Yes, stated in the LoA /03/

## Validation of ODA

The validation did not reveal any evidence that this Project activity can be seen as a diversion of ODA. It is also confirmed by the interview with Ms. Analdinah Chipeio. The same has also been confirmed by the declaration /09/ provided by the PP.

## Confirmation of MoC

The Modalities of Communication (MoC) /04/, signed on 24/10/2012, was received from the PP. As required in Procedures for Modalities of Communication between Project Participant and the Executive Board, the Validation Team has verified that the name of Mr. Utete Karimbue-Mupaine as Primary authorised signatory and Mr. Niilo Taapopi as the alternative authorised signatory for future communication related to the corresponding scope of authority with UNFCCC. The MoC has been checked as per the requirement of "Procedure for modalities of communication between project participants and the Executive Board" Annex

59, EB 45. The Validation Team confirms that the signatory and contact details on the MoC /04/ are authorized and credible.

## 3.2 Project design document

The PDD /01/ has been the basis for the validation process.

Carbon Check confirms that the above mentioned PDD is based on the PDD template that was available on the UNFCCC-website and valid at the time of completion in accordance with the applicable guidance document /B04/. "Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for proposed new small scale methodologies (CDM-SSC-NM)" /B02/

## 3.3 Project Design

Starting date of project	Expected project operational lifetime	Crediting period
28/02/2013 (expected starting date of the proposed project activity which corresponds to the date of signing the contract for civil works /21/	10 years /16/ Refer CL 10 and its closure.	10 years starting from 01/01/2014 or the effective date of registration, Whichever is later.

Herewith, the validation team summarizes major changes between webhosted PDD and final version of PDD for submission as follows:

Subject	Webhosted PDD /01/	Validated PDD /02/	Assessment
Project title	Methane recovery and power generation at the Kupferberg Landfill in Namibia	Methane recovery and power generation at the Kupferberg Landfill in Namibia	No change
Parties	Namibia (Host Party)	Namibia (Host Party)	No change
Project participants	City of Windhoek	City of Windhoek	No change
Project location	Kupferberg landfill site in Khomas region of Namibia	Kupferberg landfill site in Khomas region of Namibia	No change
Scope	1 – Energy industries (renewable - / non-renewable sources) 13-Waste handling and disposal	1 – Energy industries (renewable - / non-renewable sources) 13-Waste handling and disposal	No change
Methodologies and tools applied ( scope and version numbers)	AMS-III.G. Landfill methane recovery (Version 07) AMS-I.D. Grid connected renewable electricity generation (Version 17)	AMS-III.G. Landfill methane recovery (Version 07) AMS-I.D. Grid connected renewable electricity generation (Version 17)	No change
Amount of emission reductions (tCO <sub>2</sub> )/year	22 208	9,341	Decrease as compared to web

			<p>hosted PDD as choice of default values for DOCj and Wj,x were not correct and applicable tools were not utilized properly. Grid emission factor also decreased from 1.0368 (web hosted PDD) to 0.91 in final PDD.</p> <p>CAR 9 &amp; 10 were raised by validation team and closed successfully.</p>
Monitoring (parameters)	Two additional parameters $f_y$ = fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emission of methane to the atmosphere in the year y and effect of uncertainties of different parameters were included in web hosted PDD	Two additional parameters which were included in web hosted PDD, removed from final revised PDD	CL 7 raised by validation team and closed successfully. Two additional parameters removed from revised PDD/02/ as those parameters are not applicable for proposed project activity.
Crediting period (type / start date)	10 Years (fixed), 01/01/2013 or the date of registration of the CDM project activity, whichever is later	10 Years (fixed), 01/10/2014 or the date of registration of the CDM project activity, whichever is later	No change. Only the date of start date of crediting period revised and more realistic date chosen.
<p>Please refer to Appendix A of this report for details of each change between webhosted PDD /01/ and the final PDD /02/ for submission. The Validation Team has carried out the validation process based on the Webhosted PDD and raised CARs/CLs against the project by issuing the validation protocol. With the updated information and corrections done on final PDD, the PP has addressed all the CARs /CLs that were raised by the Validation Team.</p> <p>It is concluded that the Validation Team has reviewed the project in line with the VVM (version 1.2) and all the evidence, corrections, justifications and updating done on the final PDD with respect to CARs /CLs raised are accepted and closed by the Validation Team, issuing the positive validation opinion for project registration.</p>			

Validation team confirms that the PDD /02/ contains all relevant information, technical description and description on the components of the project activity, which transparently allows any reader to understand the project, the measure involves in GHG emission reduction, sources and gases in the project boundary and its monitoring system. The verified



/11/,/12/,/14/ technical details of components of the project to be implemented under the project activity are as below:

As verified from the PDD /02/, the project will be implemented in two phases. The purpose of the proposed project activity involves installation and commissioning of a landfill gas extraction and flaring system via a centralized piping system in phase 1 and installation of gas-to-electricity generation system, once the total extraction potential is established and flare is operational. Validation team confirmed the plant design by reviewing the EIA Report /11/ and also with landfill gas assessment report /12/. In the second phase, Electricity will be generated using an internal combustion engine of capacity 600 KW (2<sup>nd</sup> phase) and the generated electricity will be supplied to the to the integrated grid of Namibia and South Africa, managed by the state-owned company Nampower & Eskom respectively which is in charge of generation, transmission and distribution of power to end-users, to displace the predominantly fossil fuel based power generation and thereby reduce the GHG emission. The same has been verified from the EIA report/11/ and further substantiated by declaration from Department of Infrastructure, Water & Waste Management dated 30/08/2012 /14/. Validation team also confirm that the landfill started to operate in 1984 and is able to receive approximately 230 tonnes of waste per day comprising predominantly of domestic waste, but also of industrial/commercial and garden waste as verified from the EIA /11/

As the project is in early stage of implementation and details technical specification is not available, hence DoE raised a FAR in line with § 37 of VVM, ver. 1.2 /B01/

The location of the project activity was confirmed as the Kupferberg landfill site in Khomas region of Namibia as given in the section A.2 and A.4 of the PDD /02/. The geographic coordinates of the project activity are as below:

Geographical latitude: - (-22.6344, S Geographical longitude: 17.0206E. Time zone: UTC+2.

As per PDD version 03 dated 13/11/2012 /02/, the project's starting date is 28/02/2013 and a fixed crediting period has been chosen, starting from 01/01/2014, or the date of registration, Whichever is later. In accordance of the latest version of the "Glossary of CDM term"/B04-c/ that states: "*The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins*". It is confirmed by validating the expected starting date of the project on 28/02/2013 referred in the PDD version 3/02/, by cross-checking the implementation schedule/17/ provided by PP.

The GHG emission reduction would happen by displacement of grid electricity equivalent to the net electricity supplied by the gas based power plant and flaring/destruction of landfill gas (methane) which would have been released to atmosphere in the absence of project activity. As per PDD /02/, the total GHG emission reductions from the "Methane recovery and power generation at the Kupferberg Landfill in Namibia" are estimated to be 93,406 tCO<sub>2</sub>e during the 10 years fixed crediting period, resulting in an average emission reductions of 9,341 tCO<sub>2</sub>e per year. The expected operational lifetime of the project activity, as per the PDD /02/, is 10 years, which is deemed reasonable if compared with the equipments lifetime information /16/ and Carbon Check validation team experience. The project is still to be implemented and so no manufacturers (equipments / instruments) were yet defined and also considering that equipments / instruments (due to methodology requirements) can (or have to) be replaced due to fatal failures, the commitment on keeping eventually replaced equipments technical characteristics should not affect emission reductions calculations. Validation team has raised FAR 1 in compliance with § 37 of VVM, ver. 1.2 /B01/

Carbon Check was able to verify all the documented evidence listed above during the validation process and can confirm that data and considerations are complete and accurate.

Carbon Check confirms that the description of the proposed CDM project activity, as contained in the PDD sufficiently covers all relevant elements, is accurate and complete and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity.

Please also refer CAR 3, CAR 4, CL 1, CL 2 & CL 3 and its closure related to Project design and description in Appendix A, Table 3.

### 3.4 Baseline and Monitoring Methodology

#### 3.4.1 Applicability of the selected methodology to the project activity

The project applies the approved simplified monitoring methodologies for selected small-scale CDM project activity categories, AMS-III.G - “Landfill Methane Recovery”, version 07/B02-2/. The applied version of methodology is not the latest version however request for registration using this version of methodology can be submitted until 28 May 2013 23:59:59 GMT and; AMS-I.D - “Grid Connected Renewable Electricity Generation” version 17 /B02-1/, which are in line with the relevant project category.

The applicable conditions of the project with the selected methodology are justified as follows:

Item	AMS-III.G.	Assessment
1.	This methodology comprises measures to capture and combust methane from landfills (i.e. solid waste disposal sites) used for disposal of residues from human activities including municipal, industrial, and other solid wastes containing biodegradable organic matter.	It was confirmed by onsite inspection and reviewing the EIA/11/, PDD/02/ and contract signed between Envitech and the City of Windhoek /18/, that the project will capture & combust methane generated from Kupferberg Landfill site that accepts municipal solid Waste;
2.	Different options to utilise the recovered landfill gas as detailed in paragraph 3 of AMS-III.H “Methane recovery in wastewater treatment” (version 16) are eligible for use under this methodology. The relevant procedures in AMS-III.H shall be followed in this regard.	The project activity complies with criterion (a) of paragraph 3 of AMS-III.H (version 16) which says, recovered gas can be used for “ <i>Thermal or mechanical, electrical energy generation directly</i> ”; The project involves the generation of renewable electricity from landfill gas which was confirmed with declaration provided by Department of Infrastructure, Water & Waste Management City of Windhoek/14/.

Item	AMS-III.G.	Assessment
3.	Measures are limited to those that result in aggregate emission reductions of less than or equal to 60 ktCO <sub>2</sub> equivalent annually from all Type III components of the project activity.	It was confirmed by the PDD/02/ and Emission Reduction Calculation spread sheet/06/ that the estimated emission reduction is 9,341 tCO <sub>2</sub> e/yr that is less than 60kt CO <sub>2</sub> e annually.

Therefore the Validation Team confirms that AMS-III.G Landfill Methane Recovery (version 06) is fully applicable to the project.

Application of AMS-I.D Grid Connected Renewable Electricity Generation (version 17). The applicable conditions of the project with the selected methodology are justified as follows:

Item	AMS-I.D.	Assessment
1.	This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: a) Supplying electricity to a national or a regional grid; or b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	Project activity involves the generation of renewable electricity from landfill gas. Option (a) is applicable to this project – the electricity will be supplied to the grid. Validation team confirm the applicability condition with declaration provided by Department of Infrastructure, Water & Waste Management City of Windhoek /14/ and further cross checked with EIA/11/
2.	Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A) applies is included in Table 2.	AMS-I.D is applicable as the project supplies electricity to the national grid which was confirmed by the declaration provided by Department of Infrastructure, Water and waste management/14/.
3.	This methodology is applicable to project activities that: a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); b) Involve a capacity addition c) Involve a retrofit of (an) existing plant(s); or d) Involve a replacement of (an) existing plant(s).	It was confirmed by onsite inspection and reviewing the EIA/11/, PDD/02/ that the project is a green field project where there was no renewable energy power plant operating prior to the implementation of the project activity and involves no capacity addition, retrofitting and replacement activity;

Item	AMS-I.D.	Assessment
4.	<p>Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <ul style="list-style-type: none"> <li>• The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</li> <li>• The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m<sup>2</sup>;</li> <li>• The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m<sup>2</sup>.</li> </ul>	<p>The project is a LFG power project and doesn't relate to hydro power, therefore this applicability condition is not necessarily considered.</p>
5.	<p>If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.</p>	<p>The project neither includes non-renewable components nor co-fires fossil fuel, and the installed capacity of the entire power plant is 0.6 MW, far less than 15 MW.</p>
6.	<p>Combined heat and power (co-generation) systems are not eligible under this category.</p>	<p>The project is a LFG power project and doesn't relate to heat generation activity, therefore this applicable condition is not necessarily considered.</p>
7.	<p>In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.</p>	<p>As justified above, the project is a green field project and involves no capacity addition; therefore this applicable condition is not necessarily considered.</p>
8.	<p>In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.</p>	<p>As justified above, the project is a green field project and involves no retrofit or replacement; therefore this applicable condition is not necessarily considered.</p>

Therefore the Validation Team confirms that AMS-I.D Grid Connected Renewable Electricity Generation (version 17) is fully applicable to the project. Please also refer to CAR-05 and its detailed closure on the applicability of AMS ID.

#### Applicability as a small-scale project activity

According to "General Guidelines to SSC CDM methodologies" (version 17.0)/B04/, the Validation Team determined that the project fulfills criteria as follows:

- 1.) Type I: as justified above, the total installed capacity of the gas generators is 0.6 MW, far less than the upper limit of 15 MW as a small-scale CDM project activity;
- 2.) Type II: the project activity doesn't relate to any efficiency improvement, therefore this criteria is not considered;

3.) Type III: as justified above, the estimated emission reduction of the project over the selected crediting period is between 9 341 tCO<sub>2</sub>e/yr, which is less than the upper limit of 60ktCO<sub>2</sub>e/yr as a small-scale CDM project activity over the entire crediting period.

Therefore, the Validation Team confirms that the project is eligible as a small-scale project activity.

### Debundling check

According to the “Guidelines on assessment of debundling for SSC project activities” (version 03, EB54)/B04-d/ and the “determining the occurrence of debundling” as outlined in the Appendix C of the “Simplified Modalities and Procedures for Small-scale Project Activities/B04-h/”, the following criteria shall be fulfilled to demonstrate debundling of a large scale project:

- With the same project participants;
- In the same project category and technology/measure;
- Registered within the previous 2 years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

The Validation Team has checked the UNFCCC website and “CDM Pipeline Overview” /B05/ by UNEP Risoe Centre and confirmed that no registered small-scale CDM project activity (incl. application for registration) has the same project participant (i.e. City of Windhoek) as the project does. Therefore, the project is not deemed to be a de-bundled component of a large project activity.

### 3.5 Project boundary

According to the methodology AMS-III.G “Landfill Methane Recovery”, version 07/B02/, the project boundary is the physical, geographical site of the landfill where the gas is captured and destroyed/used.

According to the methodology AMS-I.D - “Grid Connected Renewable Electricity Generation”, version 17/B02/, the project boundary encompasses the physical, geographical site of the renewable generation source.

Emissions sources included in the project boundary are shown in the table below:

	GASs involved	Description
Baseline emissions - Methane Component	CH <sub>4</sub>	According to AMS-III.G, “Landfill Methane Recovery”, version 07, the baseline is emissions is the situation where, in the absence of the project activity, the biomass and other organic matter are left to decay within the project boundary and methane is emitted to the atmosphere. Baseline emissions shall exclude methane emissions that would have to be removed to comply with national or local safety requirement or legal regulations.
Baseline emissions - Electricity component	CO <sub>2</sub>	According to AMS-I.D, “Grid Connected Renewable Electricity Generation”, version 17, the baseline emissions are the product of electrical energy baseline <i>E<sub>GBL</sub></i> , <i>y</i> expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.
Project emissions	CH <sub>4</sub>	According to AMS-III.G, “Landfill Methane

- Methane component		Recovery”, Version 07, the project emissions are from flaring of the residual gas stream in year y calculated as per the “Tool to determine project emissions from flaring gases containing methane”.
Project emissions - Electricity component	CO <sub>2</sub>	As by option A1 from “Tool to calculate baseline, project and/or leakage emissions from electricity consumption/19/” the project emissions are the quantity of fuel consumed due to the implementation of the project activity. Since, there is no additional consumption of fossil fuels due to the implementation of the project activity. Therefore, $PE_y = 0$
Leakage Methane Component	CH <sub>4</sub>	In accordance with the AMS-III.G, “Landfill Methane Recovery”, version 07 and AMS-I.D, “Grid Connected Renewable Electricity Generation”, version 17, no leakage effects need to be accounted, since the project activity involves the implementation of new equipment and the equipment is neither transferred to nor from another activity.
Leakage Baseline emission- Electricity component	CO <sub>2</sub>	

By checking the information and the project site, Carbon Check can confirm that the project boundary and emission sources described in the PDD are accurate and complete, and also that the selected sources and gases are justified for the proposed project activity.

### 3.5.2 Baseline Identification

Under project category III, the baseline scenario for the project is as defined in methodology AMS-III.G “Landfill Methane Recovery”, version 07/B02/, “the situation where, in the absence of the project activity, biomass and other organic matter are left to decay within the project boundary and methane is emitted to the atmosphere”.

For the project component under project category (I), as per AMS-I.D “Grid Connected Renewable Electricity Generation”, version 17 /B02/, the baseline scenario is to be (depending on the technical and economical evaluation in the first phase, it is planned the installation of a new grid-connected renewable power plant/unit) “the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources”.

There are no obligations in the Republic of Namibia concerning waste disposal for municipal and special solid waste, or requirements in terms of landfill gas capture, flaring, or utilization and there are no national or local safety requirements or legal regulations, neither existing nor forthcoming. This information was confirmed through the Letter from The Department of Infrastructure, Water and Waste Management, City of Windhoek, Republic of Namibia explaining that there are no local and national laws or regulations that regulate methane gas production, dated 08/12/2010 /15/ and the Environmental Impact Report dated May, 2012 prepared by Matrix consulting services/11/. The common practice in terms of waste management is the disposal of waste in official or non-official sites, where the landfill gas is emitted to the atmosphere.

Please also refer CAR 6 and its closure on relevant national and /or sectoral policies.

Therefore the validation team confirms that no methane emission would be removed to comply with national or local safety requirement or legal regulations, which has been further

confirmed with local officials during on site visit in addition, during on site assessment, the validation team has observed that there were no any existing facilities to capture and destroy landfill gas generated from the Kupferberg landfill site.

Carbon Check was able to verify all the documented evidence listed above during the validation process and can confirm that:

- \* all the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- \* all documentation used /15/ & /11/ is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- \* assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence /15/ & /11/ and can be deemed reasonable;
- \* relevant national and/or sectoral policies and circumstances /15/ and /11/ are considered and listed in the PDD;
- \* the approved baseline methodologies AMS-III.G, “Landfill Methane Recovery”, version 07 /B02/ and AMS-I.D “Grid Connected Renewable Electricity Generation”, version 17 /B02/ have been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenarios reasonably represents what would occur in the absence of the proposed CDM project activity.

The identified baseline scenario is in accordance with the prescription in AMS-III.G, version 07 and AMS I.D., version 17.

<p><i>The approved baseline methodology applicable to the project</i></p> <ul style="list-style-type: none"> <li>- explicit criteria</li> <li>- implicit criteria (e.g. available scenarios, applicability of formulas for BE/PE/LE calculations)</li> </ul>	<input checked="" type="checkbox"/> <input type="checkbox"/>	<p>The project meets the explicit criteria of the methodology AMS-III.G Landfill Methane Recovery (version 07) /18/ and AMS-I.D Grid Connected Renewable Electricity Generation (version 17)/18/, please refer to details in Section 3.4.1 of this report.</p>
<p><i>PDD includes all assumptions and data used by project participants</i></p>	<input checked="" type="checkbox"/> <input type="checkbox"/>	<p>Yes, the PDD includes all assumptions and data specified in “Tool to Calculate the Emission Factor for an Electricity System (version 02.1)/19/ and “Emissions from solid waste disposal sites”, ver. 6.0.1/B03-2/.</p> <p>Tool to determine project emissions from flaring gases containing methane, ver.01/B03-3/</p>
<p><i>All the references and documents used are relevant for establishing the baseline scenario</i></p>	<input checked="" type="checkbox"/> <input type="checkbox"/>	<p>Eskom annual report, where “<i>Total purchased for the Eskom system (GWh)</i>” is shown in the “<i>Statistical overview</i>” table on pg. 324 of the report (Eskom Holdings SOC Limited, 2011) /B06/ and information from Nam power website/B06/ are relevant for establishing the baseline scenario according to AMS-I.D Grid Connected Renewable Electricity Generation (version 17)/B02-1/. Besides, Emissions from solid waste disposal sites version 6.0.1/B03-2/ / is also</p>

		relevant for establishing the baseline scenario.
<i>All the references and documents used are correctly quoted and conservatively interpreted in the PDD</i>	<input checked="" type="checkbox"/> <input type="checkbox"/>	All the above-mentioned references and documents are quoted correctly and conservatively interpreted in the PDD/02/.
<i>All relevant policies / regulations considered are listed in the PDD</i>	<input checked="" type="checkbox"/> <input type="checkbox"/>	There is no relevant policy and regulation in Namibia regarding landfill site which is explicitly mentioned in PDD/02/.
<i>Identified potential baseline scenarios reasonably represent what would/could occur in the absence of the project activity</i>	<input checked="" type="checkbox"/> <input type="checkbox"/>	Without the project, the baseline scenario is the same as the existing scenario, i.e. atmospheric release of the landfill gas and power supply by the grid.
<i>The baseline scenario selection is appropriate and determined according to the methodology</i>	<input checked="" type="checkbox"/> <input type="checkbox"/>	The baseline scenario for the project activity has been clearly prescribed according to the applied methodologies AMS-III.G version 07 and AMS-I.D version 17./B02/
<i>The approved methodology used is applicable to the identified baseline scenario</i>	<input checked="" type="checkbox"/> <input type="checkbox"/>	The applied methodologies AMS-III.G version 07 and AMS-I.D version 17 /B02/have clearly prescribed the baseline scenario for the project activity.

### 3.6 GHG Emission Reductions:

According to the PDD/02/, the ex-ante estimation of the GHG emission reductions is based on the following methodologies and tools:

- AMS-III.G Landfill Methane Recovery (version 07), EB 63
- AMS-I.D Grid Connected Renewable Electricity Generation (version 17), EB61
- Tool to Calculate the Emission Factor for an Electricity System (version 02.2.1), EB 63
- Tool to calculate emissions from solid waste disposal sites, ver. 6.0.1
- Tool to determine project emissions from flaring gases containing methane' ver.1.0
- Tool to calculate emission factor of an electricity system, ver. 02.2.1

After having reviewed the PDD/02/ and Emission Reduction Calculation spread sheet /06/, the Validation Team is able to confirm that all equations and parameters listed in the PDD/02/ have been correctly applied by comparing them to those in the above-mentioned methodologies and tools.

The detailed steps and justifications on how the Validation Team has verified the data and parameters in the equations are reported as follows:

#### Baseline Emissions

The baseline emissions are calculated in accordance with equation (1) of the applied methodology:

$$BE_y = BE_{CH_4,SWDS,y} - MD_{reg,y} \times GWP_{CH_4}$$

Where:



- $BE_{CH_4,SWDS,y}$  Methane emission potential of a solid waste disposal site (in tCO<sub>2</sub>e), calculated using the 'Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site'
- $MD_{reg,y}$  Methane emissions that would be captured and destroyed to comply with national or local safety requirement or legal regulations in the year y (tCH<sub>4</sub>)
- $GWP_{CH_4}$  Global warming potential for methane (value of 21)

In Namibia, currently there are no legal or safety requirements that enforce the flaring on landfill gas. /11/ & /15/,  
Therefore,  $MD_{reg,y} = 0$ .

So,  $BE_y = BE_{CH_4,SWDS,y}$

Please refer CAR 8 and its closure on applicability of Tool to calculate "emissions from solid waste disposal sites" ver. 06.0.1.

Baseline emission reductions have been properly explained on the PDD as per the methodology AMSI.D "Grid Connected Renewable Electricity Generation", version 17/16/. The baseline emissions are calculated in accordance with equation (1) of the applied methodology:

$$BE_y = EG_{BL,y} \times EF_{CO_2,grid,y}$$

Where:

- $BE_y$  Baseline emissions in year y (tCO<sub>2</sub>)
- $EG_{BL,y}$  Quantity of net electricity supplied to the grid as a result of the implementation of the project activity in year y (MWh)
- $EF_{CO_2,grid,y}$  CO<sub>2</sub> emission factor of the grid in year y (tCO<sub>2</sub>/MWh)

$EG_{BL,y}$  has been estimated appropriately and documented in the PDD /02/. The actual amount of generated electricity will be monitored during the chosen crediting period according to the monitoring methodology AMS I.D. Grid connected renewable electricity generation, version 17/18/.

According to the tool to calculate the emission factor for an electricity system, ver. 02.2.1 /B03/{not the latest version of the tool however can be used(not later than the calendar day (at 24:00 GMT) eight months from the publication date of EB 70 meeting report) as per paragraph 60 of EB 70 meeting report, in accordance with paragraph 36 of the "Procedure for the submission and consideration of requests for revision of approved baseline and monitoring methodologies and tools for large-scale CDM project activities"}., the grid emission factor of the project as 0.91 tCO<sub>2</sub>/MWh in the PDD/02/ was assessed by the validation team as follows:

**Step 1** - Electricity generated by the proposed project activity will be supplied to the grid.. Since, the DNAs of South Africa and Namibia have not published a delineation of the project electricity system and connected electricity systems which is also in line with tool to calculate emission factor (which defines the national grid as a project electricity system by default Cp p 4 of 33 of the tool /19/).

Also, the application of the criteria with regards to determining significant transmission constraints does not result in a clear grid boundary due to a lack of sufficient data. For these reasons the following was chosen for the reference system of this project:

- The project electricity system entails all of the Nampower and Eskom power plants in the South African and Namibian electricity grid.
- No other neighbouring countries were included in the project electricity system due to lack of sufficient data in the public domain to determine the transmission constraints and obtain power plant data. For this reason these countries were conservatively treated as connected electricity systems to the project electricity system, and electricity transfers from these countries defined as electricity imports with a 0 tCO<sub>2</sub>/MWh emission factor.

## **Justification for considering Namibia and South Africa as project electricity system:**

NamPower (Namibia) has over the 3 year period under consideration for this ex ante grid emission factor imported on average 62.53% of their power from Eskom (South Africa). Also, in accordance to the tool, there are no significant transmission constraints between Eskom and NamPower. The criteria in the tool /B03/which can be used to determine the existence of significant transmission constraints, states that “the transmission line is operated at 90% or more of its rated capacity during 90% percent or more of the hours of the year”.

Detail calculation provided in Annex. 3 of the PDD/02/ and validation team confirmed that illustration provided in PDD/02/ is in line with the tool/ B03/ and checked with supporting documents provided / B06/.

Carbon Check confirmed that there is no significant transmission constraints between the two countries, hence consideration of national grid of Namibia and South Africa as project electricity system is correct and in line of tool /B03/.

All electricity generated by the Nampower and Eskom power stations is taken into consideration when calculating the grid emission factor; exports are not subtracted.

All the data for the Eskom power stations are obtained from the Eskom website, where they have a specific webpage dedicated to CDM grid emission factor related data (Eskom Holdings SOC Limited , 2011). This data includes commissioning dates, electricity generated, and fuel consumed.

All of the data for the Nampower power stations as well as data for imported electricity to the NamPower system were obtained from the NamPower annual reports /B06/. No fuel consumption data is available in the public domain for NamPower power stations, therefore fuel consumption was conservatively assumed to be 0.

The project activity is connected to integrated grid of RSA and Namibia, hence for the purpose of estimation of baseline emission factor the consideration of National grid of RSA Grid and national grid of Namibia (Nampower) is appropriate and correct and is in line with the requirements specified in the tool /B03/. The project electricity system entails all the Eskom power plants in the South African electricity grid and all other power stations of Nam power are treated as project electricity system, and emission factors for imports from these systems are conservatively assumed to be 0 tCO<sub>2</sub>/MWh. This is acceptable and the delineation of project electricity system and connected electricity system is in line with the requirements of tool to calculate emission factor.

Step 2 - of the tool gives an option to include off-grid power plants in the project electricity system. Eskom data base and data from Nam power /B06/ has provided data for only grid connected power plants. Hence the PP has correctly /02/ considered only grid connected power plants for the calculation of grid emission factor and the same is in line with the tool /B03/ ; acceptable to the validation team.

Step 3 - Simple OM method, out of the four methods provided in the tool / B03/ for calculating the operating margin (EF<sub>grid,OMsimple,y</sub>) is selected. The tool / B03/( Cp p 5 of 33 of the tool ) specifies that the simple OM method can only be used if the low-cost/must-run resources constitute less than 50% of total grid generation in :1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production. The Simple OM method selected is by the PP in the PDD /02/ and justified and appropriate as the average proportion of low-cost/must run resources is less than 50% in project electricity **system**, checked by referring Eskom and Nampower data base /B06/ and acceptable to the validation team.

The ex-ante option for determining the simple OM is opted by the PP /02/, which is as per the tool / B03/.

Step 4 – The simple OM emission factor is calculated as the generation-weighted average CO2 emissions per unit net electricity generation (tCO2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

As per the tool / B03/, the simple OM may be calculated by one of the following two options:

Option A: Based on the net electricity generation and a CO2 emission factor of each power unit; or

Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

PP has considered /02/, the Option A for the calculation of simple OM, which is inline with the requirement of tool /B03/. All the data base explained in Annex 3 of the PDD /02/ which are sourced from Eskom website and Nam power web site /B06/. All the data used for simple OM calculation described in Annex. 3 of the PDD and also cross checked by Grid emission factor calculation spread sheet /04/ and found that PP has correctly calculated the generation weighted average value and this is in line with the tool /B03/ and arrived at following summary:

Year	EFOM [tCO2/MWh]	Generation [GWh]
2009	0.96	223 880
2010	0.95	229 744
2011	0.94	235 865
Three years generated weighted average OM(tCO2/MWh)		0.95

Based on above assessment, validation team confirms that the PP has correctly followed the guidelines of tool to calculate emission factor and by using database provided by Eskom (South African National Grid) and Nam Power and the EF<sub>gridOM</sub> for the integrated South African National grid & Nam power (Namibian National grid) is calculated based on option 'A' of the step 4 of the "Tool to calculate emission factor of an electricity system, version 02.2.1 /B03/.

Since ex-ante option has been opted for the simple OM and only grid power plants has chosen, PP has used a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-SSC-PDD to the DOE for validation. This is in compliance of tool to calculate emission factor (Cp p 5 of 33 of the tool).

**Step 5 –** PP has chosen option 1 and calculated build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of PDD submission to the DoE for validation.

PP has considered option (b) the set of power capacity additions in the electricity system that comprise 5 most recent power units, excluding CDM (SET5-units) (in MWh) and that have been built most recently has been considered and the same has been selected in the PDD /02/.

PP has fixed the Build Margin emission factor as ex-ante for the whole crediting period.

The validated BM value for the year 2011 (latest data available at the time of start of validation) comes to 0.87 tCO<sub>2</sub>/MWh and found the same correct and in line with the tool.

**Step 6** of the tool /B03/ requires calculation of the combined margin emission factor as per the following equation:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

According to the tool /B03/ on selecting alternative weights, the default weights applicable for waste to energy projects are w<sub>OM</sub> = 0.5 and w<sub>BM</sub> = 0.5 for the entire crediting period have been applied. The combined margin emission factor has been calculated as; EF<sub>y</sub> = 0.91 tCO<sub>2</sub>/MWh.

The CM is fixed ex-ante for the crediting period. Hence the validation team confirms that the PP has correctly calculated the combined margin grid emission factor and is in line with the tool to calculate emission factor, version 02.2.1 /B03/.

The justifications for the choice of data and parameters used in the baseline emission calculation are provided in the table below:

Parameter	Application A	Value Applied	Validation	Justified
$\varphi_y$	Default value	0.75	In accordance with Table 3 of the applied tool. Application A is selected in dry conditions (MAP/PET <1). Default value as applied in the "Emissions from solid waste disposal sites (version 6.0.1)"/B03/	<input checked="" type="checkbox"/> <input type="checkbox"/>
OX	Default value	0.1	During on-site assessment the Validation Team has observed that the existing landfill site is covered by soil. As defined in the "Emissions from solid waste disposal sites (version 6.0.1)", the application of value 0.1 is therefore appropriate for the project.	<input checked="" type="checkbox"/> <input type="checkbox"/>
$F$	Default value	0.5	Default value as applied in the "Emissions from solid waste disposal sites (version 6.0.1)"/ B03/	<input checked="" type="checkbox"/> <input type="checkbox"/>
$DOC_{fy}$	Default value	0.5	Default value as applied in the "Emissions from solid waste disposal sites (version 6.0.1)"/ B03/	<input checked="" type="checkbox"/> <input type="checkbox"/>

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Parameter	Application A	Value Applied	Validation	Justified
<i>MCF<sub>y</sub></i>	Default value	1.0	During on-site assessment the Validation Team has observed that the existing landfill site is covered by soil and the way of waste tipping is well managed. Therefore the landfill site is considered as anaerobic managed solid waste disposal sites as defined in the "Emissions from solid waste disposal sites (version 6.0.1)" / B03/ Therefore the Validation Team confirms that the applied value 1.0 is appropriate for the project.	<input checked="" type="checkbox"/> <input type="checkbox"/>

Parameter	Application A	Value Applied	Validation	Justified
$k_j$	Default value		<p>The landfill climatic conditions are boreal and temperate as the mean annual temperature in Windhoek is less than 20°C (19.47°C according to Wikipedia - <a href="http://en.wikipedia.org/wiki/Windhoek">http://en.wikipedia.org/wiki/Windhoek</a>). Windhoek is also dry as the mean annual precipitation/potential evapotranspiration is significantly less than 1. The annual rainfall in Windhoek is approximately 370 mm, while the potential surface evaporation rate is in the range of 3,000 – 3,500 mm/a’.</p>	<input checked="" type="checkbox"/> <input type="checkbox"/>
		Domestic waste (rapidly degrading)	As mentioned above, the Kupferberg landfill comprises of domestic waste (clearly aligning with the $k_j$ value of ‘Food, food waste, beverages and tobacco’) and garden waste (clearly aligning with the $k_j$ value of ‘Other organic putrescible garden and park waste’). However construction rubble, industrial waste and tyres do not clearly align with a waste type mentioned in Table 5.	
		Garden waste (moderately degrading)	Therefore, in accordance with the statement in version 06.0.1 of the tool ‘Emissions from solid waste disposal sites’, ‘if a waste type disposed in a SWDS cannot clearly be attributed to one of the waste types in Table 5, the project participant should choose, among the waste types that have similar characteristics, the waste type where the value of $k_j$ results in a conservative estimate (lowest emissions)’. Since construction rubble, industrial waste and tyres do not decay, the most conservative estimate for the decay rate is zero.	
		Inert waste (not degrading)		

Parameter	Application A	Value Applied	Validation	Justified	
$W_{j,x}$	Estimated once		<p>The project site started receiving MSW since 1984 according to the EIA/11/ and site interviews with project owner, with a designed service lifetime of more than 20 years. The amount of MSW landfilled annually and the composition of organic waste types is quoted from EIA/11/, which is completed by Envitech solutions,</p> <p>The Validation Team has cross-checked the information of waste tipping quantity provided in the PDD (version 03, 13/11/2012), as well as the calculation made in the emission reduction calculation spread sheet, as being effective.</p>	<input checked="" type="checkbox"/> <input type="checkbox"/>	
		Domestic waste			0.990
		Garden waste			0.002
		Inert waste			0.008
$DOC_j$	Default value		<p>All the data – the total amount of MSW and the fraction of waste types are based on wet waste so <math>DOC_j</math> (% wet waste ) is chosen, which results in a conservative estimate (lowest emission) in line with Emissions from solid waste disposal sites (version 6.0.1).</p>	<input checked="" type="checkbox"/> <input type="checkbox"/>	
		Domestic waste			0.15
		Garden waste			0.20
		Inert waste			0
$f_y$	Estimated once	0	<p>As described in Section 3.4.3 above, the Validation Team confirms there is no methane captured and destroyed prior to the implementation of the project.</p> <p>Therefore the Validation Team confirms that the applied value 0 is appropriate</p>	<input checked="" type="checkbox"/> <input type="checkbox"/>	

Please also refer CAR 9 & 11 and its detailed closure for conservativeness of parameters and waste characteristics and ex-ante parameters.

### Project Emissions

The project emissions associated with the project activity are calculated in accordance with equation (2) of the applied methodology:

$$PE_y = PE_{power,y} + PE_{flares,y} + PE_{process,y}$$

Where:

$PE_y$  Project emissions in year y (tCO<sub>2</sub>e)

- $PE_{power,y}$  Emissions from the use of fossil fuel or electricity for the operation of the installed facilities in the year  $y$  (tCO<sub>2</sub>e)
- $PE_{flare,y}$  Emissions from flaring or combustion of the landfill gas stream in the year  $y$  (tCO<sub>2</sub>e)
- $PE_{process,y}$  Emissions from the landfill gas upgrading process in the year  $y$  (tCO<sub>2</sub>e)

Since there are no emissions from the landfill gas upgrading process, equation (2) simplifies to:

$$PE_y = PE_{power,y} + PE_{flare,y}$$

$PE_{power,y}$  is negligible and is excluded from the emission reduction calculations. This is in accordance with the 'Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion' (version 02) – the tool that the project participant is referred to from AMS-I.D. This tool does not contain provisions to calculate the project emissions from electricity consumption. Therefore:

$$PE_y = PE_{flare,y}$$

$$PE_{flare,y} = \sum_{h=1}^{8760} TM_{RG,h} \times (1 - \eta_{flare,h}) \times \frac{GWP_{CH4}}{1,000}$$

Where:

$TM_{RG,h}$  = Mass flow rate of methane in the residual gas in the hour  $h$  (kg/h);

$\eta_{flare,h}$  = Flare efficiency in hour  $h$ ;

$GWP_{CH4}$  = Global Warming Potential

### Assessment of Flare Efficiency:

As per tool to calculate "Tool to determine project emissions from flaring gases containing methane' ver.1.0, the determination of the hourly flare efficiency depends on the operation of flare (e.g. temperature), the type of flare used (open or enclosed) and, in case of enclosed flares, the approach selected by project participants to determine the flare efficiency (default value or continuous monitoring).

Validation team confirmed during interview with PP that this project will use an enclosed, continuously monitored flare.

The tool states that the in case of enclosed flares and continuous monitoring of the flare efficiency, the flare efficiency in the hour  $h$  ( $\eta_{flare,h}$ ) is:

- 0% if the temperature of the exhaust gas of the flare ( $T_{flare}$ ) is below 500 °C during more than 20 minutes during the hour  $h$ .
- determined as follows in cases where the temperature of the exhaust gas of the flare ( $T_{flare}$ ) is above 500 °C for more than 40 minutes during the hour  $h$  :

Where:

$\eta_{flare,h}$  Flare efficiency in the hour  $h$

$TM_{FG,h}$  Methane mass flow rate in the exhaust gas averaged in a period of time  $t$  kg/h)

$TM_{RG,h}$  Mass flow rate of methane in the residual gas in the hour  $h$  (kg/h)



As PP has confirmed that, enclosed flare will be used and temperature will be 500°C or more, hence in line of equation no. 14 of applicable tool / B03/, efficiency of flare calculated. Value of  $TM_{FG,h}$  &  $TM_{RG,h}$  are confirmed landfill gas assessment report/ 12/.

The validation team confirm that the calculation of flare efficiency is in line of “Tool to determine project emissions from flaring gases containing methane’ ver.1.0.

## Emission Reductions

Baseline and project emission calculations had been correctly applied and properly explained in the PDD, as per the methodology AMS-III.G “Landfill Methane Recovery”, version 07 /16/. The following formula was used:

$$ER_{y,estimated} = BE_y - PE_y - Leakage$$

Since the project activity involves the implementation of new equipment and the equipment is not transferred from another activity, as verified in the site visit, leakage is not considered.

$$ER_y, estimated = BE_y - PE_y.$$

Baseline and project emission calculations have been correctly applied and properly explained in the PDD, as per the methodology AMS-I.D - “Grid Connected Renewable Electricity Generation”, version 17. The following formula was used:

$$ER_{elec,y} = BE_{elec,y} = EG_{BL,y} * EF_{grid,y} (PE_y = 0).$$

As the energy generating equipment is not transferred from another activity, as confirmed by interviews with the PP during the site visit, leakage is not to be considered.

Based on the calculation spreadsheet /06/ and the PDD /02/, the emission reductions from the project activity have been determined to be 9,341tCO<sub>2</sub>e per year (average) over its 10 year fixed crediting period starting from 2014 to 2023. The validation team noted that all assumptions and data used by the PP in the PDD, cross checked with the references and the sources provided by the PP in the PDD and found them to be appropriate and conservative.

The emission reductions estimated can be replicated for data and parameter values provided in the PDD/02/ and supporting files submitted for registration.

The validation team concludes that the project emissions, baseline emissions, leakage and emission reductions stated in the PDD are appropriate and as per the methodology and the GHG calculations are complete and transparent, and their accuracy has been verified.

The summary of GHG emission reduction is as follows:

The assumptions made for estimating GHG are listed in the PDD.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD /02/ section B.6
All data used by project participants are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD /02/ Annex 3 Baseline Information & section B.6
Their references and sources are also listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD /02/ Annex 3 Baseline Information & section B.6
Formulas, parameters, values are	<input checked="" type="checkbox"/> Yes	As per PDD /02/ Annex 3 Baseline

complete, accurate, transparent and conservative	<input type="checkbox"/> No	Information & section B.6
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD /02/ Annex 3 Baseline Information & section B.6
Methodology has been applied correctly to calculate project emissions, baseline emissions, leakage emissions and emission reductions	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per AMS-I.D., Version 17 /B02/ and methodological tool, "Tool to calculate emission factor of an electricity system" version 02.2.1 /B03/, Emissions from solid waste disposal sites version 6.0.1/B03/, Tool to determine project emissions from flaring gases containing methane' ver.1.0 /B03/
All the emissions of baseline emissions can be replicated using information provided in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per AMS-I.D., Version 17 /19/ and methodological tool "Tool to calculate emission factor of an electricity system" version 02.2.1 /B03/, Emissions from solid waste disposal sites version 6.0.1/B03/, Tool to determine project emissions from flaring gases containing methane' ver.1.0 /B03/

In conclusion, the Validation Team confirms that the emission reductions have been calculated appropriately and complying with the applied methodologies and tools.

Please also refer CAR 10 & CL 6 and its detailed closure on CER calculation.

### 3.7 Additionality

The Validation Team has assessed the additionality of the project activity with steps listed below, complying with the VVM version 01.2, and the "Guidelines on the demonstration of additionality of Small-scale CDM Project Activities" ver. 9.0 /B04/. Guidelines on Additionality of First-Of-Its's-Kind Project Activities (Version 02.0), annex 07, EB 69/B04/.

#### 3.7.1 CDM Consideration

Validation team has assessed all activities related to the project implementation /17/ and confirms that no activity till date can be considered as start date of the project as per glossary of CDM terms. In this context it was noted that a was contract signed between Envitech and the City of Windhoek on 09/12/2011 /18/ and CL-9 has been raised and closed considering the fact that this contract is only to authorise the implementation of a landfill gas project and is not a binding agreement or involves commitment towards financial expenditures of the project and validation team based on justification provided by the PP in response of CL-9 and review of this agreement /18/ confirms that this can not be considered as start date as per glossary of CDM terms.

The expected start date of the project activity is 28/02/2013 /17/.The PDD /01/ was web-hosted for public comments on 05/04/2012 i.e. before the start date of the project activity. Since the start date of the project activity is after PDD was web-hosted, the project developer does not need to provide evidence of the prior consideration of the CDM in accordance with "Guidelines on the demonstration and assessment of prior consideration of the CDM" Ver. 04 of 15/07/2011.

The expected start date of the project activity will be 28/02/2013 confirmed with project implementation chart /17/ provided by the PP.

In conclusion, in accordance with the requirements of the Guidance on the demonstration and assessment of prior consideration of the CDM and VVM /B01/, Carbon Check can confirm that the CDM was considered seriously in the decision to implement the project activity.

### 3.7.2 Identification of Alternatives

The baseline scenario for the project is as defined in methodology AMS-III.G “Landfill Methane Recovery”, version 07/B02/, “the situation where, in the absence of the project activity, biomass and other organic matter are left to decay within the project boundary and methane is emitted to the atmosphere”.

For the project component under project category (I), as per AMS-I.D “Grid Connected Renewable Electricity Generation”, version 17 /B02/, the baseline scenario is to be (depending on the technical and economical evaluation in the first phase, it is planned the installation of a new grid-connected renewable power plant/unit) “the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources”.

Paragraph 105 of VVM /B01/ states that PDD is required to identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required. Since the approved methodology AMS-III.G and AMS I. D. /B02/ used by the project activity prescribes the baseline scenario, no further analysis of alternatives is required for the project activity.

*Validation Team, therefore, concludes that the PDD and the validation report conforms to the guidance given by EB vide paragraph 105 of VVM (Ver.01.2).*

### 3.7.3 Investment analysis

Not Applicable for this project.

### 3.7.4 Barrier analysis

As per “Guidelines on the demonstration of additionality of small scale project activities’ver. 9.0/B04-e/ , project developers of SSC Projects need to demonstrate that the project activity would not have occurred anyway due to least one of the barriers, viz., investment barrier, access-to-finance barrier, technological barrier, barrier due to prevailing practices and other barriers. PP has opted to demonstrate additionality through barrier analysis and used “Guidelines on additionality of First-of-its-Kind project activities” ver. 2.0, EB 69. As per the guideline, the project activity should comply with the following conditions to qualify as ‘First-of-its-kind’ status, viz.,

The project is the first in the applicable geographical area that applies a technology that is different from technologies that are implemented by any other project, which are able to deliver the same output and have started commercial operation in the applicable geographical area before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of the proposed project activity, whichever is earlier;

The project implements one or more of the measures;

The project participants selected a crediting period for the project activity that is “maximum of 10 years with no option of renewal”.

Project developer has demonstrated that the project is first-of-its-kind in the geographical region (Host country- Namibia). The project involves the destruction of methane (either in a flare, an internal combustion engine, or a combination of the two). The project activity will flare the recovered methane gas and supply electricity (output) to the grid (integrated grid of RSA & Namibia), using methane capture (technology) in the country (geographical region i.e. Namibia) and has opted for a fixed crediting period (10 years with no renewal). It is verified /15/ that there were no other projects in commercial operation with the same technology, measure and output as on 08/12/2011 /15-a/ - i.e. before the start of GSC (PDD hosted on UNFCCC website on 05/04/2012) which is earlier date between the start date and start of GSC and even before the start date of project activity, i.e. 28/02/2013. Validation team verified another declaration from Department of economic development and environment, City of Windhoek dated 30/11/2012 / 15-b/ which confirms that at the time of GSC and during validation also, project still remain as First-of-its kind.

Validation team confirmed with the letter issued by City of Windhoek’s Department of Infrastructure, Water and Waste Management, Namibia /15-a/ that there are only three landfills site which isolate and store the solid waste that is generated by the country. These landfill sites are:

1. The Kupferberg Landfill in Windhoek which receives general and hazardous waste (this is the location of the project activity).
2. The Swakopmund Landfill in Swakopmund (on the west coast of Namibia) which receives general waste.
3. The Walvis Bay Landfill in Walvis Bay (on the west coast of Namibia) which receives general and hazardous waste.

The remaining two sites in Namibia (apart from the project activity site) are merely disposal sites and it does not involve any methane recovery and destruction, hence validation team based on revised of PDD /02/ and letter issued by The City of Windhoek’s Department of Infrastructure, Water and Waste Management, Namibia /15/ confirms that the project activity of FOIK in the host country.

It was also verified from letter from City of Windhoek’s Department of Infrastructure, Water and Waste Management/15/ that there are no plans in place to install flaring and electricity generation systems at the other Namibian landfills

The PP has submitted a confirmation letter from Department of Infrastructure, Water and Waste Management dated 08/12/2011 /15/ as an evidence the support of claim that there no any single project similar to the technology of project activity by 08/12/2011 in Namibia. Validation team confirms that such evidence is valid for demonstrating barriers as per additonality tool, relevant text is re-iterated below:

*“42. In applying Sub-steps 3a and 3b, provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternatives are prevented by these barriers. Anecdotal evidence can be included, but alone is not sufficient proof of barriers. The type of evidence to be provided should include at least one of the following:*

*(a) Relevant legislation, regulatory information or industry norms;*

*(b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions, industry associations, companies, bilateral/multilateral institutions, etc;*

(c) *Relevant statistical data from national or international statistics;*

(d) *Documentation of relevant market data (e.g. market prices, tariffs, rules);*

(e) *Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others.*

Validation team confirms that the letter provided by the Department of Infrastructure, Water & Waste Management /15 / falls under the bullet (c) of the above list as it is a written confirmation from Govt. agency based on national statistical data confirmed through independent web-research by the validation team. There is no penetration of methane destruction project in Namibia as stated in the PDD /02/.

Based on the above validation team concludes that the project fulfils the criteria laid down for 'first-of-its-kind' in line with Annex 07 EB 69.

Please also refer CAR 7 and CL 4 and its closure on demonstration first-of-its-kind barrier.

### **3.7.5 Conclusion of assessment of additionality**

In the above background, Validation Team concludes that the project is not a business-as-usual scenario and is additional as project is demonstrated as First-of-its-kind activity as per paragraph 6 of Guidelines on additionality of first-of-its-kind project activities.

### **3.8 Monitoring**

The monitoring plan is included in Section B.7 of the PDD /02/ based on the approved monitoring methodology AMS-III.G Landfill Methane Recovery (version 07) AMS-I.D./Version 17/B02/ titled "Grid connected renewable electricity generation" and is correctly applied to the CDM project activity.

The monitoring plan is in accordance with the monitoring methodologies; the monitoring plan will give opportunity for real measurement of achieved emission reductions.

Carbon Check has checked all the parameters presented in the monitoring plan against the requirements of the methodology; no deviations relevant to the project activity have been found in the plan. Carbon Check confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure that the emission reductions achieved by/ resulting from the proposed CDM project activity can be reported *ex post* and verified.

This confirms the requirement of § 122 of VVM ver. 01.2 /B01/.

Please also refer CL 7 & CL 8 and its closure related to monitoring

#### **3.8.1 Parameters determined ex-ante**

The baseline emission factor of the project is reported to be determined ex-ante and would remain during entire fixed crediting period in the PDD/02/, which is calculated as a combination margin (CM), consisting of the combination of OM and BM emission coefficient. All ex-ante parameters applied in the baseline emission calculation have been validated by the validation team and discussed in section 3.6 GHG emission reductions of this report.

The parameters for determining the GHG emissions reductions have been clearly demonstrated in section B.6.2.of the PDD /02/. The combined margin emission factor has been calculated to be 0.91 tCO<sub>2</sub> / MWh.

All default values and ex ante parameters as per methodology AMS-III G and associated tools has been discussed in section 3.6 of the report.

The validation team has verified the value used against the sources and conclude that all relevant parameters to calculate the GHG emissions reductions of the project have been sufficiently considered and the value of the parameters are real, measureable and conservative.

### 3.8.2 Parameters monitored ex –post

According to AMS-III.G Landfill Methane Recovery Version 07) and AMS-I.D. Grid connected Renewable Electricity Generation (version 17) the following parameters need to be monitored during the project's implementation:

- Amount of landfill gas combusted in gas engine
- Amount of landfill gas destroyed via flaring in the year  $y$
- Methane content in the landfill gas
- Temperature of the landfill gas
- Volumetric flow rate of the residual gas on dry basis at normal conditions in hour  $h$
- Volumetric fraction of methane in the residual gas on dry basis in hour  $h$
- Volumetric fraction of O<sub>2</sub> in the exhaust gas of the flare in hour  $h$
- Concentration of methane in the exhaust gas of the flare on dry basis at normal conditions in hour  $h$
- Net amount of electricity supplied into the grid

The electricity meter will be installed at gas engines and will be owned by Municipality of City of Windhoek . Make and accuracy class of the meter is not specified during validation and calibration of meter will be done as per relevant guidelines of host country which was confirmed during interview with PP.

According to the revised PDD (version 03, 13/11/2012), the accuracy of orifice plate flow meter (LFG flare, $y$ ) is identified as  $\pm 1\%$  and calibration frequency is once a year; the accuracy of infra-red sensor - gas analyzer ( $W_{CH_4,y}$ ) is defined as  $\pm 2\%$  full scale and calibration frequency is once a year; the accuracy of temperature meter (N-type thermocouple) is identified as  $\pm 1.5\%$  and initial calibration frequency will be done as per manufacturer's specification, subsequent calibration is not required as it will be replaced every year. The accuracy of Electro chemical electronic sensor ( $t_{O_2,h}$ ) is identified as  $\pm 0.5\%$  and initial calibration will be done by manufacturer, subsequent calibration not required as it will be replaced annually. The type and accuracy class of Electricity meter ( $EG_{BL,y}$ ) will be determined after implementation of phase-2 of the project activity. Calibration of meter will be done as per host country regulation or manufacturer's specification which is accepted by validation team. Therefore the validation team is able to confirm that the parameters monitored and the accuracy of monitoring equipments have been completely identified and described in the monitoring plan. The monitoring procedures have been determined by the validation team by means of document review and interview with the PP as project has not been implemented yet. All the monitoring equipments will be maintained and managed according to specifications provided by the manufacturer. All archived monitoring data, required for verification and issuance, will be kept at least two years after the end of the crediting period or the last issuance of CER. Therefore, the validation team confirms that the monitoring plan is in accordance with the selected monitoring methodologies.

### 3.8.3 Management system and quality assurance

According to the PDD /02/, a CDM management team consisting of City of Windhoek and Envitech projects will be established to carry out the monitoring and the project manager will hold the overall responsibility for the monitoring process. The organizational structure of the

CDM Monitoring Team and responsibility of each unit is illustrated in Section B.7.2 of the PDD.

Data management, monitoring procedures, accuracy level of each monitoring equipment, handling procedures to correct monitoring mistakes and QA/QC procedures are appropriately specified in the PDD/02/.

As project yet to be implemented, validation team confirms with the interview with PP that after commissioning and start-up of the gas extraction and flaring equipment, training will be given to site personnel by technology supplier on the operation and basic maintenance of the plant. Training records can be verified at the time of first verification

Therefore, the Validation Team is able to confirm that the project participant is competent to implement the monitoring plan complying with monitoring methodologies AMS-III.G Landfill Methane Recovery (version 07) and AMS-I.D Grid Connected Renewable Electricity Generation (version 17).

### **3.9 Sustainable Development**

The host party's DNA, Ministry of Environment and Tourism, Republic of Namibia has confirmed the contribution of the project to the sustainable development in Namibia according to the Letter of Approval for the Project /03/, which was checked by the validation team to be valid.

The project activity is in compliance with all current applicable legislations. As the project activity does not lead to generation of liquid or gaseous effluents and will partly displace fossil fuel based electricity generation, there are only benefits derived out of the project and no adverse effects are envisaged.

In conclusion, the Validation Team is of the opinion that the project activity is in full compliance with all applicable requirements for the CDM by leading to emission reductions additional to what would have otherwise occurred, providing for reliable and measurable emission reductions with sustainable development in Republic of Namibia through improvement of environmental condition, reduction of air pollutants.

### **3.10 Environmental Impacts**

The main environmental impacts and its mitigation methods of the project activity have been summarized in section D of the PDD/02/. The environmental impacts resulted from the project activity were sufficiently described in Environmental Impact Assessment (EIA) Report/11/. The environmental impact assessment was carried out by Matrix Consulting Services (Pty) in May, 2012 and was subsequently approved by Deptt. Of Environment Affairs, Republic of Namibia on 05/07/2012 /08/ in accordance with Namibian Environmental Management Act, 2007 (Act No. 7 of 2007). The validation team has carefully reviewed the EIA report /11/, of which the conclusion is that the project is acceptable as those impacts are not deemed significant and can be mitigated through related measures.

The validation team confirms that the project activity has a positive impact on the environment – it will produce renewable electricity and will reduce the amount of methane emitted to the atmosphere and all the clearances obtained are in accordance with the procedures required by the host party.

Please refer CL 11 and 12 and its detailed closure related to environment impact analysis.

### **3.11 Local Stakeholders Consultation**

The Project owner invited stakeholders through newspaper advt. on 15/02/2012 & 23/02/2012 in 'Republikein' and 'New Era'. Invitation for stakeholders also advertised in 'The Namibian' on 16/02/2012 which was confirmed by supporting documents / 07/ provided by PP and found to be correct.

Local stakeholders' consultation process dated 01/03/2012 was prior to the publication of PDD on the UNFCCC website (05/04/2012 to 04/05/2012). The validation team noted that all the relevant stakeholders were identified are in line with the definition of stakeholders as per latest version of CDM Glossary of terms /B04(c)/. A summary of the comments received and a note on how due account was taken of the concerns raised in the above public consultation are included in section E of the PDD. This also states that appropriate immediate responses were provided to them. From the background of the stakeholders, it was reasonably believed that the general attitude of the local residents, who were likely to be affected by the project, was positive towards the project.

Validation team reviewed all relevant information of local stakeholder consultation meeting /07/ and confirms that the LSC meeting meets to the requirement of § 127 of VVM, ver. 01.2 /B01/. The validation team confirms that the process for conducting the local stakeholders meeting is adequate and credible.

#### **4.0 Comments by Parties, Stakeholders and NGOs**

The PDD version 1 of 02/04/2012 was made publicly available on UNFCCC website (<https://cdm.unfccc.int/Projects/Validation/DB/3KR295YMU8HH8UHUURXNNZ9X9A5ZCU/vi-ew.html>) from 05/04/2012 to 04/05/2012 in order to invite comments from public stakeholders.

No public comments have been received during that period.



**Appendix A**

**CDM Validation Protocol**

**“Methane recovery and power generation at the Kupferberg Landfill in Namibia”  
in  
Namibia**

**Report No. N° CCL0131/MRPGKL/07022012**

**TABLE 1 MANDATORY REQUIREMENTS**

<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reductions commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non Annex I Parties contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2	OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art.12.5a CDM Modalities and Procedures §40a	OK
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the Host Country thereof.	Kyoto Protocol Art.12.2 CDM Modalities and Procedures §40	OK
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance (ODA) and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7 CDM Modalities and Procedures Appendix B §2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The Host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities and Procedures §30/31a	OK
8. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK
9. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if	Kyoto protocol Art. 12.5 c, Simplified modalities and procedures for small scale CDM project activities §23 a	OK

Requirement	Reference	Conclusion
anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.		
10. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art.12.5b	OK
11. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in §6(c) of the Marrakech Accords and shall not be a de-bundled component of a larger project activity.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK
12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK
13. If required by the Host Country, an analysis of the environmental impacts of the project activity is carried out and documented.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK
14. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
15. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for a minimum of 30/45 days, and the project design document and comments have been made publicly available.	Marrakesh accord, CDM Modalities and Procedures §40	OK
16. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel.	CDM Modalities and Procedures §37e	OK
17. The project design documents shall be in conformance with the UNFCCC-CDM-SSC-PDD	Marrakesh Accords, CDM M&P, Appendix B, EB decisions	OK

<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>
18. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords, and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK

**TABLE 2 REQUIREMENTS CHECKLIST**

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
<b>A Description of Project Activity</b>						
<b>A.1 Title of the project activity</b>						
A.1.1.	Title of the project activity, revision number and date of PDD (section A.1). State the clearly identifiable title of the project activity, the version number and the date of the PDD.	/01/	DR		<del>To be compared and confirmed from LoA.</del>	OK
A.1.2	Does the project comply with the applicable requirements for completing the PDDs?	/01/	CC	YES the project complies “Guidelines for completing the project design document (CDM-SSC-PDD) and the proposed new baseline and monitoring methodologies (CDM-SSC-NM)”	OK	OK
<b>A.2 Description of the proposed project activity</b>						
A.2.1	Does the PDD contain an accurate description of the project activity and provide the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? How was the design of the project assessed?	/01/	DR, I	The project is a small scale greenfield project involving installation and commissioning of gas extraction and flaring system and possible installation of gas to electricity	<del>GL1, FAR 1</del>	FAR 1

<sup>1</sup> MoV: DR document review, I interview, CC cross checking

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
			<p>generation system on site. Expected to start in 01<sup>st</sup> July 2012 and completed in 2013. The project was reviewed by interviewing the Technology consultant and technology manufacturer &amp; supplier and reviewing the design and feasibility study. However, brief description about the proposed project activity has not been provided in section A.2. installed solar power project. Description on phase 2 of the project activity is also not provided.</p> <p>The project also supports Host country's development goals as outlined in the "National Development Plan 3" under Environmental sustainability. However reference of this documents not provided in the PDD</p>		

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
A.2.2	Does the project activity involve alteration of existing installations? If yes, have the differences between pre-project and post-project activity been clearly described in the PDD?	/01/	DR, I The project is a greenfield project and does not involve alteration.	OK	OK
<b>A.3 Project participants</b>					
A.3.1	Have the Parties and project participants participating in the project been listed in tabular form in Section A.3 and are they consistent with the information detailed in Annex 1 of the PDD?	/01/	DR, I Namibia is the Host Party and City of Windhoek is the project participant. Information is consistent in section A.3 and Annex 1 of PDD.	OK	OK
A.3.2	Do all participating Parties fulfil the participation requirements as follows: (a) Party has ratified the Kyoto Protocol (b) Party has a Designated National Authority	/01/	DR Namibia is the only party identified and participating (Host country). <input type="checkbox"/> Namibia has ratified Kyoto Protocol on 04/09/2003 and <input type="checkbox"/> The DNA is represented through the “Ministry of Environment & Tourism” as per the UNFCCC website.  <input type="checkbox"/> The project is a unilateral project and No Annex 1 party has been identified at the time of validation and	OK	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				registration of project.		
A.3.3	Have the letters of approval have been issued?	/01/	DR	Host Country approval (LoA) has not been provided to DOE for Validation	<del>CAR-1</del>	OK
A.3.4	Do the letters of approval meet the following requirements? (a) LoA confirms that the Party has ratified the Kyoto Protocol; (b) LoA confirms that participation is voluntary (c) The LoA confirms that the project contributes to the sustainable development of the Host Country? (d) The LoA refers to the precise project activity title in the PDD (e) The LoA was received directly by the DNA of the PP In case of doubt regarding the authenticity of the LoAs, describe how it was verified that the letter of approval is authentic.	/01/	DR	Confirm the requirements	<del>Depends on closure of CAR-1</del>	OK
A.3.5	Have all private/public project participants been authorized by a Party to the Kyoto Protocol?	/01/	DR	Project participants are private or public not clear in sec. A.3 of the PDD.	<del>CAR-2</del>	OK
<b>A.4 Technical description of the project</b>						
A.4.1	Is the project location clearly defined?			Project location is	<del>CL-2</del>	OK



Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				identified and clearly defined. In section A.4.1.4 of PDD, the details of physical location, including information allowing the unique identification of this small-scale project activity exceeds the limit of one page as mentioned in the "Guidelines for completing the CDM-SSC-PDD (Version 05)."		
A.4.2	Does the project design engineering reflect current good practices? Would the technology result in a significantly better performance than any commonly used technologies in the host Country? Is any transfer of technology from any Annex I Party involved?	/01/	DR, I	Description in sec. A.4.3 of the PDD does not indicate how the proposed technology is environmentally safe and sound and how proposed technology is better than any commonly used technologies in the host country and detail technical specification of the equipment are also not provided in the PDD. Description in sec. A.4.2 is not in line with "Guidelines for	<del>CAR-3</del>	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				<p>completing the CDM-SSC-PDD, Ver. 5”</p> <p>Type and category of the project activity not provided in sec. A.4.2 of the PDD.</p> <p>PP is requested to provide pumping trial assessment report, gas assessment report based on computer based models for validation.</p>		
A.4.3	Is the information on emission reduction provided for chosen crediting period in the tabular format ?		DR, I	Table used for estimated amount of emission reduction over the chosen crediting period is not as per “Guidelines for completing the CDM-SSC-PDD, Ver. 5”	<del>CAR-4</del>	OK
A.4.4	If public funding from Parties included in Annex I is used for the project activity, have these Parties provided an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?	/01/,	DR, I	The PP has affirmed that no diversion of official development assistance will be used for this project. An undertaking also provided by PP substantiating that no ODA funding has been used in the proposed project activity.	OK	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
A.4.5	If the project activity is a small scale, confirm that it is not a debundled component of a large scale project in accordance with appendix C of the simplified M & P for SSC CDM project activities and the guidelines for assessment of de bundling for SSC project activities.			Site visit and interviews with the PP confirmed that there is no CDM registered project of the same category & technology of the project activity within 1 km of the project boundary. The project activity satisfies the criteria of appendix C of the simplified M & P for SSC CDM project activities; hence the team confirmed that the project activity is not a debundled component	OK	OK
<b>B.1 Methodology applied</b>						
B.1.1	Does the project activity apply an approved methodology and the correct version thereof?	/01/, /18/,	CC, DR, I	The project has applied “Landfill methane recovery”, version 7.0 of 13/10/2011 and “Grid connected renewable electricity generation” ver. 17 of 17/06/2011	OK	OK
<b>B.2 Applicability criteria of the methodology/tools</b>						

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
B.2.1	How was it validated that the project activity complies with the applicability criteria?	/01/, /18/	<p>CC, DR, I</p> <p>The project is a small scale greenfield project involving installation and commissioning of gas extraction and flaring system and possible installation of gas to electricity generation system on site at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant);</p> <p>In sec. B.2, in justification provided for applicability criteria under AMS I.D., total estimated installed capacity of power plant based on captured gas not mentioned to confirm that project capacity will not exceed the threshold of 15 MW.</p> <p>Evidence to support the applicability of applied methodology that project activity is grid connected has not</p>	<del>CAR-5</del>	OK

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
			been provided.		
B.2.2	/01/, /18/	CC,DR,I	<p>As per methodology AMS-III.G (version 07) is applied for the methane recovery component of this project. In accordance with paragraph 5 of AMS-III.G., 'the baseline scenario is the situation where, in the absence of the project activity, biomass and other organic matter are left to decay within the project boundary and methane is emitted to the atmosphere'</p> <p>Methodology AMS-I.D. (version 17) is applied for the electricity generation component of this project. In accordance with paragraph 10 of AMS-I.D., 'the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been</p>	OK	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid'.		
<b>B.3 Project boundary</b>						
B.3.1	Is the project boundary area clearly defined and in accordance with the applied methodology?	/01/, /18/	DR, I	In sec. B.3 of the PDD, flow diagram of the project boundary physically delineating the project activity indicates that electricity will be exported to regional grid whereas Namibia grid and South African grid both considered for OM calculation.	<del>CL-3</del>	OK
B.3.2	What are the project's system boundaries (components and facilities used to mitigate GHGs)?	/01/, /18/	DR, I	As per methodology AMS III G, the project boundary is the physical , geographical site of the landfill where the gas is captured and destroyed / used whereas as per AMS I.D., The spatial extent of the project boundary includes the project power plant and all power plants connected physically to	<del>Refer CL-3</del>	OK

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion	
			the electricity system that the CDM project power plant is connected to .			
B.3.3	Which sources are identified for the project? Does the identified project boundary cover all possible sources linked to the project activity?	/01/, /18/	DR, I	<p>Project Emission are associated with the project activity whereas no leakages are related to this project. All sources of baseline emission and project emission are identified. As all power plants connected physically to the Grid (electricity system) to which CDM project power plant is connected. This covers all possible sources linked to the project activity.</p> <p>Project emissions on account of flaring of methane and auxiliary electricity consumptions included in the project activity</p>	OK	OK
B.3.4	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do	/01/, /18/	DR, I	The project involves all emissions sources as indicated/ foreseen by	OK	OK

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion	
these sources contribute by more than 1% to the estimated emission reductions of the project?			the methodologies that may question the applicability of the methodology. The project emission also associated with the project activity due to auxiliary electricity consumption and methane flaring in the project activity. As project emission sources contribute by more than 1% of the total estimated emissions, these sources included in the project boundary.			
<b>B.4 Baseline scenario identification</b>						
B.4.1	Which baseline scenarios have been identified? Is the list of the baseline scenarios complete?	/01/, /18/	DR, I	The project is a small scale greenfield project involving installation and commissioning of gas extraction and flaring system and possible installation of gas to electricity generation system on site at a site  'the baseline scenario is the situation where,	OK	OK



Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				in the absence of the project activity, biomass and other organic matter are left to decay within the project boundary and methane is emitted to the atmosphere' and the electricity delivered to the grid by the project activity would have been otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources, as reflected in the combined margin ( CM) calculation described in the “ Tool to calculate emission factor for an electricity system”		
B.4.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/01/, /18/	DR,I	NA	OK	OK
B.4.3	What is the baseline scenario? Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/01/, /18/	DR,I	the baseline scenario is the situation where, in the absence of the project activity, biomass and other organic matter are left	OK	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				<p>to decay within the project boundary and methane is emitted to the atmosphere' and electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid'.</p> <p>The baseline scenario is in accordance with the guidance described in the methodology. These are the only baseline scenarios based on the applicability condition in the methodology</p>		
B.4.4	Has the baseline scenario been determined using conservative assumptions? Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/01/, /18/	DR, I	It was confirmed during site visit that there is no relevant policies and guidelines exists in the host country and Namibia voluntarily adopts the relevant guidelines of South	<del>CAR-6</del>	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				Africa. PP requested to explain the voluntary guidelines adopted in relevant section of the PDD and supporting guidelines to be provided for validation.		
<b>B.5 Additionality determination</b>						
B.5.1	What tool does the project use to assess additionality? Is this in line with the methodology?	/01/, /18/	DR, I	Attachment A to Appendix B of the “Simplified modalities & procedures for small scale CDM project activities” has been used to assess additionality.  First –of –its kind barrier opted to demonstrate additionality which is part of “Tool for the demonstration and assessment of additionality” PP is requested to clarify the approach used to demonstrate additionality in transparent manner	<del>CL-4</del>	OK
B.5.2	What is the project additionality mainly based	/01/, /18/,	DR, I	Section B.5 of PDD	<del>GAR-7</del>	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
	on?	/20/		<p>demonstrates additionality based on first-of –its kind barrier, but relevant tool and guidelines has not been applied appropriately to arrive on conclusion.</p> <p>PP requested to provide references and supporting documents to justify first –of its kind barrier in compliance with “ Guidelines on additionality of first-of-its kind project activities” version 01 Annex 11 of EB 63.</p>		
<b>B.5.3</b>	<b>Prior consideration of CDM</b>					
B.5.3.1	What is the starting date of the proposed project activity?	/01/, /18/, /20/		<p>The project is expected to start in 01/07/ 2012.</p> <p>The PDD was published for global stakeholder consultation on 05/04/2012 which is prior to the expected starting date of the project activity. As per</p>	OK	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				“Guidelines on the demonstration and assessment of prior consideration of the CDM” Ver. 4, EB 62. Notification to UNFCCC and DNA is not required if PDD has been published for global stakeholder consultation before the project activity start date.		
B.5.3.2	What is the evidence for serious consideration of CDM prior to the time of decision to proceed with the project activity?	/01/, /18./ /20/	DR, I	The PDD has been web hosted prior to the start date of project activity. This confirms the serious consideration of CDM.	OK	OK
B.5.3.3	What initiatives were taken by the project participants from the starting date of the project activity to the start of validation in parallel with the physical implementation of the project activity?	/01/, /18./ /20/	DR, I	The project is under validation prior to its start (physical implementation). PP requested to provide evidence for contract signed between Envitech Solutions (Pty) Ltd. and the city of Windhoek dt. 09/12/2011	CL-5	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
B.5.3.4	Does the timeline of the project confirm that continuous actions in parallel with the implementation were taken to secure CDM status?	/01/, /18./ /20/	DR, I	Refer B.5.3.2 above	OK	OK
<b>B.5.4 Investment analysis</b>						
B.5.4.1	What is the analysis method used to determine whether the proposed project activity is not (a) the most economically or financially attractive; or (b) economically or financially feasible, without the revenue from the sale of certified emission reductions?	/01/, /18./ /20/	DR, I	NA	OK	OK
B.5.4.2	What financial indicator is used?	/01/, /18./20/	DR, I	NA	OK	OK
B.5.4.3	Cross-check of main parameters used in the financial analysis: electricity generation, electricity tariff, investment costs, operating and maintenance costs, taxes, other costs. (The main parameters can be changed for the different project category.)	/01/, /18./ /20/	DR	NA	OK	OK
B.5.4.4	Sensitivity analysis: have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified?	/01/, /18./ /20/	DR	NA	OK	OK
B.5.4.5	Sensitivity analysis: is the range of variations is reasonable in the project activity?	/01/, /18./ /20/	DR	NA	OK	OK
B.5.4.6	Have the key parameters been varied to reach the benchmark and the likelihood of this happening been justified to be small?	/01/, /18./ /20/		NA	OK	OK
<b>B.5.5 Barrier analysis</b>						
B.5.5.1	Are the barriers identified complimentary to a	/01/, /20/	DR,I	Additionality has been	<del>Refer CAR 7</del>	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
	potential investment analysis?			demonstrated based on first of its kind barrier. Investment analysis has not been opted to demonstrate additionality.		
B.5.5.2	How were the investment barriers assessed to be real? How does CDM alleviate the investment barriers?	/01/ , /20/	DR, I	NA	OK	OK
B.5.5.3	Is the project activity prevented by the investment barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/01/ , /20/	DR, I	NA	OK	OK
B.5.5.4	How were the technological barriers assessed to be real? How does CDM alleviate the technological barriers?	/01/ , /20/	DR, I	NA	OK	OK
B.5.5.5	Is the project activity prevented by the technological barriers and is at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/01/ , /20/	DR, I	NA	OK	OK
B.5.5.6	How were the barriers due to prevailing practise assessed to be real? How does CDM alleviate the barriers due to prevailing practice?	/01/ , /20/	CC, DR, I	PP has demonstrated first of its kind barriers and it was concluded in the sec. B.5 of the PDD that no common practice available in the region. Details of common practice analysis are described in the PDD. PP need to provide references and	<del>Refer CAR 7</del>	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				supporting evidences for common practice analysis and to demonstrate how project is first of its kind in the host country in compliance with latest version of “Tool for the demonstration and assessment of additionality”		
B.5.5.7	Is the project activity prevented by the barriers due to prevailing practice and is at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/01/ , /20/	CC, DR,	<p>The analysis reveals that most feasible scenario in absence of project activity is that, organic matter are left to decay within the project boundary and methane is emitted to the atmosphere</p> <p>The analysis reveals that fossil fuel based power plant connected to grid is common and does not face any barrier.</p>	<del>Refer CAR 7</del>	OK
B.5.5.8	How were the other barriers assessed to be real? How does CDM alleviate the other barriers?	/01/ , /20/	CC, DR,	Only first of its kind barrier has been opted. Other barriers not been discussed.	OK	OK
B.5.5.9	Is the project activity prevented by the other barriers and is at least one of the possible	/01/ , /20/	CC, DR,	The analysis reveals that most feasible	<del>Refer CAR 7</del>	OK



Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
	alternatives to the project activity is feasible under the same circumstances?			<p>scenario in absence of project activity is that, organic matter are left to decay within the project boundary and methane is emitted to the atmosphere</p> <p>The analysis reveals that fossil fuel based power plant connected to grid is common and does not face any barrier</p>		
<b>B.5.6 Common practice analysis</b>						
B.5.6.1	What are the geographical scopes and scope of technology of the common practice analysis?	/01/	DR	NA	NA	OK
B.5.6.2	How many similar non-CDM-projects exist in the region within the scope?	/01/	DR	NA	NA	OK
B.5.6.3	What is the data source(s) used for the common practice analysis?	/01/	CC, DR	NA	NA	OK
<b>B.5.7 Conclusion on the additionality assessment</b>						
B.5.7.1	What is the conclusion with regard to the additionality of the project activity?	/01/ , /20/	DR		Conclusion of additionality depends on closure of CAR-7 & CL-4	OK
<b>B.6 Calculation of GHG emission reductions</b>						
<b>B.6.1 Baseline emissions</b>						
B.6.1.1	Are the calculations documented according to the	/01/	DR	Baseline emission is	CAR-8	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
	approved methodology and in a complete and transparent manner?			<p>calculated according to approved methodologies and tools.</p> <p>Latest version of tool “Emissions from solid waste disposal sites” ver. 06.0.1” has not been referred to calculate methane emission potential of a solid waste disposal site. Name of latest tool has to be corrected throughout the PDD</p>		
B.6.1.2	Have conservative assumptions been used when calculating the baseline emissions and are the uncertainty estimates properly addressed?	/01/	DR	<p>PP is requested to justify the conservativeness of DOCj, Kj and Wj value considered for baseline emissions.</p> <p>PP is also requested to provide qualitative and quantitative analysis of wastes along with computer based model based on which quantity of solid waste to be received till 2023 has been forecasted</p>	<del>CAR-9</del>	OK
<b>B.6.2 Project emissions</b>						

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
B.6.2.1	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/01/	DR	Project emission has been calculated based on latest applicable tools	OK	OK
B.6.2.2	Have conservative assumptions been used when calculating the project emissions and are the uncertainty estimates properly addressed?			Justify the choice of tool and equations used to calculate project emission on account of electricity consumption in project activity.	<del>CL-6</del>	OK
<b>B.6.3 Leakage</b>						
B.6.3.1	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/01/	DR	As per the applied methodology no leakage is to be considered	OK	OK
B.6.3.2	Have conservative assumptions been used when calculating the leakage and are the uncertainty estimates properly addressed?	/01/	DR	As per the applied methodology no leakage is to be considered	OK	OK
<b>B.6.4 Emission reductions</b>						
B.6.4.1	Has the methodology been correctly applied to calculate the emission reductions and can this be replicated by the data provided in the PDD and supporting files to be submitted for registration?	/01/	DR	The methodology has been correctly applied to calculate the emission reductions but tools are not correctly applied and can not be replicated by the data provided in	<del>CAR-10</del>	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				<p>the PDD. PP requested to provide corrected excel spread sheet for CER calculation.</p> <p>PP is also requested to provide references/ web links in the CER calculation spread sheet.</p> <p>Combined margin emission factor for integrated RSA &amp; Namibian grid is on higher side, please provide corrected spread sheet of GEF calculation along with references for all parameters considered for emission factor calculation.</p>		
<b>B.6.5 Data and parameters that are available at validation and that are not monitored</b>						
B.6.5.1	How were the parameters available at validation verified?	/01/	DR, I	OM & BM values fixed ex ante and available at the time of validation but has not been included in section B.6.2 of the PDD. Other parameters except default values which are fixed ex ante has not been included under B.6.2 of the	<del>CAR-14</del>	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				PDD.  Coefficient of electricity (COEFelec,y) included in B.6.2 is not correct		
<b>B.7 Monitoring plan</b>						
<b>B.7.1 Data and parameters monitored</b>						
B.7.1.1	Does the monitoring plan described in the PDD comply with the requirements of the methodology?	/01/	DR, CC	Yes, the monitoring plan described in the PDD complies with the requirements of the methodologies AMS III G & AMS I.D.	OK	OK
B.7.1.2	Does the monitoring plan contain all necessary parameters and are they clearly described?	/01/	DR	Description of the monitoring plan in sec. B.7.2 is in line with "Guideline for completing the CDM-SSC-PDD" Ver. 05. However, PP requested to revise the section and include details of monitoring frequency, calibration frequency of measuring instruments, accuracy class for all the parameters need to be monitored.	<del>GL7</del>	OK
B.7.1.3	Is the measurement equipment described? Is the accuracy of the measurement equipment addressed and deemed appropriate? Are the	/01/	DR	The metering instruments shall be installed in accordance	FAR1	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
	requirements for maintenance and calibration of measurement equipment described and deemed appropriate?			with the requirements of the Grid and the applied methodology at the point of supply.		
B.7.1.4	Is the monitoring frequency adequate for all monitoring parameters? Is it in line with the monitoring methodology?	/01/	DR,I	Monitoring frequency for all parameters to be monitored mentioned in the sec. B.7.1 of the PDD is in line with approved applicable methodology.	OK	OK
B.7.1.5	Is the recording frequency adequate for all monitoring parameters? Is it in line with the monitoring methodology?	/01/	DR	Recording frequency for all parameters to be monitored mentioned in the sec. B.7.1 of the PDD is in line with approved applicable methodology.	OK	OK
<b>B.7.2 Monitoring of sustainable development indicators/environmental impacts</b>						
B.7.2.1	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?			NA	OK	OK
B.7.2.2	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?			NA	OK	OK
B.7.2.3	Are the sustainable development indicators in line with stated national priorities in the host country?			NA	OK	OK
<b>B.7.3 Management, quality assurance and quality control</b>						
B.7.3.1	How has it been assessed that the monitoring arrangements described in the monitoring plan	/01/,	DR,I	The description of monitoring	OK	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
	are feasible within the project design?			arrangements in the monitoring plan is in line with methodology		
B.7.3.2	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/01/,	DR	<p>Procedures identified for day to day records handling is deemed adequate and in line of methodology. However training requirements of personnel who will be responsible for data monitoring related to CDM project is not explained in the sec. B. 7.2 of the PDD.</p> <p>Roles and responsibilities of the personnels involved is not transparently mentioned.</p>	<del>CL-8</del>	OK
B.7.3.3	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/01/,	DR, I	The description of monitoring plan as provided in section B.7.2 of PDD and interview with PP confirms that the data management, quality assurance and quality control procedures are sufficient to ensure that the emission reductions achieved	OK	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				by/resulting from the project can be reported ex post and verified		
B.7.3.4	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/01/,	DR,I	Yes, The document review and interview with PP confirmed that all monitored data required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later	OK	OK
<b>C. Duration of the project activity and crediting period.</b>						
<b>C.1 Start date of project activity</b>						
C.1.1	What is the expected starting date of the project activity and how has been determined? When was the first construction activity?	/01/	DR,I	The project is expected to start in 01/07/ 2012. (Construction has not started during the course of validation). However sec. B.5. suggests date of contract signed between Envitech and city of Windhoek on 09/12/2011. PP is requested to justify the start date of project	CL-9	OK



Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
				activity as per CDM glossary of terms		
C.1.2	What is the expected operational lifetime of the project activity? Is it reasonable?	/01/		PP requested to provide supporting evidence to substantiate operational life time of the project activity.	CL 10	OK
<b>C.2 Start date of crediting period</b>						
C.2.1	What is the expected starting date of the proposed project activity? Does the crediting period start eight weeks after the request for registration?	/01/	DR, I	The expected start date of project construction 01/07 2012 and the crediting period activity is 01/01/2013 or the date of registration whichever is later.	OK	OK
C.2.2	What is the length of the crediting period? Is it clearly defined and reasonable?	/01/	DR,I	Fixed crediting period of a maximum of 10 years is opted for the project.	OK	OK
<b>D. Environmental Impact</b>						
D.1.1	Has an analysis of the environment impacts of the project activity been undertaken? Is it clearly and sufficiently described in the PDD?	/01/, /11/	DR	Analysis of Environmental Impact is not recorded and presented in a report /11/ PP is requested to provide EIA report	CL 11	OK
D.1.2	Will the project create any adverse environmental effects? Are transboundary environmental	/01/, /11/	DR, I	Analysis of Environmental Impact	Refer CL 11	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
	impacts considered in the analysis?			is not recorded and presented in a report /11/ PP is requested to provide EIA report		
D.1.3	Is the analysis of the environmental impacts required by the legislation of the Host Country? If yes, has the EIA has been approved by local Government? Does the approval contain any conditions that need monitoring?	/01/,/11/,	DR,	Environmental Impact is required to be assessed as per Namibia Environmental Management, 2007and its amendments. Environmental Clearance has not been provided for the Project.	CL-12	OK
D.1.4	Is the project in line with the current environmental legislation in the Host Country?	/01/, /11/	DR,	Yes the project is in line with current environmental legislation	OK	OK
<b>E. Local stakeholder consultation</b>						
E.1.1	Were the local stakeholders invited by the PP prior to the publication of the PDD to the UNFCCC website?	/01/	DR	Yes the local stakeholders were invited prior to the publication of PDD to UNFCCC	OK	OK
E.1.2	Were the local stakeholders invited to comment on the proposed project activity?	/01/	DR, I	Local stakeholders were invited to discuss CDM during the stakeholders consultation process	OK	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Draft Conclusion	Final Conclusion
E.1.3	Is the summary of the comments received from the stakeholders, provided in the PDD complete?	/01/	DR	Yes summary of comments received are provided in section E of the PDD.	OK	OK
E.1.4	Has due account been taken by the project participants of any stakeholder comments received?	/01/	DR, I	The records of the stakeholder reveals that due account was taken on the comments received from stakeholders.	OK	OK
E.1.5	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?	/01/	DR, I	Additional Stakeholder consultation process is undertaken by the DNA. The PP on request of the LOA has to submit the signed DVR by DOE. The DNA then performs LSC by uploading the PDD via the DNA's website. Stakeholder comments can only be taken into consideration on the FVR.	<del>Depends on closure of CAR1</del>	OK

**TABLE 3 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS**

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
<p>CAR 1 Host Country approval (LoA) has Not been provided to DOE for Validation.</p>	<p>A.3.3 A.3.4 E.1.5</p>	<p><b>Response #1</b>  Host country approval has been requested from the Namibian Designated National Authority.  <b>Response #2</b>  Please see supporting documents (73) and (74) for host country approval from the Namibian Designated National Authority.</p>	<p>Host country LoA not provided CAR open  2<sup>nd</sup> Review DNA approval dated 28/08/2012 issued by Ministry of Environment &amp; Tourism, Republic of Namibia received.  CAR closed</p>
<p>CAR 2 Project participants are private or public not</p>	<p>A.3.5</p>	<p><b>Response #1</b></p>	<p>Necessary correction made in PDD which was confirmed with revised PDD.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
clear in sec. A.3 of the PDD.		The term 'Public Entity' has been included after the City of Windhoek in section A.3 of the revised PDD.	CAR Closed
<p>CAR 3</p> <p>Description in sec. A.4.2 of the PDD does not indicate how the proposed technology is environmentally safe and sound and how proposed technology is better than any commonly used technologies in the host country and detail technical specification of the equipment are also not provided in the PDD.</p> <p>Description in sec. A.4.2 is not in line with "Guidelines for completing the CDM-SSC-PDD, Ver. 5"</p> <p>Type and category of the project activity not provided in sec. A.4.2 of the PDD.</p> <p>PP is also requested to provide pumping trial assessment report, gas assessment report based on computer based models for validation</p>	A.4.2	<p><b>Response #1</b></p> <p><u>Point #1</u></p> <p>Section A.4.2 of the PDD has been revised to include more technical specifications and a description of how environmentally safe and sound technology and knowhow is being applied by the project activity (including similar project experience as well as equipment compliance to several standards). Please see reference document (26).</p> <p><u>Point #2</u></p> <p>The following paragraph has been included in the revised PDD:                      'The project type includes renewable energy projects (Type I) and other project activities (Type III). The sectoral scopes are:                      1. Energy industries (renewable - / non-renewable sources)                      13. Waste handling and disposal'</p>	<p>Point # 1</p> <p>Technical specification has been provided in revised PDD and explanation regarding adoption of environmental safe and sound technology also included in revised PDD</p> <p>Point # 2</p> <p>Type and category of of the project activity included in revised PDD, which is in line with UNFCCC requirements.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		<p><u>Point #3</u></p> <p>Please see reference documents (17) and (18) for the pumping trial assessment report and gas assessment report.</p>	<p>Point # 3</p> <p>Pumping trial assessment and landfill gas assessment has been provided for validation.</p> <p>CAR Closed</p>
<p>CAR 4</p> <p>Table used for estimated amount of emission reduction over the chosen crediting period is not as per “Guidelines for completing the CDM-SSC-PDD, Ver. 5”</p>	<p>A.4.3</p>	<p><b>Response #1</b></p> <p>The table in section A.4.3 has been revised in accordance with version 5 of the ‘Guidelines for completing the CDM) SSC-PDD’. The headings have been corrected to match the guidance exactly and the emission reductions now include the electricity generation component of the project activity.</p>	<p>Table for estimated amount of emission reduction corrected in revised PDD as per “Guidelines for completing the CDM-SSC-PDD, Ver. 5”</p> <p>CAR Closed</p>
<p>CAR 5</p> <p>In sec. B.2, in justification provided for applicability criteria under AMS I.D., total estimated installed capacity of power plant based on captured gas not mentioned to confirm that project capacity will not exceed the threshold of 15 MW.</p> <p>Evidence to support the applicability of applied methodology that project activity is</p>	<p>B.2.1</p>	<p><b>Response #1</b></p> <p><u>Point #1</u></p> <p>Section B.3 has been revised to state that a 600kW gas engine will be installed in the project activity, thereby not exceeding the limits of a Type I small scale methodology.</p>	<p><b>1<sup>st</sup> Review</b></p> <p>Point #1</p> <p>Capacity of gas engine which will be installed in 2<sup>nd</sup> phase of project implementation now included in revised. Capacity of gas engine will be 0.6 MW which is less than threshold limit of 15 MW and in compliance with applicable condition of applied</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
grid connected has not been provided		<p><u>Point #2</u></p> <p>As described in section A.4.2 of the revised PDD, the project has made an allowance for the potential installation of an onsite gas-to-electricity generation system, once the total extraction potential has been proven when the flare is operational.</p> <p>During the validation site visit it became clear that the site is grid connected although the landfill is located some distance from the city centre. The closest neighbour, the University, is also grid connected. Please see reference document (31) for proof that the Kupferberg landfill is grid connected – Kupferberg electricity invoice.</p> <p><b>Response #2</b></p> <p>Please see supporting document (75). This document is a letter from the City of Windhoek’s Department of Infrastructure, Water and Waste Management stating that if a gas-to-electricity system is installed in the future at the Kupferberg landfill, the City of Windhoek confirms that all electricity generated by the project</p>	<p>methodology.</p> <p><b>Point #2</b></p> <p>During validation site visit, it was confirmed that at present, power requirement of landfill site met by grid. Electricity invoice provide also confirms the baseline or present arrangement but it does not indicate and suggest that power generation from landfill which will be implemented in phase II, will be supplied to grid. Power generation from gas can also be used to meet its power requirement of landfill site (captive use) to replace grid electricity.</p> <p>CAR Open</p> <p><b>2<sup>nd</sup> Review</b></p> <p>An undertaking from Department of Infrastructure, Water &amp; Waste Management , City of Windhoek dated 30/08/2012 provided for validation stating that after installation of gas to electricity generation plant in future, electricity produced will be supplied to grid only.</p> <p>CAR closed</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		activity will be supplied to the existing grid.	
<p>CAR 6                      Relevant national and / or sectoral policies of host country has not been taken account in the identification of baseline scenario.</p> <p>PP requested to explain the voluntary guidelines adopted in relevant section of the PDD and supporting guidelines to be provided for validation</p>	B.4.4	<p><b>Response #1</b></p> <p>As discussed during the site visit, Namibia does not have any minimum requirements for waste disposal at a landfill, nor does it have any minimum requirements for the handling, classification and disposal of hazardous waste. However, the City of Windhoek is using two South African landfill legislations as guidelines. These are:</p> <ul style="list-style-type: none"> <li>• Minimum Requirements for Waste Disposal by Landfill, Third Edition, 2005. (Reference document (27).)</li> <li>• Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, Third Edition, 2005. (Reference document (28).)</li> </ul> <p>The abovementioned legislations do not contain any restrictions or requirements on landfill gas flaring. These legislations are used only for the purposes of waste management.</p> <p>A paragraph describing the above has</p>	<p>Namibia does not have any legally binding regulations and guidelines which were confirmed with interview with PP and referring to relevant legislation in host country.</p> <p>Relevant national policies and sectoral guidelines included in revised PDD.</p> <p>CAR closed</p>



Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		<p>been included under the heading 'national policies and circumstances relevant to the baseline' is section B.5 of the revised PDD, in accordance with version 05 of the 'Guidelines for Completing the Simplified Project Design Document (CDM-SSC-PDD)'.</p>	
<p><b>CAR 7</b>                      Section B.5 of PDD demonstrates additionality based on first-of –its kind barrier, but relevant tool and guidelines has not been applied appropriately to arrive on conclusion.</p> <p>Demonstration of first of its kind project activity is not in line with the guidelines on additionality of first of its kind project activities version 01 Annex 11 of EB 63, which provides the guidance on the same.</p>	<p>B.5.2                      B.5.5.1                      B.5.5.6                      B.5.7.7                      B.5.5.9                      B.5.6.1                      B.5.6.2                      B.5.6.3                      B.5.7.1</p>	<p><b>Response #1</b></p> <p>Section B.5 of the PDD has been revised to demonstrate additionality in a stepwise approach in accordance with version 01.0 of the 'Guidelines on Additionality of First-of-Its-Kind Project Activities'. The following references support the various aspects of the first of its kind argument: the UNFCCC website and reference documents (29) and (30).</p> <p><b>Response #2</b></p> <p>Agreed. The term 'fossil fuel' has been removed from the table in section B.5 of the revised PDD. Description has been revised in line with Guidelines for demonstration of additionality for small scale project activities, Ver. 9.0 and Guidelines on additionality for First-of-its-kind activities, ver. 2.0, Annex. 7, EB 69.</p>	<p><b>Review 1</b></p> <p>In section B.5, in table, description under 'different technologies' mentions that In Namibia, electricity generated by fossil fuel or solar power is not ever fed into the grid.</p> <p>I understand grid power is mostly dominantly by fossil fuel, please clarify.</p> <p><b>Review 2</b></p> <p>Description to demonstrate First-of-its-kind barrier modified in revised PDD. Validation team confirms that explanation in revised PDD is in line with " Guidelines for demonstration of additionality for small scale project activities, Ver. 9.0" and "Guidelines on additionality for First-of-its-kind activities, ver. 2.0, Annex. 7, EB 69".</p> <p>CAR Closed</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
<p>CAR 8</p> <p>Latest version of tool “Emissions from solid waste disposal sites” ver. 06.0.1” has not been referred to calculate methane emission potential of a solid waste disposal site. Name of latest tool has to be corrected throughout the PDD</p>	<p>B.6.1.1</p>	<p><b>Response #1</b></p> <p>Version 06.0.01 of the tool ‘Emissions from solid waste disposal sites’ has been revised and consistently referred to throughout the PDD.</p>	<p>Latest version of tool “Emissions from solid waste disposal sites” ver. 06.0.1” has now been referred consistently in revised PDD</p> <p>CAR closed</p>
<p>CAR 9</p> <p>PP is requested to justify the conservativeness of <math>DOC_j</math>, <math>K_j</math> and <math>W_j</math> value considered for baseline emissions.</p> <p>PP is also requested to provide qualitative and quantitative analysis of wastes along with computer based model based on which quantity of solid waste to be received till 2023 has been forecasted</p>	<p>B.6.1.2</p>	<p><b>Response #1</b></p> <p><u>Point #1</u></p> <p>The value for <math>DOC_j</math> has been updated in line with version 06.0.1 of the ‘Emissions from solid waste disposal sites’. According to this tool, Application A is applicable as this project activity mitigates methane emissions from a specific existing SWDS. Application A states that <math>DOC_j</math> is a default value based on waste type. Since the Kupferberg landfill comprises of 95% domestic waste, 3% garden waste, and 2% construction rubble, tyres and industrial waste, the values for <math>DOC_j</math> applicable to this project activity are as follows:</p>	<p>Point # 1</p> <p>Justification and supporting documents provided for conservativeness for values of <math>DOC_j</math>, <math>K_j</math> and <math>W_j</math> considered is accepted and values also corrected in revised PDD.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion						
		<table border="1" data-bbox="1093 236 1588 400"> <tr> <td>DOC (domestic waste)</td> <td>0.15</td> </tr> <tr> <td>DOC (garden waste)</td> <td>0.20</td> </tr> <tr> <td>DOC (tyres, construction rubble, industrial)</td> <td>0</td> </tr> </table> <p data-bbox="1093 453 1559 584">The abovementioned values have been included in the table in section B.4 and the revised emission reduction calculations.</p> <p data-bbox="1093 639 1592 1347">k<sub>j</sub> is also a default value as specified by the applied tool. The PP needs to select the climatic conditions of the landfill in order to determine which k<sub>j</sub> default value to use. The landfill climatic conditions are boreal and temperate as the mean annual temperature in Windhoek is less than 20°C (19.47°C according to Wikipedia - <a href="http://en.wikipedia.org/wiki/Windhoek">http://en.wikipedia.org/wiki/Windhoek</a>). Windhoek is also dry as the mean annual precipitation/potential evapotranspiration is significantly less than 1. This is supported by a journal article (reference document (22)) page 1, paragraph 3, which states that ‘The annual rainfall in Windhoek is approximately 370 mm, while the potential surface evaporation rate is in the range of 3,000 – 3,500 mm/a’.</p>	DOC (domestic waste)	0.15	DOC (garden waste)	0.20	DOC (tyres, construction rubble, industrial)	0	
DOC (domestic waste)	0.15								
DOC (garden waste)	0.20								
DOC (tyres, construction rubble, industrial)	0								

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion				
		<p>As mentioned above, the Kupferberg landfill comprises of domestic waste (clearly aligning with the <math>k_j</math> value of 'Food, food waste, beverages and tobacco') and garden waste (clearly aligning with the <math>k_j</math> value of 'Other organic putrescible garden and park waste'). However construction rubble, industrial waste and tyres do not clearly align with a waste type mentioned in Table 5. Therefore, in accordance with the statement in version 06.0.1 of the tool 'Emissions from solid waste disposal sites', 'if a waste type disposed in a SWDS cannot clearly be attributed to one of the waste types in Table 5, the project participant should choose, among the waste types that have similar characteristics, the waste type where the value of <math>k_j</math> results in a conservative estimate (lowest emissions)'. Since construction rubble, industrial waste and tyres do not decay, the most conservative estimate for the decay rate is zero.</p> <p>Therefore, the values for <math>k_j</math> are as follows:</p> <table border="1" data-bbox="1088 1283 1592 1367"> <tbody> <tr> <td data-bbox="1088 1283 1464 1329"><math>k_{(domestic\ waste)}</math></td> <td data-bbox="1464 1283 1592 1329">0.06</td> </tr> <tr> <td data-bbox="1088 1329 1464 1367"><math>k_{(garden\ waste)}</math></td> <td data-bbox="1464 1329 1592 1367">0.05</td> </tr> </tbody> </table>	$k_{(domestic\ waste)}$	0.06	$k_{(garden\ waste)}$	0.05	
$k_{(domestic\ waste)}$	0.06						
$k_{(garden\ waste)}$	0.05						

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion		
		<table border="1" data-bbox="1093 240 1588 280"> <tr> <td data-bbox="1093 240 1464 280">k (tyres, construction rubble, industrial)</td> <td data-bbox="1464 240 1588 280">0.00</td> </tr> </table> <p>The abovementioned values have been included in the table in section B.4 of the revised emission reduction calculations.</p> <p>Wj has been calculated from monthly waste quantities for the period of January 2004 – December 2011. Please see supporting documents (32) – (67) for these figures.</p> <p><u>Point #2</u></p> <p>Please see supporting documents (32) – (67) for proof of waste figures between 2004 and 2011. The cell where this project activity will be implemented was closed in December 2011, and therefore there is no need to forecast the amount of waste that will be received post-2011.</p> <p>The Kupferberg landfill has received waste since 1984 however; no records of the site were kept between the period of 1984 and 2003 – this was discussed during the site visit. For this reason, the population census has been used to estimate the</p>	k (tyres, construction rubble, industrial)	0.00	<p>Point # 2</p> <p>Detail report of quantity and quality of waste received at landfill from 2004 to 2011 provided for validation and cell where the project activity will be implemented , were closed in 2011, hence post 2011 information on waste quantity and quality not required.</p> <p>Kupferberg landfill is in operation since 1984 /11/ and receiving waste since 1984, however, no records are available for the period of 1984 to 2003. To forecast the estimate of waste received for this duration, population census was used and based on computer modelling forecasted estimation made.</p> <p>Clarification and supporting</p>
k (tyres, construction rubble, industrial)	0.00				

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		quantity of waste received by the landfill for the period of 1984 to 2003. Please see supporting documents (68) – (70) for these population numbers.	documents provided are found to be appropriate and accepted by validation team.  CAR Closed
<p>CAR 10</p> <p>The methodology has been correctly applied to calculate the emission reductions but tools are not correctly applied and cannot be replicated by the data provided in the PDD. PP requested to provide corrected excel spread sheet for CER calculation.</p> <p>PP is also requested to provide references/ web links in the CER calculation spread sheet</p> <p>Combined margin emission factor for integrated RSA &amp; Namibian grid is on higher side, please provide corrected spread sheet of GEF calculation along with references for all parameters considered for emission factor calculation.</p>	<p>B.6.4.1</p>	<p><b>Response #1</b></p> <p>Please see reference document (71) for the corrected emission reduction calculations together with references.</p> <p><b>Response #2</b></p> <p>Please see reference document (72) for the updated emission reduction calculation spread sheet with the power generation component of the project activity and the grid emission factor calculation. The emission reductions have also been updated accordingly in the revised PDD.</p>	<p><b>Review 1</b></p> <p>In response to CAR 4, PP stated that emission reduction due to power generation component has also been included, but ref. document (71) does not have emission reduction calculation on account of power generation and grid emission factor calculation also not included in ER spread sheet.</p> <p>CAR Open</p> <p><b>Review 2</b></p> <p>Updated ER spread sheet incorporating emission reduction calculation and grid emission factor calculation has been provided for validation.</p> <p>CAR Closed</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
<p>CAR 11</p> <p>OM &amp; BM values fixed ex ante and available at the time of validation but has not been included in section B.6.2 of the PDD. Other parameters except default values which are fixed ex ante has not been included under B.6.2 of the PDD</p> <p>Coefficient of electricity (COEF<sub>elec,y</sub>) included in B.6.2 is not correct</p>	<p>B.6.5.1</p>	<p><b>Response #1</b></p> <p>EF<sub>grid,BM,y</sub> and EF<sub>grid,OM,y</sub> have been included in section B.6.2 of the revised PDD.</p> <p>The parameter W<sub>j</sub> is also included in section B.6.2 as it is not a default value but instead estimated once before the start of the project activity.</p> <p>The parameter COEF<sub>elec,y</sub> has been removed from the revised PDD in accordance with the applied methodology.</p> <p><b>Response #2</b></p> <p>The combined margin emission factor is included in a table in section B.6.2 of the revised PDD.</p>	<p><b>Review 1</b></p> <p>Though OM, BM value has been included in section B.6.2 of the PDD but combined margin emission factor value is not included in B.6.2</p> <p>CAR Open</p> <p><b>Review 2</b></p> <p>Combined margin emission factor now included in in sec. B.6.2 of the revised PDD which is accepted and in line with PDD filling guidelines.</p> <p>The parameter W<sub>j</sub> is also included in section B.6.2 in revised PDD which will be fixed ex-ante. DoE confirms that it is inline with SSC-CDM-PDD filling guidelines.</p> <p>The parameter COEF<sub>elec,y</sub> has been removed from the revised PDD in accordance with the applied</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
			<p>methodology which is found to be appropriate by DoE.</p> <p>CAR closed</p>
<p>CL 1 Brief description about the proposed project activity has not been provided in section A.2. Description on phase 2 of the project activity is also not provided.</p> <p>The project also supports Host country's development goals as outlined in the "National Development Plan 3" under Environmental sustainability. However reference of this documents not provided in the PDD</p>	<p>A.2.1</p>	<p><b>Response #1</b></p> <p><u>Point #1</u></p> <p>Phase 1 and Phase 2 of the project activity has been elaborated upon in section A.2 of the revised PDD.</p> <p><u>Point #2</u></p> <p>A footnote to the web link for Namibia's National Development Plan 3 has been included in section A.2 of the revised PDD. Please also see supporting document (23) for Namibia's National Development Plan 3, pages 144 – 151.</p> <p><b>Response #2</b></p> <p>Yes, the footnote refers to the document which is reference document (23).</p>	<p><b>Review 1</b></p> <p>Point #1</p> <p>Brief description about both the phases of the proposed project has now been included in section A.2 of the revised PDD</p> <p>Point #2</p> <p>Footnote 1 in the PDD is not working. I understand ref. document (23) is referred in PDD as footnote.</p> <p>CL open</p> <p><b>Review 2</b></p> <p>Documents referred in foot note 1 provided for validation</p>



Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
			CL closed
<p>CL 2 Project location is identified and clearly defined. In section A.4.1.4 of PDD, the details of physical location, including information allowing the unique identification of this small-scale project activity exceeds the limit of one page as mentioned in the “Guidelines for completing the CDM-SSC-PDD (Version 05).”</p>	A.4.1	<p><b>Response #1</b></p> <p>Section A.4.1.4 is limited to one page in the revised PDD.</p>	<p>Necessary corrections made in revised PDD,accepted CL Closed</p>
<p>CL 3 In sec. B.3 of the PDD, flow diagram of the project boundary physically delineating the project activity indicates that electricity will be exported to regional grid whereas Namibia grid and South African grid both considered for OM calculation.</p>	B.3.1 B.3.2	<p><b>Response #1</b></p> <p>The term in the flow diagram now states ‘Electricity export to the integrated Namibian and South African grid’ in section B.3 of the PDD.</p>	<p>Project boundary flow chart now corrected in revised PDD. CL Closed</p>
<p>CL 4 Attachment A to Appendix B of the “Simplified modalities &amp; procedures for small scale CDM project activities” has been used to assess additionality.  First –of –its kind barrier opted to demonstrate additionality which is part of “Tool for the demonstration and assessment of additionality” PP is requested to clarify the</p>	B.5.1 B.5.7.1	<p><b>Response #1</b></p> <p>Although the first-of-its-kind guidelines do form part of version 06.0.0 of the ‘Tool for the demonstration and assessment of additionality’, the first-of-its-kind guidelines also are in a standalone document titled ‘Guidelines on Additionality of First-of-Its-Kind Project Activities’ published in</p>	<p>Latest tool for additionality has now been used in revised PDD CL Closed</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
<p>approach used to demonstrate additionality in transparent manner</p>		<p>Annex 7 of EB 69.</p> <p>Therefore, these guidelines can be used in conjunction with Guidelines on demonstration of additionality for small scale project activities, Ver. 9.0, more specifically, to support the barrier 'lack of prevailing practice'.</p>	
<p>CL 5 PP requested to provide evidence for contract signed between Envitech Solutions (Pty) Ltd. and the city of Windhoek dt. 09/12/2011</p>	<p>B.5.3.3</p>	<p><b>Response #1</b></p> <p>Please see reference document (19) for the contract signed between Envitech Projects (Pty) Ltd and the Municipal Council of Windhoek.</p>	<p>Contract signed between City of Windhoek and Envitech projects (Pty) Ltd . dated 09/12/2011 has been provided for validation</p> <p>CL Closed</p>
<p>CL 6 Justify the choice of tool and equations used to calculate project emission on account of electricity consumption in project activity.</p>	<p>B.6.2.2</p>	<p><b>Response #1</b></p> <p>The following statement has been included in Section B.6.1 of the revised PDD:</p> <p><math>PE_{power,y}</math> is zero and is excluded from the emission reduction calculations. This is in accordance with the 'Tool to calculate project or leakage CO2 emissions from fossil fuel combustion' (version 02) – the tool that the project participant is referred to from AMS-I.D. This tool does not contain provisions to calculate the project</p>	<p>Justification related to choice of tool and equations used to calculate project emission on account of electricity consumption in the project activity, found to be appropriate and accepted.</p> <p>CL Closed</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		emissions from electricity consumption.	
<p>CL 7 PP requested to revise the section and include details of monitoring frequency, calibration frequency of measuring instruments, accuracy class for all the parameters need to be monitored.</p>	B.7.1.2	<p><b>Response #1</b></p> <p>The meter type, calibration frequency, monitoring frequency, and accuracy class has been included under each parameter that is monitored. Please refer to section B.7.1 of the revised PDD.</p>	<p>Sec. B.7.1 of the revised PDD, revised to include monitoring frequency, calibration frequency and accuracy class of measuring equipment, which is acceptable to validation team.</p> <p>CL Closed</p>
<p>CL 8 Training requirements of personnel who will be responsible for data monitoring related to CDM project is not explained in the sec. B. 7.2 of the PDD. Roles and responsibilities of the personnel involved in CDM Project management and monitoring is not transparently mentioned</p>	B.7.3.2	<p><b>Response #1</b></p> <p>Section B.7.2 of the PDD has been revised to include the following:</p> <ul style="list-style-type: none"> <li>- An organogram depicting the management structure and the roles and responsibilities of personnel.</li> <li>- A paragraph explaining the training procedures for site personnel.</li> <li>- A table describing the monitoring frequency, calibration and accuracy class for all meters installed in the project activity.</li> </ul>	<p>Section B.7.2 has been modified in revised PDD and all comments raised by validation team regarding roles and responsibilities, training and overall data monitoring of proposed CDM project addressed.</p> <p>CL Closed</p>
<p>CL 9 The project is expected to start in 01/07/</p>	C.1.1	<p><b>Response #1</b></p>	<p>Justification provided for start date of project is accepted.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
<p>2012. (Construction has not started during the course of validation). However sec. B.5. suggests date of contract signed between Envitech and city of Windhoek on 09/12/2011. PP is requested to justify the start date of project activity as per CDM glossary of terms</p>		<p>According to version 06 of the 'Glossary of CDM Terms', the starting date of a project is defined as the earliest date at which either the implementation or construction or real action of a CDM project activity begins.</p> <p>The contract signed between Envitech and the City of Windhoek on 09/12/2011 (reference document (14)) is only to authorise the implementation of a landfill gas harvesting project. The contract does not include the authorisation for the construction and operation of a flaring system, and therefore this contract cannot be considered to be the starting date of the project.</p> <p>The civil engineering contract between the City of Windhoek and Envitech is expected to be signed on 28/02/2013, and this is considered to be the preferred starting date of the project. Section C.1.1 of the PDD has been revised accordingly.</p> <p>It must be noted that the project will only be implemented if it is successfully registered under the CDM before the end of December</p>	<p>CL Closed</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		2012. Therefore, the project start date cannot be before 31/12/2012.	
<p>CL 10 PP requested to provide supporting evidence to substantiate operational life time of the project activity.</p>	C.1.2	<p><b>Response #1</b></p> <p>Please see reference document (20). This document is a certificate of the useful life of the flares, blowers, controls and instrumentation. This certificate is from the technology supplier, Organics, and states that the equipment will have a useful life in excess 10 years. The certificate is signed by the Managing Director of Organics.</p> <p>The following statement has been included in section C.1.2 of the revised PDD: ‘The lifetime of the flaring infrastructure (flares, blowers, controls and instrumentation) has a lifetime in excess of 10 years, thereby exceeding the crediting period of the project activity. This has been certified by the technology supplier.’</p>	<p>A certificate from technology supplier “Organics” regarding operational life time of flaring infrastructure has been provided for validation which explicitly mentions operational life time will be in excess of 10 years.</p> <p>CL Closed</p>
<p>CL 11 Analysis of Environmental Impact is not recorded and presented in a report. PP is requested to provide EIA report</p>	D.1.1 D.1.2	<p><b>Response #1</b></p> <p>Sections D.1 and D.2 have been revised to include the findings from the Environmental Impact</p>	<p>Section D of the revised PDD modified and EIA report/11/ also provided for validation.</p> <p>CL Closed</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		Assessment that was completed in May 2012.  Please refer to supporting document (21) for the EIA report.	
CL 12 Environmental Impact is required to be assessed as per Namibia Environmental Management, 2007 and its amendments. Environmental Clearance has not been provided for the Project.	D.1.3	<b>Response #1</b>  Please see supporting document (24) for the environmental clearance for the project which was provided on 05/07/2012.	Environmental Clearance dated 05/07/2012 issued by Department of Tourism and Environment, Republic of Namibia, provided for validation.  CL Closed

**TABLE 4 FORWARD ACTION REQUEST**

Forward Action Request	Reference to Table 2	Response by project participants	Validation Conclusion
FAR 1: During the Validation stage, the project is in early stage of its implementation and the start date of the project is not yet fixed. Referring to paragraph 37 of VVM version 1.2, during 1st periodic verification, verifying DOE shall check/review the project implementation in accordance with the PDD.	A.2.1.	OK	During the first verification, the DOE needs to review the project implementation in accordance with paragraph 37 of VVM version 1.2.

# **Appendix B**

## **Certificate of Competence**







