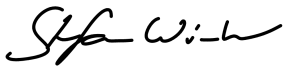




**Validation report form for renewal of crediting period for
CDM project activities
(Version 03.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Joburg Landfill Gas to Energy Project UNFCCC No: 6797
Number and duration of the next crediting period	2– Seven Years (12/11/2019 to 11/11/2026)
Version number of the validation report	1.3
Completion date of the validation report	02/12/2020
Version number of PDD to which this report applies	12
Project participants	ENER-G Systems Joburg (PTY) Ltd.
Host Party	Republic of South Africa
Applied methodologies and standardized baselines	ACM0001: Flaring or use of landfill gas - Version 19.0. ASB0040-2018 Standardized baseline: Grid emission factor for Southern African Power Pool, version 1.
Mandatory sectoral scopes	Sectoral Scope 13: Waste handling and disposal
Conditional sectoral scopes	Sectoral Scope 1: Energy industries (renewable - / non-renewable sources)
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	480,155 tCO ₂ e
Name and UNFCCC reference number of the DOE	E-0022 TÜV NORD CERT GmbH (TÜV NORD)
Name, position and signature of the approver of the validation report	 Stefan Winter - Final Approver

SECTION A. Executive summary

ENERGY Systems SA (PTY) Ltd. has commissioned the TÜV NORD JI/CDM Certification Program to carry out validation of the request for renewal of crediting period (RCP) for the project:

“Joburg Landfill Gas to Energy Project”

with regard to the relevant requirements for CDM project activities.

The project has been registered on 12/11/2012 under the UNFCCC registration No 6797. The PPs have chosen 7 years crediting period and the project is now due for renewal i.e. of second crediting period. The PPs have thus notified the UNFCCC about their intention to request the renewal of the crediting period.

The objective of this RCP validation is the review by an independent entity whether the project is still compliant with the applicable sections of:

- the CDM project standard v2.0
- the CDM cycle procedure v2.0
- the updated applied UNFCCC Methodology ACM0001, “Consolidated baseline and monitoring methodology for landfill gas project activities”, Version 19^{/METH/} and
- the methodological tool “Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the crediting period” (Version 03.0.1)^{/TL/}.

As per the requirements of the CDM Validation and Verification Standard^{/VVS/} the validation is based on

- the registered and/or latest updated version of the PDD (including revisions of the monitoring plan)^{/PDD/, /PDD-Reg/},
- the updated emission reduction calculation spread sheet ^{/XLS/},
- further supporting documents made available to the validator as well as
- information collected through performing interviews.-

As per the requirements of the CDM validation and verification Standard for project of activities^{/VVS/} (section 10) the validation is based on

- the registered and/or latest updated version of the PDD (including revisions of the monitoring plan)^{/PDD/},
- further supporting documents made available to the validator as well as
- information collected through performing interviews and during additional research.

Furthermore, publicly available information, such as the host country legislation, was considered as far as available and required.

The project will contribute to reduce GHG emissions due to recovery and destruction of methane from municipal solid waste at five Johannesburg landfill sites previously emitted to the atmosphere. The recovered landfill gas containing methane is destroyed by combusting it in an engine and/or flare. A project will include a gas collection system, LFG pre-treatment system, flaring system and/or energy generation system along with a monitoring and protection system as well as data recording and back-up. Additionally to the destruction of the methane/landfill gas the engine is generating electricity, which is fed into the connected Southern African Power grid. The total capacity for the project activity shall be up to 21 MW for the five sites. By this GHG emissions will be further reduced by replacing grid electrical power mainly sourced from fossil fuel plants with renewable energy from the recovered methane. A general technical set-up of a project activity is given in diagram A-1 below which is considered correct as per PA description and sectoral knowledge of assessment team.

Details of the project location are given in table A-1 below:

Table A-1: Project Location

No.	Project Location
Host Country	Republic of South Africa

Region:	Gauteng Province
Project location address:	<ol style="list-style-type: none"> 1. Linbro Park Landfill - Marlboro Drive, Sandton: 26° 05' 41.85" S & 28° 07' 13.43" E; 2. Marie Louise Landfill - Dobsonville Drive, Roodepoort: 26° 11' 23.89" S & 27° 53' 00.13" E; 3. Robinson Deep Landfill – Turffontein Road, Turffontein: 26° 13' 59.03" S & 28° 02' 14.77" E; 4. Goudkoppies – Houthammer Road, Devland, Lenasia: 26° 16' 52.31" S & 27° 55' 24.93" E; and 5. Ennerdale Landfill – Old Lawley Road, Lawley: 26° 22' 07.78" S & 27° 50' 02.80" E.
Latitude & Longitude:	<ol style="list-style-type: none"> 1. 26° 05' 41.85" S & 28° 07' 13.43" E; 2. 26° 11' 23.89" S & 27° 53' 00.13" E; 3. 26° 13' 59.03" S & 28° 02' 14.77" E; 4. 26° 16' 52.31" S & 27° 55' 24.93" E; and 5. 26° 22' 07.78" S & 27° 50' 02.80" E.

Basic technical details of the project are summarized below.

Table - A-2: Municipal solid waste disposal sites included in the project activity

Site	Start year	Status
Linbro Park	1969	Closed
Marie Louise	1991	Active
Robinson Deep	1936	Active
Goudkoppies	1989	Active
Ennerdale	1988	Active

Diagram A-1: Project activity set-up

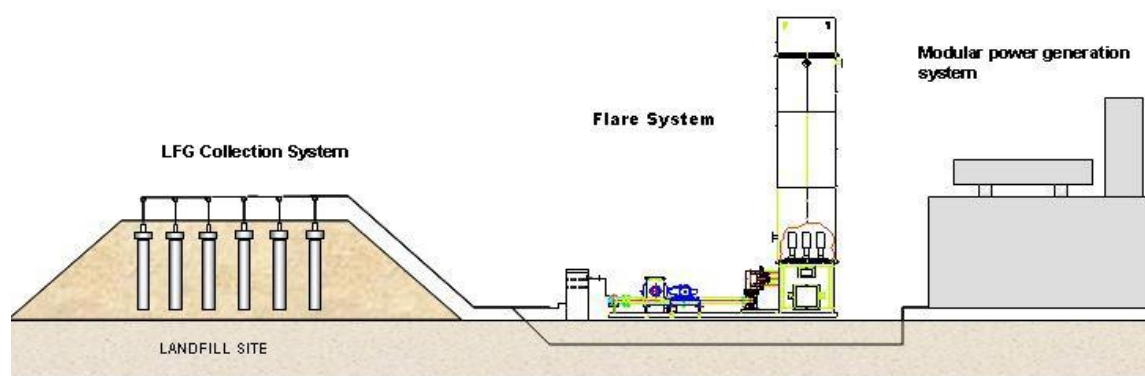


Table - A-3: Implementation status (2020)

Site	Max. Flare capacity	Installed elec. generation capacity
Linbro Park	-*	-*
Marie Louise	2000 m ³ /h	2.28 MW
Robinson Deep	2000 m ³ /h	3.42 MW

Goudkoppies	2000 m ³ /h	2.28 MW
Ennerdale	-*	-*

* Installation expected in the future

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/Document review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader/	EI	Kochaniewicz	Grzegorz	-	X	-	x	X

B.2. Technical reviewer and approver of the validation report for RCP

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Winter	Stefan	TÜV NORD CERT
2.	Technical reviewer/Approver	IR	Winter	Stefan	TÜV NORD CERT

SECTION C. Means of validation

C.1. Desk/document review

During the desk review all documents initially provided by the client and publicly available documents relevant for the validation were reviewed. The main documents are listed below:

- the last revision of the PDD including the monitoring plan^{/PDD/, /PDD-Reg/},
- the last revision of the validation report^{/VAL/},
- documentation of previous verifications^{/VER/},
- the monitoring reports, including the claimed emission reductions for the project from the previous verifications^{/VER/},
- the emission reduction calculation spreadsheet^{/XLS/}.

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

C.2. On-site inspection

Duration of on-site inspection: DD/MM/YYYY to DD/MM/YYYY				
No.	Activity performed on-site	Site location	Date	Team member
1.	-			

Due to the recent COVID-19 pandemic and South Africa as well as German travel restrictions^{/rki/}, the team leader who is based in Germany was not able to conduct a physical on-site inspection activity in South Africa. It was not possible to postpone the site visit due to deadline for submission of request for renewal of crediting period (& 278, PCP version 02.0).

On the basis of the information note issued by the CDM EB on 20/03/2020 titled “CDM Executive Board agrees to relax mandatory site visits by DOEs for a period of three months (23 March to 23 June 2020) due to COVID-19 pandemic”. The rules were extended up to 31/12/2020 during EB meeting 107^{EB/},

The following alternative approach has been realized:

- Reviewed supporting documents (data and information and crosscheck the provided information with public sources)
- Video conference interview with project manager and appointed consultant.
- Review of installed technology on basis of previous verification report.
- Review of applicable methodology and another regulatory documents.

Moreover taking in to consideration the following considerations:

- the verification history of the project. A site visit at the CDM project site took place for the previous verifications. The latest onsite inspection has been conducted on 15th to 17th of January 2019^{VER/},
- host country expertise of validation team leader and
- the fact that it isn't new “proposed” project activity,

the information provided by PP was assessed. For further detail on the assessment please refer to section D of this report.

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1	Cornish	David	General Manager/ENERGY Systems SA (PTY) LTD	20/03/2020 and 07/06/2020	General set up of the PA Changes to the PA Renewal auditing plan	G. Kochaniewicz
2	Tuchten	Olivia	Principal Carbon Advisor/Promethium Carbon	20/03/2020 and 07/06/2020	Application of new methodology version Related host country legislation and updates thereof Discussion on open issues and additionality approach decision, potential PRC	

There was a general video conference on 20/03/2020 on the contracting issues, PA-Status and changes due to ongoing PA e.g. PA management, methodology and legislation. A second conference call via Skype has been conducted on 07/06/2020 to discuss remaining open issues and South African legislation. Besides that related requests, issues and questions have been exchanged via Email.

C.4. Sampling approach

C.4.1 Sampling approach by the PP

<input checked="" type="checkbox"/>	No sampling approach has been used by the PP
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<input type="checkbox"/>	A sampling approach has been taken for the following monitored parameter(s):				
	Name of the Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population	Sample Size
	-				

¹⁾Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾Sampling Types:

PS: Parameter Sampling

C.4.2 Sampling approaches by the validation team

<input checked="" type="checkbox"/>	No sampling approach has been used by the VT to validate the fixed parameters				
<input type="checkbox"/>	A sampling approach has been applied by the VT for the following fixed parameter(s):				
	Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population	Sample Size
	-				

¹⁾Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾Sampling Types:

AS: Acceptance Sampling
 PS: Parameter Sampling
 COM: Full data check at higher data aggregation levels and sampling at original data levels

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	-	3	-
Application and selection of methodologies and standardized baselines	-	2	-
Validity of original baseline or its update	-	2	-
Estimated emission reductions or net anthropogenic removals	-	-	-
Validity of monitoring plan	-	2	-
Crediting period	-	-	-
Project participants	-	-	-
Post-registration changes	-	-	-
Others: Additionality	1	-	-
Total	1	9	-

SECTION D. Validation findings

D.1. Compliance with PDD form

Means of validation	<p>A draft revised PDD was submitted to the validation team by the project participants. By means of the UNFCCC website it has been checked whether the latest applicable PDD template CDM-PDD-FORM has been used.</p> <p>Further, it has been checked whether the latest instructions for filling out the PDD template have been followed. Every section has been checked against the respective guidance.</p>
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	The following sources of information have been used in this context:	
	<ul style="list-style-type: none"> • /PDD/ • /PDD-T/ • /unfccc/ 	
Findings	<input checked="" type="checkbox"/>	The latest reporting template CDM-PDD-FORM as listed on the UNFCCC website has been used for the PDD.
	<input type="checkbox"/>	The latest instructions for filling out the PDD have been followed. No adverse finding has been identified in the course of this validation.
	<input checked="" type="checkbox"/>	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context: CAR 01; CAR 05; CAR 09
Conclusion	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The project participants used the latest version of the PDD form (version 11) for the updated PDD than the version of the PDD form of the registered PDD. It is confirmed that the information transferred to the latest version of the PDD form is materially the same as that of the registered PDD.	

D.2. Application and selection of methodologies and standardized baselines

Means of validation	By means of comparison of the PDD with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline the verification team has checked whether the updated PDD is in compliance with the requirements of the applied methodology/tools/SB. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /PDD/ • /METH/ • /TL/ • /unfccc/ 			
Findings	<input checked="" type="checkbox"/>	The updated PDD is completely in accordance with the approved methodology applicable for the CDM project (ACM0001 ver.19)		
	<input checked="" type="checkbox"/>	The breakdown of PDD accordance of the referenced tools is as follows:		
		1	Title (of the tool)	Assessment of the validity of the original/current baseline and update the baseline at the renewal of the crediting period
			Version	03.0.1
			PDD compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A
		2	Title (of the tool)	Combined tool to identify the baseline scenario and demonstrate additionality
			Version	07.0
			PDD compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A
		3	Title (of the tool)	Tool to calculate project or leakage CO2 emissions from fossil fuel combustion
			Version	03.0
		PDD compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A	
4	Title (of the tool)	Emissions from solid waste disposal sites		

			Version	08.0	
			PDD compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A	
		5	Title (of the tool)	Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation	
			Version	03.0	
			PDD compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A	
		6	Title (of the tool)	Project emissions from flaring	
			Version	03.0	
			PDD compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A	
		7	Title (of the tool)	Tool to determine the mass flow of a greenhouse gas in a gaseous stream	
			Version	03.0	
			PDD compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A	
		The breakdown of PDD accordance of the applicable SB is as follows:			
		<input type="checkbox"/>	1	Title (of the SB)	Grid emission factor for the Southern Africa power pool (ASB0040-2018)
				Version	01.0
			MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A	
<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR 3; CAR 4				
Conclusion	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.			
	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.			
	<p>By means of checking the UNFCCC website it is confirmed that the selection of the applied methodologies and methodological tools has been done and applied correctly in line with the applicable requirements for the RCP.</p> <p>All applicability conditions of the updated latest methodologies are still met. Thus the methodologies are deemed fully applicable for the new PA period and no request for deviation with regards to the applicability of the methodology is required.</p> <p>After corrections, it can be concluded that compliance with applied tools are met.</p>				

D.3. Validity of original baseline or its update

Means of validation	In line with PA-VVS §404 for the assessment of the validity of the original baseline or its updates the validation team covered the following: (a) The impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant guidance from the Board with regard to renewal of
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	<p>crediting period of a registered CDM PA at the time of requesting the renewal of crediting period of the PA;</p> <p>(b) The correctness of the application of the approved methodologies and, where applicable, the approved standardized baselines and the other methodological regulatory documents for the determination of the continued validity of the baseline or its update, and the estimation of GHG emission reductions or net anthropogenic GHG removals for the applicable crediting period of the registered CDM PA.</p> <p>In line with "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" version 03.0.1, following stepwise approach was applied:</p> <p>Step 1: Assessment of the validity of the current baseline for the next crediting period</p> <p>Step 1.1: Check of assessment of compliance of the current baseline with relevant mandatory national and/or sectoral policies</p> <p>Step 1.2: Check of assessment of the impact of circumstances</p> <p>Step 1.3: Check of assessment of whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.</p> <p>Step 1.4: Check of assessment of the validity of the data and parameters</p> <p>Step 2: Check of the update to the current baseline and the data and parameters</p> <p>Step 2.1: Check of the update of the current baseline</p> <p>Step 2.2: Check of the update of the data and parameters</p> <p>All necessary documentation has been either provided by the client, or the validation team has acquired appropriate information required for assessment independently. For a detailed list of reviewed documentation please refer to appendix 3.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PDD/ • /METH/ • /TL/ • /LAW/ • /WP/ • /XLS/ • /unfccc/
Findings	<p><u>Step 1: Check of assessment to the validity of the current baseline for the next crediting period</u></p> <p>The baseline scenario of the project as per the registered PDD can be described as follows:</p> <p>As per §22 of the applied methodology ACM001 "The baseline scenario for LFG is assumed to be the atmospheric release of the LFG or capture of LFG and destruction through flaring to comply with regulations or contractual requirements, to address safety and odour concerns, or for other reasons."</p> <p>Further as per §23 of the applied methodology ACM001 "If all or part of the electricity generated by the project activity is exported to the grid, the baseline scenario for all or the part of the electricity exported to the grid is assumed to be electricity generation in existing and/or new grid-connected power plants. If all or part of the electricity is supplied to off-grid application, the baseline electricity generation equipment is assumed to correspond to the default emission factor from Option B2 of the "Methodological tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation".</p> <p>As per the project standard this scenario is not subject to re-assessment and is thus deemed to be applicable for the next PA period.</p> <p>However, the baseline itself i.e. the calculation of baseline emissions has been checked regarding the continued validity of underlying assumptions and parameter values. The assessment steps are described in the following subsections.</p> <p><u>Step 1.1: Check of assessment of compliance of the current baseline with relevant mandatory national and/or sectoral policies.</u></p> <p>The baseline of the registered PDD has been assessed to be compliant with the national legislation and policies applicable for the project activity at the time of validation. During the first PA period the PP has reviewed the legal requirements and policies relevant for the</p>

baseline of the project. On the basis of this the PP has arrived at the conclusion that the baseline is still in line with all applicable legislations and policies.

The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) was amended during the 1st crediting period by publication of the National Environmental Management: Waste Amendment Act, 2014. The amendment does not impact the project activity.

Nevertheless, the Waste Classification and Management Regulations on 23 August 2013 impact the project by setting limitation to the volumes of garden waste which disposal on the general landfills must be significantly reduced (by 50%) by 2023. Therefore the PP revised the ex-ante predicted volume of garden waste to be disposed on the landfill to conform with the law.

Moreover no new laws regarding the capture and destruction of landfill gas were passed, approved or released during the 1st crediting period by the host country.

During the 1st crediting period a mandatory grid emission factor, a standardised baseline (ASB0040-2018 version 01.0) was issued. Therefore for the second crediting period and in accordance with paragraph 50 of the CDM project standard for project activities (Version 02.0) and paragraph 4 of ASB0040 (Version 01.0), for the estimation of the grid emission factor the ASB was used.

On the basis of this analysis the validation team confirms that the baseline is still in compliance with the currently applicable national legislation and other national and/or sectoral policies. Beside the change to the quantity of the garden waste and the update of the grid emission factor, no other changes have been occurred based on the host country law, which would affect the PA. The requirements from national laws and regulations are practically the same as during initial request for registration. Therefore, the baseline, atmospheric release of the landfill gas and the displacement of the grid electricity did not need to be adjusted due to changes in this respect.

Step 1.2: Check of assessment to the impact of circumstances

As the baseline scenario might be affected by changed circumstances, e.g. market conditions, market prices etc. the PP has checked the baseline against such changes that have occurred since validation. This is of special importance if the baseline scenario is the continuation of the pre-project scenario.

The baseline scenario is predefined in the corresponding methodology as per assessment under step 1 above. The baseline scenario is the atmospheric release of LFG or the electricity from the grid, which is mainly produced by fossil fuel. This scenario does not require an investment and will also not require any investment now for renewal of crediting period.

In the current case no such changes have been identified by the project participants as

- changed market conditions are not likely to impact the PA.

The validation team has independently checked whether there are changes in circumstances which have an impact on the baseline, such as searching the website of national government^{/dna/}, verifying and interview with the PP^{/11/}.

No such changes have been identified and thus it is deemed appropriate not to revise the baseline due to changes in circumstances.

Step 1.3: Check of assessment to whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested

This sub-step should only be applied if the baseline scenario identified at the validation of the project activity was the continuation of use of the current equipment(s) without any investment, so it's not applicable for the PA. Besides, see assessment under Step 1.4 below. No equipment is used in the baseline for electricity generation, but taken from the connected grid.

Step 1.4: Check of assessment of the validity of the data and parameters

The parameters which have been determined ex-ante in the registered PDD are basically still valid.

Generally as per latest tool04 §25-27 the PP has to define how the amount and type of waste in the SWDS is determined. For single project sites under this PA the project participant applies Application A as the data for amount of waste and waste type are available from SWDS management or can be obtained from related studies. This is crosschecked with checking the initial validation report of the PA. Based on that the choice is reasonable and plausible and applicable.

The parameters are assessed as following:

Parameter	Previous value	Updated value	Reference						
GWP _{CH4}	21 tCO ₂ e/tCH ₄	25 tCO ₂ e/tCH ₄	IPCC Fourth Assessment Report (AR4)						
EF _{EL} or EF _{grid, CM, y}	0.977 tCO ₂ /MWh	0.9091 tCO ₂ /MWh	ASB “Grid emission factor for the Southern African power pool”, version 01.0. The use of the ASB is mandatory in accordance with paragraph 50 of the CDM project standard for project activities (Version 02.0). And the values as per paragraph 4 of the ASB.						
φ _{default}	0.9	<table border="1"><tr><td></td><td>Humid/wet conditions</td><td>Dry conditions</td></tr><tr><td>Value</td><td>0.75</td><td>0.75</td></tr></table> <p>For project or leakage emissions: φ_{default} = 1</p>		Humid/wet conditions	Dry conditions	Value	0.75	0.75	Updated w.r.t. application of latest version of TOOL 4 “Emissions from solid waste disposal sites” version 8. As application A is applied the values are defined by the related tool04.
	Humid/wet conditions	Dry conditions							
Value	0.75	0.75							
OX	0 or 0.1	0.1	As per latest version of tool04 fixed at 0.1 without any further choices.						
F	0.5	0.5	No change to previous CP.						
DOC _{f,default}	0.5	0.5	As application A is applied in line with Tool04 §29 parameter DOC _{f,y} is equal to DOC _{f,default} . DOC _{f,default} is set to 0.5 as per Tool04 besides						

			no change to previous CP.
MCF_{default}	1.0	1.0	Defined from management of related SWDS besides no change to previous CP.
DOC_j	Depending on waste type: 43% 40% 15% 24% 20% 0%	Depending on waste type: 43% 40% 15% 24% 20% 0%	As per TOOL 4 "Emissions from solid waste disposal sites" version 8. No change to previous CP.
k_j	Decay rate for Boreal and temperate (MAT <20°C): 0.04 0.02 0.05 0.06	Decay rate for Boreal and temperate (MAT <20°C) and - Dry (MAP/PET <1): 0.04 0.02 0.05 0.06	As per TOOL 4 "Emissions from solid waste disposal sites" version 8 No change to previous CP.
f_y	0	0	As per TOOL 4 "Emissions from solid waste disposal sites" version 8 No change to previous CP.
W_x	Provided by Landfill Operator, Data is aggregated annually	Done once for ex-ante calculations using Application A. Provided by Landfill Operator,	Tool 04, Application A of is applied. The approach is in line with latest tool
$NCV_{i,y}$	0.0433 TJ/t	0.0433 TJ/t	IPCC default values as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) No change to previous CP.
$EF_{CO_2,i,y}$	74.8 tCO ₂ /TJ	74.8 tCO ₂ /TJ	IPCC default values as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) No change to previous CP.

η_{PJ}	50%	50%		Default value as per methodology ACM0001 §81 Table 6. Previously parameter E _{DS} (Degasing efficiency). No change to previous CP.	
$SPEC_{flare}$	-	As per manufacturers specification of the flare		As per Tool06. Crosschecked with previous verification report.	
			Temperature (°C)		Flow rate m³/h)
		Min	700°C		400m³/h
		Max	1,200°C		2,000m³/h
R_u	-	8,314 Pa.m³/kmol.k		As per Tool06. Correct and consistent.	
MM_i	-	Methane: 16.04 kg/kmol Nitrogen: 28.01 Kg/kmol		As per Tool06. Correct and consistent.	
P_n		101,325 Pa		“Tool to determine the mass flow of a greenhouse gas in a gaseous stream”, Version 03.0 Correct and consistent.	
T_n		273.15 K		“Tool to determine the mass flow of a greenhouse gas in a gaseous stream”, Version 03.0Correct and consistent.	
$\eta_{flare,m}$	0.9	0.8		Tool “Project emissions from flaring” Version 02.0.0. The value was updated for enclosed low height flares.	

All changes have been appropriately considered in the updated PDD.

Step 2: Check of the update to the current baseline and the data and parameters

Step 2.1: Check of the update to the current baseline

As per step 1 above, it is confirmed that the current baseline does not need to be updated

Step 2.2: Check of the update to the data and parameters

Refer to results of step 1.4

The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:

	<input checked="" type="checkbox"/>	CAR 02; CAR 06
Conclusion	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		<p>The original baseline scenario of the project as per the registered PDD is still valid for the 2nd crediting period.</p> <p>Most of the data and parameters determined ex-ante are still valid, except for the emission factor $EF_{CO_2,y}$, $\eta_{flare,m}$ and the GWP of methane. The emission factor $EF_{CO_2,y}$ was re-determined by use of mandatory "Grid emission factor for the Southern African power pool", version 01.0. for the baseline emission calculation and the GWP for methane has been updated in accordance with IPCC. The efficiency of the flare was conservatively reduced in line with the tool "Project emissions from flaring" Version 02.0.0.</p> <p>The applied values are therefore correct and determined in line with methodology and related tools.</p>

D.4. Estimated emission reductions or net anthropogenic removals

Means of validation		<p>For validation of the estimated GHG emission reductions the client has provided the validation team with the following documentation:</p> <ul style="list-style-type: none"> - Updated PDD/^{PDD/} - XLS spreadsheet/^{XLS/}. <p>Further, the validation team has downloaded from the UNFCCC website the applicable version of the CDM methodology and all referenced methodological tools/^{unfccc/}.</p> <p>It has been checked whether the results have been correctly transferred to the updated PDD for determination of ex-ante ER. The validation team has further checked the updated PDD against the latest version of the applicable methodologies incl. the referenced methodological tools for consistency. Special focus was laid on the changes against the previous crediting period.</p> <p>The ER calculation process has been duly checked. Further, it has been checked whether the formulae have been correctly transferred to the updated PDD for determination of ex-ante ER.</p> <p>In the updated PDD, the version of methodology ACM0001 is changed from 11 to 19, via checking the latest version, it is confirmed that the ER calculation has been updated to be in line with version 19 and related applied latest version of tools. Several adjustments to the ER calculation have been made as methodology as well as tools had some major revisions. Moreover national law and regulations were taken in to consideration in estimation quantity of garden waste and update of grid emission factor. The general ER calculation approach has therefore not been changed.</p> <p>Thus in the updated PDD, there is no change to the formulae of estimated GHG emission reductions which will be used for ER calculation.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PDD/ • /METH/ • /XLC/ • /TL/ • /unfccc/
Findings	<input type="checkbox"/>	The calculation of ERs is done as per the applied methodology. The calculation in the Excel spreadsheet and the corresponding calculation tables in the PDD have been checked and no mistakes have been identified. The estimation of emission reductions for the 2 nd crediting period is deemed plausible and conservative.
		The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:

	<input checked="" type="checkbox"/>	- CAR 06
Conclusion	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		All changes due to the upgraded methodology and the re-assessment of the baseline have been considered appropriately and in line with the CDM PS. The calculation in the Excel spreadsheet and the corresponding calculation tables in the PDD have been checked and both are inline. The estimation of emission reductions for the 2nd crediting period is deemed plausible and conservative.

D.5. Validity of monitoring plan

Means of validation		<p>The validation team has checked the monitoring plan of the updated PDD against the required changes due to the update of the baseline and other methodological changes. Further, changes due to editorial updates of the applicable templates have been checked.</p> <p>In detail all parameters, ex-ante values and applicable formulae have been checked to determine the required changes for the next crediting period.</p> <p>Besides, based on conducted interviews with related personnel the validation team has assessed the feasibility of the required changes.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PDD/ • /METH/ • /TL/ • /VER/ • /unfccc/
Findings	<input checked="" type="checkbox"/>	<p>The monitoring plan in the PDD has been updated to comply with the latest applicable version of the monitoring methodology (ACM0001 ver.19).</p> <p>The basic changes from the current crediting period can be summarized as follows:</p> <ul style="list-style-type: none"> - Changes due to use of different parameters in methodology and related tools or different parameter abbreviation or description. <p>The validation team has duly assessed all the required changes due to the upgraded methodological requirements and the re-assessment of the baseline. The validation team has duly assessed all the required changes due to the upgraded methodological requirements and the re-assessment of the baseline. The validation team has concluded that</p> <ul style="list-style-type: none"> - all necessary changes have been appropriately reflected in the updated PDD, - the monitoring plan in the updated PDD is in compliance with the applied monitoring methodology, - the monitoring arrangements described in the updated PDD can be implemented and are feasible within the project design.
	<input checked="" type="checkbox"/>	<p>The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:</p> <p>CAR 07; CAR 08</p>
Conclusion	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		The Monitoring plan is in line with the requirements of the applied methodology ACM001 version 19.0. The PP has a team to maintain and operate the PA and monitor the parameters required by the methodologies. A brief description of data collection, field visits and training w.r.t. who is conducting this is included in the updated PDD in section B.7.3 Other elements of monitoring plan. All data required

	<p>for monitored and issuance of the CDM project activity will be kept until two years after the end of the crediting period.</p> <p>Therefore, the monitoring plan can be implemented and all monitoring arrangements are feasible within the project design.</p> <p>The ex-ante data applied in the monitoring parameters is based on the latest approved PDD, related applied methodologies and tools^{/METH/,TL/, ASB “Grid emission factor for the Southern African power pool”, version 01./ASB/ and IPCC^{/IPCC/}. Therefore, is appropriate.}</p> <p>Based on DOE’s local and sectoral knowledge, the data collecting procedures described in the monitoring plan can fully meet the requirements of the CDM methodology.</p> <p>All necessary changes have been appropriately reflected in the updated PDD, the monitoring plan in the updated PDD is in compliance with the applied monitoring methodology, and the monitoring arrangements described in the updated PDD can be implemented and are feasible within the project design.</p>
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D.6. Crediting period

Means of validation	<p>The validation team has checked the revised PDD against VVS version 2.0 Section 10, sub-section 10.1, § 400, 403, 404, 406, 407 and 410 for compliance.</p> <p>The PA was registered on 12/11/2012 and the first crediting period is from 12/11/2012 to 11/11/2019, both dates inclusive.</p> <p>The 2nd crediting period starts on 12/11/2019 and last until 11/11/2026, both dates inclusive</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PS/ • /VVS/ • /MR/ • /unfccc/ 				
Findings	<table border="1"> <tr> <td><input checked="" type="checkbox"/></td><td> <p>As the respective requirements are met, the project’s 2nd crediting period may start immediately after the expiration of the 1st one, given that all other applicable criteria are met.</p> <p>It is further confirmed that the start date (12/11/2019) and the length of the crediting period (7 years) are in compliance with the project standard.</p> </td></tr> <tr> <td><input type="checkbox"/></td><td> <p>The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:</p> <p>-</p> </td></tr> </table>	<input checked="" type="checkbox"/>	<p>As the respective requirements are met, the project’s 2nd crediting period may start immediately after the expiration of the 1st one, given that all other applicable criteria are met.</p> <p>It is further confirmed that the start date (12/11/2019) and the length of the crediting period (7 years) are in compliance with the project standard.</p>	<input type="checkbox"/>	<p>The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:</p> <p>-</p>
<input checked="" type="checkbox"/>	<p>As the respective requirements are met, the project’s 2nd crediting period may start immediately after the expiration of the 1st one, given that all other applicable criteria are met.</p> <p>It is further confirmed that the start date (12/11/2019) and the length of the crediting period (7 years) are in compliance with the project standard.</p>				
<input type="checkbox"/>	<p>The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:</p> <p>-</p>				
Conclusion	<table border="1"> <tr> <td><input checked="" type="checkbox"/></td><td>No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.</td></tr> <tr> <td><input type="checkbox"/></td><td>The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</td></tr> </table> <p>In line with §270 of the CDM project cycle procedure for project Activities v2.0, the new crediting period shall start on the day immediately after the expiration of the current crediting period regardless of the date when the crediting period is deemed renewed.</p> <p>Therefore, the start date of 12/11/2019 and the length of the second crediting period of 7 years are in compliance with the project standard.</p>	<input checked="" type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.	<input type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
<input checked="" type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.				
<input type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.				

D.7. Project participants

Means of validation	<p>The validation team has checked the revised PDD^{/PDD/} and the UNFCCC website^{/unfccc/} esp. the latest version of the Modalities of Communication^{/MOC/} to check whether the listed project participants have duly been authorized and if communication requirements are met.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PDD1/PDD2/
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		<ul style="list-style-type: none"> • /MoC/ • /LoA/ • /unfccc/
Findings	<input checked="" type="checkbox"/>	The names of the project participants as listed in the revised PDD (sections A.4. and appendix 1) are consistent with those listed on the dedicated UNFCCC project website as well as in the last version of the modalities of communication ^{/MOC/} .
	<input type="checkbox"/>	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		-
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		It could be concluded, the names of the participants are consistent with the names stated at the project page in UNFCCC, MoC annex 2, Host and Annex 1 Country Approvals.

D.8. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)	Validation report for PRCs	
		Version	Completion date
Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines or other methodological regulatory documents ¹	N	-	-
Corrections	Y	1.1	02/12/2020
Change to the start date of the crediting period	N	-	-
Inclusion of a monitoring plan	N	-	-
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	N	-	-
Changes to the project design	N	-	-
Changes specific to afforestation and reforestation project activities	N	-	-

¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied (selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

SECTION E. Internal quality control

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

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

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

After this step the submission for requesting the renewal of crediting period is conducted.

SECTION F. Validation opinion

ENERGY Systems SA (PTY) Ltd. has commissioned the TÜV NORD JI/CDM Certification Program to carry out validation of the request for renewal of crediting period (RCP) for project "Joburg Landfill Gas to Energy Project" with regard to the relevant requirements for CDM project activities.

The review of the updated project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews have provided TÜV NORD JI/CDM Certification Program with sufficient evidence to validate the fulfilment of the stated criteria applicable for RCP.

In detail the conclusions can be summarized as follows:

- The current baseline of the project is in line with the national and/or sectoral policies and circumstances at the time of requesting renewal of crediting period.
- The monitoring plan of GHG parameters is transparent and adequate and in line with the applicable monitoring methodology (ACM001, version 19.0).
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 480,155 tCO₂e /year are most likely to be achieved within the second renewable crediting period of 7 years.
- The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the renewal of the crediting period

Freiburg, 02/12/2020




G. Kochaniewicz
TÜV NORD JI/CDM Certification Program
Validation Team Leader

Appendix 1. Abbreviations

AEPC	Alternate Energy Promotion Centre
BAU	Business as usual
BUS	Biogas User Survey
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO₂	Carbon dioxide
CO₂e	Carbon dioxide equivalent
CP	Certification Program // Crediting Period
DNA	Designated National Authority
EB	CDM Executive Board
ER	Emission Reductions
ETS	Emission Trading Scheme
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
LOA	Letter of Approval
MOC	Modalities of Communication
PCP	CDM Project Cycle Procedure
PDD	Project Design Document
PP	Project Participant
PS	CDM Project Standard
PRC	Post Registration changes
RCP	Renewal of Crediting Period
UNFCCC	United Nations Framework Convention on Climate Change
VVS	CDM Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD J/CDM Certification Program

Mr. Grzegorz Kochaniewicz


SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2022-02-08
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2022-02-08

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
3.1	Energy Demand
13.1	Solid waste and wastewater
14.1	Afforestation and Reforestation

173 - Rev. 9, Date: 2019-04-18

173_S01-VA080-F20_2019-04-18_w9 S01-VA080-F20-w3 / 2012-10-25



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD J/CDM Certification Program

Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2023-07-27
VCS / ISO14064-2	Senior Assessor (Validation, Verification) Technical Reviewer	2023-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
4.1	Cement and lime production
4.2	Paper
5.2	Caprolactam, nitric and adipic acid
9.1	Aluminum and magnesium production
9.2	Iron, steel and Ferro-alloy production
10.1	Fugitive emissions from oil and gas
13.1	Solid waste and wastewater
13.2	Manure

163 - Rev. 7, Date: 2020-07-22

163_S01-VA080-F20_2020-07-22_w7 S01-VA080-F20-w3 / 2012-10-25

Appendix 3. Documents reviewed or referenced

No.	Author	Reference	Title	References to the document	Provider
1	PP	/LOA/	Host Party approvals	Letter of Approval from DNA of Republic of South Africa (Host party) dated 17/11/2011	UNFCCC
2	PP	/MOC/	Modalities of Communication dated 29/01/2015; 29/01/2015/ & 16/11/2018	-	UNFCCC
3	PP	/PDD/	Revised PDD	Revised Project Design document "Joburg Landfill Gas to Energy Project" - Version No. 10 dated 25/03/2020 Revised Project Design document "Joburg Landfill Gas to Energy Project" Version No. 11 dated 08/06/2020 Revised Project Design document "Joburg Landfill Gas to Energy Project" Version No. 12 dated 18/08/2020 Revised Project Design document "Joburg Landfill Gas to Energy Project" Version No. 12 dated 26/09/2020	PP
4	PP	/PDD-Reg/	Registered PDD	Registered Project Design Document named "Joburg Landfill Gas to Energy Project" Version No. 09 dated 06/11/2012	UNFCCC
5	PP	/XLS/	Emission reduction calculation spread sheet	RCP Emission reduction calculation spread sheet – 2 nd Crediting Period - Version 1 with respect to PDD version 10 dated 02/03/2020 - Version 2 with respect to PDD version 11 dated 08/06/2020	PP
6	DOE	/CPM/	TÜV NORD JI / CDM Certification Program Manual (incl. procedures and forms)	TÜV NORD JI / CDM Certification Program Manual (incl. procedures and forms)	TÜV NORD
7	IPCC	/IPCC/	IPCC	<ul style="list-style-type: none"> IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000 Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual 	IPCC Website
8	UNFCCC	/KP/	Kyoto Protocol (1997)	-	UNFCCC

No.	Author	Reference	Title	References to the document	Provider
9	UNFCCC	/MA/	Marrakesh – Accords	Decision 3/CMP. 1 (Marrakesh – Accords & Annex to decision (17/CP.7))	UNFCCC
10	UNFCCC	/METH/	ACM0001 ver 19 “Flaring or use of landfill gas”	https://cdm.unfccc.int/methodologies/DB/JPYB4DYQUXQPZLBDVPHA87479EMY9M	UNFCCC
11	UNFCCC	/PCP/	CDM project cycle procedure	CDM project cycle procedure for project activities, version 2.0 EB 101, Annex 16 https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20181221092024737/PC_proc_03v02.pdf	UNFCCC
12	UNFCCC	/PDD-T/	Project Design Document Form	Project Design Document Form (CDM-PDD-FORM) - Version 11 including Attachment: Instructions for filling out the project design document form for CDM project activities	UNFCCC
13	UNFCCC	/PS/	CDM project standard	CDM project standard for project activities Version 02.0 EB 101 Annex 1 https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20181221092046526/Reg_stan_04v02.pdf	UNFCCC
14	UNFCCC	/TL/	Methodological Tool	<ul style="list-style-type: none"> • TOOL02 “Combined tool to identify the baseline scenario and demonstrate additionality” (Version 07.0) (hereafter also referred to as “Additionality tool”). • TOOL03 “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” (Version 03.0). • TOOL04 “Emissions from solid waste disposal sites” (Version 08.0). • TOOL05 “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (Version 03.0). • TOOL06 “Project emissions from flaring” (Version 03.0). • TOOL08 “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” (Version 03.0): • TOOL11 “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the 	UNFCCC

No.	Author	Reference	Title	References to the document	Provider
				crediting period" (Version 03.0.1). https://cdm.unfccc.int/Reference/tools/index.html	
15	UNFCCC	/ASB/	Standardized Baseline	Standardized Baseline: Grid emission factor for the Southern Africa power pool (ASB0040-2018, Version 01.0). https://cdm.unfccc.int/methodologies/standard_base/index.html	UNFCCC
16	UNFCCC	/VAL/	Validation Report	Validation Report for the CDM project "Joburg Landfill Gas to Energy Project", version 04.2, dated 07/11/2012	PP
17	UNFCCC	/VVS/	CDM Validation and Verification Standard	CDM validation and verification standard for project activities Version 02.0 https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20170502114945162/reg_standard_06.pdf	UNFCCC
18	UNFCCC	/VER/	Previous periodic Verification Documents	Previous verification documents viewed from the project page https://cdm.unfccc.int/Projects/DB/BVQI1343063541.26/view	UNFCCC
19	PP	/dna/	Department of Mineral Resources and Energy, Republic of South Africa	http://www.energy.gov.za/home.html	PP
20	PP	/CD/	Pikitup. 2019. Survey Report_closure dates_pg 11		PP
21	Republic of South Africa	/LAW/	<ul style="list-style-type: none"> • Energ-G Amended and Reinstated Agreement Nov 2013_pg 17 • National Environmental Management_Waste Act 59 of 2008 • National Environmental Management_Waste Amend Act of 2014 • National Norms and Standards waste disposal 2177_pg 44 		PP
22	Diverse	/EGP/	<ul style="list-style-type: none"> • Gas Analyser A5E37100388-003_ULTRAMAT_23 • A1700_Electricity generation meter • ACORP DEM024 Data Electricity Hour Meter_Elec consumption • CBI EC330 Electricity Hour Meter_pg1 use EC100 series 		PP

No.	Author	Reference	Title	References to the document	Provider
			<ul style="list-style-type: none"> • Cert. Thermometer Digital with Probe TE8062 020419-020421 • GUARDIAN NG Manual (1V06_16)_Gas Analyser • Manual E&H Proline t-mass 65l Flow Meter • SIEMENS Biogas Analyser - Flare - Calibration Detail • UV Sensor 		
23	Department of Environmental Affairs Republic of South Africa	/WP/	<ul style="list-style-type: none"> • Waste Permit Ennerdale_2009_12-9-11-L53-3 • Waste Permit Goudkoppies_2004_16-2-7-C221-D11-Z1-P15 • Waste Permit Linbro_2003_16-2-7-A210-D173-Z1-P1 • Waste Permit Marie Louise_2003_16-27-C221-D11-Z3-P65 • Waste Permit_Robinson Deep_2004_16-2-7-C221-D11-Z2-P22 		PP
24	Robert Koch Institut	/rki/	Covid-19 risk Countries	https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Risikogebiete_neu.html	Others
25	UNFCCC	/EB/	EB meeting reports: CDM Executive Board 106 th meeting CDM Executive Board 107 th meeting		

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 3. CL from this validation

CL ID	01	Section no.	B.5	Date:	05/05/2020
Description of CL					
Clarify in line with PS, 280 if the update of the additionality was necessary					
Project participant response (1st round)				Date: 08/06/2020	
In accordance with the CDM project standard for project activities, Version 02.0, the editorial amendments, related to the changing of the version number of the methodology and updating the project milestones in Table B.5.6, to section B.5 have been removed and the original copy of the registered PDD has been reinstated.					
Documentation provided by project participant (1st round)					
<input checked="" type="checkbox"/>	Changes in the PDD	Section(s): B.5		New version No.: 11	
<input type="checkbox"/>	Changes in MR	Section(s):		New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:	
<input type="checkbox"/>	Other:				
DOE assessment (1st round)				Date: 09/06/2020	
The Additionality was not revised nor updated. This is in line with PS paragraph 280.					
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

Table 4. CAR from this validation

CAR ID	01	Section no.	PDD	Date:	05/05/2020
Description of CAR					
Following editorial issues, related to "Compliance of the monitoring report with the monitoring report form", were identified:					
<ol style="list-style-type: none"> 1. The Name of project participant on the cover page is incorrect. 2. The ACM0001 version in section B.6.1 3. The versions of the tools was not used in line with procedures described in section B.1 4. <i>Tool to determine project emissions from flaring gases containing methane, version 3</i> was not listed in section B.1. 					
Project participant response (1st round)					
<ol style="list-style-type: none"> 1. The name of the project participant has been revised on the cover page of the PDD. 2. The ACM0001 version in section B.6.1 has been corrected. 3. The PDD was revised so that the versions of the tools was used in line with procedures described in section B.1. 4. The name of the "Tool to determine project emissions from flaring gases containing methane" was updated by the CDM to TOOL06 "Project emissions from flaring" (Version 03.0), which is listed in section B.1. 					
Documentation provided by project participant (1st round)				Date: 08/06/2020	
<input checked="" type="checkbox"/>	Changes in the PDD	Section(s): Cover page; A.4, B.1		New version No.: 11	
<input type="checkbox"/>	Changes in MR	Section(s):		New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:	
<input type="checkbox"/>	Other:				
DOE assessment (1st round)				Date: 07/06/2020	
<ol style="list-style-type: none"> 1. The Name of project participant on the cover page was correct and is identical with the name published on the UNFCCC page. 2. The ACM0001 version in section B.6.1 was corrected to applied version 19. 3. The versions of the tools used were corrected and are in line with procedures described in section B.1. 4. <i>Tool to determine project emissions from flaring gases containing methane, version 3</i> was included in section B.1. 					

Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open)
	<input checked="" type="checkbox"/> The finding is closed

CAR ID	02	Section no.	A.1	Date:	05/05/2020
Description of CAR					
1. The GEF for SAPP is used in the baseline. The identified boundary is incorrect.					
Project participant response (1st round)					
<i>The boundary in the PDD has been revised accordingly so that it refers to the Southern African Power Pool.</i>					
Documentation provided by project participant (1st round)					Date:
<input checked="" type="checkbox"/> Changes in the PDD		Section(s): A.1, B.3		New version No.: 11	
<input type="checkbox"/> Changes in MR		Section(s):		New version No.:	
<input type="checkbox"/> Changes in XLS		Worksheet(s):		New version No.:	
<input type="checkbox"/> Other:					
DOE assessment (1st round)					Date:
The identified boundary was correct to all power plants connected to the system and extended to SAPP.					
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open)				
	<input checked="" type="checkbox"/> The finding is closed				

CAR ID	03	Section no.	B.1	Date:	05/05/2020
Description of CAR					
1. The list of tools applied is incomplete. 2. The reference to UNFCCC CDM was not provided (PS para 279a)					
Project participant response (1st round)					
1. The PDD has revised to include the full list of applied tools. 2. The reference to UNFCCC CDM (PS para 279a) is provided in the revised PDD.					
Documentation provided by project participant (1st round)					Date:
<input checked="" type="checkbox"/> Changes in the PDD		Section(s): B.1		New version No.: 11	
<input type="checkbox"/> Changes in MR		Section(s):		New version No.:	
<input type="checkbox"/> Changes in XLS		Worksheet(s):		New version No.:	
<input type="checkbox"/> Other:					
DOE assessment (1st round)					Date:
The list of tools in section B.1 was completed as per methodology.					
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open)				
	<input checked="" type="checkbox"/> The finding is closed				

CAR ID	04	Section no.	B.2	Date:	05/05/2020
Description of CAR					
1. The applicability conditions are not complete. Not all applied tools were analysed. 2. The applicability of criteria: 3b, 3d, 4d, of the methodology are inconsistent with PDD. 3. Not all applicability conditions from the tools were analysed. 4. Moreover the format of the section, separation of criteria of methodology and tools is inconsistent.					
Project participant response (1st round)					
1. <i>The table in section B.2 has been revised to include all tool applicability conditions and analysed against these conditions.</i> 2. <i>The applicability of criteria 3b, 3d, and 4d of the methodology were revised in the table in B.2.</i> 3. <i>The table in section B.2 has been revised to include analyses against all tool applicability conditions.</i> 4. <i>The table in section B.2 was formatted so that the conditions and analyses are consistently presented.</i>					
Documentation provided by project participant (1st round)					Date:
<input checked="" type="checkbox"/> Changes in the PDD		Section(s): B.2		New version No.: 11	
<input type="checkbox"/> Changes in MR		Section(s):		New version No.:	
<input type="checkbox"/> Changes in XLS		Worksheet(s):		New version No.:	
<input type="checkbox"/> Other:					
DOE assessment (1st round)					Date:

1. The PDD was revised. The applicability conditions of the methodology, all applied tools and standardized baseline, were completed.
2. The PDD was revised. The applicability of criteria 3b, 3d, 4d of the methodology were reassessed and found correct.
3. The PDD was revised. All applicability conditions from all applied tools were analysed.
4. The format of the section, separation of criteria of methodology and tools was revised and found consistent.

Additionally:

5. Clarification is requested in regards to the selection of the option A of the paragraph 5 of TOOL05.
6. In the PDD still the incorrect name of the TOOL05 (Baseline, project and/or...) is used.

Project participant response (1st round)

5. Applicability condition 15 has been revised to reflect the selection of Scenario A (as per paragraph 5 of TOOL05). Scenario C applies to the project because the landfills may use standby diesel generators (captive power plants) for on-site power backup for the flares. The diesel generators. Hence, the project can be provided with electricity from the captive power plant(s) and the grid.
6. Revised the name in section B.6.1 to the corrected name where reference is made to TOOL05

Documentation provided by project participant (1st round)

Date: 23/06/2020

<input checked="" type="checkbox"/> Changes in the PDD	Section(s): B.2, B.6.1	New version No.: 12
<input type="checkbox"/> Changes in MR	Section(s):	New version No.:
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		

DOE assessment (1st round)

Date: 27/06/2020

5. The applicability criterion on the paragraph 5 of TOOL05 "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (Version 03.0) was revised to option C. The SWDS may use diesel generators as a back-up for own electricity consumption.
6. the name of the TOOL05 "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (Version 03.0) was corrected in the PDD.

Conclusion

Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
- ☒ The finding is closed

CAR ID 05 Section no. B.3 Date: 05/05/2020

Description of CAR

1. The definition of the project boundary is missing
2. The format of the table used is not consistent with PDD template nor applied versions of methodology.
3. The flow diagram or project set-up is incomplete.

Project participant response (1st round)

1. The definition of the project boundary has been provided in B.3.
2. The format of the table in B.3 has been revised so that is consistent with the methodology.
3. The flow diagram has been revised so that it includes reference to the Southern African Power Pool grid.

Documentation provided by project participant (1st round)

Date: 08/06/2020

<input checked="" type="checkbox"/> Changes in the PDD	Section(s): B.3	New version No.: 11
<input type="checkbox"/> Changes in MR	Section(s):	New version No.:
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		

DOE assessment (1st round)

Date: 09/06/2020

1. The definition of the project boundary was added and found applicable to the project.
2. The format of the table used was revised and is consistent with applied versions of methodology and PDD template.
3. The flow diagram or project set-up was revised including SAPP and found complete.

Conclusion

Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
- ☒ The finding is closed

CAR ID 06 Section no. B.4 Date: 05/05/2020

Description of CAR

1. Description and relevance to future waste disposal of relevant national and/or sectoral laws is missing. 2. The identified baseline as “displacement” is incorrect.			
Project participant response (1st round)			
1. The description of relevant national and/or sectoral laws was included in the PDD (the referenced laws are provided). The relevance of these laws, with respect to the project operations and to future waste disposal volumes was also included. The only restrictions applicable to this project activity are those regarding the disposal of garden waste on landfill sites. General landfills are required to reduce the volumes of garden waste accepted by 50% by 2023. The landfills are owned by Pikitup, a state-owned enterprise. As such, Pikitup is required to comply with all applicable laws and regulations and thus the expected garden waste volumes (see ex-ante emission reduction calculations) have been reduced so that they are aligned with the requirements of the regulations. 2. The baseline description has been updated to align with the wording in ACM0001 version 19.0, paragraph 23.			
Documentation provided by project participant (1st round)			Date: 08/06/2020
<input checked="" type="checkbox"/>	Changes in the PDD	Section(s): B.4	New version No.: 11
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s): Waste data (Marie Louise); Waste data (Goudkoppies); Waste data (Enerdale); Waste data (Robinson Deep); WasteDiversio	New version No.: 2
<input type="checkbox"/>	Other:		
DOE assessment (1st round)			Date: 09/06/2020
1. Description and relevance to future waste disposal of relevant national and/or sectoral laws was provided. Following laws and regulation were reviewed: <ul style="list-style-type: none"> • National Environmental Management_Waste Act 59 of 2008 • National Environmental Management_Waste Amend Act of 2014 • National Norms and Standards waste disposal 2177_pg 44 • Energ-G Amended and Reinstated Agreement Nov 2013_pg 17 The Analysis of the national law reviled the national requirements to reduce the disposal of garden waste on landfill. As a result of the reassessment the updated ex-ante calcs (see the Waste Data tabs per site was provided.			
2. The description of identified baseline was revised. The baseline is the atmospheric release of the landfill gas and the generation of electricity in existing grid-connected power plants.			
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	07	Section no.	B.6.1	Date: 05/05/2020
Description of CAR				
1. The equation 3 of ACM0001 v.19 is incorrect. 2. The least efficient destruction device for calculation of $F_{CH4,FL,y}$ was not identified. 3. The question for $PE_{flare,y}$ was not provided as part of the equation $F_{CH4flared,y}$. 4. The version of tool in Option F is incorrect. 5. The explanation of the equation Density of GHG i was not provided. 6. The GHG considered as part of methodological choices shall be selected (see simplification above). 7. The MAP/PET in selection of k_j was not provided. 8. The justification for use of ASB0040 was not provided. 9. The justification for use of the Option B from the “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” was not provided. 10. Project emission of flaring is not part of the general PE equation. The $PE_{flare,y}$ is part of equation 4 far above. This was not explained here (explain clearly or move to section above). 11. Provide equation for $PE_{flare,y}$ (tool: project emission from flaring.)				
Project participant response (1st round)				

- Equation 3 of ACM0001 has been corrected in the PDD.
- The least efficient destruction device for calculation of $F_{CH_4,FL,y}$ is only relevant when a single flow meter is used. This does not apply as there are separate meters measuring gas flow to each methane destruction or utilisation device, on each landfill site in the project activity.
- The equation for $PE_{flare,y}$ has been provided in the section
- The version of the tool for Option F has been corrected.
- The expansion of the formula was an error. The equation has been revised to align with the equation listed in the Mass Flow tool, version 2.
- The selection of methane was included in the revised PDD with an explanation that it is the monitored GHG, as per ACM0001 v19.
- The MAP/PET in selection of k_j was provided. The values for k_j have not changed since the initial registration therefore the MAP/PET has not changed since then.
- Justification for the use of ASB0040 has been provided. The standardized baseline is applied in accordance with paragraph 50 of the project standard and paragraph 4 of the standardized baseline. ASB0040 is a mandatory Standardized Baseline and as such has been used in the calculations.
- The justification for using Option B has been provided: the chemical composition of the fuel is not readily available and hence Option B is used.
- The explanation for $PE_{flare,y}$ has been moved to the correct section.
- The equation for $PE_{flare,y}$ has been provided as per the tool "Project emissions from flaring".

Documentation provided by project participant (1 st round)		Date: 08/06/2020
<input checked="" type="checkbox"/> Changes in the PDD	Section(s): B.6.1	New version No.: 11
<input type="checkbox"/> Changes in MR	Section(s):	New version No.:
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		
DOE assessment (1 st round)		Date: 09/06/2020
<ol style="list-style-type: none"> The equation 3 of ACM0001 v.19 was corrected in line with methodology. Under the project the gas flow to each of the destruction device will be measured by flow meter. Therefore the identification of the least efficient destruction device for calculation of $F_{CH_4,FL,y}$ is not required. The question for $PE_{flare,y}$ was now provided as part of the equation $F_{CH_4,FL,y}$. The version of tool in Option F was revised to latest version 03.0.0. The Density of GHG i equation was revised in line with applied tool. In line with methodological choices simplification the volumetric fraction of only methane is selected and considered in the molecular mass flow. For transparency the MAP/PET in selection of k_j was explained. The justification for use of ASB0040 was provided in line with project standard. The justification for use of the Option B, in case the data for use of option A is not available, from the from the Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion was provided. Project emission of flaring is not part of the general PE equation and therefore was presented under the equation 4 of ACM0001, v19 in the section above. The equation for $PE_{flare,y}$ (tool: project emission from flaring) was provided (refer to point 10 above). 		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	08	Section no.	B.6.2	Date:	05/05/2020
Description of CAR					
<ol style="list-style-type: none"> The choice of data for parameter K_j was not specified. The choice of data for parameter MM_i was not specified. Parameter Flare efficiency was not listed. 					
Project participant response (1 st round)					
<ol style="list-style-type: none"> The values for K_j have been included in the revised PDD. The choice of data for MM_i has been specified as methane. The parameter table for flare efficiency has been included as a fixed parameter. 					
Documentation provided by project participant (1 st round)					Date: 08/06/2020
<input checked="" type="checkbox"/> Changes in the PDD	Section(s): B.6.2		New version No.: 11		
<input type="checkbox"/> Changes in MR	Section(s):		New version No.:		
<input type="checkbox"/> Changes in XLS	Worksheet(s):		New version No.:		
<input type="checkbox"/> Other:					
DOE assessment (1 st round)					Date: 09/06/2020

1. The choice of data for parameter K_j was specified. The values were provided.
2. The choice of data for parameter MM_i was specified. In line with simplification molecular mass of only Methane was provided.
3. Parameter Flare efficiency $\eta_{\text{flare},m}$ was added to the list of parameters.

Conclusion

Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
- ☒ The finding is closed

CAR ID	09	Section no.	B.7.1	Date:	05/05/2020	
Description of CAR						
<ol style="list-style-type: none"> 1. General: for each parameter follow the requirements of the template guideline and PS. 2. The Measurement methods for Management of SWDS was not provided. 3. The Source of data, standard to be applied, accuracy class, calibration for parameter Op_{jh}, $EG_{PJ,y}$, $T_{EG,m}$, $EC_{PJ,y}$, MT_{wb}, $Flame_m$ was not provided. 						
Project participant response (1st round)						
<ol style="list-style-type: none"> 1. The PDD has been revised to include the requirements of the PDD template guideline and the guidance in the CDM Project Standard, version 2. 2. The copy in the 'Measurement methods' field of the 'Management of SWDS' data parameter has been revised so that it is aligned with the wording in ACM0001 version 19. 3. With respect to the monitored data parameter tables: <ol style="list-style-type: none"> a. The accuracy class of the respective meters has been included under 'Measurement methods' field in accordance with the PDD template. b. The calibration frequencies have been included in the 'QA/QC procedures' in accordance with the PDD template. c. The sources of data have been provided (mostly in accordance with the ACM0001 version 19 methodology). 						
Documentation provided by project participant (1st round)					Date:	08/06/2020
<input checked="" type="checkbox"/>	Changes in the PDD	Section(s):	B.7.1	New version No.:	11	
<input type="checkbox"/>	Changes in MR	Section(s):		New version No.:		
<input type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:		
<input checked="" type="checkbox"/>	Other: <ul style="list-style-type: none"> - A5E37100388-003_ULTRAMAT_23 Gas Analyser_pg36 - A1700_Electricity generation meter_pg1 - ACORP DEM024 Data Electricity Hour Meter_Elec consumption_p2 - CBI EC330 Electricity Hour Meter_pg1 use EC100 series - Cert. Thermometer Digital with Probe TE8062 020419-020421 - Electricity generation meter not calibrated (email) - GUARDIAN NG Manual (1V06_16)_Gas Analyser_pg29 - Manual E&H Proline t-mass 65I Flow Meter_pg70 - SIEMENS Biogas Analyser - Flare - Calibration Detail - UV Sensor_pg2 - WI-ES-ROB-33 Rev 00 Thermocouple Test Procedure Form 					
DOE assessment (1st round)					Date:	09/06/2020
<ol style="list-style-type: none"> 1. The requirements of the template guideline and PS were followed. The parameter table were completed as per guideline. 2. The Measurement methods for Management of SWDS were provided. 3. The Source of data, standard to be applied, accuracy class, calibration for parameter Op_{jh}, $EG_{PJ,y}$, $T_{EG,m}$, $EC_{PJ,y}$, MT_{wb}, $Flame_m$ were provided. Additionally; <ol style="list-style-type: none"> 4. The equivalence of parameter $EC_{BL,k,y}$ with the monitored parameter $EG_{PJ,y}$ is missing. 5. The test frequency of the thermocouples for the monitoring of the parameter Op_{jh} is contradicting. 						
Project participant response (2nd round)					Date:	23/06/2020
<ol style="list-style-type: none"> 4. The equivalence of parameter $EC_{BL,k,y}$ with the monitored parameter $EG_{PJ,y}$ has been stated in 5. The test frequency of the thermocouples for the monitoring of the parameter Op_{jh} has been corrected. 						
Documentation provided by project participant (2st round)					Date:	23/06/2020
<input checked="" type="checkbox"/>	Changes in the PDD	Section(s):	B.7.1	New version No.:	12	
<input type="checkbox"/>	Changes in MR	Section(s):		New version No.:		
<input type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:		
<input type="checkbox"/>	Other:					
DOE assessment (1st round)					Date:	09/06/2020

4. The clarification on monitoring parameter <i>ECBL,k,y</i> and equivalent parameter $EG_{PJ,y}$ was provided in the parameter table.	
5. The test frequency of the thermocouple was revised to every 3 months. The frequency was defined in line with manufacturers' specification.	
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Table 5. FAR from this validation

FAR ID	xx	Section no.		Date: DD/MM/YYYY
Description of FAR				
-				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

- - - - -

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN) and version 02.0 of the “CDM project cycle procedure for project activities” (CDM-EB93-A06-PROC);• Make editorial improvements.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Renewal of crediting period Keywords: crediting period, project activities, validation report		