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Verification Report

Carbon Capital Markets Ltd.

1st Periodic Verification of the JI Track 2 Project

**“Landfill methane capture and flaring at Yalta and Alushta
landfills, Ukraine”**

UNFCCC UA2000006

Monitoring period 1: 01-06-2008 to 31-03-2010

Report No. 1390458

25 March 2011

TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstrasse 199 - 80686 Munich - GERMANY

1ST PERIODIC VERIFICATION

“Landfill methane capture and flaring at Yalta and Alushta landfills, Ukraine”

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Report No.	Date of first issue	Version No.:	Revision date	No. of pages
1390458	24 th of January, 2011	4	25 th of March, 2011	22
Subject:			1 th Periodic Verification under JI Track 2	
Executing Operational Unit:				
TÜV SÜD Industrie Service GmbH, Carbon Management Service Westendstrasse 199 - 80686 Munich, Federal Republic of Germany				
Project Participant (client):				
Carbon Capital Markets Ltd 22 Billiter Street EC3M 2RY London United Kingdom Gafsa-Skhid LLC Chapaeva Str. 17-A 36039 Poltava Ukraine				
Registration number / Project Title			Project UA2000006/ JI050: “Landfill methane capture and flaring at Yalta and Alushta landfills, Ukraine”	
Monitoring period:			01-06-2008 to 31-03-2010	
First Monitoring Report (version/date)			Version 1 / 10-05-2010	
Final Monitoring Report (version/date)			Version 3 / 17-02-2011	



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Summary:

TÜV SÜD Industrie Service GmbH has performed the 1st Periodic Verification of the approved JI project (Track 2): “Landfill methane capture and flaring at Yalta and Alushta landfills, Ukraine”.

The verification is based on requirements of the UN Framework Convention on Climate Change (UNFCCC) and the host country specific requirements. In this context, the relevant provisions set by the Marrakech Accords and the Kyoto Protocol; specific guidance provided by the JI-SC as well as by the Designated Focal Point (host country) has been taken into consideration.

A document review, followed by two site visits, was conducted to verify the information submitted by the project participant regarding the present verification period. Based on the assessment carried out, the verifier confirms the following:

- the project is fully implemented as described in the PDD regarding which the determination has been deemed final ;
- the monitoring has been carried out in accordance with the monitoring plan as included in the PDD regarding which the determination has been deemed final;
- the installed equipment essential for generating emission reductions runs reliably and the meters are calibrated appropriately; the project is generating emission reductions.
- the data collection system is in accordance with the monitoring plan.
- the calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.
- the project was generating emission reductions.

The verifier can confirm that the GHG emission reductions for the entire monitoring period are calculated without material misstatements. Our opinion refers to the project GHG emissions and resulting GHG emission reductions reported, determined using the valid and determined project baseline, its monitoring plan and its associated documents.

Based on the information we have seen and evaluated, we confirm that the implementation of the project resulted in:

Sub-period	Amount
01/01/2008 till 31/12/2008	2,933 t CO_{2e}
01/01/2009 till 31/12/2009	44,758 t CO_{2e}
01/01/2010 till 31/03/2010	6,869 t CO_{2e}
Totally	54,560 t CO_{2e}

Assessment Team Leader:

Thomas Kleiser

Assessment Team Members:

Ms. Olena Maslova

Dr. Albert Geiger

Technical Reviewer:

Javier Castro

Certification Body responsible:

Rachel Zhang



Abbreviations

ACM	Approved Consolidated Methodology
AIE	Accredited Independent Entity
CAR	Corrective Action Request
CCM	Carbon Capital Markets Ltd.
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CO_{2e}	Carbon dioxide equivalent
CAR	Corrective action request
CR	Clarification Request
DFP	Designated Focal Point
DVM	Determination and Verification Manual
EF	Emission Factor
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission Reduction
ERU	Emission Reduction Units
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
JI	Joint Implementation
KP	Kyoto Protocol
MP	Monitoring Protocol- project specific manual
MR	Monitoring Report
NGO	Non-Governmental Organisation
OM	Operational Margin
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality assurance/quality control
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change



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Main Documents (referred to in this report)

Methodology (name / version)	ACM0001, Version 05	
Scope	13	
Technical Area	13.1	
Determined PDD:	Version 08, dated 17-02-2009	
Revised Monitoring Plan:	n.a.	
	Version	Date
Published Monitoring Report	1	10-05-2010
Revised Monitoring Report	3	17-02-2011
Project documentation link:	http://ji.unfccc.int/JIITLProject/DB/1FC65W96MRGI985P0SSYVODU119FSC/details	

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Annex 2: Information Reference List



1 INTRODUCTION

1.1 Objective

Carbon Capital Markets Ltd. has commissioned an independent verification by TÜV SÜD Industrie Service GmbH (TÜV SÜD) of its determined JI Track 2 project:

“Landfill methane capture and flaring at Yalta and Alushta landfills, Ukraine”

Verification is the periodic independent review and ex-post determination by the Accredited Independent Entity (AIE) of the monitored reductions in GHG emissions during the defined verification period.

Periodic Verification:

The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the determined monitoring plan for the respective period. Furthermore, the periodic verification evaluates the GHG emission reduction data and expresses a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is free of material misstatements and verifies that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records.

The verification shall consider both quantitative and qualitative information on emission reductions. Quantitative data comprises the monitoring reports submitted to the verifier by the project participants. Qualitative data comprises information on internal management controls, calculation procedures, and procedures for transfer, frequency of emissions reports, review and internal audit of calculations/data transfers.

The verification work ensures that the project activity is assessed against all applicable JI Track-2 requirements as well as specific regulations as set by the national guidelines and procedures for approving of JI projects in Ukraine. The JI requirements include the JI modalities and procedures and subsequent decisions by the COP/MOP and documents released by the JI-SC and available on the UNFCCC JI website <http://ji.unfccc.int/index.html>.

The objective of the verification work ensures that the project activity complies with the requirements as specified in the appendix B of the JI guidelines on the aforementioned UNFCCC JI website <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=2>.

According to this assessment TÜV SÜD should:

- Ensure that the project activity has been implemented and operated as per the registered PDD and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place;
- Ensure that the published MR and other supporting documents provided are complete and verifiable and in accordance with applicable JI Track-2 requirements;
- Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the applicable approved methodology;
- Evaluate the data recorded and stored as per the methodology of approved PDD;
- Evaluate the GHG emission reduction data and express a conclusion about whether the reported GHG emission reduction data is verifiable and sufficiently supported by evidence, i.e. monitoring records



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1.2 Scope

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Accredited Independent Entity.

This verification is based on the submitted monitoring report and the determination report. These documents are reviewed against the determined project design document including its monitoring plan, the requirements of the Kyoto Protocol, the JI Guidelines as well as related rules and guidance set by the CMP and JISC.

Determination Process and Final Approval

The determination of the project was carried out 2007 till 2009. The results of the determination were documented by TÜV SÜD in the Determination Report No. 988479, dated 15 June 2009. This final Determination Report indicates no remaining issues with relevance for the again subsequent verifications.

Following the relevant requirements of Article 6 of the Kyoto Protocol and the JI guidelines (refer to Appendix B of the JI guidelines, §§30-45 and to the national ukrainian regulations and procedures) PP has applied a CDM approach. The principles of accuracy and completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.

Past to receipt of the Monitoring Report referred to the para. 36 of the JI guidelines, a verification of the reductions in antropogenic emissions by sources of greenhouse gases reported by project participants (PPs) in accordance with appendix B of the JI guidelines has been made showing that those reductions were monitored and calculated in accordance with para. 33 of the JI guidelines.

The project was finally approved by the JISC on 13 August 2009 and has the reference number UA2000006. Relevant associated documents are published on the UNFCCC weblink at <http://ji.unfccc.int/JIITLProject/DB/1FC65W96MRGI985P0SSYVODU119FSC/details>

Verification process

Based on the requirements in the DVM, TÜV SÜD has applied a rule-based approach for the verification of the project. The principles of accuracy, materiality, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.

The verification shall consider both quantitative and qualitative information on emission reductions. Quantitative data comprises the monitoring reports submitted to the AIE by the project entity. Qualitative data comprises information on internal management controls, calculation procedures, and procedures for transfer, frequency of emissions reports, review and internal audit of calculations/data transfers.

The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications and/or corrective actions as well as so-called forward action requests may provide input for improvement of the monitoring activities.



1.3 GHG Project Description

Project activity:	“Landfill methane capture and flaring at Yalta and Alushta landfills, Ukraine”
UNFCCC registration number:	UA2000006
Project Participants:	Gafsa-Skhid, Ukraine Carbon Capital Markets, UK
Location of the project:	Yalta and Alushta, Ukraine
Date of registration:	13-08-2009
Starting date of the crediting period:	01-06-2008

The purpose of this project is the avoidance of methane emissions into the atmosphere at the Yalta and Alushta landfills in the Ukraine by flaring the produced landfill gas. Furthermore, small amounts of methane are utilised by gas engine generators to provide electricity to the project activity.

The implementation status of the project in the verification period is as follows:

- Yalta landfill: Installation of the gas collection system with 1 flare and 1 gas engine generator
- Alushta landfill: Installation of the gas collection system with 1 flare and 1 gas engine generator

2 METHODOLOGY

2.1 Verification Process

The verification process is based on the approach depicted in JI guidelines and, in particular, refer to the Guidance on Criteria for baseline setting and monitoring, chapter C. – Guidance on monitoring. Following the good monitoring practices and its reporting the approved Joint Implementation Determination and Verification Manual (JI DVM, especially chapter G. Verification) was taken into consideration.

Standard auditing techniques have been adopted for the verification process. The means of verification for the fulfilment of the requirements and reporting are as per the DVM.

The work starts with a contract review and the appointment of the TÜV SÜD assessment team covering the technical scope(s) and area(s) as well as relevant host country experience for evaluating of this JI project activity. The principles of consistency and transparency, impartiality, independency and safeguarding against conflicts of interest and confidentiality were considered by the TÜV SÜD Certification Body (CB) and the management of the departement before accepting the verification contract.

Once the monitoring report is published on the JISC web site, the TÜV SÜD assessment team has carried out a desk review, on-site inspection, follow-up actions, resolution of issues identified and prepared a verification report. The verification report and other supporting documents then undergo an internal quality control by the TÜV SÜD Certification Body before its submission to the JISC for the final approval.



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In order to ensure transparency, assumptions are clearly and explicitly stated, audit evidences and further background material are clearly referenced in Annex 2 of this report. Project and methodology-specific checklists and a customised protocol have been developed for the project. The protocol shows criteria (requirements) in a transparent manner, the discussion of each criterion by the assessment team and results of the subsequent verification.

The verification protocol (Annex 1) serves the following purposes:

- It organizes, details and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been proved and the conclusion provided by the verifying team.

The findings are the essential part of this verification report, which are summarized in Annex 1 of the verification protocol.

2.2 Verification Team

According to the technical scopes and experiences in the sectoral or national business environment TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body “climate and energy”. The composition of an assessment team has to be approved by the Certification Body (CB) ensuring that the required skills are covered by the team. The TÜV SÜD CB operates five qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL)
- Greenhouse Gas Auditor- Determiner (GHG Determiner)
- Greenhouse Gas Auditor- Verifier (GHG Verifier)
- Greenhouse Gas Auditor Trainee (T)
- Experts (E)

It is required that the sectoral scope and technical area - both are linked to the methodology - has to be covered by the assessment team. The verification team consisted of the following members:

Name	Qualification	Coverage of scope	Coverage of technical area	Host country experience
Thomas Kleiser	ATL	☑	☑	☑
Dr. Albert Geiger	GHG-VER	☑	☑	
Mrs. Olena Maslova	GHG-VER	☑		☑

Thomas Kleiser is the Assessment Team Leader of the project with a background in physics and meteorology. Till 31st of December 2008 he was head of the division CDM and JI at TÜV SÜD Industrie Service GmbH conducting more than 110 validations and verifications of CDM and JI projects and around 25 projects under diverse voluntary schemes. In this position he was responsible for validation/determination, verification and certification processes for GHG mitigation projects as well as trainings for internal auditors on a global scale. Since 1st of January 2009 he is head of the Certification Body “Climate and Energy” of TÜV SÜD.

Olena Maslova is an auditor (Determiner / Verifier) in the “Carbon Management Service” department of TÜV SÜD Industrie Service GmbH in Munich, Germany. She is chemical engineer and host country expert for projects in Ukraine and Commonwealth of Independent



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States. Due to her further master degree at the university of applied science in the Federal Republic of Germany she is also familiar with Germany's current environmental legislation. Olena Maslova specializes in the assessment of JI projects in the sector of chemical industries and waste handling and disposal. In this project she functioned as auditor and project manager.

Dr. Albert Geiger is an auditor (Determiner/ Verifier) for CO₂-emission reduction projects of the scopes 8, 10 and 13 at the department “Environmental Service” of TÜV SÜD. He has done more than 15 CDM and JI projects and holds a PhD in geological sciences and does environmental consulting in soil and water protection as well as waste management at TÜV SÜD since 1999. In this project he functioned as lead auditor.

2.3 Review of Documents

The monitoring report submitted by the Client and additional background documents related to the project performance have been reviewed. The published Monitoring Report was assessed based on the PDD regarding which the determination has been deemed final, the applied methodology and monitoring plan. The main purpose of the assessment conducted was to verify the completeness and correctness of the data and the information presented in the monitoring report.

Monitoring Plan

The applied Monitoring Plan was assessed carefully against the Monitoring Plan of registered PDD. The assessment included:

- A completeness check of the monitored parameters
- A check of the used monitoring meters including their accuracy and calibration procedures

Monitoring Report

A compliance check of the monitoring report with respect to the monitoring plan presented in the determined final PDD and the applied methodology was carried out.

Particular attention was paid to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures. In addition, the evaluation of data management and the quality assurance and quality control system was carried out in the context of their influence on the generation and reporting of emission reductions.

Moreover, a detailed review of the data transfer and recording procedures has been carried out on-site.

All key parameters had been focused with special awareness. All automatic raw data entry and a proper use of correct default data from external data sources had been proved.

The list of references and further documents reviewed within the verification is attached as Annex 2 to this report.

2.4 On-site Assessment and follow-up Interviews

TÜV SÜD performed two physical site inspections, 04.11./05.11.2009 and 16.06./17.06.2010 including on-site interviews with the project participants to:

- confirm the implementation and operation of the project,
- review the data flow for generating, aggregating and reporting of the monitoring parameters,



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- confirm the correct implementation of procedures for operation and data collection,
- cross-check the information provided in the MR with other sources,
- check the monitoring equipment against the monitoring plan presented in the PDD and the applied methodology, including calibrations, maintenance, etc.,
- review the calculations and assumptions used to obtain the GHG data and ER,
- check if the QC/QA procedures are in place for preventing and correcting of errors or/and omissions in the reported data.
- Identify whether the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

A list of the persons interviewed during the verification activities is included in annex 2.

2.5 Quality of Evidence to Determine Emission Reductions

Among several evidences submitted, the following relevant and reliable evidence material has been used by the audit team during the verification process:

- Licenses
- Raw data
- Handwritten Journals
- Analysis
- Calibration documents
- Specifications of the meters
- Quality assurance and quality control documents (Monitoring Manual)

Sufficient evidences and data covering the full verification period in the required frequency is available to validate the figures stated in the final MR. The source of the evidences and data will be discussed in chapter 3 of this report. Specific cross-checks have been done in cases when further sources were available. The monitoring report's figures were checked by the audit team against the raw data. It can be confirmed that the data collection system meets the requirements of the monitoring plan as per the determined final PDD.

2.6 Resolution of Clarification, Corrective Action and Forward Action Requests

The objective of this phase of the verification process is to resolve any outstanding issues, which require clarification for TÜV SÜD's conclusion on the reported GHG emission reduction. The findings raised as Forward Action Requests (FARs) (if any) indicated in previous reports (determination/verification) were discussed and resolved during this phase through communication between the PP and TÜV SÜD.

Concerns raised during the desk review, the on-site audit assessment and the follow up interviews and the responses provided for the raised concerns are documented in Annex 1 (verification protocol) to guarantee the transparency of the verification process.

A Corrective Action Request is raised where TÜV SÜD identifies:

- non-conformities in monitoring and/or reporting with the monitoring plan and/or methodology;
- that the evidence provided is not sufficient to prove conformity;
- mistakes in assumptions, data or calculations that impair the ER calculations;



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- FARs raised during determination or previous verifications that are not solved until the on-site visit.

A Clarification Request is raised where TÜV SÜD does not have enough information or the information is not transparent to assess compliance with the monitoring plan.

A Forward Action Request is raised where TÜV SÜD identifies an issue relating to the monitoring that need to be reviewed during the next verification period.

Information or clarifications provided as a response to a CAR, CL or FAR could also lead to a new request.

2.7 Internal Quality Control

As a final step of verification, the final documentation including the verification report and annexes have to undergo an internal quality control by the Certification Body (CB) “climate and energy”, i.e. each report has to be finally approved either by the Head of the CB or the Deputy (a technical reviewer can be used). In case one of these two persons is part of the assessment team, the approval can only be given by the person who is not a part of the assessment team.

If the documents have been satisfactorily approved, the Request for Issuance is submitted to the JISC along with the relevant documents.

3 VERIFICATION RESULTS

In the following sections, the results of the verification are stated. The verification results relate to the project performance as documented and described in the determined PDD and the final Monitoring Report. The verification findings for each verification subject are presented below.

3.1 Requests from the first site visit

During the first on-site visit 6 CARs, 20CRs and 7 FARs have been raised which have been solved during the verification process (see chapter 1.6 of the attached protocol (annex 1)).

3.2 Project Implementation in accordance with the determined Project Design Document

According to the visual inspections the following equipment has been installed on each site:

- Gas collection system (wells and manifolds)
- 1 Flare
- 1 gas engine generator
- 1 start-up generator
- Monitoring and electronic data collection system

The gas collection system, the flares, the gas engine generators and the monitoring and electronic data collection system are implemented in accordance with the registered PDD. Instead of diesel a portable gasoline driven start-up generator has been implemented. This



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start-up generator was only used at the beginning; in the meanwhile the facilities are started without the generator.

TÜV SÜD confirms that:

- the gas collection system, the flares, the gas engine generators and the monitoring and electronic data collection system comply fully with the registered PDD.
- instead of diesel a portable gasoline driven start-up generator has been implemented.

3.3 Compliance of the Monitoring System with the Monitoring Plan

The monitoring meters have been implemented in fully accordance with the monitoring plan presented in the determined PDD (as published on UNFCCC JI website).

All parameters during the monitoring period were monitored and evaluated as per the Monitoring Plan. The parameters as included to the registered monitoring plan are considered to be complete.

The switch from the diesel to the gasoline start-up generator has been correctly considered in the data and calculation procedures by using the energy content of gasoline instead of the energy content of diesel (34.66 MJ/l instead of 36 MJ/l).

The regulatory requirements are still met which has been confirmed by the relevant national authority (IRL 25).

A comprehensive list of each parameter required by the monitoring plan is provided in Annex 1. In this checklist all parameters are described in detail including source of data, verification of data, possible crosschecks, calibration of instruments etc.

The training plan and the participant lists clearly demonstrate that the staff has been trained regularly.

TÜV SÜD confirms that:

- the function of the monitoring equipment , including its calibration status, was in order within the whole verification period.
- the evidence and records used for the monitoring are maintained in a traceable manner (journals, electronic media)
- sufficient training has been conducted.

3.4 Assessment of Data and Calculation of Greenhouse Gas Emission Reductions

All data has been available (IRL 9) and all the parameters have been monitored in accordance with the determined monitoring plan.

The audit team conducted a detailed review of the Excel based calculation tool. The data presented in the MR as well as calculation files has been cross checked against the raw data. The cross check of the calculation file was done against the raw data presented in the weekly reports for the entire monitoring period. All automatic raw data entry and a proper use of correct default data from external data sources had been proved.



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The reported data have been cross-checked against other sources available as explained in Annex 1.

The verifier confirms that the methods and formulae used to obtain the baseline, project and leakage emissions are appropriate. The same has been done in accordance with the methods and formulae described in the determined monitoring plan.

The verifier confirms that the monitoring report includes all parameters and the monitored data at the intervals required by the methodology and PDD.

The verifier confirms that all the assumptions, emission factors and default values (ex-ante values from PDD) have been correctly justified. All the emission factors and default values are explicitly mentioned in the monitoring report.

TÜV SÜD confirms that:

- Data sources used for calculating emission reductions are clearly identified, reliable and transparent
- the input data are viable and consistent with raw data.
- the used default values are clearly referenced and correctly cited.
- the methods and formulae used to obtain the baseline, project and leakage emissions are appropriate and without any mistakes.
- the calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.

4 SUMMARY OF FINDINGS

The verifier can confirm that the published MR and related documents are complete and verifiable in accordance with the JI requirements, Monitoring Plan and determined PDD. All the findings raised by the verification team, the responses by the PPs and the conclusion of the audit team are presented in Annex 1.

The means of verification and resulting changes in the MR or related documents are summarized in the following table:

<p><u>Corrective Action Request 1:</u> During the on-site mission the responsibilities for this particular JI project has been discussed. The responsibilities chart presented in the Monitoring Protocol should be corrected according to the real situation on-site. Furthermore responsibilities for parameter 14 “regulatory requirements for LGF projects” are not clear define, so please specify.</p>
<p>CAR 1, means of verification</p>
<p>On-site findings</p>
<p>CAR 1, changes in the MR or related documents</p>
<p>Revision of the Monitoring Report (IRL 5)</p>
<p><u>Corrective Action Request 2:</u> H_{electricity}: The ID in the MP is different to that mentioned in the registered PDD. Please correct.</p>
<p>CAR 2, means of verification</p>
<p>MR (IRL 4)</p>
<p>CAR 2, changes in the MR or related documents</p>
<p>Revision of the Monitoring Report (IRL 5)</p>



<u>Corrective Action Request 3:</u>
Please revise MP by including a correct location of the respective flow meters (both sites).
CAR 3, means of verification
On-site findings
CAR 3, changes in the MR or related documents
Revision of the Monitoring Report (IRL 5)
<u>Corrective Action Request 4:</u>
Please correct raw data storage procedure described in the MP on page F-2.
CAR 4, means of verification
On-site findings
CAR 4, changes in the MR or related documents
Revision of the Monitoring Report (IRL 5)
<u>Corrective Action Request 5:</u>
Operation hours of the energy plant. Please define explicitly the source of data for this parameter (both sites) and explain whether some cross-checks possibilities exist. Furthermore please describe the QA/QC aspects.
CAR 5, means of verification
On-site findings
CAR 5 changes in the MR or related documents
Revision of the Monitoring Report (IRL 5)
<u>Corrective Action Request 6:</u>
Please elaborate additional procedures for the monitoring of national landfill regulatory requirements and laws as at the time of on-site verification no procedure or responsible persons have been found.
CAR 6, means of verification
Monitoring Manual
CAR 6, changes in the MR or related documents
No changes in the MR
<u>Corrective Action Request 7:</u>
Please include a table of content into the revised MR.
CAR 7, means of verification
Monitoring Report
CAR 7, changes in the MR or related documents
Revision of the Monitoring Report (IRL 5)
<u>Corrective Action Request 8:</u>
A spot check of the Alushta data showed that there are errors in the calculation procedure of the flare efficiency (e.g. Alushta 14.09.2008, 9:06 till 9:16, flare efficiency 50% although T_{flare} in this hour < 500°C; 90% flare efficiency: The manufacturer's specifications have to be met continuously and not only for 20 minutes). Hence, please revise the applied procedure and demonstrate and explain in detail that the revised procedure meets <u>all</u> requirements of the tool. Because the same procedure has been applied for the Yalta project, the Yalta procedure has to be revised too.
CAR 8, means of verification
Data spot-check (IRL 8; 12)
CAR 8, changes in the MR or related documents



Revision of the Monitoring Report (IRL 5)
<u>Corrective Action Request 9:</u> Please revise the ERU table presented in the MR p.p. 13-14. Furthermore since no average values have been used in the calculations please correct the MR.
CAR 9, means of verification Data spot-check
CAR 9, changes in the MR or related documents Revision of the Monitoring Report (IRL 5)
Clarification Requests
<u>Clarification Request 1:</u> During the on-site inspection the date of commissioning of the both flaring units was not clear since the commissioning protocols were not available. Please provide the commissioning protocols for the both flaring plants installed at the landfill sites. Furthermore please provide the list of technical specifications for the both flaring units.
CR 1, means of verification findings during the 1st on-site visit.
CR 1, changes in the MR or related documents No changes in the MR
<u>Clarification Request 2:</u> The date of commissioning of the engine generators installed at the each site is not clear since the passports of the generators were not available on-site. Please provide the passports of engine generators.
CR 2, means of verification findings during the 1st on-site visit.
CR 2, changes in the MR or related documents No changes in the MR
<u>Clarification Request 3:</u> Please provide passports for start up diesel generators which are using at the both landfill sites. The information on technical specifications as well as serial numbers of the start up generators should be provided.
CR 3, means of verification findings during the 1st on-site visit.
CR 3, changes in the MR or related documents No changes in the MR
<u>Clarification Request 4:</u> Since it was communicated with the project participants before and confirmed at the on-site verification that Ms. Joy Williams is no longer a project responsible person in the company CCM Ltd, please specify the responsible Project Manager in CCM.
CR 4, means of verification findings during the 1st on-site visit.
CR 4, changes in the MR or related documents Revision of the Monitoring Report (IRL 5)
<u>Clarification Request 5:</u> Please update training procedures described in the monitoring protocol according to the real situation on-site.



CR 5, means of verification
findings during the 1st on-site visit.
CR 5, changes in the MR or related documents
No changes in the MR
Clarification Request 6:
The parameters $LFG_{flare,y}$ and $LFG_{electricity,y}$ are missing in the MP. Please clarify.
CR 6, means of verification
findings during the 1st on-site audit.
CR 6, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 7:
The registered PDD states to use “Tool to determine project emissions from flaring gases containing Methane” in the project’s monitoring. Since only one parameter- $PE_{flare,y}$ – is mentioned in registered PDD, please amend the MP by setting the link between all tool’s parameter and $PE_{flare,y}$.
CR 7, means of verification
findings during the on-site audit.
CR 7, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 8:
During the on-site visit TÜV SÜD assessment team found several inconsistencies between the monitoring system installed on the sites and the tool applied (some of the parameters which should be measured according to the tool are not measured on-site). Therefore please clarify how the tool has been applied to this particular project.
CR 8, means of verification
findings during the on-site audit.
CR 8, changes in the MR or related documents
Revision of the MP (IRL 5)
Clarification Request 9:
Please describe the approach of calculation of $fv_{N_2,h}$ from $fv_{CH_4,h}$. Furthermore please link this parameter with respective one from the registered PDD.
CR 9, means of verification
findings during the on-site audit.
CR 9, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 10:
MR should be revised by including $T_{ex}=T_{flare}$ according to the registered PDD. Please provide evidence (technical scheme from the technology provider etc.) that $T_{exhaust}$ is measured by the equipment
CR 10, means of verification
findings during the on-site audit, flaring tool (IRL 2).
CR 10, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 11:
Please clarify since $w_{CH_4,y} = fv_{CH_4,h}$



CR 11, means of verification
findings during the on-site audit, Methodology (IRL 2)
CR 11, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 12:
Registered PDD includes the parameter ET _y Thermal energy used in landfill during project, the monitoring protocol defines this parameter as ET _y Amount of fossil fuel used by on-site diesel generator to meet project requirement. This should be explained as registered monitoring plan demonstrates this parameter to be as energy (TJ) and not only the amount of fossil fuel used.
CR 12, means of verification
findings during the on-site audit, Methodology (IRL 2)
CR 12, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 13:
Please clarify how CEF _{thermal} will be estimated and monitored.
CR 13, means of verification
findings during the on-site audit, Methodology (IRL 2)
CR 13, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 14:
Please clarify how the measurement of this parameter will be performed at the both sites during the time when meter's calibration is conducted. Furthermore please provide the passport for those flow meters as well as manufacturer's specifications.
CR 14, means of verification
findings during the on-site audit.
CR 14, changes in the MR or related documents
No changes in the MR
Clarification Request 15:
The serial number found on-site is not consistent with one provided in the Monitoring Protocol (MP). Please clarify and correct the MP/MR if necessary. In general several inconsistencies have been found between the serial numbers mentioned in the MP and real ones. So please cross check the serial numbers and correct the MP/MR accordingly.
CR 15, means of verification
findings during the on-site audit.
CR 15, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 16:
Please provide technical specification of the gas analysers installed at the both Yalta and Alushta sites.
CR 16, means of verification
findings during the on-site audit.
CR 16, changes in the MR or related documents
No changes in the MR
Clarification Request 17:
Please explain how the continuous measurement of the flaring efficiency has been/is



conducted at the both sites. In doing so please indicate how the tool Anne 13 EB 28 has been applied (TM measurements). Furthermore please explain respective QA/QC procedures. Please refer also to CR in section 2.1.
CR 17, means of verification
findings during the on-site audit.
CR 17, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 18:
Please provide the technical documentation incl. serial numbers for thermocouples installed at the both sites.
CR 18, means of verification
findings during the on-site audit.
CR 18, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 19:
MP: CO2 emission intensity of the thermal energy- will be specific to the fossil fuel used on-site (diesel)
CR 19, means of verification
findings during the on-site audit.
CR 19, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 20:
Please provide an example of raw data for one day (from both sites) in order to demonstrate the measurement frequency and completeness of measured parameters.
CR 20, means of verification
findings during the on-site audit.
CR 20, changes in the MR or related documents
No changes of the MR
Clarification Request 21:
Although during the verification visits the TÜV SÜD assessment team did not notice any deviation in the monitoring system compared to the monitoring plan, please amend the MR by including a statement on this as it should report any changes occurred for every monitoring period.
CR 21, means of verification
findings during the on-site audit.
CR 21, changes in the MR or related documents
Revision of the MR (IRL 5)
Clarification Request 22:
Please provide the actual H&S (Health and Safety) license.
CR 22, means of verification
Document review
CR 22, changes in the MR or related documents
Revision of the MR
Clarification Request 23:
During the on-site verification visit in June 2010 TÜV SÜD team assessed that there is a new



project participants- CAF Ukraine- and one of the PPs stated in the registered PDD doesn't seem to be involved in the project any longer. This situation should be clarified; furthermore the MoC should be corrected and submitted to the TÜV SÜD for the upload to JI- SC, if necessary.
CR23, means of verification
Findings during the on-site audit.
CR 23, changes in the MR or related documents
No changes, because there is no change in the involved PPs (IRL 24)
Clarification Request 24:
Please provide the weekly monitoring reports for the entire monitoring period.
CR 24, means of verification
findings during the on-site audit.
CR 24, changes in the MR or related documents
The weekly monitoring reports have been provided (IRL 12)
Clarification Request 25:
Please describe why T_{ex} has been chosen and show its significance.
CR 25, means of verification
findings during the on-site audit.
CR 25, changes in the MR or related documents
No revision because the default values of the tool have been used
Clarification Request 26:
Please put the parameter $CEF_{thermal, y}$ in the table of constants and describe the used value. Please insert the data unit of $CEF_{thermal, y}$ in the MR
CR 26, means of verification
findings during the on-site audit.
CR 26, changes in the MR or related documents
Revision of the MR
Clarification Request No. 27
All default values used in ERUs calculation in the entire period must be reported. Please revise table 2 of the MR.
CR 27, means of verification
findings during the on-site audit.
CR 27, changes in the MR or related documents
Revision of the MR
Additional Request No. 1
The flare in Yalta has a maximum flaring capacity of 800m ³ /h, in Alushta- 500m ³ /h. Since there are values of LFG above 800m ³ and 500m ³ respectively (e.g. the week from 7.12.2008 in Alushta site) for which the PP claims ERs, it is necessary to provide evidence which defines the maximum acceptable deviation from the upper limit.
Additional Request No. 1, means of verification
findings by evaluating the raw data presented in the weekly reports. For details refer to the Annex 1 Chapter 5.
Additional Request No. 1, changes in the MR or related documents
Revision of the MR.
Forward Action Request No. 1

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“Landfill methane capture and flaring at Yalta and Alushta landfills, Ukraine”

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It is recommended to for the final excel calculation file to be improved by including e.g.a generic excel sheet with general information about the project and the calculations method, some exemplary sheets with raw data where the formulas behind the values can be seen and traced etc.

FAR 1,means of verification

To be verified at the next periodic verification.

FAR 1,changes in the MR or related documents

N/A



5 VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed the 1st Periodic Verification of the approved JI Track 2 project : “Landfill methane capture and flaring at Yalta and Alushta landfills, Ukraine”.

The verification is based on requirements of the UN Framework Convention on Climate Change (UNFCCC) and the host country specific requirements. In this context, the relevant provisions set by the Marrakech Accords and the Kyoto Protocol; specific guidance provided by the JI-SC as well as by the Designated Focal Point (host country) has been taken into consideration.

A document review, followed by two site visits, was conducted to verify the information submitted by the project participant regarding the present verification period. Based on the assessment carried out, the verifier confirms the following:

- the project is fully implemented as described in the PDD regarding which the determination has been deemed final ;
- the monitoring has been carried out in accordance with the monitoring plan as included in the PDD regarding which the determination has been deemed final;
- the installed equipment essential for generating emission reductions runs reliably and the meters are calibrated appropriately; the project is generating emission reductions.
- the calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.
- the project was generating emission reductions.

The verifier can confirm that the GHG emission reductions for the entire monitoring period are calculated without material misstatements. Our opinion refers to the project GHG emissions and resulting GHG emission reductions reported, determined using the valid and determined project baseline, its monitoring plan and its associated documents.

Based on the information we have seen and evaluated, we confirm that the implementation of the project resulted in:

Reporting period: From 01-06-2008 to 31-03-2010

Verified emissions:

Period 01-06-2008 to 31-12-2008:

Baseline emissions:	2,933	t CO _{2e}
Project emissions:	0	t CO _{2e}
Leakage emission:	0	t CO _{2e}
Emission reductions:	2,933	t CO_{2e}

Period 01-01-2009 to 31-12-2009:

Baseline emissions:	44,759	t CO _{2e}
Project emissions:	1	t CO _{2e}
Leakage emission:	0	t CO _{2e}
Emission reductions:	44,758	t CO_{2e}

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Period 01-01-2010 to 31-03-2010:

Baseline emissions:	6,869	t CO _{2e}
Project emissions:	0	t CO _{2e}
Leakage emission:	0	t CO _{2e}
Emission reductions:	6,869	t CO_{2e}

Total Emission Reductions: 54,560 t CO_{2e}

Munich, 25-03-2011

Munich, 25-03-2011

Certification Body “climate and energy”
TÜV SÜD Industrie Service GmbH

Assessment Team Leader

1ST PERIODIC VERIFICATION

“Landfill methane capture and flaring at Yalta and Alushta landfills, Ukraine”



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Annex 1: Verification Protocol

Verification Protocol

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1. Project Activity Implementation

1.1. Project Approval by Parties involved

	Verified Situation	Conclusion and IRL
Approvals at the determination stage	Host Party- Ukraine; Other Party involved- United Kingdom of Great Britain and Northern Ireland. The DFP of the Party involved, other than the host Party, issued an unconditional written project approval when submitting the final determination to the JI-SC.	<input checked="" type="checkbox"/>
Approvals at the verification	See above. No further parties, other than those issued their unconditional written project approvals at the determination stage, are involved in this project activity.	<input checked="" type="checkbox"/>

1.2. Technology

Location (s)			
	PDD Description	Verified Situation	Conclusion and IRL
Description / Address:	Landfills of Yalta and Alushta towns, Autonomous Republic of Crimea, Ukraine	The PDD description of the sites as well as respective addresses can be confirmed due to the conducted initial on-site visits. MR has been provided including the description of the project implemented, however it is necessary to include the table of contents into the revised MR. <u>Corrective Action Request No. 7:</u> Please include a table of content into the revised MR.	CAR

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		The table of content has been added in the latest version of the MR. Hence, CAR 1 is solved.	
GSP coordinates:	Yalta landfill- 44°27'01"N and 34°06'323"E; Alushta Landfill- 44°43'18"N and 34°26'06"E.	GSP coordinates are correct, which was confirmed during the on-site verification.	<input checked="" type="checkbox"/>
Technical Equipment – Main Components			
	PDD Description	Verified Situation	Conclusion and IRL
Equipment Description	<p>The project boundaries for each project site comprise</p> <ol style="list-style-type: none"> 1. Landfill gas production incl. remediation 2. Landfill gas collection system 3. Flaring plant 4. Electricity generation (for on-site use only) 5. Control panel on the flaring device 6. Operator’s room (only Alushta) 	<p>According to the initial and first periodic verification visits TÜV SÜD assessment team can confirm that following components are existing at Yalta and Alushta landfills within the project boundary:</p> <ol style="list-style-type: none"> 1. Landfill gas production incl. remediation 2. Landfill gas collection system 3. Flaring plant 4. Electricity generation (for on-site use only) 5. Control panel on the flaring device 6. Operator’s room (only at Alushta site) <p>Therefore information on the project boundaries given in the PDD and in the prepared Monitoring Protocol can be confirmed.</p>	CR

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		<p>Clarification Request No. 21:</p> <p>Although during the verification visits the TÜV SÜD assessment team did not notice any deviation in the monitoring system compared to the monitoring plan, please amend the MR by including a statement on this as it should report any changes occurred for every monitoring period.</p> <p>The statement has been added to the latest MR. Hence, CR 21 is solved.</p>	
<p>Component 1: Landfill gas collection system Technical Features</p>	<p>The main elements of LFG collection system are listed below:</p> <ul style="list-style-type: none"> - vertical gas extraction wells with regulation valves and connection units for monitoring of gas composition; - gas transport pipes, transporting gas from the wells to the integrated gas boosting and flaring plant; and - condensate shafts. <p>LFG flows from the wells through the lateral and sub-header piping to the header piping to the gas control plant. The flow of gas can be controlled at each of the individual vertical extraction wells through the use of a valve located at the top of the well piping. Each well will be individually controlled to ensure that the collection systems can be effectively set up and balanced. The systems will be manually</p>	<p>During the two separate on-site visits conducted by the assessment team in November 2009 and June 2010 it was verified that:</p> <ol style="list-style-type: none"> 1. the amount of the vertical gas extraction wells is 30 (at Alushta landfill site) and 56 (at Yalta landfill site). Serial numbers of vertical wells are C1- C30 (Alushta) and H1- H56 (Yalta). 2. LFG capacity of the units installed are the following (acc. to the manufacturer’s specifications): 500m³/h (Alushta), 800 m³/h (Yalta). 3. Manufacturer: done by Gafsa company which is project participant of the project. 4. Commissioning date: November 2007 (Alushta), March 2008 	<p>IRL9-11 IRL15-16 IRL19 <input checked="" type="checkbox"/></p>

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	monitored and controlled and each well-head will be equipped with a secure monitoring chamber and monitoring ports for gas composition, pressure, and temperature readings. Non-perforated LFG collection piping will be utilized to convey the LFG from the extraction wells to the gas control plant at the landfills.	(Yalta). 5. there are 4 gas collectors at Alushta landfill (K1-K4) and 6 at Yalta site (K1-K6).	
Component 2: Flaring plant Technical Features	The flaring plant consists mainly of the following components: manifold for the incoming pipes, flow control valves, gas pressure boosting pumps, enclosed high-temperature flare stack, gas monitoring and analysis system.	During the on-site inspections following information on technical specification of the flaring plant has been verified: On each landfill site one flare unit is installed. The capacity of the flare at Alushta landfill is 500 m ³ /h, at the Yalta site 800 m ³ /h. Manufacturer of the both installed flaring devices is the Hofstetter company, the types are: <ul style="list-style-type: none"> - Alushta; Hofstetter degassing unit HOFGAS- Ready 500, serial number 10129. - Yalta: Hofstetter degassing unit HOFGAS- Ready 800, serial number: 10128. There is 1 blower at each site. Serial numbers of them are: 11081976 (Alushta blower) 11081964 (Yalta blower)	IRL9-11 IRL15-16 IRL19 IRL26 <input checked="" type="checkbox"/>
Component 3: Electricity generation (for on-site use only) Technical Features	Electricity generation (for on-site use only) consists of: <ul style="list-style-type: none"> - Gas engine generator: used to 	During the on-site assessments it was verified that both landfills are equipped each with the gas engine generator gene-	IRL10 <input checked="" type="checkbox"/>

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	<p>supply the project activity with power</p> <ul style="list-style-type: none"> - Start-up diesel generator: used to start up the whole project system 	<p>rating electricity for on-site use only, and with the start-up small generator which was used only until April 2009</p> <p>At the Alushta site the capacity of the engine generator fed with LFG is 60 kW, manufacturer is Ukrainian company “Juzhnyj meredian”.</p> <p>At the Yalta site a similar engine generator with capacity of 60 kW from the manufacturer “Juzhnyj meredian” is installed.</p> <p>Serial number of the generator in Alushta is 20072249,</p> <p>Serial number of the engine generator installed at Yalta site is 20072248.</p>	
Component 4: Control panel Technical Features	PDD: control panel: houses all of the flare controls, motor starters, alarms and interlocks that ensure safe operation of the flare.	<p>During the on-site visits the flaring plants at the both sites have been visited by the assessment team. It was verified that each Hofstetter flaring plant includes a control panel with all the parameter measured:</p> <ul style="list-style-type: none"> - Concentration of CH₄, CO₂ and O₂, - operating hours, - temperature and pressure, - on/off signal 	<input checked="" type="checkbox"/>
Operation Status during verification			
	Verified Situation		Conclusion and IRL

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Approvals / Licenses	<p>At the on-site verification the contracts with municipality of Yalta and Alushta towns were provided to the assessment team.</p> <p>It was verified that the contract between the project participant Gafsa- Skhid and municipality of Alushta town is valid until 2020, and between Gafsa- Skhid and Yalta’s municipality is valid as long as the project exists at the site.</p> <p><u>Clarification Request No. 22</u> Please provide the actual H&S (Health and Safety) license.</p>	CR
Actual Operation Status	<p>Start date of operation (each site if applicable): Yalta: 30/11/2008, Alushta 07/09/2008</p> <p>Under construction <input type="checkbox"/></p> <p>In operation <input checked="" type="checkbox"/></p> <p>Out of operation <input type="checkbox"/></p> <p>Reason and date (if out of operation): n/a</p>	<input checked="" type="checkbox"/>
	<p>Changes in the project design (other than any revision of the Monitoring Plan): No changes to the project’s design as described in the final PDD occurred after the determination has been deemed final.</p>	<input checked="" type="checkbox"/>
	<p>Status of the project implementation: the project has been fully implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC website.</p> <p>Status of the project operation: the project has been operated as registered. This was verified by the assessment team during the on-site inspections. See also the assessment team’s requests further in this checklist.</p>	<input checked="" type="checkbox"/>
Remarks to Special Operational Status During the Verification Period	<p>none</p> <p>Phased implementation: n/a</p> <p>Special cases: n/a</p>	<input checked="" type="checkbox"/>

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1.3. Organization

Project Participant (s)		
	Verified Situation	Conclusion and IRL
Entity / Responsible person:	<p>PDD: Gafsa-Skhid/ Mr. Anatoliy M. Kurbala (Ukraine) and Carbon Capital Markets Ltd/ Ms. Joy Williams (UK)</p> <p><u>Clarification Request No. 23</u></p> <p>During the on-site verification visit in June 2010 TÜV SÜD team assessed that there is a new project participants- CAF Ukraine- and one of the PPs stated in the registered PDD doesn't seem to be involved in the project any longer. This situation should be clarified; furthermore the MoC should be corrected and submitted to the TÜV SÜD for the upload to JI- SC, if necessary.</p> <p>According to the email from Carbon Capital Markets dated 8th of December 2010 there are no new project participants. Hence, CR 23 is solved.</p> <p>However the responsible representative and therefore the contact details of the focal point to the JISC- Carbon Capital Markets Limited- have changed. Because of this, the updated MoC has been provided by the project participants and was submitted to the JISC on February 9th, 2011.</p>	CR
JI Project management:	QA/QC Manager (CCM), JI Monitoring Manager (Gafsa), Site Managers Yalta/ Alushta (Gafsa), Degassing System Service Team Yalta/ Alushta, Operational safety (Gafsa).	<input checked="" type="checkbox"/>

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1.4. Quality Management System

General aspects of the Quality Management System		
	Verified Situation	Conclusion and IRL
Quality Management Manual:	QM procedures are described in the Monitoring Protocol.	<input checked="" type="checkbox"/>
Responsibilities:	The responsibilities are clearly shown in a flow chart in chapter 2.3. The given information clearly complies with the on-site findings.	<input checked="" type="checkbox"/>
Qualification and Training:	During the on-site verification training certificates have been provided confirming training conducted for responsible personnel. However the training procedures described in the submitted monitoring protocol should be updated.	<input checked="" type="checkbox"/>
Implementation of QM-system	<p>The Monitoring Protocol developed by the project proponents comprises all the relevant parameters monitored, all the equipment installed as well as the QM/QC procedures (internal data review procedure incl. so called weekly monitoring reports, working instructions etc.). During the on-site verification visit TÜV SÜD assessment team confirmed that the respective procedures are followed by the responsible personnel.</p> <p>The weekly monitoring reports which are the basis for internal review include the relevant data for the respective week, furthermore all the special events are listed and the reasons for those events are explained on weekly basis.</p> <p><u>Clarification Request No. 24</u> Please provide the weekly monitoring reports for the entire monitoring period.</p> <p>The weekly reports have been provided by the client. Hence, CR 24 is solved.</p>	CR

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1.5. Remaining Requests from the previous verifications (or forwarded issues of validation report)

No previous verification has been conducted; thus this verification is considered to be the first periodic one.

1.6. Requests (CARs, CRs, FARs) from the first on-site visit

Clarification Requests by audit team			
Issue	<u>Corrective Action Request No. 1</u> During the on-site mission the responsibilities for this particular JI project has been discussed. The responsibilities chart presented in the Monitoring Protocol should be corrected according to the real situation on-site. Furthermore responsibilities for parameter 14 “regulatory requirements for LGF projects” are not clear define, so please specify.		<input checked="" type="checkbox"/>
Response	The responsibilities chart has been corrected and roles and responsibilities have been clarified in the Monitored Protocol (See Section B of the Monitoring Protocol). The responsibilities chart is also presented in the Section 2.3 of the Monitoring Report (version 2).		
Assessment	The responsibility chart has been provided in the MR. Hence, this issue is considered to be solved.		
Issue	<u>Corrective Action Request No. 2</u> H _{electricity} : The ID in the MP is different to that mentioned in the registered PDD. Please correct.		<input checked="" type="checkbox"/>
Response	The correct ID, as per registered PDD is h . The parameter ID has been corrected. However, measurement of this parameter is not in the scope of the applied ERU calculation procedure. Therefore, this parameter is not mentioned in the Monitoring Report		
Assessment	The parameter ID has been corrected. Hence, CAR 2 is considered to be solved.		
Issue	<u>Corrective Action Request No. 3</u> Please revise MP by including a correct location of the respective flow meters (both sites).		<input checked="" type="checkbox"/>

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Clarification Requests by audit team			
Response	<p>Locations of the respective flow meters, with a clear link to gas sampling points, are shown on the manufacturer’s PIDs # K10128 for Yalta equipment and #K10129 for Alushta equipment. These diagrams have been provided to the verifier (via the Project FTP, in the “As-builtPIDs” folder).</p> <p>Additionally, for the parameters used for the first periodic verification, an explanation with ID references has been made in the revised Monitoring Report (Tables 3.1.1 and 3.1.2).</p>		
Assessment	The documents have been provided. Hence, CAR 3 is considered to be solved.		
Issue	<p><u>Corrective Action Request No. 4</u></p> <p>Please correct raw data storage procedure described in the MP on page F-2.</p>		<input checked="" type="checkbox"/>
Response	<p>The procedure has been corrected in the Monitoring Protocol (Section F).</p> <p>The correct procedure, valid for the first monitoring/verification period, is also presented in the Section 3.2 of the Monitoring Report (version 2).</p>		
Assessment	The procedure has been corrected in the latest version of the Monitoring Protocol. Hence, CAR 4 is considered to be solved.		
Issue	<p><u>Corrective Action Request No. 5</u></p> <p>Operation hours of the energy plant. Please define explicitly the source of data for this parameter (both sites) and explain whether some cross-checks possibilities exist. Furthermore please describe the QA/QC aspects.</p>		<input checked="" type="checkbox"/>
Response	<p>The source of the measured and used parameters is referenced in the Monitoring Report (Tables 3.1.1 and 3.1.2). The Section 5 (Table 5.1) of the Monitoring Report also provides explanation of QA/QC aspects specifically for the equipment that produces measurement of the parameters used.</p> <p>The developed operational procedures also include checking of compliance with calibration procedure, accuracy of the data recorded (which is protected from any alteration), and data submitted in the Weekly Data sets. Compliance of the Operation Service Team with the developed procedures lies within the responsibilities of the Site Manager, who reports to the JI Manager. JI Manager is responsible that all data submitted to the QA/QC Manager has been</p>		

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Clarification Requests by audit team			
	checked and cross-checked using the applicable procedures. The calibration log books (paper version), which are a part of cross-check procedures performed by the Operation Service Team, were provided to the verifier during the on-site visit. The verifier also performed a cross-check of accuracy of information provided in a Weekly Monitoring report and its match with the raw data for the same week.		
Assessment	The source of the measured and used parameters is referenced in the Monitoring Report (Tables 3.1.1 and 3.1.2). QA/QC aspects have been described. Hence, CAR 5 is considered to be solved.		
Issue	<u>Corrective Action Request No. 6</u> Please elaborate additional procedures for the monitoring of national landfill regulatory requirements and laws as at the time of on-site verification no procedure or responsible persons have been found.		<input checked="" type="checkbox"/>
Response	The monitoring of national landfill regulatory requirements and laws lies within the responsibilities of the JI Manager (See Section B of the Monitoring Protocol).		
Assessment	CAR 6 is considered to be solved.		
Clarification Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
Issue	<u>Clarification Request No. 1</u> During the on-site inspection the date of commissioning of the both flaring units was not clear since the commissioning protocols were not available. Please provide the commissioning protocols for the both flaring plants installed at the landfill sites. Furthermore please provide the list of technical specifications for the both flaring units.		<input checked="" type="checkbox"/>
Response	Copies of the commissioning protocols for both flaring units were provided to the verifier during the on-site visit (Doc.Ref#7-8). The technical specifications, as well as applicable drawings were provide to the verifier for		

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Clarification Requests by audit team			
	download and review via the Project’s FTP from (Folders: “AsbuiltPIDs”, “Operational-Manual”)		
Assessment	The commissioning protocols and the technical specifications of the flare have been provided. Hence, CR 1 is considered to be solved.		
Issue	<u>Clarification Request No. 2</u> The date of commissioning of the engine generators installed at the each site is not clear since the passports of the generators were not available on-site. Please provide the passports of engine generators.		IRL9 <input checked="" type="checkbox"/>
Response	Copies of the passports of engine generators for both sites were provided to the verifier during the on-site visit (Doc.Ref#1-2).		
Assessment	Copies of the passports of the engine generators have been provided. Hence, the CR 2 is considered to be solved.		
Issue	<u>Clarification Request No. 3</u> Please provide passports for start up diesel generators which are using at the both landfill sites. The information on technical specifications as well as serial numbers of the start up generators should be provided.		IRL10 <input checked="" type="checkbox"/>
Response	Copies of the passports of start-up gasoline generators for both sites were provided to the verifier during the on-site visit (Doc.Ref#3-4).		
Assessment	Copies of the passports have been provided. Hence, CR 3 is considered to be solved.		
Issue	<u>Clarification Request No. 4</u> Since it was communicated with the project participants before and confirmed at the on-site verification that Ms. Joy Williams is no longer a project responsible person in the company CCM Ltd, please specify the responsible Project Manager in CCM.		<input checked="" type="checkbox"/>
Response	The responsible Project Manager(s) are listed in the Section 2.2 of the Monitoring Report (“Party Responsible for Preparation and Submission of the Monitoring Report”).		
Assessment	The responsible persons are clearly described in a chart in chapter 2.3 of the latest version of the Monitoring Report.		

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Clarification Requests by audit team			
Issue	<u>Clarification Request No. 5</u> Please update training procedures described in the monitoring protocol according to the real situation on-site.		<input checked="" type="checkbox"/>
Response	The training procedures have been updated and provided in the section (J-1) of the Monitoring Protocol.		
Assessment	CR 5 is solved.		
Issue	<u>Clarification Request No. 6</u> The parameters $LFG_{flare,y}$ and $LFG_{electricity,y}$ are missing in the MP. Please clarify.		<input checked="" type="checkbox"/>
Response	The Monitoring Protocol has been updated to provide clarification regarding the parameters $LFG_{flare,y}$ and $LFG_{electricity,y}$ (See Section C-3 of the Monitoring Protocol). This clarification was integrated into the explanation of the ERU Calculation Procedure (Section 3.3. of the Monitoring Report, p.9).		
Assessment	CR 6 is solved.		
Issue	<u>Clarification Request No. 7</u> The registered PDD states to use “Tool to determine project emissions from flaring gases containing Methane” in the project’s monitoring. Since only one parameter- $PE_{flare,y}$ – is mentioned in registered PDD, please amend the MP by setting the link between all tool’s parameter and $PE_{flare,y}$.		<input checked="" type="checkbox"/>
Response	The necessary amendments were elaborated. Please refer to the Section G-3 “Inputs and Calculations” of the Monitoring Protocol. For the first monitoring/verification period a proper clarifications were also elaborated in the Section 3.3 of the Monitoring Report. A clear step-by-step calculation procedure with all proper references to the calculated parameters in accordance with the Tool has been applied and is shown in the “Calc Sheet” of every weekly ERU calculation workbook (please also refer to the explanation provided in the Section 4.3 p.12 of the Monitoring Report). Please note that due to application of the “Default Flare Efficiency Approach” the STEPs 3		

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Clarification Requests by audit team			
	and 4 of the Tool are not applicable. Consequently, only STEPs 1, 2, 5, 6, and 7 were considered in the procedure for calculation of the project emissions from flaring (PE_{flare}). The Table 3.3.1 (Monitoring Report, p.9) also provides a list of constants used in the relevant equations (as per the Tool). Those constants are also provided in the “B” spreadsheet of each weekly ERU calculation workbook.		
Assessment	The CR 7 is solved.		
Issue	<u>Clarification Request No. 8</u> During the on-site visit TÜV SÜD assessment team found several inconsistencies between the monitoring system installed on the sites and the tool applied (some of the parameters which should be measured according to the tool are not measured on-site). Therefore please clarify how the tool has been applied to this particular project.		<input checked="" type="checkbox"/>
Response	The list and clarification of the parameters used is provided in the Section 3.1 of the Monitoring Report with the reference to the Tables 3.1.1, 3.1.2, and 3.1.3, which specify all continuously measured parameters used in the calculation procedure, and to the Table 3.3.1, which summarizes only the constants used in the equations of the Tool and applied in the calculation procedure. A clear and comprehensive explanation of the ERU Calculation procedure is provided in the Section 3.3 of the Monitoring Report.		
Assessment	CR 8 is solved.		
Issue	<u>Clarification Request No. 9</u> Please describe the approach of calculation of $f_{N_2, h}$ from $f_{CH_4, h}$. Furthermore please link this parameter with respective one from the registered PDD.		<input checked="" type="checkbox"/>
Response	The volumetric fraction of nitrogen (N_2) was considered as a difference between 1 (100% of the gas) and sum of the volumetric fractions of the continuously measured LFG component gases (CH_4 , CO_2 , O_2). As per registered PDD and the MR, the volumetric fractions W_{CH_4} , W_{CO_2} , W_{O_2} in LFG are to be continuously monitored and measured. The explanation in the MR (Section 3.3, p.9, formula ref.#5) also clarifies that the values of volumetric fractions W_{CH_4} , W_{CO_2} , W_{O_2} in the min-		

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Clarification Requests by audit team			
	<p>ute “m”, measured in %, were converted into fraction to be applied in the ERU Calculation procedure: $fv_{CH_4,m} = W_{CH_4,m}/100\%, \quad fv_{O_2,m} = W_{O_2,m}/100\%, \quad fv_{CO_2,m} = W_{CO_2,m}/100\%$</p> <p>Consequently, the volumetric fraction $fv_{N_2,m}$ in the minute “m” was calculated as: $fv_{N_2,m} = 1-(fv_{CH_4,m}+fv_{O_2,m}+fv_{CO_2,m})$</p>		
Assessment	The approach to calculate $fv_{N_2,h}$ from $fv_{CH_4,h}$ has been described. It fully complies with the flaring tool. Hence, CR 9 is solved.		
Issue	<p><u>Clarification Request No. 10</u></p> <p>MR should be revised by including $T_{ex}=T_{flare}$ according to the registered PDD. Please provide evidence (technical scheme from the technology provider etc.) that $T_{exhaust}$ is measured by the equipment</p>		<input checked="" type="checkbox"/>
Response	<p>The Monitoring Report is using T_{flare} as ID for the measured value of the temperature of the exhaust gas, in C. This is in compliance with the Tool. This measurement T_{flare} is also linked to the flare’s automatic self-adjustment system, which regulates the optimum performance of the plant to sustain actual operational efficiency at the level >99%. As noted in the Monitoring Report (Section 3.1) the measurement of T_{flare} is used together with the Flare Status and Plant Status measurement to identify if at that minute (data point) the flare’s/plant’s operation met all manufacturer operational requirements.</p> <p>The registered PDD (Section D.1.2.1) Ref.5(a) has T_{ex} ID for the temperature measurement of the exhaust gas, which was referenced basically for the case when “Continuous monitoring approach” would be applied. From the operational standpoint, application of the “Continuous monitoring approach” would require installation of additional thermocouple. In that case, to distinguish temperature measurements made by 2 thermocouples, the 1st placed in the top measuring slot of the flare would be named T_{ex} and the 2nd would be named $T_{combustion}$ and will be used for operational purposes.</p> <p>Thus, the ID for the measured value of the temperature of the exhaust gas will be used as:</p>		

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Clarification Requests by audit team			
	T_{flare} in the case of “Default flare efficiency” approach is applied; and T_{ex} in the case of “continuous monitoring” approach is applied.		
Assessment	The answer complies fully with the flaring tool. Hence, CR 10 is solved.		
Issue	MP states this parameter to be calculated from $fv_{CH4,h}$. <u>Clarification Request No. 11</u> Please clarify since $w_{CH4,y} = fv_{CH4,h}$		<input checked="" type="checkbox"/>
Response	Please refer to the response to the Clarification Request # 9. The correct formula that links the value of the measured parameter $W_{CH4,m}$, in %, and calculated parameter $fv_{CH4,m}$ is: $fv_{CH4,m} = W_{CH4,m}/100\%$		
Assessment	The answer complies fully with the flaring tool. Hence, CR 11 is solved.		
Issue	<u>Clarification Request No. 12</u> Registered PDD includes the parameter ET_y Thermal energy used in landfill during project, the monitoring protocol defines this parameter as ET_y Amount of fossil fuel used by on-site diesel generator to meet project requirement. This should be explained as registered monitoring plan demonstrates this parameter to be as energy (TJ) and not only the amount of fossil fuel used.		<input checked="" type="checkbox"/>
Response	The correct reference has been placed in the Monitoring Report (in the Section 3.3, p.11; and in the Annex 1, p.17), which confirms: a) Gasoline was used as fossil fuel for the start-up generator from the beginning of the Project operation and till the end of September 2009. Due to the system upgrade, no fossil fuel has been consumed for the Project needs since October 2009. b) The Incremental quantity of gasoline used in the year “y” (ET_y) was received from the weekly measured values of gasoline used (in Litres), accumulated into monthly/annual values (in Litres), and then the annual values were converted into TJ (TeraJoules) by multiplying on the Gasoline Energy Content, which equals to		

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Clarification Requests by audit team			
	34.66*10 ⁻⁶ TJ/Litre.		
Assessment	The answer complies fully with the methodology. Hence, CR 12 is solved.		
Issue	<u>Clarification Request No. 13</u> Please clarify how CEF _{thermal} will be estimated and monitored.		<input checked="" type="checkbox"/>
Response	Please refer to the explanation provided in the MR (Section 3.3, p.11; and Annex 1, p.17)		
Assessment	CEF _{thermal} has been calculated from the gasoline carbon emission factor given by the IPCC guidelines. Hence, it is derived from default values as stated in the registered PDD.		
Issue	<u>Clarification Request No. 14</u> Please clarify how the measurement of this parameter will be performed at the both sites during the time when meter’s calibration is conducted. Furthermore please provide the passport for those flow meters as well as manufacturer’s specifications.		IRL17 IRL18 <input checked="" type="checkbox"/>
Response	Calibration of the LFG Gas flow-meters was done by an independent certified laboratory in accordance with the Calibration and Maintenance Schedule (Table 5.1, MR). Calibration certificates for both Yalta and Alushta flow-meters (which incorporate certificates for all 3 components: pressure transmitter (PIR61.5), temperature transmitter (TIR61.5), and flow-counter (FIR61.5)) were provided to the verifier during the on-site visit. Operation of the flaring plant is not possible and the plant has to be shut down during calibration of the flow-meter, as the flow-meter has to be removed from the system.		
Assessment	CR 14 is solved.		
Issue	<u>Clarification Request No. 15</u> The serial number found on-site is not consistent with one provided in the Monitoring Protocol (MP). Please clarify and correct the MP/MR if necessary. In general several inconsistencies have been found between the serial numbers mentioned in the MP and real ones. So please cross check the serial numbers and correct the MP/MR accordingly.		<input checked="" type="checkbox"/>

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Clarification Requests by audit team			
Response	The serial numbers have been cross-checked and referenced for the relevant measuring equipment in the Monitoring Report (See Table 3.1.1, 3.1.2, and 5.1).		
Assessment	The serial numbers have been corrected in the latest version of the MR according to the findings of the on-site audit. Hence, CR 15 is considered to be solved.		
Issue	<u>Clarification Request No. 16</u> Please provide technical specification of the gas analysers installed at the both Yalta and Alushta sites.		IRL27 <input checked="" type="checkbox"/>
Response	Copies of the technical specification of the gas analyzers installed at Yalta and Alushta sites were provided to the verifier during the on-site visit (Doc.Ref#13).		
Assessment	The documents have been provided to the verifier. Hence, CR 16 is solved.		
Issue	<u>Clarification Request No. 17</u> Please explain how the continuous measurement of the flaring efficiency has been/is conducted at the both sites. In doing so please indicate how the tool Anne 13 EB 28 has been applied (TM measurements). Furthermore please explain respective QA/QC procedures. Please refer also to CR in section 2.1.		<input checked="" type="checkbox"/>
Response	As described in the registered PDD, Option 2 (“Continuous Monitoring Approach”) would be used where possible; otherwise, Option 1 (“Default Flare Efficiency Approach”) will be used. For the reported Monitoring period “Default Flare Efficiency Approach”, in accordance with the Tool (Annex 13 EB 28) has been applied.		
Assessment	The described approaches comply fully with the flaring tool. Hence, CR 17 is considered to be solved.		
Issue	<u>Clarification Request No. 18</u> Please provide the technical documentation incl. serial numbers for thermocouples installed at the both sites.		<input checked="" type="checkbox"/>
Response	Copies of the technical certificates for the installed thermocouples, including applicable references, were provided to the verifier during the on-site visit (Doc.Ref#14).		

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Clarification Requests by audit team			
Assessment	The documents have been provided. Hence, CR 18 is solved.		
Issue	<p><u>Clarification Request No. 19</u> MP: CO2 emission intensity of the thermal energy- will be specific to the fossil fuel used on-site (<u>diesel</u>)</p> <p>Monitoring plan provided specifies the fossil fuel used on site to be diesel. However during the on-site visit the responsible personnel confirmed that no diesel is used, but gasoline. Please revise the MP. Furthermore please explain exactly the sources of data and the monitoring procedure for this parameter (both sites).</p>		<input checked="" type="checkbox"/>
Response	Please refer to the Response provided to the Clarification Request#12		
Assessment	See CR 12.		
Issue	<p><u>Clarification Request No. 20</u> Please provide an example of raw data for one day (from both sites) in order to demonstrate the measurement frequency and completeness of measured parameters.</p>		<input checked="" type="checkbox"/>
Response	Raw data for the entire monitoring period for both sites have been provided to the verifier (via the Project FTP, “1-RAW DATA” folder)		
Assessment	The raw data have been provided. CR 20 is solved.		
Forward Action Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
Issue	<p><u>Forward Action Request No. 1</u> Please indicate the responsible QM Manager (Kozhevnikov Gafsa) and provide written QM procedures (e.g. Quality Control procedures incl. internal audits). The Monitoring Protocol should be amended accordingly (e.g. in the tables 8-9 of MP QA Manager from CCM is mentioned, however during the on-site discussion Gafsa team confirmed to be responsible,</p>		<input checked="" type="checkbox"/>

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Clarification Requests by audit team			
	etc.)		
Response	Clarification of the roles and responsibilities has been elaborated in the Section-B of the Monitoring Protocol. The Monitoring Report (version 2) has been updated with the most up-to the date chart, which outlines the structure of the parties involved in the Project monitoring and compliance Activities (See Section 2.2 of the MR).		
Assessment	The responsible are clearly shown in the latest version of the Monitoring Report. FAR 1 is solved.		
Issue	<u>Forward Action Request No. 2</u> MR should present all the additional flare operation parameters according to the applied Tool Annex 13EB28.		<input checked="" type="checkbox"/>
Response	Please refer to the Table 3.1.3 of the Monitoring Report (version 2)		
Assessment	The additional flare parameters are described in Table 3.1.3 of the latest version of the Monitoring Report. Hence, FAR 2 is solved.		
Issue	<u>Forward Action Request No. 3</u> The Monitoring Protocol describes the data processing, storage and archiving in detail. However, in order to give a complete overview and demonstrate the data processing in a transparent manner please create a so called data flow chart including all the measurement points, signals, parameters and their processing from the measurements points to the Monitoring Report and calculation workbook.		<input checked="" type="checkbox"/>
Response	Flow chart (Figure 2, Section C-2) has been included into the Monitoring Protocol		
Assessment	The document with the description has been provided. Hence, FAR 3 is solved.		
Issue	<u>Forward Action Request No. 4</u> Please describe the cross-check possibilities (e.g. check of raw data with operation hours of flare, etc.) for respective data in the MP (both sites).		<input checked="" type="checkbox"/>

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Clarification Requests by audit team			
Response	<p>The developed operational procedures also include checking of compliance with calibration procedure, accuracy of the data recorded (which is protected from any alteration), and data submitted in the Weekly Data sets. Compliance of the Operation Service Team with the developed procedures lies within the responsibilities of the Site Manager, who reports to the JI Manager. JI Manager is responsible that all data submitted to the QA/QC Manager has been checked and cross-checked using the applicable procedures.</p> <p>The summary of applied “Data collection and processing procedure is also provided in the Section 3.2 of the Monitoring Report.</p> <p>The calibration log books (paper version), which are a part of cross-check procedures performed by the Operation Service Team, were provided to the verifier during the on-site visit.</p> <p>The verifier also performed a cross-check of accuracy of information provided in a Weekly Monitoring report and its match with the raw data for the same week.</p>		
Assessment	FAR 4 is solved.		
Issue	<p><u>Forward Action Request No. 5</u></p> <p>Documented procedure for calibrations of the gas analysers installed at the both sites described in the MP should be amended by including the zero/span checks.</p>		<input checked="" type="checkbox"/>
Response	The calibration procedure for gas analyzers, which includes the zero/span checks, has been confirmed and explained by the Operation Service Team to the verifier during the on-site visit. The calibration log books (paper version) were provided.		
Assessment	The calibration log books have been provided to the verifier. The procedure includes zero/span checks. Hence, FAR 5 is solved.		
Issue	<p><u>Forward Action Request No. 6</u></p> <p>Please describe the cross-check possibilities for respective data (both sites).</p>		<input checked="" type="checkbox"/>
Response	Please refer to the response to the FAR#4. QA/QC Procedures are also outlined in the Section-I of the MP.		
Assessment	The verifier confirms that the procedures have been outlined in the Monitoring Protocol in which all QA/QC procedures are collected and described. Hence, FAR 6 is solved.		

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Clarification Requests by audit team			
Issue	Forward Action Request No. 7 Please elaborate specific procedures for internal review.		<input checked="" type="checkbox"/>
Response	Please refer to the response to the FAR#4. QA/QC Procedures are also outlined in the Section-I of the MP.		
Assessment	The verifier confirms that the procedures have been outlined in the Monitoring Protocol in which all QA/QC procedures are collected and described. Hence, FAR 7 is solved.		

2. Monitoring Plan Implementation

2.1. Parameters

Methodology applied and Monitoring Plan included in the final PDD					
Methodological approach indicated in the PDD regarding which the determination has been deemed final		JI specific approach <input type="checkbox"/>			
		Approved CDM methodology in its totality <input checked="" type="checkbox"/>			
Revision of the Monitoring Plan		Yes <input type="checkbox"/>			
		No <input checked="" type="checkbox"/>			
Parameters Methodology ACM0001					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
LFG _{total,y} Total amount of landfill gas captured	LFG _{total,y} Amount of landfill gas captured	LFG _{total, h} Volumetric flow rate of residual gas in dry basis at normal conditions at	Table 1a Yalta and Table 1b Alushta	Because all the gas is flared or treated as flared $LFG_{total, y} = LFG_{flared, y}$ (obtained from $FV_{RG, y}$).	<input checked="" type="checkbox"/>

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		inlet to the flare in hour h			
LFG _{flare,y} Amount of landfill gas flared	LFG _{flared,y} Amount of landfill gas flared	See LFG _{total,y} above	See LFG _{total,y} above	See LFG _{total,y} above	<input checked="" type="checkbox"/>
LFG _{electricity,y'} Amount of landfill gas combusted in power plant	n/a	n/a	n/a	n/a	<input checked="" type="checkbox"/>
PE _{flare,y}	PE _{flare,y} Project emissions from flaring of the residual gas stream in year y	PE _{flare,y}	Calculated Parameter not included in tables below	Compliant	<input checked="" type="checkbox"/>
W _{CH4} Methane fraction in the landfill gas	W _{CH4}	W _{CH4}	Tables 3a Yalta and 3b Alushta.	Monitoring system on-site complies with the Monitoring plan described in the registered PDD.	<input checked="" type="checkbox"/>
T Temperature of the landfill	T LFG temperature	T Temperature of the landfill	Table 6a Yalta and 6b Alushta	Monitoring system on-site complies with the Monitoring plan described in the registered PDD.	<input checked="" type="checkbox"/>

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gas		gas			
P Pressure of the landfill gas	P LFG pres- sure	P Pressure of the landfill gas	Table 7a Yalta and 7b Alushta	Monitoring system on-site complies with the Monitoring plan described in the registered PDD.	<input checked="" type="checkbox"/>
EL _{EX,LFG}	n/a	n/a	n/a	n/a	<input checked="" type="checkbox"/>
EL _{IMP} Total amount of electricity imported to meet project requirement	n/a	n/a	n/a	n/a	<input checked="" type="checkbox"/>
CO ₂ emis- sion intensity of the elec- tricity and/or other energy carriers	n/a	n/a	n/a	n/a	<input checked="" type="checkbox"/>
ET _y Thermal energy used in landfill during project	ET _y Thermal energy used in landfill during project	ET _y Amount of fossil fuel used by on- site diesel generator to meet project requirement	Table 10a Yalta and 10b Alushta	Monitoring system on-site complies with the Monitoring plan described in the registered PDD.	<input checked="" type="checkbox"/>
CEF _{thermal,y} CO ₂ emission intensity of	CEF _{thermal} CO ₂ emission intensity of	CEF _{thermal, y} CO ₂ emis- sion	Table 11a Yalta and 11b Alushta	Monitoring system on-site complies with the Monitoring plan described in the	<input checked="" type="checkbox"/>

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the thermal energy	the thermal energy	sion intensity of the thermal energy		registered PDD.	
Regulatory requirements relating to landfill gas projects	Regulatory requirements relating to landfill gas projects	Regulatory requirements for LFG projects	See CR in section 1.3 under “Responsibilities”	Monitoring system on-site complies with the Monitoring plan described in the registered PDD.	<input checked="" type="checkbox"/>
Operation of the energy plant	<i>h</i> Operation of the energy plant	h Operating hours of the energy plant	Table 9a Yalta and 9b Alushta	Monitoring system on-site complies with the Monitoring plan described in the registered PDD.	<input checked="" type="checkbox"/>
Parameters of the “Tool to determine project emissions from flaring gases containing methane”					
Meth/tool	PDD	MR	Included in table	Compliance	Conclusion and IRL
$f_{v,i,h}$	n/a	n/a	n/a	n/a	n/a
$FV_{RG,h}$ Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour <i>h</i>	$FV_{RG,h}$	$FV_{RG,h}$	Tables 1a Yalta and 1b Alushta.	Serves for obtaining LFG _{total, y} .	<input checked="" type="checkbox"/>
$t_{O_2,h}$ Volumetric	n/a	n/a	Tables 2a Yalta and 2b Alushta.	Since the default approach for the flare efficiency is applied in the relevant	<input checked="" type="checkbox"/>

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fraction of O ₂ in the exhaust gas of the flare in the hour h				monitoring period (pls. refer to the flaring tool step 6 and the MP in the registered PDD) this parameter is not applicable.	
f_{VCH4,FG,h} Volumetric fraction of methane in the exhaust gas of the flare in dry basis at normal conditions	W_{O_2ex} W_{CH_4ex} Measure volumetric fraction of O ₂ and CH ₄ in the exhaust gas	f_{VCH4,FG,h}	Tables 2a Yalta and 2b Alushta.	Since the default approach for the flare efficiency is applied in the relevant monitoring period (pls. refer to the flaring tool step 6 and the MP in the registered PDD) this parameter is not applicable.	<input checked="" type="checkbox"/>
n/a	T_{ex}	n/a	Table 4a Yalta and 4b Alushta	See CR in tables 4a and 4b.	CR
T_{flare} Temperature of the exhaust gas of the enclosed flare	T_{flare} Temperature of the exhaust gas of the enclosed flare	T_{flare} Temperature of the exhaust gas of the enclosed flare	Table 5a Yalta and 5b Alushta	Monitoring system on-site complies with the Monitoring plan described in the registered PDD.	<input checked="" type="checkbox"/>
Other flare operation parameters	Other flare operation parameters according to the Annex 13 EB28	Other flare operation parameters	Table 8a Yalta and 8b Alushta	Monitoring system on-site complies with the Monitoring plan described in the registered PDD.	<input checked="" type="checkbox"/>

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2.2. Parameters measured directly with instruments

Table 1a Yalta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	LFG _{total, y} = LFG _{flared, y} (obtained from FV _{RG, y})	LFG _{total, y} = LFG _{flared, y} (obtained from FV _{RG, y})	LFG _{total, y} = LFG _{flared, y} (obtained from FV _{RG, y})	Information given in the MR is consistent with one given in the PDD as well as real situation on-site.	<input checked="" type="checkbox"/>
Parameter ID (if available)	n/a	n/a	n/a	consistent	<input checked="" type="checkbox"/>
Data Unit	m ³	m ³	m ³	Information given in the MR is consistent with one given in the PDD as well as real situation on-site.	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	continuous	continuously	Continuously (average minutes values)	Information given in the MR is consistent with one given in the PDD as well as real situation on-site.	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	Data to be aggregated monthly or yearly	Data to be aggregated monthly or yearly	Data is aggregated weekly	Information given in the MR is consistent with one given in the PDD as well as real situation on-site.	<input checked="" type="checkbox"/>
Calibration requirements	according to the manufacturer's recommendation	n/a	Once every 2 years the last calibrations were conducted on 22.01.08 and	Compliant- the meter was calibrated timely during the entire monitoring period.	<input checked="" type="checkbox"/>

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			22.01.10		
Uncertainty level	Low	Low	PPs information: 1% according to the manufacturer's specifications	The calibration certificates confirmed the uncertainty of 1%.	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	Flow meter	Flow meter	Flow meter (turbine)	Consistent	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	Flow meter with P and T compensation				<input checked="" type="checkbox"/>
Serial Number:	10510655 Please see also CR below				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	Elster- Instromet AG SM-RI-X-K/150/G650				<input checked="" type="checkbox"/>
Specific Location:	pipe after blower				<input checked="" type="checkbox"/>
Measurement Range:	Flow: 50..1000 m3/h; T: -50..100 C; P: 0,5..2,5 bar				<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: n/a				<input checked="" type="checkbox"/>
	Default value used: n/a				<input checked="" type="checkbox"/>
	Justification: n/a				<input checked="" type="checkbox"/>
	QA/QC aspects				Conclusion and IRL
Source of data	Data is collected electronically by the data recording unit PLC at 1 minute intervals.				<input checked="" type="checkbox"/>

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	Procedure: is described in the Monitoring Protocol.	<input checked="" type="checkbox"/>
	Implementation of procedure: the procedure is fully implemented.	<input checked="" type="checkbox"/>
	Responsibility: see comments to the section 1.3. “Responsibilities”	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	Weekly data collection is done by responsible JI manager. Data archiving is performed by JI manager on his PC, too, and then on CDs as back-up. Furthermore a converted excel file comprising all the data collected is sent to the project participants (Gafsa and CMM) on weekly basis.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	The raw data is extracted with help of software ReadWin on the JI manager’s PC from the flash card of control panel on weekly basis, after that the file is converted to the excel table and stored on the JI Manager’s PC and CDs. Furthermore such tables are sent to all the PPs on weekly basis.	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data is not presented in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

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Table 1b Alushta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	$LFG_{total,y} = LFG_{flared,y}$ (obtained from $FV_{RG,y}$)	$LFG_{total,y} = LFG_{flared,y}$ (obtained from $FV_{RG,y}$)	$LFG_{total,y} = LFG_{flared,y}$ (obtained from $FV_{RG,y}$)	Information given in the MR is consistent with one given in the PDD as well as real situation on-site.	<input checked="" type="checkbox"/>
Parameter ID (if available)	n/a	n/a	n/a	consistent	<input checked="" type="checkbox"/>
Data Unit	m ³	m ³	m ³	Information given in the MR is consistent with one given in the PDD as well as real situation on-site	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	continuous	continuously	Continuously (average minutes values)	Information given in the MR is consistent with one given in the PDD as well as real situation on-site	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	Data to be aggregated monthly or yearly	Data to be aggregated monthly or yearly	Data is aggregated weekly	Information given in the MR is consistent with one given in the PDD as well as real situation on-site	<input checked="" type="checkbox"/>
Calibration requirements	according to the manufacturer's recommendation	n/a	Once every 2 years The last calibrations have been conducted on 22.01.08 and 22.01.10	Compliant- the meter was calibrated timely during the entire monitoring period.	<input checked="" type="checkbox"/>

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Uncertainty level	Low	Low	PPs information: 1% according to the manufacturer's specifications	The calibration certificates confirmed the uncertainty of 1%.	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	Flow meter	Flow meter	Flow meter (turbine)	Consistent	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	Flow meter with P and T compensation				<input checked="" type="checkbox"/>
Serial Number:	10510656				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	Elster- Instromet AG SM-RI-X-K/150/G650				<input checked="" type="checkbox"/>
Specific Location:	160 inlet pipe after the blower.				<input checked="" type="checkbox"/>
Measurement Range:	Flow: 50..1000 m ³ /h; T: -50..100°C; P: 0,5..2,5 bar				<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: n/a				<input checked="" type="checkbox"/>
	Default value used: n/a				<input checked="" type="checkbox"/>
	Justification: n/a				<input checked="" type="checkbox"/>
	QA/QC aspects				Conclusion and IRL
Source of data	Data is collected electronically by the PLC unit at 1 minute intervals.				<input checked="" type="checkbox"/>
	Procedure: is described in the Monitoring Protocol.				<input checked="" type="checkbox"/>
	Implementation of procedure: the procedure is fully implemented.				<input checked="" type="checkbox"/>

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	Responsibility: see comments to the section 1.3. “Responsibilities”	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	Weekly data collection is done by responsible JI manager. Data archiving is performed by JI manager on his PC, too, and then on CDs as back-up. Furthermore a converted excel file comprising all the data collected is sent to the project participants (Gafsa and CMM) on weekly basis. See also comments to the section 1.3. “Responsibilities”	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	The raw data is extracted with help of software ReadWin on the JI manager’s PC from the flash card of control panel on weekly basis, after that the file is converted to the excel table and stored on the JI Manager’s PC and CDs. Furthermore such tables are sent to all the PPs on weekly basis.	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data is not presented in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

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Table 2a Yalta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	Measure volumetric fraction of O2 and CH4 in the exhaust gas	$fV_{CH4,FG,h}$ Volumetric fraction of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour h $t_{O2,h}$ Volumetric fraction of O2 in the exhaust gas of the flare in the hour h	$fV_{CH4,FG,h}$ $t_{O2,h}$	Since the default approach for the flare efficiency is applied in the relevant monitoring period (pls. refer to the flaring tool step 6 and the MP in the registered PDD) these parameters are not applicable.	n/a
Parameter ID (if available)	W_{O2ex} W_{CH4ex}	$fV_{CH4,FG,h}$ $t_{O2,h}$	$fV_{CH4,FG,h}$ $t_{O2,h}$	n/a	n/a
Data Unit	%	mg/m ³ -	%	n/a	n/a
Monitoring frequency (reading)	Measured by continuous gas analyser	Preferably measured by continuous gas analyser	Continuously	n/a	n/a
Monitoring frequency (re-)	Continuously. Values to be	Continuously.	Average minute	n/a	n/a

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cording)	averaged hourly or at a shorter time interval	Values to be averaged hourly or at a shorter time interval	values		
Calibration requirements	n.a.	n.a.	Weekly according to the technology provider's recommendations.		n/a
Uncertainty level	Low	Low			n/a
Measurement Principle (if applicable)	Flue gas analyser	n.a.	See CR above		n/a
	Technical aspects				Conclusion and IRL
Instrument Type:	Flue Gas Analyser				n/a
Serial Number:	4006.41-1				n/a
Manufacturer Model Nr.:	Rosemount BINOS 100 NUK				n/a
Specific Location:	Flare outlet measurement				n/a
Measurement Range:	0..100 Vol%				n/a
Gaps in operating time of instrument :	Period: n/a				n/a
	Default value used: n/a				n/a
	Justification: since depending on the exhaust gas temperature the flaring efficiency default values of 90, 50 and 0 % were used acc. to the flaring tool and MP of the registered PDD.				n/a
	QA/QC aspects				Conclusion and IRL

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Source of data	Data is collected electronically by the data recording unit ‘PLC’ at 1 minute intervals.	n/a
	Procedure: is described in the Monitoring Protocol.	n/a
	Implementation of procedure: n/a	n/a
	Responsibility: n/a	n/a
Archiving of raw data and protection measures	Weekly data collection is done by responsible JI manager. Data archiving is performed by JI manager on his PC, too, and then on CDs as back-up. Furthermore a converted excel file comprising all the data collected is sent to the project participants (Gafsa and CMM) on weekly basis.	n/a
Data transfer and protection of input data for calculations	The raw data is extracted with help of software ReadWin on the JI manager’s PC from the flash card of control panel on weekly basis, after that the file is converted to the excel table and stored on the JI Manager’s PC and CDs. Furthermore such tables are sent to all the PPs on weekly basis.	n/a
	Quality of evidence	Conclusion and IRL
Completeness of data	n/a	n/a
Data verification	Consistency of raw data with calculation tool: n/a	n/a
	Consistency of calculation tool with monitoring report: n/a	n/a
Crosscheck (if available)	n/a	n/a

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Table 2b Alushta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	Measure volumetric fraction of O ₂ and CH ₄ in the exhaust gas	$f_{V_{CH_4,FG,h}}$ Volumetric fraction of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour h $t_{O_2,h}$ Volumetric fraction of O ₂ in the exhaust gas of the flare in the hour h	$f_{V_{CH_4,FG,h}}$ $t_{O_2,h}$	Since the default approach for the flare efficiency is applied in the relevant monitoring period (pls. refer to the flaring tool step 6 and the MP in the registered PDD) these parameters are not applicable.	n/a
Parameter ID (if available)	W_{O_2ex} W_{CH_4ex}	$f_{V_{CH_4,FG,h}}$ $t_{O_2,h}$	$f_{V_{CH_4,FG,h}}$ $t_{O_2,h}$	n/a	n/a
Data Unit	%	mg/m ³ -	%	n/a	n/a
Monitoring frequency (reading)	Measured by continuous gas analyser	Preferably measured by continuous gas analyser	Continuously	n/a	n/a
Monitoring frequency (recording)	Continuously. Values to be averaged hourly or at a	Continuously. Values to be averaged hourly or	Average minute values	n/a	n/a

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	shorter time interval	at a shorter time interval			
Calibration requirements	n.a.	n.a.	Weekly according to the technology provider's recommendations.		n/a
Uncertainty level	Low	Low			n/a
Measurement Principle (if applicable)	Flue gas analyser	n.a.	n/a		n/a
	Technical aspects				Conclusion and IRL
Instrument Type:	Flue Gas Analyser				n/a
Serial Number:	4006.63				n/a
Manufacturer Model Nr.:	Rosemount BINOS 100 NUK				n/a
Specific Location:	Flare outlet measurement Insert				n/a
Measurement Range:	0..100 Vol%				n/a
Gaps in operating time of instrument :	Period: n/a				n/a
	Default value used: n/a				n/a
	Justification: since depending on the exhaust gas temperature the flaring efficiency default values of 90, 50 and 0 % were used acc. to the flaring tool and MP of the registered PDD.				n/a
	QA/QC aspects				Conclusion and IRL
Source of data	Data is collected electronically by the data recording unit 'PLC' at 1 minute intervals.				n/a

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	Procedure: is described in the Monitoring Protocol.	n/a
	Implementation of procedure: n/a	n/a
	Responsibility: n/a	n/a
Archiving of raw data and protection measures	Weekly data collection is done by responsible JI manager. Data archiving is performed by JI manager on his PC, too, and then on CDs as back-up. Furthermore a converted excel file comprising all the data collected is sent to the project participants (Gafsa and CMM) on weekly basis.	n/a
Data transfer and protection of input data for calculations	The raw data is extracted with help of software ReadWin on the JI manager’s PC from the flash card of control panel on weekly basis, after that the file is converted to the excel table and stored on the JI Manager’s PC and CDs. Furthermore such tables are sent to all the PPs on weekly basis.	n/a
	Quality of evidence	Conclusion and IRL
Completeness of data	n/a	n/a
Data verification	Consistency of raw data with calculation tool: n/a	n/a
	Consistency of calculation tool with monitoring report: n/a	n/a
Crosscheck (if available)	n/a	n/a

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Table 3a Yalta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	W _{CH4}	W _{CH4}	W _{CH4}	Information given in the MR is consistent with one given in the PDD as well as real situation on-site.	<input checked="" type="checkbox"/>
Parameter ID (if available)	n/a	n/a	n/a	n/a	n/a
Data Unit	%	%	%	consistent	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	Measured by continuous gas quality analyser	Measured by continuous gas quality analyser	Measured by continuous gas quality analyser	consistent	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	continuous	continuous	continuous	consistent	<input checked="" type="checkbox"/>
Calibration requirements	calibrated according to the manufacturer's recommendation	calibrated according to the manufacturer's recommendation	Weekly calibrations as recommended by the manufacturer	consistent	<input checked="" type="checkbox"/>
Uncertainty level	Low	Low	CH ₄ : 2% CO ₂ : 2% O ₂ : 10%	consistent	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	Flue gas analyser	n.a.	NDIR	consistent	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion

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		and IRL
Instrument Type:	Gas Analyser	<input checked="" type="checkbox"/>
Serial Number:	4006.3212	<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	NUK NGA 5- CH4-CO2-O2	<input checked="" type="checkbox"/>
Specific Location:	System inlet measurement	<input checked="" type="checkbox"/>
Measurement Range:	CH4 and CO2: 0..100% O2: 0..25%	<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: according to the gathered data	<input checked="" type="checkbox"/>
	Default value used: n/a	<input checked="" type="checkbox"/>
	Justification: n/a	<input checked="" type="checkbox"/>
	QA/QC aspects	Conclusion and IRL
Source of data	Data is collected electronically by the data recording unit ‘PLC’ at 1 minute intervals. Type: analog data 4-20mA	<input checked="" type="checkbox"/>
	Procedure: is described in the Monitoring Protocol.	<input checked="" type="checkbox"/>
	Implementation of procedure: implemented	<input checked="" type="checkbox"/>
	Responsibility: see MR	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	Weekly data collection is done by responsible JI manager. Data archiving is performed by JI manager on his PC, too, and then on CDs as back-up. Furthermore a converted excel file comprising all the data collected is sent to the project participants (Gafsa and CMM) on weekly basis.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	The raw data is extracted with help of software ReadWin on the JI manager’s PC from the flash card of control panel on weekly basis, after that the file is converted to the ex-	<input checked="" type="checkbox"/>

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	cel table and stored on the JI Manager’s PC and CDs. Furthermore such tables are sent to all the PPs on weekly basis.	
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data is not presented in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

Table 3b Alushta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	W_{CH_4}	W_{CH_4}	W_{CH_4}	Information given in the MR is consistent with one given in the PDD as well as real situation on-site.	<input checked="" type="checkbox"/>
Parameter ID (if available)	n/a	n/a	n/a	n/a	n/a
Data Unit	%	%	%	consistent	<input checked="" type="checkbox"/>

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Monitoring frequency (reading)	Measured by continuous gas quality analyser	measured by continuous gas quality analyser	continuously	n/a	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	n.a.	n.a.	Average minute values	n/a	<input checked="" type="checkbox"/>
Calibration requirements	calibrated according to the manufacturer.s recommendation	calibrated according to the manufacturer.s recommendation	Weekly	n/a	<input checked="" type="checkbox"/>
Uncertainty level	Low	Low	CH ₄ : 2% CO ₂ : 2% O ₂ : 10%	n/a	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	Flue gas analyser	n.a.	NDIR	n/a	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	Gas Analyser				<input checked="" type="checkbox"/>
Serial Number:	4006.32				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	NUK NGA 5- CH4-CO2-O2				<input checked="" type="checkbox"/>
Specific Location:	System inlet measurement				<input checked="" type="checkbox"/>
Measurement Range:	CH4 and CO2: 0..100% O2: 0..25%				<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: n/a				<input checked="" type="checkbox"/>
	Default value used: n/a				<input checked="" type="checkbox"/>

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	Justification: n/a	<input checked="" type="checkbox"/>
	QA/QC aspects	Conclusion and IRL
Source of data	Data is collected electronically by the data recording unit ‘PLC’ at 1 minute intervals. Type: analog data 4-20mA	<input checked="" type="checkbox"/>
	Procedure: is described in the Monitoring Protocol.	<input checked="" type="checkbox"/>
	Implementation of procedure:	<input checked="" type="checkbox"/>
	Responsibility:	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	Weekly data collection is done by responsible JI manager. Data archiving is performed by JI manager on his PC, too, and then on CDs as back-up. Furthermore a converted excel file comprising all the data collected is sent to the project participants (Gafsa and CMM) on weekly basis.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	The raw data is extracted with help of software ReadWin on the JI manager’s PC from the flash card of control panel on weekly basis, after that the file is converted to the excel table and stored on the JI Manager’s PC and CDs. Furthermore such tables are sent to all the PPs on weekly basis.	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>

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	Consistency of calculation tool with monitoring report: n/a as the data is not presented in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

Table 4a Yalta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	Measure the temperature of flame in the flare	Not described	Not described	<p>Clarification Request No. 25 Please describe why this parameter has been chosen and show its significance.</p> <p>The client has clearly defined and described the parameter in accordance with the JI requirements. Hence, CR 25 is solved.</p>	CR
Parameter ID (if available)	Tex	n/a	n/a	n/a	n/a
Data Unit	K	°C	See CR	See CR above	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	Continuous	Continuously	See CR	See CR above	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	n.a.	n.a.	See CR	See CR	<input checked="" type="checkbox"/>
Calibration requirements	n.a.	Thermocouples should be replaced or cali-	See CR	See CR	<input checked="" type="checkbox"/>

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		brated every year.			
Uncertainty level	Low	n.a.	See CR	See CR	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	Thermocouple	Thermocouple	See CR	See CR	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	Thermocouple				<input checked="" type="checkbox"/>
Serial Number:	See CR above.				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	See CR above				<input checked="" type="checkbox"/>
Specific Location:	Flare measurement Insert				<input checked="" type="checkbox"/>
Measurement Range:	See CR above				<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: See CR above				<input checked="" type="checkbox"/>
	Default value used: See CR above				<input checked="" type="checkbox"/>
	Justification: See CR above				<input checked="" type="checkbox"/>
	QA/QC aspects				Conclusion and IRL
Source of data	Type: See CR above in this section				<input checked="" type="checkbox"/>
	See CR above in this section				<input checked="" type="checkbox"/>
	Implementation of procedure: See CR above in this section				<input checked="" type="checkbox"/>
	Responsibility: See CR above in this section				<input checked="" type="checkbox"/>
Archiving of raw data and	See CR above in this section				<input checked="" type="checkbox"/>

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protection measures		
Data transfer and protection of input data for calculations	See CR above in this section	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The data are complete.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: See CR above in this section	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: See CR above in this section	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	n/a

Table 4b Alushta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	Measure the temperature of flame in the flare			See table 4 Yalta	<input checked="" type="checkbox"/>
Parameter ID (if available)	Tex			See table 4 Yalta	<input checked="" type="checkbox"/>
Data Unit	K	°C	See CR in table 4 Yalta		<input checked="" type="checkbox"/>
Monitoring frequency (reading)	Continuous	Continuously	See CR in table 4 Yalta		<input checked="" type="checkbox"/>

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Monitoring frequency (recording)	n.a.	n.a.	See CR in table 4 Yalta		<input checked="" type="checkbox"/>
Calibration requirements	n.a.	Thermocouples should be replaced or calibrated every year.	See CR		<input checked="" type="checkbox"/>
Uncertainty level	Low	n.a.	See CR		<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	Thermocouple	Thermocouple	Thermocouple		<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	Thermocouple				<input checked="" type="checkbox"/>
Serial Number:	See CR above in this section				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	See CR above in this section				<input checked="" type="checkbox"/>
Specific Location:	Flare measurement Insert				<input checked="" type="checkbox"/>
Measurement Range:	See CR				<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: See CR				<input checked="" type="checkbox"/>
	Default value used: See CR				<input checked="" type="checkbox"/>
	Justification: See CR				<input checked="" type="checkbox"/>
	QA/QC aspects				Conclusion and IRL
Source of data	See CR				<input checked="" type="checkbox"/>
	See CR				<input checked="" type="checkbox"/>

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	Implementation of procedure: See CR	<input checked="" type="checkbox"/>
	Responsibility: See CR	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	See CR	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See CR	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The data are complete.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: See CR	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: See CR	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

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Table 5a Yalta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	T _{flare}	T _{flare}	T _{flare}	Consistent	<input checked="" type="checkbox"/>
Parameter ID (if available)	n/a	n/a	n/a	n/a	<input checked="" type="checkbox"/>
Data Unit	-	°C	°C	Consistent	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	Continuous	Continuously	Continuously	Consistent	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	Continuous	Continuously	Continuously	Consistent	<input checked="" type="checkbox"/>
Calibration requirements	Not described	Thermocouples should be replaced or calibrated every year.	Thermocouples should be replaced or calibrated every year.	Compliant with the tool.	<input checked="" type="checkbox"/>
Uncertainty level	Low	n.a.	1.5%	Consistent	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	Temperature sensor	Thermocouple	Thermocouple	Consistent	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	Thermocouple				<input checked="" type="checkbox"/>
Serial Number:	K-10128				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	TIRCAH 81.24				<input checked="" type="checkbox"/>
Specific Location:	Flare measurement Insert				<input checked="" type="checkbox"/>

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Measurement Range:	See CR above	<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: see data	<input checked="" type="checkbox"/>
	Default value used: n/a	<input checked="" type="checkbox"/>
	Justification: n/a	<input checked="" type="checkbox"/>
	QA/QC aspects	Conclusion and IRL
Source of data	Type: electronic data	<input checked="" type="checkbox"/>
	Implementation of procedure: implemented	<input checked="" type="checkbox"/>
	Responsibility: see MR	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	Weekly data collection is done by responsible JI manager. Data archiving is performed by JI manager on his PC, too, and then on CDs as back-up. Furthermore a converted excel file comprising all the data collected is sent to the project participants (Gafsa and CMM) on weekly basis.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	The raw data is extracted with help of software ReadWin on the JI manager's PC from the flash card of control panel on weekly basis, after that the file is converted to the excel table and stored on the JI Manager's PC and CDs. Furthermore such tables are sent to all the PPs on weekly basis.	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>

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Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	n/a

Table 5b Alushta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	T _{flare}	T _{flare}	T _{flare}	Consistent	<input checked="" type="checkbox"/>
Parameter ID (if available)	n/a	n/a	n/a	n/a	<input checked="" type="checkbox"/>
Data Unit	-	°C	°C	Consistent	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	Continuous	Continuously	Continuously	Consistent	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	Continuous	Continuously	Continuously	Consistent	<input checked="" type="checkbox"/>
Calibration requirements	Not described	Thermocouples should be replaced or calibrated every year.	Thermocouples should be replaced or calibrated every year.	Compliant with the tool	<input checked="" type="checkbox"/>
Uncertainty level	Low	n.a.	1.5%	Consistent	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	Temperature sensor	Thermocouple	Thermocouple	Consistent	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL

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Instrument Type:	Thermocouple	<input checked="" type="checkbox"/>
Serial Number:	K-10129	<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	TIRCAH 81.24	<input checked="" type="checkbox"/>
Specific Location:	Flare measurement Insert	<input checked="" type="checkbox"/>
Measurement Range:	See CR in table 6 Yalta site above.	<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: see data	<input checked="" type="checkbox"/>
	Default value used: n/a	<input checked="" type="checkbox"/>
	Justification: n/a	<input checked="" type="checkbox"/>
	QA/QC aspects	Conclusion and IRL
Source of data	Electronic data	<input checked="" type="checkbox"/>
	Implementation of procedure: implemented	<input checked="" type="checkbox"/>
	Responsibility: see MR	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	Weekly data collection is done by responsible JI manager. Data archiving is performed by JI manager on his PC, too, and then on CDs as back-up. Furthermore a converted excel file comprising all the data collected is sent to the project participants (Gafsa and CMM) on weekly basis.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	The raw data is extracted with help of software ReadWin on the JI manager's PC from the flash card of control panel on weekly basis, after that the file is converted to the excel table and stored on the JI Manager's PC and CDs. Furthermore such tables are sent to all the PPs on weekly basis.	<input checked="" type="checkbox"/>

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	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	n/a

Table 6a Yalta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	T	T	T	T and P are measured within the Landfill gas flow meter and are used for normalization of the LFG flow	<input checked="" type="checkbox"/>
Parameter ID (if available)	n/a	n/a	n/a	n/a	n/a
Data Unit	°C	°C	°C	consistent	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	Continuous	Continuously / peri-	Continuously / peri-	consistent	<input checked="" type="checkbox"/>

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		odically	odically		
Monitoring frequency (recording)	n.a.	n.a.	1 min	consistent	<input checked="" type="checkbox"/>
Calibration requirements	according to the manufacturer's recommendation	n.a.	See table 1 Yalta site	See table 1 Yalta site	<input checked="" type="checkbox"/>
Uncertainty level	Low	Low	See table 1 Yalta site	See table 1 Yalta site	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	n.a.	n.a.	Thermometer	consistent	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	Thermometer				<input checked="" type="checkbox"/>
Serial Number:	See flow meter table 1 Yalta site				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	See flow meter table 1 Yalta site				<input checked="" type="checkbox"/>
Specific Location:	T and P is measured within the Landfill gas flow meter and is used for normalization of the LFG flow				<input checked="" type="checkbox"/>
Measurement Range:	n/a				<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: n/a				<input checked="" type="checkbox"/>
	Default value used: n/a				<input checked="" type="checkbox"/>
	Justification: n/a				<input checked="" type="checkbox"/>
	QA/QC aspects				Conclusion and IRL
Source of data	See table 1 Yalta site Type:				<input checked="" type="checkbox"/>
	See table 1 Yalta site				<input checked="" type="checkbox"/>

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	See table 1 Yalta site Implementation of procedure:	<input checked="" type="checkbox"/>
	See table 1 Yalta site Responsibility:	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	See table 1 Yalta site	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See table 1 Yalta site	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	See table 1 Yalta site	<input checked="" type="checkbox"/>
Data verification	See table 1 Yalta site	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	n/a

Table 6b Alushta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	T	T	T	T and P are measured within the Landfill gas flow	<input checked="" type="checkbox"/>

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				meter and are used for normalization of the LFG flow	
Parameter ID (if available)	n/a	n/a	n/a	n/a	n/a
Data Unit	°C	°C	°C	consistent	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	Continuous	Continuously / periodically	See table 1 Alushta site	See table 1 Alushta site	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	n.a.	n.a.	n.a.	n.a.	<input checked="" type="checkbox"/>
Calibration requirements	according to the manufacturer's recommendation	n.a.	See table 1 Alushta site	See table 1 Alushta site	<input checked="" type="checkbox"/>
Uncertainty level	Low	Low	See table 1 Alushta site	See table 1 Alushta site	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	n.a.	n.a.	Thermometer	consistent	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	Thermometer (see Table 1 Alushta site)				<input checked="" type="checkbox"/>
Serial Number:	See flow meter table 1 Alushta site				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	See flow meter table 1 Alushta site				<input checked="" type="checkbox"/>
Specific Location:	T and P is measured within the Landfill gas flow meter and is used for normalization of the LFG flow				<input checked="" type="checkbox"/>
Measurement Range:	See table 1 Alushta site				<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: n/a				<input checked="" type="checkbox"/>
	Default value used: n/a				<input checked="" type="checkbox"/>

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	Justification: n/a	<input checked="" type="checkbox"/>
	QA/QC aspects	Conclusion and IRL
Source of data	See table 1 Alushta site	<input checked="" type="checkbox"/>
	See table 1 Alushta site	<input checked="" type="checkbox"/>
	Implementation of procedure: See table 1 Alushta site	<input checked="" type="checkbox"/>
	Responsibility: See table 1 Alushta site	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	See table 1 Alushta site	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See table 1 Alushta site	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	n/a

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Table 7a Yalta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	p	p	p	T and P are measured within the Landfill gas flow meter and are used for normalization of the LFG flow	<input checked="" type="checkbox"/>
Parameter ID (if available)	n/a	n/a	n/a	n/a	n/a
Data Unit	Pa	Pa	Pa	consistent	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	Continuous	Continuously / periodically	See table 1 Yalta site	See table 1 Yalta site	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	n.a.	n.a.	See table 1 Yalta site	See table 1 Yalta site	<input checked="" type="checkbox"/>
Calibration requirements	n.a.	n.a.	See table 1 Yalta site	See table 1 Yalta site	<input checked="" type="checkbox"/>
Uncertainty level	Low	Low	See table 1 Yalta site	See table 1 Yalta site	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	Pressure gauge	n.a.	Pressure transmitter in the flow meter installed	consistent	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion

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		and IRL
Instrument Type:	Pressure Transmitter	<input checked="" type="checkbox"/>
Serial Number:	See table 1 Yalta site	<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	See table 1 Yalta site	<input checked="" type="checkbox"/>
Specific Location:	T and P is measured within the Landfill gas flow meter and is used for normalization of the LFG flow	<input checked="" type="checkbox"/>
Measurement Range:	See table 1 Yalta site	<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: see data	<input checked="" type="checkbox"/>
	Default value used: n/a	<input checked="" type="checkbox"/>
	Justification: n/a	<input checked="" type="checkbox"/>
	QA/QC aspects	Conclusion and IRL
Source of data	Type: See table 1 Yalta site	<input checked="" type="checkbox"/>
	See table 1 Yalta site Since the flow is recorded at NTP, the pressure is not used in calculations, but is re-recorded to be complete	<input checked="" type="checkbox"/>
	Implementation of procedures: See table 1 Yalta site	<input checked="" type="checkbox"/>
	Responsibility: See table 1 Yalta site	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	See table 1 Yalta site	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See table 1 Yalta site	<input checked="" type="checkbox"/>

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	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	n/a

Table 7b Alushta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	p	p	p	T and P are measured within the Landfill gas flow meter and are used for normalization of the LFG flow	<input checked="" type="checkbox"/>
Parameter ID (if available)	n/a	n/a	n/a	n/a	n/a
Data Unit	Pa	Pa	Pa	consistent	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	Continuous	Continuously / peri-	See table 1 Alushta	See table 1 Alushta	<input checked="" type="checkbox"/>

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		odically	site	site	
Monitoring frequency (recording)	n.a.	n.a.	See table 1 Alushta site	See table 1 Alushta site	<input checked="" type="checkbox"/>
Calibration requirements	n.a.	n.a.	See table 1 Alushta site	See table 1 Alushta site	<input checked="" type="checkbox"/>
Uncertainty level	Low	Low	See table 1 Alushta site	See table 1 Alushta site	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	Pressure gauge	n.a.	Pressure transmitter in the flow meter installed		<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	Pressure Transmitter				<input checked="" type="checkbox"/>
Serial Number:	See table 1 Alushta site				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	See table 1 Alushta site				<input checked="" type="checkbox"/>
Specific Location:	T and P is measured within the Landfill gas flow meter and is used for normalization of the LFG flow				<input checked="" type="checkbox"/>
Measurement Range:	See table 1 Alushta site				<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: n/a				<input checked="" type="checkbox"/>
	Default value used: n/a				<input checked="" type="checkbox"/>
	Justification: n/a				<input checked="" type="checkbox"/>
	QA/QC aspects				Conclusion and IRL
Source of data	Type: See table 1 Alushta site				<input checked="" type="checkbox"/>

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	See table 1 Alushta site Since the normalized flow is recorded at NTP, the pressure is not used in calculations, but is recorded to be complete	<input checked="" type="checkbox"/>
	Implementation of procedures: See table 1 Alushta site	<input checked="" type="checkbox"/>
	Responsibility: See table 1 Alushta site	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	See table 1 Alushta site	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See table 1 Alushta site	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	n/a

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Table 8a Yalta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	Other flare operation parameters according to the Annex 13 EB28	Other flare operation parameters	Status of the flare operation ON/OFF	consistent	<input checked="" type="checkbox"/>
Parameter ID (if available)	n.a.	n.a.	n.a.	n.a.	<input checked="" type="checkbox"/>
Data Unit	n.a.	n.a.	h	Correct	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	n.a.	n.a.	Continuous; but documented weekly	Implemented as described in the MR	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	n.a.	n.a.	Continuous; but documented weekly	Implemented as described in the MR	<input checked="" type="checkbox"/>
Calibration requirements	n.a.	n.a.	n.a.	n.a.	<input checked="" type="checkbox"/>
Uncertainty level	n.a.	n.a.	n.a.	n.a.	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	n.a.	n.a.	Flare counter	Implemented as described in the MR	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	Flare counter is part of the control panel on the flaring unit				<input checked="" type="checkbox"/>
Serial Number:	-				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	-				<input checked="" type="checkbox"/>
Specific Location:	Control panel on the flaring unit				<input checked="" type="checkbox"/>

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Measurement Range:	-	<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: n/a	<input checked="" type="checkbox"/>
	Default value used: n/a	<input checked="" type="checkbox"/>
	Justification: n/a	<input checked="" type="checkbox"/>
	QA/QC aspects	Conclusion and IRL
Source of data	Type: on/off	<input checked="" type="checkbox"/>
	Procedure is described in the monitoring protocol	<input checked="" type="checkbox"/>
	Implementation of procedures: operator makes readings of OH every 2 hours and notes them into the log book- only for internal control; the minutes values are reported on the control panel and can be extracted with all the other values.	<input checked="" type="checkbox"/>
	Responsibility: are described in the MP. Responsible person- operator.	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	See above.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See above.	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>

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Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	n/a

Table 8b Alushta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	Other flare operation parameters according to the Annex 13 EB28	Other flare operation parameters	Status of the flare operation ON/OFF	consistent	<input checked="" type="checkbox"/>
Parameter ID (if available)	n.a.	n.a.	n.a.	n.a.	<input checked="" type="checkbox"/>
Data Unit	n.a.	n.a.	h	Correct	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	n.a.	n.a.	Continuous; but documented weekly	Implemented as described in the MR	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	n.a.	n.a.	Continuous; but documented weekly	Implemented as described in the MR	<input checked="" type="checkbox"/>
Calibration requirements	n.a.	n.a.	-	n.a.	<input checked="" type="checkbox"/>
Uncertainty level	n.a.	n.a.	-	n.a.	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	n.a.	n.a.	Flare counter	Implemented as described in the MR	<input checked="" type="checkbox"/>

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	Technical aspects	Conclusion and IRL
Instrument Type:	Flare counter is part of the control panel on the flaring unit	<input checked="" type="checkbox"/>
Serial Number:	-	<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	-	<input checked="" type="checkbox"/>
Specific Location:	Control panel on the flaring unit	<input checked="" type="checkbox"/>
Measurement Range:	-	<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: n/a	<input checked="" type="checkbox"/>
	Default value used: n/a	<input checked="" type="checkbox"/>
	Justification: n/a	<input checked="" type="checkbox"/>
	QA/QC aspects	Conclusion and IRL
Source of data	Type: on/off	<input checked="" type="checkbox"/>
	Procedure is described in the monitoring protocol	<input checked="" type="checkbox"/>
	Implementation of procedures: operator makes readings of OH every 2 hours and notes them into the log book- only for internal control; the minutes values are reported on the control panel and can be extracted with all the other values.	<input checked="" type="checkbox"/>
	Responsibility: are described in the MP. Responsible person- operator.	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	See above.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See above.	<input checked="" type="checkbox"/>

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	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

Table 9a Yalta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	h Operation of the energy plant	Operation of the energy plant	h Operation of the energy plant	Consistent	<input checked="" type="checkbox"/>
Parameter ID (if available)	h	n.a.	H _{electricity}	Parameter measured	<input checked="" type="checkbox"/>
Data Unit	h	n.a.	h	Correct	<input checked="" type="checkbox"/>
Monitoring frequency (reading)	n.a.	n.a.	Continuous; but documented weekly	Implemented as described in the MR	<input checked="" type="checkbox"/>
Monitoring frequency (re-	n.a.	n.a.	Continuous; but	Implemented as described in the	<input checked="" type="checkbox"/>

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cording)			documented weekly	MR	
Calibration requirements	n.a.	n.a.	-	n/a	<input checked="" type="checkbox"/>
Uncertainty level	n.a.	n.a.	-	n/a	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	n.a.	n.a.	Flare counter	Flare counter	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	LFG piston generator counter				<input checked="" type="checkbox"/>
Serial Number:	20072248				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	UMG-60				<input checked="" type="checkbox"/>
Specific Location:	Control panel on electricity generator installed				<input checked="" type="checkbox"/>
Measurement Range:	-				<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: n/a				<input checked="" type="checkbox"/>
	Default value used: n/a				<input checked="" type="checkbox"/>
	Insert Justification: n/a				<input checked="" type="checkbox"/>
	QA/QC aspects				Conclusion and IRL
Source of data	Type: See CAR above.				<input checked="" type="checkbox"/>
	See CAR above.				<input checked="" type="checkbox"/>
	Implementation of procedures: See CAR above.				<input checked="" type="checkbox"/>
	Responsibility: See CAR above.				<input checked="" type="checkbox"/>

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Archiving of raw data and protection measures	See CAR above.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See CAR above.	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

Table 9b Alushta site

Parameter and instrumentation Information					
	PDD	Meth/Tool	MR	Verification Findings	Conclusion and IRL
Parameter title	h Operation of the energy plant	Operation of the energy plant	h Operation of the energy plant	See CAR2.	<input checked="" type="checkbox"/>
Parameter ID (if available)	h	n.a.	H _{electricity}	See above.	<input checked="" type="checkbox"/>
Data Unit	h	n.a.	H	Correct	<input checked="" type="checkbox"/>

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Monitoring frequency (reading)	n.a.	n.a.	Continuous; but documented weekly	Implemented as described in the MR	<input checked="" type="checkbox"/>
Monitoring frequency (recording)	n.a.	n.a.	Continuous; but documented weekly	Implemented as described in the MR	<input checked="" type="checkbox"/>
Calibration requirements	n.a.	n.a.	-	n/a	<input checked="" type="checkbox"/>
Uncertainty level	n.a.	n.a.	-	n/a	<input checked="" type="checkbox"/>
Measurement Principle (if applicable)	n.a.	n.a.	Flare counter	Flare counter	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Instrument Type:	LFG piston generator counter				<input checked="" type="checkbox"/>
Serial Number:	20072249				<input checked="" type="checkbox"/>
Manufacturer Model Nr.:	UMG-60				<input checked="" type="checkbox"/>
Specific Location:	Control panel on electricity generator installed				<input checked="" type="checkbox"/>
Measurement Range:	-				<input checked="" type="checkbox"/>
Gaps in operating time of instrument :	Period: n/a				<input checked="" type="checkbox"/>
	Default value used: n/a				<input checked="" type="checkbox"/>
	Insert Justification: n/a				<input checked="" type="checkbox"/>
	QA/QC aspects				Conclusion and IRL
Source of data	Type: See CAR above.				<input checked="" type="checkbox"/>
	See CAR above.				<input checked="" type="checkbox"/>

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	Implementation of procedures: See CAR above.	<input checked="" type="checkbox"/>
	Responsibility: See CAR above.	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	See CAR above.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See CAR above.	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on the continuous basis, therefore the data obtained in the relevant monitoring period can be considered as complete measured data.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

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2.3. Parameters measured through sampling

Table 10 Yalta site

Sampling information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	ET _y	ET _y	ET _y	consistent	☑
Parameter ID (if available)	n/a	n/a	n/a	n/a	n/a
Data Unit	TJ	TJ	TJ	consistent	☑
Sampling frequency	Annually	Annually	Weekly	Instead of annual measurements weekly measurements are done which is considered more accurate.	☑
Sampling point	n.a.	n.a.	n.a.	n.a.	n.a.
Uncertainty level	n.a.	n.a.	n.a.	n.a.	n.a.
	Technical aspects				Conclusion and IRL
Sampling Principle:	Manual Dip stick				☑
Methodology of Sampling:	n/a				n/a
Sample Analysed by:	n/a				n/a
Certification of Analyser/ Laboratory:	n/a				n/a
Methodology of Sample Analysis (if	n/a				n/a

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applicable)		
Measurement Range:	n/a	n/a
Gaps in sampling frequency	Period: n/a	n/a
	Default value used: n/a	n/a
	Justification: n/a	n/a
	QA/QC aspects	Conclusion and IRL
Source of data	Type: See CR above	<input checked="" type="checkbox"/>
	Procedures: ETy is calculated from the weekly measured values of gasoline used (in Litres), accumulated into monthly/annual values (in Litres), and then converted into TJ (TeraJoules) by multiplying on the Gasoline Energy Content.	<input checked="" type="checkbox"/>
	Implementation of procedure: is implemented	<input checked="" type="checkbox"/>
	Responsibility: Operator	<input checked="" type="checkbox"/>
	Representativeness: n/a	<input checked="" type="checkbox"/>
	Reproducibility: n/a	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	Weekly data sets are submitted to QA/QC Manager (via email), stored by the QA/QC Manager, and backed-up onto the CCM's protected server. The weekly data sets are processed by the QA/QC Manager in accordance with the ERU calculation procedure.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See above.	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on weekly basis and described in the weekly report. According to the done spot checks the data are complete.	<input checked="" type="checkbox"/>

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Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

Table 10 Alushta site

Sampling information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	Thermal energy used in landfill during project	Thermal energy used in landfill during project	Amount of fossil fuel used by on-site diesel generator to meet project requirement	consistent	<input checked="" type="checkbox"/>
Parameter ID (if available)	ET _y	ET _y	ET _y	consistent	<input checked="" type="checkbox"/>
Data Unit	TJ	TJ	TJ	consistent	<input checked="" type="checkbox"/>
Sampling frequency	Annually	Annually	Weekly	Instead of annual measurements weekly measurements are done which is considered more accurate.	<input checked="" type="checkbox"/>
Sampling point	n.a.	n.a.	n.a.	n.a.	n.a.

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Uncertainty level	n.a.	n.a.	n.a.	n.a.	n.a.
	Technical aspects				Conclusion and IRL
Sampling Principle:	Manual Dip stick				<input checked="" type="checkbox"/>
Methodology of Sampling:	n/a				<input checked="" type="checkbox"/>
Sample Analysed by:	n/a				<input checked="" type="checkbox"/>
Certification of Analyser/ Laboratory:	n/a				<input checked="" type="checkbox"/>
Methodology of Sample Analysis (if applicable)	n/a				<input checked="" type="checkbox"/>
Measurement Range:	n/a				<input checked="" type="checkbox"/>
Gaps in sampling frequency	Period: n/a				<input checked="" type="checkbox"/>
	Default value used: n/a				<input checked="" type="checkbox"/>
	Justification: n/a				<input checked="" type="checkbox"/>
	QA/QC aspects				Conclusion and IRL
Source of data	Type: See CR above				<input checked="" type="checkbox"/>
	Procedures: ETy is calculated from the weekly measured values of gasoline used (in Litres), accumulated into monthly/annual values (in Litres), and then converted into TJ (TeraJoules) by multiplying on the Gasoline Energy Content.				<input checked="" type="checkbox"/>
	Implementation of procedure: is implemented.				<input checked="" type="checkbox"/>
	Responsibility: Operator				<input checked="" type="checkbox"/>
	Representativeness: n/a				<input checked="" type="checkbox"/>
	Reproducibility: n/a				<input checked="" type="checkbox"/>

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Archiving of raw data and protection measures	Weekly data sets are submitted to QA/QC Manager (via email), stored by the QA/QC Manager, and backed-up onto the CCM's protected server. The weekly data sets are processed by the QA/QC Manager in accordance with the ERU calculation procedure.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	See above.	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	The measurement of this parameter is performed on weekly basis and described in the weekly report. According to the done spot checks the data are complete.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: The consistency has been spot checked on a random basis. No inconsistencies have been found.	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a as the data are not described in the MR.	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

2.4. Parameters obtained through external sources and accounting data

Table 11 Yalta site

External sources and accounting information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	CO2 emission intensity of the thermal energy	CO2 emission intensity of the thermal energy	CO2 emission intensity of the thermal energy	consistent	<input checked="" type="checkbox"/>

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Parameter ID (if available)	CEF _{thermal}	CEF _{thermal,y}	CEF _{thermal}	<p><u>Clarification Request No. 26</u></p> <p>Please put the parameter in the table of constants and describe the used value. Please insert the data unit of CEF_{thermal, y} in the MR.</p> <p>The default value has been fully described in the last MR. Hence, CR 26 is solved.</p>	CR
Data Unit	t CO ₂ / TJ	t CO ₂ / TJ	The data unit is missing in the MR.	See CR above	<input checked="" type="checkbox"/>
	Technical aspects				Con- clusion and IRL
Description of Data / Data Refers to:	Monitoring Plan: CO ₂ emission intensity of the thermal energy- will be specific to the fossil fuel used on-site.				<input checked="" type="checkbox"/>
Date of Data:	See CR above.				<input checked="" type="checkbox"/>
Gaps in data	Period: n/a				<input checked="" type="checkbox"/>
	Default value used: n/a				<input checked="" type="checkbox"/>
	Justification: n.a.				<input checked="" type="checkbox"/>
	QA/QC aspects				Con- clusion and IRL

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Source of data	See CR above.	<input checked="" type="checkbox"/>
	Responsibility: Gafsa.	<input checked="" type="checkbox"/>
	See CR above.	<input checked="" type="checkbox"/>
Reliability of Data Source:	See CR above.	<input checked="" type="checkbox"/>
Is the Data up-to-date?	See CR above.	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	n.a.	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	n.a.	<input checked="" type="checkbox"/>
	Quality of evidence	Con- clusion and IRL
Completeness of data	n.a.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: see CR above	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: see CR above	<input checked="" type="checkbox"/>
Crosscheck (if available)	n.a.	<input checked="" type="checkbox"/>

Table 11 Alushta site

External sources and accounting information					
	PDD	Meth/Tool	MR	Verified	Conclusion and IRL
Parameter title	CO2 emission intensity of the thermal energy	CO2 emission intensity of the thermal energy	CO2 emission intensity of the thermal energy	See table 11 of Yalta	<input checked="" type="checkbox"/>

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Parameter ID (if available)	CEF _{thermal}	CEF _{thermal}	CEF _{thermal, y}	See table 11 of Yalta	<input checked="" type="checkbox"/>
Data Unit	t CO ₂ / TJ	t CO ₂ / TJ	See table 12 of Yalta	See table 11 of Yalta	<input checked="" type="checkbox"/>
	Technical aspects				Conclusion and IRL
Description of Data / Data Refers to:	Monitoring Plan: CO2 emission intensity of the thermal energy- will be specific to the fossil fuel used on-site. See CR in table 11 Yalta site above.				<input checked="" type="checkbox"/>
Date of Data:	See CR above.				<input checked="" type="checkbox"/>
Gaps in data	Period: n.a.				<input checked="" type="checkbox"/>
	Default value used: n.a.				<input checked="" type="checkbox"/>
	Justification: n.a.				<input checked="" type="checkbox"/>
	QA/QC aspects				Conclusion and IRL
Source of data	See CR above.				<input checked="" type="checkbox"/>
	Responsibility: Gafsa.				<input checked="" type="checkbox"/>
	See CR above.				<input checked="" type="checkbox"/>
Reliability of Data Source:	See table 11 of Yalta				<input checked="" type="checkbox"/>
Is the Data up-to-date?	See table 11 of Yalta				<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	n.a.				<input checked="" type="checkbox"/>
Data transfer and protection of input	n.a.				<input checked="" type="checkbox"/>

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data for calculations		
	Quality of evidence	Conclusion and IRL
Completeness of data	n.a.	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: See table 11 of Yalta	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: See table 11 of Yalta	<input checked="" type="checkbox"/>
Crosscheck (if available)	n.a.	<input checked="" type="checkbox"/>

2.5. Other parameters (e.g. not included in the methodology / tool, but included in the PDD)

Other information				
	PDD	MR	Verified	Conclusion and IRL
Parameter title	n/a	n/a	n/a	<input checked="" type="checkbox"/>
Parameter ID (if available)	n/a	n/a	n/a	<input checked="" type="checkbox"/>
Data Unit	n/a	n/a	n/a	<input checked="" type="checkbox"/>
	Technical aspects			Conclusion and IRL
Description of Data / Data Refers to:	n/a			<input checked="" type="checkbox"/>
Date of Data:	Date n/a			<input checked="" type="checkbox"/>
Gaps in data	Period: n/a			<input checked="" type="checkbox"/>

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	Default value used: n/a	<input checked="" type="checkbox"/>
	Justification: n/a	<input checked="" type="checkbox"/>
	QA/QC aspects	Conclusion and IRL
Source of data	Type: n/a	<input checked="" type="checkbox"/>
	Responsibility: n/a	<input checked="" type="checkbox"/>
	Representativeness: n/a	<input checked="" type="checkbox"/>
Reliability of Data Source:	n/a	<input checked="" type="checkbox"/>
Archiving of raw data and protection measures	Describe how the data will be archived, e.g. in CDs, in archive (for paper). n/a	<input checked="" type="checkbox"/>
Data transfer and protection of input data for calculations	Manual or digital transfer from raw data source to input data for calculations (in calculation tool); how is it done and who does it? n/a	<input checked="" type="checkbox"/>
	Quality of evidence	Conclusion and IRL
Completeness of data	n/a	<input checked="" type="checkbox"/>
Data verification	Consistency of raw data with calculation tool: n/a	<input checked="" type="checkbox"/>
	Consistency of calculation tool with monitoring report: n/a	<input checked="" type="checkbox"/>
Crosscheck (if available)	n/a	<input checked="" type="checkbox"/>

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3. Data Processing and ER calculation

Description of data processing from transferred data to final results in the calculation tool		
Step	Description	Conclusion and IRL
Consistency	The data are recorded and transferred electronically. Spot checks between raw data and the data used in the calculation sheet did not reveal any inconsistencies. Hence, the data are considered to be consistent.	<input checked="" type="checkbox"/>
Calculation Tool description	<p><u>Corrective Action Request No. 8</u></p> <p>A spot check of the Alushta data showed that there are errors in the calculation procedure of the flare efficiency (e.g. Alushta 14.09.2008, 9:06 till 9:16, flare efficiency 50% although T_{flare} in this hour < 500°C; 90% flare efficiency: The manufacturer’s specifications have to be met continuously and not only for 20 minutes). Hence, please revise the applied procedure and demonstrate and explain in detail that the revised procedure meets <u>all</u> requirements of the tool. Because the same procedure has been applied for the Yalta project, the Yalta procedure has to be revised too.</p> <p>The procedure has been revised. The revised procedure complies fully with the flaring tool. Hence, CAR 8 is solved.</p> <p><u>Corrective Action Request No. 9</u></p> <p>Please revise the ERU table presented in the MR p.p. 13-14. Furthermore since no average values have been used in the calculations please correct the MR.</p> <p>The ERU summary tables have been revised. Hence, CAR 9 is solved.</p>	CAR
Elimination of not plausible data (if applicable)	See CAR above	<input checked="" type="checkbox"/>
Transformation from	The data management applies to the following data types:	<input checked="" type="checkbox"/>

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useable data to input data for further calculation (if applicable)	<ol style="list-style-type: none"> 1. Electronic data (gas consumption, flare and power parameters) 2. hand written data; and, 3. External data from third parties. <p>The electronic data have been transferred electronically. Data on operations and fuel consumption have been gathered in journals and transferred to excel sheets. The spot checks done by the audit team did not reveal any errors.</p>	
Ex-ante data	n/a	<input checked="" type="checkbox"/>
Default parameter	The default values are mentioned in the MR (p.9 table 2). Missing values have to be added (see above)	<input checked="" type="checkbox"/>
Formulae check	The formulae have been checked by TÜV SÜD. No errors have been found.	<input checked="" type="checkbox"/>
Rounding functions	No specific rounding functions have been used. In the data and calculation sheets rounding has been done according to the excel procedures.	<input checked="" type="checkbox"/>
Calculation tool changes and protection measures	There are no specific protection measures implemented on the calculation tool.	<input checked="" type="checkbox"/>
Reported data	See tables above	<input checked="" type="checkbox"/>

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4. Additional assessment (both sites)

4.1. Internal Review

Description and performance of internal review		
	Description	Conclusion and IRL
Procedure	The procedures have been outlined in the Monitoring Protocol which is a monitoring manual containing all applied QA/QC procedures.	<input checked="" type="checkbox"/>
Documentation	The performance of the facilities is documented in weekly reports	<input checked="" type="checkbox"/>
Responsibilities	The responsibilities are clearly defined and described in the MR.	<input checked="" type="checkbox"/>

4.2. Peculiarities

Description of Peculiarities and unexpected Daily Events during the verification period		
	Description	Conclusion and IRL
Performance	According to the weekly reports and the gaps in the data sets there are many interruptions mainly caused by condensate and electricity production (generators).	<input checked="" type="checkbox"/>
Documentation	All the daily events occurred during the relevant monitoring period are reported by Gafsa to the project manager on weekly basis. The events are summarized for the entire week in the weekly report specifying the respective reason of such event. Project manager is responsible for weekly review of the reports and decision regarding an appropriate action in data handling, if necessary.	<input checked="" type="checkbox"/>
Measures	The operation is continuously supervised by GAFSA staff. The audit team got the impression that the staff is well familiar with the equipment.	<input checked="" type="checkbox"/>

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4.3. Further additional requirements (both sites)

Description of additional requirements to be checked		
	Description	Conclusion and IRL
Environmental issues	n/a	<input checked="" type="checkbox"/>
Landfill regulatory requirements	The regulatory requirements are met which has been confirmed by the responsible national authority.	IRL25 <input checked="" type="checkbox"/>

4.4. Data Reporting (both sites)

Description of the Monitoring Report		
	Comments and Results	Conclusion and IRL
Compliance with UNFCCC JISC regulations	The MR has been made publicly available by TÜV SÜD.	<input checked="" type="checkbox"/>
Completeness and Transparency	<u>Clarification Request No. 27</u> All default values used in ERUs calculation in the entire period must be reported. Please revise table 2 of the MR.	CR
Correctness	See comments to chapter 3 of this checklist.	<input checked="" type="checkbox"/>

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5. Compilation and Resolutions of CARs, CRs and FARs

Corrective Action Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
Issue	<p><u>Corrective Action Request No. 7</u> Please include a table of content into the revised MR.</p>	1.1	<input checked="" type="checkbox"/>
Response	The Table of Content has been added into the revised Monitoring Report (version 2)		
Assessment	The table of content has been added. Hence, CAR 1 is solved.		
Issue	<p><u>Corrective Action Request No. 8</u> A spot check of the Alushta data showed that there are errors in the calculation procedure of the flare efficiency (e.g. Alushta 14.09.2008, 9:06 till 9:16, flare efficiency 50% although T_{flare} in this hour < 500°C; 90% flare efficiency: The manufacturer's specifications have to be met continuously and not only for 20 minutes). Hence, please revise the applied procedure and demonstrate and explain in detail that the revised procedure meets <u>all</u> requirements of the tool. Because the same procedure has been applied for the Yalta project, the Yalta procedure has to be revised too.</p>	3.	<input checked="" type="checkbox"/>
Response	<p>Calculation procedure has been revised and amended to meet all requirements of the Tool. Please, refer to explanation of the ERU calculation procedure in the Section 3.3 of the Monitoring Report.</p> <p>The assumption used in the calculation procedure for application of the default flare efficiency value is also noted in the „Read Me“ spreadsheet provided with every weekly Emission Reductions calculation file.</p> <p>This assumption is:</p> <p>If in any minute (data point) of the hour h $T_{flare} \geq 700$ C, and the Flare status is "ON", and the Plant Status is "Ready" this minute meets ALL operational requirements and is assigned with a Quality factor "1"; otherwise, Quality factor is "0"; when there are less than 60 data points for the hour h, the missing data points are assumed to have "0" Quality factor.</p>		

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Corrective Action Requests by audit team			
	<ul style="list-style-type: none"> • $\eta_{\text{flare},h}$ is 90%, if the sum of Quality factors for each calendar hour h is 60; • $\eta_{\text{flare},h}$ is 50%, if the sum of Quality factors for each calendar hour h is less than 60 but more or equals 40; • $\eta_{\text{flare},h}$ is 0% if the sum of Quality factors for each calendar hour h is less than 40. <p>Thus, the applied calculation procedure is more conservative than in the Tool as it assigns 90% flare efficiency only to a complete hour (60min) within which all requirements were met; 50% efficiency – to an hour with 40..59 quality minutes; and 0% efficiency if an hour has less than 40 quality minutes.</p> <p>All calculaiton files were uploaded to the Project FTP for TUV-SUD to download and review.</p>		
Assessment	The applied procedure has been revised. TÜV SÜD IS confirms that the revised procedure complies fully with the flaring tool (EB 28 annex 13). Hence CAR 2 is solved.		
Issue	<p><u>Corrective Action Request No. 9</u></p> <p>Please revise the ERU table presented in the MR p.p. 13-14. Furthermore since no average values have been used in the calculations please correct the MR.</p>	3.	<input checked="" type="checkbox"/>
Response	<p>The ERU summary Tables have been revised and provided in the Annex 1 to the Monitoring Report (version 2).</p> <p>The Monitoring Report (version 2) contains the statement (See Section 3.3, p.11) that calculated weekly, monthly, and annual values are obtained by summing up relevant minute/weekly/monthly values without any additional mathematic operation (like data averaging or rounding); an automatic rounding happens only in order to show the final results, which solely depends on a number of decimal digits to be shown and does not affect the accuracy of the results.</p>		
Assessment	The ERU summary Tables have been revised and provided in the Annex 1 to the Monitoring Report (version 2). Hence CAR 3 is solved.		
Clarification Requests by audit team			
	Comments and Results	Ref	Conclusion

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Corrective Action Requests by audit team			
			and IRL
Issue	<p><u>Clarification Request No. 21</u></p> <p>Although during the verification visits the TÜV SÜD assessment team did not notice any deviation in the monitoring system compared to the monitoring plan, please amend the MR by including a statement on this as it should report any changes occurred for every monitoring period.</p>	1.1	<input checked="" type="checkbox"/>
Response	The statement has been added. See Section 1.1, p.3		
Assessment	The statement has been added to the revised Monitoring Report. Hence, CR 1 is solved.		
Issue	<p><u>Clarification Request No. 22</u></p> <p>Please provide the actual H&S (Health and Safety) license.</p>	1.1	IRL22
Response	The valid Licence (Health and Safety) and permissions (Operation) have been provided to TUV-SUD.		<input checked="" type="checkbox"/>
Assessment	The valid H&S licenses have been reviewed and are included into Annex 2 of the report.		
Issue	<p><u>Clarification Request No. 23</u></p> <p>During the on-site verification visit in June 2010 TÜV SÜD team assessed that there seems to be a new project participants- CAF Ukraine- and one of the PPs stated in the registered PDD doesn't seem to be involved in the project any longer. This situation should be clarified; furthermore the MoC should be corrected and submitted to the TÜV SÜD for the upload to JI- SC, if necessary.</p>	1.2	<input checked="" type="checkbox"/>
Response	<p>CAF-Ukraine LLC is a Ukrainian entity responsible for the project assets control in Ukraine. CAF-Ukraine is nominated to perform the assets management functions by its founder (CAF) through the CAF's Investment Manager – Carbon Capital Markets Limited (CCM).</p> <p>If necessary a new MoC will have to be signed and submitted by the Project Participants (Gafsa-Skhid and CCM).</p>		
Assessment	According to the statement from Carbon Capital Markets dated 8th of December 2010 there are no new PPs. Hence, CR 23 is solved. However the responsible representative and therefore the contact details of the focal point to the JISC- Carbon Capital Markets Limited-		

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Corrective Action Requests by audit team			
	have changed. Because of this, the updated MoC has been provided by the project participants and was submitted to the JISC on February 9th, 2011.		
Issue	Clarification Request No. 24 Please provide the weekly monitoring reports for the entire monitoring period.	1.3	IRL12
Response	Weekly Monitoring Reports are prepared by the project’s operator together with Raw Data and Register files and submitted to the QA/QC Manager as a Weekly Data set (RAR/ZIP archive). All weekly data sets, and hence all Weekly Monitoring Reports, have been provided to TÜV-SÜD for download/review from the Project FTP.		<input checked="" type="checkbox"/>
Assessment	The weekly monitoring reports have been provided for check and are archived at TÜV SÜD. Hence, CR 4 is solved.		
Issue	Clarification Request No. 25 Please describe why T_{ex} has been chosen and show its significance.	2.4. Table 5	<input checked="" type="checkbox"/>
Response	The Monitoring Report is using T_{flare} as ID for the measured value of the temperature of the exhaust gas, in C. This is in compliance with the Tool. This measurement T_{flare} is also linked to the flare’s automatic self-adjustment system, which regulates the optimum performance of the plant to sustain actual operational efficiency at the level >99%. As noted in the Monitoring Report (Section 3.1) the measurement of T_{flare} is used together with the Flare Status and Plant Status measurement to identify if at that minute (data point) the flare’s/plant’s operation met all manufacturer operational requirements. The registered PDD (Section D.1.2.1) Ref.5(a) has T_{ex} ID for the temperature measurement of the exhaust gas, which was referenced basically for the case when “Continuous monitoring approach” would be applied. From the operational standpoint, application of the “Continuous monitoring approach” would require installation of additional thermocouple. In that case, to distinguish temperature measurements made by 2 thermocouples, the 1 st placed in the top measuring slot of the flare would be named T_{ex} and the 2 nd would be named $T_{combustion}$.		

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Corrective Action Requests by audit team			
	tion and will be used for operational purposes. Thus, the ID for the measured value of the temperature of the exhaust gas will be used as: T_{flare} in the case of “Default flare efficiency” approach is applied; and T_{ex} in the case of “continuous monitoring” approach is applied.		
Assessment	The PP has clearly defined and described the parameter in accordance with the JI requirements. Hence, CR 5 is solved.		
Issue	Clarification Request No. 26 Please put the parameter $CEF_{thermal,y}$ in the table of constants and describe the used value. Please insert the data unit of $CEF_{thermal,y}$ in the MR	2.4. Table 12	<input checked="" type="checkbox"/>
Response	Please refer to the Table 3.3.1 (Section 3.3 of the Monitoring Report) that lists constants used for calculation of Emission Reductions in accordance with the Tool. Clarification for calculation of the Project Emissions from consumption of gasoline ($ET \cdot CEF_{thermal}$), in tCO_2 , is also provided in the Section 3.3 (pp.10-11).		
Assessment	The default value $CEF_{thermal}$ has been fully described in the revised Monitoring Report. Hence, CR 6 is solved.		
Issue	Clarification Request No. 27 All default values used in ERUs calculation in the entire period must be reported. Please revise table 2 of the MR.	4.4	<input checked="" type="checkbox"/>
Response	No default values for continuously monitored and measured parameters were used for calculation of Project Emission Reductions during the first monitoring/verification period. Therefore, the applied ERU calculation procedure does not reference to any default values for continuously measured parameters. The Monitoring Report references only the parameters, constants, and measured values applied in the ERU calculation procedure.		
Assessment	CR 7 is solved.		
Issue	Additional Request 1: The flare in Yalta has a maximum flaring capacity of 800m ³ /h, in Alushta- 500m ³ /h. Since there are values of LFG above 800m ³ and 500m ³ respectively (e.g. the week from		IRL26 <input checked="" type="checkbox"/>

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Corrective Action Requests by audit team			
	7.12.2008 in Alushta site) for which the PP claims ERs, it is necessary to provide evidence which defines the maximum acceptable deviation from the upper limit.		
Response	<p>As explained in the ERU Calculation Procedure (Section 3.3 of the Monitoring Report; C-1(i) of the Monitoring Plan) the total LFG flow is measured and assumed to be “flared” with the assigned flare efficiency, though the portion of the LFG flow is used by the LFG generator (nominal capacity of 60 Nm³/hr).</p> <p>Thus the flow value that is used by the flare is ~ flow measured – 60Nm³/hr.</p> <p>Additionally, based on the written statement from the manufacturer (Hofstetter), which has been provided to the verifier, a 10% deviation from the max. flow is acceptable.</p> <p>In result, we have that the maximum flow that doesn’t interfere with normal operation of the flare:</p> <p>a) for Yalta should not exceed $800+800*10\%+60=940$ Nm³/hr b) for Alushta – $500+500*10\%+60=610$ Nm³/hr</p>		
Assessment	The explanation provided is considered reasonable, furthermore the statement of the de-gassing units manufacturer confirms that the equipment is configured to allow an override of maximum 10% above the specified flow. Since no values above 940 Nm ³ /hr (Yalta) and 610 Nm ³ /hr (Alushta) have been spot checked by evaluating the raw data in the weekly reports, this issue is closed.		
Forward Action Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
Issue	<p><u>Forward Action Request No. 8</u></p> <p>It is recommended to for the final excel calculation file to be improved by including e.g.a generic excel sheet with general information about the project and the calculations method, some exemplary sheets with raw data where the formulas behind the values can be seen and traced etc.</p>		

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Corrective Action Requests by audit team			
	The calculation file should be presented to the assessment team at the second periodic verification.		
Response			
Assessment	This issue will be verified at the next periodic verification.		

1ST PERIODIC VERIFICATION

“Landfill methane capture and flaring at Yalta and Alushta landfills, Ukraine”



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Annex 2: Information Reference List

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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
		<p>Ms. Olena Maslova TÜV SÜD Industrie Service GmbH GHG-Auditor and host country expert</p> <p>Interviewed persons:</p> <p>Mrs. Natalia Kovalchuk Gafsa (monitoring manager)</p> <p>Mr. Igor Pokornyk Gafsa (chief engineering)</p> <p>Mr. Yaroslav Kukhar Gafsa (General director)</p> <p>Second visit: 16.06./17.06.2010</p> <p>Validation Team:</p> <p>Dr. Albert Geiger TÜV SÜD Industrie Service GmbH GHG-Auditor and technical expert</p> <p>Ms. Olena Maslova TÜV SÜD Industrie Service GmbH GHG-Auditor and host country expert</p> <p>Interviewed persons:</p> <p>Mrs. Natalia Kovalchuk Gafsa (monitoring manager)</p> <p>Mr. Igor Tsukornyk Gafsa (chief engineering)</p> <p>Mr. Yaroslav Kukhar Gafsa (General director)</p> <p>Mr. Serhiy Porovskyy Carbon Capital Markets</p>		
4	10/05/2010	JI Monitoring Report, version 1.0	Carbon Capital Markets Ltd	
5	17/02/2011	JI Monitoring Report, final version 3	Carbon Capital Markets Ltd	
6	10/05/2010	Excel spread sheets with the calculation of the emission reductions	Carbon Capital Markets Ltd	

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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
7	01/03/2010 20/09/2010	Monitoring Protocol, versions 1 and 2	Carbon Capital Markets Ltd	
8	11/05/2010 20/09/2010	Excel spread sheets comprising monthly data obtained at Alushta and Yalta landfill sites.	Carbon Capital Markets Ltd	
9	16/06/2010	Passports of the main electricity generators UMG-60, installed at Yalta and Alushta sites stating commissioning dates to be 25.02.2008 for both sites.	GAFSA	
10	16/06/2010	Owner's manuals for the start-up generators installed at Yalta (Volka gasoline generator, commissioning date is 04.06.2008) and Alushta (SDMO gasoline generator, commissioning date is 28.06.2008) landfill sites.	GAFSA	
11	04/11/2009-05/11/2009 16.06.2010-17.06.2010	Photos of the project related equipment installed at the both landfill sites taken during the initial and first periodic verification visits.	TÜV SÜD	
12	20/09/2010	Weekly monitoring reports (acc. to the internal QC procedure) for the entire monitoring period incl. all raw data and daily events	GAFSA	
13	16/06/2010	Trainings plan incl. list of participants in the trainings conducted during the entire monitoring period.	GAFSA	
14	01/06/2008	GAFSA's working instructions for health and safety	GAFSA	
15	26/06/2008	Commissioning protocol of HOFGAS- Ready 800 installed at Yalta landfill site	Hofstetter Umwelttechnik AG	Manufacturer
16	26/06/2008	Commissioning protocol of HOFGAS- Ready 500 installed at Alushta landfill site	Hofstetter Umwelttechnik AG	Manufacturer
17	22/01/2010	Calibration certificate for the flow meter SM-RI-X-K/150/G650 Serial No. 10510656 (incl. temperature and pressure meters) installed at Alushta landfill site	State company "Krym's research and production centre of	Independent third party

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			standardisation, metrology and certification”	
18	22/01/2010	Calibration certificate for the flow meter SM-RI-X-K/150/G650 Serial No. 10510655 (incl. temperature and pressure meters) installed at Yalta landfill site	State company “Krym’s research and production centre of standardisation, metrology and certification”	Independent third party
19	16/06/2010	Operating Instructions for stationary gas analyzing system for landfill gas NUK, rev. 1 incl. calibration and maintenance and troubleshooting requirements.	NUK Automatisierung Analysetechnik-Nenning und Krumm GmbH	Manufacturer
20	10/04/2008	Calibration certificate for the JUMO S thermocouples installed at the both landfill sites	MCS laboratory-Schweizerischer Kalibrierdienst	Independent third party
21	30.08.2008-30.08.2009 16.04.2009-16.04.2010)	Zero/Span gases certificates O ₂ , CH ₄ , N ₂ .	Ukrainian state research and production centre of standardisation, metrology and certification (Ukrmetrteststandard)	Independent third party
22	28/02/2006 02/03/2008	Operation H&S licenses, valid from 28.02.2006 to 27.02.2009 and from 03.03.2008 to 02.03.2011incl. Annex.	State department of industry safety, health protection	Independent third party

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Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information
23	06/09/2007	Operational license issued by the State geology department, valid till 01.09.2012	State Geology Department	Independent third party
24		Emails from the Carbon Capital Market/ CAF		
25	03.02.2011	Confirmation on the Ukrainian landfill regulations	Alushta's municipal administration of the rehabilitation and capital development	Competent local authority
26	17.02.2011	Confirmation from the degassing plants manufacturer Hofstetter Umwelttechnik AG on the maximum flow and burner capacity.	Hofstetter Umwelttechnik AG	Manufacturer
27	17.06.2010	Technical specifications and operating instructions of the LFG analyzers HOFGAS- Assay (NUK) installed at the both sites.	Hofstetter Umwelttechnik AG	Supplier