Validation report form for renewal of crediting period for CDM project activities

(Version 01.0)

Complete this form in accordance with the "Attachment: Instructions for filling out the validation report form for renewal of crediting period for CDM project activities" at the end of this form.

VALIDATION REPORT FOR RENEWAL OF CREDITING PERIOD (RCP)	
Title of the project activity	Irani Wastewater Methane Avoidance Project
Reference number of the project activity	1410
Number and duration of the next crediting period	2nd crediting period, 19/01/2015 to 18/01/2022
Version number of the validation report for RCP	1.1 Aa
Completion date of the validation report for RCP	22/12/2016
Version number of PDD to which this report applies	Version 04 of 19/12/2016
Project participant(s)	Celulose Irani S.A.; EcoSecurities Group Plc.
Host Party	Brazil
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	Sectoral scope 13 - Waste handling and disposal, AMS-III.I "Avoidance of methane production in wastewater treatment through replacement of anaerobic lagoons by aerobic systems" version 8 of 17/07/2009
Estimated annual average GHG emission reductions or net anthropogenic GHG removals in the next crediting period	47,667 tCO_2e
Name of DOE	RINA Services S.p.A. (RINA)
Name, position and signature of the approver of the validation report for RCP	Laura Severino – Unit Manager, Sustainability & Climate Change

Executive summary

Purpose and general description

The Irani Wastewater Methane Avoidance Project (hereafter, the “Project”) developed by Celulose Irani S.A. (hereafter referred to as the “Project Developer”) is a wastewater methane avoidance project in Campina da Alegria district, Vargem Bonita city, Santa Catarina state, Brazil, hereafter referred to as the “Host Country”.

The purpose of the project is to avoid methane emissions from the anaerobic wastewater treatment and disposal practices. The project activity involves implementation of a new wastewater treatment scheme, involving aerobic treatment, referred to as secondary or biologic treatment. The new wastewater treatment system will use a highly aerated activated sludge system.

Scope of validation

The objective of the Validation is to have an independent evaluation of the update PDD’s compliance with relevant UNFCCC requirements and host Party criteria to confirm that the original project baseline is still valid or has been updated taking into account of new data where applicable. In particular, the project’s baseline, monitoring plan and the project’s compliance with relevant UNFCCC requirements and host Party criteria are validated in order to confirm the correctness of the application of the approved baseline methodologies for the determination of the continued validity of the baseline/or its update, and estimation of the emission reductions for the applicable crediting period. The validation scope is to review the updated PDD against the UNFCCC criteria for CDM. UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

Validation process

This report summarizes the findings from the validation of the updated PDD of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given by the CDM Validation and Verification Standard, CDM Project Cycle Procedure and CDM Project Standard and included an assessment of: (a) The impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant guidance from the Board with regard to renewal of the crediting period at the time of requesting renewal of crediting period; (b) The correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions from the applicable crediting period. This validation opinion is also to be seen in conjunction with the validation report at the time of requesting registration for the first crediting period. The Validation Opinion is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

Conclusion

RINA Services S.p.A. (RINA), commissioned by Celulose Irani S.A, has performed the validation for renewal of the crediting period for the registered project activity Irani Wastewater Methane Avoidance Project in Brazil. In conclusion, it is RINA’s opinion that the project meets all the relevant requirements for the renewal of the crediting period.

SECTION A. Validation team, technical reviewer and approver

A.1. Validation team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader/ Technical Expert 13.1	Team Leader/ Technical Expert	IR	Carvalho	Thaís	x	x	x	x
2.	Validator	Verifier	IR	Principe	Geisa	x			

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Valoroso	Rita	RINA Central Office
2.	Approver	IR	Severino	Laura	RINA Central Office

SECTION B. Means of validation

B.1. Desk review

The updated PDD, Version 04 of 19/12/2016 and previous versions /02/, in particular the applicability of the methodology, the baseline determination, the emission reduction calculations provided in the form of a spreadsheet “20161219 CALCULATIONS SHEET Project 1410 Irani WW Renewal CP.xlsx” version 3 of 19/12/2016 and previous version /07/, and the documents listed in the table 3 below, were reviewed during the validation.

B.2. On-site inspection

Duration of on-site inspection: 15/12/2015-16/12/2015				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	- Implementation and operation of the proposed project activity; - interviewed key personnel of the plant to confirm the operational and data collection procedures; QA QC procedures	Celulose Irani main industrial complex- Campina da Alegria- SC state, Brazil	15/12/2015-16/12/2015	Thaís Carvalho

B.3. Interviews

No.	**Interviewee**			**Date**	**Subject**	**Team member**
	Last name	**First name**	**Affiliation**			
1.	Viana	Thiago	Viden	15-16/12/2015	PDD CERs calculation Methodology aplicablility	Thaís Carvalho
2	Oliveira	Eder	Irani	15-16/12/2015	Project implementation/ operation/ monitoring Equipment installed Environmental Licenses QA/QC procedures Environmental licenses	Thaís Carvalho
3	Oliveira	Lindomar	Irani	15/12/2015	Maintenance and calibration of equipment's	Thaís Carvalho
4	Garbib	Deoclecio	Irani	15/12/2015	Maintenance and calibration of equipment's	Thaís Carvalho
5	Prado	Valmir	Irani	16/12/2015	Monitoring (temperature)	Thaís Carvalho

B.4. Clarification requests, corrective action requests and forward action requests raised

Area of validation findings	**No. of CL**	**No. of CAR**	**No. of FAR**
Compliance with PDD form	-	1	-
Application of baseline and monitoring methodology and standardized baseline	-	1	-
Validity of original baseline or its update	2	1	-
Estimated GHG emission reductions or net anthropogenic GHG removals	1	5	-
Validity of monitoring plan	1	4	-
Crediting period		1	-
Project participants		1	-
Others (please specify)			-
Total	4	14	

SECTION C. Validation findings

C.1. Compliance with PDD form

Means of validation	PDD applies the applicable CDM-SSC-PDD-FORM: Project design document form for small-scale CDM project activities version 08.0 and complies with the "Instructions for filling out the project design document form for small-scale CDM project activities". /09/ RINA verified that for the renewal crediting period, information transferred to the later valid version of the PDD form is materially the same as that in the registered PDD.
Findings	**CAR 1:** Section A.1 of the PDD does not contain all the information in accordance with the Instructions for filling out the project design document form for small-scale CDM project activities, points 5, 7 and 8. To close CAR, PDD was revised in accordance with the "Instructions for filling out the project design document form for small-scale CDM project activities" and also the form was updated to version 8.
Conclusion	RINA confirms that the PDD is based on the currently valid CDM-SSC-PDD-FORM template version 08.0 and is completed in accordance with the "Instructions for filling out the project design document form for small-scale CDM project activities" /09/ RINA verified that PPs have updated the sections of the PDD relating to the baseline, estimated GHG emission reductions, the monitoring plan and the crediting period in accordance with the relevant requirements of the Project Standard.

C.2. Application of baseline and monitoring methodology and standardized baseline

Means of validation	The project was originally registered based on version 06 of the AMS-III.I "Avoidance of methane production in wastewater treatment through replacement of anaerobic lagoons by aerobic systems" /01/; the revised PDD /02/ applied AMS-III.I "Avoidance of methane production in wastewater treatment through replacement of anaerobic lagoons by aerobic systems" version 8 of 17/07/2009 /06/. The methodology is applicable as the project activity consists of a shift from an anaerobic to aerobic wastewater treatment system, thus falling under the type III SSC project category. The project qualifies as a small-scale project activity (SSC) and will remain under the limits of the cap of 60,000 CERs for type III projects during every year of the crediting period. Moreover, the "Tool to calculate the emission factor for an electricity system" Version 5 of 27/11/2015 /14/ is used to calculate the grid emission factor. RINA verified that the project boundary and GHG sources are correctly described in accordance with the applied methodology: where: (a) The wastewater treatment would have taken place and the methane emission occurred in absence of the project activity; (b) The wastewater treatment takes place in the project activity; (c) The sludge is treated and disposed off in the baseline and project situation. The project is not a debundling of a large project. The project developer already has another registered SSC project activity. However, the other project activity: - Uses different registered methodologies than the present project activity; - Reduces Greenhouse Gases (GHG) emissions by switching from grid electricity to electricity generated from biomass residue burning and also methane avoidance from biomass residues that would have otherwise been landfilled; - Does not involve wastewater treatment, and thus, employs a technology completely different from the project activity described in this PDD
Findings	**CAR 2:** PDD describes that the emission factor was calculated in accordance with the methodology AMS-ID. However, the methodology AMSI-ID refers to the "Tool to calculate the emission factor for an electricity system". To close CAR 2, the "Tool to calculate the emission factor for an electricity system" was included in the PDD.
Conclusion	RINA confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board and is applicable to the project, which complies with all the applicability conditions therein the selected version is

	valid at the time of submission of the renewal of crediting period. It is also confirmed that the methodology is correctly applied by comparing them with the actual text of the applicable version. There is no deviation from the applied methodology.

C.3. Validity of original baseline or its update

Means of validation	The baseline was updated according to the tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period, version 03.0.1" /08/. The following steps were assessed: ***Step 1: Assess the validity of the current baseline for the next crediting period*** ***Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies***. There is no regional or sectoral legislation/policy regarding this project activity. The national legislation is the National Council of Environment (Conselho Nacional do Meio Ambiente – CONAMA) resolution #357, from 17 March 2005 /18/. The main subject of this resolution is the classification of water bodies and environmental directives for this classification, as well as establishes the conditions and patterns for wastewater discharge, among others. Additionally, there is the CONAMA resolution #430, from 13 May 2011 /18/, regarding conditions and patterns of wastewater discharge, complementing and altering the resolution #357. Since the project developer undergo through periodical assessment by the environmental authority and are currently complying with the national and regional environmental licensing process, it shows that the project activity complies with the applicable Brazilian legislation. RINA verified the valid operation license nº 6510/2015 /13/ Therefore, the current baseline complies with all relevant mandatory national and/or sectoral policies that have come into effect after the submission of the project activity for validation and are applicable at the time of requesting this renewal of the crediting period. **Step 1.2: Assess the impact of circumstances** There is no new circumstance that could be defined as a change in the market characteristics and would affect the baseline scenario. Since this project involves a simple change in the wastewater treatment system, there are no fuels or raw materials involved, and a very small amount of electricity is consumed in the project scenario only. Therefore, there is no major impact in any aspect of the project regarding fuels, raw materials and electricity. The conditions used to determine the baseline emissions in the previous crediting period are still valid. The change of the wastewater treatment system would still have the same barriers as described in the registered PDD. **Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which the renewal is requested** The baseline scenario identified at the validation of the project activity was the continuation of use of the current equipment(s) without any investment. An investment in the wastewater treatment system could occur in the future due to the expansion of activities of the company. As described in the PDD, "this investment would not be due to the end of the technical lifetime of the equipment(s) before the end of the crediting period or the availability of a new technology". The maintenance needed in a concrete anaerobic lagoon is very low and allows this lagoon to be operated for an extremely long time. In case where there is a limitation in the lifetime of the anaerobic technology, the continuation of the baseline scenario would be the most likely course of action. Even in an extreme scenario, where new anaerobic lagoons would have to be constructed (or rebuilt), it would be less expensive and pose less barriers than to build an aerobic treatment system based on the activated sludge technology. Moreover, there is no new no regional or sectoral legislation/policy regarding this project activity that could require new technology to be implemented or alternatives scenarios to the baseline not included in the PDD. Therefore, there is no need to assess the impact of this investment in

	the baseline. **Step 1.4: Assessment of the validity of the data and parameters** Rina verified that the baseline emissions of the project activity were updated considering the last version of the methodologies, related applicable tools and IPCC values. However, none of the changes are due to differences in scenarios or new regulations other than the methodological update. **Step 2: Update the current baseline and the data and parameters** **Step 2.1: Update the current baseline** Since none of the steps above resulted in significant changes to any of the parameters or choices, there will be no update related to the baseline. RINA verified that the baseline emissions for the second crediting period have been updated, without reassessing the baseline scenario, based on the latest approved version of the methodology. **Step 2.2: Update the data and parameters** The data and/or parameter(s) for the second crediting period were updated. The assessment is described below
Findings	**CL 1:** In the *Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies,* PDD does not describe the relevant mandatory national and/or sectoral policies that were checked to confirm the compliance of the current baseline. **CL 2:** In the *Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which the renewal is requested,* PDD describes that "there is a possibility of project proponents would undertake an investment later", however it is not clear the impact of it in the baseline assessment. **CAR 3**: In accordance with the tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" data" that were only determined at the start of the crediting period and not monitored during the crediting period are not valid anymore, project participants should update all applicable data and parameters (for example, IPCC values, emission factors). To close CL 1, the national legislations applicable to the project activity were included in the revised PDD. To close CL 2, PP clarified that the investment could occur due to the need of expansion in the activities of the company, not related to the end of the technical lifetime of the equipment before the end of the crediting period or the availability of a new technology. To close CAR 3, PDD was revised to include the updated parameters.
Conclusion	RINA verified that the baseline was assessed according to the tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period, version 03.0.1" /08/. The current project baseline is still valid at the renewal crediting period.

C.4. Estimated GHG emission reductions or net anthropogenic GHG removals

Means of validation	The emission reduction ERy by the proposed project activity during the crediting period is the difference between baseline emissions (BEy), project emission (PEy) and emissions due to leakage (LEy) as follows. ERy= BEy- (PEy+LEy) **<u>Project emissions</u>** $PE_y = PE_{power,y} + PE_{ww,treatment,y} + PE_{ww,discharge,y} + PE_{s,treatment,y} + PE_{s,final,y}$ Where: PE_y= Project activity emissions in year y (tCO2e) $PE_{power,y}$= Emissions on account of electricity or fossil fuel consumption in the year

y (tCO2e)

$PE_{ww,treatment,y}$= Methane emissions from the biological aerobic wastewater treatment in the year y (tCO2e)

$PE_{ww,discharge,y}$= Methane emissions on account of inefficiencies in the project wastewater treatment systems and presence of degradable organic carbon in the treated wastewater discharged into river/lake/sea etc. (tCO2e)

$PE_{s,final,y}$= Methane emissions from anaerobic decay of the final sludge produced in year y (tCO2e)

$PE_{s,treatment,y}$= Methane produced in the project sludge treatment system(s) (tCO2e)

Electricity emissions:
$PE_{y,power}= EC_y*EF_y$
$PE_{y,power}$= Emissions on account of electricity consumption in the year "y"
EC_y= Electricity consumed by the project activity devices, in the year "y"
EF_y= Emission factor of the applicable grid

The grid emission factor calculation follows the approach described in option (a) of the methodology: "A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the Tool to calculate the emission factor for an electricity system" /14/

Step 1: Identify the electric system:
The Interconnected National System is defined as the relevant electric system of the Project Activity, as defined by Brazilian DNA through the resolution nº 08./23/

Step 2: Choose whether to include off-grid power plants in the project electricity system
The Option I (only grid power plants are included in the calculation) was chosen for project activity.

Step 3: Select an operating margin (OM) method:
The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on (c) Dispatch data analysis Operation Margin, calculated by the Brazilian DNA

Step 4: Calculate the operating margin emission factor according to the selected method:
The calculation of the operation margin emission factor follows the dispatch data analysis emission factor and it is calculated and defined by the Brazilian DNA in accordance with the dispatch data of the Electric System National Operator – ONS.
The CO_2 emission factors resulting from the power generation in the Brazilian National Interconnected System (SIN) are calculated based on the generation record of plants centrally dispatched by ONS.
According to the "Tool to calculate the emission factor for an electricity system" for the dispatch data analysis (OM) it must be used the year in which the project activity displaces grid electricity and it must be updated the emission factor annually during monitoring.
The Emissions Factor Operating Margin is calculated for the Brazilian National Interconnected System hourly from the value of energy exported from each plant, the cost of generation of each plant (scheduling priority), schedules of exchanges with the neighboring subsystems and emission factors of thermal power plants.

The dispatch order for Brazilian Interconnected System is: hydroelectric power plants, wind, nuclear, imports from other systems in ascending order of cost, thermoelectric power plants in ascending order of generation cost.
RINA verified that for the ex-ante estimative PP is considering data from the Brazilian DNA for 2014= 0.5837 tCO_2/MWh

Step 5: Calculate the build margin (BM) emission factor
The option 2 of the "Tool to calculate the emission factor for an electricity system"

was chosen, i.e. ex-post calculation. The build margin emission factor is calculated by the Brazilian DNA. The procedure for calculation was elaborated in cooperation between ONS, MME and MCTI and follows the "Tool to calculate the emission factor for an electricity system".
RINA verified that for the ex-ante estimative PP is considering data from the Brazilian DNA for 2014= 0.2963 tCO2/MWh /07/ /22/

Step 6: Calculate the combined margin emissions factor:
The calculation was done as the weighted average of the Operating Margin emission factor and the Build Margin emission factor:
$EF_{grid,CM} = (EF_{grid,OM,y} * W_{OM}) + (EF_{grid,BM,y} * W_{BM})$.
In accordance with the tool, w_{OM} = 25% and w_{BM} = 75% /14/
RINA verified that for the ex-ante estimative, it is equal 0.36815 tCO_2/MWh /02/ /07/ /22/. Data will be monitored during the crediting period.

The estimated energy consumption is 5,522 MWh/yr based on project developer data, considering an estimated consumption of equipment installed of 0.84051 MWh/h and load factor of 0.75 /07/. RINA verified that the same value was considered in the registered PDD /01/ and will be monitored during the crediting period.

Methane emissions during the biological aerobic treatment of wastewater are determined as follows ($PE_{ww,treatment,y}$):

$$PE_{ww,treatment,y} = \sum_{k} \left(Q_{ww,k,y} * COD_{removed,k,y} * MCF_{aerobic,k} \right) * B_o * UF_{PJ} * GWP_{CH4}$$

Where:
$Q_{ww,k,y}$ Volume of the wastewater treated by the aerobic system *k* during the year *y* (m^3)
k Index for project wastewater treatment system
$COD_{removed,k,y}$ Chemical oxygen demand removed by the aerobic system *k* in year *y* (tonnes/m^3)
$MCF_{aerobic,k}$ Methane correction factor for the aerobic wastewater treatment system *k* (MCF value for well managed aerobic biological systems, or for poorly managed or overloaded systems as per table III.I.1 shall be taken)
UF_{PJ} Model correction factor to account for model uncertainties (1.06)

For the *ex-ante* estimative the value of $MCF_{aerobic,k}$ considered is for well managed aerobic biological system provided in the methodology= 0. Therefore **$PE_{ww,treatment,y}$=0.**

The $MCF_{aerobic,k}$ will be monitored during the crediting period.

Methane emissions from degradable organic carbon in treated wastewater discharged in sea/river or lake in the project situation are determined as follows ($PE_{ww,discharge,y}$):

$$PE_{ww,discharge,y} = Q_{ww,y} * GWP_{CH4} * B_o * UF_{PJ} * COD_{ww,discharge,y} * MCF_{ww,discharge}$$

Where:
$Q_{ww,y}$ Volume of wastewater treated in the year *y* (m^3)
$COD_{ww,discharge,y}$ Chemical oxygen demand of the final treated wastewater discharged into sea, river or lake in the year *y* (tonnes/m^3)
$MCF_{ww,discharge}$ Methane correction factor based on discharge pathway of the wastewater (fraction) (MCF value in table III.I.1 for sea, river and lake discharge)
UF_{PJ} Model correction factor to account for model uncertainties (1.06)

For the $MCF_{ww,discharge}$ PP has correctly applied the value of 0.1 available in the methodology for discharge of wastewater to sea, river or lake /06/. For the ex-ante estimative of $Q_{WW,y}$ (Volume of wastewater treated in the year y) PDD considers the volume 8,640,000 m^3/yr based on projects' developer data and will be monitored in the crediting period. For the ex-ante estimative the $COD_{ww,discharge,y}$ is considering the values from 2013 and 2014 /17/

The methane GWP_{CH4}, is equal 25 tCO2e/tCH_4 updated in accordance with IPCC /20/

RINA verified during the onsite visit that the sludge is burned in the boilers and confirmed through interview that PP forecast to continue this practice. Therefore, factors related to sludge treatment and disposal can be neglected. If during the monitoring period this scenario changes, the emissions will be calculated in accordance with the methodology as described below.

Methane emissions from the project sludge treatment systems *l* are determined as follows:

$$PE_{s,treatment,y} = \sum_{l} S_{l,PJ,y} * MCF_{s,treatment,l} * DOC_s * UF_{PJ} * DOC_F * F * 16/12 * GWP_{CH4}$$

Where:

$S_{l,PJ,y}$ Amount of dry matter in the sludge treated by the sludge treatment system *l* in year *y* (tonne)

l Index for project sludge treatment system

In case sludge is composted, the following equation shall be applied:

$$PE_{s,treatment,y} = \sum_{l} S_{l,PJ,y} * EF_{composting} * GWP_{CH4}$$

Where:

$EF_{composting}$ Emission factor for composting of organic waste (t CH_4/ton waste treated). Emission factors can be based on facility/site-specific measurements, country specific values or IPCC default values (table 4.1, chapter 4, Volume 5, 2006 IPCC Guidelines for National Greenhouse Gas Inventories). IPCC default value is 0.01 t CH_4/t sludge treated on a dry weight basis

In case of sludge is disposed on landfills without methane recovery, project emissions are determined as follows:

$$PE_{s,final,y} = S_{final,PJ,y} * DOC_s * MCF_s * UF_{PJ} * DOC_F * F * 16/12 * GWP_{CH4}$$

Where:

$S_{final,PJ,y}$ Amount of dry matter in final sludge generated by the project wastewater treatment systems in year *y* disposed on a landfill (tonnes)

MCF_s Methane correction factor of the landfill that receives the final sludge, estimated as described in AMS-III.G

UF_{PJ} Model correction factor to account for model uncertainties (1.06)

Baseline emissions

In accordance with the methodology, the baseline emissions are calculated as follows:

$$BE_y = BE_{ww,treatment,y} + BE_{ww,discharge,y} + BE_{s,treatment,y} + BE_{s,final,y}$$

Where:

BE_y Baseline emissions in the year *y* (tCO_2e)

$BE_{ww,treatment,y}$ Methane produced in the anaerobic baseline wastewater treatment system(s) that is/are being replaced with the biological aerobic system(s) (tCO_2e)

$BE_{ww,discharge,y}$ Methane emissions on account of inefficiencies in the baseline

wastewater treatment systems and presence of degradable organic carbon in the treated wastewater discharged into river/lake/sea etc. (tCO_2e)

$BE_{s,treatment,y}$ Methane produced in the baseline sludge treatment system(s) (tCO_2e)

$BE_{s,final,y}$ Baseline methane emissions from anaerobic decay of the final sludge produced (tCO_2e)

In the determination of baseline emissions, historical records of two years prior to the project implementation were used (data from 2004 and 2005) /16/.

The baseline emissions from the anaerobic wastewater treatment system(s) are estimated as follows:

$$BE_{ww,treatment,y} = \sum_{i,m} \left(Q_{ww,m,y} * COD_{removed,i,m,y} * MCF_{anaerobic,i} \right) * B_o * UF_{BL} * GWP_{CH4}$$

Where:

$Q_{ww,m,y}$: Volume of the wastewater treated during the months m, during year *y*, for the months with ambient average temperature above 15°C (m^3)

i : Index for baseline wastewater treatment system

$MCF_{anaerobic,i}$: Methane correction factor for the anaerobic baseline wastewater treatment system *i* replaced by the project activity, value as per table III.I.1

$COD_{removed,i,m,y}$: Chemical oxygen demand removed by the anaerobic wastewater treatment system *i* in the baseline situation in the year *y* for the months *m* with ambient average temperature above 15° C (tonnes/m^3)

UF_{BL} Model correction factor to account for model uncertainties (0.94)

B_o : Methane producing capacity for the wastewater (IPCC default value of 0.21 kg CH_4/kg COD)

GWP_{CH4} : Global Warming Potential for CH_4

For the $MCF_{anaerobic,i}$ PP applied correctly the value of 0.8 in accordance with the methodology, for anaerobic deep lagoon /06/.

For the COD removed PP used historical data from 2013 and 2014 /17/ for the COD removal efficiency project system and historical data from 2004 and 2005 /16/ for COD removal efficiency baseline system.

Methane emissions from degradable organic carbon in treated wastewater discharged in e.g., a river, sea or lake are determined as follows

$$BE_{ww,discharge,y} = Q_{ww,y} * GWP_{CH4} * B_o * UF_{BL} * COD_{ww,discharge,BL,y} * MCF_{ww,discharge,BL}$$

Where:

$Q_{ww,y}$ Volume of treated wastewater discharged in year *y* (m^3)

UF_{BL} Model correction factor to account for model uncertainties (0.94)

$COD_{ww,discharge,BL,y}$: Chemical oxygen demand of the treated wastewater discharged into sea, river or lake in the baseline situation in year *y* (tonnes/m^3)

$MCF_{ww,discharge,BL}$ Methane correction factor based on the discharge pathway (e.g., into sea, river or lake) of the wastewater (fraction) (MCF value as per table III.I.1)

To determine $COD_{removed,i,m,y}$ and $COD_{ww,discharge,BL,y}$: as the baseline treatment system(s) is different from the treatment system(s) in the project scenario, the monitored values of the COD inflow during crediting period will be used to calculate

the baseline emissions *ex post.*

The remaining two factors are related to sludge treatment and disposal. The type of sludge treatment considered for baseline will be the same one considered for project. Since sludge is expected to be burned in the boilers, emissions from this source is zero and thus these factors can be neglected and will not be used in emissions estimation. However, if in any case the sludge is composted, landfilled, or dealt with in any other way resulting in methane emissions, according to the methodology the calculations below are applicable

Methane emissions from the baseline sludge treatment systems j are determined as follows:

$$BE_{s,treatment,y} = \sum_{j} S_{j,BL,y} * MCF_{s,treatment,j} * DOC_{s} * UF_{BL} * DOC_{F} * F * 16/12 * GWP_{CH4}$$

Where:

$S_{j,,BL,y}$: Amount of dry matter in the sludge that would have been treated by the sludge treatment system *j* in the baseline scenario (tonne)

j : Index for baseline sludge treatment system

DOC_S : Degradable organic content of the untreated sludge generated in the year *y* (fraction, dry basis). It shall be estimated using default values of 0.5 for domestic sludge and 0.257 for industrial sludge.

$MCF_{s,treatment,j}$: Methane correction factor for the baseline sludge treatment system *j* (MCF values as per table III.I.1)

UF_{BL} : Model correction factor to account for model uncertainties (0.94)

DOC_F : Fraction of DOC dissimilated to biogas (IPCC default value of 0.5)

F : Fraction of CH_4 in biogas (IPCC default of 0.5)

In case sludge is composted, the following equation shall be applied:

$$BE_{s,treatment,y} = \sum_{j} S_{j,BL,y} * EF_{composting} * GWP_{CH4}$$

Where:

$EF_{composting}$ Emission factor for composting of organic waste (t CH_4/ton waste treated). Emission factors can be based on facility/site-specific measurements, country specific values or IPCC default values (table 4.1, chapter 4, Volume 5, 2006 IPCC Guidelines for National Greenhouse Gas Inventories). IPCC default value is 0.01 t CH_4/t sludge treated on a dry weight basis.

Since the baseline wastewater treatment system is different from the treatment system in the project scenario, the sludge generation rate (amount of sludge generated per unit COD removed) in the baseline situation may differ significantly from the project situation. The amount of sludge generated in aerobic wastewater systems is generally larger than that in anaerobic systems, for the same COD removal efficiency. Therefore, the monitored values of the amount of sludge generated during the crediting period shall be used to estimate the amount of sludge generated in the baseline, as follows

$$S_{j,BL,y} = S_{l,PJ,y} * \frac{SGR_{BL}}{SGR_{PJ}}$$

Where:

$S_{l,PJ,y}$ Amount of dry matter in the sludge treated by the sludge treatment system *l* in year *y* in the project scenario (tonne)

SGR_{BL} Sludge generation ratio of the wastewater treatment plant in the baseline scenario (tonne of dry matter in sludge/tonne COD removed). This ratio will be measured *ex ante* through representative measurement campaign, or using historical records of COD removal and sludge generation in the baseline treatment systems as per the guidance in paragraph 5 or 6.

SGR_{PJ} Sludge generation ratio of the wastewater treatment plant in the project scenario (tonne of dry matter in sludge/tonne COD removed). Calculated using the

monitored values of COD removal and sludge generation in the project scenario.

Methane emissions from anaerobic decay of the final sludge produced in the baseline situation are determined as follows:

$$BE_{s,final,y} = S_{final,BL,y} * DOC_s * UF_{BL} * MCF_{s,BL,final} * DOC_F * F * 16/12 * GWP_{CH4}$$

Where:

$S_{final,BL,y}$ Amount of dry matter in final sludge generated by the baseline wastewater treatment in the year *y* (tonnes). It will be estimated using the monitored amount of dry matter in final sludge generated by the project activity ($S_{final,PJ,y}$) corrected for the sludge generation ratios of the project and baseline systems as per equation 6 above.

$MCF_{s,BL,final}$ Methane correction factor of the disposal site that receives the final sludge in the baseline situation, estimated as per the procedures described in AMS-III.G

UF_{BL} Model correction factor to account for model uncertainties (0.94)

Leakage

The equipment for the aerobic treatment system is not transferred from another facility and the existing equipment will not be transferred to another activity, therefore, leakage effects are not considered

Emission Reductions

According to the Methodology the greenhouse gas emission reductions achieved by the project
activity during a given year "y" (*ERy*) shall be estimated as follows:
ERy = BEy – (PEy + LEy)
Where:
ERy Emission reduction in the year *y* (t CO2e);
BEy Baseline emissions in the year *y* (tCO2e)
PEy Project activity emissions in the year *y* (tCO2e)
LEy Leakage emissions (tCO2e)

As neither project emissions nor baseline emissions do not include the sludge component, the following simplified equation will be applied to estimate the emission reductions:
ERy = (BEww,treatment,y + BEww,discharge,y) – (PEy,power + PEy,ww,treatment + PEww,discharge,y)

For the ex-ante estimative PP is considering that 9 months of the year the temperature is above 15ºC, based in historic data /21/

The summary of ex-ante estimative is presented below:

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
1	51,799	4,132	0	47,667
2	51,799	4,132	0	47,667
3	51,799	4,132	0	47,667
4	51,799	4,132	0	47,667
5	51,799	4,132	0	47,667
6	51,799	4,132	0	47,667
7	51,799	4,132	0	47,667
Total	362,593	28,924	0	333,669

	Total number of crediting years	7			
	Annual average over the crediting period	51,799	4,132	0	47,667
Findings	**CAR 4**: PDD describes that for the emission factor of the grid the mandatory value calculated by the Brazilian DNA will be used. However, it is not described the options and data vintage chosen in accordance with the options available in the tool (for operating and build margins). In the PDD PP has used data available for the dispatch data analysis OM, which in accordance with the tool requires annual monitoring. **CAR 5**: Verified in the CERs estimative spreadsheet, that for the ex-ante calculation of $PE_{ww,discharge,y}$, PP is not considering the $COD_{ww,discharge,y}$ of the aerobic system. The calculation is done using the removal efficiency of the baseline (anaerobic system). **CAR 6**: The GWP_{CH4} was not updated in accordance with IPCC **CAR 7**: Data presented in the CERs estimative for the EP_{PJ} (Chemical Organic Demand (COD) removal efficiency from the project wastewater treatment system for 2014 is not in accordance with the historical data provided. Moreover, the spreadsheet describes that the COD removal efficiency project system is "fixed historical value". **CAR 8**: The historical values used to calculate the E_{BL} (Chemical Organic Demand (COD) removal efficiency from the baseline wastewater treatment system), the efficiency calculation is not considering the weighted average for the COD and volume, as used to calculate the efficiency of the project wastewater treatment system. Moreover, the efficiency of the months January, February and March 2004 do not present the formula /16/ efficiency reported for August 2005 is not coherent with the others months. **CL 3**: For the ex-ante estimative PP is considering that 9 months of the year the temperature is above 15ºC. PP is requested to clarify how it was estimated and provide the evidences To close CAR 4, PP described the option used by the Brazilian DNA to calculate the emission factor. To close CAR 5, PP considered the efficiency of the aerobic system. To close CAR 6, the GWPCH4 was updated in accordance with the IPCC. To close CAR 7 and CAR 8, PP revised the calculations in accordance with the historical data. To close CL 3 the historical data evidence was provided.				
Conclusion	It is RINA's opinion: (a) All assumptions and data used by the PP are listed in the PDD; (b) All documentation used by the PP as the basis for assumption and source of data is correctly quoted and interpreted in the PDD /01/ /06/ /07/ /14/ /16/ /17/ /20/ /21/ /22/ /23/; (c) All values used in the PDD and CERs spreadsheet. including GWPs are considered reasonable in the context of the proposed project activity /20/; (d) The baseline methodology and methodological tools have been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions; /01/ /06/ /07/ /14/ /16/ /17/ /20/ /21/ /22/ /23/; (e) All estimates of the baseline and project emissions can be replicated using the data and parameters values provided in the PDD and CERs spreadsheet.				

C.5. Validity of monitoring plan

Means of validation

The project applies the approved monitoring methodology AMS-III.I "Avoidance of methane production in wastewater treatment through replacement of anaerobic lagoons by aerobic systems" version 8 of 17/07/2009 /06/. The selected monitoring methodology is applicable to the registered project activity.

Parameters determined ex-ante

The assessment ex-ante parameters presented in the PDD are described below:

	Data/parameter	Unit	Value applied	Assessment
1	B_o: Methane Producing Capacity (industrial wastewater)	$kgCH_4/kg$ COD	0.21	Value applied in accordance with the methodology /06/
2	$MCF_{anaerobic,i}$: Methane Correction Factor for Anaerobic Systems	-	0.8	Value applied in accordance with the methodology /06/
3	GWP_CH_4: Methane Global Warming Potential	-	25	Value in accordance with IPCC /20/
4	UF_{PJ}: Model correction factor to account for model uncertainties	-	1.06	Value applied in accordance with the methodology /06/
5	$MCF_{discharge,k}$: Methane correction factor based on the discharge pathway (e.g., into sea, river or lake) of the wastewater	-	0.1	Value applied in accordance with the methodology /06/
6	UF_{BL}: Model correction factor to account for model uncertainties	-	0.94	Value applied in accordance with the methodology /06/
7	$MCF_{ww,discharge,BL}$: Methane correction factor based on the discharge pathway (e.g., into sea, river or lake) of the wastewater	**-**	0.1	Value applied in accordance with the methodology /06/
8	E_{BL}: Chemical Organic Demand (COD) removal efficiency from the baseline wastewater treatment system	**-**	0.6099	Data provided in accordance with historical values from 2004 and 2005, before the project implementation /16/

Parameters monitored ex-post

The assessment of the ex-post parameters are described in the table below:

Parameter	Description/Assessment
COD_{in} (Monthly average Chemical Oxygen Demand entering the aerobic system)	PDD describes that the COD analysis will be carried out twice weekly, at least. The measuring procedures will follow recommendations by the equipment supplier. The spectrophotometer will be calibrated yearly by an accredited person or institution, with calibration schedule following Celulose Irani's maintenance procedure /24/. The measuring procedures will follow recommendations by the equipment supplier and/or a documented procedure.
E_{PJ} (Chemical Organic Demand (COD) removal efficiency from the project wastewater treatment system)	Monitoring of this specific parameter will consist of monitoring CODin and CODout. For the ex-ante estimative is was applied the historic values from 2013 and 2014 /17/.
COD_{out} (Monthly average Chemical Oxygen Demand exiting the aerobic system)	PDD describes that the COD analysis will be carried out twice weekly, at least. The measuring procedures will follow recommendations by the equipment supplier. The spectrophotometer will be calibrated yearly by an accredited person or institution, with calibration schedule following Celulose Irani's maintenance procedure /24/. The measuring procedures will follow recommendations by the equipment supplier and/or a documented procedure
$Q_{ww,k,y}$ (Volume of the wastewater treated by the aerobic system k during the year y): m^3	PDD describes that the Wastewater flow is continuously monitored using Parshall Flumes coupled with ultrasonic sensors, confirmed during the onsite visit. Equipment will be calibrated yearly by an accredited person or institution, with calibration schedule following Celulose Irani's maintenance procedure /24/.
$Q_{ww,y}$ (Volume of the wastewater treated (discharged) during year "y": m^3	PDD describes that the Wastewater flow is continuously monitored using Parshall Flumes coupled with ultrasonic sensors, confirmed during the onsite visit. Equipment will be calibrated yearly by an accredited person or institution, with calibration schedule following Celulose Irani's maintenance procedure /24/.
TEMP (Average monthly temperature): ºC	The average monthly environmental temperature will be obtained from Thermometers installed in the project developer and/or from qualified weather and climate services.
$COD_{ww,discharge,y}$ (Chemical oxygen demand of the treated wastewater discharged into sea, river or lake in year *y):* tonnes/m^3	It is the same parameter as $COD_{out,}$ as the wastewater treatment system, both in baseline and project scenarios, involves a direct discharge to the river.

	$COD_{removed,k,y}$ *(Chemical oxygen demand removed by the aerobic system in year y*	The removal efficiency value was estimated for PDD purposes using the parameters E_{BL} and E_{PJ}. During the crediting period, this parameter will be calculated using monitored values (COD_{in} and COD_{out}).
	$S_{final,PJ,y}$ (Amount of sludge generated by the wastewater treatment in the monitoring period y): tonnes	The volume (m3) of sludge is acquired using a flowmeter. The dry matter content (tonnes/m3) results from a laboratory analysis. Final destinations of sludge will be monitored and treated according to recommendations by the methodology. The volume will be monitored continuously. The dry matter content will be measured once each work shift (three times per day). Flowmeter will be calibrated once each two years by an accredited person or institution. Precision scale will be calibrated each six months by an accredited person or institution. Both equipment have calibration schedule following Celulose Irani's maintenance procedure /24/.
	EC_y *(*Electricity consumed by the project activity devices in the monitoring period y): MWh	Electricity will be monitored by electricity meter(s). If more than one meter is used to measure this parameter, all meter readings will be added to represent the total electricity consumption of the project. Electricity consumed will be continuously measured. Meters will be calibrated once each three years by an accredited person or institution, with calibration schedule following Celulose Irani's maintenance procedure /24/.
	$MCF_{aerobic}$ *(*Methane Correction Factor for the aerobic wastewater treatment system)	Since a MCF value of zero is adopted for the project wastewater treatment system assuming that it is a well-managed aerobic system, its operation will be documented in a quality control program. Therefore, the operating conditions of the treatment system will be monitored to verify if they are within the specified range so as to ensure the aerobic condition of the reactors. The acceptable range of operational parameters are defined for continuous aerobic operation of the treatment system in accordance with the engineering design of the wastewater treatment system and reported in the PDD. The operational parameters are then continuously monitored to ensure that they are always kept in the design range of operating conditions. In case the operational parameters are not within the limits for a period of time, a MCF value of 0.3 shall be taken for that period.

Management system and quality assurance

An onsite inspection has been performed on 15-16/12/2015 and it is confirmed that the monitoring arrangements in the monitoring plan are feasible within the project design. The monitoring is based only on data measured. All measurements will be performed by the "Área de Efluentes" (Effluent Area) which will be controlled by the

	"Divisão de Qualidade" (Quality Assurance Management Sector). There is a central control room at the Wastewater Treatment Station that will centralize all information regarding the monitoring. In this room, the supervisory system and computers will control the process. For the maintenance of equipment's, PP has a procedure /24/, that takes into account - Manufacturer specifications; Installation Conditions; Usage conditions (operational severity); Precision required by the process; Term of measurement validation according to the product being processed; Expertise from qualified technician.
Findings	**CAR 9**: PP has included the parameters m (months in a year with temperature above 15ºC); E_{PJ}: (Chemical Organic Demand (COD) removal efficiency from the project wastewater treatment system) and $MCF_{aerobic,k}$ (Methane Correction Factor for Aerobic Systems), in the section B.6.2 of the PDD. However, in accordance with the instructions for filing the PDD: *Include a compilation of information on the data and parameters that are not monitored during the crediting period but are determined before the registration and remain fixed throughout the crediting period. Do not include data that become available only after the registration of the project activity (e.g. measurements after the implementation of the project activity) here but include them in the table in section B.7.1* **CAR 10**: In the table B.7.1 PDD does not described the "unit" of the parameters *CODin,(*tonnes/m^3), *COD_{out}, (tonnes/m^3), CODremoved,k,y,(*tonnes/m^3), in accordance with the applicable methodology. **CAR 11**: PDD does not describe if the calibration of the monitoring equipments will be done by an accredited person or institution, in accordance with the provision of the Project Standard para. 112 © **CAR 12**: It was not included in the monitoring plan the parameter $Q_{ww,y}$ (Volume of wastewater treated in the year y (m^3)) used to calculate the $PE_{ww,discharge,y}$ **CL 4:** PP is requested to clarify if the calibration frequency described in the PDD is in accordance with local/national standards, or as per the manufacturer's specifications To close CAR 9 and CAR 12, revised PDD presents the monitored parameters in the section B.7.1. To close CAR 10 the units of the parameters were provided in accordance with the methodology. To close CAR 11 and CL 4 revised PDD describes that the calibration of the monitoring equipment's will be done by an accredited person or institution, and clarified that the calibration procedure takes into account the manufacturer specifications.
Conclusion	It is RINA's opinion that the monitoring plan is in accordance with the monitoring methodology; the monitoring plan will give opportunity for real measurement of achieved emission reductions. RINA has checked all the parameters presented in the monitoring plan against the requirements of the methodology and methodological tools; no deviations relevant to the project activity have been found in the plan. RINA confirms that the monitoring arrangements described in the monitoring plan, including the data management and quality assurance and quality control procedures, are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

C.6. Crediting period

Means of validation	The second crediting period starts on 19/01/2015, in line with the end of the first crediting period. The notification to renewal the crediting period was sent on 19/11/2016 and the e-mail confirming the receipt of the PDD and the CDM-RENN-FORM is dated 24/11/2016 /19/. As the notification of the intention to request a renewal of the crediting period was not received by the secretariat by 180 days prior to the date of expiration of the current crediting period, in accordance with project cycle paragraph 290 *the project participants or the coordinating/managing entity shall*

	not be entitled to claim the issuance of CERs from the first day of the next crediting period until the last day before the renewal of crediting period is deemed renewed or until the number of days equivalent to the delay in the notification have elapsed since the notification submission deadline, whichever is earlier.
Findings	CAR 13: In accordance with the project cycle paragraph 290. *The new crediting period shall start on the day immediately after the expiration of the current crediting period regardless of the date when the crediting period is deemed renewed in accordance with paragraph 308 below. However, if the notification of the intention to request a renewal of the crediting period was not received by the secretariat by 180 days prior to the date of expiration of the current crediting period in accordance with paragraph 291 below, and if the date when the renewal of crediting period is deemed renewed after the expiration of the current crediting period, the project participants or the coordinating/managing entity shall not be entitled to claim the issuance of CERs from the first day of the next crediting period until the last day before the renewal of crediting period is deemed renewed or until the number of days equivalent to the delay in the notification have elapsed since the notification submission deadline, whichever is earlier.* Therefore, PP is requested to update the starting date in the section C.2.2 accordingly. To close CAR 13, PDD was revised to consider the day immediately after the expiration of the current crediting period: 19/01/2015.
Conclusion	RINA confirmed that the second crediting period of the registered CDM project activity commences on the day immediately after the expiration of the current crediting period.

C.7. Project participants

Means of validation	The project participants are Celulose Irani S.A. from Brazil and EcoSecurities Group Plc.from United Kingdom of Great Britain and Northern Ireland. Both PP are in accordance with the ones listed in the UNFCCC web site project view page /12/
Findings	CAR 13 (open in the second round): Revised PDD version 02 excluded the PP EcoSecurities Group Plc.from United Kingdom of Great Britain and Northern Ireland not in accordance with the project page view in the UNFCCC web site To close CAR 13, PDD was revised and presents PP in accordance with the project page view in the UNFCCC web site.
Conclusion	RINA verified that the project participants included in the updated PDD are consistent with the names of the project participants in the UNFCCC project view page and registered PDD.

C.8. Post-registration changes

Type of post-registration changes (PRCs)	**Confirmation** (Y/N)	**Validation report for PRCs**	
		Version	**Completion date**
Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline	N		
Corrections	N		
Inclusion of a monitoring plan to a registered project activity	N		
Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline	N		
Changes to the project design of a registered project activity	N		
Types of changes specific to afforestation and reforestation project activities	N		

SECTION D. Internal quality control

The draft final version of the validation opinion report before being submitted to the UNFCCC will be subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent RINA instructions.
The technical review is performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for CDM validation and verification

SECTION E. Validation opinion

RINA Service Spa (RINA) has performed a validation of the updated PDD for the project activity “Irani Wastewater Methane Avoidance Project” in Brazil, CDM Registration Reference N° 1410. The validation of the updated PDD has performed for the second renewal crediting period (from 19/01/2015 to 18/01/2022) and is based on the information made available to us.

RINA has performed this validation in accordance with Clean Development Mechanism Validation and Verification Standard version 09 of 20/02/2015 and included an assessment of:

- An impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant guidance from the Board with regard to renewal of the crediting period at the time of requesting renewal of crediting period:
- The correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period.

During the validation, there are not proposed post-registration changes for the next crediting period that is submitted together with the request for renewal of crediting period of the registered CDM project activity.

The review of the updated project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews have provided RINA with sufficient evidence to validate the fulfillment of the stated criteria applicable for RCP.

The review of the PDD Version 04 of 19/12/2016 and the subsequent follow-up interviews have provided RINA with sufficient evidence to determine the validity of the original baseline scenario. The project correctly applies the baseline and monitoring methodology AMS-III.I “Avoidance of methane production in wastewater treatment through replacement of anaerobic lagoons by aerobic systems” version 8 of 17/07/2009. The total emission reductions from the Irani Wastewater Methane Avoidance Projectare estimated to be on an average 47,667 tCO_2e per year over the selected 7 years renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.
It is RINA’s opinion that the project “Irani Wastewater Methane Avoidance Project” in Brazil meets all the relevant requirements for the renewal of the crediting period. Hence RINA requests the renewal of the crediting period of the project activity.

Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH_4	Methane
CL	Clarification Request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CRT	Coordination and Technical Control Staff
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoV	Means of Verification
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers

RINA

CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra: *We declare that Mr/Mrs/Ms:*	**Thais De Lima Carvalho**
è qualificato come[1]: *is qualified as:*	**CDM -TEC, -VAL, -VER, -TL**
per le seguenti aree tecniche: for the following technical areas:	**1.1, 1.2, 2.1, 13.1**

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA *TECHNICAL AREA DESCRIPTION*	SCOPO SETTORIALE *SECTORAL SCOPE*
1.1	Thermal energy generation	1
1.2	Renewables	1
2.1	Electricity distribution	2
13.1	Solid waste and wastewater	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE *REVISION*	DATA *DATE*	MOTIVAZIONI PER LA REVISIONE *REASON FOR THE REVISION*
0	19-08-2009	-
12	15-01-2015	Added TA 2.1

Il Resp. QPT
Head of QPT

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism
VER:	Verifier	VCS : Verified Carbon Standard
TEC:	Technical Expert	GS: Gold Standard
TL:	Team Leader	SCS: SocialCarbon Standard
FIN-EXP:	Financial Expert	JI: Joint Implementation
DET:	Determiner	

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

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RINA

CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra: **Geisa Maria Principe Branco Saettoni**

We declare that Mr/Mrs/Ms:

è qualificato come[1]: **CDM-TEC, VAL, VER, TL**
is qualified as:

per le seguenti aree tecniche: **1.1, 1.2, 13.1**
for the following technical areas:

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA *TECHNICAL AREA DESCRIPTION*	SCOPO SETTORIALE *SECTORAL SCOPE*
1.1	Thermal Energy generation	1
1.2	Energy generation from renewable energy sources	1
13.1	Waste Handling and Disposal	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE *REVISION*	DATA *DATE*	MOTIVAZIONI PER LA REVISIONE *REASON FOR THE REVISION*
0	27-08-2009	-
9	17-07-2015	Updating qualification according AS version 6

Il Resp. QPT
Head of QPT

Rina Suruno

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism	
VER:	Verifier	VCS : Verified Carbon Standard:	
TEC:	Technical Expert	GS: Gold Standard	
TL:	Team Leader	SCS: SocialCarbon Standard	
FIN-EXP:	Financial Expert	JI: Joint Implementation	
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RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

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RINA

CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra: *We declare that Mr/Mrs/Ms:*	**Rita Valoroso**
è qualificato come1: *is qualified as:*	**CDM -TEC, -VAL, -VER, -TL TECHNICAL REVIEWER**
per le seguenti aree tecniche: for the following technical areas:	**1.2, 3.1, 13.1**

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA *TECHNICAL AREA DESCRIPTION*	SCOPO SETTORIALE *SECTORAL SCOPE*
1.2	Renewables	1
3.1	Energy demand	3
13.1	Solid Waste and waste water	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE *REVISION*	DATA *DATE*	MOTIVAZIONI PER LA REVISIONE *REASON FOR THE REVISION*
0	18-01-10	-
10	06/04/2016	Update qualification TA 3.1

Il Resp. QPT
Head of QPT

Rina Saturno

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism
VER:	Verifier	VCS : Verified Carbon Standard:
TEC:	Technical Expert	GS: Gold Standard
TL:	Team Leader	SCS: SocialCarbon Standard
FIN-EXP:	Financial Expert	JI: Joint Implementation
DET:	Determiner	

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

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Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	EcoSecurities Brasil	CDM-PDD for project activity "**Irani Wastewater Methane Avoidance Project**" in Brazil	version 03c of 08/11/2012 (approved on 02/04/2013)	Project participant
2	Viden Projetos Ambientais e Sustentabilidade	CDM-PDD updated for the second crediting period "**Irani Wastewater Methane Avoidance Project**".	Version 01 of 21/10/2015 Version 2 of 03/11/2016 Version 03 of 11/11/2016 Version 04 of 19/12/2016	Project participant
3	CDM Executive Board	Clean Development Mechanism Project Cycle Procedure	version 09 of 20/02/2015	Others
4	CDM Executive Board	Clean Development Mechanism Project Standard	version 09 of 20/02/2015	Others
5	CDM Executive Board	Clean Development Mechanism Validation and Verification Standard	version 09 of 20/02/2015	Others
6	CDM Executive Board	CDM Executive Board: Baseline and monitoring methodology AMS-III.I "Avoidance of methane production in wastewater treatment through replacement of anaerobic lagoons by aerobic systems"	version 8 of 17/07/2009	Others
7	Viden Projetos Ambientais e Sustentabilidade	CERs estimative spreadsheet "20151020 CALCULATIONS SHEET Project 1410 Irani WW Renewal CP.xlsx" 20161103 CALCULATIONS SHEET Project 1410 Irani WW Renewal CP.xlsx 20161219 CALCULATIONS SHEET Project 1410 Irani WW Renewal CP.xlsx	version 1 of 11/11/2015 version 2 of 03/11/2016 version 3 of 19/12/2016	Project participant
8	CDM Executive Board	CDM Executive Board: "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period'	version 03.0.1 of 02/03/2012	Other
9	CDM Executive Board	CDM-SSC-PDD-FORM: Project design document form for small-scale CDM project activities, including Attachment: Instructions for filling out the project design document form for small-scale CDM project activities	version 8 of 22/07/2016	Other
10	DET NORSKE VERITAS	Validation report number 2007-0709 for the project activity "Irani Wastewater Methane Avoidance Project"	Version 02B of 12/12/2007	Other
11	DET NORSKE VERITAS	Validation opinion report number PRJC-311095-2011-CCS-NOR for the Post Registration Changes of the project activity "Irani Wastewater Methane Avoidance Project"	25/02/2013	Other
12	UNFCCC web site	Project page 1410 : Irani Wastewater Methane Avoidance Project	Accessed on 18/01/2016	Other

		https://cdm.unfccc.int/Projects/DB/DNV-CUK1194334826.24/view		
13	FATMA	Operation License nº 6510/2015	29/09/2015	Project participant
14	CDM Executive Board	"Tool to calculate the emission factor for an electricity system"	Version 5 of 27/11/2015	Other
15	BRTuV	Certificate Q-00679 NBR ISO 9001:2008, valid until 18/01/2016 (Certificado ISO.pdf)	28/10/2013	Project participant
16	Irani	Historical data before the project implementation: "Boletim Mensais2004.xls" "Boletim Mensais2005.xls"	 2004 2005	Project participant
17	Irani	Historical data after the project implementation: "Boletim Controle Efluentes2013.xls" "Boletim Controle Efluentes2014.xlsx"	 2013 2014	Project participant
18	Conselho Nacional do Meio Ambiente – CONAMA	Resolution 357 Resolution 430	17/03/2005 13/05/2011	Other
19	CDM Registration	Mail confirming the receipt of the PDD and the CDM-RENN-FORM sent on 19/11/2015	24/11/2015	Other
20	IPCC	Fourth Assessment Report: Climate Change 2007, available in English at http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html	Assessed on 24/11/2016	Other
21	INMET	Historical average temperatue Temperatura-Media-Compensada_NCB_1961-1990.xls	1961 to 1990	Project participant
22	"Comissão Interministerial de Mudanças Globais do Clima" (Brazilian DNA):	Emission factor data for 2014 http://www.mct.gov.br/index.php/content/view/354444.html#ancora	assessed on 28/09/2016	Other
23	"Comissão Interministerial de Mudanças Globais do Clima" (Brazilian DNA):	Resolution nº 8 of 26/05/2008, that defines the Boundaries of National Grid http://www.mct.gov.br/upd_blob/0024/24719.pdf	assessed on 24/11/2016	Other
24	Irani	Maintenance procedure "Procedimento P02-CAL-6-300.pdf"	Revision 001 of 28/12/2015	Project participant

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

Table 1. CL from this validation

CL ID	1	**Section no.**	D.3	**Date:** 28/01/2016
Description of CL				
In the Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies, PDD does not describe the relevant mandatory national and/or sectoral policies that were checked to confirm the compliance of the current baseline				
Project participant response				**Date:** 03/11/2016
There is no regional or sectoral legislation/policy regarding this project activity. The national legislation is the National Council of Environment (Conselho Nacional do Meio Ambiente – CONAMA) resolution #357, from 17 March 2005. The main subject of this resolution is the classification of water bodies and environmental directives for this classification, as well as establishes the conditions and patterns for wastewater discharge, among others. Additionally, there is the CONAMA resolution #430, from 13 May 2011, regarding conditions and patterns of wastewater discharge, complementing and altering the resolution #357. *The PDD was updated to contain this information.*				
Documentation provided by project participant				
Revised PDD				
DOE assessment				**Date:** 09/11/2016
The national legislations applicable to the project activity were included in the revised PDD.This CL is closed				

CL ID	2	**Section no.**	D.3	**Date:** 28/02/2016
Description of CL				
In the Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which the renewal is requested, PDD describes that “there is a possibility of project proponents would undertake an investment later”, however it is not clear the impact of it in the baseline assessment.				
Project participant response				**Date:** 03/11/2016
This sentence means to clarify that an investment in the wastewater treatment system could occur in the future due to the expansion of activities of the company. As described in the PDD, “this investment would not be due to the end of the technical lifetime of the equipment(s) before the end of the crediting period or the availability of a new technology”. Therefore, there is no need to assess the impact of this investment in the baseline.				
Documentation provided by project participant				
DOE assessment				**Date:** 09/11/2016
PP clarified that the investment could occur due to the need of expansion in the activities of the company, not related to the end of the technical lifetime of the equipment before the end of the crediting period or the availability of a new technology. This CL is closed				

CL ID	3	**Section no.**	D.4	**Date:** 28/02/2016
Description of CL				
For the ex-ante estimative PP is considering that 9 months of the year the temperature is above 15ºC. PP is requested to clarify how it was estimated and provide the evidences.				
Project participant response				**Date:** 03/11/2016

The estimative being used is the same as the one already validated in the registered PDD and considered reasonable at that time. Therefore, the information was already checked during the validation of the project for registration. However, since this issue was raised, the project developer presents again a reference for this information. For this analysis, it was used a national official source of information, the monitoring performed by the National Institute of Metereology (INMET – Instituto Nacional de Meteorologia*). Historical data were preferred, to maintain coherence with CDM rational (that always suggests historical data) in order to demonstrate a historical temperature pattern for the region instead of using data from only a couple of years. The city where the project is located does not have a metereological station, thus the closest metereological station is used, distant around 82km from the project location. The average temperature in °C is the following:*

Station	**State**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Xanxerê	SC	21.2	21.3	20.3	17.5	15.1	13.2	13.7	14.7	16	17.5	19.2	20.7

Source: http://www.inmet.gov.br/portal/index.php?r=clima/normaisClimatologicas

Therefore, as can be evidenced, three months of the year present average environment temperature lower than 15°C (with one of the months presenting an average temperature of 15.1°C).

Documentation provided by project participant	
http://www.inmet.gov.br/portal/index.php?r=clima/normaisClimatologicas	
DOE assessment	**Date:** 09/11/2016
RINA verified in the INMET web site that PP is applying historical average from 1961-1990. This CL is closed	

CL ID	4	**Section no.**	D.5	**Date:** 28/01/2016
Description of CL				
PP is requested to clarify if the calibration frequency described in the PDD is in accordance with local/national standards, or as per the manufacturer's specifications				
Project participant response				**Date:** 03/11/2016

According to the company's maintenance procedure, included in the ISO scope, the calibration frequency of all equipment onsite is defined according to the following factors:
- Manufacturer specifications;
- Installation Conditions;
- Usage conditions (operational severity);
- Precision required by the process;
- Term of measurement validation according to the product being processed;
- Expertise from qualified technician.
Thus, the calibration schedule will follow this rationale. The manufacturer specifications is the most important information to be taken into consideration to define calibration schedule according to Celuose Irani Equipment Maintenance Procedure. A copy of this procedure has been made available to the DOE.

Documentation provided by project participant	
Maintenance procedure "Procedimento P02-CAL-6-300.pdf"	
DOE assessment	**Date:** 09/11/2016
RINA verified that PP has a maintenance procedure that takes into account the manufacturer instructions, among others factors, to define the calibration periodicity. This CL is closed.	

Table 2. CAR from this validation

CAR ID	1	**Section no.**	D.1	**Date:** 28/01/2016
Description of CAR				
Section A.1 of the PDD does not contain all the information in accordance with the Instructions for filling out the project design document form for small-scale CDM project activities, points 5, 7 and 8.				
Project participant response				**Date:** 03/11/2016
The PDD was updated in order to be in accordance with the Instructions for filling out the project design document form for small-scale CDM project activities. *2nd response (11/11/2016)* *The PDD form was updated to version 08.*				
Documentation provided by project participant				
Revised PDD				
DOE assessment				**Date:** 09/11/2016
Section A.1 was updated accordingly, however, the PDD form has been updated to version 08 of 22/07/2016. This CAR remains open 2nd response (22/11/2016) PDD form was updated to version 8. This CAR is closed				

CAR ID	2	**Section no.**	D.2	**Date:** 28/01/2016
Description of CAR				
PDD describes that the emission factor was calculated in accordance with the methodology AMS-ID. However, the methodology AMSI-ID refers to the "Tool to calculate the emission factor for an electricity system".				
Project participant response				**Date:** 03/11/2016
In order for this PDD not be much different from the original registered PDD for the first crediting period, the "Tool to calculate the emission factor for an electricity system" was added in section B.1 of the PDD as an additional source for grid emission factor calculation.				
Documentation provided by project participant				
Revised PDD				
DOE assessment				**Date:** 09/11/2016
The "Tool to calculate the emission factor for an electricity system" was included in the revised PDD. This CAR is closed.				

CAR ID	3	**Section no.**	D.3	**Date:** 28/01/2016
Description of CAR				
In accordance with the tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" data " that were only determined at the start of the crediting period and not monitored during the crediting period are not valid anymore, project participants should update all applicable data and parameters (for example, IPCC values, emission factors)				
Project participant response				**Date:** 03/11/2016
PDD Section B.4 already focused the point raised. However, the paragraph related to the Step 1.4 of the mentioned tool (Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period) was updated in order to better clarify this issue.				
Documentation provided by project participant				
Revised PDD				
DOE assessment				**Date:** 09/11/2016
PDD was revised accordingly. This CAR is closed.				

CAR ID	4	**Section no.**	D.4	**Date:** 28/01/2016
Description of CAR				
PDD describes that for the emission factor of the grid the mandatory value calculated by the Brazilian DNA will be used. However, it is not described the options and data vintage chosen in accordance with the options available in the tool (for operating and build margins). In the PDD PP has used data available for the dispatch data analysis OM, which in accordance with the tool requires annual monitoring.				
Project participant response				**Date:** 03/11/2016
PDD Section B.6.1 was updated to provide a detailed explanation on how the grid emission factor calculated by the Brazilian DNA will be used.				

Documentation provided by project participant	
Revised PDD	
DOE assessment	**Date:** 09/11/2016
PDD was revised accordingly and includes a detailed explanation on how the grid emission factor calculated by the Brazilian DNA will be used. This CAR is closed.	

CAR ID	5	**Section no.**	D.4	**Date:** 28/01/2016
Description of CAR				
Verified in the CERs estimative spreadsheet, that for the ex-ante calculation of $PE_{ww,discharge,y}$, PP is not considering the $COD_{ww,discharge,y}$ of the aerobic system. The calculation is done using the removal efficiency of the baseline (anaerobic system).				
Project participant response				**Date:** 03/11/2016
The calculations were updated to use monitored removal efficiency for the aerobic system.				
Documentation provided by project participant				
Revised PDD and CERs spreadsheet				
DOE assessment				**Date:** 10/11/2016
RINA verified that the CERs spreadsheet was revised to consider the monitored removal efficiency for the aerobic system. The CAR is closed.				

CAR ID	6	**Section no.**	D.4	**Date:** 28/01/2016
Description of CAR				
The GWP_{CH4} was not updated in accordance with IPCC				
Project participant response				**Date:** 03/11/2016
The project documents were updated to reflect this correction.				
Documentation provided by project participant				
Revised PDD and CERs spreadsheet				
DOE assessment				**Date:** 09/11/2016
Documents were revised and presents the GWP_{CH4} updated in accordance with IPCC (=25 tCO2e/tCH4). This CAR is closed				

CAR ID	7	**Section no.**	D.4	**Date:** 28/01/2016
Description of CAR				
Data presented in the CERs estimative for the EP_{PJ} (Chemical Organic Demand (COD) removal efficiency from the project wastewater treatment system for 2014 is not in accordance with the historical data provided. Moreover the spreadsheet describes that the COD removal efficiency project system is "fixed historical value".				
Project participant response				**Date:** 03/11/2016
The value and the text from the spreadsheet have both been corrected. *2nd response (11/11/2016)* *PDD was revised to clarify that the monitoring parameter Epj was created only to calculate estimated emissions and will not be used for ER calculations during the crediting period. The monitoring of COD removal efficiency for the project will consist in monitoring the parameters COD_{in} and COD_{out}.*				
Documentation provided by project participant				
Revised PDD and CERs spreadsheet				
DOE assessment				**Date:** 09/11/2016
Data for the year 2014 was correctly revised. However, in the monitoring table of the parameter E_{PJ} (Chemical Organic Demand (COD) removal efficiency from the project wastewater treatment system), PDD described Data calculated ex ante to estimate project emissions in the PDD, so no monitoring needed. This CAR remains open 2nd response (22/11/2016) PDD was revised to describe that the Monitoring of the parameter will consist of monitoring CODin and CODout. This CAR is closed.				

CAR ID	8	**Section no.**	D.4	**Date:** 28/01/2016
Description of CAR				
The historical values used to calculate the E_{BL} (Chemical Organic Demand (COD) removal efficiency from the baseline wastewater treatment system), the efficiency calculation is not considering the weighted average for the COD and volume, as used to calculate the efficiency of the project wastewater treatment system. Moreover, the efficiency of the months January, February and March 2004 do not present the formula /16/ efficiency reported for August 2005 is not coherent with the others months.				
Project participant response				**Date:** 03/11/2016
The historical data values for COD removal efficiency in the baseline wastewater treatment system were corrected and provided to the DOE.				
Documentation provided by project participant				
Revised PDD, revised CERs spreadsheet, "Boletim Mensais2004.xls" "Boletim Mensais2005.xls"				
DOE assessment				**Date:** 10/11/2016
Documents were corrected revised. This CAR is closed.				

CAR ID	9	**Section no.**	D.5	**Date:** 28/01/2016
Description of CAR				
PP has included the parameters m (months in a year with temperature above 15ºC); EPJ: (Chemical Organic Demand (COD) removal efficiency from the project wastewater treatment system) and $MCF_{aerobic,k}$ (Methane Correction Factor for Aerobic Systems), in the section B.6.2 of the PDD. However, in accordance with the instructions for filing the PDD: *Include a compilation of information on the data and parameters that are not monitored during the crediting period but are determined before the registration and remain fixed throughout the crediting period. Do not include data that become available only after the registration of the project activity (e.g. measurements after the implementation of the project activity) here but include them in the table in section B.7.1*				
Project participant response				**Date:** 03/11/2016
Since the discussion regarding the months in a year with temperature above 15ºC is already in section B.6.1, the parameter m was removed from section B.6.2. MCFaerobic,k and Epj were included in section B.7.1, as recommended.				
Documentation provided by project participant				
Revised PDD				
DOE assessment				**Date:** 09/11/2016
Monitored parameters were included in the section B.7.1 in accordance with the instructions for filing the PDD. This CAR is closed				

CAR ID	10	**Section no.**	D.5	**Date:** 28/01/2016
Description of CAR				
In the table B.7.1 PDD does not described the "unit" of the parameters *CODin,(*tonnes/m^3), *COD_{out}, (tonnes/m^3), CODremoved,k,y,(*tonnes/m^3), in accordance with the applicable methodology.				
Project participant response				**Date:** 03/11/2016
Data units in section B.7.1 were revised in order to be in accordance with the methodology.				
Documentation provided by project participant				
Revised PDD				
DOE assessment				**Date:** 09/11/2016
Revised PDD presents the units in accordance with the applied methodology. This CAR is closed				

CAR ID	11	**Section no.**	D.5	**Date:** 28/01/2016
Description of CAR				
PDD does not describe if the calibration of the monitoring equipment will be done by an accredited person or institution, in accordance with the provision of the Project Standard para. 112 (c)				
Project participant response				**Date:** 03/11/2016
The monitoring sections in the PDD were revised in order to better clarify this issue.				
Documentation provided by project participant				
Revised PDD				
DOE assessment				**Date:** 09/11/2016
Revised PDD describes that the calibrations will be done by an accredited person or institution, in accordance with the provision of the Project Standard. This CAR is closed.				

CAR ID	12	Section no.	D.5	Date: 28/01/2016
Description of CAR				
It was not included in the monitoring plan the parameter Qww,y (Volume of wastewater treated in the year y (m^3)) used to calculate the PEww,discharge,y				
Project participant response				**Date:** 03/11/2016
The monitoring parameters and its corresponding symbol related to amount of wastewater were revised in the PDD and calculations spreadsheet.				
Documentation provided by project participant				
Revised PDD and CERs spreadsheet				
DOE assessment				**Date:** 09/11/2016
Documents were correctly revised. This CAR is closed.				

CAR ID	13 (open in the second round)	Section no.	D.6	Date: 09/11/2016
Description of CAR				
In accordance with the project cycle paragraph 290. *The new crediting period shall start on the day immediately after the expiration of the current crediting period regardless of the date when the crediting period is deemed renewed in accordance with paragraph 308 below. However, if the notification of the intention to request a renewal of the crediting period was not received by the secretariat by 180 days prior to the date of expiration of the current crediting period in accordance with paragraph 291 below, and if the date when the renewal of crediting period is deemed renewed after the expiration of the current crediting period, the project participants or the coordinating/managing entity shall not be entitled to claim the issuance of CERs from the first day of the next crediting period until the last day before the renewal of crediting period is deemed renewed or until the number of days equivalent to the delay in the notification have elapsed since the notification submission deadline, whichever is earlier.* Therefore, PP is requested to update the starting date in the section C.2.2 accordingly.				
Project participant response				**Date:** 11/11/2016
Date updated to be in accordance with the paragraph 290.				
Documentation provided by project participant				
Revised PDD				
DOE assessment				**Date:** 22/11/2016
PDD was revised to consider the day immediately after the expiration of the current crediting period: 19/01/2015. This CAR is closed				

CAR ID	14 (open in the second round)	Section no.	D.7	Date: 09/11/2016
Description of CAR				
Revised PDD version 02 excluded the PP EcoSecurities Group Plc.from United Kingdom of Great Britain and Northern Ireland not in accordance with the project page view in the UNFCCC web site				
Project participant response				**Date:** 11/11/2016
Project participant included.				
Documentation provided by project participant				
Revised PDD				
DOE assessment				**Date:** 22/11/2016
PDD was revised and presents PP in accordance with the project page view in the UNFCCC web site. This CAR is closed				

Table 3. FAR from this validation

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

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Document information

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