UK COWCREDIT PROJECT

A UK DAIRY INITIATIVE TO REDUCE METHANE FROM ENTERIC FERMENTATION AND SUPPORT FARMERS

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Summary:

Project Description:

The proposed "UK CowCredit Project: A UK dairy initiative to reduce methane from enteric fermentation" aims to reduce greenhouse gas (GHG) emissions from the livestock sector, with the introduction of feed supplement in the dietary regime of dairy farm animals (ruminants). The project activity will reduce methane (CH_4) emissions from enteric fermentation by direct inhibition of methanogens in the rumen. The project is developed as a grouped project within the boundaries of United Kingdom (UK).

The project activity, at the time of this validation assessment, has only one instance added however, intended to add more instances during next 10 years of the first crediting period. The project implementation results in a substantial net reduction of GHG emissions, because of the avoidance of methane (CH_4) gas that would have released into the atmosphere. Methane is a greenhouse gas, by-product of the enteric fermentation process, and is expelled by the ruminant through its respiratory pathway. Prior to the start of the proposed project activity, there were no similar enteric methane reduction activities, therefore, this led to the release of CH_4 into the atmosphere and this normal scenario, in absence of the project activity, is identified as project baseline scenario.

Over the 10 years of the first crediting period, the project will generate an estimated annual average reduction of 215,050 tons of carbon dioxide equivalent (tCO2e), totaling 2,150,500 tons of aggregate emissions reduction by the end of crediting period. The Project fulfils the eligibility requirements and the conditions set in VCS methodology "VM0041: Methodology for the Reduction of Enteric Methane Emission from Ruminants through the Use of 100% Natural Feed Supplement, version 01.0" and the applicable sectoral scope is VCS Sectoral Scope 15, Livestock and manure management. During the first verification conducted along with the validation, actual emission reductions for the monitoring period 07/05/2019 – 29/02/2020 (both dates included) were calculated by PP and verified as 309 tCO_{2e}.

Validation & Verification Description:

Earthood Services Private Limited (hereafter referred as ESPL) has been contracted by Mootral S.A. for the Validation and Verification of the Grouped project activity. The overall validation and verification, from Contract Review to Validation and Verification Report & Opinion, was conducted following ESPL's internal quality control procedures.

The Validation and Verification of the project activity consisted of three phases:

i) desk review of the project;
ii) follow-up onsite visit and interviews with project stakeholders;
iii) resolution of outstanding issues and the issuance of the final joint validation and verification report and opinion.

Scope of Validation and Verification:

The scope of the validation is to establish that:

- the latest available VCS-PD was used and correctly filled up;
- the project activity is in accordance with all relevant host country criteria (The United Kingdom);
- the project activity is in accordance with all relevant VCS rules and requirements;

- the project activity is in accordance with conditions of the latest version of applied methodology VM0041: "Methodology for the Reduction of Enteric Methane Emission from Ruminants through the Use of 100% Natural Feed Supplement", version 01.0.

The verification scope includes confirming the implementation of the monitoring plan of the VCS-PD (version 04.0) and the correct application of the VCS methodology.

Method and Criteria used for Validation and Verification:

Assessment team during the onsite visit confirmed that the project activity includes the first instance operating, with Mootral feed supplement being provided to the farm dairy cows, thus resulting in a decrease in the enteric methane emissions released by farm animals. The project activity follows the rules and procedures laid down in the VCS-PD for the project monitoring, and has implemented the project monitoring in-line with the requirements of the monitoring plan, for the current monitoring period.

This is verified by the ESPL assessment team that during the current monitoring period which is starting from 07/05/2019 to 29/02/2020 (both dates included), the project activity has resulted in a GHG reductions of 309 tCO_{2e}.

During the validation and verification process, a total of 05 CLs, 03 CARs and 00 FARs were raised, which were closed upon receiving satisfactory responses from the project developer. These are discussed in detail in Appendix IV of this report.

The VVB has confirmed that:

- the PA is in accordance with all relevant host country criteria (The United Kingdom) and VCS rules and requirements;
- the PA is in accordance with all conditions of the latest version of applied methodology VM0041: "Methodology for the Reduction of Enteric Methane Emission from Ruminants through the Use of 100% Natural Feed Supplement", version 01.0;
- the local stakeholders' consultation has been performed in accordance with host country and VCS requirements;
- the environmental assessment is appropriate and sufficient;
- the monitoring plan is transparent and adequate;
- all information has been consistently applied in the VCS-PD;

It can be concluded that the implementation of the project has been done as per description in the VCS-PD.

ESPL's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the validation and verification by obtaining evidence and other information and explanations that it considered necessary, to give reasonable assurance that the project activity is valid as per project standard requirements, and the reported GHG emission reductions are fairly stated.

In ESPL's assessment team's opinion, the project activity is a valid activity under operation in terms of project description, as defined in the VCS Project Document, version 02.0 dated 02/04/2020 /2/, which is confirmed through desk based review of documents followed by project on-site visit by the assessment team. Adding to that, the GHG emissions reductions reported for the project activity for

the monitoring period 07/05/2019 to 29/02/2020 (both dates included) are fairly stated in the Monitoring Report version 01.0 dated 29/02/2020 /3/.

Vintage wise representation of the emission reductions verified is as follows:

Vintage	Period	VCUs
2019	07/05/2019 – 31/12/2019	247
2020	01/01/2020 – 29/02/2020	62
Total	**07/05/2019 – 29/02/2020**	**309**

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1 INTRODUCTION

1.1 Objective

Mootral S.A. has contracted ESPL to conduct joint validation and first verification of the project activity "UK CowCredit Project", in accordance with the requirements set under Verified Carbon Standard, version 04.0. The verification scope selected is for the period monitoring period starting from 07/05/2019 – 29/02/2020 (both dates included).

1.2 Scope and Criteria

The scope of the validation and verification is to establish/verify that:

- the latest available VCS- PD and MR were used and correctly filled up;
- the project activity is in accordance with all relevant host country criteria (The United Kingdom);
- the project activity is in accordance with all relevant VCS rules and requirements;
- the project activity is in accordance with conditions of the latest version of applied VCS methodology VM0041: version 01.0/6/.

The validation and verification of the grouped project activity is based on the VCS PD and MR, estimated GHG emission reduction calculations and calculations on actual emission reductions achieved by it.

1.3 Level of Assurance

A draft joint validation and verification report that is prepared by assessment team is reviewed by an independent technical review team (one or more members) to confirm if the internal procedures established and implemented by ESPL assessment team are duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable VCS requirements as appropriate. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of technical review team are independent of the validation and verification team. The report approved by Technical Manager is endorsed by Managing Director, who is overall responsible to ensure quality, before final release. The further details of applicable procedures and responsibilities about ESPL Quality Management System (QMS) are available on its website (www.earthood.in).

ESPL's validation approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the validation by obtaining evidence and other information and explanations that it considers necessary to give reasonable assurance that reported estimated GHG emission reductions are fairly stated.

The level of assurance of the joint validation and verification report falls under reasonable assurance engagements as selected and agreed with the Client. Reasonable assurance is a high level of assurance regarding material misstatements, but not an absolute one. Reasonable assurance includes the understanding that there is a remote likelihood that material misstatements will not be prevented or detected on a timely basis. To achieve reasonable assurance, the assessment team obtain sufficient appropriate audit evidences to reduce audit risk to an acceptably low level. This means that there is some uncertainty arising from the use of sampling, since it is possible that a material misstatement will be missed. The evidence used to achieve a reasonable level of assurance is specified in various sections of this report.

In our opinion, the estimated and actual GHG emissions reductions were calculated correctly on the basis of the approved baseline and monitoring methodology VM0041, version 01.0/6/, and the VCS standard, version 04.0 /7/.

1.4 Summary Description of the Project

The "UK CowCredit project" aims to reduce greenhouse gas (GHG) emissions from the livestock sector within the UK dairy industry. The project activity has introduced Mootral natural feed supplement into dairy cattle diet, which has resulted in reduction of methane (CH_4) emissions from enteric fermentation by directly inhibiting the methanogens in the rumen. The initial instance of the project activity has around 400 dairy cows in a dairy farm, and PP started using the Mootral natural feed supplement into the cattle diet from 7th of May 2019. The location of dairy farm which is part of current monitoring period is Lancashire county in North West England, Lancaster, United Kingdom (UK).

The project is developed as a grouped project within the UK boundaries.

The feed supplement is based on a proprietary combination of active compounds from garlic and flavonoids derived from citrus. This composition of feed ingredients acts upon the rumen, which result in direct inhibition to the activity of archaea (microbe within the digestive tract of ruminants responsible for enteric fermentation). This leads to nearly complete inhibition to activity of archaea, consequently the reduction of emitted methane. The project activity has resulted in a 38.3% reduction in methane emissions for Jersey cows and 20.7% for Holstein-Friesian cows under farm conditions. Studies conducted in the project activity farm, including a peer reviewed publication, confirm that the feed supplement doesn't affect the animal performance, its manure, or the utilization of feed. In the absence of project activity, there was no such activity which results in a decrease in CH_4 emissions released by farm animals.

The Project is quantified and will be monitored according to VCS methodology "VM0041 Methodology for the Reduction of Enteric Methane Emission from Ruminants through the Use of 100% Natural Feed Supplement" and falls under VCS Sectoral Scope 15, Livestock and manure management.

The project activity has implemented the monitoring of its first activity instance, for the monitoring period 07/05/2019 – 29/02/2020 (both dates included).

Year	Baseline emissions or removals (tCO2e)	Project emissions or removals (tCO2e)	Leakage emissions (tCO2e)	Net GHG emission reductions or removals (tCO2e)
2019	967	720	0	247
2020	244	182	0	62
Total	1211	902	0	**309**

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

The joint Validation and Verification, from Contract Review to Verification Report & Opinion, was conducted using ESPL internal procedures. The Project was verified against the latest requirements (Version 4.0) /7/ and guidance set out in VCS and CDM Standards as applicable.

The validation and verification of project activity process is conducted as per internal CDM Quality Manual and in accordance with criteria laid down by VCS. It includes the following steps:

- contract with PP for the scope and appointment of validation, verification team and technical review team;
- completeness check of VCS PD and MR;
- desk review of PD & MR and estimated as well as actual GHG emission reduction calculations;
- reporting and closure of findings (CARs/CLs/FARs) and preparation of draft joint validation and verification report;
- independent technical review of the draft report and final/revised documentation (e.g., VCS PD and MR, corresponding estimated ER estimation and calculations sheets, and evidences);
- issuance of the final validation and verification report to contracted PP (or authorized representatives).

No sampling was required for conducting checks since all data, project activity operations, and monitoring procedures were directly verified on-site (available on farm) and from supporting documents provided by PP.

2.2 Document Review

The joint validation and verification is performed primarily as a document review of the documents submitted at various stages of assessments. The review is performed by assessment team using dedicated protocols. The assessment team cross checks the information provided in the documents (Project Description & Monitoring Reports), the supporting documents/studies provided by PP, and information from sources other than those used, if available, and also conducts independent background investigations. ESPL conducted a desk review as under:

- A review of the data and information presented to verify their completeness.
- A review of the monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the frequency of measurement/recording of parameters, and the quality assurance and quality control procedures.
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

2.3 Interviews

On 03/03/2020 & 04/03/2020, Interviews were conducted by the ESPL assessment team during the on-site visit, with the project stakeholders and other officials involved in the project activity implementation. The agenda of the interviews was to confirm selected information and to resolve issues identified during document review.

During the on-site visit, the following representatives of Mootral S.A. and other stakeholders were interviewed:

S.No.	Name	Organization	Topic discussed	Team Member
1.	Elisavet Zoupanidou	Mootral	Project management, implementation, GHG calculations and on-site monitoring	Dr. Kaviraj Singh
2.	Deepashree Kand	Mootral	Implementation and on-site monitoring, technical specifications	Dr. Kaviraj Singh
3.	William Tullez	Evidence Group	Project data management, implementation, farm nutritionist and local stakeholder	Dr. Kaviraj Singh
4.	Edward Towers	Brades Farm	Farm owner & local stakeholder	Dr. Kaviraj Singh
5.	Joe Towers	Brades Farms	Farm owner & local stakeholder	Dr. Kaviraj Singh

During the on-site visit, the stakeholders were questioned about the implementation of the project activity. Topics such as the ID of cows, the implementation of software management system for entry of supplement feed data, procedures for recording and monitoring of the project emissions data and the error accountability was discussed. Regulatory documents like the incorporation certificates of feed manufacturer and the registration documents of the farm, the carbon credit rights transfer acknowledgement by the farm owner, the sale invoice slips for the feed supplement purchased by the farm during the monitoring period, farm management and data record for feed pellet mix etc were also verified at the site itself. The local stakeholders were also interviewed to assess the outcome of the Local Stakeholder Consultation activity.

Based on the discussions made during the on-site visit, it can be confirmed that the project activity is complying with the current VCS standards/7/ and maintaining all the QA/QC procedures.

2.4 Site Inspections

A site visit was undertaken by ESPL assessment team for the dates 03/03/2020 & 04/03/2020 to carry out the following:

a) An assessment of the implementation and operation of the project activity as per the methodology and VCS standards.

b) A review of information flows for generating, aggregating and reporting all parameters.

c) Physical inspection of site: Visit to the Brades Farm (where first instance of project activity is operating).

d) Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the methodology and monitoring plan in the Project Description and Monitoring Reports.

e) Review of additionality assessment.

f) Review of environmental impacts and impacts on local stakeholders.

g) Review of management and operational system: documentation, allocation of responsibilities, qualification and training, data recording &archiving, internal audit and management review and emergency procedures.

h) A cross check between information provided in the monitoring report and data from other sources such as baseline data sheets for GEI and DMI, invoice slips, carbon credit rights agreement, etc.

i) A check of the monitoring equipment, including farm's software management system; and observations of monitoring practices against the requirements of the Project Description and Monitoring Reports /2//3/, the applied methodology/6/.

j) A review of calculations and assumptions made in determining the GHG data for estimated and actual emission reductions.

k) An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

2.5 Resolution of Findings

The findings may be of the following types: CAR – Corrective Action Request, CL – Clarification Request, and FAR – Forward Action Request.

During the present validation & verification, 05 CLs and 03 CARs were raised and successfully closed.

The list of findings raised and their resolutions are presented in the Appendix IV of this joint validation & verification report. The section also includes the responses (wherever requested by the assessment team) by the project participants and an assessment by the validation and verification assessment team to ensure it was closed successfully.

2.5.1 Forward Action Requests

No FAR has been raised during this validation and verification activity.

3 VALIDATION FINDINGS

3.1 Project Details

The project activity is a grouped project activity aimed at reduction of enteric methane emissions released by farm animals, by the action of feed supplement. Mootral S.A. is the project proponent for the project activity. The project activity follows VCS methodology VM0041, ver. 01.0/6/.

The feed supplement is formulated by following the regulatory norms of the host country UK, thus using only those ingredients (garlic and flavonoids) which are registered in the EU feed material register. In the project baseline, there was no such intervention, which specifically aims at reduction of methane from farm animals. The project baseline studies and data collected reflect that the farm activity is using a feed material that is not impacting the livestock performance.

Alongwith the validation, the project is also undergoing its first verification. This includes the first monitoring period of the only project activity instance within the project activity.

The project activity is maintained by project proponent which is Mootral S.A. The project activity falls under VCS 'project' category, with annual average emissions <300,000 tCO_{2e}. Under the activity, various instances are planned for inclusion, and the farm owner/operator will act as the project activity instance implementer.

The number of annual average emission reductions estimated for the first 10-year crediting period are 215,050 tCO_{2e}.

The actual emissions achieved for the monitoring period are 309 tCO_{2e}.

Project start date is 07/05/2019, which is the date when actual usage of feed material started in the farms. The project start date is confirmed by checking the project feed supplement usage in the cattle diet ration. This is recorded in the project farm's Software Management System /9/, and the vital information for project activity (amount of diet prepared per unit dairy cattle, the components selected, the content ratio of components, the feed supplement content, and the number and grouping of cattle for each diet batch) is recorded on a continuous basis. PP has shared the records for usage of feed supplement, and these have been verified by the assessment team.

For the calculation of ERs, PP assumed a 2-week adaptation period (normally it takes 2 weeks for farm animals to adapt to any change in their feed regime), and started ER calculations from 21/05/2019. This was furnished by supporting documents (independent research studies) shared by PP /24/, where discussions were made on the rumen adaptation period. The discussion summarizes that an adaptation period is required by the rumen in order to accommodate for the changes in dietary regime, and this generally 10-14 days for cows and buffaloes.

The crediting period selected for the project activity is 10 years, twice renewable, with start date being 07/05/2019 and end date 06/05/2029. This has been verified by the document 'VCS version 4: OVERVIEW OF SUBSTANTIVE UPDATES TO PROGRAM RULES & REQUIREMENTS'/23/. The requirement

no. 5, point 3 says that "Projects applying a new VCS methodology (i.e., a methodology for which a concept note was submitted to Verra on or before 31 December 2018) will be granted additional time to apply the crediting period requirements under VCS Version 3. Specifically, projects using a new VCS methodology and completing validation within two years of the approval of the methodology may apply the crediting requirements as set out under VCS Version 3."

VERs ownership is secured by Mootral S.A. which is the manufacturer and supplier of feed supplement. This is confirmed through carbon credit rights agreement /8/ signed between Mootral S.A. and the farm director.

The project activity is implemented in the boundaries of the United Kingdom of Great Britain and Northern Ireland. The first activity instance is implemented in a farm located in Lancashire county in North West England Lancaster, United Kingdom. This is confirmed by the assessment team during their on-site visit to the project farm, where first instance of the project activity is being implemented.

The project activity is following all the regulatory, local, state and country level laws applicable to its business activity and the processes within. The same is applicable for the Local Stakeholder Consultation and EIA requirements of the project activity.

The conditions prior to the project initiation were use of regular feed material mix, with no usage of supplement for reduction of methane from enteric emissions.

The GHG emission reductions achieved by the project activity are not included in any other program (which has provisions for GHG emission allowance trading) or any emission trading mechanism. This is declared by Mootral S.A., since it is the manufacturer and sole supplier of project feed supplement material /8/. The project activity also doesn't participate in any other GHG program, nor has been rejected by any such GHG program in past. This is declared by PP in the Section 1.15 of the VCS PD, and verified by the assessment team during interviews with PP representative at the time of on-site visit.

The information provided above is verified with the help of supporting documents and evidences. The documents referenced that were verified for the project activity, have been reviewed by the assessment team, and these documents are listed in Appendix – I. Thus, VVB confirms that the description provided in project description is accurate, complete and appropriately provides the understanding of the nature of the project. The project is found to be implemented in line with the project description /2/ and applied VCS methodology /6/.

3.2 Participation under Other GHG Programs

The project activity is not a part of any other GHG program.

3.3 Safeguards

3.3.1 No Net Harm

There is no net harm caused by the project activity because it only changes the feed of the cattle (dairy cows) and has no material negative impacts on environment. This has also been confirmed, by interviewing various stakeholders involved in the project activity, on-site during the VVB team's project activity site visit.

3.3.2 Local Stakeholder Consultation

The PP has conducted several meetings with the project stakeholders, in order to understand their concerns in relation to the project activity/22/. The stakeholder consultation took place before and during the project implementation.

Apart from the stakeholder meetings, PP has also added a web-based portal for stakeholders, where they are invited to share their feedback, grievance, or suggestion.

3.3.3 Environmental Impact

The mitigation activity includes registered farm with dairy cattle operations and introduction of Mootral natural feed supplement into the animal's diet, reducing methane emissions from enteric fermentation. Thus, the project activity is not expected to have any adverse environmental impacts.

3.3.4 Public Comments

There were no comments received the public commenting period.

3.3.5 AFOLU-Specific Safeguards

Not Applicable.

3.4 Application of Methodology

3.4.1 Title and Reference

The methodology applied for the project activity is VM0041: Reduction of Enteric Methane Emission from Ruminants through the Use of 100% Natural Feed Supplement, version 01.0/6/.

3.4.2 Applicability

The project activity follows the requirements laid down in the applicability conditions of the methodology (VM0041, ver. 01.0) /6/. Thus, the methodology is deemed completely applicable for the first crediting period and no request for deviation with regards to the applicability of the methodology is required. All applicability conditions are complete and are correctly included in the VCS PD/2/.

S. No.	Criteria	Means of Verification	Conclusion

1.	Livestock producers must feed their animals a natural feed supplement which reduces enteric CH_4 emissions by direct inhibition of methanogens in the rumen.	Dairy producers must feed their animals with the Mootral feed supplement. Proof of purchase is provided through delivery receipts and/or invoices for verification. PP has shared sales invoices/18/ (ass proof of purchase) with the VVB assessment team, with verifiable dates and quantities of supplement.	The evidence shared by PP (Inovices/POs /18/) is verified, and thus it can be confirmed that the eligibility criteria is fulfilled by the project.
2.	Livestock in the project boundaries must only include ruminant animals.	This project activity includes only dairy cattle. The ER Sheets have provided data for ER calculation as well as baseline data for two species of cows, which are Holstein-Friesian and Jersey. Apart from that, the baseline study conducted for the project activity parameters DMI and GEI also includes ruminant cattle (the same cow species which are used for the project activity).	The ER Sheet/4//5/ data PP has provided, shows that only two species of dairy cows are being fed with the feed mix containing Mootral supplement pellets (3%) for the project activity. This is also being recorded in the farm's software management system /21/. Also, the VVB team confirms that only 2 cow species (i.e. Holstein-Friesian and Jersey cows) are part of the project activity, as assessed during the on-site visit.
3.a	The active ingredients of the feed supplement must be 100% natural plant-based or macroalgae based and non-GMO. This includes extracted components of plants. The feed	This project activities include the application of Mootral feed supplement. The project proponent provides a non-GMO report based on lab analysis. PP has shared a declaration in	As PP has shared declarations on supplement being non-GMO /11//12/, the criterion is fulfilled.

	manufacturer needs to provide a non-GMO certificate based on lab analysis.	support of feed supplement product, stating it being non-GMO.	Also, the PD (Section 1.14) states that ingredients used for feed supplement are traceable in the EU Feed register. In these statements within PD, PP has shared URLs (weblinks) which are showing that the feed supplement ingredients (citrus extract, and garlic extract) are natural and plant based. This has been verified by VVB team, and it confirms that the ingredients are 100% natural & plant/algae based.
3.b	The feed supplement must have been demonstrated to comply with all feed and food regulations in each national or subnational (including local) jurisdiction in which it is consumed. Where conflict arises between regulations, the most stringent standard will apply.	The project activity requires the usage of Mootral natural feed supplement. The supplement complies with the European regulatory framework as described in section 1.14. The project proponent is providing the specific part of the regulations relevant to the supplement. This has been verified through reference provided by the PP.	The reference provided against the ingredients used for the feed supplement (in the VCS PD/2/) is traceable and clarifies that the feed material is following the regulations stated therein. Therefore, this eligibility criterion is also fulfilled.
3.c	The feed supplement must have no significant negative health or performance impacts on the animal to which it is fed. Where conflict arises between regulations, the most stringent standard will apply.	The project proponent is providing studies demonstrating no significant negative health or performance impacts on the animal to which it is fed. If available health data exist during	The baseline data on farm animal health provided in the ER Sheet/4//5/, and the verifiable studies shared by PP/13/ (from

		the project implementation of each instance, they can be used to prove no negative impact on the animals' health.[1]	peer reviewed journals), confirms that the feed supplement does not have any negative performance impact on the animal to which it is fed.
3.d	The feed supplement must be used as per feeding instructions provided by the manufacturer. The instructions provide critical defining conditions to secure the default level of reduction of the enteric methane emissions, such as the feeding routine and dose of supplement per kg of DMI to the animal.	The monitoring process of this project activity will secure the applicability and usage of the feed supplement. The Brades Dosage Method, as described in OJAS (Hilde et al. 2019/14/), gives a schematic view of the mechanism that is to be followed during the project monitoring period.	The feed dosage method, applicable for the first instance (Brades Dosage Method/14/), shows that the feed supplement is being used as per the feeding instructions provided. This was further verified during the on-site visit, and has been found valid.
4.	Emission reductions generated by the use of other feed supplements and/or activities (e.g. improving animal productivity or nutritional and management strategies), the objective of which does not lead to the inhibition of methanogenesis, cannot be claimed through this methodology. This is to prevent overestimation of emission reductions achieved.	Feed records provided by the farm or farm's nutritionist are used to demonstrate the use or not of other feed supplements. The feed records/15/ are shared by the PP, and it includes the data on the feed provided to the cows on the farm.	The feed records excel sheet/15/ clearly mentions the contents of the feed mix, which states that any other supplement was not used in the project baseline. During the project monitoring period, this is evidenced in the form of accuracy report of the feed regime/15/ shared by the PP.

[1] Vrancken, H.,Suenkel, M.,Hargreaves, P.R.,Chew, L.and Towers,E.(2019) Reduction of Enteric Methane Emission in a Commercial Dairy Farm by a Novel Feed Supplement. Open Journal of Animal Sciences, 9, 286-296. Available data in ER calculation sheet also provided

			The applicability criteria is fulfilled by the project activity.
5.	The implementation of project activities must confirm that the herd of ruminants in a given operation is fed the project feed supplement. For this purpose, the project proponent must be able to trace the feed supplement from on-farm consumption.	The monitoring process of this project activity will secure the applicability and usage of the feed supplement. Additionally, the project proponent is the manufacturer of the feed supplement. PP has shared the data collection and management system, and this also includes the record of feed consumption data. PP has also shared the accuracy reports, which are prepared by third party consultant. These accuracy reports record the targeted feed components and the actual used in the farm. Together, these evidences are satisfactorily representing the monitoring of ruminants consuming the feed supplement.	The documents shared by PP used to verifies the data management system in use. The supporting documents shared for this criterion are 1. The number of animals fed (through farm's software management system)/21/ 2. The feed invoices and POs/18/ This was further checked during the project on-site visit. Interview with the farm's nutritionist clarified that the feed supplement purchased is mixed in a proportion with the essential cow feed components, total mixed ration, (grass silage, maize silage, whey, etc.), which is recorded in document form and accuracy checked via third party. The accuracy reports shared by PP are prepared by Evidence group (consultant) on a

			weekly basis, and shared with PP via email. These accuracy reports show the difference between the targeted amount for each ingredient of cattle diet (e.g. maize silage, grass silage, straw-chopped, Mootral, etc.) and the amount that was identified as actual. The InTouch Accuracy Reports (shared with PP on weekly basis) are prepared by an expert in Ruminant Nutrition, and were found as credible source of feed prescription for the farm animals. This procedure ensures that the feed supplement's on-farm consumption is traceable.
6.	The feed manufacturer needs to provide proof of evidence for no increase in the manure emissions due to feed supplementation (e.g., evidence-based literature, peer-reviewed publications, study reports).	The project proponent is providing the results of a lab slurry analysis performed during the implementation of the first instance of this project activity. Public literature is used to demonstrate this criterion by comparing the slurry analysis results against baseline values derived from public literature.	The lab Slurry analysis data/16/, alongwith the research documents as reference signify that the feed supplement aimed at inhibition of methanogenesis in cattle is in no way increasing the farm animals' manure content.

			1. Technical Note TN650, April 2013; and 2. Think manures 'A guide to manure management' The above two documents /16/ shared by PP clearly state the indicative amount of total nitrogen available in a cattle slurry on dry matter (%) basis. The slurry analysis is done on Brades farm cattle (ones consuming the Mootral Feed Supplement) and the date of slurry analysis test confirms it. The results are summarized in a report form, where the total Nitrogen content of the farm cattle slurry is of equivalent amount (as provided in the reference literature). This states that the application of feed supplement in a farm is not resulting in an increase in the farm manure emissions. Therefore, this criterion is deemed fulfilled.

7.a	Where project areas involve livestock farms that were operating prior to the start of project activities, reliable data (e.g., gross energy intake and dry matter intake) per animal group must be available for a minimum of three years if using baseline emissions Option 2 and two years if using baseline emissions Option 1.	Historical data shared by PP in the ER Sheet. The data is cross-checked for the parameters DMI and GEI, and it is found to follow the requirements set in the applicable methodology VM0041, ver. 01.0.	PP has shared the DMI and GEi data for the project's 2-year and 4 months baseline period. On adding 10 months DMI and GEi data recorded during the project implementation, this total to more than 3 years of data, hence deemed sufficient from the applicability requirement point. Therefore, the applicability criterion is deemed fulfilled by the project activity.
7.b	Where project areas involve livestock farms that no farm records and farming data are available, the project proponent must be able to provide evidence to substantiate the animal group to which each new project area is allocated according to the average group as described in national or regional statistical accounts (i.e., the baseline emissions will be considered as the average activity of where the project is located).	This criterion is not applicable, since the project activity had verifiable historical data available.	Not Applicable.

3.4.3 Project Boundary

The project boundary includes all the dairy cows in the UK, therefore, the project boundary includes dairy livestock operations in the UK.

The GHGs considered by PP within the project boundary, for baseline and project emissions, are all in-line with the methodological requirements.

GHG emissions in the baseline scenario:

There are no CO_2 emissions in the project baseline, since enteric fermentation is the only GHG source in the project's baseline, resulting in CH_4 as GHG emissions. The VVB assessment team checked the project site during on-site visit, and no CO_2 emissions were observed in the project baseline. The only GHGs present in the project baseline were CH_4 emissions from the farm cattle activity.

GHG emissions in the project scenario:

Project scenario is divided into two forms of activities, which result into GHG emissions.

They are: (i) enteric fermentation and, (ii) supplement manufacturing process. The GHG emissions owing to enteric fermentation exist in project scenario because project activity is not completely removing the GHG emissions, but are reducing it. The emissions associated with the feed supplement manufacturing process are CH_4 and CO_2. The emission sources were checked for in the project scenario by the VVB assessment team, and found as correctly implemented and valid for the project operations.

The VVB assessment team concludes that the project boundary requirements are adhered to in the PD, and the project activity implementation is being done in the project boundary defined. This has been confirmed through various evidences shared by PP and through the project on-site visit.

3.4.4 Baseline Scenario

The baseline scenario existing prior to the project activity is the prevailing practice of conventional feed regime, without any additive or supplement aimed at reduction of enteric methane emissions. The baseline scenario is the appropriate assumption, and it can be verified by considering any dairy farm in UK where Mootral feed supplement is not being used for reduction of enteric methane emissions. Since Mootral S.A. is the feed supplement manufacturer, and is using the feed supplement only for the first project activity instance (Brades Farm), it can be ascertained that the feed supplement is not being used anywhere else (i.e. feed supplement usage in dairy farms, aimed at reduction of enteric methane in farm livestock is not the common/prevailing practice in the project boundary), and the description of project baseline is accurate. The average UK dairy farm is emitting methane in the environment, and this is the baseline scenario. This is in conformity with the methodological requirements. The observations made during assessment team's project on-site visit further validates the PP's baseline description.

So, it can be concluded by the VVB team that the project baseline is a valid description of conditions existing prior to the project activity.

3.4.5 Additionality

The project activity is using activity method as its additionality criteria. While using this, the two step approach is used, as evidenced in the methodology applied /6/. Step 1 incorporates Regulatory Surplus as option of choice. Step 2 has provisions for positive list, where the requirements are fulfilled using the activity penetration option (Option A in the VCS Methodology Requirements).

There are no regulatory requirements in place within the project boundary to report or reduce methane emissions within the dairy farms. This was confirmed with the help of CL03 (2) raised in this context, and

the closure of the same upon receipt of satisfactory response from the PP (please refer Appendix IV). This clarifies that Step 1 is fulfilled for the VCS project activity.

The project activity is using a new technology, and a newly approved VCS methodology. The project technology is available in the market from less than past 3 years. Also, there are barriers to the uptake of this project technology, because the purchase of feed supplement is an add-on cost to the farmers. For the successful adoption of this technology, farm owners/operators must be aware of the existence of the technology, and must believe in the effectiveness of its actions, alongwith the understanding of its application.

Adding to that, the maximum adoption of this activity is capped to 350,000 for the first crediting period. In order to not be considered additional, the activity outreach needs to be at 1.707 billion ruminants (farm animals). The Step 2 of Additionality is also fulfilled for the project activity since the penetration level of the project activity, even if it is fully realized (achieving the maximum adoption level for the first crediting period), would not attain the 5% threshold.

The above conditions describe the fulfilment of additionality for the project activity. The detailed approach used for the application of additionality criteria in the context of project activity, shall be referred from the Appendix – I of the methodology VM0041, ver. 01.0/6/. It is found that the additionality criteria set in the methodology is met by the project activity.

The claims made by PP within the VCS-PD for additionality assessment, have been verified during the project site visit. The PP's claim of activity being additional is valid and appropriate.

3.4.6 Quantification of GHG Emission Reductions and Removals

The proposed activity has applied VCS methodology VM0041, ver. 01.0. The project follows two options (option 1 & 2) for the determination of enteric emission factor ($EF_{Enteric,i}$), as described in the methodology VM0041. Depending on the availability of relevant livestock group data and measurements, each livestock group will choose the most appropriate option to determine the baseline emissions.

Baseline Emissions:

The baseline emissions for the project activity are calculated as follows:

$$\mathrm{BEEnteric_i} = \sum_{j=1}^{N} [\mathrm{EFEnteric}_{i,j}] \bullet \frac{GWP}{1000}$$

Where:

$BE_{Enteric,i}$	Total baseline CH_4 emissions from livestock enteric fermentation for farm *i* (tCO_2e). Where the project activity includes multiple farms, emissions in the baseline scenario are estimated as the sum of annual emissions from each farm *i*: $\sum_{i=1}^{N}[\mathrm{BEEnteric_i}]$
$EF_{Enteric,i,j}$	Enteric CH_4 emissions factor for each animal group *j* during the monitoring period (kg CH_4 $group^{-1}$)

GWP	Global Warming Potential of methane (tCO_2/tCH_4)
1000	kg per one metric tonne
i	Identification of livestock farm (1,2,..,N)
j	Animal grouping (1,2,..,N)

The baseline emissions have been calculated using Option 2 of the VCS methodology, VM0041, for each livestock group. Historical data are provided to demonstrate that the baseline using Option 2 does not represent a biased event as compared to the prior conditions at the farm, and therefore the $EF_{Enterici,j}$ reflects the average activity of the farm. The formula presented below is applied to the first project activity instance – for two cow species (Holstein-Friesian & Jersey), and would be subsequently adjusted for addition of different livestock present on the farm.

$$\mathrm{EF}_{\mathrm{Enteric}_{\mathbf{i,j}}} = \left[\mathrm{GE}_{\mathbf{j}} \bullet \mathrm{Y}_{\mathbf{m,j}} \bullet N_{i,j} \bullet Days_{i,j}\right] \bullet EC^{-1}$$

Where:

$EF_{Enterici,j}$	Enteric CH4 emissions factor for each animal group j during the monitoring period (kg CH4 group^{-1})
GE_j	Average gross energy intake per animal grouping *j* in the farm *i* (MJ head^{-1} day^{-1})
Ym_j	Conversion factor (Ym) indicates the proportion of the animal grouping j gross energy intake (GE) converted to enteric CH_4 energy. Energy of CH_4 as a percentage of GE (dimensionless).
Days	Number of days for each animal in the group j during the monitoring period in farm *i*[2]
$N_{i,j}$	Average number of head in each animal grouping *j* in the farm *i* in the monitoring period (dimensionless)
EC	Energy content of methane (=55.65 MJ kg^{-1} of CH_4)
i	Identification of livestock farm (1)
j	Animal grouping (1,2,..., n)

The gross energy intake GE_j is calculated by multiplying dry matter intake by the energy density of the feedstuff:

$$GE_{\mathbf{j}} = \left[DMI_{\mathbf{j}} \bullet ED\right]$$

Where:

[2] Note that the number of days could be less than 365. For example, in the case of young cattle the number of days represents the length of stay in a specific group.

DMI_j	Average dry mass of feed consumed by animal group 1 and 2 in a given day (Kg head^{-1} day^{-1})
ED	Energy Density. Average energy content of dry matter =19.10 MJ kg^{-1}

The calculations pertaining to the Emission Reductions generated during the project activity monitoring period are provided in the ER calculations spreadsheet.

Project Emissions:

The project emissions are calculated using the following equation.

$$PE_{Enteric\ i} = \sum_{j=1}^{N} [EF_{Enteric_{ij}}] \bullet [1 - ERF_{Enteric_j}] \bullet \frac{GWP}{1000} + EFME_i$$

Where:

$PE_{Enteric_i}$	Total project enteric CH_4 emissions from livestock enteric fermentation for farm *i,* and the production and transport of the supplement used during the monitoring period (tCO_2e) Where the project activity includes multiple farms, emissions in the project scenario are estimated as the sum of annual emissions from each farm *i*: $\sum_{i=1}^{N}[PE_{Enteric_i}]$
$EF_{Enteric_{i,j}}$	Enteric CH_4 emissions factor for each animal group during the monitoring period as determined in section 4.1 (kg CH_4 group^{-1})
$ERF_{Enteric_j}$	Enteric CH_4 emissions reduction factor (default or determined percentage value). Supplement's percentage reduction of the enteric CH_4 per animal in an animal group *j* during the monitoring period.
$EFME_i$	Total emissions associated with manufacturing and transport of the feed supplement in the farm *i* during the monitoring period (tCO_2e)
GWP	Global Warming Potential of methane (tCO_2/tCH_4)
1000	kg per one metric tonne
i	Identification of livestock farm (1,2,..,N)
j	Animal grouping (1,2,..,N)

The methodology allows for using 2 options for calculation of enteric methane emission reduction factor ($ERF_{Enteric}$). Of these, Option 1 was chosen for the first project activity instance.

The values used for $ERF_{Enteric}$ for each animal group in the project activity instance are given below.

Dairy livestock group	$ERF_{Enteric}$

Group 1 (Dairy cows, Holstein-Friesian)	20.7%
Group 2 (Dairy cows, Jersey)	38.3 %

Emissions from the feed supplement are estimated by including all GHG sources from manufacturing and transport (Accounting for these GHG sources is not required for a project where such emissions are shown to be de minimis).

These emissions must be estimated as follows:

$$EFME_i = \frac{FM_i \bullet EF_P}{1000} + EF_{T\,i}$$

Where:

$EFME_i$	Total emissions associated with manufacturing and transport of the feed supplement in the farm *i* during the monitoring period (tCO_2e)
FM_i	Amount of feed supplement purchased by the farm *i* during the monitoring period (kg)
EF_P	Emission factor for production of feed supplement (kg CO_2e kg^{-1})
EF_{Ti}	Emissions for transport of feed supplement consumed during monitoring period to the farm *i* (tCO_2e)

Emissions due to Leakage:

The methodology applied considers leakage to be zero. Therefore, leakage calculations are not applicable for the project activity.

Net GHG emission reductions and Removals:

The net GHG emission reductions are calculated as shown below

$$ER_{Enteric\,i} = \sum_{i=1}^{N} [BE_{Enteric\,i} - PE_{Enteric\,i}]$$

The ER estimates for the first project activity instance, for the first year of its 10-year crediting period are

$ER_{Enterici}$ = 1459 – 1085 = 374 tCO_{2e}

This leads to an estimated 3720 tCO_{2e} ERs generated for the whole crediting period.

The current monitoring period results in a net GHG emission reduction of

$ER_{Enterici}$ = 1,211 – 902 = 309 tCO_{2e}

The equations provided above have been used for ER estimation for the first year of crediting period, as well as for the ER calculations done for the first monitoring period. In order to assess the correctness and

validity of the calculations and assumptions made, PP has shared the ER estimation and ER calculations as separate calculations done for both PD and MR respectively with the VVB team.

On thorough assessment of the calculations made and assumptions taken for the project activity, the VVB team finds that these are correct and deemed valid for the project activity. The ERs generated for the first monitoring period are verifiable and correct.

Conclusion: The validation team confirms that the project activity complies with the specified requirements and formulae used to determine emission reductions as discussed above. The assessment team also confirms that:

- All assumptions and data used by the project participants are listed in the VCS PD and MR sheets, including their references and sources;
- All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the VCS PD and MR /2//3/, and ER estimation & calculation sheets/4//5/;
- All values used in the VCS PD and MR /2//3/, and ER estimation & calculation sheets/4//5/ are considered reasonable in the context of the proposed project activity;
- The baseline methodology and corresponding tool(s) (wherever applicable) have been applied correctly to calculate project emissions, leakage emissions, baseline emissions and emission reductions;

All estimates of the baseline emissions can be replicated using the data and parameter values provided in the VCS PD and MR /2//3/, and ER estimation & calculation sheets/4//5/.This leads the VVB team to conclude that the ER calculations made for the project activity, for the first monitoring period are verifiable and correct, following the methodological requirements, and are in-line with the GHG calculations provided in the PD.

3.4.7 Methodology Deviations

There is no methodological deviation sought by PP for the first monitoring period. Therefore, this section is not applicable.

3.4.8 Monitoring Plan

The following parameters were monitored during the project activity:

S. No.	Parameter	Description	Monitored (Yes/No)	Value Obtained
1.	$N_{i,j}$	Number of animals (head)	Yes	Please refer section 4.1.2 of Joint Validation

				and Verification Report
2.	Days	Number of days project activity implemented in the specific animal grouping	Yes	Please refer section 4.1.2 of Joint Validation and Verification Report
3.	j	Animals at each farm I, grouped, based on a homogenous ruminant population characterization	Yes	2 (HF & Jersey)
4.	FM	Amount of feed supplement purchased by the farm *i* during the monitoring period	Yes	49.825 tons
5.	EF_p	Emission factor for production of feed supplement. GHG emitted per kg of feed	Yes	19 $kgCO_{2e}$ + 325 $kgCO_{2e}$ + 529kg CO_{2e} = 873 $kgCO_{2e}$
6.	EF_{Ti}	Emission factor for transportation of feed supplement to the feed mill or directly to the farm/during the monitoring period	Yes	1.9 tCO_{2e}
7.	Q_{elec}	Quantity of electricity used by production facility supplied by the grid per kg of feed supplement produced	Yes	Unit E – 75; Unit G – 1,271
8.	EF_{elec}	Emission factor for electricity	Yes	0.2556 kg CO_{2e} KWh^{-1}
9.	TEF	Emission factor values for each mode of transport m	Yes	HGV (all diesel), Rigid (>7.5-17 tonnes), 50% Laden, kg CO2e/tonne/km (freighting goods): 0.27393; HGV (all diesel), Rigid (>17 tonnes), 100% Laden, kg CO2e/tonne/km

				(freighting goods): 0.12125
10.	Di	Total distance travelled by the production site to the feedmill and then to the farm	Yes	246 km to the feedmill and 152 km to the farm

The dairy farm data for parameters such as $N_{i,j}$, j, FM is recorded in the farm management system software on a regular basis (as per the methodological requirement for monitoring). This has been confirmed during the project site visit.

The data for manufacture and transport of feed supplement material is also recorded by the PP (Mootral S.A.) since it is responsible for the implementation of these activities. The data is traceable, and doesn't require any sampling plan for its verification. The monitoring protocol implemented by PP is reasonably valid, and follows the requirements set in the methodology VM0041, ver. 01.0 /6/.

3.5 Non-Permanence Risk Analysis

There is no non-permanence risk identified for the project activity. Therefore, this section is not applicable.

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been carried in accordance with the ER calculation requirements set in the PD and MR. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR/3/.

The emission reductions are based on the methane savings from enteric fermentation, throughout the project activity.

- The emission reduction calculations are accurate from the point of data collection, transfer and the formulas applied are in accordance to the applied methodology/6/ and PD/2/.
- The emission reduction calculations have been followed in accordance to the PD/2/ and applied methodology/6/.

- The default values applied for calculations were consistent to the PD and MR sheets/2//3/.

The data transfer from farm activities to final emission reduction calculation sheet/5/ has been transparently described and followed. The final values are reproducible, and all the calculation are linked and clearly presented in the emission reduction calculation sheet/5/.

The assessment team is in a position to conclude that the monitoring for the defined period has been done in accordance with the procedures laid in the registered documents and the resulting emission reductions are measurable and conservative.

4.1.1. Parameter(s) available at the time of Validation

The table below describes how the ex-ante parameters have been verified to confirm that the actual monitoring complies with the monitoring plan, monitoring data has been thoroughly assessed and that the sampling requirement are met.

Ex-Ante Parameter	Assessment
GE_j: Average monthly gross energy intake for a specific animal group Unit: MJ $head^{-1}$ day^{-1} of dry matter	PP has applied the value of GEi on the basis of monthly consumption of feed supplement by the cows in the farm. This data is variable for each month, and the table 2 in the MR depicts the correct usage for each month. The value is calculated, and is based on another ex-ante parameter DMI (Dry Matter Intake). CL#05 (5.1) was raised for this parameter and successfully closed. The value is consistent between MR and the ER calculation sheet.
DMI_j: Average dry mass of feed consumed by an animal in a given day Unit: Kg $head^{-1}$ day^{-1}	The parameter is recorded on a daily basis. Monthly values are calculated by taking weekly average of DMI. These monthly values are variable for each month, and are provided in the table 2 within the MR. The values applied for the monitoring are correct, and are consistent with the ER Sheet.
Ym_j: Percentage of feed energy converted to methane for each animal group	The value applied for Ym_j is 6.5%, and is based on the UK NIR 2017 (Issue 2), Table

Unit: Dimensionless	3.3.4 "Dairy Cows Tier 2 Methane Emission Factors". The value applied has been found as correct and is referenced from a national environmental agency, which is verifiable and valid for use.
NDF_j: Forage quality indices (% Neutral detergent fibers) Unit: Dimensionless	The neutral Detergent Fiber is used to verify the value chosen for the Ym_j. The value used for the parameter is 30%. The value is validated by farm's nutritionist, and thus considered valid.
ED: Energy Content of dry matter Unit: MJ per kg of dry matter	The value applied for the parameter ED is 19.10 for first instance of project activity. In the PD, two choices are available for use by PP, which depends on the fat contents. If fat contents is between 4-6%, then ED will be 18.45 MJ kg^{-1}. If fat content is below 4%, then ED value to be applied will be 19.10 MJ kg^{-1}. CL#05 (5.1) was raised for this parameter and successfully closed. Since the fat content for diets is below 4%, the value applied is correct and thus considered valid for the activity.
EC: Energy Content of Methane Unit: MJ per kg of methane	The value applied is 55.65 MJ kg^{-1}, which is valid since it is a default value taken from IPCC Guidelines for National Greenhouse Gas Inventories, 2006 (Section 10.3.2).
$EF_{Enteric_i,j}$: Enteric methane emission factor for each animal group Unit: kg CH_4 per animal group	The table below provides values applied for the parameter. Total per group HF per year: 35,202 Total per group Jersey per year: 13,239 Total per group per year: 48,441 The values are calculated based on the equations provided in the methodology VM0041, ver. 01.0 /6/ & Section 4.1 of the

	PD/2/, and can be verified from the ER Sheets shared with VVB team. CL#05 (5.1) was raised for this parameter and successfully closed. Therefore, the parameter is considered valid for the project activity.
GWP of CH_4: Global Warming Potential of Methane Unit: tCO_2/tCH_4	The GWP value applied for CH_4 is 25. This is default value taken from IPCC Guidelines for National Greenhouse Gas Inventories, 2006. Since IPCC default values are deemed valid by the VCS, the value applied is correct and considered valid for the project activity.
$ERF_{Enteric\ j}$: Enteric emission reduction factor Unit: percentage (dimensionless)	The ERF values applied for each animal group in the first instance of project activity are 20.7% & 38.3% for Holstein Friesian and Jersey respectively. These values are estimated by conducting a research study: Vrancken, H., Suenkel, M., Hargreaves, P. R., Chew, L. and Towers, E. (2019) "Reduction of Enteric Methane Emission in a Commercial Dairy Farm by a Novel Feed Supplement". Open Journal of Animal Sciences, 9, 286-296. The research study has been shared by PP with the VVB team, and the data is found to apply the methodological choice - equation 7 of the applied methodology VM0041, ver. 01.0. Therefore, the values applied are considered valid.

4.1.2. Monitored Parameter(s)

Parameter	$N_{i,j}$ - Average number of head in each animal grouping *j* in the farm *i* consuming a supplement during the monitoring period.

Means of verification

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	The parameter is monitored continuously (either daily or on weekly average basis) for the estimation of number of animals being fed with the feed supplement in the farm. The value applied is average monthly number of cows per group used for the first instance. So, the value is monitored on either daily or weekly average basis, but the value being used for ER calculations is the monthly average. This is considered valid for the project activity.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency is in accordance with monitoring plan, as provided in the PD /2/ and applied methodology/6/.
Monitoring equipment	Farm's software management system
How were the values in the monitoring report verified?	The $N_{i,j}$ values applied for the monitoring period are as follows:

MM/YY	HF	Jersey
05/19	190	103
06/19	251	128
07/19	242	148
08/19	243	134
09/19	235	134

		10/19 | 227 | 138 11/19 | 226 | 139 12/19 | 227 | 144 01/20 | 241 | 142 02/20 | 183 | 103 The following monitored values were recorded in the farm's software management system, and is also provided in the ER sheet shared by the PP with the VVB team.
	If applicable, has the reported data been cross-checked with other available data?	The reported values for the parameter have been cross-checked with the software management system database during team's on-site visit, and has been found to be applied correctly.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were found to be in place.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issue
Findings	CL#05 was raised and resolved.	

Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/2/. Since all of the data for the parameter is verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.

Parameter	Days - Number of days project activity implemented in the specific animal grouping

Means of verification

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	The parameter is monitored twice for the duration of supplement feeding (i.e. once for the start date and once for the end date of supplement feeding, for each animal group).
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency is in accordance with monitoring plan, as provided in the PD /2/ and applied methodology/6/.
Monitoring equipment	Farm's software management system
How were the values in the monitoring report verified?	The values used for the parameter Days are as follows:

MM/YY	Days
05/19	11
06/19	30

		<table><tr><td>07/19</td><td>31</td></tr><tr><td>08/19</td><td>31</td></tr><tr><td>09/19</td><td>30</td></tr><tr><td>10/19</td><td>31</td></tr><tr><td>11/19</td><td>30</td></tr><tr><td>12/19</td><td>30</td></tr><tr><td>01/20</td><td>31</td></tr><tr><td>02/20</td><td>29</td></tr></table> The following monitored values were recorded in the farm's software management system, and are also available in the ER sheet shared by the PP with the VVB assessment team.
	If applicable, has the reported data been cross-checked with other available data?	The recorded values for the parameter have been cross-checked against the farm available data (in the software management system) during the on-site visit, and has found to be correct.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were found to be in place. The project activity start date is mentioned as 07 May 2019 but, PP has considered only 11 days for the first month monitoring. This is done to ensure the farm animals (cows) adapt to the feed supplement, considering the fact that first two weeks are the rumen adaptation period. So, 21 May 2019 is considered for monitoring in the first month, hence valid.

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issue
Findings	CAR#03 (3.4) raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/2/. Since all of the data for the parameter is verified, the team is able to validate that the values taken for emission reduction calculation are free from material errors.	

Parameter	j - Animals at each farm i should be grouped based on a homogenous ruminant population characterization
Means of verification	

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	Once for validation and at least once per monitoring period
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.

	Monitoring equipment	Farm's Software Management System
	How were the values in the monitoring report verified?	There are two animal groups for which project activity first instance is applicable, namely 'Holstein Friesian' and 'Jersey' during the lactation period. This has been verified by the assessment team during the on-site visit, hence considered valid.
	If applicable, has the reported data been cross-checked with other available data?	N/A
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data. The QA/QC procedures were found to be in place.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issue
Findings	CAR#03 raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

	The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/2/. As the data for the parameter is verified, the team is able to confirm that the values taken for emission reduction calculation are free from material errors.

Parameter	FM - Amount of feed supplement purchased by the farm i during the monitoring period
Means of verification	

Criteria/Requirements	**Assessment/Observation**
Measuring /Reading /Recording frequency	Monthly
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, measuring and reporting frequency is in accordance with monitoring plan, as documented in the PD/2/ and methodology/6/.
Monitoring equipment	The equipment of use is farm records. Farm records showing monthly-purchased complete feed and manufactured complete feed delivered to the farm
How were the values in the monitoring report verified?	The final value calculated for the parameter is the sum total of the quantity of feed supplement delivered at each delivery. During the monitoring period, a total of 49.825 tons of feed material was delivered by Mootral S.A., which is verified through invoices and purchase agreements. The assessment team has confirmed the supporting evidences shared by PP,

			and the values used for the parameter have been found as correct.
		If applicable, has the reported data been cross-checked with other available data?	The reported values for the parameter have been cross-checked against all the available information shared by PP.
		Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were found to be in place. Each delivery and purchase agreement for the duration of monitoring period has been shared by PP, and is verifiable.
		In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issue
Findings	CAR#03 raised and resolved		
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.		

	The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/2/. As the data for the parameter is verified, the team is able to confirm that the values taken for emission reduction calculation are free from material errors.

Parameter	EFp - Emission factor for production of feed supplement. GHG emitted per kg of feed. All activities involved at the manufacturer's production facility of the feed supplement.
Means of verification	

Criteria/Requirements	**Assessment/Observation**
Measuring /Reading /Recording frequency	The parameter is monitored on a monthly basis.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, measuring and reporting frequency is in accordance with project monitoring plan, as described in the PD /2/ and methodology applied/6/.
Monitoring equipment	Records provided by the production site
How were the values in the monitoring report verified?	The final value calculated for EF_p are as follows: For the 1st instance per kg produced: 19 $kgCO_{2e}$ + 325 $kgCO_{2e}$ + 529kg CO_{2e} = 873 $kgCO_{2e}$.
If applicable, has the reported data been cross-checked with other available data?	The reported values for the parameter have been cross-checked against all the data and evidences available, and is consistent at all applicable places.

	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and necessary QA/QC processes are in place.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issue
Findings	CAR#03 raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/2/. As the data for the parameter is verified, the team is able to confirm that the values taken for emission reduction calculation are free from material errors.	

Parameter	EF_{Ti} - Emission factor for transportation of feed supplement to the feed mill or directly to the farm I during the monitoring period. GHG emitted per kg of feed.

Means of verification	

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	The parameter is monitored on a monthly basis.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, measuring and reporting frequency is in accordance with monitoring plan as described in the PD /2/ and methodology VM0041/6/.
Monitoring equipment	N/A
How were the values in the monitoring report verified?	The value for the parameter is provided in the MR as 1.9 tCO_{2e}, and it is calculated post using data collected and estimated during the transportation of the feed supplement. The value is accurately described through calculations in the project emissions spreadsheet for GHG emissions arising out of feed manufacture and transportation. The sources and estimates used for the calculations are verifiable and therefore valid.
If applicable, has the reported data been cross-checked with other available data?	The reported values for the parameter have been cross-checked against applicable secondary data available (such as 'Google Earth' for distance traveled, secondary research to check the Emission Factor for electricity generation in UK, etc.).
Does the data management ensure correct transfer of data and reporting of emission reductions and	Yes, QA/QC procedures were found to be in place. The invoices and receipts are accurately describing the data used for calculations, hence verifiable.

	are necessary QA/QC processes in place?	
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issue
Findings	CAR#03 raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/2/. As the data for the parameter is verified, the team is able to confirm that the values taken for emission reduction calculation are free from material errors.	

Parameter	Qelec - Quantity of electricity used by production facility supplied by the grid per kg of feed supplement produced
Means of verification	

Criteria/Requirements	**Assessment/Observation**
Measuring /Reading /Recording frequency	The parameter is monitored on a monthly basis.

<table>
<tr><td></td><td>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td><td>Yes, measuring and reporting frequency is in accordance with monitoring plan /2/ and methodology/6/.</td></tr>
<tr><td></td><td>Monitoring equipment</td><td>The records provided by the production site are being used as the monitoring tool by the PP.</td></tr>
<tr><td></td><td>How were the values in the monitoring report verified?</td><td>The value recorded for Qelec are provided below:
<table><tr><td colspan="2">Total Electricity Consumption, kWh per total Production Quantity, Kg</td></tr><tr><td>Unit E</td><td>75</td></tr><tr><td>Unit G</td><td>1,271</td></tr></table>
Since there are two production sites for the project activity, namely unit E and G, the data is different for each of these sites, based on the quantity of feed supplement manufactured and the manufacturing system in place for operation.</td></tr>
<tr><td></td><td>If applicable, has the reported data been cross-checked with other available data?</td><td>The reported values for the parameter have been cross-checked against the data shared by the PP, and is considered in-line with the rest of the parameters and the monitoring plan.</td></tr>
<tr><td></td><td>Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?</td><td>Yes, QA/QC procedures were found to be in place.</td></tr>
</table>

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issue
Findings	CAR#03 raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/2/.	

Parameter	EFelec – Emission factor for electricity
Means of verification	

Criteria/Requirements	**Assessment/Observation**
Measuring /Reading /Recording frequency	Annual
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, measuring and reporting frequency is in accordance with monitoring plan /2/ and methodology/6/.
Monitoring equipment	N/A

	How were the values in the monitoring report verified?	For the parameter EFelec, 0.2556 kg CO_{2e} MWh^{-1} is applied, during the first monitoring period. The value is taken as default calculated from UK Government Conversion Factors for greenhouse gas (GHG) reporting, which is a national government published data. This is verifiable through the hyperlink shared by PP in the MR, as against this parameter.
	If applicable, has the reported data been cross-checked with other available data?	The value used by PP is cross-checked with the national government data made available public on the web.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were found to be in place.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issue
Findings	CAR#03 raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

	The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/2/.

Parameter	TEF - Emission factor values for each mode of transport m
Means of verification	

Criteria/Requirements	**Assessment/Observation**
Measuring /Reading /Recording frequency	The parameter is monitored on a monthly basis.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, measuring and reporting frequency is in accordance with monitoring plan /2/ and methodology/6/.
Monitoring equipment	N/A
How were the values in the monitoring report verified?	The final values applied for the parameter are as follows: • HGV (all diesel), Rigid (>7.5-17 tonnes), 50% Laden, kg CO_{2e}/tonne/km (freighting goods): 0.27393 • HGV (all diesel), Rigid (>17 tonnes), 100% Laden, kg CO_{2e}/tonne/km (freighting goods): 0.12125 The above values are checked against the source of data mentioned in the PD and MR (UK Government Conversion Factors for greenhouse gas (GHG) reporting), and with the ER sheet shared by the PP with the assessment team.

	If applicable, has the reported data been cross-checked with other available data?	For such country specific data, the data released by national government is considered most reliable. Apart from that, there was no other source available for the cross check of data for this parameter.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were found to be in place.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issue
Findings	CAR#03 raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/2/. As the data for the parameter is verified, the team is able to confirm that the values taken for emission reduction calculation are free from material errors.	

Parameter	Di - Total distance travelled by the production site to the feedmill and then to the farm
Means of verification	

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	The parameter is monitored on a monthly basis.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, measuring and reporting frequency is in accordance with monitoring plan /2/ and methodology/6/.
Monitoring equipment	N/A
How were the values in the monitoring report verified?	The values applied for the parameter are as follows: Distance traveled: 246 km to the feedmill and 152 km to the farm, for each delivery made. The above values are checked from the google maps, through hyperlinks provided in the spreadsheet for GHG emissions due to feed production and transportation by the PP.
If applicable, has the reported data been cross-checked with other available data?	The data is confirmed through Google Earth software, and is found to be correct.
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were found to be in place.

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issue	
Findings	No findings were raised.		
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/2/. As the data for the parameter is verified, the team is able to confirm that the values taken for emission reduction calculation are free from material errors.		

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

The emission reductions calculated for the first monitoring period of the project activity, have been verified against different resources and evidences. For some ex-ante parameters, IPCC default values were used, and they were found to be appropriate. For few parameters monitored, data released by national government was used, and was verified. Several data points were cross-checked with the actuals during the assessment team's on-site visit. The data assessed was found valid, and the calculations made were correct for baseline as well as project emissions.

The data management system was verified, and found to be confirming the structure provided in the monitoring plan within the PD /2/.

Based on the discussion made here, the verification team confirms that appropriate methods and formulae for calculating baseline and project emissions have been followed. The assumptions, emission factors and default values that were applied in the calculations are justified. The actual emission

reduction achieved during the current monitoring period are equivalent to the estimated amount of emission reductions at the time of validation. This is due to to the fact that the project baseline considered for the estimations in the PDD is composed of the project monitoring period. Therefore, there are no variations in the actual ERs achieved for the monitoring period with the ex-ante estimates in the PDD.

All the data were made available and have been monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation, is described above in recent sections.

5 VALIDATION AND VERIFICATION CONCLUSION

Earthood Services Private Limited (ESPL), contracted by Mootral S.A., has performed the joint verification and validation of the emission reductions for the VCS project activity "UK CowCredit project: A UK dairy initiative to reduce methane from enteric fermentation" in the United Kingdom of Great Britain and Northern Ireland, for the crediting period **07/05/2019 – 06/05/2029** and monitoring period **07/05/2019 to 29/02/2020** (both dates included) as reported in the VCS PD (ver. 02.0, dated 02/04/2020) and MR (ver. 01.0, dated 29/02/2020). The company, Mootral S.A. is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity. It is ESPL's responsibility to express an independent validation and verification statement on the reported GHG emission reductions from the project activity.

ESPL commenced the validation and verification based on the VCS methodology VM0041 version 01.0, the monitoring plan contained in the PD (ver. 02.0, dated 02/04/2020) and VCS Standard guidelines version 4.0, as per the process described under Section 2 of this report.

ESPL's validation and verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the validation and verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion, the GHG emissions reductions reported for the project activity for the period 07/05/2019 to 29/02/2020 (both dates included) are fairly stated in the Monitoring Report (ver. 01.0, dated 29/02/2020). The GHG emission reductions were calculated correctly based on the VCS methodology VM0041 version 01.0, and the VCS standard, version 04.0.

Verification period: From 07/05/2019 to 29/02/2020 (both dates included)

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO2e)	Project emissions or removals (tCO2e)	Leakage emissions (tCO2e)	Net GHG emission reductions or removals (tCO2e)
2019	967	720	0	247
2020	244	182	0	62
Total	1,211	902	0	309

Approved by

Ashok K Gautam

Director

Earthood Services Privated Limited

Date: 11/05/2020

Place: Gurgaon, Haryana

APPENDIX I: REFERENCES

No.	Title	References
1.	VCS Project description Report	Version 01.0 Dated: 21/11/2019
2.	VCS Project Description Report	Version 02.0 Dated: 02/04/2020
3.	VCS Project Monitoring Report	Version 01.0 Dated: 29/02/2020
4.	ER estimation sheet (for Project Description Report ER calculations)	-
5.	ER calculation sheet (for Project Monitoring calculations)	-
6.	VCS Methodology VM0041: Methodology for the Reduction of Enteric Methane Emission from Ruminants through the Use of 100% Natural Feed Supplement	Version 01.0
7.	VCS Standard	Version 04.0
8.	Documentary evidence against project ownership: i) Mootral Brades Collaboration Term Sheet Signed Final ii) Carbon Ownership Agreement signed between Mootral and Brades farm	i) Signed Date: 10/05/2019 ii) Signed Date: 16/03/2020
9.	Evidence against Project Start Date: Farm Management System Software (Check for 07/05/2019)	Farm Record for 07/05/2019
10.	Evidence against Project crediting period: VCS Standard Appendix 2.	Version 04.0
11.	Non-GMO Statement: Mootral Powder	Dated: 21/02/2019
12.	Non-GMO Statement: Other powders of Mootral	Dated: 10/04/2018
13.	Studies demonstrating 'no significant negative health or performance impacts on the animal' to which feed supplement is fed	Hilde et al, 2019
14.	Feeding Instructions for Dosage: 200109_Brades_dosage_method (MS)	Source: Hilde et al, 2019
15.	No clubbing of methanogenesis inhibiting feed supplement with any other feed during project activity – 1. Feed records – Extended Baseline(WT) – records upto 13/05/2019 2. Accuracy report – Feed regime (Brades Farm)	-
16.	Evidence against "no increase in manure emissions" due to Feed Supplement – 1. lab slurry analysis – Lancrop Laboratories (Issue Date – 12/08/2019); 2. Literature 1: Technical Note TN650, April 2013; 3. Literature 2: Think manures 'A guide to manure management'	-
17.	Data evidence against DMI and GEi – ER estimation sheet	Corresponding to the latest version of PDD
18.	Proof of purchase of Feed Supplement – Invoices, Purchase orders, and Delivery receipts	Separate invoice/PO for each delivery made
19.	IPCC Tier 2 method for calculation of enteric emission factor	IPCC, 2006
20.	Source of Data for $Y_{m,i}$: UK NIR 2017 (Issue 2), Table A 3.3.4 "Dairy Cows Tier 2 Methane Emission Factors	UK NIR, 2017 (Issue 2)

21.	Proof against Number of animals fed – Farm's software management system (sample screenshots shared)	Folder titled 'Number of Animals'
22.	Local Stakeholder Consultation – Stakeholder Email responses against the consultation meetings concluded with them	Folder titled 'Consultation'
23.	VCS Version 4.0: OVERVIEW OF SUBSTANTIVE UPDATES TO PROGRAM RULES & REQUIREMENTS	Dated: 19/09/2019
24.	Folder titled: Rumen Adaptation Period	Shared on 24/02/2020

APPENDIX II: ABBREVIATIONS

Abbreviations	Full texts
BE	Baseline Emission
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CH_4	Methane
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CL	Clarification Request
VVB	Validation and Verification Body
ER	Emission Reduction
ESPL	Earthood Services Private Limited
ERPA	Emission Reductions Purchase Agreement
FAR	Forward Action Request
GHG	Greenhouse gas(es)
MP	Monitoring Plan
MR	Monitoring Report
N_2O	Nitrous Oxide
NIR	National Inventory Report
PA	Project Activity
PP	Project Proponent
PE	Project Emission
PP	Project Participant
QA/QC	Quality Assurance / Quality Control

UNFCCC	United Nations Framework Convention on Climate Change
URL	Unique Resource Link
VCS	Verified Carbon Standard
VCS-PD/PD	VCS – Project Description
VCU	Verified Carbon Unit
VVB	Validation and Verification Body
XLS	Emission Reduction Calculation Spread Sheet
IPCC	Intergovernmental Panel on Climate Change

APPENDIX III: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Competence Statement			
Name	Kaviraj Singh		
Country	India		
Education	Ph.D. (Environmental Engineering), IIT Delhi Masters (Energy & Environmental), DAVV Indore		
Experience	15 Years +		
Field	Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-II.D., ACM0006, AMS-I.A., AMS-I.C., AMS-II.B., AMS-III.H, ACM0002, ACM0001, AM0080, ACM0018		
Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1, TA 13.2)		
Reviewed by	Abhishek Mahawar	**Date**	12/02/2020
Approved by	Ashok Gautam	**Date**	12/02/2020

Competence Statement	
Name	Ashok Gautam
Country	India
Education	M. Sc. (Environmental Sciences) M. Tech. (Energy & Environmental Management)
Experience	16 Years +
Field	Energy, Climate Change & Environment
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES
Methodology Expert	AMS-I.D., AMS-I.A., AMS-I.C., AMS-I.E, AMS-II.D., AMS-II.G., AMS-III.E., AMS-III.H., AMS-III.Q, AMS-III.Z., AMS-III.AV., AM0029, AM0025, AM0056, ACM0001, ACM0002, ACM0004, ACM0012, ACM0006, AM0018, ACM0009, AM0034, AMS.I.B, ACM0003

Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1)		
Reviewed by	Shreya Garg	**Date**	23/10/2019
Approved by	Anshika Gupta	**Date**	23/10/2019

Competence Statement			
Name	Shreya Garg		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	**Date**	01/03/2018
Approved by	Ashok Gautam	**Date**	01/03/2018

Competence Statement	
Name	Ajay Kumar
Country	India
Education	Master's in Environmental Sciences
Experience	3 Years+
Field	Climate Change
Approved Roles	
Team Leader	NO
Validator	NO
Verifier	NO
Methodology Expert	NO
Local expert	YES (India)

Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Trainee	Validator/ Verifier		
Reviewed by	Shreya Garg	**Date**	11/03/2020
Approved by	Anshika Gupta	**Date**	11/03/2020

APPENDIX IV: FINDINGS

CL from this validation & verification

CL ID	01	**Section no.**	3.1, 1.4	**Date :** 27/02/2020
Description of CL				
1. **Section 1.7** of the PDD says that PP (Mootral SA) has the ownership and legal rights of the project activity. PP is requested to share the documentary evidence which support PP's claim. 2. In **section 1.9** of the PDD, the project crediting period is written as '10 years, twice renewable for a total of 30 years. PP is requested to support its statement with clear reference of the clause/section/para of the VCS document referred while selecting this crediting period. 3. Clarification is required from PP for the ingredients used, since **section 1.14** of the PDD says that both ingredients - Garlic dried and citrus extract are following regulatory requirements. The references provided (URLs in footnotes) for EU catalogue of feed material and EU feed additives register do not give specifics, since both ingredients require specific ID number and name.				
Project participant response				**Date :** 02/03/2020
1. **Section 1.7** of the PDD says that PP (Mootral SA) has the ownership and legal rights of the project activity. PP is requested to share the documentary evidence which support PP's claim. **Answer: Ownership Agreement shared** 2. In **section 1.9** of the PDD, the project crediting period is written as '10 years, twice renewable for a total of 30 years. PP is requested to support its statement with clear reference of the clause/section/para of the VCS document referred while selecting this crediting period. **Answer: VCS Standard, V4.0 / Appendix 2** *"Projects applying a new VCS methodology (i.e., a methodology for which a concept note was submitted to Verra on or before 31 December 2018) shall be granted additional time to apply the crediting period requirements under VCS Version 3. Specifically, projects using a new VCS methodology and completing validation within two years of the approval of the methodology may apply the crediting requirements as set out under VCS Version 3.* 3. Clarification is required from PP for the ingredients used, since **section 1.14** of the PDD says that both ingredients - Garlic dried and citrus extract are following regulatory requirements. The references provided (URLs in footnotes) for EU catalogue of feed material and EU feed additives register do not give specifics, since both ingredients require specific ID number and name. **Answer: See document uploaded in Box** **https://inqpharm.box.com/s/mxpbdetpiec4ot04yyu2huprpkj9tvnz**				
Documentation provided by project participant				
N/A				
DOE assessment				**Date:** 26/03/2020

1. PP has shared the Carbon credits ownership agreement with the VVB. The agreement clearly indicates the ownership rights transferred from the farm owner (Brades Farm) to the first instance operator (Mootral S.A.). Therefore, this finding is closed. 2. The reference provided by PP has been verified and is valid for the project activity instance. So, this finding is closed. 3. The documentary evidence clarifying the status of feed supplement ingredients in relation to EU feed regulatory requirements has been provided by PP. This finding is closed. Thus, CL01 stands closed.

CL ID	02	Section no.	3.3.2, 3.3.3	Date : 02/03/2020
Description of CL				
1. In **section 2.2**, PP is requested to state the reason why local stakeholder consultation not required for the project activity. 2. In **section 2.3**, Justification required for PP's statement "the project activity is not expected to have any adverse environmental impacts".				
Project participant response				Date : 02/03/2020

1. In **section 2.2**, PP is requested to state the reason why local stakeholder consultation not required for the project activity.
   Answer: Such consultations allow stakeholders to evaluate impacts, raise concerns about potential negative impacts and provide input on the project design. There are no national or regional requirements for local stakeholder consultation due to the implementation of the natural feed supplement. The project activity includes the dairy livestock operations in the UK. The supplement complies with the European regulatory framework as its ingredients are part of the EU catalogue of feed material.

   In order to assess the adequacy of the local stakeholder consultation the Project Proponent informed all the local stakeholders relevant to the project activity. Project proponent has conducted many meetings to communicate project details to the stakeholders involved. The stakeholders are:
   1. People working at the farm
   2. Nutritionist of the farm
   3. Milk distributor
   4. Feedmill
   5. UK Government

   The stakeholder consultation for the project activity, took place before and during the roject implementation. In addition, Mootral SA has in place a website (https://www.mootral.com/participate/) that invites stakeholders to send their comments and suggestions through the web.
   Please see email exchange :
   https://inqpharm.box.com/s/6km2kawfbdfq61659m3ldkhjku372rdw

2. In **section 2.3**, Justification required for PP's statement "the project activity is not expected to have any adverse environmental impacts".
   Answer: The Initial Project Activity Instance complies with all local and state laws regarding its operation and the usage of Mootral feed supplement. The Farm was not required to conduct an Environmental Impact Statement by law. The farm is a registered farm

Documentation provided by project participant	
NA	
DOE assessment	**Date:** 26/03/2020

1. The response provided by the PP has been verified and it is in conformity with the stakeholder consultation requirements. So, the finding is closed.

2. Since the farm is already a registered activity, and is following all the regulatory requirements, be it local and state laws or the laws related to environmental impact assessment, it can be validated that the project activity is not causing any adverse environmental impact. This was further confirmed during the on-site visit. Therefore, this finding is closed.

   Based on the above, the CL02 stands closed.

CL ID	03	**Section no.**	3.4.2, 3.4.5	**Date** 27/02/2020
Description of CL				

1. **Section 3.2 of VCS-PD,** requires following clarification:(Table 1: Project compliance with applicability condition),
    a) applicability condition in 3c is fulfilled by PP through furnishing studies which demonstrate that no significant negative health or performance impacts are there on the animals it is fed. However, clear references (e.g. footnote or citation) to the studies are yet to be provided by PP.
    b) for the eligibility condition 4, PP has added 'Feed records provided by the farm or farm's nutritionist' to be used as supporting evidences. In the PDD, PP is requested to provide clarification that 'no other feed supplements or activities are in practice in conjunction with Mootral' and if there is any mechanism in place to ensure the same? If yes, PP to provide the mechanism/plan in the applicable sub-section (Table 1, eligibility condition 4) and share the applicable evidence.
    c) For eligibility condition 5, Demonstrate if there is any monitoring and recording procedure in place for the feed supplement consumption.

    ,
2. For project activity's demonstration of Additionality under section 3.5, PP has provided 2 conditions (in-line to the applied methodology VM0041,Ver1.0) to support its additionality claim. However, none of the two conditions stated were found to be satisfactorily complying with the additionality conditions. In condition 1, relevant national, state or local legislation may be provided. In condition 2, 'project activity has achieved a low level of penetration relative to its maximum adoption potential' may be demonstrated through relevant evidence.

Project participant response	**Date :** 02/03/2020

1. Section 3.2 of VCS-PD, requires following clarification:(Table 1: Project compliance with applicability condition),

   a) applicability condition in 3c is fulfilled by PP through furnishing studies which demonstrate that no significant negative health or performance impacts are there on the animals it is fed. However, clear references (e.g. footnote or citation) to the studies are yet to be provided by PP.
   Answer: Footnote has been added. Also, in the sharing box you will find the study stating that during the scientific trial performed at the same farm there was no negative health or performance impacts are there on the animals it is fed.

   https://inqpharm.box.com/s/6fzqrvdpxbs6w75v2dph13rkvyn2qvl5

   In addition, data were recorded during the project activity implementation to enhance the statement which also are available for the auditor in the shared box "Calculator"

   b) for the eligibility condition 4, PP has added 'Feed records provided by the farm or farm's nutritionist' to be used as supporting evidences. In the PDD, PP is requested to provide clarification that 'no other feed supplements or activities are in practice in conjunction with Mootral' and if there is any mechanism in place to ensure the same? If yes, PP to provide the mechanism/plan in the applicable sub-section (Table 1, eligibility condition 4) and share the applicable evidence.

   Answer: The only mechanism is the feed records and that the same farm is not participating in another carbon reduction project. The baseline records are provided by the Evidence Group, nutritionist.
   Accuracy reports are provided by ALLTECH software can further verify that the there is no other supplement added in the feed regime. Please see uploaded documents in the box:
   https://inqpharm.box.com/s/n7beq353tlpfd5v3fompupyyffqm11re

   c) For eligibility condition 5, Demonstrate if there is any monitoring and recording procedure in place for the feed supplement consumption.

   Answer:
   Please refer to the documents in the box and also to the spreadsheet including line diagrams to display the GHG data collection and management system.
   https://inqpharm.box.com/s/2ncblbl3c0prbmh68h3esox3bkaym51e
   https://inqpharm.box.com/s/m4zurbn0gf1eozrr1x3rivc3vll1qtws

2. For project activity's demonstration of Additionality under section 3.5, PP has provided 2 conditions (in-line to the applied methodology VM0041,Ver1.0) to support its additionality claim. However, none of the two conditions stated were found to be satisfactorily complying with the additionality conditions. In condition 1, relevant national, state or local legislation may be provided. In condition 2, 'project activity has achieved a low level of penetration relative to its maximum adoption potential' may be demonstrated through relevant evidence.

   Answer: 1) In England, the approach for reducing GHG emissions from agriculture includes a range of actions led by industry and government. The Greenhouse Gas Action Plan (GHGAP) is an industry led voluntary initiative being taken forward by an Industry Partnership consisting of 14 organisations. It outlines how GHG emission reductions could be delivered between now and the third carbon budget (2018 – 2022) through wider uptake of more resource efficient practices.

The Climate Change Act 2008 sets a legally binding commitment of at least an 80% cut in Greenhouse Gas (GHG) emissions by 2050 measured against a 1990 baseline. To support progress towards achieving this ambition, a carbon budgeting system which caps GHG emissions over five year periods, has been established with the first three carbon budgets running from 2008 - 2012, 2013 - 2017 and 2018 - 2022. Carbon budgets cap GHG emissions from the overall 'carbon' economy but do not set targets for sectors as action to reduce GHG emissions is focused on areas where cost effective savings may be achieved. The level of savings between sectors of the carbon economy will therefore vary to reflect the unique challenges and circumstances each face.
https://www.theccc.org.uk/tackling-climate-change/the-legal-landscape/the-climate-change-act/

According to the methodology "Given the current ruminants population and the commercially available feed supplements, and in particular those which have a significant effect on reducing enteric methane emissions by direct inhibition of methanogens in the rumen, it is demonstrated that the activity penetration level of the project activity covered by this methodology is below the five percent threshold, and the project activity may be deemed additional." See also updated PDD document

Documentation provided by project participant	
NA	
DOE assessment	**Date:** 26/03/2020

1. The responses provided by PP are assessed as follows:
   (a) PP has provided reference of a study conducted for the applicable project activity instance. This study, published in a peer-reviewed journal, clarifies that there was no negative impact observed during the study in terms of animal performance, and other physiological aspects (such as fertility, feet, mastitis, or metabolic issues). This is further evidenced by regularly monitoring the livestock animals for their performance, and the data is maintained in excel sheets.

   (b) The feed records are accuracy checked, and the baseline data is verified by the nutritionist. The only mechanism that exists for feed monitoring is feed records, and it is validated by third party for the accuracy. Thus, there is reliable evidence that the feed records ensure that no other feed supplement is provided to the farm animals. So, the finding is closed.

   (c) The supporting documents shared by PP clearly indicates that there is a systematic approach in place for monitoring of project activity and, ensuring availability of records of monitoring data at any time.

2. The clarification provided by PP for the demonstration of additionality clearly outlines the approach taken, and since it is already provided in the methodology applied that the activity penetration level of the project activity covered by this methodology is below the five percent threshold. The clarifications establish the fact that the project activity is additional. The finding is closed.

CL03 is closed.

CL ID	04	Section no.	3.4.6	Date : 27/02/2020

Description of CL

1. Section 4.1 of the PDD (page 20): The table showing values of $EF_{enteric,i}$ and $BE_{enteric,i}$ doesn't give a clear picture in terms of calculations done, and the values of parameters taken, because values assumed for ex-ante baseline and project emissions calculations need to be provided in relevant sections. PP must include the calculations done for each step, alongwith the values assumed for each parameter (wherever required in the PDD).

2. In section 4.2 of PDD, the total annual emissions associated with manufacturing and transport of the feed supplement for the first project instance during the monitoring period is given as 2 tCO_2, but there is no document/calculation on the basis of which these values can be validated.

Project participant response | **Date :** 02/03/2020

1. Section 4.1 of the PDD (page 20): The table showing values of $EF_{enteric,i}$ and $BE_{enteric,i}$ doesn't give a clear picture in terms of calculations done, and the values of parameters taken, because values assumed for ex-ante baseline and project emissions calculations need to be provided in relevant sections. PP must include the calculations done for each step, alongwith the values assumed for each parameter (wherever required in the PDD).

   Answer: See also updated PDD document
   A calculator has been provided in the box.

2. In section 4.2 of PDD, the total annual emissions associated with manufacturing and transport of the feed supplement for the first project instance during the monitoring period is given as 2 tCO_2, but there is no document/calculation on the basis of which these values can be validated.

   Answer: See also updated PDD document
   A calculator has been provided in the box. Please refer to the documents in the box
   https://inqpharm.box.com/s/5ouxro03tqya8rssqzn8r4f4tnvc899r

Documentation provided by project participant

NA

DOE assessment | **Date:** 26/03/2020

1. The values applied for parameters used, for $EF_{Enteric}$ calculation is provided in the ER estimation sheet. The calculations have been checked, and are found to conform with the methodological requirements and equations provided in VM0041, ver. 01.0. The finding is closed.

2. The spreadsheet and word document demonstrating the calculations for estimation of total annual emissions associated with manufacturing and transport of the feed supplement is provided by PP. The calculations are valid and acceptable. The finding is closed.

   CL04 is closed.

CL ID	05	Section no.	3.4.6, 3.4.8	Date : 27/02/2020

Description of CL

1. For section 5.1 following clarifications are required:
   i. For the parameter GE_i, in the "justification of choice of data…" row, it is stated that the "Parameter to be updated with any change in the animal's feeding regime." PP to provide clarification on how it is monitoring the change in animal's feed regime.
   ii. For the parameter ED, the value chosen is based on 'diets including edible oils with fat contents below 4%. PP to provide the basis for choosing fat contents below 4% (mentioned as average 3.7%).
   iii. PP to provide the source of data for parameter $EF_{Enterici,j}$, and the exact equation used (wherever applicable). Also, in the row "justification of choice of data…", the justifications in terms of choices made for the data calculations are to be provided here.

2. Under section 5.2, the parameter $N_{i,j}$, in the row "Description of measurement methods and procedures to be applied", PP to describe the monitoring system that'll be used for recording this parameter (e.g. a brief of Farm's record system). Also, what is the estimated number of animals applied (value of the parameter) to perform ex-ante calculations.

3. In section 5.3 of PDD, PP is requested to provide a monitoring plan, where each and every data/parameter to be monitored is described, with detailed approach (sampling approach), controls for reliability of data (e.g. 90/10 acceptance rule), and a management system, wherever applicable, in-line with the VCS Standard (ver. 4.0).

Project participant response	**Date :** 02/03/2020

1. For section 5.1 following clarifications are required:
   iv. For the parameter GE_i, in the "justification of choice of data…" row, it is stated that the "Parameter to be updated with any change in the animal's feeding regime." PP to provide clarification on how it is monitoring the change in animal's feed regime.
   Answer: See updated PDD document. Monthly records are being provided to the project proponent by the nutritionist of the farm
   v. For the parameter ED, the value chosen is based on 'diets including edible oils with fat contents below 4%. PP to provide the basis for choosing fat contents below 4% (mentioned as average 3.7%).
   Answer: See updated PDD. Monthly records are being provided to the project proponent by the nutritionist of the farm (parameter: Avg Crude fat (% DM) 3.74)

   vi. PP to provide the source of data for parameter $EF_{Enterici,j}$, and the exact equation used (wherever applicable). Also, in the row "justification of choice of data…", the justifications in terms of choices made for the data calculations are to be provided here.
   Answer: See updated PDD. A calculator has been provided in the box.

2. Under section 5.2, the parameter $N_{i,j}$, in the row "Description of measurement methods and procedures to be applied", PP to describe the monitoring system that'll be used for recording this parameter (e.g. a brief of Farm's record system). Also, what is the estimated number of animals applied (value of the parameter) to perform ex-ante calculations.
   Answer: See updated PDD.
3. In section 5.3 of PDD, PP is requested to provide a monitoring plan, where each and every data/parameter to be monitored is described, with detailed approach (sampling approach), controls for reliability of data (e.g. 90/10 acceptance rule), and a management system, wherever applicable, in-line with the VCS Standard (ver. 4.0).
   Answer: See updated PDD.

Documentation provided by project participant
NA

DOE assessment	**Date:** 26/03/2020

1. The assessment is given below:
   i. The response provided by PP is validated, based on the statement given above and the site visit conducted. This finding is closed.
   ii. The value is provided by the farm nutritionist, hence considered valid. The finding is closed
   iii. The calculations for $EF_{Enteric}$ are assessed from the calculator sheet and, found in line with the methodological equations and requirements. The finding is closed.

2. Section 5.2 has been updated for the parameter $N_{i,j}$, and PP is using a farm management software. Screenshots of the farm's record system are shared with the VVB. The ex-ante number of animals can be confirmed from the values for parameter $N_{i,j}$, used in the ER estimation sheet, which are monthly average values. Therefore, this finding is closed.

3. The monitoring plan is described by PP, and a line diagram is added for the same. It is containing the processes laid down for the project monitoring requirements. So, this finding is closed.

The CL05 is closed.

CAR from this validation & verification

CAR ID	01	**Section no.**	3.4.2	**Date :** 27/02/2020
Description of CAR				
1. **Section 3.2** (Table 1: Project compliance with applicability condition) sub-section7a says that the Project activity is using Baseline Emissions Option 2 (to calculate $EF_{enteric,i}$). For the fulfilment of this condition, methodology VM0041 (ver. 1.0) requires minimum 3 years' data for GEI and DMI parameters per animal group (HF and Jersey) for this instance. Data spreadsheet to be provided by the PP. 2. **Section 3.3** requires KML file to be added for each instance of a grouped project activity. This is a requirement of VCS Standard (ver. 4.0), Section 3.10.1 (3)[3].				
Project participant response				**Date :** 02/03/2020

[3] Project location for grouped projects shall be specified using geodetic polygons to delineate the project's geographic area or areas (see Section 3.5.8 for further information on geographic areas for grouped projects) and provided in a KML file.

1. **Section 3.2** (Table 1: Project compliance with applicability condition) sub-section7a says that the Project activity is using Baseline Emissions Option 2 (to calculate $EF_{enteric,i}$). For the fulfilment of this condition, methodology VM0041 (ver. 1.0) requires minimum 3 years' data for GEI and DMI parameters per animal group (HF and Jersey) for this instance. Data spreadsheet to be provided by the PP.

   Answer: Please refer to the data in the box "Calcuator". Data of 2 years have been provided as there are no farm records available by the farm before 2017. The dairy operation was different in 2016 therefore any data from 2016 will not be representative. Additionally, we believe 2 years if historical data and 1 year of project activity data are sufficient as Brades farm is representative of the average dairy activity in the UK.
   However, the nutritionist of the farm provided some records and guidelines comparing brdaes farm to others. Attached the guidelines that we mostly work to. Nutrisionist wrote "Intake and milk production are lower at Brades than our typical clients. Partly this is due to genetics – Brades cows are Jerseys and Friesians, whilst most of our clients have a larger Holstein type of cow. Also due to the milk from Brades being higher constituent percentages the liquid yield is lower."

   Also milk yield and milk composition (i.e milk fat and milk protein) can have an inverse relationship. Thus in OTDC overview document (parge 2) you may find higher milk protein and fat. Here is another UK link on milk yield https://ahdb.org.uk/dairy/uk-milk-yield

   NDF is mostly from forage, and the 'forage DMI' value in Will's report (for Brades farm) in within the range.

   https://inqpharm.box.com/s/7af2n3m52grlk9wyafoah23v4a5zf9zi

2. **Section 3.3** requires KML file to be added for each instance of a grouped project activity. This is a requirement of VCS Standard (ver. 4.0), Section 3.10.1 (3)[4].
   Answer:
   Please refer to the documents in the box folder "Location"
   https://inqpharm.box.com/s/s8kcftc5ufdrhgq73gokc5opxsz35z2h

Documentation provided by project participant	
DOE assessment	**Date:** 26/03/2020

1. The data spreadsheet provided by PP only contains the historic 2 year data, but 1 year of project activity data is also considered for defining the values of parameters GEI and DMI. This is acceptable since the data before 2017 is not available at the farm, adding to the fact that the farm conditions were different than the current scenario. Therefore, the spreadsheet containing data of 2 years of historical data and 1 year of project data is acceptable.

2. Since the KML file for the project location is shared by PP, the finding is closed.

The CAR01 is closed.

[4] Project location for grouped projects shall be specified using geodetic polygons to delineate the project's geographic area or areas (see Section 3.5.8 for further information on geographic areas for grouped projects) and provided in a KML file.

CAR ID	02	Section no.	3.4.6	Date : 27/02/2020
Description of CAR				
1. In **section 4.0**, Table 3, PP has selected option 1 for $EF_{enteric}$ calculation of Group 2 (Jersey dairy cows). This contradicts with the information provided on Page 20 Para 1, where it is mentioned that the Project activity is using Option 2 for each livestock group. 2. How is PP defining the unique identity of each animal, with it being a part of this project activity only and no other (even for newly added instances)? This is done to avoid double counting for the animals in the project activity. PP to clarify if any such arrangement exists, and if not, then how to ensure no double counting would occur.				
Project participant response				**Date :** 02/03/2020
1. In **section 4.0**, Table 3, PP has selected option 1 for $EF_{enteric}$ calculation of Group 2 (Jersey dairy cows). This contradicts with the information provided on Page 20 Para 1, where it is mentioned that the Project activity is using Option 2 for each livestock group. Answer: The purpose of the table is to demonstrate an example of the different option a project proponent has by using this methodology. However, if you believe that it creates confusion, we can delete it. 2. How is PP defining the unique identity of each animal, with it being a part of this project activity only and no other (even for newly added instances)? This is done to avoid double counting for the animals in the project activity. PP to clarify if any such arrangement exists, and if not, then how to ensure no double counting would occur. Answer: The monitoring system is set-up at a farm level. Weekly data per group provides a robust representation of the average monthly number of animals per group. A project instance in this project activity is considered a dairy farm which has a specific ID since it's a registered farm. Each animal has a unique identifier.				
Documentation provided by project participant				
DOE assessment				**Date:** 26/03/2020
1. The different options available with the PP may also be referred from the methodology applicable and the conditions suitable to the project activity. PP is requested to remove the table, thus only demonstrating options available in the context of project activity instance added. 2. The information provided by PP is sufficient to validate that the double counting will not happen for the project activity in terms of the number of animals participating in the project activity instance. This is attributable to the fact that PP is using a unique ID tag for the animals. CAR02 is closed.				

CAR ID	03	Section no.	3.4.6	Date : 27/02/2020
Description of CAR				

1. For the parameter $Y_{m,i}$, the source of data is given as "UK NIR 2017 (Issue 2), Table A 3.3.4 "Dairy Cows Tier 2 Methane Emission Factors"", which didn't give the value applied. Also, the row "justification of choice of data…" gives another source of data which was found to contain the value applied (6.5%). PP is requested to replace the incorrect reference for source of data with the correct one.
2. For the parameter NDF_i, the source of data is given as "Records and data from livestock operator and nutritionist from Jan 2017", which is not shared with the VVB. Also, in the "justification of choice of data", there is a reference "Appendix III" which is untraceable. PP to provide exact references for the parameters.
3. For the parameter $EF_{Productioni,j}$, in the row "justification of choice of data…", PP to provide the reason for not applying any value.
4. For parameters "Days", "j", "FM", "EF_p", "EF_{Ti}", "Q_{elec}", "Q_{ff}", "FC_a", and "EF_{fuel}", estimates are to be provided by PP for net ER calculations.

Project participant response | **Date :** 02/03/2020

1. For the parameter $Y_{m,i}$, the source of data is given as "UK NIR 2017 (Issue 2), Table A 3.3.4 "Dairy Cows Tier 2 Methane Emission Factors"", which didn't give the value applied. Also, the row "justification of choice of data…" gives another source of data which was found to contain the value applied (6.5%). PP is requested to replace the incorrect reference for source of data with the correct one.

   Answer: The UK national inventory is proposing the value 6.5% (Table A 3.3.4 footnote)

2. For the parameter NDF_i, the source of data is given as "Records and data from livestock operator and nutritionist from Jan 2017", which is not shared with the VVB. Also, in the "justification of choice of data", there is a reference "Appendix III" which is untraceable. PP to provide exact references for the parameters.

   Answer: Please refer to the documents in the box folder "calculator". Appendix III from the methodology document. See also updated PDD

3. For the parameter $EF_{Productioni,j}$, in the row "justification of choice of data…", PP to provide the reason for not applying any value.

   Answer: This parameter is not being used for the 1st project instance therefore I deleted. See also updated PDD

4. For parameters "Days", "j", "FM", "EF_p", "EF_{Ti}", "Q_{elec}", "Q_{ff}", "FC_a", and "EF_{fuel}", estimates are to be provided by PP for net ER calculations.

   Answer: Please refer to the documents in the box folder "supplement emissions" See also updated PDD

Documentation provided by project participant

DOE assessment | **Date:** 26/03/2020

1. The source provided by PP is correct and has applied the correct value for the parameter. Therefore, this is acceptable, and finding is closed.

2. The applicable correction has been incorporated by PP and the data is shared with the VVB. This finding is closed.

3. The parameter is not in use for the first instance, and deleted by PP. So, this finding is closed.

4. The value applied row for the highlighted parameters is now filled-in with the applicable data. Therefore, this finding is closed.

CAR03 is closed.

Table 1. FAR from this validation and verification

~~FAR ID~~	~~01~~	~~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~~

There is no FAR raised during the joint validation and verification.