UKCCC SOIL CARBON MINIMUM STANDARDS FOR MEASURE REPORTING AND VERIFICATION (MRV)

Version: 2.0

Issued: *24-Jun-24*

UK Carbon Code of Conduct

Kent

1. Impact Quantification Methodologies

All UK Carbon Code of Conduct (UKCCC) Measure Reporting and Verification (MRV) protocols have been developed to align with BS EN 14064-2:2019 and with the Integrity Council for the Voluntary Carbon Market (ICVCM) core carbon principles. Only UKCCC approved MRV protocols may be used to determine the outcome of UKCCC approved projects.

All Greenhouse Gas Removal (GGR+) credits can be bought and retired by companies to count towards net zero claims provided they have followed all UKCCC claims guidelines.

2. The 4 Pillars of UKCCC Projects

- **Assured additionality**
- **Assured permanence**
- **Avoidance of leakage**
- **Avoidance of negative outcomes**

The 4 Pillars are ensured through the UKCCC approval and verification process and only after the UKCCC Board has been satisfied of a project's protection of these pillars, will UKCCC GGR+ credits be issued.

The first tranche of credits issued must be used to ensure the project host is at net zero emissions before any excess are traded.

Issuance is no guarantee of ongoing acceptance in the scheme, as such the UKCCC Board reserves the right to de-list any projects that do not adhere to the standards of the code.

This set of protocols is to be used alongside the UKCCC GGR+ Credit requirements.

All projects must quantify their full emissions and natural capital sequestration to establish their current net carbon position.

3. Soil, Regenerative Agriculture Projects

Soil and regenerative agriculture projects are viewed by the UKCCC as a highly important project type that can be rapidly deployed to draw down atmospheric CO2e into soils on a continual basis. Just 2 tonnes of CO2e per hectare drawdown across all UK agricultural land can help reduce overall atmospheric CO2e by over 34 million tonnes per year in the UK. Although some critics feel that soil organic carbon increases can only be seen as a temporary measure, as it can be reversed, a widescale adoption of regenerative agriculture can reduce atmospheric CO2e concentration whilst the rest of the economy de-carbonises. In climate change mitigation there is no substitute for reducing emissions.

The continuation of regenerative agricultural production will lead to continued atmospheric CO2e sequestration and storage and deliver a range of co-benefits including cleaner air, water, more climate resilient soils which able to withstand drought shocks and lead to the production of healthier crops, less reliant on artificial inputs.

An ongoing move towards regenerative practices will continue to sequester and store significant levels of atmospheric CO2e over the life of the project thus ensuring permanence.

The aim of a regenerative agriculture project is to help farmers finance the transition to practices that may in the short term reduce their income.

4. The Establishment of a Baseline

A baseline is essential to ensure that it can be demonstrated that the change in management practices has led to an increase in soil carbon levels. Before the start of any project that leads to UKCCC approval, soil carbon levels will be established by procedures that align with this UKCCC Soil Sampling Methodology.

At the start of the project the project proponent shall establish the current soil testing regime of the project host. The project proponent shall attempt to use current data where it exists and discuss with the host to add SOC testing to this regime to save cost.

5. Soil Sampling Methodology

5.1. Site & Sample Strategy

Applicable Land Use	Arable Land, Permanent Cropland and Permanent Grassland.	
Sampling Strategy	Random sampling.	Sampling locations should be random within each zone. In-field stratification should be considered where features dictate, e.g. change of soil type, wet areas, clear yield map variations
Sampling Zone - Standard	Minimum 18 metres from field / geological boundaries.	To mitigate the effect of boundary features such hedges and trees, soil compaction near gateways, and nutrient concentration from middens etc.
	Minimum 9 metres from any in-field tree or obstacles in any direction.	This should also apply if the sampling location has been allocated prior to sampling and an obstacle is in the allocated location. The revised sample location should be reported.
Sampling Density	2 Cores per hectare. Minimum 9 metre spacing between cores.	Minimum 2 cores per field.
Sampling Zone - Restricted	A minimum of 2 samples shall be taken from the area, from as close to a centre quadrant as possible.	Where the standard sampling zone allocation is not feasible, i.e due to small (<2 hectares) and/or narrow fields (<36 metres wide)

5.2. Sampling Methodology

Timing	Retesting of soil should be carried out at the same time of year as the baseline measurements	Samples should be collected before any artificial fertiliser or manures/composts are applied or at least 3 months after any application.
Core Depth	Upto 1m, each core is divided into 3 samples for testing, 0-30 cm, 30-60 cm and 60+ cm.	0-30 sample may be split into 2 sections (0-15, 15-30).
Soil Samples	No compositing.	To ensure satisfactory soil bulk density measurements intact soil samples are required to be collected, compositing destroys the sample soil structure.
Less Favourable and Inaccessible Areas	Hand coring should be considered for fields classified by RPA in England as Less Favourable Areas, or for fields which are generally inaccessible for machinery	

5.3. Soil Organic Carbon

Lab test methodology	Methodology should be based on Dumas dry combustion. Laboratories should be ISO 9001 accredited with the SOC testing method having ISO 17025 accreditation.	Loss of ignition (LoI) or spectroscopic methodologies are not generally accepted for projects.
	Methodology used should reference the relevant BS/ ISO standards: BS 7755-3.8:1995 **Soil quality. Chemical methods - Determination of organic and total carbon after dry combustion (elementary analysis)** BS ISO 23400:2021 **Guidelines for the determination of organic carbon and nitrogen stocks and their variations in mineral soils at field scale** BS EN 15936:2022 **Soil, waste, treated biowaste and sludge. Determination of total organic carbon (TOC) by dry combustion** BS EN 17505:2023 **Soil and waste characterization. Temperature dependent differentiation of total carbon (TOC400, ROC, TIC900)**	
Historic Data	Where historic soil carbon measurements are available, these may be used to form a baseline but	If the historic data comprises Loss on Ignition values, a further assessment will be required to ascertain the specific

	the methodology and efficacy shall be assessed by the UKCCC Commissioner's Office.	correction factor for conversion from SOM% to SOC% for the data set. Generalised correction factors are not accepted. In all cases, a higher buffer discount maybe applied until verification results are available.

5.4. Soil Bulk Density

Lab test methodology	Accurate soil bulk density measurements require "undisturbed" soil samples	
	Should be aligned with principles in ISO 11272:1998	Reported soil bulk density values should be adjusted for stone/ rock content

5.5. Results and Reporting

Results	Results should provide a unique sample reference that tracks: field ID, sample location, sample depth, SOC%, and soil bulk density, as a minimum.	For UK farms the RPA's field number should be used as the unique field ID, e.g. TQ1618/5086
	The average total carbon stock per hectare shall be established, and the total CO2e sequestration is calculated by multiplying the carbon stock per hectare by 3.67	
Reporting	Shapefile of farm's results containing one record per field referenced by the field's unique ID.	
	Shapefile of random sampling locations referenced by the field's unique ID.	

It is recognised that organic matter levels vary from year to year and crop to crop but that with a move to regenerative farming practices the trend in soil carbon stocks should always be increasing.

6. Methodology Changes and Improvements

The methodologies are based on the best available science and quantification methods and revised

as the scientific understanding evolves through the UKCCC protocol approval cycle and as such the UKCCC reserves the right to change the required testing regime as new techniques are developed.

If the approved methodology changes during the lifetime of a project all existing data collected will remain valid and applicable to the project deliverables.

The UKCCC is also aiming to establish a remote monitoring system to improve interim verification accuracy. Experimental data collected as part of UKCC projects may be used to develop remote modelling system at the discretion of the UKCCC.

7. Ongoing Project Monitoring

Each year before the anniversary of the project start date the project proponent shall visit the project host to complete a light touch Annual Monitoring Report as per the Annual Monitoring Plan, as laid out in the Project Plan Document (PDD).

This shall include the completion of an audit of the project hosts activities that may influence the status and validity of the project. The findings will be recorded on the Annual Monitoring Report. Ongoing regenerative agriculture practices will be discussed, and the project plan updated to reflect any changes that have been identified as current best practice.

Every 5th year a verification soil test will be conducted to determine the carbon stocks at that point. The test will be conducted by the Dumas method, unless the UKCCC deem a different methodology is required due to technological advances.

8. Document History

Issue ref.	2.0	**Date of Issue:**	*DRAFT*
Author:	DG	25/06/24	
Reviewed by:	DJW		

Revision History		
Revision	**Date**	**Details of Revision**
1.0	01-07-23	
1.x	23-11-23	
2.0	25/06/24	