Woodland Carbon Code version 2.2 guidance

Contents

1. Eligibility

1.1 Key project dates

Guidance

Project start date and registration

The **project implementation date** is the date when work begins onsite, either fencing, deer control, ground preparation or planting, whichever occurs first. For a project with a combination of planting and natural regeneration, the project implementation date will be the earliest of the two dates.

The **project start date** is the last day of planting or, for natural regeneration, the date when fencing is complete or deer management has reduced deer numbers to an acceptable level for natural regeneration. For a project with a combination of planting and natural regeneration, the project start date will be the latest of the two dates. Carbon sequestration is claimed from the start date.

For groups of projects validated together, the **group start date** is the latest start date within the group. Carbon sequestration is claimed from the group start date.

The **date of registration** is the date on which a project moves from 'Draft' to 'Under Development' status on the UK Land Carbon Registry. This is the date the project is approved by the Woodland Carbon Code Secretariat and S&P Global.

Project duration

The **project duration** is the time over which carbon sequestration claims are to be made. The duration can be up to 100 years from the project start date and, for schemes involving clearfelling, the minimum duration is the length of the shortest clearfell period in the project. Many schemes claim carbon for a shorter period (e.g. 40 years for a conifer project managed on a 40 year rotation or 65-75 years for a native woodland project managed with minimum intervention). This could be because the landowner does not want to commit for a longer period or as it is not cost effective to verify carbon sequestration from later vintages.

Project end date

The **project end date** is the project start date + project duration. E.g. if project start date is 01/04/2013 and duration is 100 years, then end date is 31/3/2113.
The project duration should not be confused with permanence (section 2.3 management of risks and permanence). All projects shall involve a permanent land-use change to woodland cover.

Validation extensions

For single projects or groups, a validation extension will be given in extenuating circumstances, for example, if your planting will span 3-5 planting seasons, or planting is unavoidably delayed. Contact the Woodland Carbon Code secretariat.

Related guidance

See section 2.3 Management of risks and permanence2.3 Management of risks and permanence

1.2 Eligible activities

Guidance

Woodland Creation

For the purposes of the Woodland Carbon Code, we define woodland creation as the human-induced conversion to woodland of land that has not been under tree cover for at least 25 years. The woodland can be established by planting, direct seeding or natural colonisation/ regeneration.

Project size/makeup

- The minimum project size reflects that projects less than 1 hectare are unlikely to be cost-effective under the woodland creation methodology. If you registered a project less than 1 hectare prior to 1 May 2024 and it is not yet validated, then we will contact you to discuss options.
- The minimum block size, width and stocking density reflects the minimum definition of ‘woodland’ across the UK.
- An agroforestry methodology is under development. It is possible that any tree planting that does not meet these criteria may be eligible under a future agroforestry methodology. It is not possible to ‘pre-register’ for any future methodologies.

'New' woodland creation

Projects will need to prove that the land has not been wooded in the last 25 years. The following sources of evidence are suitable:

- Land use records
- Historical maps or images
- Forestry Commission England, Scottish Forestry, Welsh Government or Northern Ireland Forest Service planting/ felling databases
- Signed attestation from an independent expert

Soil and the woodland carbon code

The carbon benefits associated with woodland creation are generally greatest on soils with lower organic matter content (such as mineral soils) and where establishment and management techniques disturb the soil as little as possible. We advocate ground preparation techniques with the minimum soil disturbance necessary for successful establishment.

Research is still ongoing to fully understand the changes to soil carbon as a result of land use change and land management activities. We are adopt a conservative approach to soil carbon, ensuring that soil carbon emissions associated with the woodland creation project are not under-estimated and that any soil carbon sequestration associated with the woodland creation project is not over-estimated. This approach has been developed with the support of a group of soil experts from across the UK. See Soil Carbon and the Woodland Carbon Code.

What are Organic, Organo-mineral and Mineral soils?

A comparison of the soil classifications used in the soil surveys of England and Wales, Scotland and the Forest Research classification identifies which soil types are organic, organo-mineral and mineral.

Organic soils: In Scotland and Northern Ireland, organic soils are those with an organic layer of at least 50cm. In England and Wales they have an organic layer of at least 40cm. The Forest Research classification suggests an organic layer of > 45cm. These organic soils can also be known as peats in Scotland and Northern Ireland and deep peats in England and Wales.

Organo-mineral soils: In Scotland and Northern Ireland, organo-mineral soils have an organic layer of 50cm or less, and in England and Wales 40cm or less. Forest Research's classification, suggests an organic layer of < 45cm. These can include humus-iron podzols, peaty podzols, surface and ground water peaty gleys, peaty rankers and podzolic rankers.

Mineral soils are not defined as having an organic layer (primarily composed of decaying plant material) although they do contain an organic horizon (with higher organic content than underlying horizons). Forest Research classifies mineral soils as having an organic layer of less than 5cm. These can include brown earths, brown rankers and rendzinas, cultivated podzols, surface water and ground water mineral gleys.

Which soils are eligible for woodland creation under the Code?

On some soils with a deep organic layer the magnitude of soil carbon losses due to disturbance and oxidation can be greater than carbon uptake by tree growth over the long term. For this reason, in addition to habitat and biodiversity value, the Woodland Carbon Code does not allow any woodland creation to occur on soils with an organic (peat) layer of more than:

- **30cm** in England (See Decision support framework for peatland protection in England)
- **50cm** in Wales, Scotland and Northern Ireland (See Scotland's Guide for Cultivation on Upland Sites)

Areas of deep peat should be excluded from the project.

How do I confirm the soil type and peat depth on my site?

Projects should assess the soil type onsite using one of the following methods:

- Using the following maps to check for areas of peat:
  - The British Geological Survey 1:250,000 or 1:50,000 scale data for mapped areas of peat exceeding 100cm in depth.
  - Soil Survey of Scotland, Soil Survey of England and Wales and Soil Survey of Northern Ireland 1:250,000, 1:63,360, 1:50,000 and 1:25,000 data for mapped areas of peat.
  - FC soil maps for mapped 'deep peat' soil types.
- Ascertain soil type using one of the following tools:
  - In Scotland, using the Soil Information for Scottish Soils tool
  - In England and Wales, using the Land Information System Soilscapes tool
- Field survey for soil type and where necessary, peat depth and vegetation

Peat depth survey

- Where it is possible there are organomineral soils, then use a peat probe to assess depth (contact us if further information required):
  - Use GPS to set out a regular 50mx50m sampling grid across the site
  - Use a peat probe measure and record the depth at each point
  - If you need to show where the 50cm depth boundary falls, 3D modelling packages can then estimate the '50cm depth' peat boundary if necessary. This can be affirmed or refined by probing on a 10mx10m grid as above.

Biosecurity

We encourage the use of plants from Plant Healthy-certified nurseries where possible. Plant Healthy is a certification scheme designed to ensure that people who grow and handle plants have suitable biosecurity standards in place.

Related guidance

Related documents

- Soil Classification Organic, Organomineral, Mineral
- Soil carbon and the Woodland Carbon Code

Useful sites

- Soilscapes Soil Types Viewer for England and Wales
- Soil Information for Scottish Soils

1.3 Eligible land

Guidance

One way of proving ownership through the relevant land registry:

- Land Registry (England and Wales)
- Registers of Scotland

- The Land Registry Northern Ireland

Other suitable forms of evidence of ownership include:

- Title deeds
- Solicitor's letter
- If the land is leased, a certified copy of the lease

1.4 Compliance with the law

Guidance

Validation and verification is not a legal compliance audit. The validation/ verification body will be checking that there is no evidence of non-compliance with relevant legal requirements and that no issues of non-compliance are raised by regulatory authorities or other interested parties.

The main legislation relevant to sustainable forest management is set out in the UK Forestry Standard (including the elements of sustainable forest management: climate change, soil, water, biodiversity, landscape, historic environment and people).

1.5 Conformance with UK Forestry Standard

Guidance

Validation/Verification is not a UK Forestry Standard conformance audit. The validation/ verification body will be checking that there is no evidence of non-compliance with the UK Forestry Standard.

1.6 Additionality

Guidance

What is additionality?

The term additionality is used to mean the carbon sequestration over and above that which would have happened anyway in the absence of a given project or activity. Buyers of carbon units want to know that their input has enabled more carbon sequestration than would otherwise have happened under existing legal, financial and business circumstances. Under the financial consideration, a project is only 'additional' if it requires carbon income to turn it from a project which is not financially viable/worthwhile (in its own right or compared to an alternative non-woodland use) to one which is financially viable.

If the landowner wishes to create woodland and use the carbon units against their business' own emissions in the future, the carbon price represents the price they would otherwise have to pay to buy carbon units on the open market. See examples of those who are 'growing their own'.

Background to additionality in the UK

Levels of woodland creation across the UK are generally low at present and woodland creation targets of 30,000 hectares per year to help meet the target to be net zero emissions by 2050 are challenging. Income from carbon sales will encourage some new landowners to plant and other landowners might wish to create their own 'store' of carbon credits to use against their wider business' emissions.

The Woodland Carbon Code applies a project-based approach to assessing additionality. This guidance has been adapted from the CDM Tool for the Demonstration and Assessment of Additionality in A/R CDM Project Activities (Version 02) in order to take account of policy instruments operating in the UK.

Bundling or stacking of ecosystem service credits/units in woodland projects

Current situation: Implicitly bundled credits/units

With the Woodland Carbon Code, wider benefits of woodland creation projects are implicitly ‘bundled’ with the carbon unit when they are sold (i.e. the landowner sells the carbon unit with the other benefits of the project 'attached' or included).

Future possibilities: stacked credits/units

In future, it may be possible to ‘stack’ voluntary credits/units generated from a woodland creation project (e.g. where credits/units are generated for other ecosystem services such as biodiversity or water). Work is underway in collaboration with the Peatland Code, the UK Land Carbon Registry and each of the devolved UK Governments to consider how stacking could function in a future version of the Code.

Mechanisms are needed to ensure stacking does not compromise the integrity of the market, in particular the requirement for projects to demonstrate additionality. A programme of work is planned to develop mechanisms to enable stacking, including:

- The existence of credible voluntary standards for each ecosystem service in the stack.
- A mechanism to ‘approve’ those standards to ‘stack’ with the Woodland Carbon Code, potentially through the Nature Markets Framework being developed by Defra and the British Standards Institute, with approval from the Woodland Carbon Code Executive Board.
- Methods for distinguishing bundled projects from stacked projects, including mechanisms to show this on the UK Land Carbon Registry. If other ecosystem credits are held on a different registry, then processes to make this transparent between registries. This will avoid double counting and ensure that claims of the different benefits/credits from a project are clear and explicit.
- An updated Woodland Carbon Code Cashflow spreadsheet to include income streams from other types of credit.

How to assess additionality

Additionality is tested in two ways within the Woodland Carbon Code:

- Legal test
- Investment test

Both tests shall be passed to demonstrate additionality.

Legal test

Woodland creation that is required by law is not additional, whether under legislation set by the EU, UK, devolved administrations or local government. A woodland creation project passes the legal test when there are no laws, statutes, regulations, court orders, environmental management agreements, planning decisions **(see below) or other legally binding agreements that require its implementation, or the implementation of measures that would achieve equivalent levels of sequestration or other greenhouse gas emissions reductions.

Compensatory planting to replace areas of woodland that are felled (e.g. for development or restoration of open habitats) or areas felled due to a Statutory Plant Health Notice are not additional.

****Planning decisions:**

Woodland creation as a result of a planning condition under a Town and Country Planning Act or in England the Environment Act 2021 may be eligible provided:

- There is a range of possible environmental solutions and woodland creation is not specifically required.
- It is not compensatory planting to replace areas of woodland felled.
- The income from the developer/ planning condition doesn't rule the project out under the investment test.

This includes:

- The Town and Country Planning Act (1990), Section 106 Planning Obligation (for England and Wales)
- The Town and Country Planning Act (Scotland) 1997, Section 75 Planning Obligations
- The Planning Act (Northern Ireland) 2011, Section 121 Planning permission to include appropriate provision for trees
- Conservation Covenants for Biodiversity Net Gain under the Environment Act 2021.

In England, woodland creation projects established to provide biodiversity credits under Biodiversity Net Gain or nutrient credits under the Solent Nutrient Market or Somerset Catchment Market are unlikely to be eligible for the Woodland Carbon Code/voluntary carbon credits as their legal agreements are likely to specify that woodland creation is required.

Investment test

The purpose of the investment test is to demonstrate that, over the project duration, without carbon finance, woodland creation is either:

1. not the most economically or financially attractive option for that area of land (e.g. woodland creation is profitable, but less so than grazing or other likely non-woodland use) - *For example the Net Present Value of woodland creation (without carbon income) could be positive, but it is less than the Net Present Value of the current/ baseline land use,* or
2. not economically or financially viable on that land at all (e.g. woodland creation is not profitable) - *For example, the Net Present Value of woodland creation (without carbon income) is negative, but adding carbon income moves the Net Present Value to nearer zero or positive.*

Project developers should use the Woodland Carbon Code Cashflow Spreadsheet to set out costs/income over the project duration. See template documents. The spreadsheet uses standard costs incurred in woodland creation and standard carbon/timber income. The net cashflow is calculated over the project duration and is based on current prices. Project developers enter their actual grant and other income data.

In general, native broadleaved schemes, where there is little or no income from the woodland once established, are much more likely to pass the investment test than productive conifer schemes, where there is future income from timber. However, many schemes contain a combination of productive and non-productive elements, and each scheme is judged on its own merits.

At the time of validation, all expected income streams/credit sales should be included in the Woodland Carbon Code additionality assessment. If further income streams/ credit sales are identified at a later date, evidence may be requested to show that the project was not aware of this income opportunity or had not entered into a separate agreement at the time of validation. If Woodland Carbon Code projects are subsequently found not to meet any of the requirements above, the project and carbon units may be marked 'Not Delivered' on the UK Land Carbon Registry.

Further guidance and advice

- Approaches to additionality (Valatin, 2012) (pdf)
- Investment returns from timber and carbon in woodland creation projects (Haw, 2017) (pdf)

2. Project governance

2.1 Commitment of landowners and project developers / group managers

Guidance

Landowner / project developer commitments

This section brings together in one place all the commitments required of the landowner and/or project developer. Some of these commitments are referred to in more detail in other sections of the code, but are shown together here for clarity.

There may be more than one party involved in the management of a Woodland Carbon Code project. A landowner could develop their own project or contract a third party. A group manager is effectively a project developer for several projects working together for validation/verification. Whichever setup applies, there are a number of commitments that each party involved in Woodland Carbon Code projects should make.

The Project Developer or Group Manager needs to be legally constituted such that they can enter a service contract with the validation/verification body.

The group agreement

Once validated as a group, it is anticipated that groups will continue to work together for the duration of their projects/the Group Agreement.

The **group manager** should:

- Maintain a register of members of the group and the individual planting projects covered by the group scheme.
- Ensure the requirements of the contract between the group manager and the constituent group members are adhered to.
- Establish and implement a system of document control and record keeping, holding copies of documents as required by the Woodland Carbon Code.
- Act as the main point of contact with the Woodland Carbon Code Secretariat, the validation/verification body and the UK Land Carbon Registry.
- Register the projects in the group on the UK Land Carbon Registry and coordinate the project-group design.
- Lead on project-group validation and ongoing verification including addressing corrective actions for non-conformities.
- Inform group members of relevant developments.
- Deal with complaints relevant to Woodland Carbon Code validation/verification.
- Revise the Group Agreement (as necessary) with any changes to the group membership or terms.
- Commit to the other terms for project developers as detailed above.

Group members should:

- Abide by the Group Agreement.
- Inform successor landowner(s) of their commitment to the group.
- Allow the group manager to apply for Woodland Carbon Code validation/verification on their behalf.

- Supply information required by the group manager and agree to internal audit by the group manager.
- Take any corrective action required by the group manager to address non-conformities.
- Commit to other terms for landowners as detailed above.

Group Agreements should be signed and dated by all parties.

2.2 Management plan

Guidance

Management planning documentation

If the project is receiving a woodland grant (or, as it matures, has a felling licence), any existing woodland management planning documentation may provide sufficient evidence. There should be a process for updating the management plan. The key aims and objectives of your project as well as the type of woodland to be created should be summarised in your project design document (and updated in your project progress report if changed).

The UK Forestry Standard (including the sustainable forest management elements of climate change, soil, water, biodiversity, landscape, historic environment and people) sets out sustainable forest management standards for the UK and requirements for management planning.

- My Forest provides free woodland mapping and management planning software
- The Land App also provides free mapping services

In Scotland, the Scottish Land Commission provides further guidance on land management standards in their Good Stewardship of Land Protocol.

Longer-term management intentions

Project developers need to set out the intended management regime of the woodland for the project duration and beyond (e.g. regular thinning, clearfell with a given rotation length, continuous cover forestry, or minimum intervention). This should be consistent with the management regime assumed in the Woodland Carbon Code Carbon Calculation Spreadsheet.

Mapping rules

Projects should provide a clear and easily understandable map of their woodland creation project as a PDF.

The map forms an important part of the Woodland Carbon Code documentation. It will be uploaded to the UK Land Carbon Registry and will be a publicly available document enabling potential carbon buyers as well as validating/verifying bodies to locate your project and identify the different elements within it.

If you have already produced a map, e.g. for a grant application, then provided it accurately represents the planting carried out and meets these mapping rules, it can also be used for the Woodland Carbon Code.

- Example maps

Maps should include:

Base map
Ideally this should be an Ordnance Survey map, but other map formats are acceptable, provided they accurately show features such as roads, boundaries, woodlands, watercourses etc. Depending on the size of your project, you can use any appropriate scale of base map.

Scale
The map should show the scale of the original base map.

Title - Name of project
The map title should be the same name that you are using in the UK Land Carbon Registry and in your other project documents (project design document or project progress report).

Outer boundary
The outer boundary of your project should be clearly marked, ideally in red, and should include any land directly related to the project (for example, please ensure you include the entirety of your woodland creation grant in the Woodland Carbon Code project boundary).

Open ground
Any open ground within the outer boundary should be clearly mapped if above 0.25 hectares. This should include open ground which is part of a grant contract as well as any other land which is not planted.

Existing woodland and any other areas not accounted for
Any existing woodland or young planting which are not part of the carbon project but are within the boundary should be clearly marked.

Fencing and other infrastructure
Where new fencing, fence upgrades, vehicle and pedestrian gates and roads/tracks will be added, please show these clearly on the map.
Please ensure this is clear where it is coincident with project or section/sub-compartment boundaries. Provide a second map if it's not possible to show everything on one page.

Grid reference
Your map should be labelled with a six figure British National Grid Reference (This also applies to projects in Northern Ireland). The location of the Grid Reference should be clearly marked on your map, within the boundary of your Woodland Carbon Code project. This should be the same Grid Reference you use in other

documentation (i.e. project design document, UK Land Carbon Registry). If your project has several separate components/stands, use the Grid Reference of the most central or the main/largest component as the Project Grid Reference.

Legend
All features (area, line or point) on the map should be clearly identified in the map legend.

Sections/sub-compartments
Any sections/sub-compartments within the woodland can be clearly marked and labelled (for example shaded with different colours). The woodland might be subdivided into sections based on planting mix, spacing, establishment year or site type. For example, broadleaved and coniferous planted woodland should be separated and clearly labelled. If intimate mixtures that contain both conifers and broadleaves are present, please make this clear.

If each section is dealt with separately in your Woodland Carbon Code Carbon Calculation Spreadsheet, then use the same names for sections/sub-compartments on the map and in your carbon calculation. The sections/sub-compartments may be helpful later at the monitoring and verification stage when thinking about stratifying your site.

Maps over multiple pages
If your map has several pages, please ensure:

- The project name appears on each page
- There is at least one component/ stand with marked Grid Reference on each page to enable location of the components on that page
- All pages are combined into one PDF document

Additional requirements for natural regeneration
Provide map(s) showing

- any seed sources/existing mature trees
- upfront claimable regeneration < 50m from seed sources
- upfront claimable regeneration > 50m from seed sources and
- future claimable natural regeneration areas
- open ground/non-eligible areas
- Existing woodland greater than 0.25 hectares should be mapped as a polygon. Smaller clumps or individual seed trees should be marked with a symbol.

If you are claiming Pending Issuance Units upfront for any areas more than 50m from existing seed sources, then you should also provide a map of the seedling survey showing the presence of any existing seedlings on the site.

Natural regeneration example maps and guidance notes

Further guidance and advice

- UK Forestry Standard
- Free woodland management or mapping tools:
  - My Forest
  - The Land App

2.3 Management of risks and permanence

Guidance

What is 'permanence'?

Permanence describes the issue of ensuring removal of carbon dioxide from the atmosphere is permanent and not reversed at a future point in time. Woodland projects carry a risk of reversibility and, as such, safeguards must be in place to minimise that risk as well as to guarantee replacement or compensatory woodland planting should a reversal occur.

Woodlands sequester carbon from the atmosphere, but can also lose carbon either through natural causes (pest and disease attacks, extreme weather events or fire) or through management (felling and not replacing the trees). Project managers need to make every effort to ensure that any claimed carbon store remains in the woodland for the duration of the project and beyond.

The measures set out below ensure that the risk of loss is minimised and that if there are any unavoidable losses, there is a process for these to be dealt with. Where there is an avoidable loss (e.g. where the management regime set out in the project design document is not followed by the landowner/manager), this can be dealt with by legal and contractual means.

Managing woodland to minimise losses

Projects validated/verified to the Woodland Carbon Code can manage their woodland in a variety of ways, including periodic clearfelling. The project design document should clearly state the management intentions for the project over the project duration and beyond consistent with the Woodland Carbon Code Carbon Calculation Spreadsheet. These management intentions should be realistic for the type of woodland as well as the conditions at the site.

Whatever the management regime, the maximum sequestration that can be claimed is the long-term average carbon stock of the woodland type and management on the site. Clearfelling should be carried out in line with plans set out in the project design document. Restocking should be carried out in line with any felling licence conditions.

Minimising risks to minimise losses

A risk assessment should be included in the project design document at validation in order to insure against unforeseen losses of woodland carbon. Any updates to risk should be given in the project progress report at verification. For each project, the

potential risks should be identified and strategies developed to mitigate these risks. As a minimum, the following areas should be considered:

- Legal/ social
- Natural disturbance: fire
- Natural disturbance: wind
- Natural disturbance: drought/ flood
- Natural disturbance: pest and disease
- Species suitability in current and future climate

Buffer

Purpose

The Woodland Carbon Code buffer safeguards the investment made by carbon buyers and maintains and protects the integrity of verified Woodland Carbon Units. Thus Woodland Carbon Units issued for a project are permanent and would never have to be cancelled or 'paid back' should that project subsequently fail. We will ensure there are always sufficient units in the pooled buffer to cover any unanticipated losses from individual project failures.

The buffer is a single account held in the UK Land Carbon Registry and managed by Scottish Forestry. It contains the contributions from all verified projects.

For avoidance of doubt, the following would not be covered and losses would be borne by the project:

- Pending Issuance Units
- Sequestered carbon which is not yet verified

Contributing to the buffer

From Version 2.0 of the Woodland Carbon Code, projects each contribute 20% of the project's net carbon sequestration to the buffer. With previous versions of the standard, projects contributed a variable amount (15% to 40%) based upon project risk.

At validation, 20% of Pending Issuance Units are transferred into the Woodland Carbon Code buffer account managed by Scottish Forestry. This indicates the potential size of the buffer over time. It will not be possible to make claims from the Pending Issuance Units in the buffer account.

On verification of each vintage/ monitoring period, Pending Issuance Units will be converted to Woodland Carbon Units. 20% of verified Woodland Carbon Units from that vintage will be allocated to the buffer account managed by Scottish Forestry. Verified Woodland Carbon Units in the buffer can be drawn on in case of any losses of verified Woodland Carbon Units from a project. Buffer units are not tradable.

Losses

A ‘loss’ of carbon is defined as when the woodland loses some of its trees and standing volume, and therefore carbon due to avoidable or unavoidable circumstances.

Should a loss occur, the project should immediately inform the Woodland Carbon Code Secretariat.

The project must submit a loss event report within six months of discovery of the loss. The relevant number of buffer units to cover the loss will be put on hold.

The project will then conduct their next regular verification as per the verification schedule.

Reversals

A reversal is defined as when the net greenhouse gas benefit of the project, taking into account the baseline, leakage and project carbon sequestration, is negative in a given monitoring period/vintage. The size of the reversal is the net carbon sequestration at the current verification minus the net carbon sequestration at the previous verification.

Reversal: If at the next regular verification there has been a reversal since the previous verification:

1. If desired, any unsold Woodland Carbon Units in the project-developer’s account which are not part of the amount lost, can be cancelled to cover the reversal.
2. Should this be insufficient to cover the loss then the relevant number of buffer units already put on hold will be cancelled to cover the remaining proportion of the shortfall. If this number is insufficient, additional buffer units will be cancelled. If too many were put on hold, the ‘surplus’ will be released back into the buffer.
3. The project design document shall be reviewed with a view to taking corrective actions to make good the losses in a reasonable timeframe of, perhaps, 10 to 20 years.

No Reversal/Increase: If at the next regular verification there has been a net increase in carbon sequestration since the previous verification, then there is no reversal and any Woodland Carbon Code Buffer units put on hold at the time of the loss event report will be released back to the buffer.

See also the Registry Rules of Use.

Replenishing the buffer

An **unavoidable reversal** relates to a loss due to natural disaster (e.g. severe storms, flooding, drought, fire, pest and disease attacks) or man-made events over which the project has no control (e.g. terrorism, war).

If a reversal has occurred, then:

- If the **reversal was avoidable** (e.g. poor management or early/over-harvesting of timber) the project shall **reimburse the buffer for all credits cancelled** to compensate for the loss before further Woodland Carbon Units are issued to the project.
- If the **reversal was unavoidable**, the project is only required to **repay the buffer for carbon units cancelled in excess of the contribution their project had previously made** (e.g. if a project had contributed 50 units but 60 were cancelled to cover their loss, the project would only have to repay 10 units). Further Woodland Carbon Units can then be issued.

The project would then continue to contribute a proportion of verified carbon units into the buffer at each subsequent verification.

End of project duration

At the end of a project's duration, all remaining buffer units which were contributed by that project will be cancelled and there is no further requirement to monitor the project.

Legal instruments to ensure permanence

The landowner of a Woodland Carbon Code project has to commit to a permanent land use change to woodland and to maintain the woodland as a woodland carbon sink. Any unavoidable losses due to natural disturbances such as fire, pest, disease or wind damage will be eligible to make a claim from the 'buffer' of unclaimed carbon. Avoidable losses (e.g. the landowner choosing to fell and not replace the trees) must be dealt with by legal or contractual means.

Contractual obligation Where a contract is in place with a buyer covering the landowner's obligations to provide carbon sequestration through woodlands, claims may be made by the buyer in the event of a breach of contract.

In addition to any contractual obligations set up under the Woodland Carbon Code, projects are subject to existing legislation that would guard against deforestation or the removal of woodland.

Across the UK, the following legislation requires an Environmental Impact Assessment for deforestation above 0.5ha in sensitive areas, 1.0ha outside sensitive areas:

- Environmental Impact Assessment (Forestry) (England and Wales) Regulations (1999)
- Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017
- Environmental Impact Assessment (Forestry) Regulations (Northern Ireland) 2006.
- EIA (Deforestation) - England
- EIA (Deforestation) - Scotland
- EIA (Deforestation) - Wales
- EIA (Deforestation) - Northern Ireland

Across the UK, the following legislation prevents the felling of trees without the permission of the Forestry Commission, Scottish Forestry, Natural Resources Wales or Northern Ireland Forest Service, through a Felling Licence.

- The Forestry Act (1967)
- Forestry and Land Management (Scotland) Act 2018
- The Forestry Act (Northern Ireland) 2010
- Felling Licences - England
- Felling Permissions - Scotland
- Felling Licences - Wales
- Felling Licences - Northern Ireland

Further guidance and advice

- Loss event report - version 2.1
- 2.6 Registry rules of use

Future developments

- We are developing standard terms to be included in contracts sellers and buyers.
- We will provide further examples on avoidable and unavoidable reversals and replenishing the buffer.

2.4 Consultation

Guidance

In addition to a number of statutory consultees, communities can reasonably expect to be engaged in decisions about the use and management of land where the outcome is likely to have an impact on the community. This engagement should be a genuine exercise in collaboration and community views should be considered to help achieve mutually beneficial outcomes. The process should be proportionate to the resources available to all parties and the impact that the decision may have on the community.

The toolbox for public engagement in forest and woodland planning can assist forest and woodland managers when planning for public involvement and when considering which tools would be most appropriate when including local communities and other stakeholders in forest or woodland planning and management.

In Scotland, the Scottish Land Commission Protocol on Community Engagement in Decisions Relating to Land and the Route Map for Community Engagement provides further guidance. The Scottish Land Rights and Responsibilities Statement helps guide the process of land reform in Scotland.

If a project has carried out an Environmental Impact Assessment or applied for a woodland creation grant, evidence of the consultation required as part of these processes is sufficient in most cases. Projects which apply for grant are also placed

on a public register for four weeks and comments received will be considered as part of the grant approval process.

- England: Consultation register for grant schemes, felling licences and Environmental Impact Assessment applications
- Scotland: Public register of Forestry Grant Scheme woodland creation applications
- Wales: Public Register of Environmental Impact Assessment Decisions
- Northern Ireland: Public Register of Environmental Impact Assessments

Further guidance and advice

Toolbox for public engagement in forest and woodland planning

2.5 Monitoring

Guidance

Monitoring plan

Each project needs to have a monitoring plan in place before validation. Monitoring will enable the project to quantify and document the progress of carbon sequestration as well as ensure that the project is being managed to the UK Forestry Standard. The monitoring plan shall be set out in the project design document.

When to monitor

Projects developers need to undertake the field survey six to 12 months (but no more than 12 months, except in exceptional circumstances) prior to each verification due-date to:

- demonstrate successful woodland establishment at year five, and
- assess actual tree growth and carbon sequestration rates from year 15 onwards.

Starting the monitoring six to 12 months before the due date allows sufficient time for verification to be completed before the verification due-date.

Monitoring at year-5

The first verification due-date is five years after the start date (for those projects validated earlier than July 2013, timing of the first verification may differ).

The purpose of monitoring at year five is to ensure that the site has been suitably stocked and established (as set out in the project design document) and that the trees/ site are in good health with the potential to grow and sequester carbon as predicted. All projects should use the Woodland Carbon Code survey protocol V2.1.1 April 2024 (pdf) which sets out requirements of the year five survey. It assesses:

- Tree stocking density through the number of seedlings and saplings of each species
- Actual species mix
- Tree health, tree damage, weed growth and tree protection (shelters/fencing)

The Woodland Carbon Code year 5 monitoring report V2.1.1 April 2024 provides template sheets for data collection as well as a summary sheet which calculates stocking density from the results of the field survey. You will submit a project progress report and the year 5 monitoring report, with site-based photos to your chosen verifier. On verification, the predicted number of Pending Issuance Units will be converted to Woodland Carbon Units with no under or over delivery.

At year five, projects will be verified to a 'limited' level of assurance.

Monitoring from year 15 onwards

Verification due-dates for subsequent assessments will be 15 years after the project start date and then at least 10-yearly up to the project end date. There are three options for monitoring:

Full monitoring and 3*rd* party verification

The purpose of monitoring from year 15 onwards is to assess the carbon stock of the site and to confirm that the trees/site are in good health with the potential to grow and sequester carbon as predicted. This involves carrying out a plot-based mensuration survey for year 15 onwards following the Woodland Carbon Code survey protocol V2.1.1 April 2024. It assesses:

- Carbon stock
- Tree health

The Woodland Carbon Code year 15+ monitoring report pilot V2.1 March 2021 provides template sheets for data collection as well as summary sheets to calculate the carbon stock of the woodland. You will submit a project progress report V2.2.1 April 2024 and Woodland Carbon Code year 15+ monitoring report with site-based photos to your chosen verifier. On verification, your units realised will be converted from Pending Issuance Units to Woodland Carbon Units.

- If your survey results confirm more carbon is stored onsite than predicted, then your verification status will be 'green' and you will be issued more Woodland Carbon Units, in line with your survey results.
- If your survey results confirm less carbon is stored onsite than predicted, then your verification status will be 'red' and any undelivered Pending Issuance Units will be cancelled.
- If the verifiers' assessment is that there is real concern for the ability of your project to sequester the predicted amount in future vintages, you will be required to re-assess your carbon prediction and Pending Issuance Units issued for future vintages will be cancelled.

Projects which undertake full monitoring will be verified to a ‘reasonable’ level of assurance.

Basic monitoring and 3rd party verification (for projects that used the Small Project Calculator)

For projects that used the small project calculator, basic monitoring (see section 2 project governance) can be carried out to assess the carbon stock of the site and to confirm that the trees/ site are in good health. You will submit a project progress report V2.2.1 April 2024 and basic monitoring report for verification. On verification, it will be assumed that the predicted amount of carbon dioxide has been sequestered and your units will be converted from Pending Issuance Units to Woodland Carbon Units with no under or over delivery.

You can only undertake basic monitoring and third party verification if:

- Your project is at least 15 years old.
- You used the ‘small woods calculator’ at validation.
- It’s not the last monitoring period of your project. At the last monitoring period you will be required to do full monitoring and third party verification.
- There have been no major changes to the project since the last verification (area, management, health etc).

The verifier can request other sources of information if any source supplied is not clear. If the verifier still has any concerns about the growth or health of the project, they can request that you conduct Full Monitoring prior to verification of your small project.

Small projects which undertake basic monitoring will be verified to a ‘limited’ level of assurance.

Basic monitoring and self-assessment

Self-assessment involves carrying out basic monitoring and uploading your basic monitoring report and project progress report to the registry without third party verification. There will be a basic check of the evidence submitted by the Woodland Carbon Code Secretariat and your project will have the status ‘self-assessed’. If you self-assess, your carbon units will remain as Pending Issuance Units and won’t be converted to Woodland Carbon Units, so they still can’t be used by buyers to report against their emissions.

You can only undertake self-assessment from year 15 onwards if:

- Your latest verification received a ‘green’ status (if a group, all projects have to be ‘green’ status) and you don’t have any concerns about the growth and health of your project.
- Your latest assessment was a verification, not a self-assessment.
- It’s not the last monitoring period of your project. At the last monitoring period you will be required to do full monitoring and third party verification.
- There have been no major changes to the project (area, management, health etc.)

Please contact the Woodland Carbon Code Secretariat if you intend to self-assess and we will check you meet the criteria.

When reviewing a 'self-assessed' project, the Secretariat can request other sources of information if any source supplied is not clear. If the Secretariat are content with the information provided, they will approve the project as 'self-assessed'. If the Secretariat still have any concerns about the growth and health of a project that is submitted as 'self-assessed', the Secretariat can require that full monitoring and third party verification is undertaken.

Self-assessed projects are not verified. No Pending Issuance Units will be converted to Woodland Carbon Units.

Basic monitoring requirements

- Complete the **project progress report** which confirms the project still meets the standard and is still on track.
- Project developer prepares a **basic monitoring report** containing imagery of the site as follows, to confirm the health, growth and extent of the woodland. Project developers should check proposed aerial imagery with the Woodland Carbon Code Secretariat (for self-assessment) or verifier (for verification):
    - Representative geotagged site-based photos (minimum three to four, more if the project consists of lots of separate compartments) AND
    - One form of aerial image, with the boundary of the project and planted area overlaid, to confirm stocking over whole site. This could be:
        - Plane-based aerial photos (these are available map browsers such as):
            - England's Map Browser and Land Information Search
            - Scotland's Land Information Search in Scotland's Environment Web
            - Natural Resources Wales Interactive Mapper
            - My Forest (You can upload an existing shapefile and overlay it on aerial photography)
            - The Land App (access Bing imagery or Mapbox imagery)
            - MAGIC
            - Scotland's Environment Web
            - Google Maps or Bing Maps (although aerial photography can be older).
        - Satellite-based optical data (Copernicus/Sentinel now produces images every six days. This is currently available to Forestry Commission/Forest Research/Scottish Forestry internally. Also available from private sources).
        - Drone-based video/photos
        - Other image sources as they become available.
- An updated map (with planted/open/existing woodland and project boundary) if the net area apparent on aerial image is at odds with the original map. This should follow Woodland Carbon Code mapping guidance (see section 2.2 management plan). If there is greater than a 5% disparity in apparent net area, then full monitoring should be undertaken.

Who can undertake the assessment?

The year five or year 15 survey can be carried out by a suitably experienced landowner, project developer or independent third party. The verifier may also offer to carry out the field survey on the project developer's behalf. The verification body will always visit the site at the year five verification, but will do so on a risk-based approach for subsequent verifications. Monitoring carried out by an independent third party could be less likely to require a verification body field visit, however project developers should contact their chosen verification body to check the suitability of an independent surveyor prior to carrying out the survey.

The science behind the assessment of carbon

The Woodland Carbon Code Survey Protocol is a subset of methods outlined in the Woodland Carbon Code Carbon Assessment Protocol. Methods of calculating the tree stem volume are detailed further in the Forest Mensuration Handbook. The methods of estimating the mass of carbon from the tree volume are given in The Carbon Content of Trees (pdf) and other Forestry Commission publications such as:

- Forests, Carbon and Climate Change: the UK contribution (pdf)
- Understanding the carbon and greenhouse gas balance of forests in Britain

Further guidance and advice

- Carbon assessment protocol - version 2.0 March 2018 (pdf)
- Verification

Future developments

- We will develop a soil carbon assessment protocol.

- We are investigating how technology such as instruments on drones, planes and satellites could help with verification. We will add to the protocol when such methods are acceptable and cost effective.

2.6 Registry and avoidance of double counting

Guidance

The UK Land Carbon Registry is managed by S&P Global on behalf of the Woodland Carbon Code and the Peatland Code.

- See UK Land Carbon Registry for details of how to join or view the registry.
- See the Registry rules of use

2.7 Carbon statements and reporting

Guidance

It is vital to the reputation of the code that any claims made about carbon are true and accurate and that carbon from a given project is not used or accounted for more than once. As a general principle, carbon can only be used once the trees have grown, carbon is sequestered and verified. Companies using verified Woodland Carbon Units should demonstrate their use in an annual report (environmental, greenhouse gas or financial) as well as in other promotional claims. **Landowners, project developers and carbon buyers should make every effort to ensure the appropriateness and accuracy of any claims.**

The UK Land Carbon Registry, a carbon unit registry for the Woodland Carbon Code and Peatland Carbon Code, hosted by S&P Global. This contains units in two forms:

- **Pending Issuance Units** of a given 'vintage'/time-period (essentially a promise to deliver carbon units in a given timeframe; not guaranteed) and
- Verified **Woodland Carbon Units** of a particular vintage/time-period (verified carbon sequestration which can be used or reported; guaranteed).

All units are linked to the project they belong to and are publicly visible with their current status and owner. When units are retired from the registry for use, this will be publicly visible on a 'retirement' page. This will provide clarity and transparency of carbon owners and claims that are made. It is possible for project developers to 'assign' a Pending Issuance Unit to a buyer if the buyer doesn't wish to have their own account. Assignment is irreversible and assigned credits will be automatically retired once they are converted to verified Woodland Carbon Units upon verification.

Scottish Government's Interim Principles for Responsible Investment in Natural Capital provide further guidance for those thinking of buying carbon units or buying land to create carbon units.

Further guidance and advice

Reporting your emissions

- Environmental reporting guidelines - including streamlined energy and carbon reporting requirements PAS 2060:2014
- Specification for the demonstration of carbon neutrality

Other useful guidance

- Voluntary Carbon Markets Integrity Initiative
- Green/environmental claims guidance

3. Carbon sequestration

3.1 Carbon baseline

Guidance

What is a baseline scenario?

A baseline scenario is a projection of the changes to carbon on the site, over the project duration, in the absence of the project (e.g. woodland creation) going ahead. It is the reference scenario from which the impact of the project can be measured.

Small projects (5 ha net planting area or less): We assume that the baseline is 'no change in carbon stocks over time'. No assessment is necessary

Standard projects (over 5 ha net planting area): It is often the case with standard projects that the baseline will be 'no change in carbon stocks over time' if the project was previously grazed pasture or arable land. It would be unlikely there was any carbon sequestration in these cases and we do not allow projects to claim for the 'reduction in emissions' from stopping the previous land-use. However, standard projects should consider whether there would have been significant sequestration in the 'baseline' scenario.

Which carbon pools do I include?

The Woodland Carbon Code is adopting a conservative approach to the construction of the baseline scenario, meaning greenhouse gas emissions from the land use prior to woodland creation (e.g. from livestock, fertiliser or burning) cannot be included in the baseline.

The following carbon pools shall be included in the baseline scenario:

- Tree biomass (above and below ground)
- Litter and deadwood
- Non-tree biomass (above and below ground)
- Soil

Calculating the carbon stock at the start of the project

Reference can be made to any maps, photographs, remotely sensed images or field survey results which confirm the condition of vegetation and soil previous to woodland creation. This will allow an estimate of the carbon stock onsite prior to the project taking place.

- **For tree biomass -** The Carbon Assessment Protocol should be used to survey the trees already existing onsite and estimate the carbon they contain.
- **For litter and deadwood** - It is unlikely that this carbon pool, or changes to it, will be significant.
- **For non-tree biomass -** Reference Natural England's Carbon Storage and Sequestration by Habitat 2021 (NERR094**) or** contact the Woodland Carbon Code Secretariat for further information on estimates of carbon stock of other shrubs and vegetation.
- **For soil carbon -** Unless the project has undertaken specific soil carbon assessment prior to tree planting, then we will assume that the soil carbon content at the site at the start of the project can be derived from looking at the closest land use type in the table Soil Carbon Estimate Prior to Planting. Note we recognise these figures are the mean mass of soil carbon across each land use and country, and in reality there is a large variation.

Calculating changes to the baseline scenario over the project duration

If likely to be significant (i.e. ≥ 5% of the project carbon sequestration over the duration of the project), projects need to calculate how carbon stocks on the site would have changed over the project duration had the project not gone ahead (the 'baseline' or 'business as usual' scenario). The baseline scenario is conservative by accounting for sequestration but not emissions. This means the net carbon sequestration (project sequestration minus baseline) will not be more than the actual sequestration of the ecosystem.

If the change to the carbon pools is not significant (i.e. < 5% of the project carbon sequestration over the duration of the project) then it can be assumed that the baseline scenario is 'no change of carbon stocks over time'. However, projects should clearly lay out in the project design document how they came to this conclusion.

For tree biomass - In the baseline scenario, any trees already present on the site will continue to accumulate carbon without the project going ahead and this should be accounted for. This can be done by:

- assessing the density of trees present and their current age
- converting this to an equivalent area of woodland of a given age at a given planting spacing
- using the Carbon Lookup Tables to estimate the likely changes to that stock over time

For litter and deadwood - It is unlikely that this carbon pool, or changes to it, will be significant. Projects can assume that in the baseline scenario there is no change over time to this carbon pool.

For non-tree biomass - In the baseline scenario, non-tree biomass could accumulate or it could be in equilibrium over the project duration (in which case no changes over time will be accountable). This depends largely on the type of vegetation present. Crops and established grass can be assumed to be in equilibrium and therefore there will be no change over the project duration in the carbon stock of non-tree biomass. However, other biomass may still be growing and sequestering carbon and projects should account for the change to the carbon stock over the duration of the project. Projects should refer to the IPCC 2003 Good Practice Guide for LULUCF.

For soil carbon - It is hard to predict what soil carbon changes would have occurred in a given baseline scenario, however, given that gains to soil carbon in the non-wooded baseline scenario are unlikely to be significant (≥ 5% of the project carbon sequestration over the duration of the project) for sites with an organic/peat layer 50 cm or less, projects can assume that there is no change over time to soil carbon in the baseline scenario.

Future developments

- We will publish estimates of the carbon stock of other types of non-tree vegetation.
- We will update the table Soil Carbon Estimate Prior to Planting with information by soil grouping (organic, organo-mineral and mineral) or, where possible, by soil type to increase the accuracy of these predictions.
- In future for Scotland more soil type-specific carbon stock information may be available from the Soil Information for Scottish Soils website.
- We will publish a Soil Carbon Assessment Protocol to allow projects to undertake a field assessment to estimate the soil carbon stock at the site.

3.2 Carbon leakage

Guidance

What is 'leakage'?

Many international carbon standards involve assessments of leakage or changes to carbon stocks outside of the project boundary as a result of the project going ahead. International carbon standards describe two main types of leakage and their relevance in terms of a woodland creation project is described below:

- **Activity-shifting leakage**: When the activity (agriculture or other) which was taking place on the project site is moved and causes land-use change elsewhere. In some countries there is concern that this might cause deforestation away from the project site or degradation of other semi-natural habitats. These emissions from deforestation or intensification of use of non-wooded land are normally accounted for.
- **Market leakage**: If the presence of the project causes production of a product to be stopped on the project site, forcing additional production elsewhere to ensure the market demand is met. This tends to be used where a project involves accounting for changes to woodland management and timber production on the project site is stopped or postponed. In the case of new woodlands, this is not likely to occur since there is no woodland product produced at the site prior to planting.

Likelihood of leakage of emissions in the UK

Given that the Woodland Carbon Code only deals with woodland creation, only activity-shifting leakage would appear to be relevant. However, there are a number of laws governing the protection of semi-natural habitats and existing woodlands so that any activity-shifting leakage within the UK (in terms of intensification of use of land outside the project boundary) is highly unlikely.

For deforestation:

- Environmental Impact Assessment (Forestry) (England and Wales) Regulations 1999 and the Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999. Requires an Environmental Impact assessment for any deforestation over 1ha (0.5ha in sensitive areas).

- Forestry Act 1967. Requires a felling licence for deforestation. Unconditional (i.e. no restocking required) felling licences are rare. There are some exceptions including:
    - Very small volumes of timber felled annually by the woodland owner
    - Development granted under the Town and Country Planning Act 1990 or the Town and Country Planning (Scotland) Act 1997
    - Electricity operator

For protection of biodiversity and other semi-natural habitats:

- Wildlife and Countryside Act 1981 and amendments
- Countryside and Rights of Way Act (England and Wales) 2000, Nature Conservation (Scotland) Act 2004, The Conservation Regulations (Northern Ireland) 1995

Approach to leakage in the Woodland Carbon Code

Due to the existing legislation in the UK which protects semi-natural habitats, biodiversity and also protects against deforestation, the Woodland Carbon Code assumes that in most cases there will be NO LEAKAGE (i.e. leakage = 0, no change over time) in woodland creation projects.

Small projects (5 ha net planting area or less): Can assume that there is no leakage.

Standard projects (over 5 ha net planting area): Should consider whether the project will result in more intensive use of another area of land under the same ownership or lessee. If so, then any significant greenhouse gas emissions through changes in land use or management of the area of land should be accounted for over the project duration (significant is more than 5% of the project carbon sequestration over the duration of the project). Leakage assessments are likely to be project-specific. The following guidance should help define the scope of the assessment.

1. The following carbon pools shall be included:

- Tree above and below ground biomass
- Litter and deadwood
- Non-tree above and below ground biomass
- Soil
- Increased emissions from management of the land

2. Any land use change or intensification within the UK which can be attributed to the project going ahead should be accounted for.

3. Only significant greenhouse gas emissions need to be accounted for in the project's net carbon sequestration. Emissions are considered significant if they amount to more than 5% of the project carbon sequestration over the duration of the project.

4. Projects can refer to the IPCC 2003 Good Practice Guide for Land Use, Land-Use change and Forestry and the IPCC 2006 Guidelines for national GHG inventories for guidance.

3.3 Project carbon sequestration

Guidance

What is 'project carbon sequestration'?

Project carbon sequestration is the changes in carbon stocks due to woodland creation over the project duration as a direct result of the project.

This page outlines how to predict changes to carbon stocks that will occur over the duration of the project. The monitoring section (2.5) explains how to assess actual carbon stocks later on in the project once the trees are growing and carbon has been sequestered.

Project developers should bear in mind when agreeing to sell Pending Issuance Units that the tools here provide a prediction of the carbon that is likely to be sequestered and not a guarantee that a particular woodland will sequester a certain amount.

Accounting for project carbon sequestration

Projects should account for project carbon sequestration using the Carbon Calculation Spreadsheet version 2.4.1 April 2024 following the associated guidance. The calculator includes the following:

- Emissions from establishment activities, ongoing management and clearfell.
- Emissions from soil disturbance
- Sequestration in tree biomass, litter and deadwood (and in a limited number of scenarios, soil)

Small projects (5 hectares net planting or less): Can use the 'Small Project Carbon Calculator' which is simpler to complete and conservative. Projects using this prediction tool can use the less intensive 'basic monitoring' from year 15 onwards.

Standard projects: Should use the 'Standard Project Carbon Calculator'.

Vegetation removed at start of project

If any vegetation is removed prior to the start of the project, this should be accounted for (both tree and non-tree biomass). Projects can use Natural England's Carbon Storage and Sequestration by Habitat or contact us for further information on estimates of the carbon stocks of non-tree biomass. They can also refer to the IPCC 2003 Good Practice Guide for Land Use, Land-Use change and Forestry and the IPCC 2006 Guidelines for national GHG inventories for guidance on estimating the carbon stock of existing vegetation.

Carbon in the soil

Soil Carbon and the Woodland Carbon Code sets out the methodology for organomineral and mineral soils. The Carbon Calculator includes assumptions about the likely soil disturbance and soil greenhouse gas emissions. Alternatively, projects can make a soil carbon assessment prior to tree planting with repeat assessments as the project progresses.

Soil carbon accumulation can currently only be claimed for projects on a mineral soil where the previous land use was arable or rotational grass and the woodland will be managed as minimum intervention. This is included within the Carbon Calculator.

Carbon prediction tools

- Carbon calculation guidance version 2.4 March 2021 (pdf)
- Carbon calculation spreadsheet version 2.4.1 April 2024 (xlsx)
- Example carbon calculations March 2021 (xlsx)
- Ecological Site Classification version 4 - This is not currently available for Northern Ireland. Please contact us for further information.

Future developments

- **Tree biomass:** Data behind the Carbon Calculator is being reviewed and revised to incorporate new growth and yield models and to refine estimates of contributions from root and branch biomass. The revised estimates for some tree species may be more conservative than current predictions, particularly for the early growth period of broadleaved species. The Carbon Calculator already subtracts 20% from modelled predictions and it is anticipated that these revisions will fall within this threshold.
- **Tree biomass:** We will develop our Carbon Calculator to include a wider selection of spacings and to account for the carbon stored in roots and stumps when clearfelling.
- **Non-tree biomass:** We will publish estimates of the carbon stock of other types of non-tree vegetation.
- **Soil:** There will be a number of developments:
    - We will update the soil carbon methodology using results of ongoing research. This will allow us to say with more certainty both the amount of soil carbon lost on woodland establishment as well as the rate of accumulation of soil carbon as the woodland grows and matures.
    - We will establish a soil carbon assessment protocol to enable projects to consistently assess the soil carbon content of their soil.
    - Ongoing research will help us better understand the changes to soil carbon due to woodland creation and management.

3.4 Net carbon sequestration

Guidance

Net carbon sequestration is the total amount of carbon sequestered by the project which can be converted into carbon units. These are divided between the proportion that will contribute to the shared Woodland Carbon Code buffer and the claimable

carbon sequestration which is the amount the project can sell or claim. The number of units will be set out by vintage or monitoring period in the project design document.

Net carbon sequestration = project carbon + leakage - baseline.

The Woodland Carbon Code Carbon Calculation Spreadsheet helps project developers to calculate their net carbon sequestration. See 3.3 Project carbon sequestration.

4. Environmental quality

Guidance

Safeguarding / ensuring no harm is done - Environmental Impact Assessment

In order to show that the creation of a Woodland Carbon Code project 'does no harm', all projects should ensure safeguards are in place so they can show that any environmental impacts on the land area concerned are likely to be positive. An Environmental Impact Assessment and Environmental Statement/EIA Report (where required) will usually cover all issues associated with environmental integrity.

Environmental Impact Assessment England
Environmental Impact Assessment Scotland
Environmental Impact Assessment Wales
Environmental Impact Assessment Northern Ireland

If no Environmental Impact Assessment is required due to scale or nature of project and site, projects should demonstrate in their Project Design Document:

- Any likely environmental impacts
- Any rare or endangered species in the project area and how these are taken into account in the project design
- Any statutory designations in the project area and how these are taken into account in the project design
- The design has given due regard to the visual, cultural value and character of the local environment

Where a woodland creation grant has been applied for, the information supplied for a grant application will help.

Useful map-based tools in each country can show designated areas or features on or near the project site:

Land information search England, and MAGiC mapping tool, England
Land information search Scotland
NRW Mapping, Wales
Northern Ireland

UK Forestry Standard: In order to show that the project is managed with the best possible outcomes for the environment, the project design shall incorporate the environmental aspects of sustainable forest management as set out in the UK Forestry Standard and supporting Guidelines for Climate Change, Soil, Water, Biodiversity, Landscape and Historic Environment. These standards shall be maintained throughout the duration of the project.

BS8632:2021: BSI's standard for Natural Capital Accounting for Organisations: This is a tool to measure changes in the stock of natural capital. Landowners may be interested in considering this approach, though it does not form a part of the Woodland Carbon Code.

Monitoring and making statements about the environmental benefit of a project

Project developers use the Woodland Benefits Tool to present the likely environmental outcomes of their projects. Projects are scored out of five in each area at validation. The Woodland Carbon Code does not yet have a methodology to monitor the benefits over time.

5. Social responsibility

Guidance

Safeguarding / ensuring no harm is done and managing for positive social outcomes

UK Forestry Standard: In order to safeguard against negative social outcomes and ensure no harm is done, as well as to manage for positive social outcomes, the project needs to incorporate the social aspects of sustainable forest management as set out in the UK Forestry Standard and supporting Guidelines for Forests and People.

Where a woodland creation grant has been applied for, the information supplied for a grant application will help.

Scottish Government's Interim Principles for Responsible Investment in Natural Capital provide further guidance for those thinking of creating carbon units on their land. The Scottish Land Rights and Responsibilities Statement 2022 helps guide the process of land reform in Scotland.

Monitoring and making statements about the social benefit of a project

Project developers use the Woodland Benefits Tool to present the likely social outcomes of their projects. Projects are scored out of five for the likely benefits in the following areas: