

# Developing a Woodland Water Code: what do buyers and investors want from water credits?

Lunchtime seminar summary • 15<sup>th</sup> February 2024

This document provides a summary of the seminar exploring what buyers and investors want from water credits generated from the Woodland Water Code (WWC). A series of frequently asked questions (FAQs) were identified and responded to below, this is followed by a summary of the discussions during the seminar and the key follow-up actions.

## FAQs

### 1. Why is only woodland creation included, and not other habitat types?

Alongside a UK-wide target of 30,000 ha per year of woodland creation by the end of the current Parliament,<sup>1</sup> each devolved nation has set its own woodland creation targets. The scope of the WWC is to quantify the water benefits provided by woodland creation projects in the UK to increase private investment and incentivise land use change. It is estimated that the gap in finance to meet the UK's woodland creation goals between 2022 – 2032 is at least £1,800 million.<sup>2</sup>

There is an abundance of research that has evidenced the benefits of woodland to water, examples of which can be found in the [Woodland for Water \(2011\)](#) report, the payments for Ecosystem Services (Forests for Water) [PESFOR-W \(2016-2021\)](#) Cost Action and [IUFRO: Forests and Water on a Changing Planet](#). In addition to water, woodlands provide benefits such as carbon sequestration, biodiversity and improvements to health and wellbeing. There are several other nature-based solutions (NbS), such as wetlands, which can also deliver water benefits. These are outside the project scope. However, the WWC team are interested in collaborations to explore whether the WWC could fit within a wider code, such as an overarching water code or land use change code. The WWC project team

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<sup>1</sup> Department for Environment, Food & Rural Affairs, [England Tree Strategy Consultation](#), June 2020, p.6

<sup>2</sup> Green Finance Institute, [The Finance Gap for UK Nature](#), October 2021, p.53

is working closely with the Woodland Carbon Code, which is currently considered the best option for combining/integrating with Woodland Water Code in the next 2 – 3 years. A wider code, whilst valuable, is expected to take much longer to develop and thus further delay progress with meeting the UK's woodland creation goals.

Similarly, the inclusion of other tree/ vegetation planting will increase the complexity of the WWC, both in terms of the quantification of water benefits (e.g., developing or modifying existing hydrological models) and for defining the rules for key issues such as leakage and permanence. Therefore, only woodland will be included in the first iteration of the Code. Expansion to other types of tree planting such as agroforestry, as well as a more holistic code applicable to multiple NbS, will be a key consideration for future refinements.

### 2. Will the WWC be UK-wide?

The aim is to develop a UK-wide WWC. Representatives from all four devolved nations are on the Steering Group, and discussions are ongoing to ensure the WWC is applicable across the UK.

### 3. How are water resources considered?

Water resources are not quantified within the WWC, but they are considered as part of the application process for woodland creation projects. Therefore, areas with a water resource problem (e.g., drought prone areas) will be excluded if woodland creation is considered to further exacerbate the issue. The World Resource Institute (WRI) has developed a Volumetric Water Benefit Accounting method for implementing and valuing water stewardship activities. Whilst this method does include reforestation, it does not provide a standardised methodology for quantifying the benefits of woodlands for water or a private finance mechanism tailored to woodland creation in the UK – which is the focus of the WWC.

### 4. Will the WWC be applicable for both voluntary and regulatory/compliance markets?

The WWC is expected to be a voluntary Code at the outset, aligning with the Woodland Carbon Code. However, the methodologies underpinning the WWC could be utilised in other markets. For example, the WWC team are working with Natural England to ensure the approach is consistent with Nutrient Trading in England. The project team are also liaising with contacts in the Welsh Government and Natural Resources Wales to ensure consistency

with developments in Wales on nutrient neutrality. In addition, water companies are already working with farmers to undertake NbS to tackle water quality issues – some involving tree planting (e.g. see [case studies](#)). In these instances, the WWC may not be required as a vehicle for financing woodland creation schemes but would provide a consistent methodology for assessing the water benefits for reporting purposes. The WWC will also provide a vehicle for private finance for investing in woodland creation projects by those outside of the water sector.

### 5. Woodland creation can involve pesticide/ herbicide usage. How is this included in the water quality metric?

Farmscoper (version 5, 2021) developed by ADAS, is used to calculate pollutant concentrations from the field/farm to the watercourse and is estimated on an annual basis. Farmscoper estimates the pesticide concentrations in dose units, which incorporates herbicides, fungicides, insecticides, growth regulators and molluscicides. The number of sprayer applications used to apply these chemicals are also included. The pesticide values for arable land in Farmscoper's calculations are obtained from the Pesticide Usage Survey Report of Great Britain 2005-2006. For woodland, pesticide values are not included. Unlike arable land, the application of pesticides such as herbicides to woodland is relatively uncommon and where needed, is usually limited to a few years after planting to achieve tree establishment (e.g., to control weed competition or pests). United Kingdom Forestry Standard (UKFS) requirements and guidelines will apply for all woodland creation projects and should be checked as part of the grant awards or for the UK Woodland Assurance Standard (UKWAS) accreditation.<sup>3,4,5</sup> In addition, pesticide application to woodland is considered to have a rotation of 100 years. Therefore, any herbicide concentrations in water resulting from glyphosate usage within this timeframe would result in very

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<sup>3</sup> G. Sellers, Forest Research (2014), Weed Control BPG Note 11: Best Practice Guidance for Land Generation, 2014.

<sup>4</sup> Forestry Commission (2019), Managing forest operations to protect the water environment, Forestry Commission Practice Guide.

<sup>5</sup> Forestry Commission (2004), Reducing Pesticide Use in Forestry, Forestry Commission Practice Guide.

small/negligible chemical losses to water. Targeted studies have struggled to detect the presence of pesticides in waters draining woodland.

### 6. What is a Woodland Water Unit?

Woodland Water Units will represent a new type of credit. They will be used to represent the quantified benefits of woodlands for the three water elements included in the WWC (water quality, NFM and water cooling), and associated with the created woodland.

Woodland Water Units will be complex compared to carbon credits which use a common metric (greenhouse gas equivalent). Work to determine the appropriate metrics, timing, scale and type of these credits is ongoing.

### 7. How will good woodland management practices be enforced?

Woodland management practices will follow the United Kingdom Forestry Standards (UKFS) in regard to all aspects such as the woodland design, establishment and monitoring. The Woodland Creation Sensitivity Map, ground truthing, Environment Impact Assessments (EIA) and other requirements will be conducted before woodland is established to ensure existing priority habitats and species such as waders are not disturbed.

### 8. Who are the buyers of Woodland Water Units?

Market research is currently underway to identify potential buyers of Woodland Water Units through the WWC. Buyers include any company or organisation looking to invest in woodland creation with an interest in delivering water benefits. Initial market research has indicated a particular interest from companies/ organisations:

- with a direct reliance on a supply of clean water (e.g., food and drinks industry and water companies);
- impacted by flooding (e.g., insurance and re-insurance companies, local authorities and local communities); and/ or
- involved in river restoration (e.g., Wildlife/ Rivers Trusts and Fishery Groups).

## Water metrics:

The WWC will develop methodologies for quantifying the benefits of woodland on three water benefits – water quality, natural flood management (NFM) and water cooling. There was general agreement that all three benefits are of interest, but with less interest in water cooling metrics than in water quality and flood risk management.

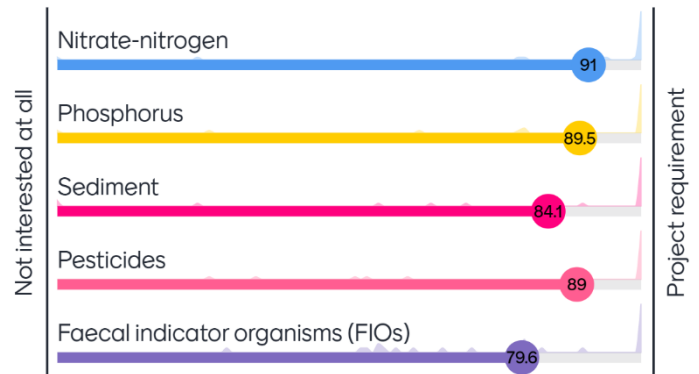
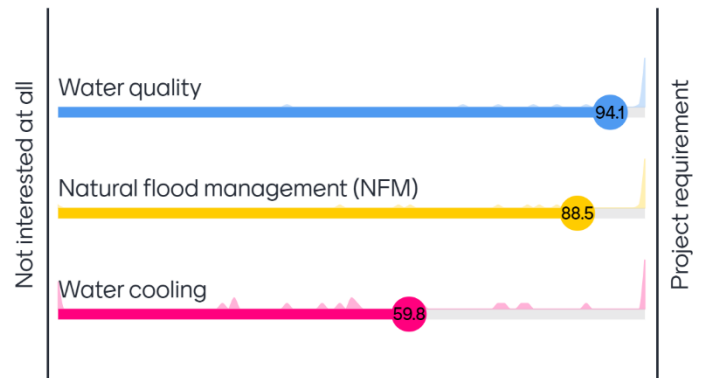
## Water quality metrics:

Together with the WWC Technical Group, the water quality methodology is currently being finalised ready for piloting. The Farmscoper model is being adapted to calculate the reduction of pollutant loads to water from a woodland compared to a baseline agricultural

activity. Updates include expanding Farmscoper to cover the UK, better representation of woodlands and inclusion of woodland interceptor buffers. Participants indicated that all five metrics are of interest. However, it was raised that whilst these metrics are useful from an environment perspective, buyers need to be identified. Discussions with potential buyers will be a key focus in the next stage of the project. In direct response to some of the questions raised in the webinar:

- Assessing erosive potential as an additional metric is not currently being considered within the water quality element of the Code. However, sediment delivery to water is one of the five diffuse pollutants modelled by Farmscoper and additional modelling work is underway by Rothamsted Research and the James Hutton Institute to better

Which water benefit would you be interested in quantifying from a woodland creation project?



capture the impact of storm events.<sup>6</sup> Evidence from this research should improve the modelling of sediment erosion within Farmscoper for the WWC.

- In relation to the need to better quantify the benefits of interceptor woodlands, the additional modelling work by James Hutton Institute seeks to address this within the WWC, which will be based on the evidence gained from extensive research into buffer strips<sup>7</sup>. In response to the use of woodlands to intercept phosphorus from sewage works, it is unlikely that the WWC will be used in this way. The Code is designed to mitigate pollutants from agriculture, with no plans at present to extend it to quantify loads from wastewater treatment plants.

Once the water quality methodology has been finalised for the initial piloting stage, work will begin to develop NFM and water cooling metrics. Initial feedback was received on the proposed metrics of m<sup>3</sup> of effective flood storage for NFM and uplift in relative degree of shade for water cooling.

### **Natural Flood Management (NFM) metrics:**

The metric to be used for the NFM element of the WWC is m<sup>3</sup> of effective flood storage. This represents the volume of water that has been lost by evaporation from the woodland canopy either during a flood event or beforehand, resulting in drier soils and greater potential below-ground flood water storage. An additional element is the larger potential above-ground flood water storage resulting from the greater hydraulic roughness created by floodplain and riparian woodland. Joint work between Forest Research and UKCEH involved using the Joint UK Land Environment Simulator (JULES) model to quantify the additional flood water storage generated by the above effects (for both broadleaved and conifer woodland) compared to an alternative grass cover. To address some of the questions raised in the webinar:

- While other habitats such as wetlands can contribute to natural flood management, the woodland benefits are greater than those provided by shorter vegetation,

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<sup>6</sup> S. Pulley and A. L. Collins, Soil and Tillage Research, 4, 2020

<sup>7</sup> [3D buffer strips: towards practical actions under a new Agriculture Bill | The James Hutton Institute](#)

reflecting the potentially higher water use and hydraulic roughness provided by woodland.

- Some studies have been able to calculate the avoided damage costs due to woodland NFM benefits but unfortunately, this requires a bespoke calculation for individual locations, which is both time consuming and costly. The JULES model-based approach provides a simpler but still robust methodology for the WWC that can be applied across countries.
- Both flood storage and timing affect the flood peak and are therefore relevant. We acknowledge that floods can occur at any time during the year and have tried to reflect this by calculating the average daily available below-ground flood storage capacity. It is more difficult to calculate the effect of woodland on flow timing and thus the focus continues to be on potential flood storage.
- We have not yet reviewed the Green Finance Institute work on financing NFM but this will be addressed.

### **Water cooling metrics:**

The exact water cooling metric that will be used in the WWC is still under consideration, however at present, a numerical value of 'uplift in shading' is preferred. The metric will not represent a reduction in temperature. Advice from the Environment Agency and Marine Scotland Science recommended that due to the many factors influencing river temperature, trying to quantify this would be very data demanding and could result in a metric unrepresentative of real-world conditions. The current shading of watercourses (scaled from 1 – 20 whereby 1 is least shaded (red) and 20 is most shaded (blue)) will be determined using the Environment Agency's Keeping Rivers Cool Maps (2022) derived using LiDAR data. From this, factors such as orientation will be used to determine the effect of riparian tree establishment on shading of the river. The difference in prior shading and shading post tree establishment represents the 'uplift in shading' metric.

In response to the suggestion during the webinar of rivers being scored differently depending on river type (with a priority on upland streams) - the scoring proposed reflects local factors contributing shade to individual watercourses, including aspect and vegetation height, and is derived using a consistent method. The monetary value of the metric would

be determined by the market and is likely to reflect the sensitivity of the waterbody. The greater the uplift in shading from riparian woodland creation, the larger the monetary value generally expected.

Users of the WWC will be unable to receive any benefits for maintaining the current shading level of the river, whether that be by woodland or any other means. The woodland must be created under the WWC to generate credits and for the landowner to be eligible to sell these. Moreover, an 'additionality' test will apply that ensures credits can only be sold if the woodland would not have been created as a consequence of an existing regulatory requirement.

### **Stacking vs bundling:**

Woodland Water Units will represent a new type of credit. They will be used to represent the quantified benefits of woodlands for the three water benefits included in the WWC (water quality, NFM and water cooling). Woodland Water Units will be complex compared to carbon credits which use a common metric (greenhouse gas equivalent). Further work is required to determine whether Woodland Water Units can be stacked or will constitute bundled benefits, both for:

- each water benefit i.e., whether projects which deliver more than one type of water benefit (e.g., both water quality and water cooling) are issued with a combined (bundled) credit or separate (stackable) credits; and:
- for co-benefits (e.g., a woodland delivering both carbon and water benefits) whether Woodland Water Units would be stacked with Woodland Carbon Units or bundled with them in some way.

Participants indicated a slight preference for stackable credits. It was noted that the benefits included in a bundled credit must be identified separately with their quantification consistent and robust across time and space. Stackable credits may therefore be preferred as water benefits, such as water quality, will often be delivered earlier in a woodland creation project than carbon. Adaptation of the current financial additionality test under the Woodland Carbon Code will be required. External activities, such as a project led by Defra on stackable credits and the emerging BSI standards framework for UK nature markets are expected to impact the type of credits issued under the WWC.

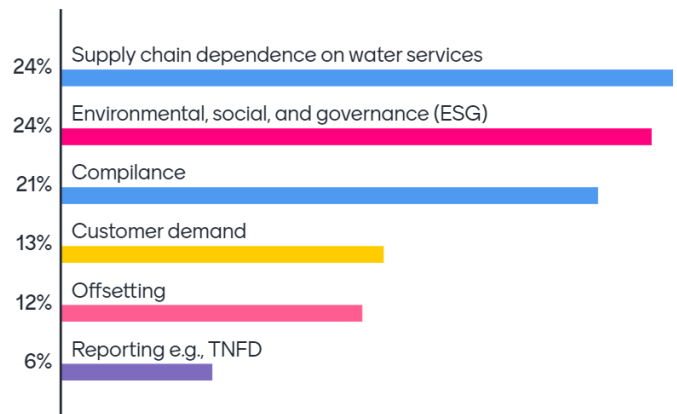


### Drivers for investing in woodlands for water:

Participants indicated that there are a range of motivations for investing in woodlands for water, notably the reliance on access to freshwater and ESG reporting requirements. Reporting, such as under the Task Force on Nature-related Financial Disclosures (TNFD) was rated the least important motivator for purchasing water credits. However, a range of uses for Woodland Water Units for nature impact reporting were identified, including:

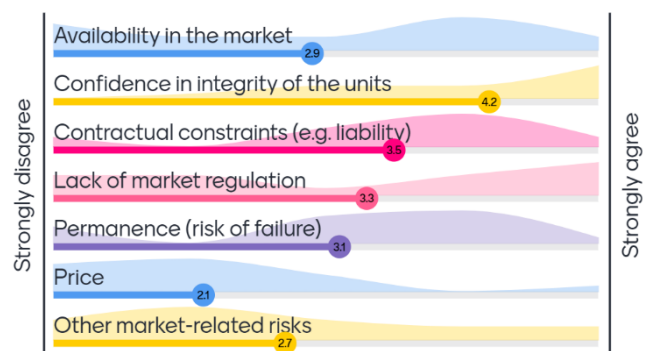
- Risk mitigation (supply chain, operations, real assets)
- Offsetting impacts on the water environment
- Demonstrating the environmental integrity and value to customers of woodland creation schemes, both of the benefits to water and other co-benefits (carbon, biodiversity and community benefits).

### What would be your main motivations for purchasing water credits?



### Barriers and constraints for investing in nature markets:

When asked which are the key barriers to purchasing ecosystem services, participants indicated that confidence in the integrity of the unit is the most important, followed closely by liability and a lack of market regulation. The need for the code to be accredited with buy-in from regulators and guidance from Government was highlighted.



The following key criteria were identified for building confidence in the market and to encourage the purchase of woodland water units and will be considered in the upcoming desk-based pilot testing.

- Demonstration of the robustness of the evidence base and quantified water benefits. Including:
  - Ensuring permanence in the benefits developed.
  - Long-term monitoring to underpin methodology.
  - Improved quantification of nitrogen capture by interceptor woodlands.
  - Potential approaches to demonstrating financial additionality based upon indicators other than agricultural income foregone and woodland creation costs incurred.
- Potential for taking outcomes-based additionality related to delivery of multiple-benefits into account.
- Clear information on the interaction with other environmental schemes such as the Countryside Stewardship Scheme, Woodland Carbon Code and Biodiversity Net Gain, guidance on the role of the water industry and distinction between Government and private funding.
- Identification of companies that are able to act as market intermediaries i.e., facilitate the sale and purchase of water credits.

In addition, some participants expressed a preference for a code focused on rivers rather than woodland creation. The WWC team acknowledges the potential of a water market outside of woodland creation schemes and is interested in collaborations to explore whether the WWC could fit within a wider code, such as a water code or land use change code.

### Next steps

A range of follow-up actions were identified during the seminar:

- Conduct interviews with a range of potential buyers to better understand the drivers and barriers to engaging with the WWC.
- Circulate a first draft of the methods and rules underpinning the WWC detailing the science underpinning the WWC and seek feedback from a range of stakeholders to build confidence in the Code.

## Seminar: What do buyers and investors want from water credits?

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- Continue discussions with water companies on their methodology for quantifying the benefits of woodland creation schemes for water. Identify any barriers to utilising the WWC to provide a standard methodology across the UK. Engage with a wider range of water companies.
- Contact the Green Finance Institute to discuss work on financing NFM.

The WWC is currently under development, with the aim of having a draft Code, that has been piloted on a range of woodland creation projects, complete (at least for water quality elements) by March 2025. Stakeholder engagement will be ongoing throughout this phase of the project. If you registered for this seminar, you may receive information about future events. If you would like to be removed from our mailing list, please contact [rosie.brook@forestersearch.gov.uk](mailto:rosie.brook@forestersearch.gov.uk).

In addition, if there are particularly aspects of the Code that you would be interested in discussing, please provide your details and a brief description of your interests using this survey: <https://forms.office.com/e/hyxFxiNmwr>.

Thank you for your interest and support in the WWC.