# 502810 - Developing Standardised Biodiversity Metrics and Financial Tools for Peatlands and Woodlands

End of Project Report for the National Lottery Heritage Fund and The Facility for Investment Ready Nature in Scotland (FIRNS) Programme

March 31st 2026

This project is supported by The Facility for Investment Ready Nature in Scotland (FIRNS). Delivered by NatureScot in collaboration with The Scottish Government and in partnership with the National Lottery Heritage Fund.

# Purpose statement

This document aims to summarise the process, outcomes, challenges, and next steps related to the FIRNS Project 502810 – “Developing Standardised Biodiversity Metrics and Financial Tools for Peatlands and Woodlands". Relevant supporting documents will be referenced in this document and submitted alongside the report.

# 1. Project introduction

The Peatland Code and Woodland Carbon Code currently assume that a carbon credit generated from peatland restoration or woodland creation has an associated benefit to biodiversity. Thus, each carbon credit has an implicit biodiversity value. However, the uplift in biodiversity between the baseline and at each verification is currently not measured. If biodiversity for each restoration site was quantified there could be two main benefits: a. this could unlock greater funding for restoration through the sale of biodiversity credits, and b. this could provide incentive to projects to better design restoration to enhance biodiversity, potentially leading to a greater increase in biodiversity than would have otherwise happened with carbon credits alone. In addition, measuring biodiversity uplift would better align the Codes with international nature finance markets. Previous work, funded by FIRNS1, explored different ways of bundling and stacking carbon and biodiversity credits. It was identified that a ‘Carbon+’ bundle would be most appropriate for the Peatland Code and Woodland Carbon Code. Different approaches to quantifying biodiversity uplift were considered, and the Wallacea Trust methodology was selected as the most appropriate. The Wallacea Trust methodology is open source, high-integrity, and internationally reputable. However, it was noted that certain adaptations to the Wallacea Trust metric were needed to make it more UK – and woodland/peatland – specific. This project, funded through FIRNS 3, explored how the methodology could be adapted for the Peatland Code and Woodland Carbon Code. It also investigated the financial viability of the proposed Carbon+ biodiversity credits, by considering the additional costs of biodiversity monitoring and verification. This work established an estimated ‘breakeven’ price - the price that Carbon+ credits would need to sell for in order for the project developer/landowner to breakeven - after accounting for standard project costs and additional costs for quantify biodiversity uplift. The project was designed to address critical knowledge gaps, explore

suitable UK-specific biodiversity metrics for woodland creation and peatland restoration projects, and provide insights into the financial feasibility of Carbon+ credits to guide future investment and policy decisions. By integrating biodiversity monitoring into the Peatland Code and Woodland Carbon Code, further private funding for nature restoration could be unlocked. The project was a collaboration between IUCN UK PP, the Woodand Carbon Code, and SRUC and ran from July 2025 to March 2026.

## 2. Project delivery summary

As the biodiversity crediting market in the UK is in its nascent stages, this initiative sought to provide much-needed structure, methodology, and robustness to support the development of a voluntary biodiversity crediting market that aligns with the high-integrity principles of the Codes. The project engaged with a broad range of stakeholders, including project developers, academia, the Scottish Government, and regulatory bodies, to continue to develop a suitable biodiversity metric for woodlands and peatlands.

During this phase of the project, we collated biodiversity data in intact peatlands and woodlands, to assess if this aggregated database could be used as an alternative to costly reference site surveys. Biodiversity data was obtained from databases, peer-reviewed literature and grey literature, such as site condition monitoring reports. We obtained data for 499 sites and a variety of taxonomic groups. The were gaps identified within the aggregated dataset, but these may be addressed in future as more data becomes available and the dataset grows. This dataset is now accessible on the Peatland Code and Woodland Carbon Code websites.

We also explored a methodology to measure biodiversity uplift using a community similarity index, which is more specific to the UK context. We highlighted benefits and limitations of this method, and suggested an alternative approach that could be used where no reference site is available.

Financial modelling highlighted that the Carbon+ breakeven price ranged from £22–£150 for woodlands, and £9–£122 for peatlands. The modelling also highlighted that there is uncertainty around how much investors and buyers are willing to pay for the additional biodiversity element, suggesting that further research into demand-side dynamics is needed.

# 3. Project outcomes

The project focussed on three main aspects: exploration of a similarity index for measuring biodiversity change, aggregation of biodiversity data from intact peatlands and woodlands to be used by projects as reference data, and financial modelling to understand the breakeven point of a Carbon+ credit. Below we detail each of these outputs:

## Biodiversity dataset

The Wallacea Trust methodology is based on measuring a variety of taxonomic groups (minimum of four) as well as a structural metric, such as peatland condition. However, two aspects of the Wallacea Trust methodology would need adapting for a more appropriate UK- specific biodiversity metric. Firstly, the Wallacea Trust recommends the use of a reference site to enable a calculation of biodiversity uplift. The reference site needs to be a site that has been previously restored or is in a 'near-natural' condition. This is challenging in the UK, as the majority of habitats are in poor condition. Furthermore, even if projects were able to locate a suitable near-natural or previously restored reference site, measuring both the project and reference site would substantially increase the cost of biodiversity surveys, risking financial viability.

To address this issue, the first stage of the FIRNS3 project collated biodiversity data from near-natural or previously restored/planted peatlands and woodlands across the UK to create a reference site database. This database may be utilised by project developers/landowners to avoid the costs of manually surveying a reference site. This data exploration also highlighted gaps in our knowledge and helped assess how feasible the use of reference sites are in the UK context. The full method for the database creation, as well as the database itself, are available on the Peatland Code and Woodland Carbon Code websites.

We identified gaps in our knowledge of biodiversity composition for intact peatlands and woodlands in some parts of the UK. This is particularly noticeable for peatlands, since around 80% of UK peatlands are degraded, and most intact sites are concentrated in the flow country. Whilst the database can be added to in the future as more data becomes available, it is likely that some projects may need to survey their own reference site at additional costs. This outcome for FIRNS3 has been fully met and our methods for collecting data were extensive, locating data for almost 500 sites.

## Exploring a similarity index to measure peatland - and woodland – specific biodiversity change

Another aspect of The Wallacea Trust method that may require adjusting to make it more specific to the UK context is the attribution of weighting species by conservation status, as assessed by IUCN or local authorities. For example, a species that is critically endangered would receive a weighting of 5, whilst a species that is least concern would receive a weighting of 1. This may not be appropriate for the UK where many groups of invertebrates have not been assessed for their conservation status. In addition, this may not prioritise peatland – and woodland – specific biodiversity. Therefore, we explored two methods that could provide a more UK-specific calculation of biodiversity uplift. The first was based on measuring the similarity of communities of plants, invertebrates or birds between the project site and the reference sites. The second retains the Wallacea Trust method for calculating a biodiversity score, but instead of weighting species by conservation value, it assigns higher weighting to woodland and peatland specialist species (with less weighting given to generalist species or non-woodland/peatland species). These two methods are outlined in detail on the Peatland Code and Woodland Carbon Code websites. Key learnings from this exploratory work highlighted that both methods have their benefits and limitations, but that either approach is likely more suitable for the UK context than weighting by conservation status.

## Financial modelling

As well as developing adaptations to the Wallacea Trust methodology, the FIRNS3 project explored the financial viability of the proposed Carbon+ credits for project developers/landowners. The aim was to quantify how much more a Carbon+ credit would need to sell for, compared to a carbon-only credit, to accommodate the additional costs of measuring biodiversity and to achieve a ‘breakeven’ point for the project. This financial modelling was contracted out to Ricardo. Ricardo produced two separate financial models, one for peatland projects and one for woodland projects. The Carbon+ breakeven price ranged from £22–£150 for woodlands, and £9–£122 for peatlands. It varied substantially based on whether credits were sold upfront or at verification, due to the impact of the discount rate. The breakeven price also varied depending on the woodland creation/peatland restoration scenario. A detailed report is available on the Peatland Code and Woodland Carbon Code websites. Ricardo also produced a financial modelling tool which can be used by project

developers/landowners to input their own costs and calculate the breakeven point specific to their project.

### Roadmap to completion

Maintaining consistent communication and receiving input from the Peatland Code and Woodland Carbon Code Executive Boards is critical for operationalising our proposed biodiversity methodology. Creating a 'roadmap to completion' gave the Executive Boards the opportunity to provide feedback on any concerns and further work that is required before they can approve. Discussions with the Executive Boards throughout the FIRNS3 project, as well as with SRUC and the Peatland Code and Woodland Carbon Code operational teams, highlighted a number of additional steps needed to finalise the methodology. These are outlined under the 'next steps' section in this document, and more detail is provided in the Roadmap to Completion document available on the Peatland Code and Woodland Carbon Code websites.

List of project outputs:

- Biodiversity database
- Interactive map for the database
- Methods for the biodiversity database and similarity index
- Financial modelling report
- Financial modelling tool
- Recorded webinar

These outputs can be found on the PC website here: FIRNS Project: Biodiversity crediting for Peatlands and Woodlands | IUCN UK Peatland Programme

And on the WCC website here: Biodiversity crediting | Woodland Carbon Code

# Assessment of FIRNS outputs, milestones and outcomes

This phase of the FIRNS project has **delivered valuable tools** - the reference site database and financial modelling tool – which will support project

developers/landowners considering measuring biodiversity uplift for inclusion in the Codes. The financial tool will help to understand costs, whilst the aggregated dataset and accompanying map could help to reduce the costs of biodiversity surveys. We **engaged with project developers** to understand the costs associated with carrying out biodiversity surveys and gained a good understanding of how regularly these surveys are being carried out and whether this work is being done in-house or through contractors. We delivered a webinar, with the recording made available on the Peatland Code and Woodland Carbon Code websites to **share our learning** from the project, as well as sharing all other outputs on the websites. The webinar attracted 109 attendees and 94% rated the webinar as good or excellent. Below we have assessed our progress against each FIRNS milestone.

| Milestones | Progress |
|---|---|
| Type of Codes/standards used or developed | The overall aim of this project is to integrate quantified biodiversity uplift into existing Peatland Code and Woodland Carbon Code credits, as well as developing a biodiversity-only credit for shallow peat projects. FIRNS3 has enabled us to progress greatly towards this milestone, as we have further developed our biodiversity metric and have a better understanding of the cost of this additional monitoring to projects/landowners. |
| Development of a viable business model | The nature finance market is rapidly evolving, with some companies in the UK already offering credits with a measured biodiversity benefit (e.g. Wilder Carbon). Integrating biodiversity into the Codes will allow the Peatland Code and Woodland Carbon Code to remain competitive in an ever-evolving market, thus increasing viability as a business model. |
| Number of buyers or investors engaged with | The outcomes of this project were not centred around engagement with buyers/ investors. However, we did engage with project developers/landowners to obtain cost data on biodiversity surveys. Approximately 6-7 project developers/landowners were engaged with via an online form as well email exchanges |

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| | and calls. Buyers and investors may have engaged with our webinar, as we had 109 attendees. |
| Replicability or potential to scale | All methods used for aggregating the dataset and financial modelling have been made available and are thus replicable. We have explored the potential of an additional validation and verification body (Biodiversity Futures Initiative) that could help with scaling up (by reducing pressure of current bodies to incorporate the biodiversity element) |
| Bundling and/or stacking capability | A clear method of biodiversity quantification that was further developed during FIRNS3 will allow projects to bundle their biodiversity uplift with carbon credits. |
| Types of community benefits proposed | The outcomes of this project were not centred around community benefits. The Peatland Code and Woodland Carbon Code already integrate best practice community benefits into their standards. |
| Number of community organisations engaged with | Whilst direct engagement with community organisations was not related to the project, we did use some community-generated (citizen science) data in our aggregated dataset. |
| Which communities were engaged in project design and implementation | We engaged with several projects that are already registered with the Codes to obtain realistic estimates of the costs of biodiversity surveys. |
| Number of new jobs created or identified by projects | 1 FTE for 6 months was created |
| Number of potential jobs identified for future nature restoration | 1 FTE fixed term contract has been extended a result of the project |

| Outcomes | Progress |
|---|---|
| Deliver replicable examples and tools to encourage landowners and businesses to use Scotland's existing voluntary carbon markets: the Woodland Carbon Code and Peatland Code. | The financial modelling tool that has been made publicly available will enable landowners, businesses and stakeholders to engage with and explore the benefits or incorporating biodiversity credits into the PC and WCC. The aggregated dataset of plant, insect and bird communities in intact peatlands and ancient woodlands will allow projects to compare their baseline surveys to a 'reference' site, reducing costs of surveying both the project site and a reference site and hopefully encouraging greater uptake of the PC and WCC. We have also created an interactive map that will make the aggregated dataset easier for projects to explore/use. |
| Engage meaningfully with communities in project design and delivery, fostering inclusion, and develop effective mechanisms to share benefits where appropriate, thereby supporting a just transition. | We have engaged with peatland restoration/ woodland creation projects that are carrying out biodiversity monitoring, including having discussions on the types of biodiversity monitoring that are taking place and the costs of this. Information on costs input into financial modelling which provided useful information for communities on the break-even point for projects. |
| Capture and share learning and best practice to enhance and scale high-integrity natural capital markets. | This is part of the output and all learning and tools as part of the FIRNS project are on the PC/WCC websites. We also delivered a webinar in March giving a full project update, with the recording available on the PC/WCC websites. |

# Challenges and lessons learned

## Challenges with working in a developing market

One of the biggest challenges of this project is that we are working in a nascent market that is rapidly changing and developing, with many unknowns. We had initially hoped that financial modelling would provide confidence in the expected value of our Carbon+ credit. However, lack of existing market data made this difficult, as there are so few Carbon+ or biodiversity credits in existence which have been sold. This lack of pricing data makes it uncertain what our proposed Carbon+ credits would be worth to buyers. This could potentially have been answered with more targeted buyer engagement studies, however, this was beyond our project budget. We hope to be able to answer this through further funding and engagement.

## Challenges with project continuity

Another aspect related to project continuity was the delay in recruitment for the project manager role. This was largely due to internal HR processes but needs to be considered in future applications. The time for processing should be included in the project timeframe, as this resulted in substantial delays to the start of the project. The previous project manager left their post before the end of the FIRNS1 phase, and a learning package was put together to facilitate handover. However, there was a period of 10 months between the original project manager leaving, and the FIRNS3 project manager starting, with the project passing between a few different people during that time. This meant that the FIRNS3 project manager was unable to obtain clarification on several points from the previous work, including the rationale behind key decisions. Moving forwards, we have ensured that the whole team (including the Peatland Programme Manager and staff from the Woodland Carbon Code) were included in all decision-making stages. The whole team had bi-monthly catchups as a minimum to ensure that everyone was kept up to date. This means that in the event of the project manager leaving, there should be multiple people able to help with a more streamlined handover.

## Challenges with interdependent outcomes

Delays have a more severe knock-on effect when outcomes are linked. Careful planning of future projects should assess whether outcomes need to be linked, and reduce the number of interdependent outcomes wherever possible. Ensuring the broader team are kept up-to-date and understand the outcomes from each stage of the project could also help reduce delays caused by loss of staff and subsequent recruitment. Ensuring that there are always multiple team members involved in each stage would mean that some components of the project can continue even before a new member of staff is in position, potentially saving months of delays.

### Unintended benefits

During this project we have built a good working relationship with ReNew who are a consultancy using the Wallacea Trust method to quantify biodiversity change on project sites. This has been a valuable relationship as we have been able to align our approaches, as well as learn from real-life experience of the method being used in the field.

The reference site database also has a variety of potential applications outside of its intended use. For example, it could be used to identify indicator species for intact peatland/woodland or for other research purposes.

# Five year project maintenance plan

Ensuring the longevity and success of the biodiversity methodology developed through this project requires a structured approach to monitoring, stakeholder engagement, and securing financial sustainability. Over the next five years, several key actions will be undertaken to support ongoing implementation and refinement.

### Ongoing Monitoring and Compliance

- Maintaining the biodiversity methodologies and other project documents on both the Woodland Carbon Code and Peatland Code websites where stakeholders can access all relevant documents, reports, and outcomes. Promoting these documents through our newsletters, LinkedIn and other media.
- Tracking downloads and usage of the biodiversity crediting methodologies and other documents from both the Woodland Carbon Code and Peatland Code websites to assess adoption rates, gathering email addresses from projects piloting the method.
- Periodic updates to methodology and best practices based on user feedback, scientific advancements and changes to standards.
- Providing technical support to external collaborators that are interested in further developing biodiversity methodologies for the Woodland Carbon Code and Peatland Code.
- Once the method is approved, uptake of the biodiversity method will be tracked using the code registries.

### Remaining barriers for investment

The biodiversity methodology still needs further refinement and testing to be operationalised, as well as approval from the Executive Boards. A greater understanding of the demand for Carbon+ and biodiversity-only peatland credits in the UK market is essential to ensuring the development of a product that is fit-for-purpose. In addition, if operationalised, a permanent role(s) may need to be created to manage the additional workload generated by the biodiversity monitoring element of the Codes, which will be dependant on funding.

# Future development and next steps

This project has helped us to identify next steps that need to be taken to operationalise the biodiversity methodology for generation of Carbon+ credits, all of which are dependent on securing further funding:

1. Update methodology documents on our websites so that projects can use this to pilot the method.

2. Reach out to projects and support them with piloting the method over the summer months. This will enable us to integrate any feedback into the method, and/or streamline the process for projects registered with the Codes.

3. Submit our method for academic peer-review and adjust in response to feedback.

4. Refine ‘how’ the biodiversity element is integrated into the Codes e.g. how often will validation and verification take place? Which companies will provide this?

5. Carry out investment engagement studies to understand the demand for biodiversity quantification, the willingness to pay for Carbon+ credits, and any remaining barriers for investment.

6. Continue to liaise with the Executive Boards to increase confidence in the biodiversity methodology, and seek approval for final adoption.

# Acknowledgement of funding

Acknowledgement was given in all our promotional social media posts, as well as in the project briefs for SRUC and Ricardo, and in our webinar. All final outputs (method documents, financial modelling report, financial modelling tool) all contain acknowledgement of the grant.