



**Projects established through natural regeneration/colonisation
Updated guidance for the WCC
April 2024**

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Introduction

If a native woodland is to be established by natural regeneration/ colonisation rather than planting, trees are likely to take longer to establish. The WCC requires further evidence to show where new or increased intervention is needed to reduce browsing pressure and enable the success of natural regeneration/ colonisation.

Participants are also reminded that an Environmental Impact Assessment determination for afforestation is necessary whether projects are planted, direct seeded or colonise naturally. The Woodland Carbon Code also requires a management plan to be in place and appropriate consultation with relevant organisations and neighbours to occur.

Successful establishment and carbon sequestration by natural regeneration/ colonisation can be less predictable than in planted woodlands, and for this reason, we adopt a conservative approach where either a limited number of PIUs are issued upfront, or no PIUs are issued upfront. Upon verification, the actual sequestration at the project site will be established, and any 'extra' carbon sequestration above that issued as PIUs will be credited as verified Woodland Carbon Units. Natural Regeneration/colonisation areas should be capable of achieving at least 400 stems per hectare overall.

Upfront Claimable areas: The area/amount of PIUs that is 'Upfront Claimable' is dependent upon evidence that successful regeneration/colonisation is likely. It is

preferable to wait for regeneration to establish and be verified and then issuing verified units, but the following areas can be claimed upfront:

- Areas within 50m of a seed source
- Areas further than 50m from a seed source, provided a seedling survey demonstrates that there is evidence of suppressed seedlings meeting the criteria set out below.

Future Claimable areas: It is also possible to register and validate areas you hope will naturally regenerate/colonise, but there is not yet sufficient evidence (in the form of seedlings) to claim upfront. These could be areas further from any seed source. No PIUs will be issued for these areas, but if you demonstrate the carbon stock of these areas at verification, verified credits will be issued at that time.

Carbon Prediction for Natural Regeneration: For natural colonisation, the options are limited to:

- Native Broadleaves or Scots pine
- Yield Class 2 or 4
- 3m, 4m, or 5m spacing

This is a conservative upfront estimate, gives some flexibility where respacing and light thinning are planned in more densely stocked projects, allows some income upfront through sales of PIU, with the ability to issue and sell more WCUs at each verification.

Eligibility

Determining what's eligible: To be eligible, the landowner needs to take some action to enable woodland to regenerate. Most commonly in the UK, this requires reducing browsing pressure. The following 'process' to determine what is eligible identifies areas where natural regeneration is likely, where there are signs to indicate success, however without increased action to manage browsing pressure, there will be no successful establishment.

To determine eligible areas complete the following steps:

For the purposes of this methodology, seedlings/saplings/trees >1m and/or > 7cm dbh are considered to be 'established' and part of the 'existing woodland', and therefore not eligible.

For the purposes of this methodology, 'suppressed' seedlings means that on average 50% of seedlings are browsed at a High or Very High level (Appendix 1).

- **Identify the Gross area** including all open ground and existing woodland.
- **Map out areas of existing woodland and 'established' seedlings/saplings over 0.25ha** (> 20% canopy cover or 400 stems/ha of 'established' seedlings/saplings/trees).
- **Map out other ineligible areas:** Deep peat, rock, other open areas (eg for archaeology). Aerial imagery can be helpful in mapping net area
- **Identify individual seed trees/clumps of seed trees outside** of mappable woodland.

- **Upfront claimable natural regeneration < 50m.** Apply a 50m buffer to the existing woodland. These areas are claimable without the need for a seedling survey.
- **Outside the 50m buffer:** Carry out a seedling survey to determine presence, height and level of browsing.
 - **Upfront claimable natural regeneration > 50m:** Eligible areas will have a seedling height on average < 0.5m high, suppressed by browsing. Saplings between 0.5m and 1m are acceptable provided the average seedling/sapling height across the 'claimable area' of the site is < 0.5m.
 - **Future claimable natural regeneration > 50m:** Will have little or no evidence of seedlings at the present time, but you hope will regenerate in future.
- **Net area is the total of:**
 - claimable upfront natural regeneration < 50m from seed source
 - claimable upfront natural regeneration > 50m from seed source
 - future claimable natural regeneration > 50m from seed source

In your carbon calculation: Use the 'Natural Regeneration – Native Broadleaves' or 'Natural Regeneration – Scots Pine' species options for the 'upfront claimable' natural regeneration areas only. If you have 'Future claimable' natural regeneration areas then the area you claim in Table 2 will be less than the total net area of your project.

Registration

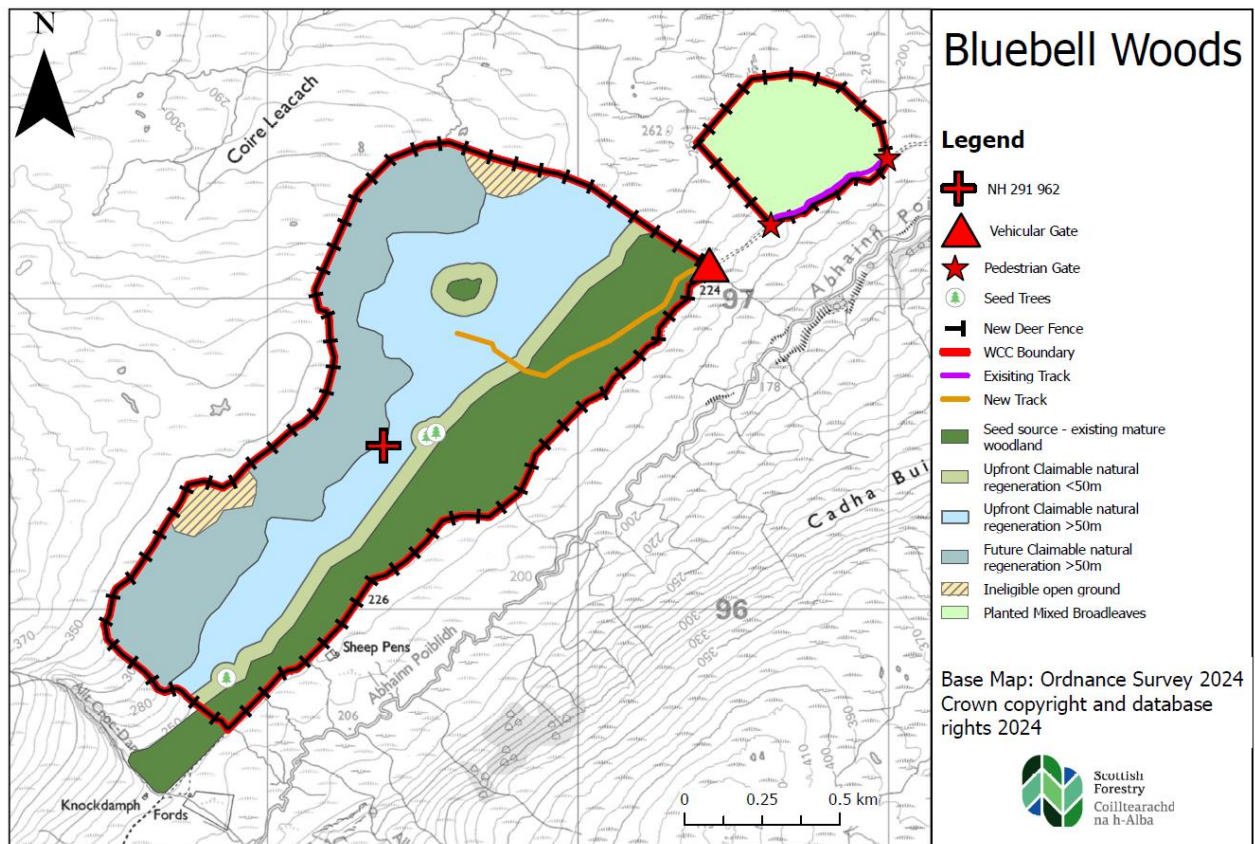
For natural regeneration/ colonisation we will clarify the implementation and start dates soon.

Natural colonisation projects should supply the following documents at registration:

- **A map** which clearly shows
 - the seed sources ~(individual trees, clumps and areas > 0.25ha)
 - open ground/non-eligible areas
 - upfront claimable natural regeneration < 50m,
 - upfront claimable natural regeneration > 50m and
 - future claimable natural regeneration 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. See Figure 1.

Figure 1: Example natural regeneration map showing 50m buffer around mature woodland/seed trees, the upfront claimable areas further than 50m from seed trees and future claimable areas of natural regeneration.

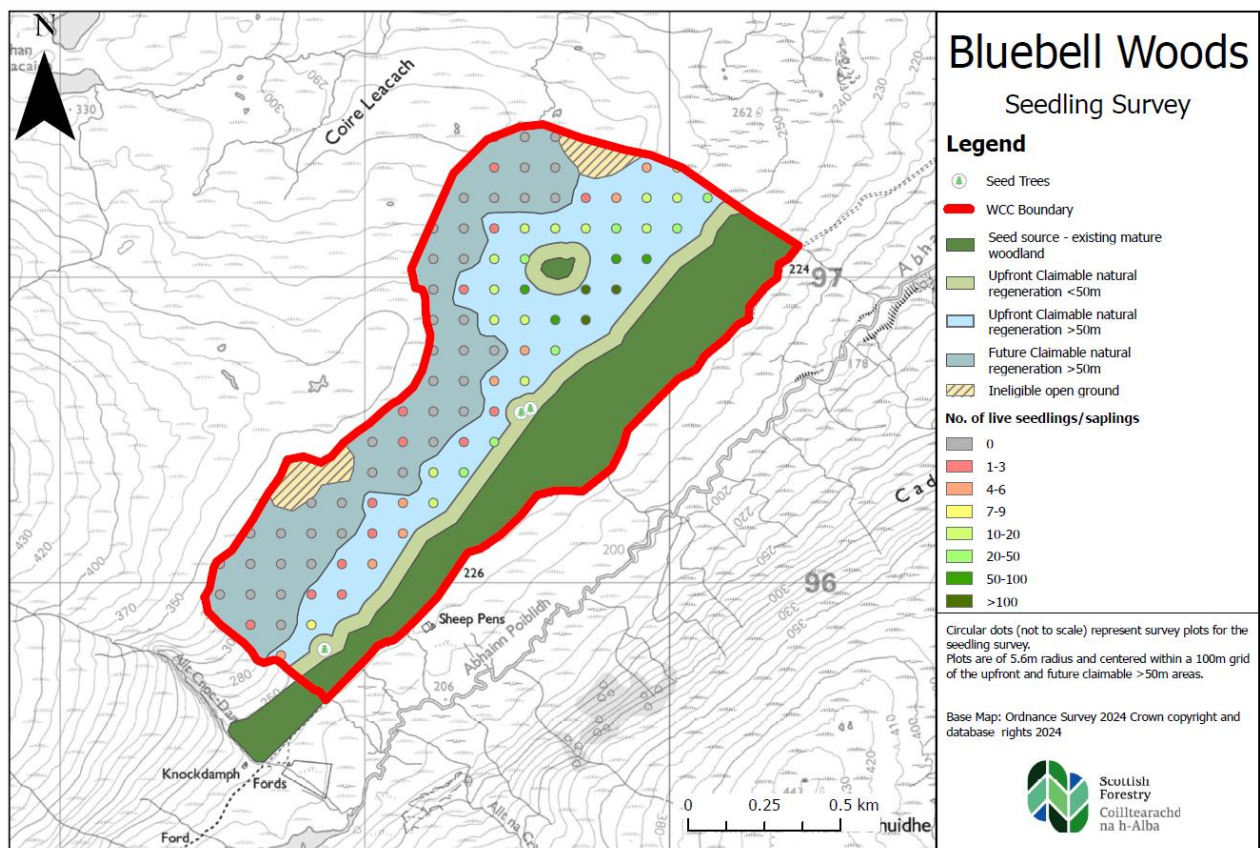


Validation

Natural Regeneration projects need to supply the following extra documents at validation:

- **A map** (see Registration and Figure 1).
- **A herbivore or deer management plan** which shows the current herbivore impacts on seedlings and how this will be managed and monitored to ensure establishment of regeneration
- **Results of baseline seedling survey:** A plot-based survey is required if you wish to claim upfront any areas further than 50m from the seed source, and should be done prior to the project start date. The survey needs to quantify the presence of existing seedlings and the extent to which they are being suppressed by herbivores. See methodology below.
- **A map of seedling density.** See Figure 2.

Figure 2: Map showing seedling density from baseline seedling survey.



- An **operational plan** which also considers:
 - **The Soil Moisture/Nutrient status** (The soil moisture status should usually be very moist or drier, and the nutrient status very poor to rich. See Appendix 2)
 - **Competition with other vegetation.** Consider whether light cultivation (such as light patch scarification) or vegetation control through manual or mechanical treatment, herbicide or grazing (pre-commencement, to encourage less coarse vegetation) is necessary to ensure successful regeneration/colonisation.
 - **Subsequent management of regeneration.** Any plans to either respace dense regeneration or carry out enrichment planting should natural regeneration be slow to appear.

Verification 5 years after the start date

Carry out the Year 5 Survey Protocol as normal

We do not expect the same level of successful establishment from a natural regeneration project by year 5.

- If the project demonstrates a stocking density of at least 400 stems per hectare (> 0.5m height) at that time with ongoing management and protection in place and no concerns about browsing levels, the next verification will be at year 15 as normal.

- If there are concerns about the rate of colonisation, the browsing levels or other health issues of the seedlings, the verifier may require either:
 - Further action to promote establishment – for example enhanced deer management, direct seeding or enrichment planting
 - An extra verification at year 10 to confirm continued progress.

Verification 15 years after the start date

Carry out the Year 15 (Mensuration) Survey Protocol as normal, unless trees are largely < 7cm dbh, in which case, repeat the year 5 stocking density survey

By year 15 the site should have achieved the target stocking density within the claimable area, with acceptable grazing/browsing levels.

- If natural colonisation is proving more successful than originally stated, any extra sequestration could be claimed from this point
- If the project is still not sequestering as fast as predicted, then the carbon prediction would be reviewed at this stage.

Baseline seedling survey protocol

1. Aims

- a. To determine the number of seedlings and level of suppression in across the site/potential regeneration area
- b. To demonstrate that there is herbivore impact on seedlings/saplings of high or very high levels and that there will be no change in carbon stocks over time without intervention (ie browsing control)
- c. To confirm mature tree baseline of less than 400 stems/ha (i.e. less than 20% canopy cover of 'established' saplings/ existing trees)

2. Methodology

Plots

5.6m radius circular plots are located on a 100m grid across the potential regeneration area, after excluding areas of existing/'established' woodland and the 50m buffer from seed source. Where the area is less than 12 hectares, there should be a minimum of

- 12 plots where the potential regeneration area is 2-12 hectares,
- 8 plots if it is 0.5-2 hectares and
- 6 plots if the area is less than 0.5 hectares.

Data (to be collected in each sample plot)

- Grid Reference (GPS from GPS device, phone or within metadata of photo)
 - Number of live seedlings/saplings
 - Percentage of seedlings/saplings browsed
 - Average height of vegetation
 - Number of mature stems
 - Nearest seed source

- Geotagged Photograph

3. Assessment

1. Within each 5.6m radius sample plot, record the number of live:
 - a. seedlings <0.5m
 - b. saplings >0.5-1.0m
 - c. saplings > 1.0m (counted as 'established/existing woodland')
and
 - d. trees (>7cm dbh)
2. If there are more than 20 eligible seedlings/saplings in the plot, then allocate to the following categories:
 - a. 20-50
 - b. 50-100
 - c. >100
3. Estimate percentage of total seedlings/eligible saplings that are browsed and in High or Very High HIA category (see Appendix 1 below)
4. Photograph whole plot facing North
5. Record nearest seed source to plot

4. Assessment Equipment

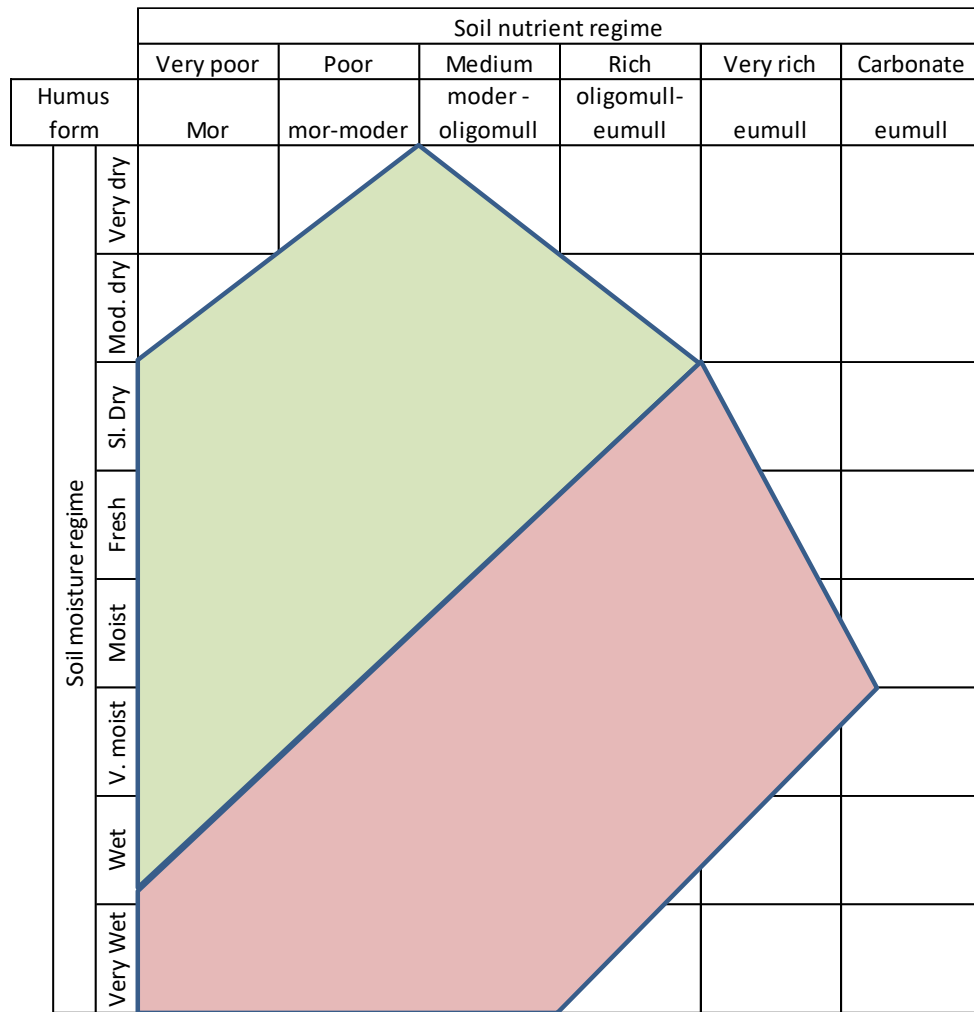
- Data collection forms (waterproof paper)
- Weatherwriter/pencils
- Centimetre rule for measuring height.
- 10m Tape measure
- Bamboo canes and tree tape for marking plots.
- Waterproof notepad for second recorder

Appendix 1 – Level of herbivore impacts

Guidance on [Tree species palatability](#)

| Current Herbivore Impacts | | | | | |
|---|---|---|--|---|---|
| Indicator | Very High | High | Medium | Low | No impact |
| <p>Seedlings & saplings Seedlings = <50 cm tall. Saplings = 50-200 cm tall. “Old seedlings” = trees < 50 cm tall that may be many years old but adverse conditions, usually browsing pressure, prevent them from growing upwards</p> <p>Score as ‘Not applicable’ if seedlings and saplings are absent.</p> | <p>“Old seedlings” very heavily browsed into a topiaried form. Other seedlings, of all species, will only be present if in their first growing season. All will be browsed the following winter. Saplings battered by very heavy browsing, with many woody side shoots browsed back or snapped. Leaders of saplings undamaged only if they cannot be reached by herbivores.</p> | <p>Seedlings of unpalatable species and all “old seedlings” moderately or heavily browsed. Seedlings of palatable and browse-sensitive species are likely to be absent (apart from possibly first year seedlings in the growing season). If they are present, they will be very heavily browsed. Saplings of all species heavily browsed. Leaders of saplings undamaged only if they cannot be reached by herbivores.</p> | <p>Seedlings of unpalatable species unbrowsed or lightly browsed. Those of palatable species moderately or heavily browsed Saplings of unpalatable species lightly to moderately browsed. Those of palatable species heavily browsed. Groups of birch, alder and willow saplings may have some unbrowsed leaders. Otherwise, leaders undamaged only if they cannot be reached by herbivores.</p> | <p>Seedlings of unpalatable species generally unbrowsed but some may be lightly browsed. Seedlings of palatable species generally lightly browsed but some may be moderately browsed. Most saplings of palatable species lightly browsed. Most saplings of unpalatable species unbrowsed.</p> | <p>Numerous seedlings present provided that there is an adequate seed source, suitable ground conditions, and an absence of very dense shading. These will be unbrowsed by large herbivores. Saplings of all species (if present) unbrowsed.</p> |

Appendix 2: Soil nutrient/ moisture types for natural regeneration/ colonisation



Key Good for natural regeneration
 Natural regeneration unlikely to occur or difficult to encourage

Figure 1. Ecological Site Classification soil moisture and nutrient regimes grid showing the prospects for natural regeneration of conifers (after Nixon and Worrell, 1999). Although species differ, natural colonisation of broadleaves by seed will tend to follow a similar pattern.