

Decision support framework for peatland protection and the establishment of new woodland (Interim) June 2021

Purpose

This guidance has been developed by the Forestry Commission, Forest Research and Natural England to provide an agreed evidence-based decision support framework to guide both landowners and NE/FC regulators on where to establish trees and where to restore peat; this will provide greater certainty and consistency, and quicker decision making for all involved, while ensuring due regard is given to existing and potential biodiversity value, future site conditions in a changing climate, water and archaeological interests. The guidance is interim and has been produced to support the launch of the new England Woodland Creation Offer and the new Peat Restoration Grants, ensuring effective alignment in their operational delivery and helping to avoid possible tension between achievement of Government ambitions for woodland creation and those for nature's recovery and net zero. This decision support framework together with a decision framework for considering existing woodland on peat will be incorporated into a new Practice Guide on Trees and Peat setting out how the UKFS will be implemented in England, which is due to be published in Autumn/Winter 2021.

Introduction

The government's 25 Year Environment Plan¹ includes specific high-level commitments in England to bring about nature's recovery, restoring our protected sites to favourable condition, creating and restoring an additional 500,000 ha of wildlife rich habitat, protecting and restoring peatlands, and expanding woodland cover. These increases in woodland cover are sought not only to enhance nature but also to increase domestic timber supply, so enabling increased substitution for materials with higher embodied carbon. Woodland expansion and better peatland protection and restoration are two of the most important, large-scale changes in land use needed to restore nature, sequester and store carbon, and can provide many other environmental benefits. In order to avoid the potential for conflict and

¹ <https://www.gov.uk/government/publications/25-year-environment-plan>

perverse outcomes it is essential that these activities are carried out in an integrated and complementary way. Woodland expansion must be well sited and designed to avoid adversely affecting other important semi-natural habitats including peatlands, or where it affects the hydrology of peatlands.

Fully functioning peatland and woodland habitats rich in wildlife will make an important contribution to the Government's commitments to protect and recover nature. In particular, these habitats will contribute to the Nature Recovery Network: a bigger, better quality and increasingly connected network of places that are richer in wildlife. The Nature Recovery Network² will be supported in law by a combination of measures set out in the Environment Act³: including spatial mapping and planning tools called Local Nature Recovery Strategies (LNRS)⁴; and duties and incentives, such as Biodiversity Net Gain, that will drive change on the ground. The Peat Action Plan⁵ and the England Trees Action Plan⁶ are linked and, together with wider plans and strategies for nature, set out Government's approach to tackling both climate change and biodiversity loss. We want forest cover to expand in areas where it will not damage peatland. Peatland restoration targets are of equal importance to those for tree planting.

The UK Forestry Standard⁷, Environmental Impact Assessment Regulations⁸ and Open Habitat Policy⁹ provide a well-established framework within which we consider woodland creation and the restoration of open habitat from woodland at a national strategic level. LNRSs will help identify opportunities at a site level for funding both woodland creation and peat restoration. Within LNRS Partnerships, stakeholders will work together to consider the realistic prospects for effective restoration of wider hydrological units and help prioritise funding to achieve restoration.

In addition, National Park and AONB Management Plans will establish shared priorities and articulate the vision and goals for a balanced approach to woodland creation and peat restoration, as well as work with land managers, communities and partnership agencies to co-design and deliver the action required. This interim guidance sets out this approach and is in step with the principles set out in the UK Forestry Standard.

² <https://www.gov.uk/government/publications/nature-recovery-network/nature-recovery-network>

³ <https://www.gov.uk/government/publications/environment-bill-2020>

⁴ <https://www.gov.uk/government/news/five-local-authorities-announced-to-trailblaze-englands-nature-recovery-pilots>

⁵ <https://www.gov.uk/government/publications/england-peat-action-plan>

⁶ <https://www.gov.uk/government/publications/england-trees-action-plan-2021-to-2024>

⁷ <https://www.gov.uk/government/publications/the-uk-forestry-standard>

⁸ <https://www.gov.uk/guidance/environmental-impact-assessments-for-woodland-overview>

⁹ <https://www.gov.uk/guidance/get-consent-to-convert-woodland-to-open-habitats>

Scope of guidance

This guidance applies to England only, to new proposals for woodland creation that require Forestry Commission scrutiny and approval under current grant scheme rules and / or Environmental Impact Regulations for forestry. The guidance is interim, to be replaced by new England guidance on Trees and Peat later in 2021.

Land managers who have already received a project approval from the Forestry Commission should consider implementing the project in accordance with this and other recently updated guidance on soil cultivation in order to remain compliant with the UK Forestry Standard.

The guidance will not be applied retrospectively to projects which have already been implemented.

FC will contact applicants/agreement holders for Countryside Stewardship (CS), Woodland Creation Planning Grant (WCPG), Woodland Carbon Fund (WCF), HS2 Woodland Fund and stand-alone EIAs within six weeks of the implementation date if we believe that this new approach for woodland establishment may affect those proposals.

In total there are approximately 1,420,000 hectares of peat in England¹⁰. Analysis¹¹ by the Forestry Commission and Natural England, based on the 2012 National Forest Inventory, showed that in England 51,447 ha of woodland is on deep peat (peat soils more than 40 cm in depth) out of a total mapped deep peat area (excluding lowland fens and reed beds) of 391,000 ha; 60% of the woodland on afforested deep peat is conifer plantation, with the remainder broadleaf woodland. Forty-two percent of woodland on deep peat was within the Public Forest Estate and 18 % was on Sites of Special Scientific Interest (SSSIs) designated for either priority habitat or species interest.

¹⁰ <http://publications.naturalengland.org.uk/publication/30021>

¹¹ <https://www.forestryresearch.gov.uk/tools-and-resources/fthr/peatland-restoration/>

Definition of peat in scope of this guidance

Carbon-rich soils that have developed wetlands of which there are three main peat-forming types in England:

- Blanket bog – large areas of peat found largely in uplands, the surface of which is fed primarily by precipitation;
- Raised bog – localised domes of deep peat (usually deeper than true blanket bog) in uplands and lowlands, the surface of which is fed only by precipitation;
- Fens – found in uplands and lowlands, fed by groundwater and surface water, as well as rainfall.

Peat formed under blanket bog makes up 52% of England’s peatland area. Forty-two percent is derived from lowland fens, and 5% from raised bogs. Spatial mapping of peatland is generally more accurate on deeper peat (more than 40 cm depth), which accounts for 682,200 ha, but shallow peat (more than 10 cm but less than 40 cm) also supports high biodiversity and provides a suite of ecosystem services, including significant carbon stores.

Shallow peats are often referred to as organo-minerals soils and encompass peaty podzols, ironpans and peaty gleys. They can occur in similar situations to peats on plateaus and sloping ground. Although such soils have shallower organic layers, they are carbon rich and may support priority habitats including heath and semi-natural wet grassland. They can also occur adjacent to deep peat, forming part of the same hydrological unit, or be found as more dispersed peaty deposits as a result of localised groundwater outflows or small topographic hollows in otherwise mineral soils. In such instances they may support the only wetland habitat within otherwise dry landscapes.

Wasted peats are former peatland areas, typically under improved grassland or agricultural cropping, that have been so degraded that their depth no longer qualifies them as peatlands under standard depth definitions. However, in many cases they will still retain an upper layer of peat soil and may therefore produce emissions approaching those from deeper drained peatlands.

UK Forestry Standard definition

Currently the UK Forestry Standard excludes planting on deep peat soils (over 50 cm peat depth) and on sites that would compromise the hydrology of adjacent bog or wetland habitats. The UKFS also requires that soil disturbance through cultivation and associated drainage should be minimised to reduce carbon loss from soils, while still achieving successful establishment. Revised guidance¹² for applicants in England to encourage better practice has recently been published.

¹² <https://www.gov.uk/government/publications/guidance-on-cultivation-and-ukfs-compliance-for-application-in-england-operations-note-53/guidance-on-cultivation-and-ukfs-compliance-for-application-in-england-operations-note-53>

Peatland Restoration Project Criteria

In order to be eligible for Peat Capital Grant funding in England the area of peatland included in a project must have a predominantly minimum peat depth of 30 cm. For the purposes of the project peat soils are considered as those with a soil organic matter content of at least 50%. Where shallower peat or peaty soils are intrinsic to the restoration of the peat mass, for example as part of the same hydrological unit, these may be considered as a component of the project. A similar approach is applied in Nature Scot's Peatland Action Programme, in which peatlands eligible for restoration can be 30 cm in depth as long as they are part of a deeper hydrological unit. The rationale for using a shallower cut-off is that the previous 50 cm threshold precluded a large part of the carbon store and made it more difficult to restore peatlands effectively. It also encouraged tree planting up to the edge of restoration sites with risks of trees self-seeding.

Decision support framework

The decision framework outlined in Figure 1 should be used to ensure that woodland establishment only occurs on peat where there are clearly justified biodiversity benefits and where no risk is posed to the hydrological integrity of the peatland.

It is important that consideration is given to the effect of woodland establishment has not only on biodiversity and carbon, but also on water, archaeology and the archive of palaeo-environmental evidence contained in peat.

To ensure sound decision making it is vital that desk-based assessments are confirmed by field survey including, at an early stage, establishing whether a proposal is worth pursuing.

Summary of decision steps

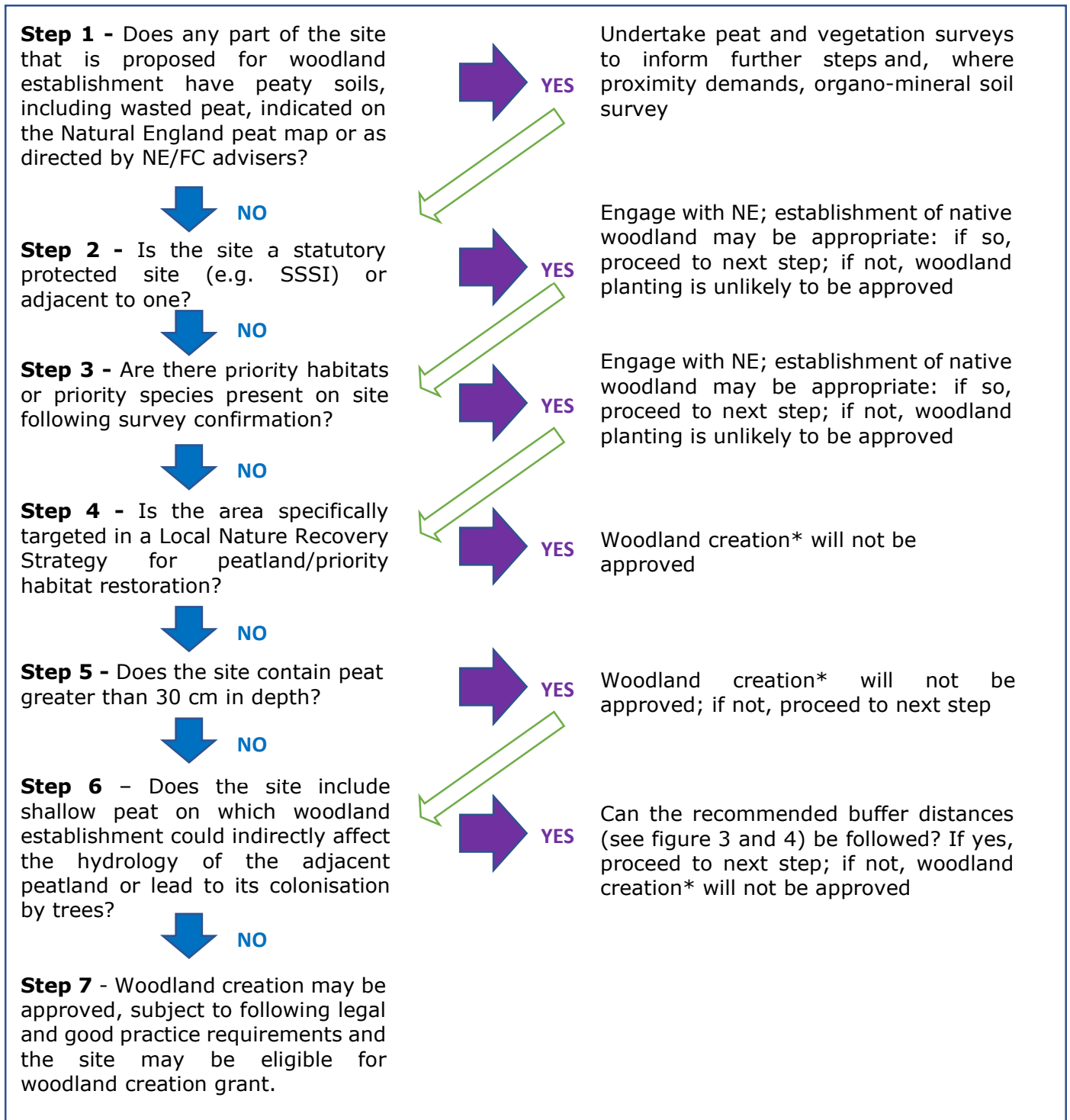


Figure 1. Decision support framework for peatland protection and the establishment of new woodland

* Low density woodland may be appropriate in agreement with the Forestry Commission

Step 1 – Does any part of the site that is proposed for woodland establishment have peaty soils? If yes, a vegetation and peat survey will be required.

A report from the FC's Land Information Search (LIS) will tell you whether this framework applies to the site; the report draws on the Natural England peat map and includes wasted peat. However, currently available peat and priority habitat maps are not sufficiently detailed to indicate all relevant areas. If an area is deemed to be relevant but is not identified on the LIS, this will be confirmed by the Forestry Commission following discussion with Natural England and you will be asked to follow this framework. The requirement for a vegetation survey will not apply if the current land use is temporary grassland or arable cropping.

Step 2 – Are proposals in a statutory protected site (i.e. SSSI), within 100 metres of a protected site or within 1,000 metres of a protected site notified for open habitat birds?

Woodland creation on peat is inappropriate on statutory protected conservation sites (i.e. Sites of Special Scientific Interest, National Nature Reserves, Special Protection Areas, Special Areas of Conservation and Ramsar Sites) because the designation is intended to protect their natural features and habitats. The only exceptions to this would be where restoring or expanding bog or carr woodland, riparian or ancient woodland is encouraged by Natural England.

The other terrestrial designations (SAC, SPA, and NNR) are underpinned by SSSI designation so the SSSI layer covers them all. A buffer distance of 100 m around protected sites will usually prevent any significant tree establishment in the SSSI from seed from the area where new woodland is being established^{13,14,15}. This buffer between new woodland and designated conservation sites is illustrated in Figure 2. For designated sites with open habitat bird species or assemblages as a notified feature, proceed to step 3.

¹³ [Forestry Commission Information Note FCIN54](#).

¹⁴ Manzano, D. (2012) Assessing conifer regeneration on peatlands adjacent to Strathmore Forest. Unpublished report. Forestry Commission Scotland Highlands and Islands Conservancy

¹⁵ [Forestry Commission Bulletin 120](#)

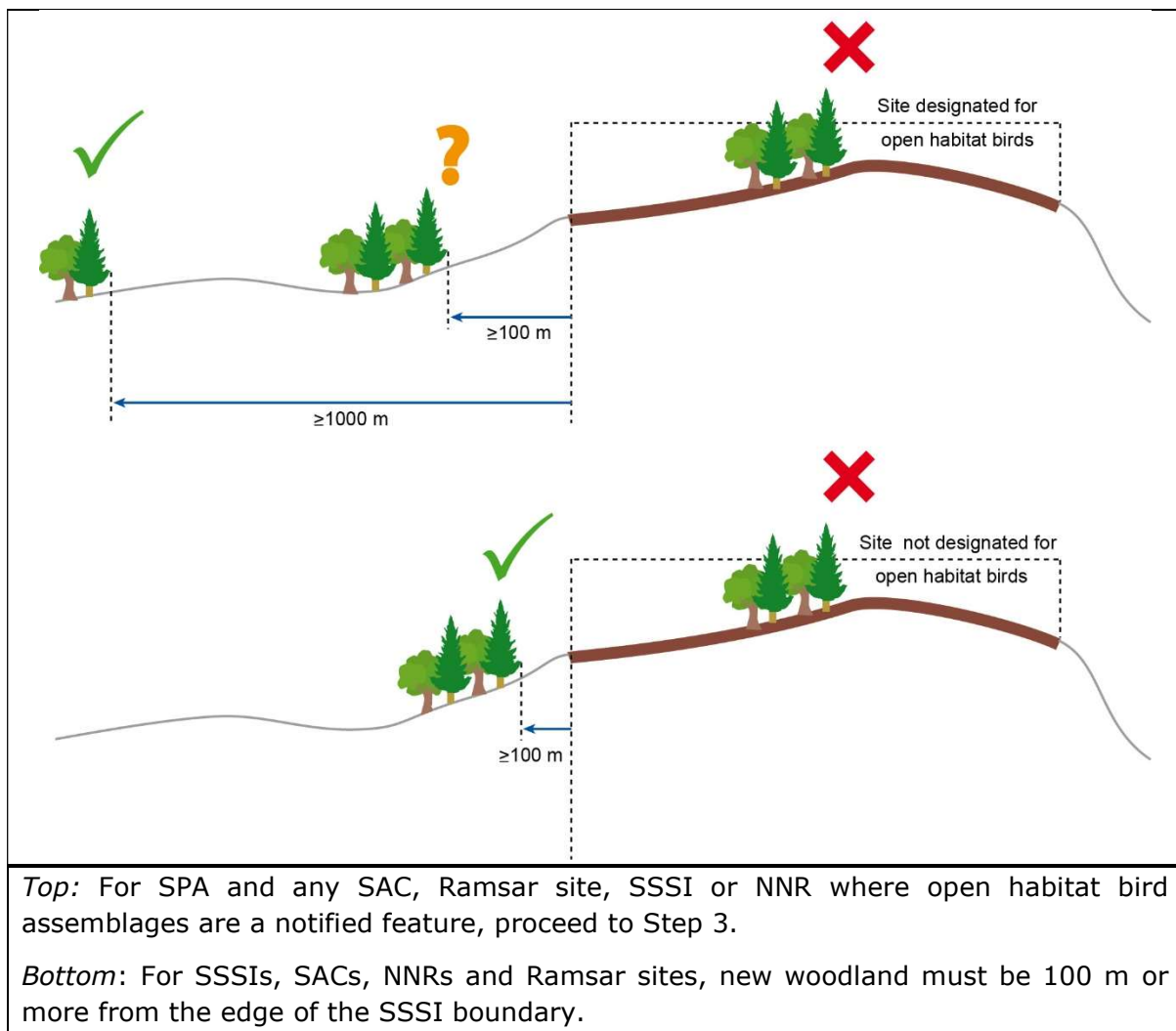


Figure 2. Buffer distance for new woodland in relation to designated sites – note consultation with NE on site specific issues may result in different buffer distances being recommended

Step 3 – Are there any priority habitats or species present on site following survey confirmation?

England's priority habitats are defined by the Natural Environment and Rural Communities Act (2006) and listed in Natural England's List of Habitats of Principal Importance, last updated in 2010. These are the habitat types of greatest importance for conserving and restoring England's biodiversity. Priority habitats and valued non-priority habitats (i.e. those which are more semi-natural in nature that may occur on peat), are listed in Table 1. Apart from wet woodland, these are normally open habitats and it is inappropriate to establish new woodland on peat supporting these habitats or adjacent to such sites where this is likely to adversely impact them. The three additional habitat types that may be present on peaty soils, that have not yet been added to the priority habitats list, are valuable

for conserving and restoring biodiversity and, as such, are generally inappropriate for conifer planting:

- good quality semi-improved grassland;
- grass moorland;
- fragmented heath.

Although priority habitat maps and maps of these three valued non-priority habitats are available on the Magic¹⁶ website, the scale and accuracy of these is not sufficient to guarantee their presence or absence from a particular site so applications for new woodland in areas with peaty soils must have a priority habitat survey of the site by a CIEEM-qualified surveyor following a survey brief provided by the Forestry Commission as evidence for this criterion. This will help establish both existing interest and their scope for habitat restoration in line with the ambition to recover nature. In some circumstances it may be appropriate to establish low density scrub and trees to enhance structural variation and niche diversity. In all cases, surveys will be subject to verification by Forestry Commission Area Ecologists.

Location	Priority or valued non-priority habitat type
Lowland	Lowland fen Lowland raised bog Lowland heathland Reedbed Wet woodland Purple moor grass and rush pasture Lowland meadows Lowland calcareous grassland Lowland dry acid grassland Good quality semi-improved grassland
Upland	Blanket bog 'Lowland' raised bogs in Upland situations Purple moor grass and rush pasture Upland flush, fen and swamp Upland heathland Upland hay meadows Wet woodland Grass moorland Fragmented heath

Table 1 – Priority habitat types that may contain peat

¹⁶ <https://magic.defra.gov.uk/MagicMap.aspx>

For priority species, surveys will have identified important species and the use of habitats at the site. Species should be listed according to their national status e.g. IUCN, S41. An assessment of the impact of woodland creation must be undertaken. Advice should always be sought from the Forestry Commission before considering undertaking any bird or other species surveys. Note: breeding bird surveys may, for example, need to take into account surrounding land up to 1,000m from the site footprint (see figure 2), depending on the suitability of habitat for ground nesting birds, particularly breeding waders and/or proximity of designated sites.

Step 4 – Has the landscape been specifically targeted for peatland habitat restoration in a Local Nature Recovery Strategy?

The Nature Recovery Network is a major long-term commitment in the Government's 25 Year Environment Plan to enable nature's recovery alongside a range of other benefits, including carbon capture, flood management, improvements to water quality and opportunities for recreation. The Nature Recovery Network brings together new funding, new laws and new partners for the first time, making nature and its recovery a collaboration to which every single person, business and organisation can contribute.

The nature recovery network will be implemented through:

- I. supporting strong national and local partnerships to take coordinated action for nature. Defra has established a National Delivery Partnership, led by Natural England, to initiate, coordinate and advise action.
- II. developing new spatial planning tools, Local Nature Recovery Strategies (LNRS), to ensure habitat is established in the best place for wildlife and the wider environment.
- III. integrating the Network with new funding streams and land management duties to incentivise change on the ground.

Peatland restoration is one example of the local action that delivers carbon storage that the National NRN Partnership could support. LNRSs will also support delivery of mandatory Biodiversity Net Gain, and, in complying with the strengthened biodiversity duty, all public authorities must have regard to relevant LNRSs in the exercise of their functions. They will underpin the Nature Recovery Network, alongside work to develop partnerships and to integrate nature into our incentives, ensuring that finance is available to fund the management of land post restoration. Each strategy will, for the area that it covers: agree priorities for nature's recovery; map the most valuable existing habitat for nature; and map specific proposals for creating or improving habitat for nature and wider environmental goals including woodland creation and peat restoration. LNRSs will help identify opportunities at a landscape and, eventually, site level for restoration moving beyond simple metrics such as peat depth, to a position where stakeholders are working together to consider the realistic prospects for restoration of the wider hydrological unit of an area of peat.

Step 5 – Does the site contain peat greater than 30cm in depth?

Soil with a peat layer of 30 cm or thicker falls into the category 'deep peat' for the purposes of this guidance; the Soil Survey of England and Wales (Avery, 1980¹⁷) classifies these as the major soil type 'Peat soils' or group 10, while the FC classification system (Pyatt, 1982¹⁸; Kennedy, 2002¹⁹) has two categories, flushed peatlands and unflushed peatlands, Codes 8,9 and 10,11,14, respectively. Even if the peat does not currently support a priority habitat type, it is likely to have the right combination of climate, landform, soil substratum and ecohydrology for supporting this habitat in future, a valuable potential which should not be compromised by woodland establishment.

As well as its ability to support rare and threatened biodiversity a further critical reason to avoid establishing woodland on peat is that drainage and other forms of disturbance aerate the peat, encouraging oxidation of organic matter, releasing stored carbon into the atmosphere, and as dissolved organic carbon into water course. Losses of carbon can partly or wholly counteract the carbon sequestration benefits of woodland establishment, constraining GHG emissions reductions.

Avoiding drainage and drying of peat also protects preserved archaeological remains, such as wooden artefacts and safeguards the time series of palaeo-ecological evidence held in the intact peat profile.

Step 6 – Does the site include shallow peat on which drainage and woodland establishment could indirectly drain adjacent deep peat or input slopes where new woodland could affect the supply and quality of water reaching adjacent peatland or, in either case, cause it to be colonised by trees?

Where shallow peat and organo-mineral soil is being considered for woodland establishment, peat bodies containing peat of 30 cm or more need to be avoided. Drainage of relatively flat peatland lowers the soil water table beside the drain and this effect can extend some distance from the drain, perhaps up to 40 m either side during the first rotation of trees and, possibly, further in subsequent rotations²⁰.

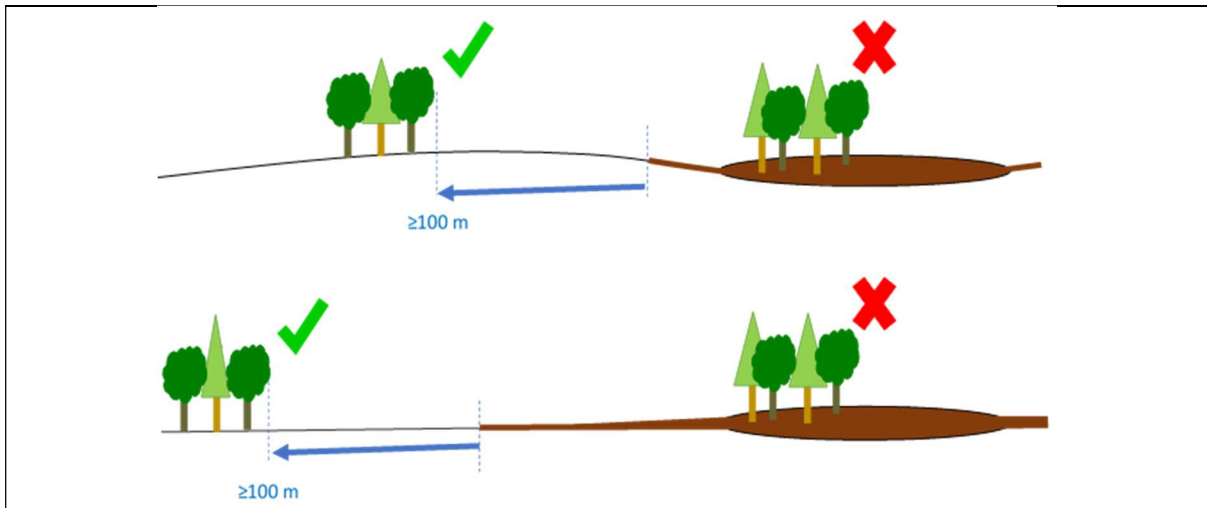
It is important to avoid lowering the water table in deep peat outside the area being considered for woodland establishment because this will increase aeration and decomposition of the peat, releasing stored carbon as CO₂ and in drainage water. Figure 3 shows buffer distances that need to be maintained on flat or gently sloping ground (<1°) between new woodland and areas of raised and blanket bog to avoid the extended drainage effect drying the deep peat.

¹⁷ Avery, B.W. (1980). Soil Classification for England and Wales. Technical Monograph 14. Soil Survey.

¹⁸ Pyatt, D.G. (1982). Soil Classification. Research Information Note 68. Forestry Commission.

¹⁹ Kennedy F. (2002). The Identification of Soils for Forest Management. Field Guide. Forestry Commission.

²⁰ Changes to blanket bog adjoining forest plots at Bad a' Cheo, Rumster Forest, Caithness.

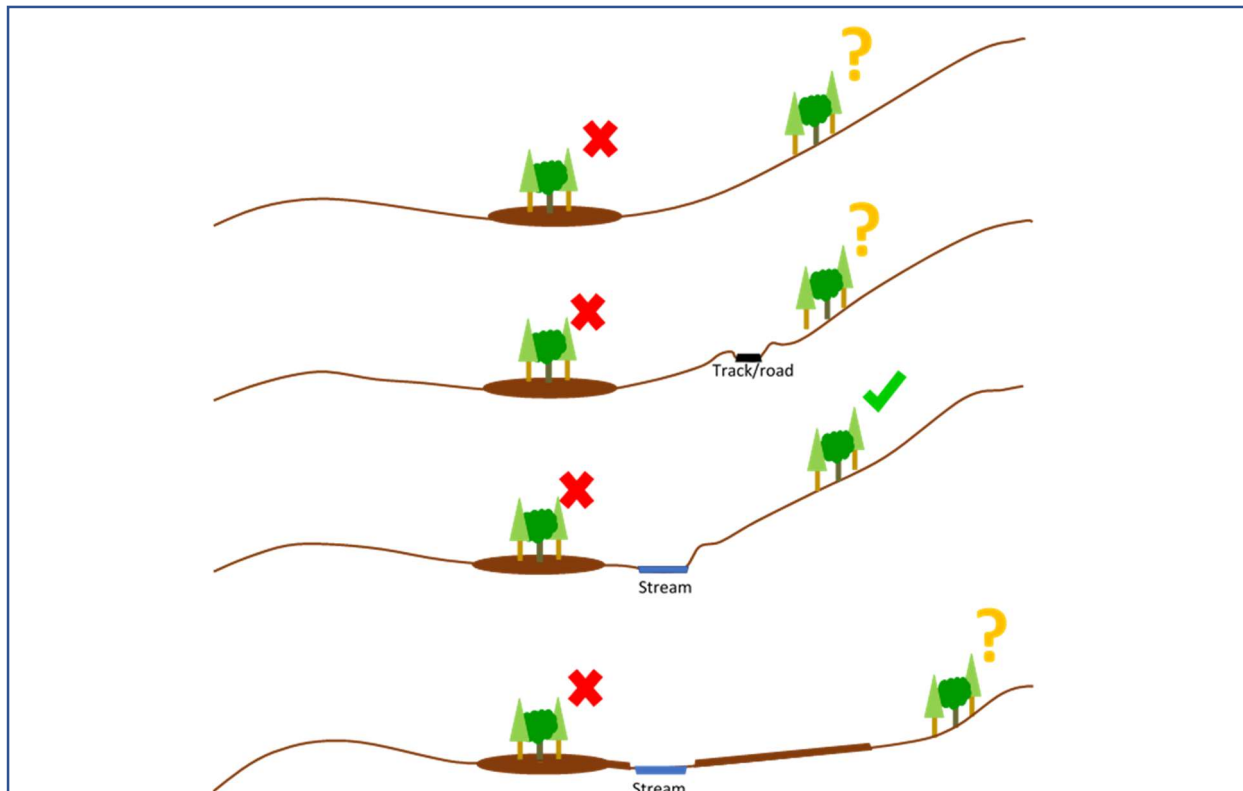


Top: New woodland must be 100 m or more from the edge of shallow peat contiguous with a lowland raised bog.

Bottom: New woodland must be at least 100 m from the edge of shallow peat contiguous with either a lowland raised bog or with flat or gently sloping blanket bog where peat is of (or more than) 30 cm in depth.

Figure 3. Buffer distances for afforestation near raised and blanket bogs on flat or gently sloping terrain (<1°)

Through interception and evaporation of rainwater, some types of forest reduce the amount of water draining off the land. On sloping ground, drainage alters the pattern of water movement and may divert water away that would previously have moved downslope as seepage and overland flow. If this happens, land downslope suffers a reduced water supply, which could lower the soil water level and alter the ecology. Figure 4 below shows situations where new woodland could affect the supply and quality of water reaching peatlands. Native broadleaf woodland established by natural colonisation or without drainage or water-diverting forms of cultivation is acceptable in these situations because its water use is comparable to that of open ground vegetation.



Top: Woodland reducing the amount of water reaching the peatland. New woodland must not bring the total area of woodland to more than 20%²¹ of the peatland's catchment and must not have drains or cultivation diverting water away from its normal path downslope.

Second from top: A track or road crossing the slope does not normally prevent water running down the slope above from reaching the peatland below, provided it has frequent culverts to minimise diversion of water away from its natural flow paths.

Third from top: A stream separating the new woodland from the deep peat separates them hydrologically so that the new woodland does not affect the water supply to the peatland. Note "Stream" does not encompass artificial drains or heavily modified lag streams which will be reducing the water table of the peatland.

Bottom: The proposed new woodland will affect the area of deep peat on the same side of the stream.

Figure 4. New woodlands on input slopes

²¹ Nisbet, T and Thomas, H., 2021. Trees, woodlands and flooding. *Quarterly J of Forestry*, 115 (1), 55-63.

Step 7 – If the answer to all the preceding steps (1-6) is no, woodland creation may be approved and eligible for woodland creation grant subject to following UKFS legal requirements/good practice and meeting grant scheme requirements.

The sustainability of woodland creation is strongly linked to the way new forests are planned, designed and managed. Woodland establishment that does not follow good practice is likely to be unsustainable and should not go ahead. If woodland establishment is considered appropriate, then minimal cultivation and new drainage should be undertaken to minimise disturbance to soils.

Operational plans must demonstrate that due diligence has been taken in identifying the soils within the woodland creation site and how the proposed cultivation can be justified to be “the least intensive and most appropriate cultivation method to successfully establish the proposed woodland”; this is a requirement to receive approval to create new woodland and receive incentives from the Forestry Commission. Further guidance can be found in FC Operations Note 053²² which notes that *‘given the distribution of soils, habitats and site types in England, it is unlikely that traditional “mouldboard” type forestry ploughing will be considered as an appropriate method of cultivation and therefore will not be supported by woodland creation grant’*.

²² <https://www.gov.uk/government/publications/guidance-on-cultivation-and-ukfs-compliance-for-application-in-england-operations-note-53>