



# Tree Planting Guidance Pack

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Cover page photo credits: (Top left) Newly planted saplings at Southmead Hospital, Bristol. Photo: Vicki Brown / CSH. (Top right) New Leaf Orchard, Devon Partnership NHS Trust. Photo: Mark Rattenbury. All rights reserved. (Bottom left) Staff among the trees at Mount Vernon Cancer Centre. Photo: Vicki Brown / CSH. (Bottom Right) Tree planting event at Fairfields, with Yorkshire Ambulance Service. Photo: Alexis Percival / YAS.

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## Green Recovery Challenge Fund



New Leaf orchard, Devon Partnership NHS Trust. Photo: Mark Rattenbury, all rights reserved.

# Introduction

The NHS Forest, run by the Centre for Sustainable Healthcare, has been donating trees for planting on or near NHS land across the UK since 2009. This Guidance Pack will introduce you to the NHS Forest and its tree planting programme. It will provide you with all the information you need to start planning your own tree planting initiatives, organise tree planting events, and ensure your trees are well looked after as they establish in the first few years of their life.

There is a saying about tree planting: *The right tree, in the right place, at the right time, and for the right reason.* The selection of species, planting location, and commitment to aftercare are all as important as trying to plant as many trees as possible. This is the mantra by which we help NHS sites plant trees – it is not just about numbers.

In this Guidance Pack, we have tried to cover everything that you need to plan a tree planting project. If you have any questions, please get in touch with the team at [info@nhsforest.org](mailto:info@nhsforest.org)

# Background

## The Centre for Sustainable Healthcare

The Centre for Sustainable Healthcare (CSH) is a charity dedicated to pioneering action to tackle the twin crises of climate change and biodiversity loss, and to improve wellbeing. Our work is focused on the interface between climate change and health improvement – particularly transformational changes tackling both issues in the NHS. Our Green Space for Health programme partners with the NHS to use their green space for nature recovery, and the NHS Forest network is a key part of this. CSH has worked extensively with UK hospitals and health centres since 2008, supporting green space improvements for the wellbeing of people and the planet. We have produced policy reports, best practice guides and substantial research studies.



Staff tend gardens by their ward at Mount Vernon Cancer Centre, London. Photo: Vicki Brown / CSH



Volunteers plant wildflowers at Mount Vernon Cancer Centre, London. Photo: Vicki Brown / CSH

## The NHS Forest

The NHS Forest, established in 2009, is an alliance of over 270 healthcare sites across the UK working to transform their green spaces and realise their full potential for health, wellbeing and biodiversity. As of 2022, our sites have planted more than 100,000 trees and engaged with all aspects of green space development in healthcare settings, including the creation of woodlands, gardens, allotments, orchards and meadows, and the introduction of nature-based activities.

The NHS Forest runs an **annual conference** and an awards scheme, as well as providing help and guidance on all aspects of the use of green space in healthcare, from advising on the practicalities of tree planting to collating and disseminating the growing academic **evidence** on the links between green space and health. We want to make green space integral to NHS care and practice, with benefits for patients, staff and the wider community. The NHS Forest supports that mission by capturing and publicising learning from the best NHS green space initiatives and working with individual health sites on innovative projects.

## The NHS Forest tree planting programme

The NHS Forest began life as a tree planting initiative. Individuals and organisations are invited to **donate money** to the NHS Forest to fund the provision of trees. However, most of our tree planting is currently funded through the Department for Environment, Food and Rural Affairs (Defra). We then purchase saplings during the tree planting season and arrange for them to be delivered to NHS Forest sites that have registered interest. The number of available trees varies from year to year, due to variations in the number of tree sponsors and funding. Planting projects range from small scale planting to larger-scale projects in the thousands of trees. Between November 2023 and March 2025 we will be planting over 150,000 trees.

Our aim is to support healthcare sites, no matter how small or large, how rural or urban, to engage with the multiplicity of benefits that trees can provide to the environment and human health. Planting trees helps the NHS estate reduce its carbon emissions and work towards **Net Zero** as well as providing social and environmental benefits to communities and ecosystems. It also greens healthcare, bringing nature into the health system and integrating the benefits of the outdoors and nature connection with the needs of NHS patients and staff, for example by providing beautiful spaces in which to exercise and relax.

Every year, we invite NHS sites across the country to register their interest in receiving free saplings. The NHS Forest team works with these sites to develop planting plans, choose the right tree species (whether for an orchard, a woodland, a hedgerow, or something else), organise volunteers and develop press and publicity on planting events. We advise on all aspects of the tree planting and maintenance process to ensure every NHS Forest tree is well cared-for and given the best chance of survival. When large-scale projects of over 500 trees are planned we can give more in-depth support.





Highbury Community Garden, Nottinghamshire. Photo: Miriam Dobson / CSH

## Why plant trees at healthcare sites?

The natural environment is potentially the nation's greatest asset for supporting health. Enriched by trees and woodland, green space improves health and wellbeing, prevents disease and assists patients in recovering from illness. Access to green space has been linked to lower mortality from cardiovascular disease, lower levels of obesity and lower levels of type 2 diabetes. Many NHS sites provide only limited green space in which patients and others can relax and exercise, even though nature has been proven to help in speeding recovery. We want to redress this situation, so that many more people can experience attractive green space at healthcare sites. The benefits of this extend not just to patients, but to staff in need of stress-relieving environments, and local residents with limited access to green space. Where NHS land is accessible to the public this can facilitate preventative healthcare in the wider community.

Tree planting on the NHS estate brings numerous other benefits, including improving air quality, reducing the urban heat island effect, giving shade, reducing storm water runoff, absorbing carbon dioxide and providing habitats for wildlife. It also highlights the links between people's immediate environment and the global environment, and how human health cannot be separated from planetary health.

You can read more about the expansive and growing [evidence base](#) for the use of nature in healthcare, including tree planting, on the NHS Forest website.



## Why you should join the NHS Forest

Becoming part of the NHS Forest is an opportunity to join a growing network of healthcare sites across the UK that are interested in transforming their estates to develop the use of green space for the benefit of patients, staff, the wider community, and the local and global environment. It enables you to connect with others who share similar values and visions. Each NHS Forest site gets a customised page on our website, a regular newsletter, and access to our tree planting scheme as well as the wider advice and support available through our [Green Space and Health network](#).

## Partner support

Since 2009, the NHS Forest has benefitted from the support of numerous charitable, corporate and individual partners. Learn more about them on our [website](#).

## Purpose of the Guidance Pack

This Guidance Pack is designed to help NHS sites of any size move through the process of receiving, planting and caring for NHS Forest trees. It should help you with all aspects of developing your tree planting project, but in the case of any questions or concerns, the NHS Forest team is here to help at [info@nhsforest.org](mailto:info@nhsforest.org).



# How to get started

## Expressing interest

You can express interest in the NHS Forest by emailing [info@nhsforest.org](mailto:info@nhsforest.org) to talk to one of the team.

You can also [register as an NHS Forest site](#), subscribe to our [newsletter](#), or follow us on [Twitter](#) to keep up to date with our news and network.



Mulching saplings at Southmead Hospital, Bristol. Photo: Vicki Brown / CSH

## What if you don't have space to plant trees?

Any NHS site looking to improve or develop its use of green space can join the NHS Forest network; there is no requirement for tree planting activities for you to be part of our community of good practice. Not all NHS Forest sites plant trees. However, you may be interested in supporting our tree planting capacity even if you cannot plant trees on your own site.

The NHS Forest includes a [Tree Sponsorship Scheme](#) which allows individuals or groups to sponsor tree planting within the NHS Forest. The Tree Sponsorship Scheme also enables people to celebrate a birth, say thank you for great care, or commemorate someone's life, for example. It is a good way for staff to give a lasting gift when a colleague retires.

While we can never guarantee exactly where a sponsored tree will be planted, we do guarantee it will be planted as part of the NHS Forest. NHS Forest trees may be planted on or near health sites of many kinds, including hospitals, GP surgeries and ambulance stations. This means that any trees you sponsor will contribute to the overall network of green space on NHS estates, helping provide healthcare sites with opportunities to improve patient and staff wellbeing, contribute positively to the local environment and reduce carbon emissions.

## Registering to join

To sign up as an NHS Forest site, you don't need to have already planted trees. We welcome registrations from all healthcare sites interested in improving their use of green space, as well as those already engaged in nature-based activities. You can sign up to join the NHS Forest [here](#). It is free, and the sign-up form takes less than five minutes to complete. Your site will become part of our network and be displayed on our [map of NHS Forest sites](#). We may ask you for updates on your site's green space activities. Before signing up, please check if your site is already a member, and do discuss your intention to join the NHS Forest with any relevant staff at your site – for example, the estates department, or sustainability officers.



## Planning, planting and community engagement

The NHS Forest team is here to support you throughout the development of your tree planting programme.

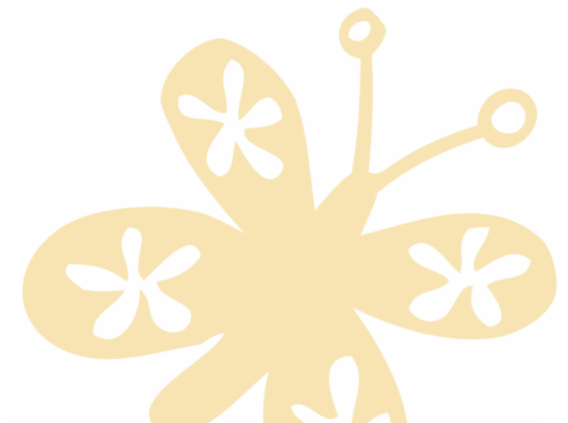
Briefly, this comprises:

- Identifying suitable sites for your trees
- Deciding on the choice of species and number of trees
- Planning planting days and any volunteer recruitment that needs to take place to ensure a successful planting event
- Press releases or event planning to mark the occasion of planting your NHS Forest trees.

The NHS Forest team will organise tree ordering and delivery to your site. The tree planting season runs from November to March and sites are encouraged to select a delivery date as early as possible so that we can give the nursery plenty of notice.

A key component of the NHS Forest is community engagement in the planting and maintenance, including by staff, patients, schools and individuals, in order to create a green space that the community can access and enjoy. This is most likely to be achieved if the community is involved from the early stages of designing and creating the forest. Not only does it promote a sense of ownership that can help to prevent vandalism and encourage long term care of the trees, but it also provides direct benefits to the people involved. For example, activities like planting and weeding are a great way to keep fit.

In many cases, you may be able to approach existing community groups, such as environmental groups or schools, to help with tree planting, aftercare and community events. NHS sites may also want to consider establishing a new 'Friends of the NHS Forest' group, by recruiting volunteers to help in planting and caring for trees in the long term.



## Seeking advice in the community

Some sites may benefit from specialist support or advice. The NHS Forest team can provide advice in some cases, but in others more specialised assistance may be needed. Usually, we can help you identify what kind of specialists you might want to involve, and help you locate the right person or organisation (e.g. The Woodland Trust, The Conservation Volunteers, landscape gardeners or ecologists).

Depending on the project, there may be money available to pay for a specialist where this is appropriate. If funding is an issue, many of our NHS Forest sites have had success in receiving specialist advice pro bono from generous members of the community who are happy to give back to the NHS.

This can also be an opportunity to identify local stakeholders who are interested in supporting ongoing maintenance work or developing community events on your site as time goes on. We encourage sites to make use of local community forums, social media groups and patient networks if they are struggling to identify the assistance that they need.

## Expectations and tree agreements

All sites receiving NHS Forest trees are required to sign an NHS Forest tree agreement with the Centre for Sustainable Healthcare (CSH). This ensures that there is a mutual understanding of the division of responsibilities in the tree planting process.

Briefly, the NHS site is responsible for:

- Fiscal and legal obligations relating to planning, building control and environmental legislation
- Ensuring that the ground where the trees are planted is not scheduled for building development within the next 10 years
- The direction and management of all activity including planning, planting and maintenance
- Registering to join the NHS Forest
- Providing access to the planting areas for staff, patient and community groups (except in exceptional circumstances)
- Providing photographs of the completed tree planting and sending them to CSH as proof of planting
- Ensuring that adequate public liability insurance is in place.

## Legal compliance

Please note that NHS sites are responsible for compliance with fiscal and legal obligations including planning, building control, statutory consents, health, safety and environmental legislation arising from NHS Forest project activity at that site.

## Reporting progress

The NHS Forest requires sites to report on their tree planting. The information that we require is:

- Number and species of trees if any changes are made to the original agreement
- Number of volunteers involved in tree planting
- Type of volunteers, staff, patients, community groups
- Area planted in hectares or square metres

Occasionally we may ask for extra information to meet the criteria of our funders. In this case, we would let you know well in advance of any further information that you need to gather for us.

## Promotion

To ensure that patients, staff, visitors and the wider community get the fullest benefit, NHS sites should consider ways of promoting their NHS Forest area and encouraging people to use and enjoy the space. The site can be promoted through leaflets, posters and displays in the hospital. On site events, such as picnics, can be organised by volunteers or community groups. All NHS Forest sites are encouraged to put up signage indicating that the area is part of the national NHS Forest. The NHS Forest team is happy to supply our logo files or work with you to design signs for this purpose.

Each NHS Forest site is contributing to the green infrastructure of their wider area. Sites can potentially maximise the benefits to people and the environment by talking to their local authority and/or Integrated Care Systems about green infrastructure provision in their locality and making links with others working to provide green spaces for their communities. Local NHS link workers (primary care network non-clinicians employed to support people to unpick complex issues affecting their wellbeing) can also advise on opportunities to use the NHS Forest site in green social prescribing initiatives.

# Technical information and detailed tree planting guide

There are many different types of tree planting (see section 4.5. below for more detailed information).

- Hedges can act as screens or boundaries while providing corridors for wildlife and softening harsh environments
- Single trees and clumps can form features in the centre of open, grassy areas. Eventually they will develop into splendid parkland trees with an open canopy
- Avenues of trees in open areas or along road edges will form neighbourhood features of the future
- Orchards can provide a valuable resource for humans as well as wildlife. Apples and pears can be eaten straight from the tree, while crab apples, elderberries and blackthorn sloes can be used to make a variety of drinks and jams.



Tree planting day at Castle Hill Hospital, Hull.  
Photo: Miriam Dobson / CSH



## Identification and design of suitable tree planting sites

Every site has different qualities – from soils and water resources, to aspect and landscape. Proximity to roads and buildings, local archaeology, existing trees and ancient woodlands, pipes and cables, and wildlife habits are all examples of issues that may need considering. There are also other questions that arise when creating a woodland or planting area within or near a healthcare site. Here are some specific issues you should consider at the design stage:

- How will the planted area incorporate access for patients, staff and the community? What walkways, paths and seating arrangements will be part of your planting design?
- What planting arrangements would bring the most benefit to patients, staff and the wider community? For example, trees that are visible from ward windows can create attractive views for patients which may aid recovery. A grove of trees can provide secluded cover for patient and staff relaxation. Planting around an entrance can make visitors feel more welcome. Undertaking consultation will enable NHS sites to find out what people need and want from the space
- Will healthcare staff use the new space as part of patients' rehabilitation, and will patients themselves use it for recuperation? If so, consider what needs they have; for example, do you need to design a space with wheelchair access?





Broomfield Hospital. Photo: Carey Newson CSH, 2021

- Trees planted over an area in straight lines are easier to maintain in the short-term but can look regimented, so a less ordered scheme is usually recommended. Trees will thin themselves over time, if left to their own devices, and will develop their own natural pattern
- Scalloped woodland edges blend more naturally into the landscape and the edges themselves are important wildlife habitats
- All sites need management – so it is worth considering access for maintenance, including for vehicles if these will be required

Avoid planting trees where they will cast too much shade on buildings where patients and staff benefit from daylight.

## Biosecurity and tree provenance

Tree nurseries have the option to register in a voluntary scheme which assures the provenance of native trees – **UKISG** (UK and Ireland Sourced and Grown). At the NHS Forest we have the aim that all our donated saplings have been grown from British seed in British nurseries, without ever leaving the UK. This prevents the importation of pests and diseases – a particularly important issue given that our native trees may have no natural defences against foreign pest species. One devastating example of where this has happened has been with historic imports of ash saplings infected with ash dieback, which is now endemic across the UK and predicted to cause an almost-total destruction of our ash trees – 150 million mature trees and 2 billion saplings by 2040.



## Species selection

The NHS Forest provides exclusively native British tree species to match the conditions of the native environment and provide appropriate habitats for biodiversity.

Soil type, aspect, altitude and hydrology of a site can all influence species choice. Some species, for example willow and alder, like wet areas. Aspen and birch are common on high and exposed sites. Oak in one of its forms is found in all regions of the UK as are hazel and hawthorn. Trees that already grow on or near your site in hedgerows or woodlands can give a good indication of which species will do well in a new planting scheme. Sadly, it is no longer a sensible option to plant ash due to dieback.

British trees have a huge variation in their forms and colours across the seasons. Maples are known for their autumn colour, and the dogwoods have a beautiful array of greens, reds and yellows, as do some of the willow species. The blossom on blackthorn and hawthorn is the backdrop to spring, and catkins on hazel are a delight early in the year when little else is about. Planting birch and alder together will give subtle but elegant changes in dark reds throughout winter and, of course, the dark green needles of Scots pine provide cover in the winter. Consider what effect you are looking for throughout the seasons. This does not just mean leaves, but also bark colour and tree shape.

Blackthorn, holly, gorse and hawthorn create effective natural borders, dividing space on a site, screening eyesores such as car parks, and providing habitats for wildlife such as birds and insects.

Bearing in mind relevant environmental constraints, NHS sites are encouraged to invite staff, patients and local residents to choose the tree species that they would like to see.

## Tree size and growth rate considerations

Generally, it is inadvisable to plant trees near walls and buildings as any tree, large or small, can affect foundations by taking moisture from the soil or blocking drains. If your plot is close to buildings but you still want to plant trees, go for smaller trees and larger shrubs as they are less likely to cause damage. Thorn or birch may be suitable. The further a site is from buildings the more scope you will have in your species choice – assuming you are not blocking views or sight lines along highways, etc. A large tree – an oak or lime for example – can easily grow to a height of 20m and a span of 15m – although it will take a long time to get that big!

The forest should be designed with growth and management in mind, as in general, the quicker the growth rate the shorter the lifespan of a tree. Therefore, you may consider planting a range of tree species with a view to taking out some of the faster growing ones in, say, 15 years' time and leaving the bigger, but slower growing, trees. Remember that trees do need ongoing management and be aware how wide a tree or hedge will grow. The spot where you plant that tiny twig in an open field could be the centre of a 15m diameter mature parkland tree or a one- or two-metre-wide hedge. Bear this in mind when planting beside roads, boundaries or paths.





NHS Forest whips waiting to be planted. Photo: Alexis Percival / Yorkshire Ambulance Service

## What are whips?

We supply young trees known as whips - seedlings which are one to two years old. They are usually around 40-60 cm tall and are grown by nurseries for planting out. Best practice for handling whips varies by root form, but it is always best to keep any trees in the original packaging until the moment of planting and ensure they are planted out while dormant to minimise transplant shock.

Cell grown trees can be stored outside (or in a cool but frost-free undercover space such as a shed) for up to four weeks from delivery with the root plugs left in stretch-wrap as supplied. They can be lightly watered if the soil feels dry but should not be submersed or left in water.

Bare-rooted stock is more time sensitive and should ideally be planted within a week of receipt. Keep the roots moist and always covered – for example, in the bags they are delivered in – and protected from the wind and frost. Where it is not practical to plant immediately, it is possible to extend the viability of bare-rooted trees by ‘healing in’ – i.e. temporarily covering the roots in a shallow trench.

All trees are vulnerable to root damage while being planted – be careful! Do not keep your trees in storage for any longer than is necessary. If, for example, the ground is frozen for a long time please contact the NHS Forest for advice on storing the trees to ensure the best chance of survival as you wait for the thaw. This will depend on your location and the local weather conditions.

## Types of tree planting

The following brief descriptions of different types of tree planting may help inspire you to see the possibilities for different uses for trees on your site. Different types of tree planting have different appropriate spacings for planting each tree. For example, hedging trees are planted 30cm apart or 40-45cm if planting a double hedging row, while standard woodland planting allows 1.5-2m between trees. Of course, designed areas such as avenue trees or some orchards may have planting spacing unique to the site you are planting on. Tiny forests, or Miyawaki forests, are planted very densely (see section 4.5.5).

### Coppice

Coppice woodlands are traditionally planted with species such as hazel or willow. These are managed woodlands where each year a proportion of trees are coppiced – cut back and allowed to regrow from the base – on a rotational system. Coppice woodlands can provide the raw materials needed to build fencing, create beautiful woodwork projects, or provide fuel. Coppicing can also increase woodland biodiversity, as when trees are cut, greater amounts of light reach the ground, allowing other species to grow. Many of these species provide food for butterflies and other insects, birds and mammals.

### Woodland

Woodlands provide multiple benefits to human health and wellbeing, as well as the overall environment, through carbon sequestration and biodiversity support. **In 2020, only 16.2% of the UK's population had accessible woodland areas of at least two hectares within 500m of their homes.** While woodland cover has declined significantly in the UK, there is now a huge public appetite to preserve our remaining ancient woodland and expand native tree cover.

One approach to **woodland creation** involves extending existing ancient woodland by planting alongside the edges, taking inspiration from the species that already grow there to inform your planting design. Completely new woodlands can also be created but need careful design and care as they establish through the first years of their life.

Woodlands, even very small ones, can provide opportunities to design-in spaces that support human wellbeing, such as trails, quiet seating areas, beautiful open glades, and nature walks with information boards about plants and wildlife.



Orchard maintenance at Bethlem Royal Hospital. All rights reserved.

## Orchards

Traditional **orchards** not only provide food for the community but can also support a huge variety of wildlife. Blossom encourages pollinating insects, which are in decline across the country. Hollow trunks and holes – which are particularly common in fruit trees – shelter bats, woodpeckers and owls. Fruit trees can form part of a community garden or a standalone grove. They look beautiful in the spring, and come the autumn, the benefits of fresh fruit can be enjoyed by all – from fruit picking to community apple juice or cider-making days. Orchards can range in size from a few fruit trees creating a focal point within the landscape to larger woodland-style plantings providing huge quantities of food. Globally, there are over 7,500 varieties of apples alone, and heritage fruit tree planting is an important way to preserve genetic diversity in fruit and celebrate the vast range of varieties that have been bred in the UK over millennia.

## Hedging

Hedgerows are an important part of the British landscape and make up the largest wildlife habitat in the UK, providing a home for over 2,000 species, including frogs, newts, birds, butterflies and pollinating insects. Hedgerows are home to 80% of British woodland birds, 50% of mammals and 30% of butterflies. In addition, **every kilometre of new hedgerow can store 600-800kg of carbon dioxide equivalent per year**, meaning they play a key role in the fight against climate change. Traditional hedgerow trees such as hawthorn, blackthorn and hazel make a beautiful boundary line or windbreak.



## Tiny / Miyawaki forests

**Tiny forests**, or **Miyawaki forests**, are dense and fast-growing native woodland, based on a forest management method developed in the 1970s by Dr Akira Miyawaki. High density planting of saplings replicates the regeneration process that occurs in a natural forest when a clearing opens in the canopy after a large tree falls. The saplings grow very fast to compete for light, and natural selection favours the fastest-growing trees and naturally thins out the planting. As a result, this dense forest grows in 20 to 30 years instead of taking up to 200 years. After the first two years, this forest has very little management or maintenance requirements.

## Individual trees

Trees planted by themselves can form a feature point in a landscape when they reach maturity – think of the way your eyes are drawn to a large oak in an arable landscape in the British countryside. Individual trees with greater spacing than typical woodland planting can be used to create dramatic visual landscapes – a widely spaced avenue is an example of this. However, they will take time to reach maturity if planted as whips, so think about other ways that the landscape could be made interesting in the meantime, for example by planting interesting ground flora or by choosing species that grow quickly or have eye-catching blossom from a young age.

## Ground preparation

Trees require suitable soil, water, light and nutrients to grow, so if your soil is compacted and drainage is poor, it is particularly important that it is broken up before planting. Where dense or high grass is present, tree growth and survival rates will be reduced through competition for resources, so removal of grass around the planting area is encouraged. Where areas are shaded by buildings, hedgerows and established trees, the choice of tree species should be carefully considered, as shade can hold back some young trees.

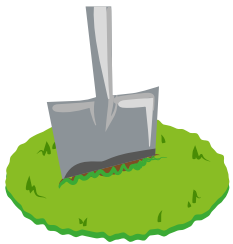
## Choosing your planting day

Tree planting is traditionally carried out between November and March (November to February in South East England), avoiding frost and snow if possible. It is best for the trees to be planted on dull, drizzly, still days, as exposure to drying winds can damage the fine root fibres.

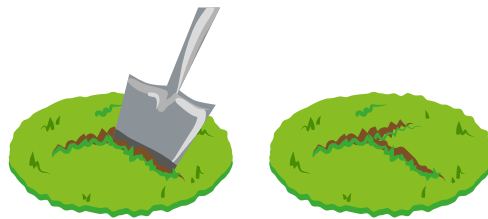




Notch planting



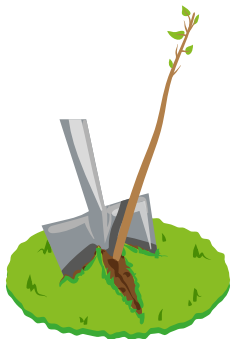
Create a T-shaped notch



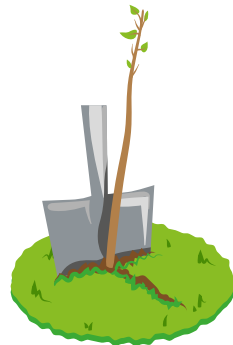
Use a spade to open the notch



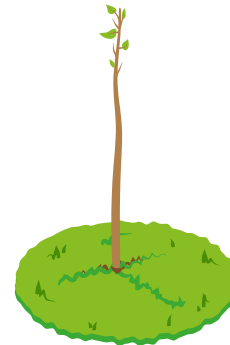
Slide the whip in



Slide the whip in



Cover the notch



## Planting methods

There are different ways to plant trees, depending on your circumstances. In grassy areas, grass will need to be cleared one metre in diameter around the planting location prior to planting.

Notch planting is often the best method for planting young trees and is fast as well. For this, you simply create a notch in the ground with your spade, push the spade backwards and forwards to open the notch. Unless the plants are very small, you should make a notch in the shape of a "T" and slide the plant in along the section of the notch that runs from the middle of the top of the T to the base of the T. Then carefully insert the roots of the tree into the notch. The soil plugs of cell grown trees should be left intact and not broken up. If planting bare-root trees, sliding them into position using a sideways wiping motion helps to spread out the roots. Remove the spade to close the notch and firm the soil around the tree.

Pit planting is the other traditional method of planting young trees. However, it is slower and harder work than notch planting. It is better to use pit planting if you are handling trees with bushy roots that won't fit in T notches; if you have heavy, compacted, clay soils; or if you have very crumbly or friable soils where a notch would collapse. For pit planting, dig a hole and remove the soil. Break it up and place your tree in the hole and replace the soil around the tree roots. Ensure the soil collar (the mark from where the soil came up to when the tree was growing in the nursery) is level with the surface of the soil. Firm the soil afterwards with your hands or feet, taking care not to cause compaction.

Some general guidelines apply to both the above methods:

- Water the tree immediately after planting. Use around one bucket of water per tree.
- When creating holes or notches, make sure they are big enough so that no roots are bent or broken. Ensure the soil plugs of cell grown trees are not crushed or broken up and bare-roots are spread evenly rather than cramped or bent.
- Both bare-root and cell grown trees should be planted to the same depth as they were growing previously in the nursery. The root collar (where the roots meet the stem) will provide a guideline.
- Fit the shelter, stake/cane, and mulch mat (if applicable) whilst planting.
- Firm the soil around the tree after planting to securely anchor the roots without overly compacting the soil. A tree is well anchored when you gently pull on its stem and the plant does not loosen.





## Aftercare and ongoing management

The first five years of a tree's life are crucial for its establishment and longer-term chances of survival. During this period, trees are particularly vulnerable to competition for light, nutrients and water, and to damage by animals. After this initial period, the canopy will shade the ground, reducing competition from other plants, and the tree stems will be less susceptible to pest damage. If trees grow well and establish a strong root system and good top growth in the first few years, they will have improved drought, disease and predator resistance.

Maintaining a weed or grass-free ring of one metre diameter around young trees for the first three years of their growth reduces competition for light, nutrients and water and therefore enhances the tree's growth rate and chance of survival. You can create this ring by fitting a mulch mat at planting, mulching with materials such as straw after planting, and/or hand weeding. Weed problems are greater where soil fertility is higher – in this case, keeping this area free of weeds is particularly important.

Mowing or strimming is not an effective method of weed control as this stimulates grass growth. Hand weeding tends to only be an option for smaller planting areas due to its labour requirements. Therefore, mulching is often the preferred option – we discourage the use of chemical treatment. There are a variety of ways you can mulch your young trees. The best approach for weed suppression is a DIY sheet mulch made of disused natural fibre carpet. If you are using loose mulch, such as woodchip, you need a layer 10cm thick. Keep mulches away from tree stems to prevent rot; think of them as a doughnut shape around the tree, rather than a pile against the stem, and annually replace wood mulches in winter. Leaving decaying leaves around the base of the tree is good practice to encourage mycorrhizal activity, stimulating the growth of fungal species which support tree health, particularly in the roots.

Watering young trees is very important. Do not underestimate the water requirements of saplings, particularly during the growing season. Ensure young trees are not left to dry out during periods of drought; watering is particularly important in spring and summer. Mulches can also help retain water in the soil. Drought is more common a problem than it used to be in the UK due to climate change, and observing which tree species establish and grow successfully in a drought year can inform your future planting designs. Drought makes weed control more important: a week of weed growth during April can reduce water availability for saplings until October!

Tree protection is also important for saplings, particularly in more rural areas where animal browsing is a greater risk. The NHS Forest supplies all its saplings with biodegradable shelters and stakes/canes to ensure young trees have adequate protection from interference. In more urban areas, vandalism can be a problem. Local community involvement in tree planting can foster a sense of ownership and protection and reduce this risk.

As your trees establish you can start to remove shelters as soon as the main stems – excluding branching – have reached three metres in height. Typically this occurs around five years after planting, but it can take longer for slower growing species. If in doubt it is often better to err on the side of caution and leave shelters in place. Spiral guards will expand with the trunk without harming the tree, but traditional tubes should always be removed if they begin to split to avoid impeding the growth of the tree.





Woodland bluebells. Photo: Liz Brown

## Encouraging biodiversity with further planting

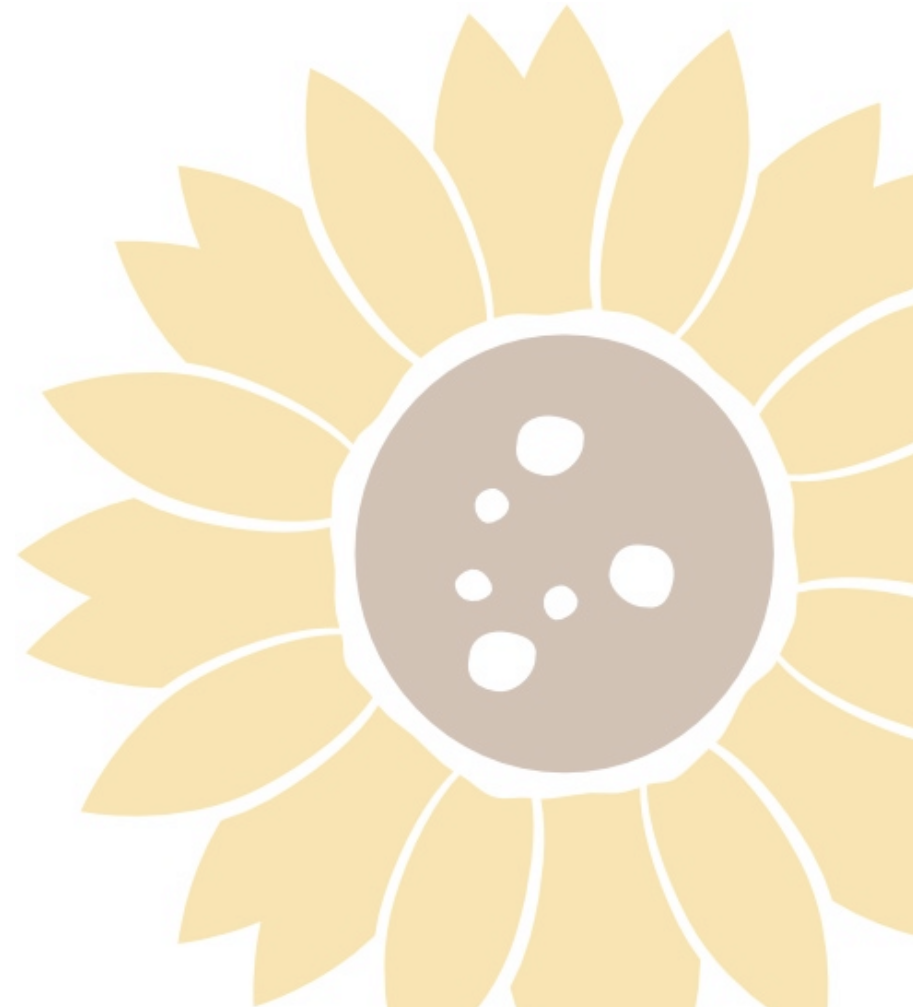
Supporting the environment and community wellbeing through planting trees doesn't have to finish with the trees! Introducing appropriate flowering plants alongside and around your tree planting areas can provide visual delights and homes for wildlife. Many of our loveliest woodland species, such as wood anemones, native bluebells, ferns, primroses and red campion work together to create a landscape that has a vibrancy and visual interest throughout the seasons. Some woodland species are easier to establish than others; seek advice from horticulturalists or arborists for more information and to discuss the most appropriate species for your area.

When planting trees with wider spacing, such as for an avenue or individual standard trees, consider using some of the surrounding space to establish a wildflower meadow. This will support insect biodiversity as well as encouraging the establishment of non-grass species which pose less of a competitive threat to the young trees. Bulbs can easily be underplanted to provide a beautiful splash of colour around your trees in the early spring.

## Considerations for urban trees

Trees in urban areas are particularly important for the quality of the local environment – they filter air pollution, give shelter from the wind, provide shade, and reduce the urban heat island effect to contribute to cooling in cities. They also increase the desirability of neighbourhoods and promote wellbeing in the community. However, tree species selection is particularly important in the urban environment due to the potential for trees to destabilise built structures through root growth.

Additionally, too dense a tree planting can feel threatening; ensure that tree cover is balanced with open space, and that paths are wide, clear and attractive. Urban trees may need more careful management to ensure that branches do not pose a threat to parked cars or buildings and that the root system and tree health is stable enough that there is no risk of trees falling. Local councils have tree officers who are experts in these matters and can be called upon for advice.



# Planting day equipment and volunteer organisation



School children plant a tree at Castle Hill Hospital, Hull. Photo: Rachel Johnson



Tree planting at the Becton Centre, Sheffield. Photo: Miriam Dobson / CSH

## Equipment checklist

- First aid kit
- Close fitting clothes are best – they do not get snagged in branches
- Wellies or work boots are best for footwear – if possible, wear steel toe capped footwear
- Gloves – gardening gloves are fine
- Heavy duty spade and fork and rubber mallet



## Organising volunteers

Preparation for volunteer planting events includes:

- Ensuring adequate public liability insurance
- A risk assessment which considers the risks and safety measures that need putting in place for volunteers working on site, for example, trip hazards
- Arranging access to the site. When sending out information to volunteers, ensure that full directions to the site are given by public transport and active travel methods such as cycling. This information should be prioritised over directions by car, but if car access is necessary ensure that volunteers are given the option to carpool.
- Arranging plants, tools, first aid and personal protective equipment such as gardening gloves
- Plans for breaks, and refreshments
- Access to toilets and wet weather cover
- Ensuring there is a designated First Aider on site.

When planning how many volunteers you may need for a tree planting event, consider the approximate number of trees you expect to plant each day. Rates for experienced volunteers for pit planting are around 20 to 30 trees per person per day including installing shelters. If using notch planting, which is quicker, allow for 50 to 60 trees per day if fitting shelters and supports, and up to 100 if not. Schoolchildren or inexperienced volunteers will be considerably slower.

General points to consider when involving volunteers in environmental work are:

- Appoint a project leader to oversee the event. They should explain the purpose of the work, general site safety, demonstrate tool use and set the objectives for the day
- Where possible, verbal explanations should be backed up with work plans, demonstrations or samples of work. For example, clear labelling of trees for planting and copies of planting plans will help avoid mistakes and allow workers to get on without further instruction
- Small groups should work methodically on one goal at a time, rather than piecemeal on several things, none of which may get finished at the end of the day

- Large groups should be divided up and work on several tasks or on different parts of the site
- Mark on the ground where you want trees planted, including which species are to go where. This can be done with small flags, sticks, pre-printed diagrams, and so on
- Whatever the division of labour, do not leave anyone out, but find a place for people of all strengths and abilities. New volunteers can work alongside more experienced ones
- Count out and count in the tools at the start and finish of work and note any which need repair
- In organising the group, aim for a balance between high work standards and conditions which are not only safe but also rewarding for volunteers
- Make sure to thank volunteers at the end of the day!

The following points apply specifically to tree planting:

- It is usually easier to work in pairs. One person measures the spacing, digs the notch and holds it open with the spade, while the other person quickly transfers the plant from the planting bag to the notch
- Separate teams can check that the trees are firm, fit tree shelters, and add mulch. Others can keep the teams supplied with trees and other materials
- Swap the teams around from time to time so everyone has an opportunity to plant a tree.

If you are involving people with different needs in planting, **Thrive** has particular experience of gardening and planting or people with disabilities, ill health, autism and special educational needs. It is a good organisation to contact to ensure you design a planting event that is accessible and enjoyable for all your volunteers.

We encourage sites to produce hand-outs or volunteers so that they have information to refer to on the day and can, as much as possible, work to their own speed and without having to go back to supervisors for information or reminders too often. Bear in mind the level of experience, age and mobility of your volunteers, as well as your chosen planting method, any specific information relevant to your site, and overall aims for the day. If you would like guidance in producing a handout, please get in touch with the NHS Forest team or use our handout template.



# Further reading, resources and information



Signpost at Cirencester Hospital. Photo: Carey Newson /CSH

## Academic evidence for benefits of trees

The NHS Forest website hosts a database of [the academic evidence](#) for the use of green space in healthcare. Trees support these overall benefits to physical and mental health, as well as providing numerous environmental benefits. Here are some headline benefits that have been identified through research.

- **Accelerated patient recovery:** Even a view of trees from a ward window can improve patient recovery time and reduce need for pain medication
- **Improved community health:** Green spaces provide a myriad of opportunities to promote outdoor recreation and nature connection, as well as being linked to numerous public health-related benefits, such as a reduction in air pollution
- **Improved air quality:** Trees and woodland have a measurable impact on air quality, through absorbing pollutants, intercepting harmful smoke, pollen and dust particles, and releasing oxygen
- **Reduced noise:** Trees deflect and absorb stressful sounds, such as traffic, improving the hospital grounds environment for patients and staff
- **Mitigation of the urban heat island effect:** The cooling and shading benefits of trees help provide spaces to escape the heat during heatwaves, and reduce the 'urban heat island' effect caused by hard surfaces in city areas
- **Reduced flood risk:** Trees regulate the rate at which rainfall reaches the ground and slow the flow of runoff, increasing water infiltration and the ability of drainage channels and manmade drains to cope with excess water
- **Reduced carbon emissions:** Trees help mitigate climate change by absorbing carbon dioxide from the atmosphere
- **Economic benefits:** These include reduced costs through preventative healthcare from trees and green space, reduced costs linked to flood prevention and value from leisure use

## Online resources

The following websites provide other relevant resources for tree planting projects, volunteer activities, and horticultural advice:

[TCV - The Conservation Volunteers](#)

[The Woodland Trust](#)

[Small Woods Association](#)

[Lantra](#)

[Plantlife](#)

[The Royal Horticultural Society](#)

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