



Safe lighting, management and extinguishing of a campfire

Small campfires can be desirable as they provide a richness to a wide range of learning and well-being activities.

When planning a campfire, it is important that you consider how to do this in a way that ensures the safety of all present. It is recommended that the leader of any campfire activities has:

- experience and knowledge of safe fire lighting, for example, accreditation such as a Level 3 Agored Cymru Coastal or Forest School qualification
- experience of group management around campfires
- policies and procedures on safe fire lighting and extinguishing
- client group medical information and permission to engage in the activity
- landowner’s permission for fire lighting/collecting firewood
- suitable health and safety equipment
- suitable campfire cooking equipment
- sufficient water on site to extinguish the fire and deal with burns should they occur

When planning a campfire, it is important to take steps to minimise the risk of damage to the natural environment and each other. Consider using ‘off the floor’ fire structures, such as a fire pit or bowl, to help reduce the environmental impact of lighting a campfire. Using a portable fire structure to light a campfire in leaves little to no trace in the environment. They can be easily moved to different areas which helps to reduce the compaction of soil and denuding of vegetation and dead wood in any one area. Learners are more likely to use similar equipment with their families, helping to embed appropriate health and safety practices. While there are cost implications to the purchasing of fire pits and bowls, they are an investment for long term use if properly looked after and provide more flexibility.

Before lighting a campfire

Before striking a match, consider if lighting a campfire is appropriate. Building a campfire, maintaining it and keeping it under control comes with responsibility. A campfire that is not properly built, maintained, monitored and extinguished can quickly become a hazard to the people, animals, and land around it.

The following checklist is not an exhaustive list but aims to stimulate the careful consideration of place based or group based factors that may impact on a safe campfire experience.

Campfire Checklist	
Landowners’ permission	<ul style="list-style-type: none"> • Do you have the landowner’s permission to light a campfire? • Make sure you know and understand the landowner’s rules and requirements. • Is there a designated area in which you are allowed to build a campfire? • Are there any exclusion or conservation areas to be avoided? • Have you asked if there is any site-specific information needed for your risk benefit analysis? • Do you have permission to gather tinder and firewood?



Campfire Checklist	
Staff	<ul style="list-style-type: none"> Do you have appropriate staffing levels in place to manage both a campfire and supervise learners? Do you have a qualified First Aider present? Do the adults in the group have access to, and understand the risk benefit analysis and relevant safety procedures?
Weather	<ul style="list-style-type: none"> Dynamically assess the climatic conditions on site before lighting the fire and throughout the activity. Check the wind direction before lighting the campfire. Could it allow flames or sparks to travel dangerously? Do not attempt to build and light a campfire in very dry/drought/windy conditions as this might cause the fire to grow out of control. Is it going to be very damp or wet? You might need extra and very dry kindling and other fire lighting kit to establish a reliable fire.
Campfire site check	<ul style="list-style-type: none"> What's the ground like around where you plan on lighting the fire? Check for holes, tree roots and anything else that may present a trip hazard. If there are any of the above, consider moving elsewhere. Is the campfire area level? Do not light a campfire on a slope as the fire might travel downhill. For example, if the fire bowl was knocked over. Is there a lot of leaf litter, twigs and other flammable materials close to your campfire? You will need to brush these away down to bare soil to ensure a 'clean' fire site, within the range of any possible sparks. Check your soil type. Is peat soil present? Don't light a campfire on peat soil as the fire can travel underground. Peat burns slowly at a low temperature, smouldering as opposed to burning with an open flame. Once alight, peat can burn downwards over a large area, sustaining underground fires that can continue to burn for several weeks, making them difficult to put out. Are there trees too close to the campfire or low hanging branches? Don't light campfires too close to trees as fire can travel along roots, trunks and sparks and burning debris might float up into the canopy. Is there flammable infrastructure nearby? Your campfire should be away from flammable tarpaulins, buildings and other structures. If you are not using an off the ground fire structure, have you created a containment area for the campfire? Either dig a 10cm deep pit for the fire or arrange large logs to prevent the spread of fire at ground level. If you are using logs, pour enough water over them before lighting the fire to make them very damp and less likely to catch fire. You will also need a boundary to ensure learner safety by keeping them at a distance of 2 metres away from the fire.



Campfire Checklist

Fire kit

- Have you got enough clean water? You need a **minimum** of 5 litres of clean water in a covered bucket to use to treat burns. You need a **minimum** of 20 litres of water to extinguish the campfire completely. Any water required for drinks, cooking, washing, etc. should be in addition.
- Is your water close to the fire?
You may need this in an emergency.
- Have you got a fire blanket near to the campfire?
You may need this to smother flames in an emergency.
- Is your first aid kit up to date?
You may need cling film or a burns kit on site for use by the designated First Aider.
- Is your campfire equipment in good order? Check your resources before any activity to prevent accidents. For example, have corks been removed from Kelly Kettles, chains on Dutch oven trivets, wood cutting tool handles, fire wok/bowl legs secure, fire steels in good order, etc.
- Gather your tinder, kindling and firewood before lighting the campfire. Only use dead material. Deadwood (see information below) and natural detritus are vital components of ecosystems, providing food and shelter for many creatures so removing material for tinder (see information below) and firewood can have an impact. Avoid anything that is green, too wet or that bends without snapping – it won't burn well.
- Only use wood from the site if wood is abundant – consider buying and bringing in. Look for Forest Stewardship Council (FSC) logo if doing this to make sure wood products are sustainably sourced.
- If you are using matches, ensure they stay dry by keeping in an airtight container.
- If there are damp or wet conditions, you might want to make sure that you have firelighters such as cotton wool dipped in petroleum jelly to aid ignition.

Prepare ahead

- Have you got health and safety policies and procedures in place for the site, activity and group?
- Have you undertaken a risk benefit analysis for the activity and site?
- Have you communicated your safety procedures and controls with the whole group?
- Make sure you know where you can get a good phone signal in case you need to call the emergency services.
- Do you have a safe evacuation route from the area in the event of the fire becoming dangerous? Do your group know where to go and what to do?
- Does your setting know where you are and what time to expect you back?



Campfire Checklist

Lighting the campfire

- Ensure that anyone near the campfire ties back long hair and removes any objects that may dangle in or over the fire, including jewellery and clothing.
- Have no more than 2 learners assisting in lighting the fire.
- Keep all persons 2 metres away from the fire, except for those designated to add fuel or to cook.
- Minimise the risk of trips, falls, and items catching fire by ensuring the area around the campfire is kept clear. For example, remove any bags or personal equipment. Only have essential items nearby.
- To help identify the best firewood to use at different stages of lighting the campfire, first separate the firewood into 3 piles;
 - 1.** twigs with the width of a matchstick and as long as a little finger. These smaller pieces can help establish the first flames.
 - 2.** twigs as long as the distance from a middle finger to a wrist and as thick as a little finger. These will catch fire as the smaller twigs heat.
 - 3.** sticks as long as a forearm and as thick as a thumb. These are the sticks that will be used to create the main shape of your fire structure.
- There are a range of campfire structures that can be built to suit different purposes. For example, a simple tepee structure is a good choice for the less confident.
- Create a fire bed: Place dead, dry sticks side by side to form a layer on the floor before placing the kindling on top to ensure your kindling doesn't get damp and to allow for improved air flow.
- Now build your campfire structure, starting with smaller twigs and wood, building it up.
- Once your campfire structure is complete, use a fire steel, matches, etc. to light it.

Managing the fire

- Keep the fire small. Only have the size of fire to suit the task and dampen down as necessary.
- Minimise the ecological impacts by not continuing to add wood unnecessarily.
- Maximum flame height should not exceed knee level. Remove the group from the area if flames become too large.
- Don't stamp on the fire or throw items/wood into the fire.
- Only designated persons should be allowed to add wood to the fire when requested.
- Learners should understand appropriate and safe behaviour around the campfire. For example, not to stand on logs if a log circle is in place, how to enter and exit the campfire area safely.
- All members of the group should walk, and never run in the campfire area.
- Never leave the fire unattended. Ensure there is a designated, confident and experienced person to always be with the fire whilst it is alight.
- If the fire becomes dangerous at any point, call 999 and ask for the Fire Service.



Campfire Checklist

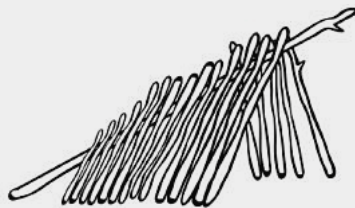
Extinguishing

- Avoid adding wood to the fire as soon as you have completed the final activity such as cooking or making charcoal.
- Allow the wood to burn down to ash and cool as much as possible.
- Slowly and carefully, pour water over the ashes. Do not pour from a great height as this will throw up ash and steam.
- Use a large stick to stir the water through the ash and repeat until there is no heat remaining. If in doubt add more water. The ash should be cool enough to handle safely.
- Remove all evidence of the campfire and return the area to as natural a state as possible. Ash and any charred wood should be removed and carefully disposed of. For example, ash can be used in the garden.

Types of fire structure



Tepee fire



Lean to fire



Log cabin fire

What is deadwood?

In forestry, the term deadwood is used for all dead or dying trees. This includes branches, stumps, roots and other tree debris. Dead and decaying trees are vital components of the forest ecosystem and play an essential role in biodiversity, providing micro habitats for many different invertebrates and supporting soil fertility and energy flows. Deadwood also stores carbon and helps to mitigate the effects of climate change. Deadwood is seasoned by time and drier than greenwood so burns more effectively. Historically, deadwood was removed from woodlands for firewood.

What is kindling?

Also known as tinder, this is small, dry material that can be readily ignited such as tiny twigs, bark, leaves, pine straw, grasses, seeds and lichens. You can use other materials such as crumpled newspaper, cotton wool with petroleum jelly, and lint. Kindling takes the initial spark of the fire and can then be added to with bigger pieces of wood.

Using shop bought wood fuel

To ensure that you are using sustainably sourced wood products, purchase material that has the Forest Stewardship Council (FSC) logo. The FSC is an international, non-governmental organisation dedicated to promoting responsible management of the world's forests.



Look for
this logo



What woods burn well?

Which trees provide the best firewood and which ones should be avoided? Generally, hardwood, broadleaf trees like oak, and most fruit trees are the best burning woods that will give you a hotter and longer burn time. These woods have the least pitch and sap, and are generally cleaner to handle. The table below shows some firewood properties to help you get started.

Species	Burn	Comment
Alder	Poor	Low heat with short burn time
Apple	Good	Requires seasoning
Ash	Good	Can be burnt when green
Beech	Good	Requires seasoning
Birch	Good	Burns quickly
Cedar	Ok	Burns well but with little flame
Cherry	Ok	Requires seasoning
Douglas Fir	Poor	Small flames and low heat
Elder	Poor	Small flames and low heat
Elm	Ok	Requires seasoning
Hawthorn	Good	Burns well
Hazel	Good	Burns quickly so is better if seasoned
Holly	Good	Can be burnt when green
Hornbeam	Good	Burns well
Horse Chestnut	Ok	Spits a lot
Larch	Poor	Requires seasoning, spits and produces soot
Lime	Ok	Poor heat output and short lasting
Oak	Good	Burns long and hot
Pear	Good	Requires seasoning
Pine	Poor	Spits and produces soot
Plane	Good	Burns well
Poplar	Poor	Produces black smoke
Rowan	Good	Burns well



Species	Burn	Comment
Spruce	Ok	Poor heat output and short lasting
Sweet Chestnut	Poor	Poor heat output and spits a lot
Sycamore	Good	Burns well
Walnut	Ok	Poor heat output and short lasting
Willow	Ok	Requires seasoning
Yew	Ok	Poor heat output and short lasting

Seasoning firewood

Seasoned wood is just wood that is dry. When a tree is felled, a slow process begins, drying out the moisture held in the tree’s mass of cells. As the wood dries out, it starts to shrink and crack. Ideally, firewood should have a moisture content of less than 20%. You can use moisture readers to test your firewood. But you can also:

- Look for cracks that radiate out from the heartwood to the sapwood
- Observe a change in colour as wood fades and darkens as it dries out
- Check the smell – green wood smells sappy
- Examine the bark – dry wood has bark which slowly begins to separate from the wood
- Listen for hollow sounds when you bang 2 pieces of wood together
- Check the weight as seasoned wood weighs less than the same species of green wood

Firewood can take a long time to season depending on the species, size, local climate, and storage conditions. Traditionally, wood is seasoned for at least six months.

Why not try our:

- [Information note – Campfire cooking](#)
- [Information note – Installing a log circle](#)
- [Activity plan – Making campfire charcoal](#)
- [Film clip – Fire lighting and extinguishing](#)

Looking for more learning resources, information and data?

Please contact: education@naturalresourceswales.gov.uk or go to <https://naturalresources.wales/learning>

Alternative format; large print or another language, please contact: enquiries@naturalresourceswales.gov.uk 0300 065 3000

