

# Ben Shioldaig Estate

(Plan period – 2022 to 2027)



WOODLAND  
TRUST

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## Introduction to the Woodland Trust Estate

The Woodland Trust owns and cares for well over 1,250 sites covering almost 30,000 hectares (ha) across the UK. This includes more than 4,000ha of ancient semi-natural woodland and almost 4,000ha of non-native plantations on ancient woodland sites and we have created over 5,000ha of new native woodland. We also manage other valuable habitats such as flower-rich grasslands, heaths, ponds/lakes and moorland.

Our Vision is:

“A UK rich in native woods and trees for people and wildlife.”

To realise all the environmental, social and economic benefits woods and trees bring to society, we:

- **Create Woodland** – championing the need to hugely increase the UK’s native woodland and trees.
- **Protect Woodland** – fighting to defend native woodland, especially irreplaceable ancient woodland and veteran trees; there should be no loss of ancient woodland
- **Restore Woodland** – ensuring the sensitive restoration of all damaged ancient woodland and the re-creation of native wooded landscapes.

# Management of the Woodland Trust Estate

All our sites have a management plan which is freely accessible via our website

[www.woodlandtrust.org.uk](http://www.woodlandtrust.org.uk)

Our woods are managed to the UK Woodland Assurance Standard (UKWAS) and are certified with the Forest Stewardship Council® (FSC®) under licence FSC-C009406 and through independent audit.

The following principles provide an overarching framework to guide the management of all our sites but we recognise that all woods are different and that their management also needs to reflect their local landscape, history and where appropriate support local projects and initiatives.

1. Our woods are managed to maintain their intrinsic key features of value and to reflect those of the surrounding landscape. We intervene in our woods when there is evidence that it is necessary to maintain or improve biodiversity, safety and to further the development of more resilient woods and landscapes.
2. We establish new native woodland for all the positive reasons set out in our Conservation Principles, preferably using natural regeneration but often by planting trees, particularly when there are opportunities for involving people.
3. We provide free public access to woods for quiet, informal recreation and our woods are managed to make them accessible, welcoming and safe. Where possible, we pro-actively engage with people to help them appreciate the value of woods and trees.
4. The long term vision for all our ancient woodland sites is to restore them to predominantly native species composition and semi-natural structure, a vision that equally applies to our secondary woods.
5. Existing semi-natural open ground and freshwater habitats are restored and maintained wherever their management can be sustained and new open ground habitats created where appropriate.
6. The natural and cultural heritage value of sites is taken into account in our management and in particular, our ancient trees are retained for as long as possible.
7. Land and woods can generate income both from the sustainable harvesting of wood products and the delivery of other services. We therefore consider the appropriateness of opportunities to generate income from our Estate to help support our aims.
8. We work with neighbours, local people, organisations and other stakeholders in developing the management of our woods. We recognise the benefits of local community woodland ownership and management. Where appropriate we encourage our woods to be used for local woodland, conservation, education and access initiatives.
9. We use and offer the Estate where appropriate, for the purpose of demonstration, evidence gathering and research associated with the conservation, recreational and sustainable management of woodlands. We maintain a network of sites for long-term monitoring and trials leading to reductions in plastics and pesticides.
10. Any activities we undertake are in line with our wider Conservation Principles, conform to sustainable forest management practices, are appropriate for the site and balanced with our primary objectives of enhancing the biodiversity and recreational value of our woods and the wider landscapes.

## The Public Management Plan

This public management plan describes the site and sets out the long term aims for our management and lists the Key Features which drive our management actions. The Key Features are specific to this site – their significance is outlined together with our long, 50 years and beyond, and our short, the next 5 years, term objectives for the management and enhancement of these features. The short term objectives are complemented by an outline Work Programme for the period of this management plan aimed at delivering our management aims.

Detailed compartment descriptions are listed in the appendices which include any major management constraints and designations. Any legally confidential or sensitive species information about this site is not included in this version of the plan.

There is a formal review of this plan every 5 years and we continually monitor our sites to assess the success of our management, therefore this printed version may quickly become out of date, particularly in relation to the planned work programme.

Please either consult The Woodland Trust website

[www.woodlandtrust.org.uk](http://www.woodlandtrust.org.uk)

or contact the Woodland Trust

[operations@woodlandtrust.org.uk](mailto:operations@woodlandtrust.org.uk)

to confirm details of the current management programme.

A short glossary of technical terms can be found at the end of the plan.

## Location and Access

Location maps and directions for how to find and access our woods, including this site, can be found by using the following link to the Woodland Trust web-site which contains information on accessible woodlands across the UK

<https://www.woodlandtrust.org.uk/visiting-woods/find-woods/>

In Scotland access to our sites is in accordance with the Land Reform Act (of Scotland) 2003 and the Scottish Outdoor Access Code.

In England, Wales and NI, with the exception of designated Public Rights of Ways, all routes across our sites are permissive in nature and where we have specific access provision for horse riders and/or cyclists this will be noted in the management plan.

# The Management Plan

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## 1. SITE DETAILS

### Ben Shieldaig Estate

Location:	Strathcarron Grid reference: NG844543 OS 1:50,000 Sheet No. N/A
Area:	1539.67 hectares (3804.61 acres)
External Designations:	National Scenic Area, Site of Special Scientific Interest, Special Area of Conservation
Internal Designations:	N/A

## 2. SITE DESCRIPTION

### Introduction:

Ben Shieldaig Estate is a 1539 hectare (3,800 acre) property set in a unique and dramatic landscape perched on the very fringes of Scotland's west coast in the Wester Ross National Scenic Area. It is partly designated as a Site of Special Scientific Interest (SSSI) - Shieldaig Woods, which includes an area of ancient semi-natural birch woodland as well as a significant remnant of ancient Caledonian pinewood (the most north-westerly example in the country with a unique genetic make-up). The majority of the land is open hillside, bog and rock, some of which would have been more extensively wooded hundreds of years ago. The relationship between the mountain, the woodland, neighbouring lochs and the sea, mean Ben Shieldaig is home to some remarkable and charismatic wildlife such as red squirrel, pine marten and golden eagle, as well as many of the characteristic lichens and bryophytes of Scotland's rainforest zone.

In November 2021, the Woodland Trust acquired Couldoran Estate (1,849 ha), which borders Ben Shieldaig to the south and west. This extends the area of ownership to 3,388 hectares, which the Trust will manage as one estate. As Couldoran has only recently been acquired and time is needed to gain a better understanding of the estate and what the opportunities and challenges are, it has not been included in this management plan. In agreement with the previous owners however, 242 hectares of Couldoran have already been surveyed prior to the acquisition to tie in with our woodland creation plans for Ben Shieldaig. The surveyed area of Couldoran will therefore feature in this management plan bringing the total area included to 1,781 ha.

### Description:

Ben Shieldaig is 534m / 1,752 feet high. The ridge of Ben Shieldaig forms a spectacular and recognisable massif which drops away sharply to the rocky shores of Beinn Damh (or Ben Damph) to the east and the lower reaches of Glen Shieldaig to the west. The topography is particularly steep on the north and west faces of Ben Shieldaig.

The estate sits between the communities of Kishorn in the south and Shieldaig immediately adjacent to the north. To the west is the Applecross peninsula, Lochcarron to the south and Torridon to the north. Shieldaig itself has a population of around 100 permanent residents with facilities including a café, hotel, shop, campsite and public toilets. There is a vibrant local primary school whose numbers are growing.

The north end of the estate is on the popular tourist route, the North Coast 500 (NC500), one of the largest attractions in the Highlands. Wester Ross as a region attracts over 450,000 visitors each year.

Ben Shieldaig sits within the Loch Maree Complex Special Area of Conservation, which includes Beinn Eighe National Nature Reserve (NNR), the UK's oldest NNR. To the east of the Estate, on the other side of Loch Damh, sits the Doire Damh SSSI. To the west is Kinloch Woodlands, a 400 ha area fenced off since 1994 for the planting of three native woodland schemes and enabling significant natural regeneration. Kinloch also holds substantial areas of the Shieldaig Woods Caledonian Pinewood Inventory site. 5km to the south of the estate is Rassal Ashwood, the most northerly ash woodland in the UK and until recently an NNR.

In the north of the Estate is an extensive area of upland birch woodland, Mheallaidh Wood, on the slopes of Sròn an Fhithich behind and to the east of Shialdaig village. This birch woodland, confined to the moisture-laden strip of land between the mountain and the sea, is part of a unique west coast habitat - Scotland's temperate rainforest. It is brimming with mosses and liverworts and is a very important site for oceanic bryophytes, not just in Scotland but internationally. Almost 20% of Scotland's bryophyte species have been recorded on this one site.

On the west face of the massif above Loch Dughail is a large area of Caledonian pine, Coille Creag-loch. This pinewood is remarkable not only because it may have started to grow shortly after the last ice age, but because it lies at the very limit of the Scots pine's northern European distribution. As one of the most westerly remnants of native pine in Europe; one of the closest to sea level; and of the genetically distinct Wester Ross type; it is of international conservation importance.

Both woodland sites have been designated within a single Site of Special Scientific Interest [the Shialdaig Woods SSSI] since 1984 and are included in the more recent Loch Maree Complex Special Area of Conservation. Scotland's Ancient Woodland Inventory lists both areas of woodland and Shialdaig Woods is listed as one of the 84 Caledonian Pinewood Inventory sites.

The majority of the open hill has vegetation typical of this area of Wester Ross with wet heath and mire vegetation dominating the southern and west-facing slope, and a stronger growth of both bell and ling heather on the drier slopes to the north and east. There are scattered lochans along the ridge of Ben Shialdaig.

The relationship between the mountain, the woodland, neighbouring lochs and the sea, mean Shialdaig is home to some remarkable and charismatic wildlife. Nesting golden eagles and upland waders can be spotted on the hill tops and pine martens and red squirrels in the woodland. Otters and a variety of seabirds can be seen on neighbouring freshwater lochs and along the seashore, not to mention white-tailed eagles which nest on Shialdaig Island.

There is incredible biodiversity present; pipistrelle bats, smooth newts, woodpeckers and siskins in the woodland; black throated divers by the lochs (Wester Ross is one of the UK's prime sites for these beautiful birds); damselflies and dragonflies (the UK's smallest dragonfly, the Black darter and the vulnerable Azure Hawker dragonfly have both been recorded here); rare insects like the Red Data Book listed hover fly *Callicera rufa* or the near threatened Rockhopper beetle; as well as characteristic pinewood plants such as heather, blaeberry, sundew, butterwort, glittering wood moss, plume moss, wavy hair grass and the rare 'witches hair' lichen.

The hills of Torridon are some of the oldest in Europe. The red and unusually twisted Torridonian sandstone was laid down over 1000 million years ago. The rock it rests on, Lewisian gneiss, is much older at over 3200 million years old - the oldest exposed rock in Europe. Ben Shialdaig has many large sandstone outcrops (particularly on the east side by north end of Loch Damh) as well as individual boulders or erratics suitable for scrambling / climbing.

The warm and wet conditions of the Gulf Stream climate of the West Coast have created a temperate rainforest habitat at Ben Shialdaig. This is perhaps most clearly represented by the rich and diverse bryophyte populations.

Whilst Ben Shialdaig has been identified as an example of globally important temperate rainforest habitat, the site also reflects significant environmental challenges that these areas are facing. These include; browsing pressure from deer, presence of invasive species such as *Rhododendrom ponticum*, habitat fragmentation, tree disease and climate change. In an attempt to protect these important habitats, Ben Shialdaig is incorporated within the 'Saving Scotland's Rainforest' project which is the sum of the work of the Alliance for Scotland's Rainforest (ASR), for which

the Woodland Trust is a lead partner. This focuses on collaborating with other government and non-government organisations to work together on conservation efforts at a landscape scale across the west coast of Scotland. The key focus is to protect these woodlands and make them more resilient through increasing their connectivity, reducing threats and raising awareness of their presence and importance.

Unlike its neighbour Ben Shieldaig, with its remarkable ancient woodland, most of Couldoran is currently open heathland/ moorland with a series of crags, burns and lochans. Blanket bog is punctuated with exposed bedrock thanks to thin vegetation cover. As on Ben Shieldaig however, the geology is quite striking - predominantly sedimentary Torridonian sandstone overlying Lewisian gneiss.

Dwarf juniper heath habitat has been recorded on neighbouring Beinn Bhan, thought to be the most southerly and high-altitude example of this community in mainland Britain. With large amounts of prostrate juniper evident on Couldoran, such habitat could exist here too.

Whilst there are relict patches (pockets) of native broadleaf trees (holly, willow birch and aspen), these are restricted to crags, ravines & gorges less accessible to grazing animals. There is much potential to restore habitats and increase tree cover across the estate including treeline or montane woodland.

Where peat accumulates on shallow slopes, the vegetation is mostly deer grass / cotton grass blanket bog and where it's less disturbed there is sphagnum moss and other bryophytes. Bell heather & ling give way to wet heath and in more exposed areas montane vegetation like *Racomitrium* moss and *Cladonia* lichens are present alongside widespread development of clubmoss (*Lycopodium*).

#### History:

In 1959, in their seminal work on the Caledonian pinewoods of Scotland, Steven and Carlisle noted in their entry for Shieldaig pinewood that, in the first Statistical Account of Scotland (late eighteenth century), the local minister recorded that there were some natural woodlands of Scots pine, birch and hazel in the parish. At that time the land belonged to the Mackenzies of Applecross. Fifty years later, the second Statistical Account for Scotland refers specifically to a "good fir wood at Shieldaig producing timber fit for boats, vessels and buildings".

Around 1870, the woodlands were fenced – partly to keep red deer from the crofts to the west and partly to keep sheep and cattle out of the woodlands. In 1932 the owner at that time, Mr C. W. Murray, sold some of the larger pine to a timber merchant who erected a sawmill to the south of Shieldaig and dispatched the sawn timber by sea. Local residents still remember the remains of the sawmill.

The woodland was purchased by Mr A. C. Greg in 1945 and formed part of the large Lochcarron Estate. Since then, very little felling has occurred.

There have been a number of fires in the pinewood over time. There were apparently also two fires which destroyed much of the younger natural regeneration in the 1930s and a more recent fire in 1974 where it is reckoned that only 15 ha of mature pine trees were lost.

At this time the Nature Conservancy Council also designated the main pinewood as a Site of Special Scientific Interest, covering just over 220 ha. The wood was re-notified in 1985 and designated a Special Area of Conservation in 2005. It also became part of the Wester Ross National Scenic Area.



The Ben Shieldaig section of the Lochcarron estate, (1700 ha), which contains the majority of the pinewood, was sold to a private owner in the 1990s.

Although Shieldaig has always been well-connected by its position on the sea, access by land has always been more difficult. Road access to the eastern side of Ben Shieldaig and the area around the Balgy river was only established in the 1960s, before this the roads ended at Shieldaig to the west and Torridon village to the east. There was however a track which went between the 2 villages, around the southern shoreline of Loch Torridon and passing through Annat and the Balgy Township.

Shieldaig village was constructed during the Napoleonic wars to provide and train sailors for the Royal Navy. By the time the new village was fully populated however, there was no longer a threat from Napoleon.

Shieldaig grew well from this time, assisted by government grants for boat building and guaranteed prices for fish supplies. Land was made available, and a new road was constructed to link Shieldaig with Kishorn and Lochcarron. Shieldaig benefitted from duty-free salt, which enabled the local fisherman to cure their catches before sending them south to markets.

Shieldaig was, however, heavily impacted by the Highland Clearances. The village was originally part of the Applecross Estate, however when the estate changed hands from the MacKenzies of Applecross to the Duke of Leeds, the cattle grazings were taken away from the crofters/fishermen and turned over to large scale sheep farming. The Duke of Leeds broke up the Applecross property into smaller partitions, and the Lochcarron estate, including the village of Shieldaig, was sold to Sir John Stewart. Deerstalking in the Glenshieldaig forest dispossessed many of the Shieldaig tenants, with many of their houses taken over for estate use. Most of the land was rented out to incoming sheep farmers.

### 3. LONG TERM POLICY

Ben Shieldaig will be an exemplar of habitat restoration in a degraded upland setting, valued locally and nationally for its outstanding landscape and rich biodiversity.

Whilst a mixed habitat mosaic of woodland and open ground will be preserved, woodland will be expanded to cover 35% of the estate, through natural regeneration and new native planting. This will help conserve and buffer the ancient woodland on the site, enhancing connectivity with other ancient woodland and rainforest fragments in Wester Ross. It will also lock away carbon and reduce soil erosion.

The ecological communities supported by the woodlands, particularly indicator lichen and lower plant species, will be thriving. Populations of flagship species, such as red squirrels and golden eagles, will have grown in numbers and spread to other woodlands in the area. Rare rainforest habitats, such as liverwort heath, will be in healthy condition and montane species, such as dwarf juniper, will be widespread.

Local communities will have benefitted from our work and have a greater role in the stewardship of the land and its resources. The estate will be used as an outstanding learning and recreational resource by local communities, interest groups and visitors, and a network of paths and trails will connect Ben Shieldaig throughout the landscape.

The project will act as a catalyst and demonstration site for encouraging landscape-scale restoration across neighbouring land, with partnerships of landowners, organisations and communities working together to support landscape-scale regeneration across the west coast of Scotland.

## 4. KEY FEATURES

### 4.1 Ancient Semi Natural Woodland

#### Description

Ben Shieldaig contains two extensive areas of native woodland. To the north are 25 ha of upland birch woodland (Compartment 1 on map, Mheallaidh Wood: downy birch, including some sessile oak, hazel, rowan and scattered pines) on the slopes of Sròn an Fhithich behind and to the east of the Shieldaig township. On the west face of the massif above Loch Dughail there are 67.5 ha of Caledonian pine (Compartment 3 on map, Coille Creag-loch), considered to be the most Westerly area of Caledonian Pine in Europe.

Both woods are designated within a single Site of Special Scientific Interest (SSSI), known as Shieldaig Woods. The SSSI is protected for native Pinewood (in 'favourable maintained' condition in 2006), upland Birchwood ('unfavourable declining' 2013), beetles ('favourable maintained' 2010), flies ('favourable maintained' 2015) and its bryophyte assemblage ('favourable maintained' 2010). The SSSI is part of the much larger Loch Maree Complex Special Area of Conservation (SAC), designated for a range of features of which Caledonian Forest is most relevant to Shieldaig ('unfavourable no change' condition in 2010).

Scotland's Ancient Woodland Inventory lists both areas of woodland, the birchwood and the pinewood. Woodland is shown at and around the site of the Shieldaig site on the Roy Highlands map from 1747-52. Roy's map suggests that the pinewood may have been more extensive at this time.

The 1st Ordnance Survey map (1843-82) depicts the extent of woodland at Shieldaig much as it now is, although there has been some expansion of woodland in the north of Ben Shieldaig and along the upper woodland margins.

The Native Woodland Survey for Scotland (NWSS) shows that Ben Shieldaig Estate contains 60.13 hectares of native pinewood at mixed maturity, which includes 0.54 hectares of dwarf shrub heath and a further 6.88 ha area of regeneration to the south of the pinewood. An area of 14.9 ha of adjoining native pinewood sits on the Shieldaig common grazings. It also shows 24.99 ha of upland birchwood. A further area of 4.38 ha of adjoining native upland birchwood sits on the Shieldaig common grazings.

Most Caledonian Pinewood Inventory (CPI) sites have a 'Core' pinewood area which is the mapped area of existing Caledonian Pinewood, a surrounding 'Regeneration' zone where it might be hoped that the pinewood could naturally regenerate via existing trees in the 'Core' area providing a seed source. Both of these zones are contained within Compartment 3. Around these areas is a much larger 'Buffer' area, which takes in the birchwood in Compartment 1, but also the surrounding open hill in a section of Compartment 6.

Until 1993 maintaining higher deer numbers for stalking was the main focus of management on Ben Shieldaig. However, in 1993 a Woodland Grant Scheme (WGS) was established to encourage natural regeneration and expand the native woodland. In 1995 a second WGS was established on the SSSI to expand the woodland to the east of the site

through natural regeneration.

A deer fence was erected across the Estate from Loch Dughail in the west to Loch Damh in the east, fencing off 830 ha of the northern part of the Estate, in order to control deer movements and provide an independent management block within which to maintain lower densities of deer.

No fence was placed along the northern boundary, as it was considered at the time that the river and the waters of Loch Damh formed a reasonably effective boundary.

Until 1993 the majority of the site had also been grazed by sheep, under a grazing let and as part of the Common Grazings. In 1997 the western side (along the A896 on Loch Dughail-side) was stock-fenced to prevent access by sheep. This stock fence continues to the east, along the limit of the Shieldaig common grazings, to keep sheep out of the main block of the birch woodland. It is currently, however, in poor condition.

This WGS scheme may have initially had some impact on deer densities and enabled some natural regeneration within the existing woodland however it has not proved an effective barrier at controlling deer movements as they have been able to swim around the part of the fence which ran into Loch Damh and also enter via the stock fence. Lower densities of deer also do not seem to have been maintained.

In 1974 a severe fire damaged extensive areas of the south facing pine woodland with the loss of trees and ground flora. However, this did also create conditions for growth and since then there has been some strong natural regeneration of Scots pine, particularly on the drier, heather dominated areas.

Past grazing pressure from both sheep and deer, and three fires, two in the 1930s and the severe fire in 1974, have shaped the present woodland structure into the current open canopy with under-developed shrub layer and modified ground flora.

The canopy within the pinewood varies between areas heavily dominated by Scots pine (typically made up mainly of mature trees and areas where Scots pine mixes with birch (typically made up mainly of 'maturing' trees). It is densest on the platforms that run between successive cliffs along the top of the pinewood, where most of the trees have a dense forest growth-form. The canopy of the pinewood is mostly made up of mature Scots pine although younger birch are also significant locally. Undergrowth is mainly made up of regenerating Scots pine along with some birch, whilst rowan and other palatable trees are suppressed by browsing.

Dense areas of young Scots pine regeneration are found widely in the more open parts of the pinewood, and these mix with young birch locally. Elsewhere undergrowth is sparse. Rowan is widespread at low cover and is suppressed by browsing except in inaccessible areas.

Deadwood within the pinewood is widespread and mostly made up of Scots pine. A wide range of types are represented, including standing dead trees with attached bark, standing dead trees with exposed lignin ('pine bones'), stumps along with fallen deadwood, and uprooted trees. These support different communities of invertebrates, bryophytes, lichens and fungi: for example, pine bones provide habitat for specialised pin-head lichens, whilst fallen deadwood provides habitat for mosses and liverworts such as Rustwort. Pine bones are particularly common within the pinewood, and many of these are fire scarred, evidence of the past fires which swept through the woods.

The condition of the pinewood feature was assessed as 'favourable maintained' condition in 2006.

In the birchwood, downy birch is predominant in a diverse age structure, with scattered sessile oak, rowan and willow; Scots pine is restricted to the upper crags. This area is particularly notable for its oceanic bryophyte communities, including characteristic rainforest species.

The most recent condition assessment within the SSSI in August 2013 found the birchwood feature to be in 'unfavourable condition'; whilst there is good regeneration on the lower slopes of the birch wood there is less regeneration higher up the slope, with regeneration restricted to rocky outcrops. This appears to relate to both exposure, which results in a slow annual growth rate of trees, as well as excessive browsing.

Vibrant lower plant communities are one of the differentiating features of Scotland's rainforest. Lower plants can act as colonisers but some species can be very sensitive to climatic change, especially air quality. They act as important indicators of the health of the woodland. Both woodlands on Ben Shieldaig have important assemblages of different types of lower plants. The pinewood has more lichen interest with a number of nationally scarce species such as *Platismatia norvegica* and *Arthothelium lirellans*.

The birchwood also has lichen interest with the easily identifiable species *Lobaria pulmonaria* (tree lungwort). However, the birchwood is more noticeable for its extensive assemblage of bryophytes and it has been noted as being "one of the most important sites for oceanic bryophytes in the north-west of Scotland".

Bryophytes include both mosses and liverworts and they are more diverse in Scotland than in other parts of the UK and also in many other parts of Europe. Scotland has just under 1,000 species of bryophytes, the woods of Ben Shieldaig have around 20% of these with 199 species. *Daltonia splachnoides* (Irish daltonia) is the rarest example in the woods, this small, shiny, usually dark green moss is nationally rare, known from only a handful of sites in Scotland and elsewhere in Europe is known only from western Ireland, this along with Beinn Eighe is the most northerly location in Europe. Although much of the interest here is in the birchwood one of the 12 nationally scarce species present on site *Glyphomitrium daviesii* (Black-tufted moss) occurs only in the pinewood. The site is considered of international importance for its oceanic bryophytes.

Throughout both woodland areas, oak is scattered at low cover with early-mature to mature trees on bouldery terrain and crags. Aspen is very rare, restricted to a few of the crags on Ben Shieldaig, and holly is rare and scattered.

The earlier growth stages of Scots pine – seedlings, saplings and maturing trees – are relatively abundant within the pinewood, indicating that Scots pine has been successfully regenerating widely for some time: based on the number of growth whorls per stem, this is estimated to have started first in the pinewood around 25 years ago, which would be consistent with the start of the WGS scheme. This pattern is replicated for birch, but most other tree species such as rowan, willow, holly and hazel are not successfully reaching maturity. This is likely because most seedlings and saplings of these species are being stunted by heavy selective browsing away from crags. Similarly, oak regeneration is only reaching the early mature stage where it is growing amongst boulders or on crags. Later growth stages – mature, old and dead trees – are mostly made up of Scots pine in the pinewood, along with birch in the birchwood and a small number of oak. Their distribution across the site is concentrated in difficult to access areas, particularly the platforms between successive cliffs in upper parts of the pinewood.

As earlier growth stages of most Scots pine trees are more abundant than later growth stages, it appears that the

woodland will likely become denser in future, though not more diverse. Further up the slopes of the pinewood, the woodland is naturally starting to thin out as some trees die, but undergrowth species like rowan and holly are unable to take advantage of increasing light as they are suppressed by heavy browsing.

Ground vegetation on Ben Shieldaig is dominated by common heather across much of the site, although purple moor grass is locally dominant within denser parts of the woodland and in the southern part of the pinewood. Bracken is widespread but found generally in small stands and never completely dense, though it has become more abundant in open areas of the woodland following the incidences of wildfire. Blaeberry, hard fern, bell heather and cross-leaved heath are widespread at low cover, and bramble, dog rose, honeysuckle, ivy and buckler ferns are local and suppressed by browsing/grazing. Ostrich-plume feather-moss – a moss associated with upland woodland – is frequently noted, and stony flushes with hooked scorpion-moss were noted along the southern part of the pinewood.

The Native Woodland Survey of Scotland shows there is 0% cover of invasive species in the woods within the Ben Shieldaig Estate boundary however there are a number of small *Rhododendron ponticum* scattered throughout the site. There are a number of possible seed sources for these, in Shieldaig village but also extensively on neighbouring properties to the east.

Shieldaig Woods SSSI lies within the Plantlife Important Plant Area (IPA) for Western Atlantic Woodland, i.e. the geographical area identified as Scotland's Rainforest. There is both 'Core Area' and 'Zones of Opportunity' throughout the site - spaces where the rainforest habitat has the potential to expand.

The pinewood provides a highly valuable source of seed for future woodland expansion. Indeed, neighbouring Kinloch Woodland has already used seeds grown from cones gathered on west Ben Shieldaig to establish native woodland across the coastal slopes of the North Applecross peninsula.

The genetic composition of the pinewood, along with a few other sites in Wester Ross, has been recognised as distinctive from other Scots pine in Scotland. Studies suggest that they colonised via a different route from pines in other parts of the country after the last ice-age.

Ben Shieldaig's pinewood has now been registered as a Gene Conservation Unit with the European Forest Genetic Resources Programme (EUFORGEN). A Gene Conservation Unit is a clearly mapped area of forest or woodland where dynamic gene conservation is one of the main management priorities for one or more tree species. The dynamic gene conservation approach emphasises the maintenance of evolutionary processes within tree populations to safeguard their potential for continuous adaptation. This includes managing sites to allow and encourage production of new seedlings and saplings.

Scientists have shown that the genetic diversity of pine is related to the diversity of the plants growing beneath its canopy. It is also essential for allowing the development of resilience to pressures such as climate change and tree diseases.

### **Significance**

Ben Shieldaig pinewood is one of the most significant Caledonian Pinewood Inventory sites; most westerly, closest to sea level, in good stage of regeneration and, along with a handful of other sites in Wester Ross, is genetically distinct from pinewoods throughout the rest of the country. The woodland at Ben Shieldaig is of particular significance as an

example of temperate rainforest, and one of the most important sites for oceanic bryophytes in the north-west of Scotland.

## **Opportunities & Constraints**

### **Opportunities:**

Whilst some species in the woodlands have been regenerating well, browsing impact, especially at the Northern end of the pinewood and in the birchwood has been sufficient to stunt the growth of species such as rowan, and partly prevent the regeneration of Scots pine from progressing to maturity. As a consequence, there is an opportunity to improve regeneration and mobility by installing new deer fencing and reducing the level of browsing. This would ensure that the woodlands are able to respond appropriately to climate change and counter past fragmentation.

The Ben Shieldaig pinewood has existing connectivity with other core areas of the CPI, such as on Kinloch. It may have existing connectivity with the pinewood on Shieldaig Island and old pinewoods between Rhuroin and along the Shieldaig coastline. There is an opportunity to safeguard existing connectivity through allowing diverse regeneration to take place and allowing deadwood to accumulate.

The site should be home to a wide range of specialist rainforest species particularly ferns, lichens, bryophytes and invertebrates, surveys of which have recently begun. There is an opportunity to improve our knowledge of these rainforest species and ensure the management of the site is aligned with their protection. This will require careful balancing of the grazing and browsing levels to achieve both the light levels required by lower plants and the tree regeneration required.

There is the opportunity to limit the impact of deer incursions into Shieldaig village, which have been increasing in frequency in recent years.

There is an opportunity to work with our neighbours to collaborate on land management, and share knowledge and resources to help achieve our conservation objectives for our estates and across the wider landscape.

### **Constraints:**

#### **Access:**

Whilst the A896 circuits the estate, there are no management tracks or trails, and few parking areas.

There are also access issues on the site itself with much of Ben Shieldaig consisting of steep slopes, crags, boulders and uneven, boggy ground.

#### **Herbivore Impact:**

Herbivore impact from deer is generally high throughout the woodlands and is impeding their ability to regenerate.

#### **Invasive and non-native species:**

Rhododendron ponticum is scattered modestly throughout Ben Shieldaig and can be controlled relatively easily, though there are still existing seed sources, such as in Shieldaig village, which could cause continuing issues.

#### **Disease:**

Whilst there is currently no evidence of tree disease being observed on Ben Shieldaig, tree diseases could be introduced

to the site by routine works or by members of the public visiting the site.

Currently there has been no Dothistroma needle blight (DNB) detected at Shildaig however this could present a significant risk without appropriate biosecurity measures in place.

Phytophthora pluvialis, a fungus-like pathogen known to affect a variety of trees including western hemlock, and Douglas fir, has been discovered nearby to Lochcarron – around 15 mins from Couldoran. Inspections will be required in the estate grounds and policies of Couldoran, which contains a number of non-native tree species, to see if there is any evidence of further spread.

#### Wildfires:

Future accidental wildfires could be started by people wild camping in the area; there is evidence of fire pits at a number of sites around the estate. Ground fire fuel loads are mostly high so Shildaig is considered to be at a very high risk of a wildfire spreading should one start.

#### Existing Services:

An 11 Kv power line runs down the estate, and through the pinewood in Compartment 3. A buffer zone of 10m is in place to ensure that any natural regeneration does not impact the overhead lines.

#### Climate change:

Shildaig may be at risk from climate change, which may make the site more suitable for oak than Scots pine (and oak is already a component of the site). The best way to mitigate this risk is to further enhance mobility so that Scots pine can establish at higher altitudes. This can be achieved by reducing browsing pressure, as Scots pine regeneration is already present widely along the upper margins of the pinewood.

### **Factors Causing Change**

#### Natural succession

Grazing, browsing, and ground damage by deer, or changes in behaviour as a result of deer management activities

Invasive non-native shrubs

Regeneration of non-native trees

### **Long term Objective (50 years+)**

The woodland and its features on Ben Shildaig are in favourable ecological condition, with varying ages and stages throughout the structure, balancing the needs of all the characteristic species and assemblages (e.g. lower plants). Canopy cover has increased throughout both existing sections of woodland, linking them together, as Scots pine and birch regeneration progresses to maturity, and palatable species like oak and possibly aspen are now better represented. Undergrowth is well developed and diverse, including regenerating canopy trees. Hazel is also abundant locally. Ground vegetation is now dominated by blaeberry, which has enhanced the quality of habitat for a wide range of invertebrates, birds and mammals. Dog rose, bramble, angelica and other palatable species are also much more abundant. Deadwood remains widespread and mostly made up of Scots pine, but will become more diverse in future. Rainforest communities of lichens and lower plants are maintained and enhanced.



## Short term management Objectives for the plan period (5 years)

### Woodland Management:

- 1) Identify and map out a buffer zone around the existing areas of woodland for natural regeneration.
- 2) Install natural regeneration transects to put a baseline in place and monitor the rate of natural regeneration.
- 3) Condition Monitoring to monitor the ecological health of the woodland is in place, according to guidance developed by the Alliance for Scotland's Rainforest and specifically regular monitoring of bryophytes
- 4) Assess the condition of the designated features of the SSSI and identify any new features which might be present
- 5) Identify and record veteran and ancient trees using the Ancient Woodland Inventory

### Fencing:

- 6) Repair or replace current stock fence bordering the Shieldaig Common Grazings and existing deer fence which runs from Loch Dughail over the ridge of Ben Shieldaig to Loch Damh.

### Deer Management:

- 7) Recruit resource to deliver deer management and monitor and repair fence lines.
- 8) Formulate a Deer Management Plan for the site to run in conjunction with the site management plan, informed by the information gathered through the surveys.
- 9) Undertake culls to exclude all deer from within the fencelines of compartments 2 and 4.
- 10) Undertake culls to reduce the impact of deer browsing to low within compartments 1 and 3.
- 11) Biannual thermal imagery survey to be undertaken to provide information on species, density and distribution across the estate, and more regularly.
- 12) Regular Annual Herbivore Impact Assessment (HIA) to be undertaken to assess overall browsing impact.

### Invasive Species:

- 13) Survey and map out existing invasive species on both Ben Shieldaig and Couldoran, including both *Rhododendron ponticum* and cotoneaster.
- 14) Using mechanical or chemical treatment to remove all *Rhododendron ponticum* from Ben Shieldaig.
- 15) Inspect annually specific areas of infestation, as well as the estate generally, for signs of regrowth and remove as required.

### Safeguarding rainforest species:

- 16) Conduct an ecological assessment on lichens, bryophytes and lower plant communities to identify current species present and potential for variety to inform decisions regarding management.
- 17) Identify areas where only gradual regeneration will be encouraged to support lichen requirement for open areas as well as other trees within reach to spread.

### Invertebrates:

- 18) Prioritise invertebrate families to survey looking first at species that may be impacted by future management and those with identified high priority species.
- 19) Monitor presence of vulnerable Azure Hawker dragonfly and associated deer wallows in woodland habitat to assess if intervention is required once browsing pressure has reduced.
- 20) Allow fallen deadwood to accumulate through the woodlands.

### Protect from diseases:

- 21) Survey woodlands on both Ben Shieldaig and Couldoran, and especially the non-native species around Couldoran policies, to assess any possible disease.
- 22) Create a Disease Mitigation Plan for the estate outlining possible risks, and which mitigations, including biosecurity measures, can be put in place.

Wildfire management:

- 23) Fire Management Plan to be updated annually, which will include helicopter assistance should it be required. This will be coordinated with neighbouring estates and shared with volunteers.
- 24) Create a network of volunteers who can assist with wildfire management, in roles which do not impact their safety.
- 25) Wildfire signs to be installed whenever fire risk is high alongside regular patrols by estate staff.

## 4.2 Mixed Habitat Mosaic

### Description

The habitat mosaic of Ben Shieldaig is made up of several distinct components arranged in an irregular pattern of small and large patches. The topography reflects the wider landscape of Torridon, consisting of mostly sandstone mountains with glens in between.

Overall, approximately 93 ha of Ben Shieldaig is covered by woodland, the majority of which is Ancient Semi Natural Woodland and contains rich biodiversity. The remaining area is currently open ground, predominantly a mix of open heathland and wetland, which includes a number of small freshwater lochans.

The most extensive habitat at Ben Shieldaig is wet heath interspersed with numerous rock exposures. Wet heath vegetation commonly occurs on peat which is less than 0.5 m in depth or on peaty mineral soils that are often waterlogged. Deergrass, ling heather cross-leaved heath and purple moor-grass are the key components of this vegetation. Deergrass is prominent in the wet heath at Ben Shieldaig since ling heather appears to be kept low by browsing and Cladonia lichens are frequent in this shorter sward.

Reducing browsing sufficiently over a sustained period should result in natural tree regeneration since several saplings occur, such as rowan, holly and birch, in the wet heath, although they are heavily browsed at present. This is particularly the case in rocky areas or with slightly drier conditions associated with stands of scattered bracken.

This habitat is likely a result of anthropogenic influence, derived from woodland following a long history of burning and grazing. Natural regeneration will therefore be patchy at first until soil conditions began to change – facilitating an increase in woodland cover. The best natural regeneration in the wet heath at Ben Shieldaig can be seen along the road edge of Compartment 1. Birch in particular is prominent on the freely-draining banks at the edge of the wet heath. This natural regeneration may have been helped by the frequent disturbance to large herbivores from passing traffic on the A896 as much as by the freely-draining nature of the soils.

Livestock previously grazed on the open hill of Ben Shieldaig until the Woodland Trust took on ownership in 2019. Livestock were then excluded from the site. Early indications are that this has allowed more natural regeneration to take place in the Glen, especially alongside the Abhain nan Lub.

Creeping willow and eared willow also occur in the wet heath and are often heavily browsed. These willow species may

provide an opportunity to aid woodland establishment. Like other diverse plants on Ben Shieldaig, and like 95% of all terrestrial land plants, willows rely upon soil fungi forming mutualistic associations with their roots to enable survival and enhance nutrient uptake. These mycorrhizal associations are essential for the healthy growth of the plants and are particularly important during establishment and are also actively involved in continuing defence against soil pathogens and in enhancing survival under stressed conditions (e.g. drought).

Willows can form both ecto- and arbuscular mycorrhizas. An initial survey at Ben Shieldaig noted that willows are scattered across the site outside the woodland areas. Their ability to form arbuscular associations allows them to spread freely across the site. This is key in facilitating woodland expansion, as once willow plants become established, any ectomycorrhizal fungal spores landing near them will also be able to colonise the roots. The willows could then potentially act as reservoirs, or islands, of ectomycorrhizal fungi in areas otherwise dominated by ericoid and arbuscular plants and fungi. Any birch or pine seeds lucky enough to germinate near the willows could therefore become colonised by the ectomycorrhizal fungi and survive and thrive.

The great majority of the willows in the survey were found in groups, including mixed species groups, indicating that once growing, single plants facilitate the establishment of other plants. This was not simply a seed source effect as many of the groups contained different willow species. The willows are acting as natural nurseries for birch and Scots pine seedlings. Very few, if any, of the latter are to be found growing without a willow in close proximity. Additionally, the larger the group of willow trees, the greater the number of birch and pine seedlings found within it. This points towards an important role for willows in supporting woodland expansion across Ben Shieldaig.

The dry heath at Ben Shieldaig is generally associated with the steepest ground and inland cliffs. Where this habitat occurs on north-facing slopes among boulders, the vegetation is also known as liverwort heath and has high conservation value owing to its international rarity. This type of dry heath is one of the Annex 1 habitats for which the Loch Maree Complex SAC is designated. It is characterised by the coexistence of a number of oceanic liverworts growing in often large and colourful cushions with *Sphagnum capillifolium* and various bulky pleurocarpous mosses beneath a canopy of ling heather with scattered shoots of blaeberry. Eleven of the 16 liverworts concerned have a Northern Atlantic distribution and some occur in other habitats but only in the liverwort heath of northwest Scotland do they occur together.

Given the high conservation value of liverwort heath, some grazing by large herbivores can be beneficial but at low enough levels to permit a good coverage of ling heather. Previous studies have demonstrated that dense woodland regeneration inside exclosures can have a detrimental impact on liverwort heath vegetation.

The extensive summit area that runs from the northwest to the southeast has a great deal of exposed rock with wind-blasted wet heath vegetation that has created gaps conducive to the frequent occurrence of dwarf juniper (*Juniperus communis* ssp. *nana*). Patches of blanket bog occur in scattered hollows across this summit area; these may have survived historical fires or may have just accumulated peat more readily owing to their shallow gradient. Hare's-tail cottongrass is abundant in these locations with ling heather in the canopy and sphagnum moss constant below. There are also numerous oligotrophic lochans in the summit area.

Through Glen Shieldaig and straddling either side of the meandering Abhainn nan Lùb the vegetation is mainly represented by mire with stands of blanket bog and wet heath. This is largely dominated by purple moor-grass with bog myrtle locally frequent with cross-leaved heath. Blanket bog also occurs over a number of other areas, particularly alongside Loch Damh.

Throughout the large area of wet heath at Ben Shildaig there are occasional small stands of other habitats, such as marshy grassland and places where bracken is the main canopy species. Semi-improved acid grassland is associated with the roadside embankment that runs northwest to southeast – often as a narrow strip that runs parallel to the road that perhaps resulted from re-seeding after works had been completed. Elsewhere, this grassland is associated with places where livestock may have gathered historically, such as at Rèidh-nan-uaig. A small patch of acid flushed vegetation also occurred at Rèidh-nan-uaig in which rushes were abundant in the canopy and sphagnum moss was frequent beneath as groundwater drained into the channel.

Much of what is now wet heath vegetation would have once been wooded, judging from the presence of woodland indicators throughout such as ivy, honeysuckle and various tree species in locations which may have survived browsing and burning. Evapotranspiration was dramatically reduced following tree removal and soils became much wetter – especially during the Atlantic climatic period. Where peat could accumulate, on land where the gradient was shallow, the vegetation shifted towards blanket bog but wet heath developed on more sloping terrain. Grazing and burning are likely to have then prevented the wet heath at Ben Shildaig from returning to woodland.

Whilst deliberate burning no longer occurs and browsing impacts will be reduced, any natural regeneration on the open hill will likely be slow and limited in scale. This is primarily due to challenging soil conditions, a result of erosion and nutrient loss over the years.

### **Significance**

The mosaic of woodland with open ground habitats in an intimate mix has created very diverse habitat.

The biodiversity of the site has been recognised with the SSSI and SAC designations within its boundaries. The development of native woodland through establishment and natural regeneration will extend and buffer existing semi-natural woodland across site, forming a significantly larger core habitat area. This will increase connectivity with other ancient woodland sites across the area.

This large, contiguous area of semi-natural woodland is important in the context of climate change, as it likely to be more stable and resilient than the more fragmented woodland typical of the Highlands.

The mixed habitat mosaic supports a range of species regarded as wholly reliant on the habitat provided by the site. Management of the mixed habitat mosaic contributes to the Woodland Trust objectives to protect, restore and create native woodland.

### **Opportunities & Constraints**

#### **Opportunities:**

Connectivity with existing ancient woodland on the site could be improved more widely in the area to other significant ancient woodlands such as the Doire Damh on Ben Damph and Rassal Ashwood on Lochcarron Estate. Connectivity with other CPI sites in particular could be improved, to Taodail and Attadale, 15km and 16km to the south east respectively, followed by Loch Clair around 16km to the east.

With a significant number of mature native species there is a natural abundant seed source on site that can be harnessed for enrichment planting efforts.

There is the opportunity to monitor the impact of the proposed woodland creation on soils and carbon and trial and monitor experimental techniques for woodland creation, including direct seeding and alternatives to fertiliser.

Increased tree cover and leaf litter will begin to alter the acidity and composition of the soil, which has been degraded over centuries and lost much of its nutrients.

Regeneration of Ben Shieldaig involving planting of seedlings could be greatly facilitated by coordinating planting into areas supporting existing appropriate mycorrhizal inoculum.

The site is within the Wester Ross National Scenic Area. The Shieldaig Woods are SSSI & SAC designated. Whilst the visual impact of any proposed fence lines will need to be carefully considered, there is an opportunity to improve the character and scenery of the landscape through extended tree cover. Potential fence lines could be designed to divert fencing away from the roadside and reduce visibility wherever practical and possible.

#### Constraints:

##### Deer:

Deer densities in the area, at 5-6 per square km, are too high to enable regeneration of the existing woodlands. Any signs of regeneration are currently heavily browsed.

##### Disease:

The existing pinewood is a Caledonian Pinewood Inventory site, guidance on the risk of DNB infection recommends that no planting of Scots pine which hasn't been grown on site is undertaken within the buffer zone.

##### Existing Services:

An 11 Kv power line runs down the estate, on the Ben Shieldaig side of the Glen. A buffer zone of 10m will be in place to ensure that any planting does not impact the overhead lines.

There are two telecommunications masts at NG851484. A 50m buffer zone will be created around these masts where no planting will take place.

##### Access:

Access to the western part of the property is available by foot (and in places by ATV) directly from the A896. However, the eastern parts of the property along the shores of Loch Damh are less readily accessible. Access for fishing on Loch Damh will need to be maintained. Public access for recreation, particularly hill walking, will also need to be maintained.

##### Soil Conditions:

The soils are predominantly peaty podzols and peaty gleys. There are areas of deep peat associated with priority mire habitat present. These are excluded from planting. - All areas of deep peat (50cm plus) have been excluded through extensive soil and peat depth surveys, in line with UK Forestry Standard guidance. In addition, a precautionary approach has been undertaken, all substantial areas where the peat depth is greater than 30cm have been excluded from planting in order to reduce any potential disturbance of carbon in these organic soils.

##### Archaeology:

There are significant archaeological remains which could be adversely impacted by planting plans. A buffer zone of 10m has been placed around any archaeology highlighted during the walkover survey and no trees will be planted within

these areas.

**Wildfire Management:**

Future accidental wildfires could be started by people wild camping in the area and there is evidence at a number of sites around the estate of fire pits. Ground fire fuel loads are mostly high so Shieldaig should be considered to be at a very high risk of a wildfire spreading should one start. This risk will be minimised through fire planning, and through the planting of native broadleaves, which are less susceptible to fire, to act as natural fire breaks.

**Factors Causing Change**

Natural succession

Grazing, browsing, and ground damage by deer, or changes in behaviour as a result of deer management activities.

Invasive non-native shrubs

Regeneration of non-native trees

Encroachment of bracken

Climate change

**Long term Objective (50 years+)**

Woodland cover has been substantially extended across the property where appropriate, through natural regeneration where possible and through planting where believed to be necessary. This has contributed to nature recovery, increasing the area of core woodland, whilst reducing fragmentation of the habitat network of woods and trees in the area. Connectivity from Shieldaig Woods to woodland on adjoining ownerships, and to small, isolated remnants in gullies and crags across the property, will have improved.

Through planting of appropriate native species which are believed to be unrepresented due to herbivore pressure and historic management, the woodland and scrub habitat will be diversified and its resilience in the face of a changing climate and pests and diseases will be increased. In addition, the diversity of habitat present on the property will be increased allowing a valuable mosaic of open habitat, scrub and woodland to develop offering opportunities and benefits to key species such as red squirrel whilst supporting the ecological restoration of natural processes.

**Short term management Objectives for the plan period (5 years)**

Fencing:

- 1) New deer fencing to be installed around compartment 4 with two cattle-grids to the north and south of Glen Shieldaig.
- 2) New deer fencing to be installed around compartment 2, with 4x4 access track running through.
- 3) Existing deer fence which runs over the ridge and which joins the compartment 2 & 4 enclosures to be repaired.

Woodland Creation:

- 4) The following planting for Compartment 2 will take place from January 2024 and will deliver:
  - a. 64.48 ha of the W4 Upland Birch Model – predominantly birch and willow, but with other native species – with an average of 1600 stems per hectare, and approximately 10% open ground.
  - b. 3.22 ha of planting of low density Native Broadleaves with an average of 500 stems per hectare and 24.79 ha with an average of 1100 stems per hectare, and approximately 30-50% open ground.

- 5) The following planting for Compartment 4 will take place from January 2025 and will deliver:
- a. 47 ha of the Native Scots Pine Model – predominantly Scots pine and birch.
  - b. 137 ha of the Upland Birch Model - predominantly birch and willow, but with other native species – with an average of 1600 stems per hectare, and approximately 10% open ground.
  - c. 15.4 ha of low density Native Broadleaves with an average of 500 stems per hectare and 58.6 ha Model with an average of 1100 stems per hectare, and approximately 30-50% open ground.
- 4) A woodland creation delivery plan for Compartment 5 will be developed. This will investigate the potential of working with neighbours to establish a wider strategic fence which will protect the new woodland from deer.
- 5) An operational plan will be developed, in collaboration with contractors delivering the works, to identify the proportion of inverse mounding and screef planting to be used (area of vegetation approximately 30x30cm removed manually to create planting position).
- 6) Investigate the potential planting and regeneration of montane species.

Access:

- 7) Establish a new 1.4km 4x4 access track from the A896 west of Balgy Lodge along the eastern boundary of the estate to Loch to assist with woodland operations in Coire Fionn-allt and general estate management.

Tree Procurement:

- 8) Seed of local origin to be collected annually from the site and, with permission, on neighbouring estate using volunteers.
- 9) Investigate the feasibility of setting up a nursery facility on site at Couldoran, where local seed could be grown on and used for woodland creation.

Deer Management:

- 10) Undertake culls to exclude all deer from compartments 2 and 4.
- 11) Undertake annual culls throughout compartments 5 and 7:
- a. Initially according to recommended cull targets provided by the South West Ross Deer Management Group for stalking on out-bye land and based on browsing impact.
  - b. However, depending on the outcomes of Objective 4, this cull target may be increased in the future to enable woodland creation.
- 12) Biannual thermal imagery survey to be undertaken to provide information on species, density and distribution, within the fenced-off areas, and generally across the rest of the site.
- 13) Regular Herbivore Impact Assessment (HIA) to be undertaken to assess overall browsing impact.

Surveying & Monitoring:

- 14) A monitoring plan will be in place, identifying further surveys required to build up a strong ecological baseline with which to monitor change.
- 15) Further surveys will take place to provide a baseline for soil and mycorrhizae communities.

Research & Demonstration:

- 16) A Research Project will be designed which will monitor the impact of the proposed woodland creation on soils and carbon and trial and monitor experimental techniques for woodland creation.

Invasive Species:

- 17) Removal of non-native tree species to take place where they pose a threat to public safety or have an impact on

habitat restoration objectives for the site.

18) Inspect annually specific areas of infestation, as well as the estate generally, for signs of regrowth and remove as required.

Wildfire management:

19) Natural firebreaks of broadleaf species to be incorporated where possible into the design of woodland creation with compartments 2 and 4.

### 4.3 Connecting People with woods & trees

#### Description

The mountain of Ben Shieldaig is a majestic presence over the small but vibrant coastal village of Shieldaig. Although there are remnants of older settlements all around the area, including a large settlement at Balgy, the village of Shieldaig itself dates back to the early 1800's. With such a presence it is inevitable that the history of the mountain is entwined with that of the people around it. Around 100 residents live permanently at Shieldaig and the local primary school is currently expanding, to the south of the estate the villages of Kishorn have a population of around 80.

Gaelic was the dominant language of the region and this is evident on the maps of the area. Gaelic place names give insight into the historical relationship between people, culture, nature and landscape. The estate has plenty of examples; Sròn an Fhithich (the hill end / nose of the raven), where ravens still nest today, and Loch nan Eun (the loch of the birds). Although interestingly the name Shieldaig is derived from Old Norse Síld-vík which means Herring Bay.

The area has a thriving tourism industry, according to a recent STEAM report commissioned by Wester Ross Biosphere, around 450,000 visitors come to the Wester Ross area each year. Tourism has increased in recent years with the popularity of the NC500, the feeling within local communities is that visitors are now more transitory, not necessarily stopping to make use of local facilities. A survey conducted by Wester Ross Biosphere suggested around 54% of visitors stay in the region for 3 nights or less.

The nearest facilities to the estate are in Shieldaig where there is a public toilet run by the community, a village shop, hotel and café. There is also a café at Tornapress, just south of the estate.

Nearby the Torridon (National Trust for Scotland) and Beinn Eighe National Nature Reserve have active ranger services and provide a number of guided walks and interpretive events. There are also active community groups in Shieldaig and Lochcarron, an Outdoor and Woodland Learning Group for the West Coast and several ranger services that we can work with on engagement opportunities.

The unique ancient rainforest remnants and their associated lower plant communities along with the spectacular panoramic views, the wild landscape and the diverse wildlife on the estate are all features that will draw people into the site.

Since purchasing Ben Shieldaig in 2019 estate staff have worked closely with the community in Shieldaig as well as local landowners and organisations. With the purchase of Couldoran they will work to develop these same close ties with the neighbouring communities.

Access:



The site is not visited frequently due to lack of paths and infrastructure. In the 2019 community survey only 27% of respondents said they visited the site weekly (or more regularly). This is low in comparison with most Woodland Trust sites, where this would be around 50%. The anecdotal feedback from the community is that the only visitors to the site from outside the area are a limited number of hardy hillwalkers. Even then this number is low as the site is not one of the hills to 'bag' (ie Corbetts/Munros etc). This view is backed up by data from WalkHighlands where only 52 walkers have 'bagged' Ben Shieldaig compared to over 1000 for neighbouring Corbett Ben Damph.

The visitors who do come are frequenting the site to walk, enjoy the peace and tranquility and also to spot wildlife.

There is only one path on Ben Shieldaig at the moment, a historical track from Balgy to the east side of the birchwood. The line of this is indistinct and hard to follow. On neighbouring land there is a track that leads to the north shore of Loch Damh from Balgy, a track that leads to the pinewood from the village through the common grazings and a number of waymarked trails in the Kinloch community woods.

There are two areas of rough parking on the estate, a small gravel parking area at the south end of Loch Dughail (NG 829 513) with space for up to 6 cars and a layby at the south end of Ben Shieldaig (NG 846 485) with space for 2 cars.

Infrastructure is limited to a gate halfway along the pinewood and another by the parking area at Loch Dughail (NG 829 513). There are also two stiles over the deer fence one at Loch Dughail, the other towards the ridge at the top of the mountain. Both are fairly old and in need of regular maintenance. There are currently no signs indicating the name or ownership of the site.

The main barriers to access on the site are the lack of paths and infrastructure, parking is also limited. The steep and rocky nature of the terrain is also a barrier to many people.

#### Interpretation and Education:

Currently there is limited physical site interpretation, digital interpretation is via the Woodland Trust website at <https://www.woodlandtrust.org.uk/visiting-woods/woods/ben-shieldaig-estate/>

Following a workshop with stakeholders from the community an interpretation plan was published in 2020.

During 2021 a number of interpretive and educational events took place on site including a guided walk to the summit, dragonfly ID training and a themed activity trail for COP26 held in conjunction with Beinn Eighe national nature reserve, James Hutton Institute and Aberdeen Science Centre. Work is also underway to develop some bespoke seating for the Shieldaig playpark to coincide with the arrival of new equipment, purchased as a result of community fundraising.

At the start of 2022 we held our first activity with the local Shieldaig primary school, a seed collecting morning where we took the children to the pinewoods for outdoor activities relating to the pinewoods which culminated in collecting pine cones from the trees which will be used in our planting.

In 2021 the site became part of the Wester Ross Biosphere Sustainability Trail and a post has been erected at the south end of Loch Dughail. New wildfire signage was also developed in preparation for the 2022 season.

#### Volunteering:

A growing number of volunteers have been getting involved in the project, with around 30 people having participated in activities so far.

Squirrel monitors have been undertaking work to see how the reintroduced squirrel population are faring since 2019.

In 2021, in partnership with Wester Ross Biosphere, an online training event and field day at Beinn Eighe took place to help people learn about ancient trees and record trees for the Ancient Tree Inventory.

2021 also saw the start of our seed collecting project. Over 20 volunteers signed up for this and various events collecting birch, hazel, oak, rowan, alder, holly and Scots pine have taken place.

Communications:

Ben Shieldaig now has its own Facebook page <https://www.facebook.com/WTBenShieldaig> a great way of finding out what is going on around the estate.

Quarterly updates are also posted on the Shieldaig Community website and posters of events are regularly displayed in the local shops.

### **Significance**

Ben Shieldaig and Couldoran are uniquely positioned to work with neighbouring estates and local stakeholders to approach habitat restoration at catchment and landscape-scale. This will improve the resilience of the land and its ecosystems in the area whilst benefitting the communities that live in and around it.

Improving access to the estate will give many people the opportunity to explore a landscape which has previously been perceived as inaccessible.

By engaging with and enthusing the communities surrounding the estate we can nurture future generations of custodians of the habitats and wildlife the site supports.

Working with and supporting a valued network of volunteers will make the ambitious plans for the site possible.

Tapping into the significant volume of tourist activity can help bring more value to the community. Encouraging slow tourism helps increase the length of visitors' stays; providing an exceptional experience that helps develop their understanding of local heritage and support for landscape-scale habitat restoration within Scotland's rainforest zone.

### **Opportunities & Constraints**

Access:

Opportunities:

As the only Woodland Trust Scotland site in Wester Ross there is a great opportunity to engage both with local communities and visitors to the area about the work of the organisation and to raise awareness of Scotland's rainforest.

With the purchase of Couldoran there is the opportunity to consolidate the name of the estate. After comprehensive

consultation, the name will be changed to Gleann Shìldeag, with the Gaelic translation being the primary name and Glen Shieldaig being used as supplementary where possible. This will encompass both Ben Shieldaig & Couldoran - both of these names will continue to be used however to define their particular areas.

The new name reflects the opportunity to interpret the importance of Gaelic to the cultural and natural heritage of the area. Further options to highlight this relationship will be explored through our interpretation plan

68% of respondents in the 2019 survey believe the mountain should be made more accessible also 84% of visitors to the area are over 35 and have interest in landscapes and wildlife. Providing trails and improved path infrastructure (gates etc) for both these audiences will allow substantially more people to experience and connect with the woods and habitat restoration work on the estate.

Currently, there is no access to Loch Damh through the estate, though there is a quad track on neighbouring ground to the west of the Balgy river. A new access track along the eastern boundary of the estate could provide a good opportunity to link up with existing trails and providing a starting point for a more accessible route to the summit of Ben Shieldaig from the eastern side of the estate.

There is an opportunity to work with neighbours and link up with existing trails previously mentioned on neighbouring land to provide some exceptional circular routes in the area. The old path from Balgy to the village could be redefined and extended through the base of the birchwood to provide a circular summit route, and a path through the pinewoods could link existing the path through the common grazings with the path that leads out of Kinloch woods at the south end of Loch Dughaill.

In order to facilitate and manage sustainable visitor access, it would help to improve the limited parking for visitors. The existing small hardstanding area at the south end of Loch Dughaill could make a useful formal parking area, and could become the main access point for walking trails with interpretation and a picnic area. There is currently space for 6 cars however this is on an informal basis and there is the opportunity to formalise these spaces, with improved access. Formalising this parking area could help reduce the risk of wildfires in the area by reducing the number of campervans who view the site as wild with no restrictions. There is the opportunity to install more robust signage against wildfires and ensure regular patrols to watch for antisocial visitor behaviour, especially during busy periods.

The layby at the south end of Glen Shieldaig could also make a good parking area as the starting point for the traverse of the Ben Shieldaig ridge, also giving a great viewpoint along the glen to the pinewoods where a substantial amount of planting will be taking place. This provides a great interpretive opportunity to show the changing landscape over time. A car park of 3 spaces could be explored here, with a further 3 for staff/contractor spaces.

#### Constraints:

There is a need to balancing provision of trails with protection of ancient woodland and wildlife as increased visitors could have a detrimental impact on the site, both from an ecological perspective but also impacting the characteristics that give Ben Shieldaig its feeling of untamed wilderness. In particular, increased visitors could lead to an increase in the incidents of wildfires and littering in the area.

The site is designated and so work on paths within the restricted area will need to be agreed with NatureScot and also align with internal Woodland Trust policy on protection of ancient woodland.

Any developments such as parking spaces have the potential to increase the risk of wildfires and encourage overnight stays, if not properly monitored and managed. Such spaces will require extensive engagement with local stakeholders and neighbouring landowners and will require planning permission.

The nature of the terrain makes providing all abilities access trails on Ben Shieldaig challenging, consideration needs to be given to Equalities Act (2010).

The desire is not to attract more visitors by improving access (in the community survey an increase in visitors was not viewed favourably) but to encourage existing visitors to spend more time in the area.

There is limited public transport to access many parts of the estate.

Interpretation & Education:

Opportunities:

Unique opportunity to contribute to sustainable community development, providing opportunities for education (working with principles of learning for sustainability), connection with nature and employment.

To work with local schools, other education providers and organisations such as the Wester Ross OWL group to inspire children to connect with and value nature.

With a yearly events calendar we can create a wide range of interpretive and educational experiences for visitors of all ages across a variety of subjects. Harnessing the wealth of different expertise in the local communities will enable us to provide an enjoyable and stimulating schedule.

Providing effective and creative physical and digital interpretation will inspire audiences to consider the threats facing Scotland's rainforest and encourage them to contribute towards its protection and expansion.

By engaging with the local communities, we can help bring to life the significant archaeological remains on the site and the aural histories of the area to highlight its unique heritage and document the community's evolving relationship with the estate.

Constraints:

There is limited transport available at Shieldaig primary school.

Due to the remote nature of the area the site is a distance away from some communities in Wester Ross.

Sites for physical interpretation are dependent on progress of access infrastructure (ie parking, trails etc).

Mobile signal on site is limited which may constrain digital engagement ie live streaming, use of QR codes etc

Volunteering:

Opportunities:

To grow the skills base within the local community, helping people to gain valuable practical conservation experience

whilst helping deliver management objectives for the estate.

By offering a wide range of volunteering opportunities for all ages and abilities we can help people to connect with nature in a sociable way, with the associated health benefits this brings.

Volunteering can help us to connect to and learn from a diverse group of people with a wide range of experience that can be valuable to the project.

Developing citizen science programs like the Ancient Tree Inventory and biological recording in the local area provides an excellent opportunity for engagement and socialising whilst making a valuable contribution to scientific data sets.

**Constraints:**

The amount of tasks we can currently offer is limited but, with the acquisition of the new estate, commencing tree planting and development of access infrastructure, more opportunities will be available.

**Communications:**

**Opportunities:**

Raise awareness of the work at Ben Shieldaig within the community and general public.

As we develop access opportunities use digital tools such as Tripadvisor and social media channels to attract visitors.

Attract walkers by publicising new walking routes via WalkHighlands.

Work with social media influencers to spread the message about our ongoing conservation work.

Work across a variety of media to engage with as wide an audience as possible.

**Constraints:**

The current website used to provide community updates is hosted by the Shieldaig Community Association and file size is limited, meaning it is hard to show images and other large files on the site.

Audiences use a variety of media, not always digital, social media has multiple channels, very hard to make sure all interested parties find out about relevant events, etc.

**Factors Causing Change**

Staff changes would have an impact on the relationships built up within the local communities, likewise should significant changes occur in the relative community and partner groups we work with.

An increase in footfall could cause damage to the environment and infrastructure on the estate and also an increase in antisocial behaviour such as inappropriate parking and irresponsible access. The risk of wildfires could also increase.

Changes local in local tourism, for example the NC500 route and its popularity could change the dynamics of the type of visitor in the area and consequently the amount of visitors that would frequent the site.

### **Long term Objective (50 years+)**

Ben Shieldaig is viewed with pride by the surrounding communities who value it for its wildlife, peace and tranquility and people from around the world talk about the ground-breaking habitat restoration that has taken place here, helping to ensure the long-term survival of Scotland's rainforest and flagship species such as red squirrel.

The site is a popular destination with both local residents and visitors. Infrastructure is sufficient to support between 5,000 and 10,000 visitors each year, enough to enthuse a wide audience about Scotland's rainforest without detrimentally impacting its unique wild character. Responsible visitor access is encouraged and managed so that threats of anti-social behaviour and increased wildfire risks are reduced. A network of tracks winds through the estate allowing visitors to enjoy both the ancient and growing woodlands and the thriving mosaic of habitats. Key parking areas allow visitors to easily stop and access the site or enjoy a leisurely picnic in fantastic surroundings.

An established program of educational and interpretive events is inspiring residents and visitors alike to advocate for Scotland's rainforest. Regular engagement with the local schools and younger residents has ensured new generations grow up caring for and protecting the unique woodlands.

A passionate network of volunteers help to us to meet and exceed our expectations on the site ensuring we have robust monitoring, contributing to citizen science and helping with a diverse range of tasks.

Regular updates to the local communities ensure everyone knows the latest about progress and upcoming events and activities. While utilising the best advances in technology has enabled us to connect with and inspire global audiences.

### **Short term management Objectives for the plan period (5 years)**

Access:

- 1) Install name signs at entrances to, and strategic points on, the estate.
- 2) Install wildfire signage during times of high fire risk.
- 3) Continue to consult with neighbours, local communities and other stakeholders to explore opportunities for improving and formalizing parking areas at Loch Dughail and in Glen Shieldaig.
- 4) Get baseline of visitor numbers to the parking area at Loch Dughail
- 5) Consult with partner organisations (Highland Council / Paths for all / NatureScot) and neighbouring landowners to create a plan for development of paths and associated infrastructure on the estate, including how to monitor usage and impact.
- 6) Develop a vehicular access track to the north of Loch Damh to help with access for tree planting and wildlife management.
- 7) Assess potential for access improvements on the new ground at Couldoran.
- 8) Adopt and develop a framework for monitoring the impact of visitors on the estate (eg 'limits of acceptable change').

Interpretation / Education:

- 9) Develop bespoke rainforest inspired seating for the new playpark in Shieldaig.
- 10) Work with partner organisations, volunteers and expert contributors to arrange an all day, family friendly Bioblitz at Ben Shieldaig / Couldoran raising awareness of the work we do, encouraging involvement in Citizen Science and

improving our knowledge of the species present on site

- 11) Create, promote and deliver a yearly calendar of interpretive and educational events working in association with relevant partners and providers.
- 12) Host a skills share session for the Wester Ross OWL group.
- 13) Develop a 3 year plan for interpretation on the estate (in line with planned access improvements).
- 14) Work with stakeholders to implement the plan and create a suite of on and offsite interpretive products that develops people's connection with and understanding of the estate and the work that's being done, this may include but is not limited to guided walks, interpretive panels and digital media.
- 15) Host regular outdoor learning sessions with the local primary school in Shieldaig, develop relationship with primary school in Lochcarron.

#### Volunteering:

- 16) Expand the range of volunteering opportunities available on the estate:
  - a. Initiate Woodland working group.
  - b. Formalise role for Ecological monitoring and surveying volunteers.
- 17) Recruit at least 5 new volunteers from around the area for the existing squirrel monitoring and seed collection projects.
- 18) Undertake yearly surveys of red squirrel presence on the estate and in the wider area.
- 19) Formalise the tree regeneration and bryophyte monitoring methodology and recruit volunteers.
- 20) Organise Ancient Tree Inventory outings (at least 1 each year) and develop lead volunteer role to assist.
- 21) Ensure that volunteers feel valued, consulted and rewarded by providing networking and training opportunities and hosting at least one volunteer gathering each year.

#### Communications:

- 22) Attend local events such as the Shieldaig fete as an opportunity to talk to people about the project.
- 23) Trial a community newsletter to help raise awareness of the estate and inspire people to get involved.
- 24) Work with the Red Squirrel Survival Trust and Dani Connor 'Queen of Red Squirrels' filmmaker to create a film exploring the need for habitat restoration work in red squirrel conservation and the role that communities play in that work.

## 5. WORK PROGRAMME

Year	Type Of Work	Description	Due Date
2022	AW - Management Access Maintenance	Works associated with the maintenance of management access infrastructure and tracks Such as repairs to vehicle entrance points, maintaining vehicle bridges and repairing / reinstating surfaced management access routes.	March
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	March
2022	Site Rent		March
2021	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	March
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	April
2022	Utilities - Electricity		April
2022	Utilities - Electricity		April
2022	CS - Planning Permissions / Designs	Use of external consultants to undertake planning permission designs, supporting documents, oversee planning application process and presentation to planning committees	April
2022	CS - Planning Permissions / Designs	Use of external consultants to undertake planning permission designs, supporting documents, oversee planning application process and presentation to planning committees	April
2022	CS - Planning Permissions / Designs	Use of external consultants to undertake planning permission designs, supporting documents, oversee planning application process and presentation to planning committees	April
2021	Building - Repairs & Maintenance		April
2022	CS – Legal Fees (ED)		May
2022	PE - Events - General	Provision of materials needed to support a WT event / guided walk such as refreshments / shelters / mobile toilets	May
2022	Utilities - Electricity		May
2022	AW - Management Access Maintenance	Works associated with the maintenance of management access infrastructure and tracks Such as repairs to vehicle entrance points,	May



Year	Type Of Work	Description	Due Date
		maintaining vehicle bridges and repairing / reinstating surfaced management access routes.	
2022	Utilities - Electricity		May
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	May
2022	PC - Deer Control - Shooting	Works associated with deer management by shooting – such as stalker costs, high seats, signage, maintenance of tracks and open ground provided specifically for deer management etc	May
2022	SL - H&S Signage	Provision of on-site signage both temporary and permanent to alert visitor to safety risks or measures	May
2022	Building - Repairs & Maintenance		May
2022	SL - Safety Inspections / Reports	The provision of external consultants/contractors to provide specialist advice / inspections undertaken to assess safety and/or legal obligations of features such as bridges, walls, mineshafts and other site infrastructure	May
2022	Utilities - Electricity		May
2022	Utilities - Electricity		May
2022	Utilities - Electricity		May
2022	AW - Visitor Access Infrastructure	Works associated with the construction of a new or extension to existing car parking facilities.	May
2022	Site Rent		May
2022	WMM - General Site Management	Works associated with maintaining conservation and physical features within the sites such as boundary ditches, fences and walls, hedges,	May
2022	Building - Repairs & Maintenance		May
2022	Utilities - Electricity		May
2022	Building - Repairs & Maintenance		May
2022	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	May

Year	Type Of Work	Description	Due Date
2021	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	June
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	June
2022	PE - Volunteer on site activity	Support for activities at the site of visiting volunteer groups, such as corporate partners, local groups. Support could include tools, external trainers or materials for work parties	July
2022	PE - Volunteer on site activity	Support for activities at the site of visiting volunteer groups, such as corporate partners, local groups. Support could include tools, external trainers or materials for work parties	July
2022	Utilities - Electricity		July
2022	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	July
2022	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	July
2022	PE - Events - General	Provision of materials needed to support a WT event / guided walk such as refreshments / shelters / mobile toilets	July
2022	PE - Events - General	Provision of materials needed to support a WT event / guided walk such as refreshments / shelters / mobile toilets	July
2022	PE - Volunteer on site activity	Support for activities at the site of visiting volunteer groups, such as corporate partners, local groups. Support could include tools, external trainers or materials for work parties	July
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	August
2022	PE - Events - General	Provision of materials needed to support a WT event / guided walk such as refreshments / shelters / mobile toilets	August
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	August
2022	Utilities - Electricity		August
2022	Utilities - Electricity		August
2022	Utilities - Electricity		August
2022	SL - H&S Signage	Provision of on-site signage both temporary and permanent to alert visitor to safety risks or measures	August

Year	Type Of Work	Description	Due Date
2022	Utilities - Electricity		August
2022	Utilities - Electricity		August
2022	Utilities - Electricity		August
2022	Building - Repairs & Maintenance		August
2022	Building - Repairs & Maintenance		August
2022	PE - Volunteer on site activity	Support for activities at the site of visiting volunteer groups, such as corporate partners, local groups. Support could include tools, external trainers or materials for work parties	September
2022	Utilities - Electricity		September
2022	Utilities - Electricity		September
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	September
2022	Utilities - Electricity		September
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	September
2022	Management Fees - Site		September
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	September
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	October
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	October
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	October
2022	Utilities - Electricity		October
2022	Utilities - Electricity		October
2022	AW - Visitor Access Infrastructure	Works associated with the construction of a new or extension to existing car parking facilities.	October

Year	Type Of Work	Description	Due Date
2022	AW - Management Access Maintenance	Works associated with the maintenance of management access infrastructure and tracks Such as repairs to vehicle entrance points, maintaining vehicle bridges and repairing / reinstating surfaced management access routes.	October
2022	PE - Events - General	Provision of materials needed to support a WT event / guided walk such as refreshments / shelters / mobile toilets	October
2022	Utilities - Electricity		October
2022	Utilities - Electricity		October
2022	Utilities - Electricity		November
2022	Utilities - Electricity		November
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	November
2022	SL - Routine Safety Work	Works associated with undertaking planned visitor and structure safety orientated actions, such as erection/creation or maintenance of safety features such as fencing, rails, re-pointing of retaining walls etc	November
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	November
2022	CS - Map / Interpretation Work	NULLUse of external consultants to support the provision of interpretation features and materials such as visitor information boards, leaflets, site based media applications	November
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	November
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	November
2022	Building - Repairs & Maintenance		November
2022	CS - Map / Interpretation Work	NULLUse of external consultants to support the provision of interpretation features and materials such as visitor information boards, leaflets, site based media applications	December
2022	CS - Map / Interpretation Work	NULLUse of external consultants to support the provision of interpretation features and materials such as visitor information boards, leaflets, site based media applications	December

Year	Type Of Work	Description	Due Date
2022	CS - Map / Interpretation Work	NULLUse of external consultants to support the provision of interpretation features and materials such as visitor information boards, leaflets, site based media applications	December
2022	Utilities - Electricity		December
2022	Utilities - Electricity		December
2022	Utilities - Electricity		December
2022	Utilities - Electricity		December
2022	Utilities - Electricity		December
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2022	Utilities - Electricity		December
2022	Utilities - Electricity		December
2022	Utilities - Electricity		January
2023	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	January
2023	Utilities - Electricity		January
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	January
2023	PE - Volunteer on site activity	Support for activities at the site of visiting volunteer groups, such as corporate partners, local groups. Support could include tools, external trainers or materials for work parties	February
2023	Utilities - Electricity		February
2023	AW - Management Access Maintenance	Works associated with the maintenance of management access infrastructure and tracks Such as repairs to vehicle entrance points, maintaining vehicle bridges and repairing / reinstating surfaced management access routes.	February

Year	Type Of Work	Description	Due Date
2023	WC - Tree / Seed Supply	The supply of trees/seeds for woodland creation sites	February
2023	Ops Equipment Repairs & Maintenance		February
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	February
2022	AW - Management Access Maintenance	Works associated with the maintenance of management access infrastructure and tracks Such as repairs to vehicle entrance points, maintaining vehicle bridges and repairing / reinstating surfaced management access routes.	February
2023	Utilities - Electricity		March
2022	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	March
2023	Utilities - Electricity		March
2023	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	March
2022	Site Rent		March
2022	Site Rent		March
2023	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	March
2023	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	March
2023	Utilities - Electricity		April
2023	PC - Deer Control - Shooting	Works associated with deer management by shooting – such as stalker costs, high seats, signage, maintenance of tracks and open ground provided specifically for deer management etc	April
2023	WC - Tree / Seed Supply	The supply of trees/seeds for woodland creation sites	April
2023	WC - Tree / Seed Supply	The supply of trees/seeds for woodland creation sites	April
2023	Utilities - Electricity		April

Year	Type Of Work	Description	Due Date
2023	Site Rent		April
2022	Utilities - Electricity		April
2023	WC - Tree / Seed Supply	The supply of trees/seeds for woodland creation sites	April
2023	Utilities - Electricity		May
2023	Utilities - Electricity		May
2023	AW - Management Access Capital	Works associated with installing new or replacement management access infrastructure. Such as management access gates, vehicle bridges, fencing and surfacing works.	May
2023	AW - Management Access Capital	Works associated with installing new or replacement management access infrastructure. Such as management access gates, vehicle bridges, fencing and surfacing works.	May
2023	AW - Management Access Capital	Works associated with installing new or replacement management access infrastructure. Such as management access gates, vehicle bridges, fencing and surfacing works.	May
2023	AW - Management Access Capital	Works associated with installing new or replacement management access infrastructure. Such as management access gates, vehicle bridges, fencing and surfacing works.	May
2022	Building - Repairs & Maintenance		May
2023	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	May
2023	Building - Repairs & Maintenance		May
2022	Building - Repairs & Maintenance		May
2022	Building - Repairs & Maintenance		May
2022	Utilities - Electricity		May
2023	Building - Repairs & Maintenance		May
2023	WC - Planting Ground Preparation	Works associated with the physical preparation of the ground to ensure it is suitable for planting such as ripping, grass seeding, mounding	May

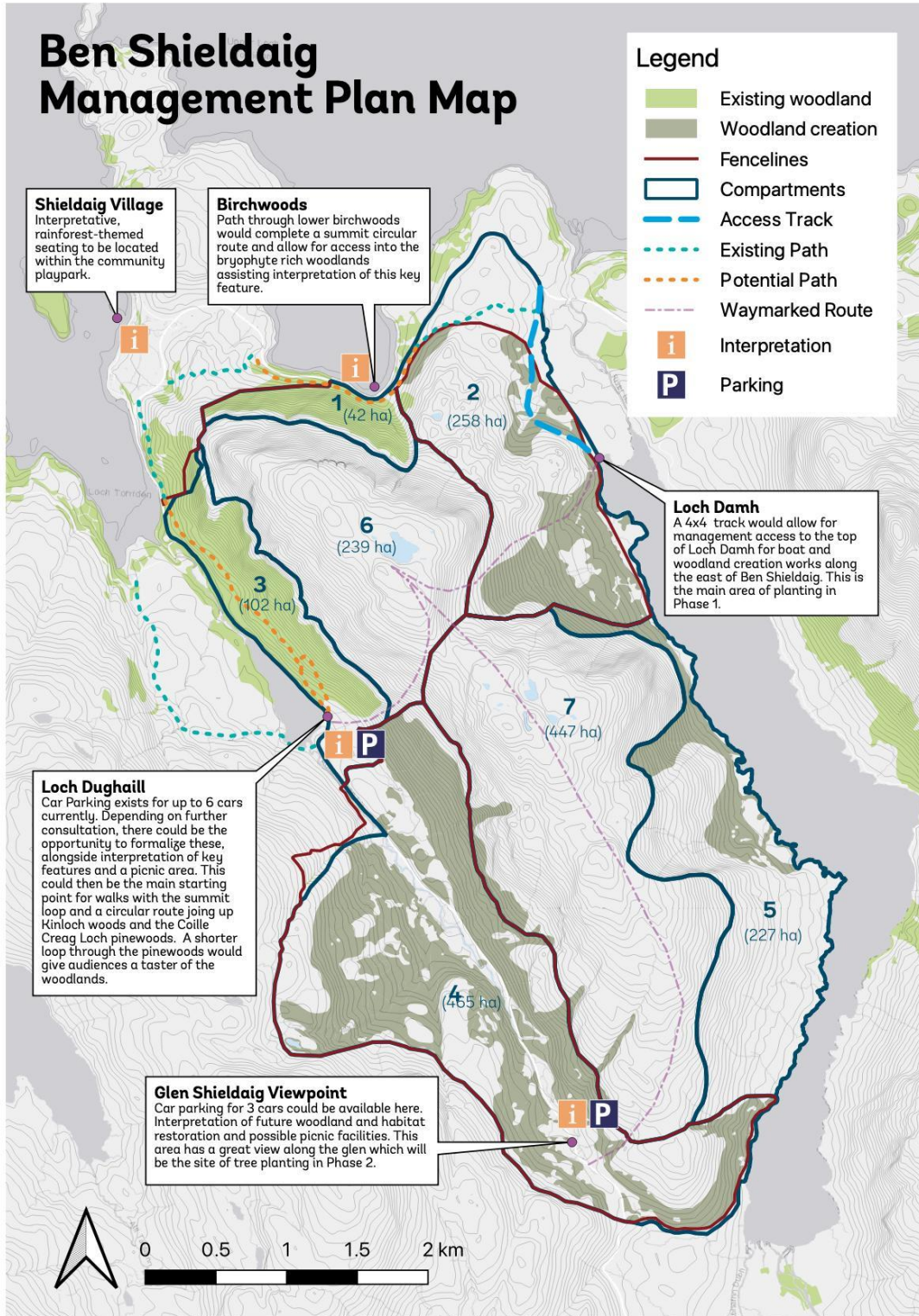
Year	Type Of Work	Description	Due Date
2023	Building - Repairs & Maintenance		May
2023	AW - Management Access Capital	Works associated with installing new or replacement management access infrastructure. Such as management access gates, vehicle bridges, fencing and surfacing works.	May
2023	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	May
2023	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	May
2023	AW - Visitor Access Infrastructure	Works associated with the construction of a new or extension to existing car parking facilities.	May
2023	WC - Invasive Plant Control	Works associated with noxious or invasive weed control on woodland creation sites	May
2023	Building - Repairs & Maintenance		May
2023	WC - Shelter Supply / Erection	Works associated with the supply, erection, maintenance and removal of tree shelters	May
2023	Building - Repairs & Maintenance		May
2023	Building - Repairs & Maintenance		May
2023	Building - Repairs & Maintenance		May
2023	Building - Repairs & Maintenance		May
2023	Building - Repairs & Maintenance		May
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Year	Type Of Work	Description	Due Date
2023	Building - Repairs & Maintenance		May
2023	Building - Repairs & Maintenance		May
2023	Building - Repairs & Maintenance		May
2023	Building - Repairs & Maintenance		May
2023	WC - Fencing	Works associated with fencing to protect planting areas	May
2023	WC - Fencing	Works associated with fencing to protect planting areas	May
2023	WC - Fencing	Works associated with fencing to protect planting areas	May
2023	WC - Fencing	Works associated with fencing to protect planting areas	May
2023	WC - Fencing	Works associated with fencing to protect planting areas	May
2023	WC - Fencing	Works associated with fencing to protect planting areas	May
2023	WC - Fencing	Works associated with fencing to protect planting areas	May
2023	WC - Fencing	Works associated with fencing to protect planting areas	May
2023	Utilities - Electricity		June
2022	Building - Repairs & Maintenance		June
2023	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	November
2023	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	December
2023	WC - Planting Ground Preparation	Works associated with the physical preparation of the ground to ensure it is suitable for planting such as ripping, grass seeding, mounding	December
2023	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	December
2023	WC - Tree Planting / Seeding	Works associated with tree planting / tree seeding for woodland creation sites	March
2023	PC - Other Pest / Animal Control	Works associated with wildlife control outside of deer / rabbits / squirrel	March

Year	Type Of Work	Description	Due Date
2023	WC - Tree Planting / Seeding	Works associated with tree planting / tree seeding for woodland creation sites	March
2023	PC - Other Pest / Animal Control	Works associated with wildlife control outside of deer / rabbits / squirrel	March
2023	CS - General Consultancy	Use of external consultant to support Woodland Trust site management	March
2023	Building - Repairs & Maintenance		May
2023	PE - Interpretation & Signage	Works associated with the provision of visitor signage, waymarking, interpretation features and leaflets	May
2023	WC - Invasive Plant Control	Works associated with noxious or invasive weed control on woodland creation sites	May
2023	AW - Management Access Capital	Works associated with installing new or replacement management access infrastructure. Such as management access gates, vehicle bridges, fencing and surfacing works.	May
2022	AW - Management Access Capital	Works associated with installing new or replacement management access infrastructure. Such as management access gates, vehicle bridges, fencing and surfacing works.	May
2023	CS - Ecological Survey & Assessment	Use of external consultants to support the provision of ecological surveys, assessment and biodiversity / species monitoring	May
2024	AW - Management Access Capital	Works associated with installing new or replacement management access infrastructure. Such as management access gates, vehicle bridges, fencing and surfacing works.	May
2024	WC - Tree Planting / Seeding	Works associated with tree planting / tree seeding for woodland creation sites	March
2024	PC - Other Pest / Animal Control	Works associated with wildlife control outside of deer / rabbits / squirrel	March
2024	PC - Other Pest / Animal Control	Works associated with wildlife control outside of deer / rabbits / squirrel	March
2024	WC - Tree Planting / Seeding	Works associated with tree planting / tree seeding for woodland creation sites	March
2024	PC - Other Pest / Animal Control	Works associated with wildlife control outside of deer / rabbits / squirrel	March

Year	Type Of Work	Description	Due Date
2024	WC - Invasive Plant Control	Works associated with noxious or invasive weed control on woodland creation sites	May



## APPENDIX 2 : COMPARTMENT DESCRIPTIONS

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
1a	42	Downy birch	2022	High forest		
<p>An extensive area of upland birch woodland, Mheallaidh Wood, on the slopes of Sròn an Fhithich behind and to the east of Shildaig village. Downy birch is predominant in a diverse age structure, with scattered sessile oak, rowan and willow; Scots pine is restricted to the upper crags. This compartment is particularly notable for its oceanic bryophyte communities, including characteristic rainforest species</p>						
2a	258	NULL	2022	Wood establishment		
<p>Area of open ground comprising of a shoulder of Ben Shildaig (comprised mostly of Lewisian Gneiss, rather than Torridian Sandstone) jutting out from the main massif with the A896 running along the northern edge. There is a small patch of birch woodland with a few scattered oak, just over the Allt an Aoil from the main birchwood in compartment 1. Otherwise, there are a number of veteran trees, including aspen, willow and holly, which are present in the gullies and crags running up to the main ride. Most of the ground cover is heather with some larger areas of bracken nearer the birchwood and road. A previous large landslide in Coire an Fionn-ullt, rising up from the shores of Loch Damh, provides good conditions for woodland creation.</p>						
3a	102	Scots pine	2022	High forest		
<p>A large area of Caledonian pine, Coille Creag-loch, and one of the listed CPI sites. The canopy of the pinewood is mostly made up of 'mature' Scots pine although younger birch are also significant locally. Undergrowth is mainly made up of regenerating Scots pine along with some birch, whilst rowan and other palatable trees are suppressed by browsing.</p> <p>Ground vegetation is mostly ling heather although purple moor grass is locally dominant within denser parts of the woodland and in the southern part of the pinewood. Bracken is widespread and significant locally. Blaeberry, hard fern, bell heather and crossleaved heath are widespread at low cover, and bramble, dog rose, honeysuckle, ivy and buckler ferns are local though suppressed by browsing/grazing</p>						
4a	465	NULL	2022	Wood establishment		
<p>A large area of open ground which makes up a large part of Glen Shildaig. This compartment stretches from the boundary with Kinloch Woodlands and Compartment 3 in the north, to the top of the Glen in the south, crossing the bottom of the Ben Shildaig ridge down to Loch Damh.</p>						

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
<p>Comprised mostly of wet heath interspersed with numerous rock exposures, ground vegetation is mostly ling heather, deer-grass, cross-leaved heath and purple moor-grass. Areas of dry dwarf shrub heath are found mainly on the inland cliffs of the south-west facing slopes.</p> <p>Straddling either side of the meandering Abhainn nan Lùb which runs up the middle of Glen Shieldaig, there are also areas of blanket bog dominated by purple moor-grass. A area of marshy grassland lines the lower reaches of the Allt Coire Mhurchaidh and is dominated by purple moor-grass with the occasional presence of cross-leaved heath, ling heather and bog myrtle.</p> <p>Small numbers of rowan, holly, downy birch and willow are scattered throughout the compartment, particularly in rocky areas or associated with slightly drier conditions associated with stands of scattered bracken. This includes some aspen in the gully of Allt Ceann a Mhill Dhubh on the west facing slopes of Ben Shieldaig, just above the small section of old road.</p>						
5a	227	NULL	2022	Wood establishment		
<p>A large area of open hill ground which runs the length of the western shores of Loch Damh and continues up to the main ridge of Ben Shieldaig. This compartment is characterised by the numerous cliffs and crags, particularly the impressive buttress of Creag Dhubh Phollaster.</p> <p>Comprised mostly of wet heath interspersed with numerous rock exposures, ground vegetation is mostly ling heather, deer-grass, cross-leaved heath and purple moor-grass. Areas of dry dwarf shrub heath are found mainly on the north facing cliffs of Creag Dhubh Phollaster and, particularly areas of the internationally important liverwort heath.</p> <p>Small numbers of rowan, holly, downy birch and willow are scattered throughout the compartment, particularly in rocky areas or on the shoreline of Loch Damh.</p>						
6a	239	Scots pine	2022	Min-intervention		
<p>Contains the northern part of the ridge and summit of Ben Shieldaig. There is a large amount of exposed rock with wind-blasted wet heath vegetation and frequently dwarf juniper. Large areas of dry heath in the north and particularly more areas of liverwort heath on the cliffs towering over Shieldaig village, comprising of ling heather, blaeberry and sphagnum.</p> <p>Small areas of blanket bog exist above the cliffs, amongst oceanic liverworts occurring in the wet heath vegetation close to boulders and crags facing north.</p>						

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
<p>The main lochan on Ben Shieldaig, Loch nan Eun, sit just below the summit and is popular with waders.</p> <p>Scattered pine in particular are spreading up the western slopes of this compartment, from the main pinewood section in compartment 3.</p>						
7a	447	NULL	2022	Min-intervention		
<p>Containing the ridge of Ben Shieldaig that runs from the northwest to the southeast has a great deal of exposed rock with wind-blasted wet heath vegetation. The moss <i>Racomitrium lanuginosum</i> (Woolly fringe-moss) and terricolous lichens are more obvious here. Patches of blanket bog occur in scattered hollows across this summit area; hare's-tail cotton-grass is abundant in these locations with ling heather in the canopy and aphagnum moss constant below.</p> <p>There are numerous lochans on the ridge, surrounded in places by dwarf juniper and a series of blanket bogs.</p>						

### **Ancient Woodland**

Ancient woods are defined as those where there has been continuous woodland cover since at least 1600 AD. In Scotland ancient woods are defined strictly as sites shown as semi-natural woodland on the 'Roy' maps (a military survey carried out in 1750 AD, which is the best source of historical map evidence) and as woodland all subsequent maps. However, they have been combined with long-established woods of semi-natural origin (originating from between 1750 and 1860) into a single category of Ancient Semi-Natural Woodland to take account of uncertainties in their identification. Ancient woods include Ancient Semi-Natural Woodland and plantations on Ancient Woodland Sites (see below). May support many species that are only found in ancient woodland.

### **Ancient Semi - Natural Woodland**

Stands in ancient woods defined as those consisting predominantly of native trees and shrubs that have not obviously been planted, which have arisen from natural regeneration or coppice regrowth.

### **Ancient Woodland Site**

Stands in ancient woods that have been converted to plantations, of coniferous, broadleaved or mixed species, usually for timber production, including plantations of native species planted so closely together that any semi-natural elements of the understorey have been suppressed.

### **Beating Up**

Replacing any newly planted trees that have died in the first few years after planting.

### **Broadleaf**

A tree having broad leaves (such as oak) rather than needles found on conifers (such as Scots pine).

### **Canopy**

The uppermost layer of vegetation in a woodland, or the upper foliage and branches of an individual tree.

### **Clearfell**

Felling of all trees within a defined area.

### **Compartment**

Permanent management division of a woodland, usually defined on site by permanent features such as roads. See Sub-compartments.

### **Conifer**

A tree having needles, rather than broadleaves, and typically bearing cones.

### **Continuous Cover forestry**

A term used for managing woods to ensure that there are groups or individual trees of different ages scattered over the whole wood and that some mature tree cover is always maintained. Management is by repeated thinning and no large areas are ever completely felled all at once.



**Coppice**

Trees which are cut back to ground levels at regular intervals (3-25 years).

**Exotic (non-native) Species**

Species originating from other countries (or other parts of the UK) that have been introduced by humans, deliberately or accidentally.

**Field Layer**

Layer of small, non-woody herbaceous plants such as bluebells.

**Group Fell**

The felling of a small group of trees, often to promote natural regeneration or allow planting.

**Long Term Retention**

Discrete groups of trees (or in some cases single trees) that are retained significantly past their economic felling age. Operations may still be carried out within them and thinning is often necessary to maintain stability.

**Minimum Intervention**

Areas where no operations (such as thinning) will take place other than to protect public safety or possibly to control invasive exotic species.

**Mixed Woodland**

Woodland made up of broadleaved and coniferous trees.

**National vegetation classification (NVC)**

A classification scheme that allows an area of vegetation to be assigned to the standardised type that best matches the combination of plant species that it contains. All woodlands in the UK can be described as being one of 18 main woodland types (W1 - W18), which principally reflect soil and climatic conditions. For example, Upland Oakwoods are type W11, and normally occur on well drained infertile soils in the cooler and wetter north and west of Britain. Each main type can be subdivided into numerous subtypes. Most real woods contain more than one type or sub-type and inevitably some woods are intermediate in character and can't be properly described by any sub type.

**Native Species**

Species that arrived in Britain without human assistance.

**Natural Regeneration**

Naturally grown trees from seeds falling from mature trees. Also regeneration from coppicing and suckering.

**Origin & Provenance**

The provenance of a tree or seed is the place where seed was collected to grow the tree or plant. The origin is the geographical location within the natural range of a species from where seeds/tree originally derives. Thus an acorn collected from a Turkey oak in Edinburgh would have an Edinburgh provenance and a southern European origin.

**Re-Stocking**

Re-planting an area of woodland, after it has been felled.

**Shrub Layer**

Formed by woody plants 1-10m tall.

**Silviculture**

The growing and care of trees in woodlands.

**Stand**

Trees of one type or species, grouped together within a woodland.

**Sub-Compartment**

Temporary management division of a compartment, which may change between management plan periods.

**Thinning**

The felling of a proportion of individual trees within a given area. The remaining trees grow to fill in the space created.

**Tubex or Grow or Tuley Tubes**

Tubes placed over newly planted trees or natural regeneration that promote growth and provide protection from animals such as rabbits and deer.

**Weeding**

The control of vegetation immediately around newly planted trees or natural regeneration to promote tree growth until they become established.

**Windblow/Windthrow**

Trees or groups of trees blown over (usually uprooted) by strong winds and gales.

**Registered Office:**

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