



COED CADW  
WOODLAND  
TRUST

# Coed Felenrhyd & Llennyrch

## Management Plan

# 2016-2021

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## THE WOODLAND TRUST

### INTRODUCTION

The Trust's corporate aims and management approach guide the management of all the Trust's properties, and are described on Page 4. These determine basic management policies and methods, which apply to all sites unless specifically stated otherwise. Such policies include free public access; keeping local people informed of major proposed work; the retention of old trees and dead wood; and a desire for management to be as unobtrusive as possible. The Trust also has available Policy Statements covering a variety of woodland management issues.

The Trust's management plans are based on the identification of Key Features for the site and setting objectives for their management. A monitoring programme (not included in this plan) ensures that these objectives are met and any necessary management works are carried out.

Any legally confidential or sensitive species information about this site is not included in this version of the plan.

### PLAN REVIEW AND UPDATING

The information presented in this Management plan is held in a database which is continuously being amended and updated on our website. Consequently this printed version may quickly become out of date, particularly in relation to the planned work programme and on-going monitoring observations. Please either consult The Woodland Trust website [www.woodlandtrust.org.uk](http://www.woodlandtrust.org.uk) or contact the Woodland Trust ([wopsmail@woodlandtrust.org.uk](mailto:wopsmail@woodlandtrust.org.uk)) to confirm details of the current management programme.

There is a formal review of this plan every 5 years and a summary of monitoring results can be obtained on request.

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## WOODLAND MANAGEMENT APPROACH

The management of our woods is based on our charitable purposes, and is therefore focused on improving woodland biodiversity and increasing peoples' understanding and enjoyment of woodland. Our strategic aims are to:

- Protect native woods, trees and their wildlife for the future
- Work with others to create more native woodlands and places rich in trees
- Inspire everyone to enjoy and value woods and trees

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.

In addition to the guidelines below we have specific guidance and policies on issues of woodland management which we review and update from time to time.

We recognise that all woods are different and that the management of our sites should also reflect their local landscape and where appropriate support local projects and initiatives. Guidelines like these provide a necessary overarching framework to guide the management of our sites but such management also requires decisions based on local circumstances and our Site Manager's intimate knowledge of each site.

The following guidelines help to direct our woodland management:

1. Our woods are managed to maintain their intrinsic key features of value and to reflect those of the surrounding landscape. We intervene when there is evidence that it is necessary to maintain or improve biodiversity and to further the development of more resilient woods and landscapes.
2. We establish new native woodland using both natural regeneration and tree planting, but largely the latter, 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.
4. The long term vision for our non-native plantations on 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 heritage and cultural value of sites is taken into account in our management and, in particular, our ancient trees are retained for as long as possible.
7. Woods can offer the potential to generate income both from the sustainable harvesting of wood products and the delivery of other services. We will therefore consider the potential 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 allow our woods to be used to support 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. In particular we will develop and maintain a network of long-term monitoring sites across the estate.
10. Any activities we undertake will conform to sustainable forest management principles, be appropriate for the site and will be balanced with our primary objectives of enhancing the biodiversity and recreational value of our woods and the wider landscapes.

## SUMMARY

This public management plan briefly describes the site, specifically mentions information on public access, sets out the long term policy and lists the Key Features which drive management actions. The Key Features are specific to this site - their significance is outlined together with their long (50 year+) and short (5 year) term objectives. The short term objectives are complemented by a detailed Work Programme for the period of this management plan. Detailed compartment descriptions are listed in the appendices which include any major management constraints and designations. A short glossary of technical terms is at the end. The Key Features and general woodland condition of this site are subject to a formal monitoring programme which is maintained in a central database. A summary of monitoring results is available on request.

## 1.0 SITE DETAILS

<b>Site name:</b>	Coed Felenrhyd & Llennyrch
<b>Location:</b>	Maentwrog
<b>Grid reference:</b>	SH656389, OS 1:50,000 Sheet No. 124
<b>Area:</b>	309.67 hectares (765.21 acres)
<b>Designations:</b>	Ancient Semi Natural Woodland, Grade II listed structure., National Park, Planted Ancient Woodland Site, Site of Special Scientific Interest, Special Area of Conservation

## 2.0 SITE DESCRIPTION

### 2.1 Summary Description

Explore a precious piece of the Celtic Rainforest. In 2015, the Trust had the fantastic opportunity of acquiring Llennyrch, a traditional upland farm with an extraordinary surviving fragment of temperate rainforest at its heart. Together with the Trust's existing wood, Coed Felenrhyd (also known locally as Melenrhyd), this landscape has a place in Welsh myth and stretches from the shores of Llyn Trawsfynydd to the fringes of the Dwyryd Estuary. The steep banks of the Afon Prysor are thought to have been wooded for thousands of years - possibly since trees first re-colonised Wales after the last Ice Age - and a walk here certainly feels like a journey back in time. It's a magical place that echoes with birdsong and where gnarled oaks are festooned with mosses and ferns.

### 2.2 Extended Description

Coed Felenrhyd & Llennyrch is a significant property of 309 hectares, linking Coed y Rhygen on the shores of Llyn Trawsfynydd with the Dwyryd estuary to the west. The northern boundary is defined by the deep and atmospheric gorge of the Afon Prysor, Ceunant Llennyrch. The steep sides of the ravine are cloaked in sessile oak woodland with rowan and birch, with species such as ash, hazel and elm on milder soils. This woodland is designated as a SSSI for its Atlantic bryophytes, which thrive in the humid conditions of this temperate rainforest, where it can rain 200 days a year. The quality of the lower plant flora is of European and indeed global importance, a fact recognised by its

inclusion within the Meirionnydd Oakwoods and Bat Sites Special Area of Conservation. More recently, survey work has confirmed the site's international importance for lichen conservation. A number of rare species found here occur nowhere else in Wales and their presence indicates significant habitat continuity over many thousands of years.

Coed Felinrhyd has been managed by Coed Cadw (The Woodland Trust in Wales) since 1991. In 2015, the opportunity arose to purchase Llennyrch, a 550 acre farm adjacent to Felinrhyd. Together, the site connects the National Nature Reserves of Coed y Rhygen and Ceunant Llennyrch and is an important part in the wooded landscape of the Vale of Ffestiniog.

In addition to roughly 130 hectares of woodland, most of it ancient in origin, the property includes significant areas of acid grassland, semi-improved grassland, heathland, bog and mire, extending up to 320m above sea level on the northern flanks of the Rhinog mountain range. Mature field trees and traditional dry-stone boundary walls and barns are a significant feature of this farmed landscape.

The heart of Llennyrch is a four bed farmhouse and the barns, where livestock (sheep and Welsh black cattle) are gathered. Llennyrch supports a hefted flock of around three hundred Welsh mountain ewes, which have become adapted to the specific conditions of the farm over many generations. At present the flock ranges widely over the farm and also grazes the woodland at Coed Felinrhyd under licence in order to maintain optimum conditions for lichens and bryophytes. The grazing is managed by a local farmer under a farm business tenancy.

The two woods within the property have quite different management histories. Coed Felinrhyd was once part of the Oakeley estate and would have provided oak bark for tanning and timbers for ship building, before being subject to widespread planting of conifer (hemlock, larch, cedar, spruce and Douglas fir) in the post-World War II period. Small farmsteads were carved out on higher ground, of which only clearings and a few ruined stone barns remain as evidence today. Coed Felinrhyd was also once densely infested with *Rhododendron ponticum*, a highly invasive ornamental shrub. Several decades of work by Coed Cadw and its partners have gradually reduced the threat to the ancient woodland from dense plantation conifer and invasive rhododendron. Broadleaf cover is now increasing again across the wood and veteran oaks are again visible, released from their shroud of shading hemlock and spruce. Grazing has been recently reintroduced to control coarse and competing vegetation.

By contrast, the woodland at Llennyrch shows evidence of a long history of grazing as part of a farmed landscape, being very open in character with little understorey or natural regeneration. However, the even age of much of the oak and an absence of hazel in some parts of the wood suggests that episodes of felling or intensive management have occurred away from the inaccessible steep ravines, perhaps around the time of the First World War. The site nonetheless escaped the damaging impacts of post-WW2 plantation forestry and major rhododendron infestation.

The wood has a remote feel and does not benefit from a designated car park, although parking is available at a layby near the Maentwrog hydroelectric power station or at the Visitor Centre on Llyn Trawsfynydd. A variation of the Wales Coast Path passes through the wood at Maentwrog. From this entrance, visitors can gain access to a good network of internal footpaths, although given the terrain many of these routes include steep flights of steps. From the east, Llennyrch is accessed

from the dam at Llyn Trawsfynydd, utilising the public rights of way network or the new Llyn Trawsfynydd cycleway which passes through a corner of the property. Management access is via a forestry track which runs to the south of Coed Felinrhyd or from the public road at Llandecwyn.

For those who enjoy longer walks in rugged scenery, however, Coed Felinrhyd & Llennyrch has a great deal to offer, with a varied internal landscape and magical atmosphere, coupled with outstanding views across Snowdonia.

The key features of Coed Felinrhyd comprise:

- Informal public access
- Ancient Semi-natural woodland, being those areas largely unaffected by coniferisation, and with notable lower plant communities
- Plantations on Ancient Woodland Sites, which have been intensively modified by the introduction of non-native species
- A Mosaic of Open Ground Habitats

## 3.0 PUBLIC ACCESS INFORMATION

### 3.1 Getting there



**Directions to main entrance:**

From the A487, take the A496 signposted for Harlech. Travel through the village of Maentwrog. The main entrance to the wood is just over a kilometre from the village on the left immediately after Maentwrog Power Station and the Prysor bridge. There is some parking at a layby just before the bridge on the right.

Alternatively, for access to Llennyrch, park at Llyn Trawsfynydd and follow the cycle trail across the dam, accessing Llennyrch via the public rights of way network. Management access to Llennyrch is gained from the minor road from Llandecwyn, however, this is steep, narrow and gated, providing few opportunities for turning and no formal parking facilities are available near the farm itself.

**By bus:**

The nearest main bus stop is in Maentwrog next to the National Park Information Centre. It is served by the no. 38 service (Barmouth - Porthmadog). The walk from the village to the woodland along the A496 can be hazardous as the road is narrow in places. A safer alternative is to use a spur of the Wales Coast Path, which is waymarked from the village to the wood. Buses will also drop off near the Maentwrog Hydro Power Station, which is adjacent to the main entrance at Coed Felinrhyd. This is currently served by services, 2, 2G and 38 (<https://bustimes.org/stops/5400WDB23053>), however check before you travel.

To access by bus from the east, Trawsfynydd is served by the no. 35 bus service: Llennyrch may be accessed from the village or the lakeside café using the public right of way network although this is a walk of several miles. For further information, contact Traveline Cymru on 0871 200 2233 or visit [traveline.cymru](http://traveline.cymru)

**By train:**

It's a two-mile (3km) walk from Llandecwyn station to the wood along the Wales Coast Path/ Coastal Communities Route. For further information, contact Traveline Cymru on 0871 200 2233 or visit [traveline.cymru](http://traveline.cymru)

**By car:**

From Maentwrog, take the A496 road to Harlech. After you pass the Maentwrog Power Station entrance on your left, look out for the main woodland entrance on the same side of the road just after crossing a bridge. Alternatively, approach Llennyrch from the dam at Trawsfynydd.

**Parking:** There is no parking at Coed Felinrhyd but you can park in a small lay-by on the A496 that is 200 metres east of the main entrance. Alternatively, use the facilities at the Llyn Trawsfynydd café and walk to Llennyrch using the Llyn Traws cycleway.

**By bike:**

Bicycles can be tethered at purpose-made posts near the wood's main entrance to the west. The Llyn Traws cycle route also crosses the property on the east side near the dam (linking to Sustrans route 82) .

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## 3.2 Access / Walks

Coed Felinrhyd & Llennyrch has a good network of paths and tracks enabling visitors to explore, although walkers should be aware that, given the nature of the terrain, most routes are either steep, or can be loose or wet in places and there are some flights of steps/ stiles. There are a number of old forest tracks which make for easier going, but good boots are advised.

At present there is one waymarked trail within Coed Felinrhyd, which starts from the westernmost entrance near the Maentwrog hydro power station. An information panel near this entrance illustrates the paths within Coed Felinrhyd. The waymarked loop follows Llwybr Gwyndaf upstream along the steep gorge of the Prysor. Wide and level at first, it later becomes steeper as it rises towards Rhaeadr Du, the Black Falls, from where it climbs a long flight of steps before looping back through the upper woodland, past a house called Cae'n y Coed which occupies a clearing in the wood, before following the public footpath back down to the main entrance.

Dolen Melenrhyd. 3.8km/ 2.4 miles. Strenuous. Allow 2-3 hours.

Follow in the footsteps of the heroes of the Mabinogion and explore the heart of this magical Celtic rainforest. The wood's majestic waterfalls and delicate filmy ferns are magical at any time of year.

Most paths are narrow with an earth surface that can be muddy when wet. Some long flights of steps with steep and occasionally exposed sections. Rough and rocky or rooty in places.

A Coastal Communities route also climbs through the wood from Maentwrog on a sunken bridleway.

Approaching from the east, Llennyrch can be reached by parking at the visitor centre at Llyn Trawsfynydd and following the new cycle trail across the dam: there is a public footpath just beyond the dam which follows river downstream from the lake, crossing a stream and climbing to Llennyrch farmhouse (NB this can be very wet, especially in winter). From here, a footpath links the farm southward to the tarmac road near Llyn Llennyrch, or westward toward Coed Felinrhyd, where the path crosses a stile and links to a good path to the right which follows the boundary between the farm and Coed Felinrhyd for a time before linking into the path network within Coed Felinrhyd. The other main old trackways within the wood at Llennyrch will also be maintained as permissive paths for visitors to explore. It is possible to use these paths to link in to Felinrhyd's waymarked route just above Rhaeadr Ddu.

A linear walk from Trawsfynydd to Maentwrog through Llennyrch and Coed Felinrhyd would also make a great day out.

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## 4.0 LONG TERM POLICY

In the long term, Coed Felinrhyd & Llennyrch will represent a prime example of a resilient landscape, with a mosaic of semi-natural habitats maintained in good ecological condition. Future visitors to this corner of North West Wales will experience an extensive network of rich and vibrant temperate rainforests where plant life is lush and abundant and wildlife is diverse.

The ancient woodlands will continue to provide a refuge for rare plant species lost from the wider landscape, being well connected to other high quality oak woodlands in the locality. Where there has been a continuous history of limited silvicultural intervention, in particular in the steep humid ravines, this will continue. Connectivity will be aided by gradual expansion of tree cover in places, however other habitats of high conservation interest, such as unimproved grassland, mire and bog, will also play an important part in the landscape. The land will continue to support sensitive agricultural activity in keeping with its special features.

The woodland as a whole will develop a reasonable degree of structural diversity. In time, native broadleaved trees will predominate with only scattered and occasional conifer remaining. Once a high forest/ dense wood pasture condition has been achieved, with a canopy dominated by broadleaved species throughout, silvicultural interventions will become infrequent and of low intensity. Sessile oak would be expected to be the most abundant canopy tree, however, there should be a good degree of tree species diversity within the constraints of the soil and aspect, with plenty of hazel stands. The remnant features of the ancient woodland - notably veteran trees, ground and epiphytic flora including Atlantic mosses, lichens and liverworts, and broadleaf deadwood - will be secure and a significant expansion of woodland ground flora should be expected over a fifty year period, as conifer cover in Coed Felinrhyd reduces and invasives such as Rhododendron and hemlock are kept at bay. There will be sufficient recruitment of young broadleaved trees to ensure continuity of canopy cover and genetic turnover, however, this may be unevenly distributed. Overall, conditions in the woodland will remain relatively light, with open glades and areas of relatively sparse under-storey which favour less competitive Atlantic bryophytes and lichens. Coarse vegetation will be localised. This condition is likely to be achieved through light grazing alongside an on-going cycle of conifer thinning in planted ancient woodland stands and invasive species control. Mature trees will be retained and allowed to develop veteran features wherever possible.

The area of tree and scrub cover will expand, largely through natural regeneration at the woodland edge and of scattered trees and copses across the ffridd, improving connectivity between woodland blocks. There will be modest expansion of tree cover along existing field boundaries, both through planting and protection of existing hedges, with on-going recruitment of infield and boundary trees. This will include suitable successors to the impressive mature ash around Llennyrch farmhouse; the next generation of field trees. Tree cover will not only benefit biodiversity but will provide shelter and forage for livestock.

However, woodland expansion will not be to the detriment of other habitats of conservation value, such as unimproved grassland, bog, heathland and mire, of which the property will continue to boast good examples. Llennyrch in particular has a history of low input agricultural management, which should continue, with grasslands supporting a diverse array of grasses, flowering plants and fungi. There will be an intimate patchwork of heathland, mire and bog habitats which are varied in structure

with their hydrology maintained. High value habitat areas and watercourses will not be subject to potentially damaging impacts such as drainage, pollution, nutrient enrichment, ploughing or re-seeding, however, existing semi-improved ground will provide a silage crop where needed. Grazing will be important in maintaining these areas as open ground, for both their habitat and landscape value. Traditional field boundaries and buildings will be maintained as notable features of both practical and aesthetic value.

Visitors will come to appreciate this unique landscape and there will be an extensive and well-maintained path network to facilitate access, although the sense of remoteness and peacefulness will be maintained. Those that do visit will do so in safety. Infrastructure will be low key and visually 'urban' trappings will be avoided. Even those unable to visit or negotiate the rugged terrain will be able to enjoy 'intellectual access' to the stunning sights and atmosphere and understand the Trust's vision for the site.

The farmhouse will be retained and its use will be in-keeping with the Woodland Trust's charitable purposes, charitable aims and specific objectives for the wood.

## 5.0 KEY FEATURES

The Key Features of the site are identified and described below. They encapsulate what is important about the site. The short and long-term objectives are stated and any management necessary to maintain and improve the Key Feature.

### 5.1 Ancient Semi Natural Woodland

#### Description

Almost all of the woodland at Coed Felinrhyd & Llennyrch is ancient in origin, although much has been heavily modified by human activity. A proportion of Coed Felinrhyd could be characterised as semi-natural ancient woodland: relatively small areas remain dominated by native broadleaf, having escaped coniferisation or where under-planted conifer crops have failed. These lie principally on the steep slopes immediately adjacent to Afon Prysor, although as areas of planted ancient woodland as classed as restored, these will effectively become part of this feature and will be managed in a similar fashion. At Llennyrch, the existing ancient woodland forms a rough horseshoe shape, following two streams north east to their confluences with the main gorge, Ceunant Llennyrch. Whilst semi-natural, it is clear that there has been some historic management on the flatter more accessible ground, with some of the oak being of possible plantation origin and hazel being sparse.

In both woods, the woodland type could be characterised as upland oakwood, mainly comprising sessile oak and various birch species (downy, silver and probably also *B. celtiberica*) (NVC W17/W11). However, there is variation, with a component of ash, elm and hazel (tending to NVC W9) on base-enriched ground. Wetter patches typically support alder and willow. The shrub layer is generally sparse, with scattered rowan and hazel alongside patches of strong native tree regeneration. Llennyrch is rather more lacking than Felinrhyd in shrubs and regen due to a longer history of grazing. The ground layer is typically ericaceous, with areas of bramble, grasses, cow-wheat and bracken, but more diverse (e.g. wood sorrel, dog's mercury) in NVC W9 areas. Llennyrch's less humid zones support carpets of bluebell in spring. In areas of higher humidity (the river gorge) bryophytes, ferns and lichens become a dominant component of the flora, including nationally rare species. Llennyrch has a long tradition as pasture woodland, with grazing recently reintroduced to Coed Felinrhyd.

The ancient woodland element of the site is designated as management unit 9/ 20 within the Meirionnydd Oakwoods and Bat Sites SAC.

#### Significance

Temperate rainforest of this type is globally scarcer and more threatened than its better known tropical equivalent, with Coed Felinrhyd & Llennyrch being some of Wales' best examples. The Ancient Semi Natural Woodland types present - upland oakwood and upland mixed ashwood - are both priority habitats in the UK and Snowdonia National Park Biodiversity Action Plans and the UK holds a high proportion of the global resource for these habitat types.

The gorge is important for a number of Nationally scarce lower plant species and the lichen community is of international importance: hazel in particular supports rare species, some of which, such as *Pyrenula hibernica* and *Thelotrema pectractoides*, have been recorded nowhere else in Wales and are indicative of continuity of habitat stretching back toward the end of the last Ice Age. The woodland cover helps to maintain the right humidity for the maintenance of the oceanic bryophyte flora of Ceunant Llennyrch SSSI. The woodland is designated as part of the Meirionnydd Oakwoods and Bat Sites SAC for its old sessile oak woodland habitat, a Natura 2000 Key habitat. This area is also deemed by Plantlife to be an Important Plant Area.

European Protected Species such as otter and bats use the site to forage, whilst the oakwoods locally support a number of IUCN red-listed species such as wood warbler. BAP species such as Bullfinch and small pearl-bordered fritillary have also been recorded in the SSSI.

### Opportunities & Constraints

In 2010, securing sympathetic management of neighbouring land and on-going grazing commitment were raised as constraints. The acquisition of the farm at Llennyrch in late 2015, along with its hefted flock, presents a major opportunity to secure access to grazing livestock as a long term management tool and to bring a wider woodscape into sympathetic, joined up management. There are opportunities to buffer the ancient woodland through appropriate expansion and to fine tune stocking levels across a much wider area. Whilst the terrain remains challenging, the hefted flock are adapted to grazing the site and by securing the purchase of Llennyrch this arrangement can be preserved. Fragmentation of habitats may reduce resilience in the face of climate change, although the size of the property allows scope of habitats to expand and move over long time scales.

Some of the conifer stands in Felinrhyd and even aged oak in Llennyrch will provide a timber resource, for sale or use in situ, as a by-product of conservation interventions.

### Factors Causing Change

Natural regeneration of conifers and Rhododendron into the ASNW areas from surrounding woodland is an ongoing threat. Management decisions taken on adjacent land e.g. clear-felling or re-stocking with further conifer crops may impact on wind-firmness and regeneration within the site.

Increasing usage of the Ceunant Llenynrch gorge for recreation could put pressure on the lower plant communities and bog communities on the banks of the Afon Prysor.

Natural succession is likely to produce a field layer dominated by bilberry and coarser species while the shrub layer is likely to become more dense, which may not be beneficial to the woodland lichen communities recently noted in the ASNW areas, however, the recent introduction of sheep grazing appears to be checking this trend. Natural regeneration is likely to be strong if not managed, although species are likely to be a mix of natives and non-natives.

Tree disease is also a threat. Within Coed Felinrhyd, PAWS stands where larch is the primary canopy tree could be at risk of temporary loss of canopy cover in the event of infection by *Phytophthora ramorum*, present nearby. Ash dieback could also have a significant impact on tree species diversity and specifically on lichen and bryophyte diversity: whilst a small component of the woodland numerically, ash supports a different community of epiphytes associated with base-rich bark and is significant in relict hedgerows, as infield trees and as a canopy tree along stream-sides (the locations most associated with rare flora).

Changing patterns of agricultural practice and subsidy over time could impact on the viability of farming the landscape, with the potential for external pressure from tenants to change stocking levels or type. A disease such as foot and mouth could also have a devastating impact on the hefted flock if it were to occur.

All these factors could interact with the long term impacts of climate change, which are likely to result in warmer, drier summers and mild wet winters. The habitat, particularly humidity-sensitive bryophytes, is high on the climate vulnerability index, although oak woodland cover is likely to persist and expand to higher ground in a regime of higher temperatures. Future management of flows from the Traws dam could also impact on hydrological conditions in the gorge. The natural range of flora and fauna within the UK is likely to shift in the very long term, under current climate predictions, which may favour some northward moving species such as greater horseshoe bat and beech, while detrimental to others. Risks associated with dry summers - for instance fires, soil depletion and changes in water quality - may be heightened.

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

The current area of semi-natural woodland will be maintained, with some expansion of tree cover over all. The canopy cover within the woodland will, barring major natural events, remain at 80% or more.

There will be a good degree of native tree species diversity - implying some resilience to impacts such as tree disease - although sessile oak is likely to dominate the canopy for the foreseeable future, alongside smaller proportions of ash, birch, elm and alder, as well as stands of almost-pure hazel. There will be many mature and veteran trees (at least one per hectare on average), providing substrates for lower plants and refuges for species such as bats, with an accumulating volume of fallen and standing deadwood. The under-storey will be generally sparse but with patches of un-coppiced hazel, rowan and birch colonising canopy gaps. Holly will be a part of the woodland flora but will not dominate the understorey. Sufficient natural regeneration will occur to allow periodic recruitment of new canopy trees, the character of the woodland being generally that of a rather dense pasture woodland. The structure will not however be entirely uniform and there will be expansion at the margins, with areas of developing woodland and scrub linking Ceunant Llennyrch to other woods such as Coed y Rhygen.

The lower plant communities of the woodland will remain in good condition: the distribution and abundance of both common and typical, as well as the uncommon, species of moss, lichen and liverwort will be stable or increasing within the core humid areas of the gorge, so long as macro-climatic conditions allow. A good covering of epiphytic species will be found throughout the woodland. Woodland ground flora will also be abundant, mainly comprising a lush carpet of lower plants but with a mix of vascular plant species such as bluebell and cow-wheat. The field layer will be sparse but patches of ericaceous plants such as heather and bilberry will occur, with small amounts of bramble and bracken. Invasive species will be absent.

Informal recreational use will not be harmful to the special botanical interest.

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



Light sheep grazing will be maintained across the current grazed woodland area, with the distribution and abundance of coarse vegetation in Coed Felinrhyd reducing significantly over the five years. The woodland at Llennyrch will be enclosed in order to better manage grazing levels, which will be modified slightly in order to allow some scattered and localised regeneration of a range of native tree species for a period, although the aim should be for more or less continuous low intensity grazing rather than total removal. This enclosure will include a wide margin for expansion, within which scattered native tree regeneration will start to occur during this five year plan. A long term arrangement will be established to provide security for the farming tenant and allow for flexibility in grazing management of the woodlands.

There will be little or no silvicultural intervention within the steep ravines in the woodland, however, glades will be established within Llennyrch's even aged oak in order to improve structural diversity and improve conditions for lichens and hazel expansion. This timber could be split for fence posts to be used in situ.

Non-native conifer regeneration will be occasional and rhododendron rare, with no flowering specimens.

Species interest and locations of particularly rare lower plants in Llennyrch will be confirmed by survey.

**Management prescriptions:**

- \* Trial direct seeding and protection of natural regeneration within pasture woodland.
- \* Fence compartments 17a and b with standard stock fencing or jump fence and repair walls where extant. Use split oak where available from uneven thin/ glade creation within even aged oak stands away from watercourses.
- \* Control non-native conifer regeneration and rhododendron seedlings/ regrowth by pulling/ cutting and herbicide (glyphosate) if required.
- \* Bryophyte and lichen survey of Llennyrch (in addition to information for Felinrhyd).
- \* Light grazing of woodland with sheep under tenancy agreement (c.1 sheep per ha average, or c. 300 sheep over winter across Llennyrch and Felinrhyd. NB these prescriptions may need to be flexible and respond to actual browsing levels on the ground year-on-year).

## 5.2 Planted Ancient Woodland Site

### Description

The majority of Coed Felinrhyd is an Ancient Woodland Site which was coniferised in the 1960s, and subsequently severely infested with *Rhododendron ponticum*. In Woodland Trust ownership the core area of *Rhododendron* infestation and outlying pockets have been cleared and conifers have been thinned or removed entirely over approximately 60% of ancient woodland area. Mature oak is present in varying proportions throughout, sometimes as an almost entire canopy, occasionally only along old internal wall boundaries. Where *Rhododendron* was dominant, birch is now the dominant canopy tree. Shrub and field layers are generally poor to absent, except in patches where rocky ground or failed conifers has preserved a mainly ericaceous or bryophyte carpet. In 2011, almost 9ha of the site were still identified as 'critical' in the PAWS assessment, largely due to dense pole stage conifers or hemlock regeneration: by 2016 this had reduced to 2.66ha. In 2011, 51ha were classed as threatened, due to continued conifer shading and rhody or conifer regeneration encroaching on the under-storey; this had reduced by 2016 to 39.33ha. The remainder of the wood is now considered to be secure/ restored, although obviously general threats of rhododendron or conifer reinvasion exists. While the majority of the site was identified as ancient woodland in the 2011 inventory, fragments of higher ground to the south were once fields associated with the various small holdings whose buildings remain evident on site, or heathland, mire and bog, much of which was also coniferised in the post-war period. These areas will be treated as PAWS, with the ultimate objective of establishing semi-natural native woodland: some of these areas have been planted, while others are stocked by natural regeneration. Replanting has also occurred on areas of clear-felled conifer.

### Significance

PAWS areas have the potential for restoration primarily to native upland oakwood (W17) and upland mixed ashwood (W9) - priority habitats in the UK and SNPA Biodiversity Action Plans. Restoration would significantly bolster SAC features and allow for long-term expansion of nationally rare species such as lichens for which the site is notable. Ancient woodland cannot be recreated, so the opportunity to restore damaged elements of ancient woodland is a crucial opportunity to secure a threatened natural resource.

### Opportunities & Constraints

Adjacent ASNW will provide a refuge for species which can then expand into restored PAWS areas, therefore there is high potential to restore the woodland to a high quality habitat, increasing native woodland cover. There are a number of remnant features also extant within the coniferised areas, including pre-crop broadleaf trees and ground flora.

Some of the conifer stands in Felinrhyd and even aged oak in Llennyrch will provide a timber resource, for sale or use in situ, as a by-product of conservation interventions.

Management access is not readily available for all coniferised areas and this may render works less economic. Care is required in the vicinity of badger setts during active management work. Work in the vicinity of the gorge must take into account the need to maintain a steady humidity and be undertaken gradually: in particular, lichen-bearing species such as hazel will require protection during operations.

Combining PAWS restoration with grazing of ASNW elements will require careful management to ensure that natural regeneration of broadleaf in PAWS stands is not significantly inhibited.

### **Factors Causing Change**

Abundant regenerating conifers and Rhododendron will be an ongoing threat while seeding canopy trees and other local seed sources remain. Upper levels of the site may be prone to windblow, particularly in the event of clearfelling in neighbouring forestry blocks. The presence of grazing may impact on the frequency of natural regeneration in thinned areas and the eventual semi-natural composition of restored PAWS.

Tree disease is also a threat. Within Coed Felinrhyd, PAWS stands where larch is the primary canopy tree could be at risk of temporary loss of canopy cover in the event of infection by *Phytophthora ramorum*, present nearby. Ash dieback could also have a significant impact on tree species diversity and specifically on lichen and bryophyte diversity: whilst a small component of the woodland numerically, ash supports a different community of epiphytes associated with base-rich bark and is significant in relict hedgerows, as infield trees and as a canopy tree along stream-sides (the locations most associated with rare flora).

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

In fifty years, all planted ancient woodland stands will have been restored to a broadly semi-natural in composition, dominated by native broadleaved canopy species, particularly sessile oak with some ash on milder ground, with birch, rowan and hazel also present and alder and willow in wetter areas. A typical Atlantic woodland flora will have recovered across most of the site, with conifer regeneration and coarse vegetation being occasional and localised. Rhododendron will be absent. A scattering of conifers, where non-invasive, may be retained where these present a low risk to PAWS features. Planted trees to the west of the site will establish and resemble semi-natural broadleaved woodland. Lower plant communities will recover and spread from existing ASNW areas into restored PAWS, which in time will come to resemble the neighbouring lichen-rich ASNW areas, with a well-spaced canopy, sparse understorey and rich mossy field layer. Mature and veteran trees and deadwood will be frequent.

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

The level of threat to PAWS stands will be reduced, with no areas deemed to be 'critical' by the end of the plan period. All 'phase 1' operations to secure remnant features will have been completed, with most stands moving through 'phase 2', a process of restructuring which will move them toward a more varied structure and species composition. A few stands will be at the stage where more intense interventions are required to initiate broadleaf regeneration or to control the threat of conifer seeding, although where mature oaks are vulnerable to sudden exposure a lighter intervention will be required. A precautionary thin will be completed on the remaining pure larch stands to try to stimulate advance regeneration and therefore mitigate the impact of the potential arrival of *Phytophthora*. Broadleaf regeneration in PAWS stands may need to be stimulated and protected in order to ensure a successor canopy whilst grazing is also undertaken for the lower plant interest. Coarse vegetation will reduce in abundance and distribution, whilst conifer regen will be occasional. *Rhododendron* will be rare with no flowering specimens.

Retained broadleaves will be protected during operations. Some thinning work may involve extraction where the trees are accessible but a large proportion of felling to waste can be anticipated, increasing the deadwood component of the woodland. Existing planted areas will be maintained to achieve canopy closure, while natural regeneration, mainly birch, willow and alder, will be allowed to encroach on former fields in Coed Nyth y Fran.

Management prescriptions:

- \* Thin priority PAWS zones in cpt 3a, 9a, 10a, 10b, 11a, 13a and 16a, including a further halo of mature oaks under hemlock in cpt 10b. Extract from 3a and 10a where accessible. Where successive operations have reduced the hemlock component to well-spaced or scattered trees and few remnant oaks occur, consider clear or selective fell with a contingency for restocking subject to levels of broadleaf regen: reduce wider threat from abundant seed production in hemlock.
- \* Thin larch in PAWS zones 12 and 13 (cpt 8b, 12a, 11b) to encourage advance regen.
- \* Control *rhododendron* and conifer regeneration, by manual means where possible, using spot application of glyphosate where necessary.
- \* Trial direct seeding and temporary fencing of regen glades within grazed PAWS areas where broadleaf regeneration is weak.

## 5.3 Connecting People with woods & trees

### Description

Coed Felenrhyd & Llennyrch lies between Llyn Trawsfynydd and the Dwyryd estuary in the Snowdonia National Park, which receives around 4 million visitors per annum, spending around 10 million visitor days in the Park. At present, southern Snowdonia is less well known to tourists, on the whole, than the more northerly honeypots of Betws-y-Coed and Llanberis, with the Rhinog mountains to the south being some of the most remote and inaccessible peaks in the Park. However, stretching from the high mountain slopes of Craig y Gwynt to the deep and atmospheric rainforest ravine of the Afon Prysor and with outstanding views of Snowdonia's mountains, this property has a potentially powerful appeal to local visitors and Trust supporters. It is one of a cluster of publicly accessible woods, managed by the Trust and others, this tree-rich landscape can collectively offer a unique Celtic Rainforest visitor experience.

The wood lies in close proximity to the village of Trawsfynydd, Talsarnau and Maentwrog, close to the town of Porthmadog (population c4000) and in an area where around 70% of the local population are Welsh speaking. The current visitor profile generally comprises mature walkers, many of whom are likely to live locally or be visiting one of the nearby holiday cottages. They typically know the area or are accustomed to using OS maps or GPS to navigate. Occasional families with older children may visit.

Both Coed Felinrhyd and Llennyrch are well served by a network of internal tracks and paths, some of which apparently follow historic drove or 'coffin' routes and offering walking options ranging from moderate to strenuous. The architecture of structures such as the listed Ivy Bridge and the construction of old trackways at Llennyrch suggests that these routes were once of great significance locally. The ffridd areas are mapped as access land (CRoW Act).

The site is affected by a lack of suitable parking. Coed Felinrhyd: a small number of cars can be accommodated at a layby near the Maentwrog hydro-electric power station, although access to the main entrance gate (due for replacement) requires walkers to cross the main Prysor road bridge (no pavement). A 'coastal communities' route follows the by-way steeply up from this entrance heading south. Alternatively, walkers can follow Llwybr Gwyndaf east, upstream along Ceunant Llennyrch, making a circuit to re-join the public right of way network and return to the start point or continuing east into Llennyrch. Felinrhyd has a 3.8km strenuous grade waymarked trail with benches (installed around 2000, now rather tired) and an orientation panel installed in 2013 at the main gate. Access can be gained to Coed Felinrhyd at four points to the south of the wood from the public rights of way network and adjacent forestry track (all with new WT welcome signage and via open paths or kissing gates).

Access to Llennyrch is best gained from the centre on the shores of Llyn Trawsfynydd where there is a public car park and a new cycleway which briefly crosses Llennyrch shortly after passing over the dam, either end marked with a new ladderboard/ welcome sign (2016). The higher 'ffridd' areas of Llennyrch are mapped on the Ordnance Survey map as Access Land, presumably under CROW (2000). There is also a public footpath from the dam which passes across Ceunant Geifr and past the farmhouse before crossing to Coed Nyth y Fran (NB the route on the ground differs from that on the OS map), as well as a number of internal tracks. A WT Welcome sign marks the Trust boundary. The public road extends onto the property at Llennyrch, although there is no formal parking provision and the access road from Talsarnau is gated, narrow and very steep. Welcome and

ladderboard signs mark the property boundary at these points. Access to Ceunant Geifr, as well as the higher parcel of access land, can be gained from the leat which bisects the property and is used for informal public access on foot, although no signage was in place as of 2017. Two ladder stiles on the upper side of the southern parcel also provide access to the common above (WT welcome signs installed 2016). At the time of acquisition, some improvements were needed to the condition of the path network (especially where it crosses bog) and waymarking was limited to the cycleway and public footpath. Crossing toward Llennyrch farm from the east requires the crossing of Ceunant Geifr at one of two fords, which can be difficult after heavy rain (wellies recommended).

There is considerable informal usage of the gorge at Ceunant Llennyrch, with most accessing from the National Nature Reserve on the north bank of the river (footfall counters suggests this is around 4000 visits per annum). This activity is almost all guided by locally based outdoor adventure organisations and would typically involve young independents or families with older children. However, much of the site remains relatively secluded: this is a quiet wood where a visitor could expect for much of the year to have the place to themselves. The extensive path network would probably accommodate a moderate increase in walkers without significant impacts on the sense of remoteness.

The wood is of apparent interest to specialist audiences e.g. ancient woodland restoration, botanists, farming community, volunteers and has the potential to demonstrate various aspects of sustainable land use and the ecosystem services provided by trees and woods. Bangor University are currently including the site in a study on woodland grazing. A number of groups have approached the Trust for guided visits and there is volunteer interest: to date, there is a Woodland Warden and volunteer work parties have helped with the collection of local provenance oak and with control of rhododendron and conifer regeneration.

The current Trust web provision for the site is rather confusing, with two different pages on the WT web page (Coed Felinrhyd and Coed Felinrhyd & Llennyrch). Information available remains fairly basic. A themed walk is described on the Royal Geographical Society's 'Discovering Britain' website and attracted a good deal of attention. Walk descriptions also feature on a variety of third party sites including the BBC, North Wales Holiday Cottages and the Guardian website.

## Significance

The Woodland Trust believes that everyone should have access to woodland and the recreational benefits it brings and has a policy of providing open access for quiet recreation on its sites wherever safe and reasonable to do so. Coed Felenrhyd & Llennyrch is a large site with good footpath access and much internal visual interest, with potential to absorb more visitors in a popular tourist area, given better parking facilities and promotion, as one of a number of publicly accessible oakwoods in the region.

The wood is located in South Snowdonia , an area where the Trust will focus our landscape scale partnership work over the coming years. One of the objectives of this programme is to 'promote the distinctive identity of the Meirionnydd Tree-scape, with the Trust at its heart, increasing visitor appreciation of woods and trees and encouraging everyone to explore beyond the key tourist areas.'

The recent Llennyrch appeal demonstrated that the wood has the power to capture the imagination of Trust supporters, even those without the opportunity to visit the site. The site presents excellent opportunities to demonstrate core Trust activities such as ancient woodland restoration and woodland creation in a farmed landscape and to connect intellectually through visual and audio material with passionate supporters both on and off site.

The property is an extensive and important part of the local cultural landscape. Coed Felinrhyd (Melenrhyd) is mentioned in the Mabinogion (the core text for Welsh legends) as the site where Gwydion was slain and buried by Pryderi in a battle over stolen magic swine. More recent local myths include that of the alleged 'murder' of Williams Evans, of Llennyrch, on his way home through Coed Felinrhyd. The farm has been managed in a more or less traditional and sympathetic fashion for many centuries (the house may date back as early as the late 1500s and is mentioned in the written records in 1623) with its hefted flock of Welsh mountain sheep: this way of life has a strong cultural resonance in the local and national community including the farming sector, which is a key Trust stakeholder, and the retention of the farm as a unit is important in a heritage context. The historic interest of the house (likely to be listed) is an added draw and the property appears at one time to have been a significant hub within the local agricultural community.

## Opportunities & Constraints

Recent investment in the Visitor Centre and access around Llyn Trawsfynydd may attract more visitors and provide a touch point to connect Llennyrch with visitors: engagement work on Trust sites may dovetail with our future aspirations to develop wider engagement across the 'treescape', including the idea of a local woodland 'visitor hub'. As one of a number of Trust 'welcome sites' in the region, there is scope to promote a 'cluster' of sites for walking and reach a mature visitor segment including hill- and low level- walkers/ Park visitors as well as residents. Local tourism businesses consulted have been keen to have local walking opportunities to promote to their customers.

The National Park Authority and local council are keen to alleviate pressure on some of the key honeypot sites and spread the benefits of tourism across the region, with local support evident for initiatives beneficial to the adjacent communities and several potential local partners exist in the development of recreational or economic opportunities. The wood is adjacent to the Snowdonia Enterprise Zone at Trawsfynydd, which is intended to stimulate activity in the local economy.

The Coastal Communities route from Maentwrog may bring some new visitors to Coed Felinrhyd. A relatively modest investment could improve physical access and refresh/ extend waymarked routes to include the newly acquired area at Llennyrch. There are opportunities to improve intellectual access and build on the interest generated by the recent appeal, supported by technology.

There are opportunities to work with other teams within the Trust to connect the property with specialist audiences through visits or case studies.

Any future development/ restoration of the farmhouse, subject to approval of a project plan, has the potential to compliment or increase the capacity for people engagement and volunteering activity at the site, with the potential to attract new visitors and, perhaps, as a venue for open days, volunteer training, interpretative displays or corporate volunteering, while the wood's special qualities may equally be an asset to the building, dependent on end use.

Steep slopes will constrain range of users and all ability access potential is very restricted. No potential currently exists to physically improve or create on-site car parking: access from existing visitor sites and parking areas should be encouraged. Road access to Llennyrch farm is not suitable for heavy vehicles or increased traffic.

Any visitor increase must be managed carefully and not impinge on the quiet nature and ecological importance of the site. Unconstrained access within the most sensitive gorge area could be damaging to the special interest of the SSSI. Access should not be detrimental to the agricultural use of the land e.g. there may be restrictions on dogs where livestock are grazing. Any fencing within access land areas will need to be planned with sufficient pedestrian access points. Better signage and interpretation, as well as path improvements, may be necessary to improve the visitor welcome sufficient to encourage access on foot from the Trawsfynydd side.

The presence of a number of overhead cables and pylons has detrimental landscape impact.

## Factors Causing Change



While bryologists report that current levels of access impacts in the gorge are seemingly compatible with the bryophyte interest, increasing or inappropriately managed usage of the gorge could put pressure on the scarcer and less robust species. Awareness of the 'code of conduct for groups in gorges' may decline locally if not refreshed.

Future development plans in the Snowdonia Enterprise Zone adjacent may impact on local access and landscape.

Decisions on the exact future development of the house are subject to further assessment, although the preference is for retention of the property as a unit and in the long term restoration to allow habitation/ usage.

Resources may limit the ability to develop good printed and online material to interpret the site in a changing funding climate.

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

Coed Felenrhyd & Llennyrch will retain a remote feel, however, those visitors who do make the journey will feel welcome to explore and be easily able to orient themselves from the main entrance points. The visual appeal of the property will be maintained, with its mixture of lush woodland and breath-taking vistas. Traditional landscape features such as drystone walls and barns will be preserved and connect visitors with the farm's cultural heritage.

Coed Felenrhyd & Llennyrch will continue to be inspiring to both to local people and wider Trust supporters, attracting a mix of local and visiting walkers and specialist interest groups. Visitors may be attracted to the site's wildlife and natural history, historic interest or be inspired creatively, through photography or art for example. Even those without the opportunity to visit the wood will have a chance to understand the significance of the unique temperate rainforest habitat and get a flavour of its particular atmosphere through digital resources.

Visitor numbers will be modest but can be expected to somewhat increase over time, including both locals and visitors to Snowdonia who are keen to explore less well-trodden routes. There will be a good variety of well-maintained paths and tracks for walkers that take in the landscape highlights in safety. Visitors will utilise existing parking and facilities in neighbouring communities, in so doing benefiting local tourism businesses. Visitors will be aware of the Trust and be invited to support our vision for woods and trees, through onsite and online information as well as participation in group visits or guided walks.

There will be regular opportunities for volunteers to support our work at the wood in a variety of ways, both in conservation (e.g. collecting local provenance tree seed, undertaking woodland management works, wardening and ecological survey) and engagement (e.g. leading guided walks, volunteer photography).

No inappropriate usage will threaten the conservation features of the site and recreational users will be encouraged to respect and cherish the sensitive species present in the wood.

The Trust will facilitate academic involvement in the site, particularly where this can support case studies or evidence gathering on key subjects such as ancient woodland restoration, ecosystem services and the role of trees and woods in farming systems.

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

By end 2017, paths in Llennyrch will undergo clearance and initial improvements to drainage. Thereafter, all paths, site furniture and entrances will be maintained to the Trust's basic specifications. Unsightly or hazardous rubbish, waste tips and redundant farm equipment will be removed or securely stored.

By end 2018, wooden entrance signage at all public entrance points will be refreshed or installed to ensure that visitors are aware of the Trust's ownership. Entrance infrastructure will be improved to meet 'welcome site' standards. Orientation/ info panels will be updated/ installed at key access points (in some cases these will ideally be located on adjacent property subject to approval) to reflect the extension of the property.

As part of a cluster of Trust 'welcome sites' within Meirionnydd, by end 2019, walking opportunities at the site wood be promoted via a cluster booklet and a feature sculpture installed as a focal point. Gpx files and further information will be made available on the Trust website (the issue of the double entry being corrected) and guided walk leader volunteers will run a programme of scheduled and on-demand walks for local and tourist audiences. Visits by interest groups and the media will be encouraged and supported. In the same timeframe, waymarking will be installed to help visitors to navigate and encourage use of the permissive and public path network. Where pedestrian access is particularly difficult due to boggy ground or stream crossings, sympathetic management will be undertaken in conjunction with neighbours to improve the routes to make them suitable for increased footfall without erosional damage (subject to environmental assessment). The site will then be one of a number of woods suitable for promotion through any online and physical 'visitor hub' developments arising from the Trust's landscape partnership work.

Trees near roads, houses, paths and powerlines will be regularly inspected and work undertaken as reasonable to preserve public safety. Buildings (especially Ty Newydd and accessible barns) and other structures (such as historic bridges) which might pose a hazard to visitors will be made safe (subject if relevant to environmental assessment). Management of the site will respect the important cultural landscape features: where dry-stone walls are reasonably intact, they will be maintained, whilst barns will be preserved where possible.

When planting hedgerow restoration and tree planting, consideration will be given to means of mitigating the landscape impact of the OH pylons, by screening or distracting from the line.

Volunteers will be recruited to undertake wardening and seed collection activities, whilst occasional work parties will support with woodland management activity (these may be third party groups or present opportunities for Trust volunteer network events as required). By the end of the plan period, three or more regular volunteers will help to contribute an estimated 100+ volunteer hours per annum.

Opportunities will be taken to work with others, such as Snowdonia Active and the Outdoor Partnership, to continue to promote awareness of the Code of Conduct for Groups in Gorges and the special features of the woodland among the local outdoor sector.

The Site Manager and engagement colleagues will contribute to the Llennyrch farmhouse and Trust's 'Treescapes' project teams to ensure that the needs of the site, including those of visitors, and the opportunities for engagement, are reflected in any future plans.

One special event will be held during the coming plan period offering special behind-the-scenes access. This would particularly aim to incentivise members or to deepen relations with existing supporters.

## 5.4 Mixed Habitat Mosaic

### Description

With the acquisition of Llennyrch, a significant area of semi-natural open ground habitat has been added to the property. The area around the farmhouse itself comprises semi-improved and acid grassland, managed as low input permanent pasture. There are many streams and flushes, with numerous out-grown hedgerows and field corners in-filled with trees, especially in the lower fields. The fields around Ty Newydd are more open and exposed. Scattered fruit trees remain along a few relict boundaries. In poorly drained areas, purple moor-grass, rush and willow predominate, whilst the margins of the enclosed areas grade into bracken, gorse and scrub. The unenclosed areas of the farm are predominantly mire, bog and heathland, with swathes of dense bracken on shallow mineral soils and a few isolated trees such as willow and rowan. Steep craggy ground extends upward to the boundary with the neighbouring common land of Craig y Gwynt. Traditional drystone walls and barns are a marked feature of this upland farm landscape.

### Significance

The history of low input pastoral agriculture has allowed an interesting sward to develop within the permanent pasture and the site supports an abundance of grassland fungi, including 3 'Class A' indicator species, making it of National Importance for its waxcap flora. With many decades of agricultural intensification, such relatively unimproved pastures are relatively uncommon both nationally and internationally, therefore their conservation should be a priority. Both dry and wet heaths are Natura 2000 habitats, as well as being listed under Section 42 and being prioritised in the Snowdonia Local Biodiversity Action Plan. The same goes for blanket and valley mires, European priorities which also occur within open ground areas at Llennyrch. Purple moor-grass and rush pastures are also national and local priority habitats. Sympathetic management of open ground will positively impact upon woodland condition and together the various semi-natural habitats form a mosaic of ecological and landscape value. Ecotones between different habitats are notoriously rich in biodiversity.

### Opportunities & Constraints

Ecological and agricultural priorities may sometimes conflict: e.g. activities such as liming or re-seeding could improve farm productivity but could be detrimental to the species interest. There is, however, an opportunity to add some animal manure and attempt silage production in a number of the more nutrient rich fields to provide over-winter feed without harm to the grassland interest. There are also areas where livestock diversification would bring habitat benefits e.g. the introduction of cattle to the bog and mire habitats or mixed grazing of some of the pasture areas. The current state of the grassland is certainly not overgrazed, so there are opportunities to balance the grazing between woodland and non-woodland areas as required. Control over neighbouring land allows the ancient woodland to be protected from detrimental impacts such as heavy chemical usage. Managing the farm as a unit also means that the hefted flock can be secured for the future. There are opportunities also to protect and expand tree cover along field boundaries and in areas of low agricultural value such as dense bracken, improving the availability of in-field shelter for livestock and habitat connectivity. With local expertise in this area, there is also scope to establish a small area of Juniper scrub within the ffridd: once present on the Rhinog mountains nearby, and a Natura 2000 habitat, its distribution is very restricted.

### Factors Causing Change

Such upland farms may become less desirable subject to long term changes in the agricultural sector. A good agreement and relationship with the farming tenant will be a real asset in achieving good conservation condition. The demands of agri-environment schemes and financial support for agriculture in general may shift over time e.g. if relationships between UK and Europe change. Without on-going grazing, wet habitats and heathland may become rank and scrub would likely develop in many areas. Likewise, over-grazing could reduce the robustness of the open ground habitats and cause issues such as erosion and run-off. Climate change is likely to have a long term impact on soils and hydrology. Livestock disease could have a detrimental impact on the hefted flock if significant numbers of animals were lost.

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

Llennyrch will remain as a farmed landscape, in good environmental and agricultural condition. The property will comprise a mix of robust habitats, including unimproved and acid grassland, bog, heathland and mire, where these can be sustainably maintained. The area of secondary woodland, scattered tree cover and scrub will increase, however this will not be to the detriment of other habitats of high conservation value. There will be good habitat connectivity across the farm, with hedgerows protected and on-going recruitment of new hedgerow and in-field trees. Trees will be a demonstrably valuable asset to the farm business.

Llennyrch's grasslands will continue to support a diverse array of grasses, flowering plants and fungi, preserved by a regime of low inputs. There will be an intimate patchwork of heathland, mire and bog habitats which are varied in structure with their hydrology maintained. High value habitat areas and watercourses will be protected from damaging impacts such as drainage, pollution, nutrient enrichment, ploughing or re-seeding. Grazing will be important in maintaining these areas as open ground, for both their habitat and landscape value. Cattle will be introduced alongside the hefted flock, the integrity of which will be maintained. The use of re-seeding and organic fertilisers to improve agricultural productivity will be restricted to a small area of the farm where there is lower botanical interest and a greater history of 'improvement'.

Traditional field boundaries and buildings will be maintained as notable features of both practical and aesthetic value. The farmhouse is likely to remain a core element of the property, allowing for the option of a resident tenant in the future.

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

The farm will be maintained in good agricultural and environmental condition. Key internal and external boundaries will be brought up to a good standard to allow greater management control within the open ground habitats, using dry stone walls where these are extant: in particular, silage or gathering fields will be secured; the main division between sub-compartments 18a and b will be repaired and the external wall to the common will be brought into stockproof condition.

A long term tenancy will be agreed to provide continuity of tenure and ensure longer term husbandry of the hefted flock. The terms will restrict usage of harmful chemicals and potentially damaging activities such as ploughing, re-seeding and artificial fertiliser usage where these could damage the grassland interest but will encourage the introduction of summer grazing by cattle, especially in the heathland and mire areas of the site.

Existing hedgerows and some field corners will be protected from grazing to allow natural regeneration, although allowing stock access to in-field trees for shelter will continue to be important.

There will be some small scale boundary and parkland tree planting, in particular to ensure successors to the mature ash around the house and the fruit trees which were evidently once part of the farm's tradition, particularly where this can alleviate landscape impacts from infrastructure such as pylons and provide useful stock shelter.

Small areas of bracken-dominated land within the ffridd will be enclosed to allow natural regeneration and the establishment of juniper scrub. This may entail some management of the bracken to aid tree establishment initially. (Once established, these may be opened up to periods of grazing).

The suitability and security of the farm outbuildings will be reviewed in light of developing plans for the farmhouse itself and the needs of the tenant.

Opportunities to use the site to study and demonstrate the benefits of trees on farms will be sought in partnership with academic institutions.

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## 6.0 WORK PROGRAMME

Year	Type of Work	Description	Due By
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## APPENDIX 1: COMPARTMENT DESCRIPTIONS

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Key Features Present	Designations
1a	0.30	Mixed native broadleaves	1800	High forest	No/poor vehicular access to the site	Connecting People with woods & trees	Ancient Semi Natural Woodland, National Park, Other, Special Area of Conservation
<p>Mature and over-mature native broadleaves (oak and ash) occur here above the main public entrance to the wood. These large trees have a significantly important lichen flora, supporting base rich bark lichen communities of international importance, the most visible component of which is Lungwort. No understorey is present while the field layer comprises mainly grasses. Despite being the only direct access to the public road, the narrowness and position (on a sharp bend) of the entrance point restricts its use for management access. Public and permissive routes enter the wood here (including the Wales Coast path): entrance signage, bike tethering posts and an interpretation panel are provided. The compartment also includes part of the Ivy Bridge, a fine, Grade II listed packhorse bridge dating back at least to the 18th century, which would once have comprised the main route from Maentwrog toward Harlech.</p>							
2a	9.20	Oak (sessile)	1900	PAWS restoration	Landscape factors, Management factors (eg grazing etc), No/poor vehicular access to the site, Sensitive habitats/species on or adjacent to site, Services & wayleaves, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation



The most prominent area of Coed Felinrhyd in the local Vale of Ffestiniog landscape, with generally a good oakwood canopy remaining. The compartment was cleared of all conifers in 1996-98, with some extracted for sale but also a large proportion felled to waste. Brash was windrowed in 3 small areas in the largest gaps and those replanted with oak. Unconiferised rocky knolls retain good ericaceous ground flora, however, coarse vegetation (bramble and bracken) is abundant in areas where the conifer canopy has been removed. Small areas of Norway maple and red oak occur at the western extremities. Harvesting tracks remain, including two new spurs created in 1996 from the main management access. In recent years, conifer regeneration (some larch, but particularly Western hemlock and cedar) has become an issue to the margins, while occasional rhododendron regeneration is still found during control works, especially in planted areas and on rocky outcrops. While the PAWS assessment noted the compartment's condition as secure, vigilance to reinvasion by conifers and rhododendron will be required.

2b	1.00	Japanese larch	1969	PAWS restoration	Mostly wet ground/exposed site	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation
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The canopy here comprises predominantly conifers (mainly Japanese larch) with scattered mature oaks on rock outcrops and near the boundary wall with compartment 3. The area was thinned in conjunction with compartment 3 in 1998 to free broadleaves and to select conifers for economic retention. Some bryophyte flora remains on refugia in rocky areas and on walls. Management access is achieved from the main forest track via compartment 3. Conifer regeneration, particularly Western hemlock, occurs in the understory.

3a	2.70	Mixed conifers	1969	PAWS restoration	Mostly wet ground/exposed site	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation
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A mixed conifer plantation (including western hemlock, Japanese larch, Norway spruce, Sitka spruce and lodgepole pine) with scattered mature oaks on rock outcrops and near the boundary wall with compartment 2. Following a number of thinning interventions and major windblow events in 2013, areas of the stand now have quite an open canopy with some natural regen of both broadleaf and conifer occurring. Some bryophyte flora remains on refugia in rocky areas and on walls. Management access is available from main forest track.

4a	1.20	Downy birch	1997	PAWS restoration	Mostly wet ground/exposed site, Sensitive habitats/species on or adjacent to site	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation
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Once a dense Western hemlock plantation, the compartment was partly clear felled in 1999, except for a block around the then-active badger sett, which was later ring-barked after signs of activity ceased. Hemlock regeneration is now frequent especially along the old sunken lane which marks the southern boundary. Veteran trees, mainly sweet chestnuts, also occur along this track. Since felling, dense natural regeneration, mainly of broadleaf, has occurred. Management access is via the old road.

5a	7.80	Mixed conifers	1969	PAWS restoration	Management factors (eg grazing etc), Mostly wet ground/exposed site, No/poor vehicular access to the site, Sensitive habitats/species on or adjacent to site, Services & wayleaves, Very steep slope/cliff/quarry/ mine shafts/sink holes etc	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation
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A large area of PAWS, characterised by scattered native broadleaves (mainly mature or veteran oak, occurring most abundantly along the old road to the north of the compartment, with birch in areas of failed conifer) amongst thinned conifers (western red cedar and western hemlock) and pockets of beech. The whole area was formerly under dense Rhododendron (cleared 1992-97) and areas of sparse field layer remain, while conifer regeneration is frequent and scattered rhody also occurs. Open glades typically exhibit regenerating ericaceous shrubs and birch, and scattered seedlings of oak. An attractive small stream valley and rocky gorge cut through the compartment. A major electricity wayleave (3 overhead lines) marks the south-eastern boundary. Public and permissive footpaths cross the area. Following extensive fencing works by CCW, this area was included in 2012 in a large grazing compartment incorporating a large proportion of the wood and is now lightly grazed by sheep. It is aimed at enhancing the woodland lichen and bryophyte communities: the lower slopes of the compartment host a lichen flora of international importance.

6a	5.60	Oak (sessile)	1900	PAWS restoration	Management factors (eg grazing etc), Mostly wet ground/exposed site, No/poor vehicular access to the site, Services & wayleaves, Very steep slope/cliff/quarry/ mine shafts/sink holes etc	Connecting People with woods & trees	National Park, Site of Special Scientific Interest, Special Area of Conservation
<p>An area of ancient woodland, the compartment was planted with Douglas Fir and Japanese larch with Western red cedar, which have been subject to successive thinning in recent decades, leaving few mature conifers: the ground flora and understorey remain sparse in places although a more semi-natural composition is re-establishing. Scattered native broadleaves (mainly mature oak, with birch in areas of failed conifer) remain. The whole area was formerly under dense Rhododendron (cleared 1991-93). Open glades support regenerating ericaceous shrubs and birch and scattered seedlings of oak. Several small streams cross the area, which is very steep with rock outcrops and wet flushes. The lower levels of these gullies are of particular interest for lichens. A major electricity wayleave (3 overhead lines) marks the north-western boundary. Public and permissive footpaths cross the area. Following extensive fencing works by CCW, this area was included in 2012 in a grazing compartment incorporating a large proportion of the wood and is now lightly grazed by sheep.</p>							
7a	3.60	Mixed native broadleaves	1900	High forest	Management factors (eg grazing etc), Mostly wet ground/exposed site, No/poor vehicular access within the site, Very steep slope/cliff/quarry/ mine shafts/sink holes etc	Connecting People with woods & trees	Ancient Semi Natural Woodland, National Park, Site of Special Scientific Interest, Special Area of Conservation

This compartment comprises native broadleaved woodland, predominantly sessile oak with birch and occasional ash. Formerly coniferised and with Rhododendron infestation, the main clearance effort occurred in the 1980s; rhododendron and conifer regeneration is now only occasional. The ground slopes steeply to the Afon Prysor (Ceunant Llennyrch) along the northern edge, which is designated a SSSI for its Atlantic bryophytes and ferns. The compartment supports pockets of internationally important lichen flora, occurring particularly on old hazel and rowan. Otters have been noted in the river. Several tributary streams occur. Following extensive fencing works by CCW, this area was included in 2012 in a grazing compartment incorporating a large proportion of the wood and is now lightly grazed by sheep.

8a	5.10	Oak (sessile)	1900	PAWS restoration	Management factors (eg grazing etc), No/poor vehicular access within the site, Sensitive habitats/species on or adjacent to site, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation
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An area of PAWS, Douglas fir and larch were planted extensively, leaving a scattering of native broadleaves (mainly mature oak, with birch in areas of failed conifer) amongst the crop. The whole area was formerly under dense Rhododendron (cleared 1993-94). The mature conifers were partially thinned in 2001-2, leaving a predominantly broadleaf canopy with small pockets of remaining Douglas. Open glades now support regenerating ericaceous shrubs, rowan and birch. Following extensive fencing works by CCW, this area was included in 2012 in a grazing compartment incorporating a large proportion of the wood and is now lightly grazed by sheep. Public and permissive paths cross the compartment.

8b	2.10	Mixed conifers	1969	PAWS restoration	Management factors (eg grazing etc), No/poor vehicular access to the site, Services & wayleaves, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation
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<p>Plantations of unthinned Douglas fir and thinned Japanese larch occur here on steep and rocky ground. Few broadleaved trees are present other than on inaccessible cliffs, some etoliated birch occur. An electricity wayleave forms the southern boundary, while a small field associated with Cae'n y Coed occurs to the South East . A public footpath runs along the southern boundary. Following extensive fencing works by CCW, this area was included in 2012 in a large grazing compartment incorporating a large proportion of the wood and is now lightly grazed by sheep.</p>							
9a	0.90	Western hemlock	1969	PAWS restoration	Management factors (eg grazing etc)	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation
<p>This plantation of western hemlock (with occasional beech) is situated on moderate slopes below forest road. Scattered halo-thinned mature oaks occur under the hemlock canopy. Management access is from main forest track, also via old road and potentially along overgrown track on eastern side. Hemlock is regenerating strongly in the understorey. There is a mossy field layer in open areas, however the ground is bare in much of the compartment. Following extensive fencing works by CCW, this area was included in 2012 in a large grazing compartment incorporating a large proportion of the wood and is now lightly grazed by sheep.</p>							
9b	0.90	Sessile oak	1969	PAWS restoration	Management factors (eg grazing etc), Mostly wet ground/exposed site	Connecting People with woods & trees	National Park, Special Area of Conservation
<p>An area of PAWS in which scattered mature oak is still present within the crop, the area was planted with mixed conifers (western red cedar, western hemlock, Norway spruce) and some beech. The ground is fairly flat ground and bisected by a stream. Scattered Rhododendron was cleared 1993-94 but regeneration of both rhody and conifers is present. Following extensive fencing works by CCW, this area was included in 2012 in a large grazing compartment incorporating a large proportion of the wood and is now lightly grazed by sheep. Most of the conifer component has now been ringbarked or has windblown, although regen occurs.</p>							
10a	7.60	Western hemlock	1969	PAWS restoration	Management factors (eg grazing etc), Mostly wet ground/exposed site, Services & wayleaves, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Connecting People with woods & trees	National Park, Special Area of Conservation

Part of the zone is recognised as PAWS and scattered mature oak remain, released from under- and inter-planted conifers in 1999. Canopy and regenerating western hemlock remains, at varying densities. Rocky knolls occur and the ground is moderately sloping, dropping more steeply to the north. Streams run along the eastern edge and cut across the area. Overhead electricity lines follow the central stream corridor and run along northern edge, both with unthinned conifer adjacent. Rhododendron (mainly in wayleaves and edges) was cleared in 1992-94, although regen of both rhody and conifer continues to be an issue. Management access is from main forest road. Following extensive fencing works by CCW, this area was included in 2012 in a large grazing compartment incorporating a large proportion of the wood and is now lightly grazed by sheep.

10b	4.20	Mixed conifers	1969	PAWS restoration	Management factors (eg grazing etc), Mostly wet ground/exposed site, Services & wayleaves, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Connecting People with woods & trees	National Park, Special Area of Conservation
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Again, this area comprises a plantation of mixed conifers (western hemlock, Japanese larch, Norway spruce, Douglas fir, western red cedar) with scattered mature oak lying on a steep slope below the forest road. A stream marks the western edge, while an overhead electricity line crosses to the north. Rhododendron (mainly in wayleave and edges) was cleared 1992-94 but regeneration of both rhody and conifers persists. Management access is from the main forest road, although there is little opportunity to turn forestry vehicles beyond the overhead lines. A public footpath cross the area and follows the wayleave along the northern edge. Following extensive fencing works by CCW, this area was included in 2012 in a large grazing compartment incorporating a large proportion of the wood and is now lightly grazed by sheep.

11a	11.80	Mixed conifers	1969	PAWS restoration	Management factors (eg grazing etc), No/poor vehicular access within the site, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Site of Special Scientific Interest, Special Area of Conservation
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This area of PAWS hosts plantations of Douglas fir and some Japanese larch, with scattered native broadleaves, predominantly sessile oak with birch in areas of failed/cleared conifer and occasional ash / hazel. The riparian zone is now considered robust following the removal of the majority of the conifer and ongoing rhododendron clearance efforts since the 1980s, however, occasional rhody and conifer regen occurs within the compartment. Very steep ground slopes down to the gorge of Afon Prysor (Ceunant Llennyrch) along the northern edge, which is designated a SSSI for its Atlantic bryophytes and ferns. A number of areas close to the river have also been noted as being of international importance for lichens. A fine waterfall, Rhaeadr Du, occurs on the river at the eastern extremity. Otters have been noted in the river. Several tributary streams flow through the compartment. No management access exists other than on foot. A permissive footpath allows visitors to reach and view the waterfall from above. Following extensive fencing works by CCW, this area was included in 2012 in a large grazing compartment incorporating a large proportion of the wood and is now lightly grazed by sheep.

11b	5.10	Douglas fir	1969	PAWS restoration	Management factors (eg grazing etc)	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation
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Part confirmed PAWS, much of it deemed secure, the scattered mature oak and birch have been largely released from under- and inter-planted conifers (1999) with remnant Douglas fir present as thinned stems. Management access is possible from the forest track over moderate to flat ground although a number of streams and flushes are present. Included within the grazing scheme managed by CCW.

12a	2.00	Japanese larch	1969	PAWS restoration	Housing/infrastructure, structures & water features on or adjacent to site, Management factors (eg grazing etc)	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation
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This area comprises mainly plantations of Japanese larch on old fields, which were thinned in 1998 to promote best stems. Some mature oak occur, mainly on rocky ground and along old field boundaries. A roofless stone barn associated with the old fields, situated alongside the main forest access track which runs along southern edge of the compartment, hosts a number of more unusual species including cushion mosses. Permissive footpaths are present. The area is included in the grazing scheme managed by CCW.

13a	1.70	Mixed conifers	1969	PAWS restoration	Services & wayleaves	Connecting People with woods & trees	National Park, Special Area of Conservation
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<p>Plantations of dense Norway spruce occur on drained wet ground, with some Lodgepole pine, Sitka and Douglas fir, while birch, willow and alder are encroaching at the margins. Some of these plantations remain unthinned: the ground flora here is very sparse and if regarded as PAWS then this area would be classed as threatened. The ground is generally flat with a small stream and the main forest access track (permissive footpath) passing through the northern edge. Overhead electricity lines pass along north-eastern edge (HV) and through the western corner (LV).</p>							
14a	9.00	Oak (sessile)	1900	High forest	Housing/infrastructure, structures & water features on or adjacent to site, Services & wayleaves	Connecting People with woods & trees	Ancient Semi Natural Woodland, National Park, Planted Ancient Woodland Site, Special Area of Conservation
<p>Comprising ancient broadleaved woodland, primarily sessile oak, this area is now in robust condition. The northern section and southern edge are rather open after conifer clearance in 1997 and subsequent windblow. Stunted Douglas fir underplanted in the central area of oakwood on the dome of Coed Nyth y Frân were killed standing in 1992. The woodland is largely open in character with a sparse understorey and mossy field layer. A ruined building exists in the south-western corner, possibly the farmstead associated with the cleared fields in the wood. Permissive footpaths and tracks cross the compartment.</p>							
15a	3.20	Birch (downy/silver)	2007	PAWS restoration	Housing/infrastructure, structures & water features on or adjacent to site, Services & wayleaves	Connecting People with woods & trees	Ancient Semi Natural Woodland, National Park, Special Area of Conservation
<p>Two late 1960s plantations, of Norway spruce in the east and Douglas fir in the west, were both thinned in 1997, however, due to extensive windthrow the crop was clearfelled in 2007. Much of this plantation was probably on formerly open ground: a roofless stone barn still extant along the main track testifies to past agricultural activity. Native broadleaves are present in remaining fragments of ancient woodland along the gully to the east (sessile oak) and amongst failed conifers in the western end (mainly birch). These have provided a seed source for dense natural regeneration, mainly birch but with occasional oak, rowan, willow, ash and conifer, now at thicket stage. Permissive footpaths are present. The ground flora is somewhat suppressed, with some bramble, although the canopy is now closing between the regenerating trees.</p>							
16a	2.50	Mixed conifers	1969	PAWS restoration	Mostly wet ground/exposed site, No/poor vehicular access within the site	Connecting People with woods & trees	National Park, Planted Ancient Woodland Site, Special Area of Conservation



While not confirmed as PAWS, fragments of mature ancient woodland remain on the margins of a plantation of mixed conifer, situated on a rocky knoll with remnant heathland vegetation. The conifers comprise mainly Sitka spruce, with stands of Lodgepole pine, Japanese larch, Norway spruce and Douglas fir. A few broadleaves are present within the crop. Treated as PAWS, dense shade is inhibiting most natural regeneration of ground flora and tree species. A path through the southern edge follows a small stream and links to the wider public footpath network.

17a	26.45	Sessile oak	1915	Wood pasture	Gullies/Deep Valleys/Uneven/Rocky ground, Management factors (eg grazing etc), Sensitive habitats/species on or adjacent to site	Connecting People with woods & trees	Ancient Semi Natural Woodland, National Park, Site of Special Scientific Interest, Special Area of Conservation
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This compartment is dominated by sessile oak, of relatively even age (possibly the result of felling and regrowth or re-stocking around the time of the First World War), with patches of hazel, downy birch, rowan and alder. There are some open glades, dominated by tussocky Molinia or bracken on drier ground. The woodland structure is a little more diverse in the gorge itself, where species such as willow and ash are also present in small numbers and there is a small patch of wet woodland type vegetation, with hazel, birch and alder, where a stream crosses a flatter plain between steep inclines, to the east of the compartment. There is generally very little understorey or natural regeneration at present due to historic grazing pressure. The ground flora in the more humid areas is dominated by mosses and liverworts typical of Atlantic woodlands. On higher, drier ground, the understorey is largely grassy, with swathes of bluebell in spring. Public and permissive rights of way cross the compartment. The compartment includes an adjacent bracken field into which native trees may expand.

17b	37.56	Sessile oak	1915	Wood pasture	Gullies/Deep Valleys/Uneven/Rocky ground, Management factors (eg grazing etc), Mostly wet ground/exposed site, Sensitive habitats/species on or adjacent to site	Connecting People with woods & trees	Ancient Semi Natural Woodland, National Park, Site of Special Scientific Interest, Special Area of Conservation
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This compartment comprises Ceunant Geifr, the gorge of the Nant Ddu, along with surrounding woodland and rough grazing. The woodland itself is dominated by sessile oak, much of which is relatively even aged, although the species and structure within the steep gorge itself is more diverse, with birch, rowan, ash, elm, alder and a few young beech. The steep slopes along the Afon Prysor and Nant Ddu support a range of rare lichens, mosses and liverworts, with streams passing steeply down to Ceunant Llennyrch. Beyond the woodland edge, the ground cover comprises bracken, gorse, rocky outcrops and scattered heathland vegetation, into which sparse tree cover is slowly expanding, although the whole area is currently grazed. A public right of way crosses Ceunant Geifr and follows the stream for a time. The open ground areas appear to be access land under CRow.

18a	23.02	Open ground		Non-wood habitat	Housing/infrastructure, structures & water features on or adjacent to site, Management factors (eg grazing etc), Sensitive habitats/species on or adjacent to site	Connecting People with woods & trees	National Park
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A network of fields with a generally NE aspect situated on relatively sheltered slopes around Llennyrch farmhouse. There is a mosaic of habitats within these fields, including semi-improved grasslands (MG6) and acid grassland (U4). Patches of dense and sometimes unmanaged bracken exist closest to the woodland edge (U20). Along streamsides there are patches of *Molinia mire* (M25) with meadowsweet and rushy pasture areas (M27c). Tree cover within these fields is relatively high, mainly along field boundaries (dilapidated drystone walls and ditches/ streams) and including a number of veteran ash of up to 5m diameter around Llennyrch farmhouse. Scattered trees and pockets of establishing woodland occur to the NE end of the sub-compartment along the boundary with the neighbouring ancient woodland. Some of the fields have significant grassland fungi interest. The compartment is well served by tracks and public rights of way.

18b	34.25	Open ground		Non-wood habitat	Management factors (eg grazing etc), Mostly wet ground/exposed site, Sensitive habitats/species on or adjacent to site	Connecting People with woods & trees	National Park
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A mosaic of habitats within grazed fields on higher ground around the ruined farmstead at Ty Newydd. The grassland is primarily acid grassland (U4) with one field of semi-improved MG6 grassland and generally quite exposed to prevailing south-westerly winds. There is significant grassland fungi interest with three Class A indicator species occurring within the grassland. The fields to the south of the public road/ track and adjacent to Llyn Llennyrch are particularly diverse in terms of habitat types, with a mix of mire, wet heath and blanket bog habitats of conservation interest. Patches of gorse and bracken also occur. To the northwest of the compartment there is a mosaic of woodland, mainly on drier knolls, and rank *Molinia* mire, leading down to the stream which forms the property boundary. There are a few isolated trees within the fields including relict fruit trees along field boundaries. Field boundaries largely comprise dry stone walls of often impressive construction. Accessible from the road and main track. A small area to the south is mapped as access land.

19a	23.02	Open ground		Non-wood habitat	Mostly wet ground/exposed site, No/poor vehicular access within the site, Sensitive habitats/species on or adjacent to site	Connecting People with woods & trees	National Park
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An area of open ground crossed by multiple streams and flushes feeding northward toward the Prysor. Mire vegetation predominates, including areas of wet heath, *Molinia* mire and patches of bog myrtle, with areas of bracken on drier knolls. The boundaries are undefined on the ground to the south and east, with livestock ranging up to the shores of Llyn Trawsfynydd. Access for quad bikes or on foot is possible from Ceunant Geifr. A public footpath follows the gorge from the dam at Llyn Trawsfynydd. The compartment is also access land.

19b	76.23	Open ground		Non-wood habitat	Gullies/Deep Valleys/Uneven/Rocky ground, Mostly wet ground/exposed site, No/poor vehicular access within the site, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Connecting People with woods & trees	National Park
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A large extent of ffridd between the conduit and the mountain wall with the common. A mixture of dry and wet heath habitats, bog and mire, with peaty soils on flatter ground around watercourses. On drier ground and around exposed crags, bracken is densely established, with a few scattered trees mainly in inaccessible areas where the ground rises steeply to meet the lower slopes of Craig y Gwynt. The remains of agricultural buildings are still visible close to the boundary with Coed y Rhygen National Nature Reserve. The area is access land and is crossed by the Llyn Trawsfynydd cycleway. Management access can be gained from 19a but only by quad bike/ on foot. There are currently areas of dense bracken on shallower mineral soils, where the establishment of scattered tree cover would be desirable.

## Appendix 2: Harvesting operations (20 years)

Forecast Year	Cpt	Operation Type	Work Area (ha)	Estimated vol/ha	Estimated total vol.
2017	17a	Thin	2.39	18	44
2018	8b	Thin	1.51	60	90
2018	11b	Thin	0.98	60	59
2018	12a	Thin	1.39	60	83
2019	3a	Clear Fell	1.37	190	260
2019	5a	Thin	4.19	55	230
2019	9a	Thin	0.87	75	65
2019	10a	Selective Fell	2.97	178	530
2019	10b	Thin	4.33	69	300
2019	11a	Thin	17.13	41	700
2019	13a	Thin	1.91	5	9
2020	16a	Clear Fell	2.55	235	600
2024	5a	Thin	4.19	55	230
2024	10a	Clear Fell	2.97	99	295
2024	10b	Thin	4.33	69	300
2024	11a	Thin	17.13	41	700
2029	5a	Thin	4.19	55	230
2029	10b	Thin	4.33	69	300
2029	11a	Thin	17.13	41	700

## GLOSSARY

### **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. Either by hand cutting or with carefully selected weed killers such as glyphosate.

## **Windblow/Windthrow**

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