



Bwlch Corog

Management Plan

Plan Period 2017 - 2022

Produced by



Sefydliad Tir Gwyllt Cymru
Wales Wild Land Foundation

For



COED CADW
WOODLAND
TRUST

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1 Site details

Site name	Bwlch Corog
Location	Glaspwll, Machynlleth, SY20 8UA Grid Reference: SN 742 959 (Access) OS 1: 25,000 Map Explorer OL23
Area	142 hectares (351 acres)
External Designations	Dyfi Biosphere, Priority Acid Sensitive Catchment, Ancient Woodland Site (9.88ha)
Internal Designations	Cambrian Wildwood

2 Site description

2.1 Location

Bwlch Corog is located near to the village of Glaspwll at the northern end of the Cambrian Mountains, south of Afon Dyfi, between Machynlleth and Aberystwyth.

See Map 1 for an aerial map of the location.

2.2 Neighbouring Land

West

Mynydd Dynyn, incorporating Pen Carreg Gopa a Moel Hyrddod SSSI (see Section 2.3 below), mainly upland pasture grazed by feral horses.

Maesycilyn, north of Mynydd Dynyn, commercial forestry comprising Sitka spruce, owned by FIM and managed by Tilhill.

North

Coed Cefn Coch a PAWS woodland property comprising native woodland, conifers and red oak, sharing a short boundary in the wooded river gorge.

East

Cefn Coch farm, managed as sheep and cattle pasture.

Land pertaining to Cefn Coch farmhouse. Mainly cattle pasture.

Forestry land, south of Cefn Coch farm, owned by the National Assembly for Wales and managed by Natural Resources Wales, part of the Cwm Einion and Nant y Moch forest areas. It comprises mainly Sitka spruce. The narrow section between Bwlch Corog and Pencreigiau'r Llan SSSI (see Section 2.3 below) is recently felled and restocked with Sitka

spruce: following the felling a very healthy upland heath habitat developed and still dominates the area while the spruce remains small.

South

Pemprys farm, sharing a boundary across the top of the hill, set in a steep-sided valley and managed as sheep pasture.

See Map 2 for an aerial map showing the setting of Bwlch Corog within the local landscape.

2.3 Local Designated Sites

Pen Carreg Gopa a Moel Hyrddod SSSI

To the west of the site on higher ground, designated for Blanket Bog and Upland Heath habitats.

Pencreigiau'r Llan SSSI

To the east of the site on higher ground, designated for Blanket Bog and Upland Heath habitats, along with Hawkweed.

Cwm Llyfnant SSSI

To the north, in the narrow wooded valley of the Afon Llyfnant, designated for Broadleaved woodland, Woodland/wet flush invertebrates, and a wood stitchwort.

Cwm Einion SSSI

To the south, in the picturesque wooded valley of Cwm Einion, known also as Artists Valley, designated for broadleaved woodland, a woodland bryophyte assemblage, and three lichen features.

Cwm Einion SAC

Also in Cwm Einion, designated for Tilio-Acerion forests of slopes, screes and ravines.

2.4 Place Names

Bwlch Corog is named after the hill which dominates the site. As this is an unusual name for a hill (*bwlch* means 'pass' in English), it is worth mentioning some history of the place names on the site. A map from the 18th Century shows the river now called Nant Cefn Coch named as Nant Coro and a farmhouse nearby named Blaen Coro, which features as Blaen-cero on modern maps. The hill was named Esgair Maen.

The drovers road to Ffair Rhos, surviving now as a Public Bridleway, followed a route over the hill via the pass which was marked by a stone identified on old maps as Carn Bwlch Coro, located in the present government forestry land, about 500m east of the summit of the hill. On maps from the 19th Century to today, the summit is marked as Bwlch Corog.

The site was formerly part of Llechwedd Einion farm until that property was integrated into Cefn Coch farm in the 19th Century. In 2004 Cefn Coch farm was divided into three properties

by a new owner. The other two parts were sold on, while the Bwlch Corog site was retained. It was put on the market in 2013 as 'Cefn Coch' and acquired in 2017 by Woodland Trust, and passed to Wales Wild Land Foundation CIO on a 125 year lease for the Cambrian Wildwood project. The property name was changed from Cefn Coch to Bwlch Corog to prevent confusion with the two neighbouring properties named Cefn Coch, and because it is reflective of the dominant landscape feature on the property.

2.5 Topography

The site covers 142 hectares and rises from 100m to 388m above mean sea level.

The land extends from the river gorge of Nant Cefn Coch southwards to the summit of the hill Bwlch Corog for 2.5km, at a width of approximately 750m.

Afon Pemprys has two of its sources in blanket bog on the site, the tributaries flowing south to join in Pemprys valley. Nant y Castell has its source in blanket bog on the site and flows north, forming much of the western boundary. Nant Cefn Coch flows north near to the northern section of the eastern boundary. Three tributaries of this river have their source on the site.

2.6 Geology and Soils

Geology

The underlying geology is Palaeozoic slaty mudstone and siltstone.

Soils

The soils are brown earths, brown rankers, stagnopodzols, stagnohumic gleys, and organic peat soils.

2.7 Habitats

The following broad habitats are present:

- purple moor grass (*Molinia caerulea*);
- dry and wet upland heath;
- blanket bog;
- acid grassland;
- bracken (*Pteridium aquilinum*);
- woodland (9.88ha)

More detail on habitats is in Section 5.1 on key features.

2.8 Public Access

Open Access Land

Almost the whole site is Open Access Land. The site is generally very difficult going due to the heavy growth of purple moor grass, rushes or bracken.

Public Bridleways

From Glaspwll following the river gorge south, a bridleway enters the site in the wooded river gorge and continues for about 400m before ascending to the access track for Cefn Coch and Bwlch Corog. The track is within the property for this section. Leaving the property at the fork in the tracks, the bridleway follows the track to the holiday cottages re-enters the property at the gate opposite the holiday cottages. It then follows the eastern boundary of the site, crossing through a gate onto the Cefn Coch farmland for 250m before crossing through another gate back onto Bwlch Corog. It continues to follow the eastern boundary until it leaves the site to continue onto Pemprys.

See Map 3 for a map showing all the trails at Bwlch Corog.

This bridleway is part of the Welsh Government Dragon Route, and the Prince Llewelyn Ride.

It is impassable in the river gorge and very difficult going for all the rest except for the section on the access track.

Another bridleway joins this one at the corner where the government forestry becomes the neighbour to the east: this short section of bridleway connects two parallel bridleways. It is blocked on our boundary with Cefn Coch farm by a fence and stile.

2.9 Infrastructure

Tracks

A track enters the site via a gate opposite the holiday cottages associated with Cefn Coch farmhouse. It continues for about 500m at the north-eastern end of the site. It is overgrown and very wet in places, however it is passable on foot and by off-road vehicle.

The traces of other tracks are perceivable on the site: they are very overgrown with 3 foot high vegetation of purple moor grass and rushes, and generally very difficult to follow on foot.

See Map 3 for a map showing all the trails at Bwlch Corog.

Banks

Traces of old banks and walls are perceivable on the site, characterised by the growth of rushes as a linear feature.

Grips

The hill is drained by a network of grips. The dominance of purple moor grass across the site is probably a result mainly of this land drainage.

See Map 7 for an overview of the main drainage grips across the site.

Fences

Fencing around the external boundary of the site was installed in about 2005: it consists of tanalized softwood posts and stakes, and galvanised steel pig netting and barbed wire. A survey of the boundary in 2017 shows the external fence to be fit for purpose.

Internal fences are present along former and current field boundaries across the site. They are in various states of repair, from being fully stockproof to almost fully decomposed. They are all of the type with wooden posts and stakes with galvanised steel pig netting and barbed wire. The newer fencelines have tanalized softwood posts and stakes, while the older ones are in oak.

3 Directions to Site

By road

On A487 Machynlleth to Aberystwyth, about 1 mile south-west of Machynlleth and ½ mile north-east of Derwenlas take minor road signposted 'Glaspwll', heading east and then south. Continue to village of Glaspwll, about 2 miles from main road.

Alternative route: on A487 Machynlleth to Aberystwyth, about 2 miles south-west of Derwenlas and ½ mile north-east of Glandyfi take unsignposted minor road that leads east along Cwm Llyfnant / Llyfnant Valley. Continue to village of Glaspwll, about 2½ miles from main road.

By train

Take the train to Dyfi Junction and walk to village of Glandyfi: follow A487 north-east for ½ mile and then proceed along unsignposted minor road that leads east along Cwm Llyfnant / Llyfnant Valley. Continue to village of Glaspwll, about 2½ miles from main road. Alternatively, follow the bridleway that leads along Cwm Llyfnant / Llyfnant Valley on the north side of the river.

Alternative route: take the train to Machynlleth and proceed to Glaspwll by taxi or bus/on foot.

By bus

The A487 road is well served by buses. Unfortunately none of them proceed to the village of Glaspwll. Bus stops are located in the villages of Derwenlas and Glandyfi. To continue on foot, follow the directions 'By road' above. Or use the bridleway along north side of Cwm Llyfnant / Llyfnant Valley.

From Glaspwll

Continue on foot, following Public Bridleway that leads south from village up the river gorge of Nant y Factory and Nant Cefn Coch, arriving after about ½ mile or 600 metres at the wooded northern end of the site.

Alternative route: follow the track signposted 'Cefn Coch' from bridge in village, past the bee

keeping site and up a steep hill. Continue for about a mile to a fork: take the right fork signposted 'Holiday Cottages', and continue on the track for another 400m. Opposite the holiday cottages is the entrance to the site via a 12 foot metal gate.

4 Long Term Policy

The key features of Bwlch Corog are:

- Habitats
- Species
- Access

See Section 5 for details of key features.

4.1 Vision for Bwlch Corog

Cambrian Wildwood aims to establish a large area of around 3,000ha for wildlife, with Bwlch Corog being the initial site.

The long term vision for Bwlch Corog is for the site to be wild land whose form and content and evolution are driven by natural processes. Attention will be paid to the aesthetic qualities of wildness, which make a significant contribution to the experience of being in a wild place.

The main attributes will be:

- An absence of modern industrial infrastructure. Maintenance of the access track and trails across the site by cutting vegetation is acceptable. Low impact constructions using local natural materials in a limited area at one end of the site are acceptable.
- A perception of the landscape being unmodified and composed of natural habitats, with a natural distribution and interface of different habitat types, and increased tree cover: see Section 5.1 for more detail on habitats.
- Presence of wild animals, including large herbivores, and an absence of domestic livestock: see Section 5.2 for more detail on species.
- No artificial boundaries such as fencing.
- Signage of subtle design and kept to a minimum, for example at entrance points to the site, and on public bridleways.
- No drainage grips or other artefacts modifying the landscape.

4.2 Management Rationale

Management will be directed towards making the land wilder. Sometimes referred to as rewilding, the process has elements in common with ecological restoration though with less emphasis on human intervention.

Management will be focussed on initial interventions to establish appropriate conditions so that subsequent development of the site is driven principally by natural processes.

Initial interventions will include:

- Removal of internal fencing.
- Blocking drainage grips.
- Planting trees.
- Introducing grazing.

Ongoing management will be mainly the management of large herbivores, for welfare purposes and to manage their numbers to achieve the objective of a steady net increase in tree cover across the site.

5 Key Features

5.1 Habitats

5.1.1 Long term objectives

Whole site

Only natural habitats present, appropriate to the site: native woodland, blanket bog and upland heath are the predominant natural habitats of this land.

The Ancient Woodland area at Bwlch Corog will be undiminished in scale, with its remnant components secure, improving in condition, and slowly expanding across the site.

There are no other defined quantitative objectives for the extent and structure of the habitats, however the composition will be native species only.

A plausible state for the whole site in the long term could be: roughly one third woodland, one third open habitat, and one third mixture of open habitat with sparse tree cover, in a haphazard distribution across the site related to some extent to elevation and soil conditions, and in a dynamic state of change over time in response to disturbance factors, colonisation, succession, species population dynamics, species interactions and interventions by humans if considered necessary.

Woodland

The woodland area will have increased from its current extent – perhaps to around 50ha as suggested above. It will be composed of native tree species, including current species present, and those introduced by planting in line with evidence of past composition.

Woodland structure will range from dense thicket to high canopy forest to significant canopy gaps and glades; the woodland edge will be dynamic in its form and position due to disturbance factors and tree colonisation; lower density tree cover will be present with open land habitats beyond the woodland area.

The age structure will range from young regeneration to ancient trees.

Species of plants, bryophytes, lichens and animals appropriate to the woodland will be present.

The area of Ancient Semi Natural Woodland will not be reduced from its current area of around 4ha.

5.1.2 Current status

In general the distribution and interface of different habitat types are natural, albeit between modified habitats. However some existing internal fencelines mark an abrupt change in vegetation:

- The southern section of the fenceline alongside the track marks an abrupt change in vegetation from woodland to the east and open land with bracken and sparse colonisation of young trees to the west.
- The northern section of the fenceline alongside the track, where it follows an east-west direction, marks an abrupt change in vegetation from bracken to the north and acid grassland and heath and purple moor grass to the south.

The following broad habitats are present:

- purple moor grass (*Molinia caerulea*)
- dry and wet upland heath
- blanket bog
- acid grassland
- bracken (*Pteridium aquilinum*)
- woodland

See Map 6 for a map of the habitats across Bwlch Corog.

For more detailed information on habitats, see the Vegetation Survey Reports of 2005 and 2017, where habitats are mapped and described in detail according to the National Vegetation Classification (NVC).

The woodland amounts to 9.88ha and is made up of the following NVC types:

- W7 *Alder – Ash – Yellow Pimpernel woodland*, a community typical of wet or moist soils.
- W11 *Sessile oak – Downy birch – Wood sorrel woodland*, a community of moist, free draining, base-poor soils.
- W17 *Sessile oak – Downy birch – Dicranum majus woodland*, a community of very acid, thin soils in areas of high rainfall.

The woodland is categorised into different types of Ancient Woodland Site:

- 'Plantation on Ancient Woodland Site' (Japanese larch stand)
- 'Ancient Semi Natural Woodland' (undisturbed original native woodland)

- Bracken with scattered mature trees and some colonisation of young trees
- Planted native woodland (about 20 years old)

Current tree species present:

sessile oak
ash
birch species
rowan
small-leaved lime
elm
aspen
holly
hazel
hawthorn
alder
willow species

See the Ancient Woodland Report on Bwlch Corog of 2017, which describes the woodland in detail, and gives recommendations for management.

5.1.3 Significance

Habitats is the most important of the key features: the status of the habitats define the aesthetic experience of being in the landscape more than other factors; the habitats provide the ecological context for the presence of wildlife; and all of these provide interest in accessing the site.

The two neighbouring hills are designated as SSSIs for their upland heath and blanket bog habitats. With the landscape of Bwlch Corog restored to natural habitats including upland heath and blanket bog, there will be a large, contiguous area of these communities across the landscape, increasing their resilience and improving the landscape for wildlife.

The two neighbouring valleys are well wooded and include SAC and SSSI woodlands. There is virtually no native woodland at higher elevations. By increasing the area of native woodland across the site including the higher ground, native woodland will be present across the altitude range and more connectivity between woodlands in neighbouring valleys will be established. This will create a large area of native woodland across the landscape.

The Ancient Woodland (ASNW and PAWS) at the northern end of Bwlch Corog is an irreplaceable habitat and represents a significant habitat from which remnant species can colonise the remainder of the site.

See also Section 2.3 on local designated sites.

Cambrian Wildwood management of Bwlch Corog creates a significant area within Dyfi

Biosphere that fulfills the UNESCO defined criteria of a Biosphere Reserve for a core area (a strictly protected ecosystem that contributes to the conservation of landscapes, ecosystems, species and genetic variation) or a buffer zone (for activities compatible with sound ecological practices that can reinforce scientific research, monitoring, training and education).

5.1.4 Opportunities and constraints

Opportunities

- The presence of natural habitats across the site.
- Colonisation by young trees ongoing, since the removal of sheep grazing in 2011.
- Potential to block drainage grips.
- Potential to introduce grazing by suitable large herbivores.
- Potential to plant native trees, in woodland blocks or individually using the sabre method.

Constraints

- Overgrown vegetation across site, especially purple moor grass and bracken, making tree establishment difficult, and suppressing growth or colonisation of other plants.
- Remoteness of parts of site from existing native trees to act as seed sources.

5.1.5 Factors causing change

- Drainage grips drying the soil and encouraging purple moor grass.
- Colonisation by young trees since the removal of sheep grazing in 2011.

5.1.6 Management rationale

Initial interventions to be carried out to establish natural conditions where necessary, for example blocking drainage grips, planting trees, introducing grazing and removing non-native species.

Habitats will be allowed to develop naturally under the influence of natural processes. Trees to establish within woodlands by natural regeneration. Woodland expansion to be achieved by natural colonisation.

For open land tree planting will be considered in areas unlikely to colonise with trees readily, due to being remote from source of tree seed or due to competing vegetation. Tree species to be planted are those native trees currently present in existing woodland nearby and other species revealed as previously present by soil core pollen analysis.

Grazing by large herbivores is a natural element of the habitat types present. See Section 5.2 on species for discussion of herbivores.

5.1.7 Management objectives for 5 year plan

- Restore blanket bog and wet heath by restoring natural water table by removing all drainage infrastructure by the end of the plan period.
- Establish natural and dynamic changes in habitats across the site, by removing all

internal fencing, except new exclosures for establishing woodland areas.

- Establish natural process of grazing by large herbivores: introduction of small herd of horses, maximum number 16 horses (see Grazing Plan).
- Enable tree cover to achieve a steady net increase across the site, by planting in 2 exclosures totalling 4.9ha and sabre planting of 500 individual trees, using trees grown from seed collected on site, or Ceredigion and Gwynedd provenance trees grown in UK, or nearest provenance available.
- Restore PAWS to native woodland, by gradual thinning of Japanese larch, moving stand in the direction of threatened to secure.
- Area of Ancient Semi Natural Woodland to be maintained at current extent.

5.2 Species

5.2.1 Long term objectives

No invasive non-native species of plant present.

Full complement of native animal species present, as far as feasible with regards to other land uses in the neighbourhood and region. It is expected that the range of acceptable species, from a socio-economic perspective, will increase with time over the long term.

For the foreseeable future, it is presumed that the large carnivores (bear, wolf and lynx) will not be present on the site, and it is considered beyond the scope of Cambrian Wildwood to promote these species.

All other native species, including large herbivores, will be present. Some animals requiring cooperation and agreement across a large area of landscape will be longer term considerations: for example, wild boar, moose, bison and red deer. Other herbivores can be retained within a defined area with fencing and will be shorter term considerations: for example horse and cattle, which will be proxys for the extinct tarpan and aurochs from which they are descended. Roe deer are arriving in the Cambrian Mountains from the east and are likely to colonise the site in the short term.

Other mammals expected to be part of the wild landscape are: water vole, dormouse, red squirrel, pine marten, otter, weasel, stoat, polecat, badger, fox, brown hare, mountain hare, wild cat, hedgehog; plus small mammals (species of mouse, vole and shrew) and various bat species.

Bird species expected to be part of the wild landscape are too numerous to list here. Particular species of interest include: red grouse, black grouse, hen harrier, buzzard, peregrine, red kite, kestrel, cuckoo, ring ouzel, stonechat, redstart, spotted flycatcher, curlew, golden plover, common sandpiper, whinchat, wheatear, skylark, nightjar.

Also, site native species of reptiles, amphibians and invertebrates.

See Appendix 5 for a list of protected species likely to benefit from the Cambrian Wildwood

project.

See Appendix 6 for the results of bird surveys carried out in the Pumlumon area near to Bwlch Corog in 1984 and in 2011, which give an indication of the bird species which may have been present on the site historically and are likely to be attracted to the site as the habitats are restored.

5.2.2 Current status

Mammals:

No large herbivores present (as at September 2017).

Field voles evident across the site.

Observations of fox, pine marten, grey squirrel recorded.

Birds:

Meadow pipit, raven, red kite, buzzard, kestrel, sparrowhawk, greater spotted woodpecker, wren, fieldfare (winter visitor).

Amphibians and reptiles:

Common lizard.

Invertebrates:

Many evident; Poplar sawfly, Welsh clearwing of particular interest.

Formal surveys for mammals, birds, invertebrates pending.

5.2.3 Significance

Wildlife populations declined globally by 58% during the period 1970 to 2012, as reported in Living Planet Report 2016 by WWF. This is reflected in the ongoing loss of wildlife across the UK, as documented in the State of Nature Report of 2016. The bird surveys of the Pumlumon area carried out in 1984 and 2011 (see Appendix 6) show this trend operating locally for birds: over those 27 years, 12 species became extinct, with only 3 new species recorded. Of the 16 remaining species there were declines in all counts except 4.

The main reasons for this tragic loss of other species across the planet are directly linked to human activity: exploitation of the wildlife, and habitat loss.

Cambrian Wildwood aims to restore all the native species to the landscape, as far as feasible with regards to other land uses in the neighbourhood and region. The many reasons to aim for this include: the ethical case for not eradicating other species, and to restore what has previously been eradicated locally; the utilitarian case for regarding an ecosystem as a whole and maintaining it in its complete natural state for it to function and therefore provide for our needs; the aesthetic case for enjoying the beauty and inspiration of wild animals and a complete ecosystem; the spiritual case for living with other wild animals.

5.2.4 Opportunities and constraints

Opportunities

- Even if locally absent, most native species are not extinct, so can be reintroduced to the site.
- Two species that are extinct, tarpan and aurochs, have direct descendents as domestic animals, horse and cattle. By careful choice of breeds and allowing the animals to live as wild herds as far as practicable, they provide close proxies for their wild ancestors.
- Some species absent from the site, are present locally enough to recolonise the site naturally given the right habitat conditions. This is particularly the case for a number of bird species.
- Many species do not cause any problems for human economic activity or pose any danger, and are therefore easily reintroduced, given the right habitat conditions.
- Pine marten in the locality may limit the grey squirrel population in the area, providing an opportunity to reintroduce red squirrel. See *Population crash in an invasive species following the recovery of a native predator: the case of the American grey squirrel and the European pine marten in Ireland* by Sheehy & Lawton (2014) and *The enemy of my enemy is my friend: native pine marten recovery reverses the decline of the red squirrel by suppressing grey squirrel populations* by Sheehy et al. (2018). Feasibility report for establishing red squirrel at Bwlch Corog pending.

Constraints

- With the presence of livestock farming in the locality, the reintroduction of large carnivores is not practical.
- Some large herbivores, for example red deer, are difficult to enclose without specialist fencing, and might be better introduced in cooperation with neighbouring landowners over a wide area. This suggests a long time frame in order to ensure that all parties affected are sympathetic to the proposal.
- The presence of grey squirrel limits the potential for reintroducing red squirrel.
- Some animals have the potential to endanger people: for example wild boar, bison, bulls, stallions (in the presence of mares with riders).

5.2.5 Factors causing change

Colonisation by young trees since the removal of sheep grazing in 2011, making the landscape more hospitable to wildlife.

5.2.6 Management rationale

Remove invasive non-native species of plant, to prevent competition with site native plants.

Remove non-native tree species.

Introduce native animals missing from site, subject to individual feasibility studies and following IUCN guidelines for translocations and reintroductions.

Species of large herbivore will be introduced as feral herds over a number of years. Roe deer are expected to colonise the site naturally. Horse will be the first introduction, as a proxy for tarpan, being the easiest to manage. Other species could be cattle, as a proxy for aurochs; red deer; European bison; moose. Studies will be carried out for each species to test for suitability for site and conflicts with other objectives; in the case of horse and cattle, the study will research the most suitable breeds for the site.

In the long term, management of herbivore populations will need consideration, for example, if tree regeneration is being prevented by the density of herbivores. In the absence of large predators apart from humans, responses could be to increase the range available to the animals, to remove some animals to another site, to sterilise some animals, or to cull populations.

5.2.7 Management objectives for 5 year plan

- No presence of non-native trees and other non-native plants across whole site: remove Sitka spruce that has self-seeded onto moorland.
- Presence of full complement of tree species native to site: those currently not growing on site to be introduced in planting programme, informed by soil core pollen analysis (see Appendix 3).
- Presence of wild, or proxy for wild, large herbivores: introduce herd of horse of suitable breed, close to primitive wild horse.
- Presence of water vole: reintroduction programme, subject to feasibility study, assessments and required consultations, following IUCN guidelines.
- Presence of red squirrel: reintroduction programme, subject to feasibility study, assessments and required consultations, following IUCN guidelines.
- Other animal species to be considered under future plans.

5.3 Access

5.3.1 Long term objectives

Informal access will be enabled by making sure that the public bridleways are fit for use; and that a network of permissive trails allowing access on foot, on horseback and on mountain bikes are fit for use.

Organised education and public engagement activities will be a core focus of Cambrian Wildwood, as a way of enabling people to benefit from what the site has to offer despite its remoteness, and to enable the project to share its values of respect for nature. Supervised activities will include: primary school programme, youth camp programme, volunteer work days, courses and events.

Access objectives associated with the formal programmes are:

To make sure the track that enters the site opposite the holiday cottages is serviceable for vehicular access for a distance of about 500m, to the location of the old quarry.

To establish a compost toilet facility, near the old quarry.

To establish two storage and workshop shelters, near the old quarry: these will not be intended for overnight stays.

5.3.2 Current status

The bridleway in the woodland is very overgrown with vegetation and is difficult to follow in some places.

Most sections of the public bridleway on the hill are difficult or impossible to negotiate on foot.

Former tracks are very difficult to negotiate on foot, some are not evident on the ground.

The track that enters the site opposite the holiday cottages and continues for about 500m is walkable and driveable with an off-road vehicle. It is overgrown with vegetation and very wet in 3 places.

5.3.3 Significance

It is important for people to be able to visit and enjoy being at the site. One reason is that people will be more inclined to value a place, its wildlife and nature in general if they feel that they can benefit from spending time there. There are many health and wellbeing benefits from being in nature. The community and educational activities at Bwlch Corog will enable people from different age and social groups to have significant amounts of time on the site and meaningful connections with nature. This will provide health and wellbeing benefits for the people, and encourage respect for the natural world.

5.3.4 Opportunities and constraints

Opportunities

- The bridleway in the woodland is part of the Prince Llywelyn Ride and will be improved as part of a PONT project to restore the whole section of bridleway from Glaspwll (forestry road) to Cefn Coch (access track), where this does not incur loss or damage to ancient woodland features.
- The bridleway on the hill can be maintained with a tractor and topper to facilitate its use for walking and riding.
- Existing tracks can be reinstated for use as appropriate. The main access track can be maintained for vehicular access; the other tracks can be cut with a tractor and topper to facilitate their use for walking.
- Other trails can be created and maintained to establish a network of trails across the site: by cutting through the purple moor grass with a tractor and topper.

Constraints

- No constraints apparent.

5.3.5 Factors causing change

- Growth of vegetation.

- Blocked culverts.

5.3.6 Management rationale

Maintain public bridleway so that it is open and fit for purpose.

Create and maintain a network of trails across site, including a length of permissive bridleway alongside eastern boundary with Cefn Coch farm to enable bridleway users to remain on our property and not have to cross into Cefn Coch farm following the statutory route, as is currently the case.

Fence off public bridleway and permissive bridleway from rest of site with post and two strands of barb wire fencing, leaving a width of at least 4m, so that large herbivores cannot access the bridleway. This is to allay the potential concerns of riders and walkers.

Reinstate track for vehicular access for distance of 500m from site entrance.

5.3.7 Management objectives for 5 year plan

(See Map 3 for references)

- Public bridleways on the site to be open and fit for purpose.
- Other existing tracks on the site to be accessible for pedestrian access.
- New trails, including permissive bridleways, to be accessible for pedestrian and equestrian access.
- Access track that enters site at holiday cottages to be fit for vehicular use.
- Low key signage at appropriate locations to welcome visitors and provide access guidance.
- 11 volunteer work days per year, plus extra volunteer courses and workshops according to requirements and demand from groups.
- 4 school visits per school by 9 Primary schools over the 5 years.
- 14 youth camps for groups of up to 10 teenagers over the 5 years.

6 Work programme

Action	Cost (£)	By	Date
Tree seed collection		Staff + Volunteers	Oct 2017 - Mar 2021
Remove internal fencing 4 x fencing pliers 4 x hammers 2 x bolt cutters		Staff + Volunteers	Jan 2018 - Mar 2019
Block drainage grips with peat dams using peat excavated from borrow pits near to dam sites		Contractor	Jan 2019 - Mar 2020
Plant native trees at 1600/ha in areas totalling 4.9ha 10 x planting spades 10 x safety boots 30 x work gloves fencing (estimate 744m at £8/m) mounding planting areas in purple moor grass trees (60-90cm bare-rooted, 7,850) vole guards (7,850 at £0.29 each)		Staff + Volunteers Contractor Contractor Nursery Nursery	Nov 2019 - Mar 2022
Plant 500 individual trees by sabre planting method trees (120-150cm cell-grown, 500 at £5.00 each) vole guards (500 at £0.29 each)		Staff + Volunteers Nursery Nursery	Nov 2019 - Mar 2022
Aftercare of planted trees: clearing bracken, removing vole guards, etc		Staff + Volunteers	Jun 2020 - Sep 2022
Gradually thin Japanese larch plantation to favour native trees: remove up to 5 cubic metres per calendar quarter. Estimated standing volume is 1,000 cubic metres. Potentially a 50 year program, subject to review under PAWS assessment every 5 years.		Contractor	Jul 2018 - long term

Remove Sitka spruce, by cutting with hand saws 4 x hand saws		Staff + Volunteers	Jan 2018 - Mar 2022
Introduce 6 Konik horses to site: 5 mares, 1 stallion. To increase numbers to 12-18 horses.		Wildwood Trust	Apr 2018 - Jun 2018
Feasibility study, assessments, required consultations, licence and plan for water vole introduction		Wildwood Trust	Apr 2019 - Feb 2022
Feasibility study, assessments, required consultations, licence and plan for red squirrel introduction		Wildwood Trust	Apr 2019 - Feb 2022
Bridleway through the woodland reinstated under a PONT project (part of the Prince Llewelyn Ride)		PONT	
Cut trails 4 foot wide through purple moor grass, rushes or bracken using tractor and topper to open existing bridleways and create network of trails across the site, following former tracks and creating new routes. Annual maintenance		Contractor	Apr 2018 Apr 2019 Apr 2020 Apr 2021 Apr 2022
Reinstate main access track using appropriate machinery and renew 3 culverts to remove water from track		Contractor	Apr 2019
Signage Install signage at entry points to site: where bridleway enters site in woodland, heading south from Glaspwll; where access track enters site at gate opposite holiday cottages; where bridleway enters site from Pemprys, heading north; where connection to bridleway through government forestry enters site, eastern boundary; other entry points identified over time. Signage in Welsh and English to include 'Coetir Anian		Supplier Staff	Apr 2019 - Sep 2020

<p>/ Cambrian Wildwood' logo and funder's logo, welcome to Bwlch Corog, and any instructions deemed necessary</p> <p>Install signage along bridleway to encourage users to remain on property following permissive bridleway, instead of crossing fenceline to Cefn Coch farm following statutory route.</p> <p>Signage in Welsh and English to include 'Coetir Anian / Cambrian Wildwood' logo and funder's logo, and message such as 'permissive bridleway towards Pemprys/Cefn Coch, rejoins official bridleway in 250m'</p>			
<p>Subject to planning consent for permissive development, construct compost toilet facility: design to be round wood timber frame, timber board walls, doors, composting chamber underneath and turf roof, set into hillside near former quarry site</p>		Staff + Volunteers	Jun 2019
<p>Subject to planning consent for permissive development, construct first storage and workshop shelter: design to be round wood timber frame with natural materials as walls, windows, doorways, and turf roof, set into hillside at former quarry site to minimise landscape impact</p>		Staff + Volunteers + Contractor	Sep 2020
<p>Subject to planning consent for permissive development, construct second storage and workshop shelter: design as above</p>		Staff + Volunteers + Contractor	Sep 2021

7 Sub-compartment Details

The whole site is defined as a single compartment, because there is no fixed boundary between the different habitat types in the long term. The sub-compartments are defined according management distinctions in the short term.

Sub-compartments 1a, 1b, 1c, 1d correspond to the Ancient Woodland Report Compartments 1, 2, 3, 4 respectively: see Map 5.

Sub-cpt	Area (ha)	Main Species	Year	Management Regime	Management Constraints	Key Features	Designations
1a	1.13	Japanese larch	1990	PAWS restoration	Risk of infection by <i>Phytophthora ramorum</i> ; Telephone line along track	Landscape Habitats Species Access	Ancient Woodland Site
<p>Thin strip of Japanese larch plantation on Ancient Woodland Site located alongside main track to Cefn Coch. Broadleaf understory of Sessile oak, Downy birch, Rowan, Hazel, Hawthorn.</p> <p>Ground flora: Bluebells, Slender St John's wort, Wavy hair grass.</p> <p>Very little deadwood.</p> <p>Management: Restoration to native woodland by gradual thinning, removing up to 5 cubic metres per calendar quarter. Estimated standing volume is 1,000 cubic metres.</p>							

Sub-cpt	Area (ha)	Main Species	Year	Management Regime	Management Constraints	Key Features	Designations
1b	4.37	Sessile oak	n/a	Non-intervention	n/a	Landscape Habitats Species Access	Ancient Woodland Site
<p>Ancient woodland, described by Arthur Chater as ‘one of the nicest woods in the county’. At the northern end the area forms a strip of woodland between the larch stand and Nant Cefn Coch in a steep river gorge. Upstream to the south the area covers both sides of the river gorge and continues up the slope on the western side and also follows a stream coming from the south-west. The woodland comprises NVC habitats W7, W11, W17. Canopy is predominantly Sessile oak, Downy birch, Ash with lower canopy and shrub layer of Rowan, Hazel. Small stand of <i>Betula celtiberica</i> at edge of western end. Small stand of Aspen close to southern end of boundary with sub-compartment 1c with good regeneration by suckering.</p> <p>Ground flora: Bilberry, Hard fern, Scaly male fern, Wavy hair grass, Honeysuckle, Wood sorrel, Meadow fescue, Greater stitchwort, Opposite-leaved golden saxifrage, Yellow pimpernel, Climbing corydalis, Tufted hair grass, Enchanter’s nightshade, Wood sedge, Common polypody, Hairy wood rush, Wood speedwell, Beech fern, Lemon-scented fern, Common valerian, Dog violet, Bracken, Marsh violet, Common bent, Purple moor grass.</p> <p>Good level of fallen and standing deadwood.</p> <p>Lichens, mosses and fungi: <i>Sticta silvatica</i>, <i>Sticta limbata</i>, <i>Graphina ruiziana</i>, <i>Graphina pauciloculata</i>, <i>Sphaerophorous globosus</i>, <i>Pertusaria amara</i>, <i>Parmelia parvula</i>, <i>Usnea fragulescens</i>, <i>Peltigera horizontalis</i>, <i>Dichranum majus</i>, <i>Dichranum scoparium</i>, <i>Sphagnum squarrosum</i>, <i>Diplophilum albicans</i>, Red cracked boletus.</p> <p>Management: Non-intervention is recommended for habitat management. The bridleway from Glaspwll runs through this area and requires reinstatement: to be carried out by PONT. Monitor for conifer regeneration and remove.</p>							

Sub-cpt	Area (ha)	Main Species	Year	Management Regime	Management Constraints	Key Features	Designations
1c	3.02	Bracken	n/a	Non-intervention; tree planting	Plan to graze whole site with horses	Landscape Habitats Species Access	Ancient Woodland Site
<p>Area dominated by bracken (<i>Pteridium aquilinum</i>). Woodland cover along stream (tributary of Nant Cefn Coch) and boundary with sub-compartment 1b. Small stands of Sessile oak, Rowan and Hazel with a few scattered ancient Sessile oak with good lichen interest and woodland indicators in the understory. Younger oak in the area were planted (tree guards found) probably at same time as planting in sub-compartment 1d. Willow more frequent in scattered stands close to boundary with sub-compartment 1b. Old Downy birch and Crab apple along boundary with sub-compartment 1d. <i>Betula celtiberica</i> present near western end of boundary with sub-compartment 1b.</p> <p>On steeper parts with thinner soil and shorter bracken there is a good level of colonisation by young native trees. Most of area is covered in tall thick bracken and no tree colonisation is occurring.</p> <p>Ground flora: Bracken, <i>Agrostis</i> sp., Tufted hair grass, Climbing corydalis, <i>Holcus mollis</i>, Scaly male fern, Common polypody, Honeysuckle, Bluebell, Wood sorrel, Wavy hair grass, Bilberry.</p> <p>Lichen: <i>Sticta sylvatica</i>.</p> <p>Management: Remove tree guards from planted oak. Maintain access trails through bracken with hand tools. Plant one or more areas with native trees, to total 1.0ha: see Tree Planting Plan in Appendix 3. Sub-compartment 1ci: part of Sub-compartment 1c not planted: 2.0ha Sub-compartment 1cii: part of Sub-compartment 1c planted with trees: 1.0ha</p>							

Sub-cpt	Area (ha)	Main Species	Year	Management Regime	Management Constraints	Key Features	Designations
1d	1.35	Sessile oak	1990	Non-intervention	n/a	Landscape Habitats Species Access	Ancient Woodland Site
<p>Mainly planted sessile oak woodland with small areas of Ancient Woodland along riverside. Several older trees within stand and on old field boundaries: Sessile oak, Downy birch, Hazel, Rowan, Hawthorn. Squirrel damage on planted Oak. Older Birch and Willow with good lichen interest.</p> <p>Ground flora: Large stands of Marsh violet, plus Wood sorrel, Yellow pimpernel, Greater stitchwort, Bluebell, Tufted hair-grass, Purple moor- grass.</p> <p>Lichens: <i>Peltigera horizontalis</i> (on Ash), <i>Sticta fuliginosa</i> (on Willow)</p> <p>Good level of fallen and standing deadwood.</p> <p>Management: Remove tree guards from planted oak.</p>							

Sub-cpt	Area (ha)	Main Species	Year	Management Regime	Management Constraints	Key Features	Designations
1e	132	Purple moor grass	n/a	Heath and bog restoration; tree planting	Depth of grips; Plan to graze whole site with horses	Landscape Habitats Species Access	Ancient Woodland Site
<p>Open hill dominated substantially by purple moor grass (<i>Molinia caerulea</i>). Lower elevations near to woodland sub-compartments have acid grassland and light bracken vegetation with small areas of heather and some colonisation by young native trees. The majority of the area is covered with purple moor grass with small amounts of heather and bilberry. Rushes are a significant presence along former linear features such as tracks and walls or banks. Some blanket bog is present. A scattering of young Rowan is colonising the area, probably since sheep grazing was removed in about 2011.</p> <p>See Map 5 for overview of heath and bog habitats. See NVC reports of 2005 and 2017 (in preparation) for more detail of this area.</p> <p>The hill is drained by a substantial network of drainage grips, and this is probably the main factor in determining the presence of purple moor grass where blanket bog probably existed formerly. Other factors such as burning and sheep grazing have probably increased purple moor grass where heather and bilberry existed previously.</p> <p>A pollen analysis will establish historic vegetation cover, including tree species prior to deforestation (pending).</p> <p>Management: Block drainage grips. Introduce grazing by horses. Maintain Public Bridleway and new access trails through purple moor grass and rushes by mowing with tractor and flail. Plant one or more areas with native trees, to total 4.0 ha: see Tree Planting Plan in Appendix 3. Sub-compartment 1ei: part of Sub-compartment 1e not planted: 128.0ha Sub-compartment 1eii: part of Sub-compartment 1e planted with trees: 3.9ha</p>							

8 Monitoring key features

8.1 Observations for Key Feature 1 - Habitats

<i>Planned observation</i>	<i>Date</i>
Internal fencing and boundary fencing	Mar 2019
Habitat types present, including types of woodland	Oct 2022
Extent of each habitat type, including woodland	Oct 2022
Structure of each habitat type, including woodland	Oct 2022
Plant species composition of each habitat type, including woodland	Oct 2022
Distribution and interface of different habitat types	Annual
Extent and condition of Ancient Woodland area: repeat AW assessment and formulate restoration strategy for next management plan period	Aug 2022
Assess impact of grazing and browsing, following Herbivore Impact Assessment Method accompanying Grazing Plan	Annual
Drainage grips blocked	Annual

<i>Completed observation</i>	<i>Date</i>
Internal fences present along former and current field boundaries across the site. In various states of repair, from fully stockproof to almost fully decomposed. All of type with wooden posts and stakes with galvanised steel pig netting and barbed wire Old banks or walls have become lost to the vegetation, but are just about discernible on the ground along old boundaries (Simon Ayres)	Jun 2017
<i>Betula pubescens</i> , <i>Betula pendula</i> , <i>Betula celtiberica</i> all recorded on site (Arthur Chater)	Sep 2017
The following broad habitats are present: <ul style="list-style-type: none"> ■ purple moor grass (<i>Molinia caerulea</i>) ■ dry and wet upland heath ■ blanket bog ■ acid grassland 	Sep 2017

<ul style="list-style-type: none"> ▪ bracken (<i>Pteridium aquilinum</i>) ▪ woodland <p>see Map 6 for the locations of the different habitats</p> <p>See Vegetation Survey Reports of 2005 and 2017, for habitat maps and detailed descriptions, according to the National Vegetation Classification (Stuart Hedley)</p>	
Larch stand 1.13ha in ancient woodland site (Adam Thorogood)	Aug 2017
<p>Woodland area is 9.88ha and has the following NVC types:</p> <ul style="list-style-type: none"> ▪ W7 Alder – Ash – Yellow Pimpernel woodland, a community typical of wet or moist soils. ▪ W11 Sessile oak – Downy birch – Wood sorrel woodland, a community of moist, free draining, base-poor soils. ▪ W17 Sessile oak – Downy birch – Dicranum majus woodland, a community of very acid, thin soils in areas of high rainfall. <p>The woodland is all categorised as Ancient Woodland Site, with areas in differing states according to management history:</p> <ul style="list-style-type: none"> ▪ 'Plantation on Ancient Woodland Site' (Japanese larch stand) ▪ 'Ancient Semi Natural Woodland' (undisturbed original native woodland) ▪ Bracken with scattered mature trees and some colonisation of young trees ▪ Planted native woodland (about 20 years old) <p>Current tree species present:</p> <ul style="list-style-type: none"> sessile oak ash birch species rowan small-leaved lime elm aspen holly hazel hawthorn alder willow species <p>See Ancient Woodland Report on Bwlch Corog of 2017 for more detail on woodland including records of non-tree plant and lichen species (Adam Thorogood)</p>	Aug 2017

<p>In general the distribution and interface of different habitat types are natural, albeit between modified habitats.</p> <p>Some existing internal fencelines mark an abrupt change in vegetation:</p> <ul style="list-style-type: none"> ▪ Southern section of fenceline alongside track marks an abrupt change in vegetation from woodland to the east and open land with bracken and sparse colonisation of young trees to the west ▪ Northern section of fenceline alongside track, where it follows an east-west direction, marks an abrupt change in vegetation from bracken to the north and acid grassland and heath to the south (Simon Ayres) 	Jun 2017
A network of grips drains the landscape over much of the site see Map 7 for map of main grips (Stuart Hedley)	Sep 2017

8.2 Observations for Key Feature 2 - Species

<i>Planned observation</i>	<i>Date</i>
Presence of invasive non-native species of plant (most likely Sitka spruce)	Annual
Large herbivores species, populations, status (following introduction)	Weekly
Water vole population, status (following introduction)	Annual
Red squirrel population, status (following introduction)	Annual
Bat species, populations, status	Jun 2019
Other mammals species, populations, status	Jun 2019
Bird species, populations, status	Jun 2019
Invertebrates species, populations, status	Mar 2019

<i>Completed observation</i>	<i>Date</i>
Occasional young Sitka spruce tree growing on moorland (Simon Ayres)	Jun 2017
No large herbivores are grazing the site	Jun 2017

Signs of field vole observed (Simon Ayres)	Jun 2017
Half day survey recorded only meadow pipit, consistent with informal observations on other occasions (Mick Green).	Aug 2017
Further observations have recorded: raven, buzzard, red kite, kestrel, sparrowhawk, greater spotted woodpecker, wren, fieldfare.	Aug 2017 onwards

8.3 Observations for Key Feature 3 - Access

<i>Planned observation</i>	<i>Date</i>
State of public bridleways	Annual
State of other trails	Annual
State of main access track that enters the site opposite holiday cottages	Annual
Presence and style of signage	Sep 2019
Compost toilet	Sep 2019
First storage and workshop shelter	Sep 2020
Second storage and workshop shelter	Sep 2021

<i>Completed observation</i>	<i>Date</i>
Most sections of public bridleway on the moorland are very difficult to negotiate on foot (Simon Ayres)	Jun 2017
Public bridleway in the woodland is very overgrown with vegetation and disappears for a section, appearing to require an almost vertical climb for about 20 metres (Simon Ayres)	Jun 2017
All tracks (except main access track for 500m) are very difficult to negotiate on foot, some are not evident on the ground (Simon Ayres)	Jun 2017
Main access track (entering site opposite the holiday cottages and continuing for about 500m) is walkable and driveable with an off road vehicle. Overgrown	Jun 2017

with vegetation and very wet in 3 places (Simon Ayres)	
Signage is almost non-existent: there is a broken waymarker for the bridleway near the entrance gate (Simon Ayres)	Jun 2017

Appendix 1

Harvesting operations (20 years)

<i>Sub-cpt</i>	<i>Operation</i>	<i>Harvesting year</i>	<i>Estimated volume (m³)</i>
1a	Thin	2018-19	20
1a	Thin	2019-20	20
1a	Thin	2020-21	20
1a	Thin	2021-22	20
1a	Thin	2022-23	20
1a	Thin	2023-69	20 per year

Appendix 2

Completed Surveys of Bwlch Corog

<i>Survey</i>	<i>Details</i>	<i>Surveyors</i>	<i>Date</i>
A Vegetation Survey of Bwlch Corog, Ceredigion	NVC habitat types, species of interest, and summary of restoration potential. Accompanied by digital maps for GIS showing habitat types. Covers Pemprys and Cefn Coch farms with Bwlch Corog	A. J. Turner, D. K. Reed, S. D. S. Bosanquet	2005
Acid Sensitive Catchment Monitoring	Record of acidity of watercourses flowing off site over a 6 month period	Tilhill	2015
Peat Survey	Assessment of location, extent and depth of peat soils across site	Tilhill	2015
Lichen Survey	Survey of lichen species present on site	Tilhill	2015
Bwlch Corog Ancient Woodland Survey and Recommendations for Management	Detailed assessment of area identified as Ancient Woodland. Four types of Ancient Woodland present: PAWS, ASNW, RAWS, AWI Unknown. Tree, shrub and ground layer species listed. Recommendations for management	Adam Thorogood (Woodland Trust)	2017
Vegetation and Drainage Grip Survey	Vegetation across site, excluding woodland. Referenced to 2005 survey. Accompanied by digital maps for GIS showing habitat types, plus map of drainage grips	Stuart Hedley	2017
Fixed Point Photographs	300 fixed point photographs, catalogued with GPS coordinates, orientation, and notes features in photographs, for example plant or invertebrate species	Mike Kay	2018

Proposed Surveys of Bwlch Corog

Drone survey, to provide detailed aerial imagery for vegetation and feature mapping

Bird survey

Bat survey

Mammal survey

Invertebrate survey

Appendix 3

Tree planting plan

Summary

Trees native to the site will be planted in several areas totalling 5ha across Bwlch Corog; plus 500 individual trees at wide spacing following the sabre planting method (see Appendix 4).

Reason to plant

The aim is to increase the woodland area from 10ha to about 50ha mainly by natural colonisation over the long term. There are some constraints to this process:

- Parts of the site are remote from seed sources of native trees, but close to seed sources of Sitka spruce
- Ground vegetation of purple moor grass or bracken is particularly dense in some areas, making germination and survival of young trees unlikely
- Some trees previously growing on the site before it was deforested might not be present in the locality

Planting locations

Some parts of the site are not suitable for planting:

- No areas with existing habitats of upland heath and blanket bog will be planted
- No areas currently showing colonisation by young trees will be planted

This leaves two broad areas where planting will be beneficial:

- The heavy bracken area above the existing woodland
- At the southern end of the western boundary, near the stream that flows south towards Pemprys.

Survey to identify exact location and extent of planting areas pending.

Species

The following native tree species are present in local woodlands and are suitable candidates for a planting list:

sessile oak	<i>Quercus petraea</i>
downy birch	<i>Betula pubesens</i>
silver birch	<i>Betula pendula</i>
a birch	<i>Betula celtiberica</i>
small-leaved lime	<i>Tilia cordata</i>
wych elm	<i>Ulmus glabra</i>
aspen	<i>Populus tremula</i>
hazel	<i>Corylus avellana</i>
hawthorn	<i>Crataegus monogyna</i>
willow species	<i>Salix</i> spp.

holly

Ilex aquifolium

Other species present that are less likely to be on planting list:

ash *Fraxinus excelsior*

- restrictions on transporting this species between sites, due to ash die back disease

alder *Alnus glutinosa*

- contributes to soil acidification; site within Priority Acid Sensitive catchment

rowan *Sorbus aucuparia*

- only species already colonising the site successfully over wide area

The following tree species will be planted because their historic presence on the site is confirmed by soil core pollen analysis:

[pending research]

Nursery stock

- Seed to be collected from site and grown on by local nursery.
- Where required, stock grown from seed sourced elsewhere will be procured, Ceredigion or Gwynedd provenance, grown in UK.
- In exclosures: 60-90cm, bare-rooted transplants.
- Sabre planting: minimum 90-120cm, 1 litre container grown.
- Willow: cuttings collected locally; for Sabre planting use 9ft forked stem method in planting sites accessible to browsing.

Planting areas

- Fenced exclosures to protect young trees from browsing by horses.
- Two areas of 1.0ha in bracken and 3.9ha in Molinia at far south end, total area 4.9ha.
- Survey to identify exact location of planting areas to be carried out following successful application for woodland creation grant.

Planting density

- In exclosures: 1600 trees/ha (2.5m average spacing).
- Sabre planting: no specification.

Planting pattern in exclosures

- Plant in single species groups of 25 minimum, up to 250 trees per group.
- Variable spacing of 1m to 4m between trees; use wider spacing between trees of different species; to average 2.5m spacing.
- Choice of species to suit ground conditions.

Ground preparation

- Mounding in the planting areas dominated by purple moor grass.

Planting method

- Work carried out by volunteer work parties.
- Contractors will be hired if necessary to complete work by grant deadline.
- Bare-rooted: notch planting using planting spade.
- Container grown: pit planting using 5 foot crow bar.

Plant protection

- All trees to be protected with vole guards.

Aftercare

- It is expected that the mounding will provide a growing environment free of weeds long enough for the trees to be established.
- Sabre planted trees are expected to be big enough to survive competition from weeds.
- Trees planted in bracken will have bracken beaten with a stick or cut back from tree during the summer; in winter, the trees will be checked that no bracken has fallen onto them.
- Planted trees will be monitored for losses, weed competition, browsing damage, disease, etc. on a regular basis and appropriate action taken.

Appendix 4

Sabre tree planting method

Sabre planting method of establishing trees: Glastir Technical Note

646 SABRE PLANTING

This technical note describes the standard of work required in order to receive payments for 'Sabre Planting', as specified in your Glastir Contract. Pioneered by an independent local charity 'Bugeiliaid y Coed', (Tree Shepherds), the No Fence Planting technique mimics the way in which self-sown trees establish themselves naturally on grazed farmland. Trees of one metre plus in height can be 'sabre-planted' perpendicular to steep ground (rather than pointing straight up) so that the leading shoots cannot be reached by browsing sheep and cattle. Such trees typically have a 'sabre-shaped' profile and can be seen growing in most valleys in Wales. Your Contract Manager must approve any significant variation to the required planting method.

Planting Method

Trees can be planted amongst gorse and also 'sabre-planted' at an angle perpendicular to the slope on steep ground. Steep and broken ground with bracken is ideal for 'Sabre Planting'. Other no-fence methods include the planting of 1.5–2 m trees and large willow cuttings. Wherever possible try to obtain plants grown from locally obtained seeds or cuttings (native provenance), since these will do better under local conditions and are more valuable for wildlife than imported stock

Benefits of No-Fence Planting

- No-fence planting need not affect Single Farm Payment.
- The establishment of trees need not change land use or farming practice.
- Trees and livestock can co-exist without the need to remove animals or reduce grazing density.
- Open woodlands can be created as opposed to plantations, leaving more space, light and grass between trees
- Broadleaf trees improve soil fertility.
- Timber production can be integrated with conventional farming practices

Appendix 5

Species likely to benefit from Cambrian Wildwood project ecological restoration at Bwlch Corog

(Reference: Mick Green, ecologist with 30 years' experience surveying in Cambrian Mountains, personal communication)

EPS = European Protected Species – listed under either the Birds Directive or Habitats and Species directive: International Importance.

IUCN Endangered = International Importance.

Section 7 = Species of principle importance for the conservation of biodiversity listed under Section 7 of the Environment (Wales) Act 2016, which replaces the duties under Section 42 of the Natural Environment and Rural Communities Act 2006.

Red list = species undergoing major declines.

Amber list = species undergoing declines.

Priority BAP

Skylark: Red list UK, Amber list Wales, Section 7

Tree Pipit: Amber List UK

Nightjar: Birds directive - EPS, Red List UK, Amber List Wales, Section 7

Hawfinch

Cuckoo: Amber list UK

Lesser spotted woodpecker: Red list Wales and UK

Red grouse: Amber list UK

Spotted flycatcher: Red List UK, Amber list Wales, Section 7

Curlew: Red list Wales, Amber list UK, IUCN Endangered, Section 7

Wood warbler: Amber list UK

Willow tit: Red list Wales and UK

Bullfinch: Red list Wales and UK, Section 7

Black grouse: Red list Wales and UK, Section 7

Song thrush: Red list UK, Amber list Wales Section 7

Ring ouzel: Red list Wales and UK

Not Priority BAP

Hen harrier: Birds Directive – EPS, Red list Wales and UK, Section 7

Golden plover: Birds Directive – EPS, Red List Wales, Section 7

Priority BAP

Water vole: protected under Wildlife and Countryside Act 1981, Section 7

Hedgehog: Section 7

Brown hare: Section 7

Otter: EPS, Section 7

Pine marten: Section 7

Dormouse: EPS, Section 7

Polecat: Section 7

Bat species: all EPS, most Section 7

Red squirrel: Section 7

Atlantic salmon: Section 7

Brown trout: Section 7

Common toad: Section 7

Pool frog

Grass snake: Section 7

Adder: Section 7

Common lizard: Section 7

Appendix 6

Surveys of bird populations in Pumlumon area

(Reference: Mick Green, *The Welsh Uplands – Death or Resurrection?* in Natur Cymru Gaeaf 2015-16).

<u>Species</u>	<u>1984 survey</u>	<u>2011 survey</u>	<u>% change</u>
Black-headed Gull	65	0	- 100
Cuckoo	8	0	- 100
Ring Ouzel	7	0	- 100
Teal	5	0	- 100
Redstart	3	0	- 100
Chaffinch	2	0	- 100
Curlew	2	0	- 100
Coot	1	0	- 100
Kestrel	1	0	- 100
Mallard	1	0	- 100
Mistle Thrush	1	0	- 100
Stonechat	1	0	- 100
Golden Plover	13	1	- 92
Common Sandpiper	10	1	- 90
Pied Wagtail	8	1	- 88
Whinchat	21	4	- 81
Grey Wagtail	4	1	- 75
Wheatear	49	16	- 67
Skylark	287	134	- 53
Willow Warbler	2	1	- 50
Red Grouse	27	14	- 48
Wren	5	3	- 40
Buzzard	1	1	0
Peregrine	1	1	0
Swallow	1	1	0
Tree Pipit	2	3	+ 50
Canada goose	0	1	+ 100
Hen Harrier	0	1	+ 100
Reed Bunting	0	1	+ 100

Map 1

Aerial map showing location of Bwlch Corog in the northern part of the Cambrian Mountains and south of the Afon Dyfi, between Machynlleth and Aberystwyth



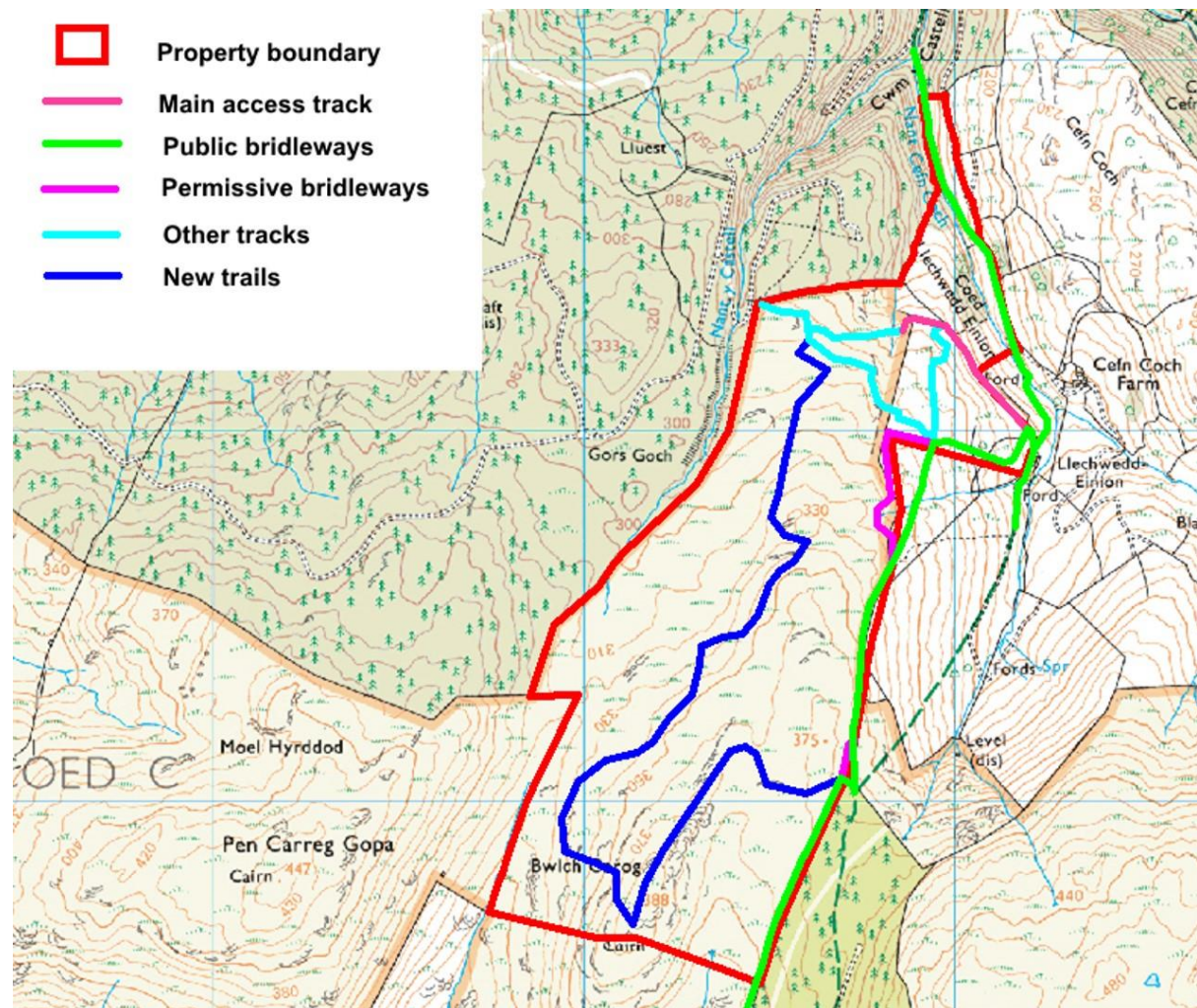
Map 2

Aerial map showing landscape setting of Bwlch Corog near the village of Glaspwll



Map 3

Map showing routes of trails, including main access track and public bridleways:
route of 'new trails' is approximate

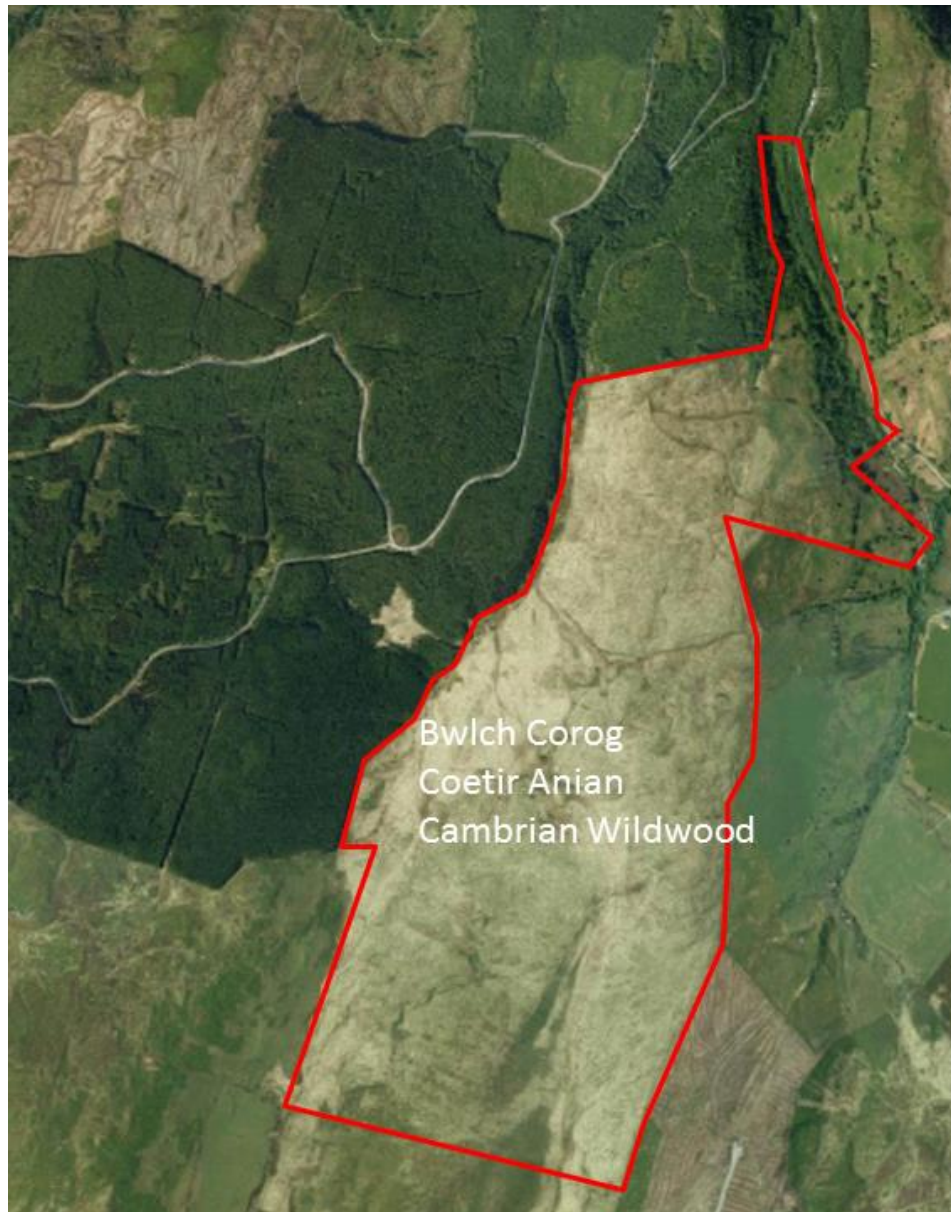


Approximate Distances:

Main access track	400m
Public Bridleways	2km on Bwlch Corog
New permissive bridleways	500m
Other tracks	1km
New trails	6km

Map 4

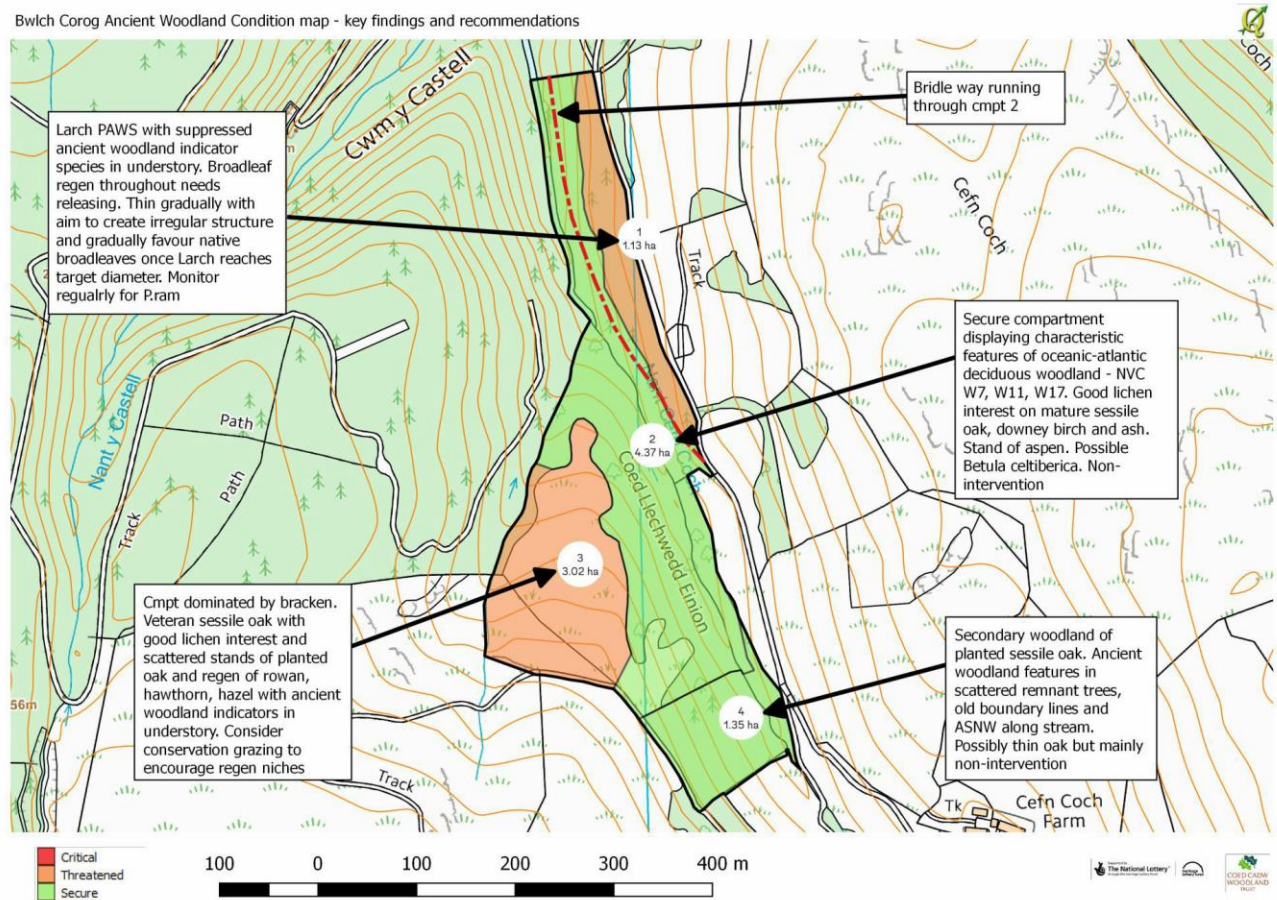
Aerial map showing boundary of Bwlch Corog: note the woodland in the north of the site, on the lower ground along the watercourses



Map 5

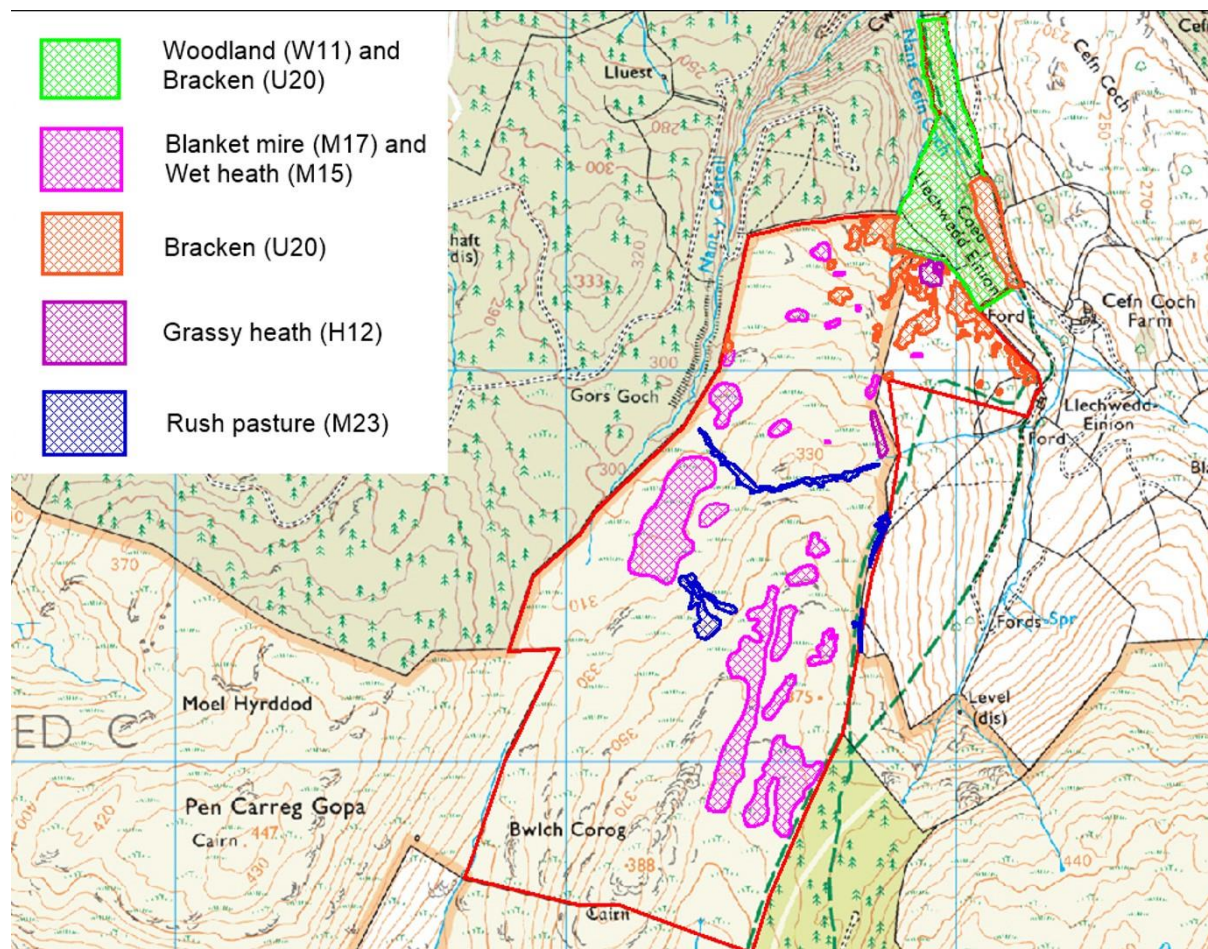
Woodland Sub-compartments

Bwlch Corog Ancient Woodland Condition map - key findings and recommendations



Map 6

Map showing habitat types including National Vegetation Classification codes, as mapped by the vegetation surveys of 2005 and 2017



Notes

Woodland and bracken habitat:

This area of 9.38ha comprises ancient semi-natural woodland, plantation ancient woodland site with larch, and a substantial proportion of bracken with scattered young trees. Some of these trees were planted c. 1990 and some have colonised the bracken naturally.

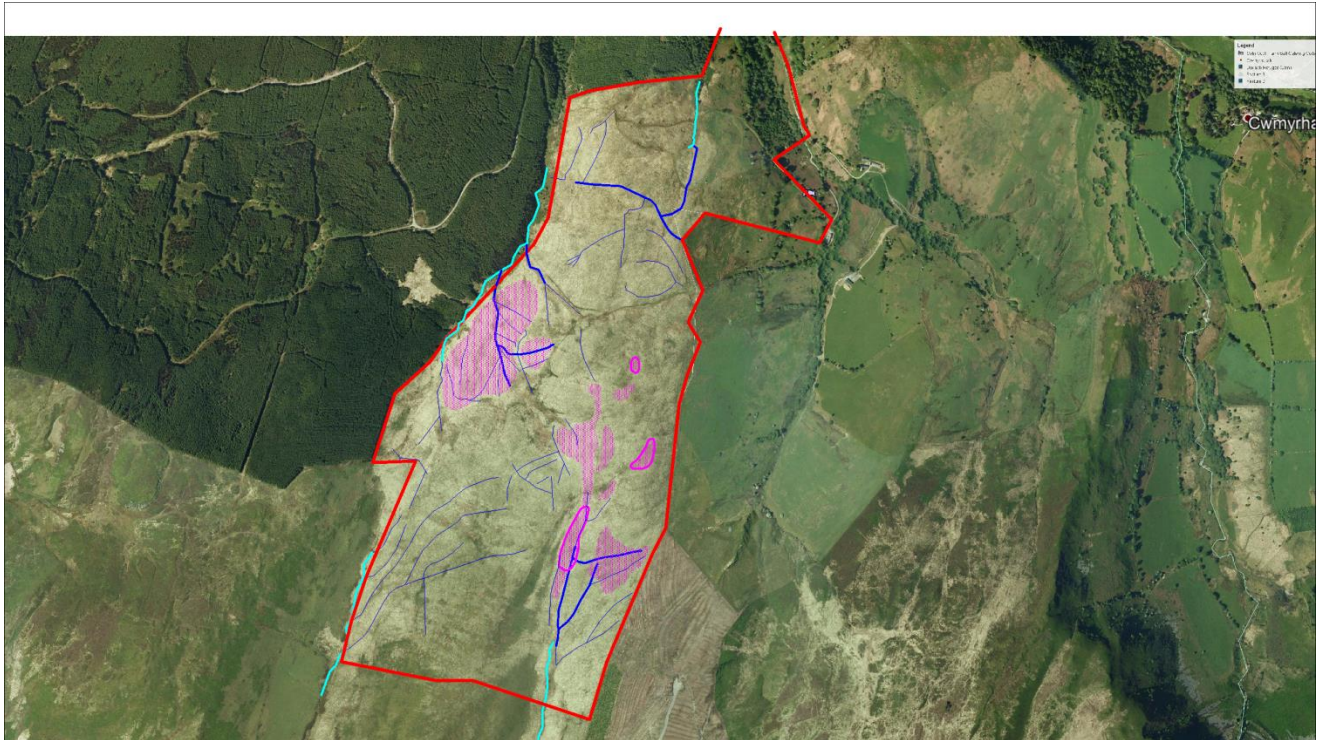
Blanket mire and wet heath habitat:

These are two distinct habitat types, but it is not clear in many cases what the appropriate classification should be. Drainage of the site has created drier conditions than would occur naturally, and this will be addressed by the grip blocking proposed.

Where no habitat type is marked, the vegetation is predominantly purple moor grass.

Map 7

Network of drainage grips across Bwlch Corog



Key:

Dark blue = Drainage grips

Light blue = Natural watercourses.

Pink hatch, no border = residual bog, Unfavourable Condition

Pink hatch, pink border = residual bog, Favourable Condition