

Cyttir Mawr, Llandegfan, Local Nature Reserve, Management Plan

Summary

This Management Plan replaces the previous management plan. It should be reviewed after 5 years in 2024. The Action Plan is a separate document that can be constantly reviewed as and when required.

Cyttir Mawr, Llandegfan, is a Local Nature Reserve (LNR). The vision is to continue to manage the LNR for its wildlife and its quiet, natural setting. The aims are to preserve the natural character of the common and to provide access for visitors and residents to enjoy their natural surroundings. The LNR is managed by Cwm Cadnant Community Council and Menter Môn.



Aerial photograph showing Cyttir Mawr LNR outlined red
QGIS using Bing Aerial photo with LNR boundary (Natural Resources Wales open data)

This Management Plan describes:

- ◆ the Local Nature Reserve
- ◆ the management structure
- ◆ the principles of management,
- ◆ a programme of practical management.

Aims

- To maintain the reserve as a mixture of natural vegetation types: heath, ponds, grassland and woodland for multiple benefits.
- To provide free public access for the purpose of recreation consistent with conserving the natural and archaeological features.

Objectives

- *Wildlife* ~ To maintain the LNR's mixture of natural vegetation types comprising heath, ponds, grassland and native broadleaved woodland. To maintain or increase the area of heath by reducing the area of scrub or woodland. To manage the ponds as a continuum of habitat from open water to bog.
- *Access* ~ To maintain public pedestrian access, for the purpose of recreation consistent with conserving the natural features.
- *Interpretation and Education* ~ To provide information on the LNR and interpret features of interest accordingly. To encourage and foster links with the local school and other educational establishments.

NATURE RESERVE AGREEMENT – Cytir Mawr Llandegfan: CL10

Dated 28 March

2006

An AGREEMENT under seal dated 28 March 2006 and made between Cwm Cadnant Community Council of the one part and Menter Môn in respect of Cytir Mawr Llandegfan CL10 shown highlighted by a solid green area on the attached plan.

WHEREAS

- 1) It is intended to declare a Local Nature Reserve on land which is in the ownership of Menter Môn (Cytir Mawr Llandegfan CL10) shown highlighted by a solid green area on the attached plan of which land is more particularly described in the schedule hereto and which is hereinafter referred to as "the reserve".
- 2) Cwm Cadnant Community Council and Menter Môn have mutually agreed to enter into this Agreement in accordance with the provisions of Part III of the National Parks and Access to the Countryside Act 1949 as amended in respect of the land in the ownership of Menter Môn.
- 3) Cwm Cadnant Community Council has consulted the Countryside Council for Wales which has given its consent to the establishment of the reserve as a Local Nature Reserve.

NOW THEREFORE IT IS HEREBY AGREED between the parties hereto as follows:

- 1) Cwm Cadnant Community Council will within 28 days from the date of this agreement declare the reserve a Local Nature Reserve and will manage the reserve as a Local Nature Reserve within the meaning of Section 15 of the National Parks and Access to the Countryside Act 1949.

That is to say for the purpose of:

- a) Providing under suitable conditions and control special opportunities for the study of and research into matters relating to the fauna and flora of Anglesey and the physical conditions in which they live and for the study of geological and physiographical features of special interest in the area.
 - b) Carrying out the provisions of the Management Plan.
 - c) Providing facilities for properly supervised parties of students and school children to use the reserve in connection with the purposes described in clause a) hereof in such numbers as may be compatible with the achievement of such purposes.
 - d) Establishing a reserve Management Committee which shall comprise Cwm Cadnant Community Council and an officer of Menter Môn.
- 2) This agreement shall continue in force for a term of 21 years and thereafter until determined by either party hereto giving to the other twelve months' notice in writing expiring at any time.

In witness whereof the Common Seal of Menter Môn hereto has been hereunto affixed this 28 day of March two thousand and six.

The schedule above referred to: all that land containing 6.5 hectares or thereabouts in the Parish of Cwm Cadnant in the County of Anglesey and shown highlighted by a solid green area on the attached plan known as Cytir Mawr Llandegfan CL10.

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1. AIM OF THE LOCAL NATURE RESERVE

“to conserve and enhance the natural beauty of the area for the benefit of wildlife and local people”

The aim of the Local Nature Reserve (LNR) is to conserve and enhance the natural beauty of the area for the benefit of wildlife and local people. Natural beauty includes native wildlife (flora and fauna), the visual landscape and cultural artefacts. LNRs recognise both the legal and traditional rights of people (local and visitors) to enjoy access to and use of the area, and seeks to balance and integrate these. The following sections describe the essential features of the reserve, its public interest, the factors which may affect the conservation of the reserve, and gives prescriptions for managing these features and activities.

2. DESCRIPTION OF RESERVE

2.1 Location

Cyttir Mawr LNR measures 6.44 hectares (16½ acres) and is located approximately 1 mile (1½ km) from the centre of Llandegfan as the crow flies or 1½ miles (2½ km) by road or 1¼ miles (2 km) along footpaths. It is ½ mile (750 m) from Hen Bentref Llandegfan and just under 2 miles (3 km) from Beaumaris. There is a good footpath network linking Cyttir Mawr LNR with Llandegfan and Hen Bentref Llandegfan.



Map 1: LNR location - Cyttir Mawr LNR outlined red
QGIS using 1:25,000 - ©Ordnance Survey with LNR boundary (Natural Resources Wales open data)

Cyttir Mawr, Llandegfan, comprises of common land made up of a mosaic of open lowland

heathland, scrub and secondary wet woodland and lowland oak -birch woodland. These habitats have their own action plans in the Anglesey Local Biodiversity Action Plan (LBAP), and a specific aim of the Anglesey Heathland Strategy is to increase the area of lowland heathland on the island. The LNR lies within the southern part of M12 Cyttir Llandegfan Wildlife Site designated by the Isle of Anglesey County Council. The LNR is very wet in some areas with a high water table consequently there are springs, ponds and a small stream. The whole area is very rich in wildlife. It lies in an area of gently rolling landscape and is linked by hedgerows to a number of other woodlands in the area.

2.2 Ownership & Management

The LNR is owned by Menter Môn who purchased the land from the University of Wales in 2002. There is a 21 year agreement with Cwm Cadnant Community Council dated 28th March 2006 to establish a Management Committee comprised of the Community Council and Menter Môn.

2.3 Landowner Rights

The landowner has rights to manage the land as long as works are carried out that do not impede the rights of commoners. There are certain activities that are restricted and require permission from Welsh Ministers that is if they prevent or impede access to the land, or involve the resurfacing of land with a 'hard' surface (such as concrete or tarmac). The owner has the right to graze livestock provided they do not interfere with the rights of commoners in doing so.

2.4 Permissions

2.4.1 Tree Felling

A Felling Licence will be required if felling trees over 10cm diameter at breast height producing over 5 cubic metres of timber or 2 cubic metres of timber (if timber is being sold or exchanged for services) per calendar quarter; if coppicing or pollarding is carried out the diameter is 15cm at breast height. Clearing areas above 1 hectare currently requires an Environmental Impact Assessment, which could require replacement trees to be planted. Licensing will be required if UK or European Protected Species are to be disturbed. (see NRW website for updated information on permits and permissions <https://naturalresources.wales/permits-and-permissions/?lang=en>)

2.4.2 Burning

The Heather and Grass etc. Burning (Wales) Regulations 2008 ("the Burning Regulations") should be adhered to. Burning of lowland heath can only be carried out between 1st November and 15th March (see The Heather and Grass Burning Code for Wales 2008). A Burning Management Plan must be produced and must be available for inspection by Welsh Assembly Government officials upon request. The Burning Management Plan is a standard form available from the local Department for Rural Affairs (DRA), Welsh Assembly Government office on which information about the proposed burns should be recorded. A burning plan map needs to be produced and it is recommended that practitioners attend a training course.

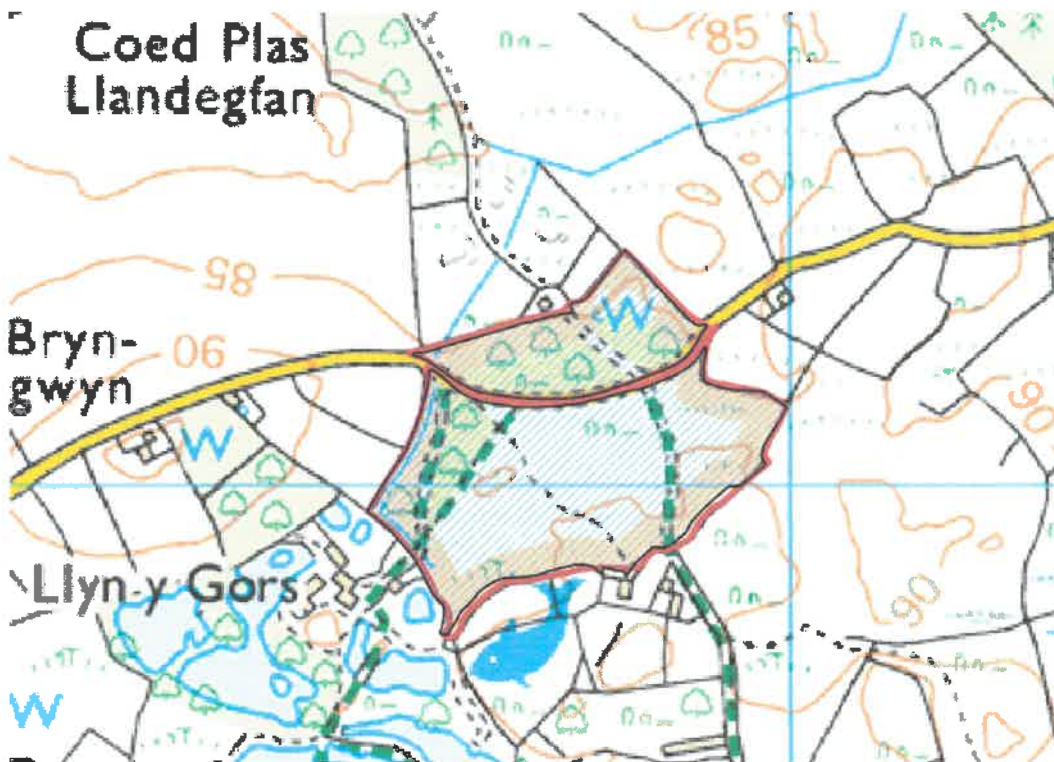
A Burning Licence will be needed if burning after 15th March or before 1st November. (See Welsh Government website - Land Management <https://beta.gov.wales/land-management>)

2.5 Designations

The site is designated a Local Nature Reserve. It is part of M12 Cyttir Llandegfan Wildlife Site designated by the Isle of Anglesey County Council. All of the land is Open Access land with a number of Public Rights of Way across it. All of the land is Common Land with various wayleaves for adjacent properties and for Scottish Power.

2.6 Registered Commons

The LNR is registered as common land and is on the commons registry held by the Isle of Anglesey County Council as CL10.



Map 2: Common Land CL10 - hatched area

QGIS using 1:25,000 - ©Ordnance Survey with common land data (Natural Resources Wales open data)

2.7 Commoners rights

There are no commoners registered on the Common Lands Registry held by the Isle of Anglesey County Council. Therefore there are no commoners able to affect the management of the land.

2.8 Rights of Easement and Wayleaves

There are 5 rights of easement acknowledged in the registry. There are a number of wayleaves across the common land, these are for public services (electricity, water, sewerage) and private (access, connections to public services). Not all of these are known but known services are marked on the map below.

Cyttir Mawr Farm	1. Surfacing and drainage of existing carriageway to Cyttir Mawr Farm from public road
	2. Laying of pipe drains for passage of stream or other water under carriageway mentioned above
	3. Electric power lines and ancillary poles from electricity boards main transmission line on Llandegfan Common across to boundary of Cyttir Mawr Farm with the common.
Gors Farm (Llyn y Gors)	... easement being a right of way for all purposes, with or without vehicles ... from Gors Farm, Llandegfan to the main highway.
Bwthyn Castan	... easement being a right of way for all purposes, with or without vehicles ... from Bwthyn Castan, Cyttir Mawr, Llandegfan to the main highway.
Cyttir Mawr	... easement being a right of way for all purposes, with or without vehicles ... from Cyttir Mawr, Llandegfan to the main highway.
Aysgarth, Maes y Ffynnon, Llandegfan	... easement being a right of way for all purposes, with or without vehicles ... from land owned by them which was formerly part of Cyttir Mawr Farm, Llandegfan to the main highway.
Scottish Power	Electricity transmission lines crossing the LNR. These measure approximately 0.5ha (1¼ acres)

Table 1: Rights of easement and wayleaves



Map 3: Wayleaves for public services - outlined blue
QGIS using Bing Aerial photo with LNR boundary (Natural Resources Wales open data) and digitised data

2.9 Public

All land in the LNR is marked as Open Access land on Ordnance Survey maps under the Countryside and Rights of Way Act (2000) (the CROW Act). The Countryside Code <https://naturalresources.wales/days-out/the-countryside-codes/?lang=en> defines open access land as; mountain, moorland, heathland, down land and registered common land (mapped under the Countryside and Rights of Way Act 2000) that is available to people to walk, run, explore, climb and watch wildlife, without having to stay on paths.

The tenets of the Countryside code are:

Respect other people

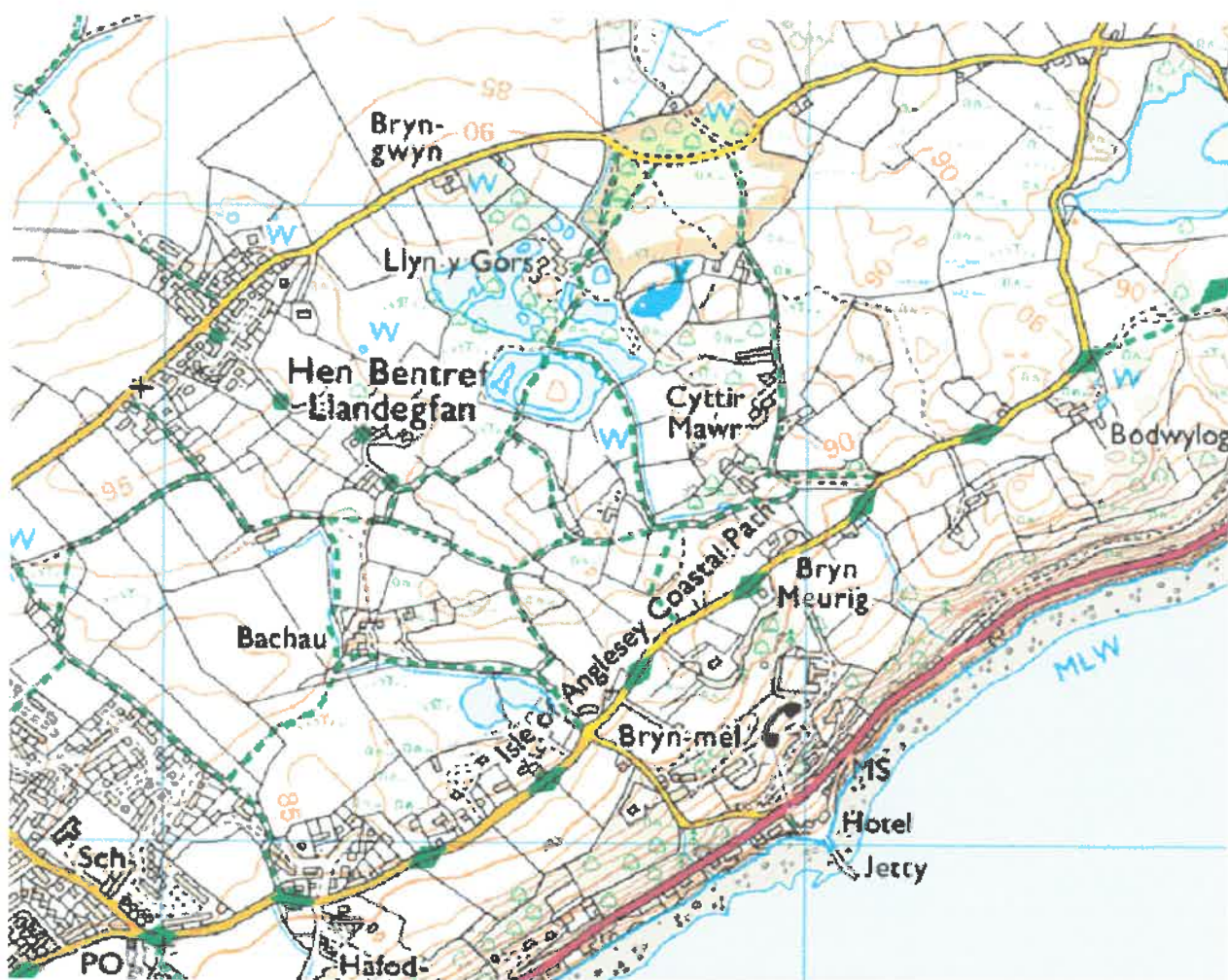
- Consider the local community and other people enjoying the outdoors
- Leave gates and property as you find them and follow paths unless wider access is available

Protect the natural environment

- Leave no trace of your visit and take your litter home
- Keep dogs under effective control

Enjoy the outdoors and stay safe

- Plan ahead and be prepared
- Follow advice and local signs



Map 4: Open Access land (outlined orange) and Public rights of Way (green dashed lines)
QGIS using 1:25,000 ©Ordnance Survey

Members of the public have right of access for "open-air recreation". There are a number of activities that members of the public have no right to do on CroW land, these include:

- damaging or interfering with any wall, fence, hedge, gate or stile, or neglecting to shut a gate (except where it is clearly intended to be left open);
- driving any vehicle be it mechanically propelled or otherwise, except mobility vehicles used by people with disabilities, riding a horse;
- bringing any animal other than a dog, (although any dog must be on a lead of no more than 2 metres between 1st March and 31st July each year and at any time when in the vicinity of livestock);
- committing any criminal offence;
- lighting fires or act in a way that would cause a fire;
- damaging (intentionally or recklessly) any wildlife, including eggs and nests, or plants, shrubs, trees etc.;
- feeding livestock;
- hunting, fishing or shooting;
- using, or having in their possession, a metal detector;
- obstructing the flow of any drain or watercourse, or anything intended to control the flow of water;

- posting any advertising or notices;
- intimidating, obstructing or interfering with the lawful activities of the land manager and others on CRoW access land or adjacent land;
- engaging in any organised games, or in camping, hang-gliding or paragliding;
- engaging in any activity organised or undertaken primarily for a commercial purpose.

(see <https://naturalresources.wales/days-out/recreation-and-access-policy-advice-and-guidance/managing-access/open-access-land/?lang=en> for further information)

3. EVALUATION OF THE SITE AS A LOCAL NATURE RESERVE

The common meets the criteria for a Local Nature Reserve given in the National Parks and Access to the Countryside Act 1949 (see Appendix).

3.1 Public Access and Enjoyment

There is open public access for pedestrians on the LNR and a network of public rights of way and informal footpaths that connects it to Llandegfan and Hen Bentref Llandegfan (See Map 4). There are Public Rights of Way and other footpaths transecting the LNR, two of the Public Rights of Way are along tracks (one to Llyn Gors and one to Cyttir). There is limited on-road parking with potential parking along the track to Llyn y Gors. Cyttir Mawr LNR lies between Hen Bentref Llandegfan and Beaumaris, and provides pleasant natural surroundings for residents and visitors to enjoy. The LNR provides opportunities for engaging in outdoor recreational activities such as walking and bird watching. The LNR creates opportunities for education and research.



Map 5: Public Rights of Way (green dashed lines) and existing footpaths
QGIS using Bing Aerial photo, OS data and digitised data (courtesy of Geoff Radford)

3.2 Wildlife

3.2.1. Biodiversity Action Plans

The importance of wildlife sites is increased if the habitat or species have been designated at the national level as having priority and have written Biodiversity Action Plans (BAP). Lowland heathland is a BAP habitat. BAP species occurring are: linnet, bullfinch, song thrush and soprano

pipistrelle bat. A draft plan is to be launched by the Isle of Anglesey County Council in 2019.

3.2.2. Habitats

The main habitat types are:

Grassland – The roadside verges are grassland rich in wildflowers, particularly yellow rattle (*Rhinanthus minor*) and common spotted orchid (*Dactylorhiza fuchsii*). Parts of the track to the north are wet grassland particularly rich in northern marsh orchid (*Dactylorhiza purpurella*)

Heath - Most of the remaining heathland on the site is dry heath and comprises a mix of ling (*Calluna vulgaris*), bell heather (*Erica cinerea*) and western gorse (*Ulex gallii*) (H8 *Calluna vulgaris*-*Ulex gallii* heath) with patches of wet heath/flushing on lower lying areas. The dry heath has a well-developed moss layer typically dominated by *Hypnum* sp. (plait moss) with other common heathland species such as *Pleurozium schreberi* (red stemmed feather moss), *Rhytidiadelphus squarrosus* (springy turf moss) and *Dicranum scoparium* (broom fork-moss). There are scattered patches of green-ribbed sedge (*Carex binervis*) and blue sedge (*Carex flacca*). Typical Heathland forbs such as tormentil (*Potentilla erecta*), cat's ear (*Hyopochaeris radiacata*) and ribwort plantain (*Plantago lanceolata*) have been recorded along with pale dog violet (*Viola lactea*), a species which has a very restricted distribution on heathland sites on Llŷn and Anglesey. There are some sizable patches of reindeer lichen (*Cladonia portentosa*) growing on mature ling (*Calluna*) bushes. The dry heath is very rank in places and dominated by western gorse (*Ulex gallii*) and in some places European gorse (*Ulex europaeus*) and birch scrub have invaded. Bramble is frequent in the more rank vegetation and there are patches of bracken which appear to have pioneering fronts. There are young trees within the heath principally oak, birch and ash.

Wet areas support flushed heathy vegetation with purple moor grass (*Molinia caerulea*), frequent cross-leaved heath (*Erica tetralix*), locally abundant bog asphodel (*Narthecium ossifragum*) and patches of Sphagnum particularly notable are the clumps of lustrous bog-moss (*Sphagnum subnitens*). Typical heathland flowers such as sheep's sorrel (*Rumex acetosella*), heath bedstraw (*Galium saxatile*) and heath milkwort (*Polygala serpyllifolia*) also occur especially where the heath vegetation is short. Petty whin (*Genista anglica*) is also known to occur at the reserve. See Cyttir Mawr Heathland Restoration (Annex 1), this describes the heath in more detail.

Scrub – Scrub is a transient habitat that colonises areas of open habitat such as heath, grassland, wetland and clearings in woodland. If left to develop it often becomes woodland. The scrub is predominantly common gorse, blackthorn and bramble.

Wetlands, Ponds and Watercourses - The ponds watercourses and wetlands within the reserve contain a variety of flowering plant species including greater and lesser spearwort (*Ranunculus lingua*) and (*Ranunculus flammula*), cuckoo flower (*Cardamine pratensis*), yellow flag iris (*Iris pseudacorus*), common bulrush (*Typha latifolia*) and common marsh bedstraw (*Galium palustre*). There are 4 ponds, one south of the road and at the south west junction of the lane to Cyttir (Corner Pond), three to the north of the road (West, North and East Ponds) all with associated wetland. There is a stream on western edge of the LNR.

Woodland - The woodland types are classified as wet woodland (W4 *Betula pubescens* – *Molinia caerulea* [downy birch - purple moor grass] woodland) and lowland oak – birch woodland (W16 *Quercus* spp. – *Betula* spp. – *Deschampsia flexuosa* [oak – birch – wavy-hair grass] woodland). These types of woodlands are particularly associated with fly agaric (*Amanita muscari*) which have a mycorrhizal association with birch trees.

The woodland overlies nutrient poor, thin soils with numerous rock outcrops. Drainage is locally poor and dominant tree species are mainly willow and birch. There is oak, holly and yew regenerating naturally in the woodland, a result of seed dispersal by birds. Sycamore is present at high densities in certain sections of the woodland. Overall the canopy is open, and creates a

dappled shade of varying light levels. This allows a variety of species to grow in the shrub and field layers, some areas are dominated by bramble, particularly next to the wayleaves where light levels are higher and bracken, particularly to the south of the LNR. Various mosses, lichen and fungi can be found. The woodland does not contain much deadwood, storms, recent thinning and overhead power line clearance works has provided fallen timber and a few habitat piles that have been colonised and are habitat for various species of fungi, plants, birds and animals. There is standing deadwood in the form of dead trees, limbs or storm damaged trees.



Map 6 showing location and mosaic of habitats
QGIS using Bing Aerial photo and digitised data

3.2.3. Recorded Flora and Fauna

Cofnod have provided data to help inform the management plan - see annex 2. Cofnod have provided:

- 8 records of Birds -
- 121 records of Butterflies and Moths -
- 49 records of Fungi, Lichen and Slime Moulds -
- 6 records of Mammals -
- 59 records of Other Invertebrates
- 133 records of Plants -
- 2 records of Reptiles and Amphibians

The following are species mentioned in the previous management plan but not necessarily recorded by Cofnod.

Birds

The LNR supports a variety of birds and is a very good location for bird watching. Species include bullfinch, long tailed tit, jay, great spotted woodpecker, wren, song thrush, blackbird, robin, blue tit, great tit, and chaffinch. Summer visitors include chiffchaff, willow warbler, blackcap and garden warbler. Woodcock are frequently found in winter as are visiting siskin, linnet and redpoll.

Butterflies and Moths

The most commonly recorded butterfly species are; the speckled wood, peacock, orange-tip, meadow brown, large skipper, gatekeeper, red admiral. The most commonly recorded moth species are; drinker, common heath, light emerald, common marble and common case-bearer.

Fungi, Lichen and Slime Moulds

Fungi such as fly agaric, and tar spot and nearly 50 species of lichen including the cup lichen species (*Cladonia spp*) including reindeer lichen, have been recorded.

Mammals

The scrub and rank vegetation provides habitat for small mammals such as harvest mice, wood mice, field vole and common shrew. Weasels have been recorded, as have hedgehogs and foxes. Common and soprano pipistrelle bats, myotis bats and noctule bats have been observed foraging within the LNR, and it is likely that other bat species also use the area for feeding and roosting.

Reptiles and amphibians

Common lizards, common toads and common frogs have been recorded in the heathland and pond areas, and the heathland habitat is suitable for adder and slow-worm.

Invertebrates

There are many other species of invertebrates than butterflies and moths including spiders, grasshoppers and crickets (notably oak bush-cricket recorded in 2015), flies, beetles, weevils etc. The 4 commonest species of damselfly are attracted to the ponds and wet lying areas presumably from Llyn y Gors adjacent to the LNR.

Plants

The following species have been recorded:

Grass, sedge and rush species; common bent, sweet vernal grass, crested dog's-tail, cock's foot, sheep's fescue, Yorkshire fog, bulbous rush, mat grass, timothy, fern species; lady fern, hard fern, narrow buckler-fern, bracken, moss and liverwort species; *Aulacomnium palustre*, *Barbula unguiculata*, *Brachythecium rivulare*, *Bryum pseudotriquetrum*, *Camylopus spp*, *Colura calyptrifolia*, *Dicranella varia*, *Dicranodontium spp.*, *Frullana dilatata*, *Hypnum spp.*, *Isothecium myosuroides*, jagged germanderwort, *Leucobryum glaucum*, *Metzgeria spp.*, *Microlejeunea ulicina*, *Mnium hornum*, *Orthotrichum affine*, *Pellia epiphylla*, *Plagiothecium undulatum*, *Pleurozium schreberi*, *Polytrichum spp.*, *Scleropodium purum*, *Sphagnum spp.*, *Thuidium tamarascinum*, *Tortula truncata*, *Ulota spp.*
Forbs (herbaceous species); enchanter's nightshade, hoary willowherb, meadowsweet, bedstraw, heath bedstraw, marsh bedstraw, wood avens, tutsan, cat's ear, ribwort plantain, greater plantain, silverweed, selfheal, lesser spearwort, marsh yellow-cress, rose spp., common sorrel, common ragwort, hedge woundwort, wood sage, common nettle, pale dog-violet, violet
Tree and shrub species; hazel, beech, wild cherry, blackthorn, oak spp., grey willow, elder, guelder rose.

INNS Buddleia, *Crassula helmsii* (recorded on Llyn y Gors), *Montbretia*, blackcurrant,

3.3 Landscape

The LNR is predominantly woodland and has occasional views to open countryside and the mountains but is largely an enclosed space. The heathland areas are enclosed within the woodland and views open up in these areas. The mixture of trees and open areas forms a mosaic of varying but complementary vegetation types.

3.4 Archaeology

There are no known archaeological artefacts on the site. A find of a late bronze-age hoard of a gold and silver ring and fragments of copper ingots were found about 50m to the south-eastern edge of the LNR. There are quarried areas within the reserve which are not recorded by the Gwynedd Archaeological Trust.

4. FACTORS WHICH MAY INFLUENCE THE NATURAL FEATURES

There are a variety of factors which may affect the natural features of the reserve, according to circumstances. The following especially should be borne in mind when developing the management of the area.

4.1 Natural Succession

Aerial imagery shows how Cyttir Mawr has changed over time; it was devoid of trees other than a few trees and hedgerows on its boundaries in 1945 and has become predominantly woodland by the 1960s. The woodland started to be established as grazing was reduced and eventually ceased on the common around the 1950s and 60s. There was a large fire on the heathland in 1974 which will have removed vegetation and some of the peaty soil exposing mineral soil and giving ideal conditions for invasion of tree species, particularly birch.

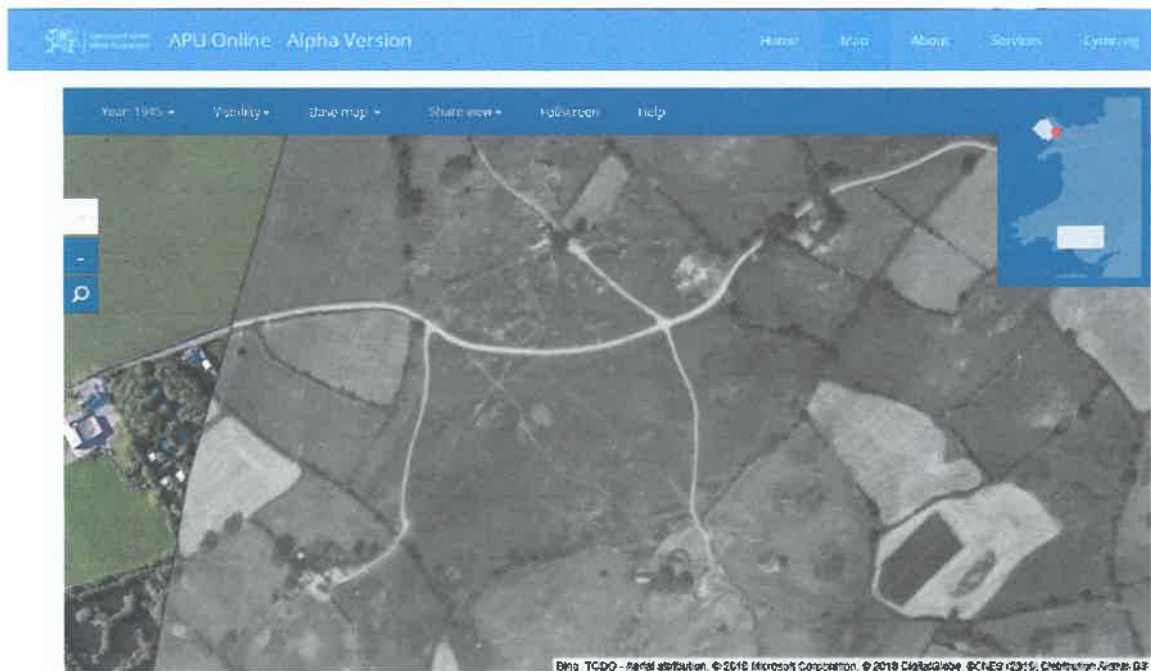


Fig 1: Aerial photography from 1945

<http://aerialphotos.wales.gov.uk/map/?lang=en#&x=-4.13210&y=53.25349&z=16&b=0&a=1945>

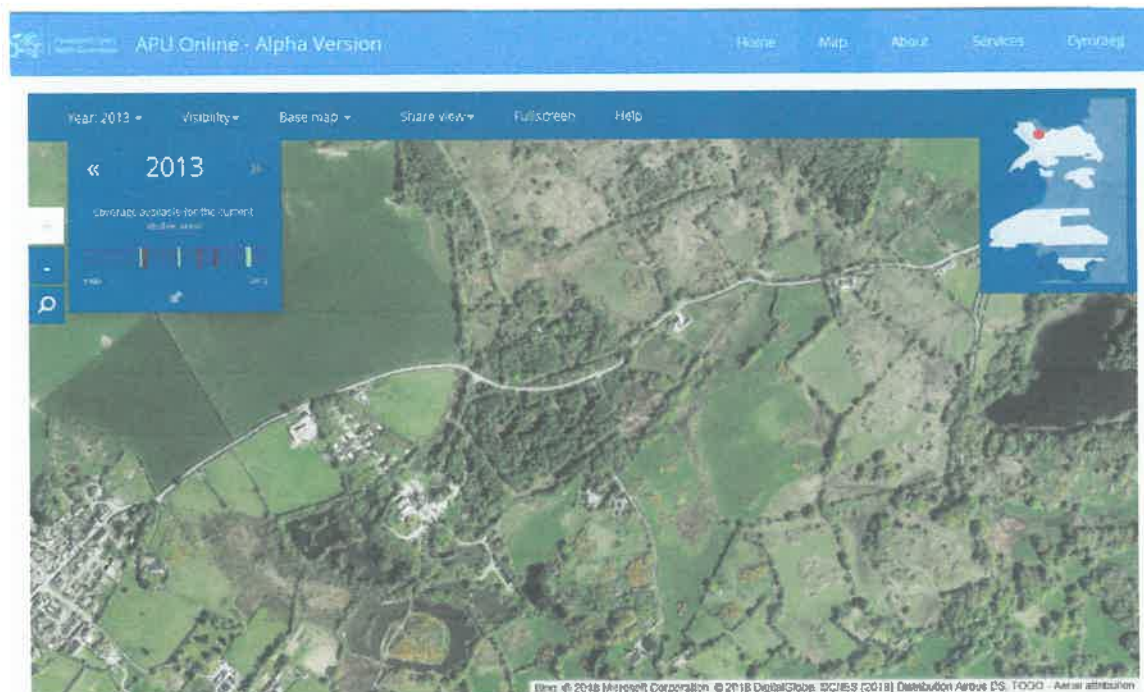


Fig 2: Aerial Photography from 2013

<http://aerialphotos.wales.gov.uk/map/?lang=en#&x=-4.13210&y=53.25349&z=16&b=0&a=2013>

4.2 Natural Processes and Traditional Management Activities

4.2.1 Natural Processes

1) *Woodland and Scrub*- The woodland is recent in origin being at the most 50 to 60 years old. In the absence of grazing, natural succession and events such as tree death and wind blow in the woodland result in species such as sycamore, oak, holly and yew becoming more dominant over time. It is likely to be the case that in years to come the woodland will be dominated by sycamore or oak. Scrub has invaded areas of heath and has dominated the heathland. Scrub tends to be a transient habitat and will develop into woodland over time.

- Woodlands can be managed through traditional methods such as thinning, coppicing or pollarding to provide a supply of materials for traditional crafts and for timber and fuelwood. Depending on intervals between thinning, coppicing or pollarding some of the heathland and grassland species can be favoured through these management methods.
- Without regular management of woodlands shade to ground flora is increased and species such as sycamore can dominate. Shading leads to an impoverishment in flora and the larger leaves of sycamore tend to further increase shading.
- Extensive storm damage leads to increased light levels reaching the ground which in turn encourages species such as bramble to dominate the shrub layer. Extensive storm damage such as wind blow and snapping tends to occur where woodlands have minimal management or where new edges have been created through creation or management of wayleaves. Over-thinning has the same consequence hence the management needs to be carried out sensitively.
- Grazing in woodlands can have a detrimental effect leading to loss of species and poaching of the ground, killing mature trees. Low intensity grazing that is monitored can have a beneficial effect by increasing light levels and browsing unwanted bramble and tree regeneration.
- The woodland could possibly be reverted to heath but the soils have been enriched over

the years. Also any drastic reduction in the woodland area would require permission from NRW and could require replacement planting to be carried out elsewhere to compensate for loss of woodland area.

- Small areas of felling (around 0.25ha maximum) on the edges of heathland or other habitat would be beneficial and would allow development of spread of those habitats.
- Scrub could be removed, especially where it is adjacent to other habitats such as heath.

2) *Heathland* -

In the absence of management, natural succession on heathland generally leads to:

- Domination by taller shrubs and herbs such as European gorse, willow herb, bracken and bramble, which shade out smaller species. This is already evident in some areas of the heathland, with European gorse dominating in places.
- The establishment of trees such as willow (in wet areas) and birch (in dryer areas), which results in the loss of typical heath species and eventual loss of heathland. If this were to continue unchecked the heathland would succeed to woodland.
- Soil enrichment favouring coarse grasses and herbs, which leads to succession of woodland and loss of typical heathland species that prefer nutrient poor growing conditions
- The heathland could be expanded by removal of other habitat such as woodland or scrub. Removal of woodland should be relatively small-scale. Scrub could be removed on a larger scale. follow up action is needed to prevent scrub from re-establishment such as treatment of cut stems with herbicide to prevent regrowth or grazing.

The exception to these processes will be on the very thin soils where the characteristic heathland vegetation is likely to be self-sustaining.

4.2.2 Traditional Management Activities

Areas of heathland are traditionally managed through a combination of burning, grazing and cutting to produce palatable vegetation for grazing animals and to maintain heathland and grassland habitats. It may not be appropriate to use these methods on a large scale where vulnerable species such as harvest mice are present.

a) *Grazing*. The common would have historically been grazed with domestic animals. Grazing is usually carried out over a large area to give enough forage for livestock. The choice of hardy livestock negates the need for additional feeding or the need of shelter, however the livestock need to be checked and managed to ensure they are kept healthy and to prevent over-grazing. Grazing has two principal effects:

- Grazing maintains short vegetation and prevents the establishment of tree scrub, thus conserving the diversity of heathland plant species and their associated fauna. Over-intensive grazing and feeding of livestock can lead to a loss of heather and heathland flowers, increased soil nutrients and so to domination by grasses.
- Nutrient levels are slowly reduced as vegetation is taken off the land by livestock digesting the vegetation and their increasing body weight. A reduction in nutrient levels favours heathland species. The soil pH is reduced when heathland species become more dominant leading to more acidic soils locking up soil nutrients thus further depleting the soil-nutrient status.

b) *Burning*.

- Burning heathland and grassland vegetation at the correct time of year (Jan/Feb) is beneficial as it reduces vegetation and soil fertility. However it will result in the loss of species especially if it occurs in summer and may result in losses any time of the year.

Intense burning can remove the humus rich layer of soil exposing mineral soil thus creating the ideal seed bed for tree and shrub species, it can also lead to a higher soil pH resulting in more soil nutrients becoming available. Burning is an anti-social behaviour due to it creating smoke and ashes.

- Complying with the Heather and Grass etc. Burning (Wales) Regulations 2008 ("the Burning Regulations") and other legislation, and following the recommendations in this Code, will greatly reduce risks to those carrying out burning and to the general public, and will decrease the risk of damage to property, agricultural, forestry and game interests, and to wildlife and the wider environment.
- Burning of lowland heath can only be carried out between 1st November and 15th March (see The Heather and Grass Burning Code for Wales 2008).
- A Burning Management Plan must be produced and must be available for inspection by Welsh Assembly Government officials upon request. The Burning Management Plan is a standard form available from the local Department for Rural Affairs (DRA), Welsh Assembly Government office on which information about the proposed burns should be recorded. A burning plan map needs to be produced and it is recommended that practitioners attend a training course.

c) Cutting

- Cutting and removing arisings is another method to reduce soil fertility and traditionally material would have been removed as fodder or bedding for livestock or even as roofing material (thatch) for buildings and covering hay and straw. Cutting grassland habitats in late summer and removing arisings can maintain lower soil fertility favouring the meadow species. Cutting heathland in late winter to early spring can rejuvenate rank heather and reduce scrub and other invading species.

4.3 Invasive Non-Native Species (INNS)

There are a number of INNS present:

- Montbretia (*Crocasmia xrocosmiiflora*) – Present on roadside verges and along the track to the derelict cottage on the northern edge of the LNR.
- Snowberry (*Symphoricarpos albus*) – Present by the eastern end of the footpath on the northern half of the LNR.
- Cotoneaster (*Cotoneaster spp.*) – scattered plants throughout.
- Buddleia (*Buddleia davidii*) – scattered plants throughout
- Spirea (*Spirea spp.*) – scattered plants throughout
- Blackcurrants (*Ribes nigrum*) – scattered plants throughout
- Raspberries (*Ribes idaeus*) – scattered plants throughout
- Himalayan balsam (*Impatiens glandulifera*) – scattered plants adjacent to watercourses, especially on the western edge
- Cherry laurel (*Prunus laurocerasus*) – scattered plants
- Variegated yellow archangel – Present on verges
- Dotted or large yellow loosestrife (*Lysimachia punctata*) – Present on verges
- Winter heliotrope (*Petasites fragrans*) – Present on verge by track to derelict cottage
- Michaelmas daisy (*Aster spp.*) – Present on verges

New Zealand pygmyweed (*Crassula helmsii*) has been recorded on one of the lakes at Llyn y Gors, this is shown in the Cofnod records, and hopefully has been eradicated as it is a pernicious INNS.

4.4 Recreational Activities

Activities such as walking and bird watching are unlikely to have significant effects on the heathland vegetation unless they are excessive. Some plants and ground nesting birds may become vulnerable if there is excessive trampling. Footpaths in wetter parts of the woodland can become very boggy, and this tends to be worse during the winter months.

4.5 Antisocial behaviour

The introduction of any species may need licensing and should only be permitted by the landowner if thought to pose no risk.

The removal of some plant and animal species may need a licence and needs permission of the landowner. However, removing invasive non-native species does not.

The dumping of garden waste will have a detrimental effect upon the LNR. It creates areas of enriched soils changing the vegetation locally and can introduce INNS such as Japanese knotweed and Himalayan balsam through seed or vegetative material, other noxious weeds such as thistle and dock and it can also be unsightly. Any waste material to be disposed of as part of the management of the site should be carefully sited to prevent soil enrichment and to discourage others from dumping their own garden waste.

The dumping of other waste materials such as building waste will have a detrimental effect. It should be reported to NRW and/or Anglesey County Council and removed at the earliest opportunity. The dumping of waste is illegal and can lead to prosecutions and fines.

4.6 Health & safety

There are health and safety concerns and a site risk assessment has been produced. The main risks to users of the common land are;

- a road bisects the area and vision may be obscured for drivers, cyclists and pedestrians especially on bends
- there are overhead powerlines traversing a number of the areas
- the common risks of slips, trips and falls if paths are not adequately maintained

These risks can be mitigated and reduced through management of the LNR.

4.7 Wayleaves

The wayleaves under the powerlines offer an opportunity to restore habitat in those areas. The past management has been for the utility company (Scottish Power) to send operatives to prune trees to give a 3 metre clearance along the line. All of the cut material has been left below the lines to rot. This gives rise to rank vegetation and scrub developing below the powerlines which is inaccessible. This is only a problem in areas of woodland but is an extensive area, some 0.53ha.

5. MANAGEMENT OBJECTIVES AND METHODS

5.1 Aims and Objectives

Aims

- To maintain the reserve as a mixture of natural vegetation types: heath, ponds, grassland and woodland for multiple benefits.
- To provide free public access for the purpose of recreation consistent with conserving the natural and archaeological features.

Objectives

- *Wildlife* ~ To maintain the LNR's mixture of natural vegetation types comprising heath, ponds, grassland and native broadleaved woodland. To maintain or increase the area of heath by reducing the area of scrub or woodland. To manage the ponds as a continuum of habitat from open water to bog.
- *Access* ~ To maintain public pedestrian access, for the purpose of recreation consistent with conserving the natural features.
- *Interpretation and Education* ~ To provide information on the LNR and interpret features of interest accordingly. To encourage and foster links with the local school and other educational establishments.

5.2 Rationale

In order to control vegetation, to maintain species diversity and heathland vegetation, and to minimise the frequency of management it will be necessary:

- To manage vegetation directly by cutting, burning or grazing;
- To remove cuttings from areas vulnerable to soil enrichment, particularly the roadside verges and heathland. This will prevent excessive growth and promote species diversity.
- To maintain heathland and woodland in a healthy condition.
- To manage areas of heath in rotation in order to maintain a variety of age classes of heather and to allow re-colonisation into adjacent areas.
- To control the encroachment of willow, birch, bramble, common gorse & INNS, and the spread of bracken.

To allow the public to visit the LNR there should be pedestrian access through the reserve, thus public footpaths should be maintained in a usable condition. The use of motorbikes, or other vehicles, is damaging and disturbs the tranquillity of the reserve and such users should be prosecuted.

Interpretation describing the LNR will enhance enjoyment and promote understanding. This can be achieved by interpretation boards, leaflets and digital media. The LNR has significant educational potential, which should be exploited through establishing links with the local primary school.

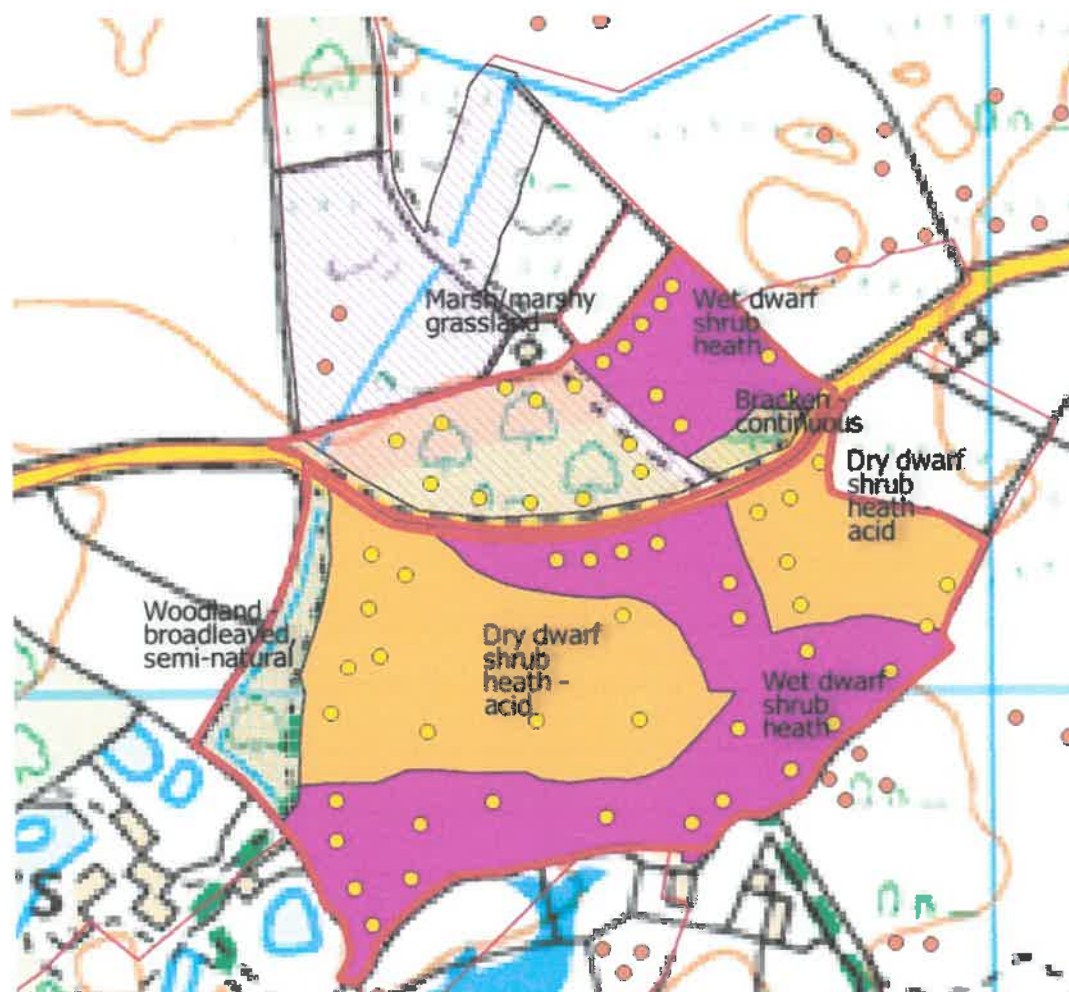
The use of the reserve as an educational resource can be encouraged by fostering links with local schools and educational establishments. The reserve has an entry in the Countryside Council for Wales' 'Outdoor Education Directory'.

5.3 Management of Habitats

5.3.1 Heath

Lowland heathland is a plagioclimax community and therefore requires ongoing management to prevent succession to scrub and woodland. Typically, lowland heathland is managed by grazing in combination with some vegetation management by cutting, mowing or burning.

The heathland at Cyttir Mawr is in poor condition due to the invasion of scrub, bracken and bramble and the lack of heather management resulting in a large proportion of mature and over-mature heath. The heathland found on Cyttir Mawr today is a very small remnant of the heathland which was present 30 or more years ago. Map 6 shows the extent of heathland recorded by the Phase 1 survey in the 1980s. The phase 1 survey recorded 5.07 hectares of heath.



Map 7 Phase 1 Heathland map from the 1980s - Yellow dots signify scattered scrub
QGIS using Ordnance Survey 1:25,000 and NRW data. Contains OS data Crown Copyright and Database Right 2019

Map 8 shows the current extent of heath on the LNR. Currently there is approximately 0.34 ha of heath to the south of the road, but much of this is scrub-dominated. To the north of the road there is a clearing measuring about 0.05 ha but very little of this can be currently classed as heathland.



Map 8 Current extent of heath at Cyttir Mawr

QGIS using Bing Aerial photo and PONT data. Contains OS data Crown Copyright and Database Right 2019

Ideally grazing should be introduced on to the heath on the south side of the road in combination with clearance of gorse, scrub and removal of litter. There are concerns about the impacts of grazing on species particularly harvest mouse but the design and implementation of grazing can take this into account. Without grazing the heath could be managed manually by cutting but experience elsewhere in North Wales on these *Calluna-Ulex* heaths has shown that this is rarely successful without follow-up grazing to control regeneration of *Ulex*, bramble and other scrub. Grazing also develops a varied vegetation structure at a finer scale than can be achieved by mechanical management. This helps to provide niches for a range of associated species and patches of bare ground needed for germination of ericoids, particularly *Calluna*, from seed.

A key objective on the site should be to manage the heath to create a larger open area by removing European gorse (*Ulex europaeus*) and other scrub and controlling bramble and bracken. At present the heath is so fragmented and the edge effect from encroaching scrub, bramble and bracken so significant that the long-term survival of the habitat is doubtful. It is particularly difficult to maintain heaths which have been invaded by European gorse (*Ulex europaeus*) as the nitrogen fixing capacity of this species coupled with the dense litter it produces has a significant impact on soil fertility. Experience on lowland heathland sites on Llŷn, Anglesey, Pembrokeshire, Ceredigion and Great Orme has shown that it is very difficult to restore heath after the removal of dense European gorse (*Ulex europaeus*). On Cyttir Mawr there is still some ericoid component within the European gorse (*Ulex europaeus*) vegetation and it should be possible to improve the condition of the heath although this will be a slow process.

In general, European gorse (*Ulex europaeus*), birch and other scrub should be pushed back from the heathland edge. This does not mean removing all the scrub within this part of the site as scrub has value for some species e.g. woodcock, seen on the site in dense scrub and European gorse (*Ulex europaeus*) is an important host for greater broomrape (*Orobancha rapum-genistae*). Some individual young trees should be maintained on the edge of the heath to add structural diversity.

The level of grazing needs to be sufficient and at the right time so that it takes enough biomass away from the heath without causing damage through over-grazing. This will require fencing of some form which can be stock-proof fencing, electric fencing, invisible fencing or even cattle grids on the roads.

The habitat needs to be improved to make it suitable for grazing and to give a large enough area to put livestock on. Scrub will need to be cut prior to putting any stock on. The preferred approach is to graze one area first and install electric fencing along the edges and monitor the results of grazing and dung. It may be necessary to remove animal dung as it can have detrimental effects to habitats although it creates a new habitat with a different range of associated species. If grazing is successful then other areas can be grazed and permanent fencing could be installed. The grazing regime may need to be modified to suit different areas and changing weather patterns.

Cutting can replicate grazing and result in habitat improvements as long as it is carried out at the right time of the year and cuttings are removed from the area.

Burning is the most cost-effective method and should ideally be carried out in January or February. For legal requirements see 4.2.2. above.

5.3.2 Scrub

Willow, birch and common gorse should be cut to prevent further loss of heath. Bramble scrub should be reduced or eradicated where possible as it tends to dominate in certain habitats. Grazing, cutting and treating with herbicide and uprooting are common methods of control.

5.3.3 Wetlands, Ponds and Watercourses

The ponds within the LNR tend to become clogged with vegetation over time with the loss of areas of open water and shallow water at pond margins and shelves. The wetland margins provide very important habitat for aquatic invertebrates and amphibians, and are especially favoured by emergent vegetation such as yellow flag iris and cuckoo flower. Open water is favoured by great crested newts during their breeding cycle, and the larger of the ponds within the reserve may be made suitable for their colonisation, given appropriate management. Ponds will need to be cleared out periodically in order to encourage and sustain wildlife. Arisings should be spread adjacent to the pond avoiding areas of rich habitat.

The best time for clearing out ponds is late summer when they are driest. The question of when causes least disturbance is a difficult one. If it is done in winter when things are least active, disturbance appears to be minimal but animals that have been disturbed are least likely to make it back to the pond. If it is done in the warmer months, there will appear to be many more disturbed animals but they tend to be in more active life stages so have a better chance of getting back to the water. Damage to green plants in summer looks worse than damage to dead plants in winter. Disturbing the sediments in warmer months is more likely to cause deoxygenation. The key is to do a little at a time rather than clean out a whole pond in one go.

When planning work on the ponds, their possible archaeological importance should be taken into account. The pond basin may be of significance, if it is the result of quarrying or other historical activity. For example East Pond is shown on the 1913 OS map as a quarry and the North Pond

appears on the map as a rectangle of unknown origin. Re-profiling may destroy archaeological evidence. Secondly, the sediments may be an important record of activities on the Common which would be destroyed by cleaning out the pond.

The main watercourse to the west is at risk of nutrient enrichment due to run-off from adjacent land. There is also a general risk of increased nitrification of groundwater, the south east corner of the LNR is probably the most vulnerable. To better understand the hydrology a hydrological survey should be carried out. In order to safeguard hydrology it may be necessary to influence local landowners and planning applications through the local authority

5.3.4 Grassland

Roadside verges and parts of the track to the lodge to the north should be cut once or twice annually and the cuttings removed. This should be confined to the months of August, September and October. This allows plants to set seed and minimises damage and disturbance to wildlife. If growth is excessive over winter then an additional cut may be done before the end of March.

5.3.5 Woodland

Whilst an aim of the management plan is to improve the heathland and reverse the succession to woodland, it is inevitable that a large proportion of the reserve will continue to be woodland for the foreseeable future. The woodland has arisen by natural colonisation and its development should continue with minimal intervention. Competition leads to the death of some trees which constitute standing dead wood, one of the more valuable aspects of a woodland providing habitat for fungi, insects and hole-nesting birds such as woodpeckers and nuthatches. Because the soils are thin, fallen trees are likely to become more numerous as the trees get bigger. Fallen trees are another natural phenomenon and provide valuable niches in the form of patches of light reaching the ground, patches of bare rock or subsoil, seasonal pools, novel growth forms of trees and dead timber.

The exceptions where intervention is required include:

- clearing fallen trees across roads, footpaths, adjacent properties, power lines and other habitats;
- ensuring dead and partially fallen trees will not fall across a footpath, close to the road or adjacent properties;
- reducing or felling trees along the power lines (this is carried out by Scottish Power);
- control or removal of alien species including sycamore, cotoneaster, cherry laurel, Buddleia, snowberry and Spiraea;
- clearing brambles if they are thought to be out-competing more important ground flora;
- removal of trees which have been planted;
- expanding the open, non-wooded areas of the reserve;
- improving the habitat in the open areas such as by reducing leaf fall or increasing sun light.

As a rule, both standing and fallen dead wood should be retained in-situ. Dead wood is one of the aspects of recently developed woodland most likely to attract uncommon species. Because of the wide variety of potential habitats produced by the decay of wood, it is worth having as much dead wood as possible in order to enable the maximum number of decay pathways. However, there will be situations where dead wood should not be left where it falls, such as if it blocks a footpath or dominates a patch of heath. If woodland is being cleared in order to expand a clearing, trees should be felled into the woodland rather than into the clearing if possible. If cut or fallen timber has to be moved, it should be kept in as large sections as possible rather than cut into logs. This is because larger pieces of decaying wood are better habitat. Habitat piles offer few if any advantages (perhaps hibernation sites for reptiles and amphibians?) over the same material being

strewn on the woodland floor, but there may be situations where it is better to make a pile of cut branches rather than leave them shading the ground flora.

Bracken on the southern edge of the woodland should be controlled once or twice in summer (mid June to end July) by cutting, topping, rolling or crushing. Bramble, where it is encroaching onto paths should be controlled either by cutting in summer (July to September), grazing or uprooting in winter (November to February), it may be necessary to treat the same areas a number of times to reduce the density of brambles. Cutting and spraying bramble regrowth with herbicide is effective but should only be used as a last resort.

The electricity wayleaves through the woodland should be managed in a more pro-active manner. Trees and scrub below the lines should be cut and stacked to the edge of the area. Adjacent trees to the wayleave should be managed to produce a curved natural edge rather than a straight line. The area below the powerline can then be cut on an annual basis or grazed.

5.4 Management of Archaeology

All archaeology will be retained in situ, this includes quarries, stone walls, banks and ditches. All archaeological features will be recorded.

5.5 Access Management

The provision of one circular route on the firmest ground for people with mobility issues should be explored, this may be a completely new route. All public rights of way are maintained and cut on a regular basis, Cwm Cadnant Community Council have a programme of cutting vegetation along footpaths. The condition of the surface should be monitored and action taken as necessary. The condition of the boardwalks should be inspected annually and action taken as necessary. To mitigate the risks of slips, trips and falls it may be necessary to remove all of the boardwalks over time.

5.6 Management of Interpretation and Education

Interpretation of the LNR should be improved to make people aware of its significance which will lead to better respect and more use of the LNR. A plan needs to be devised and implemented to use various media to promote the site. The involvement of the local school should be sought.

5.7 Management methods

See Annex 1 for more detailed management of the heath

5.7.1 Grazing

The introduction of grazing will require the installation of fencing. Boundary fencing with adjacent land should be checked to ensure that it is stock proof.

- Stock-proof fencing (posts with wire and netting) may only be erected with the permission of the Welsh ministers as it is a permanent structure. It is relatively expensive to install and can be intrusive and can be prone to failure due through trees falling on it or vandalism..
- Electric fencing can be erected to contain livestock and taken down once the livestock are removed. Vegetation needs to be managed along the fence-line to prevent the fence shorting out. The fencing unit needs maintaining to ensure the fencing is working effectively. Electric fencing can be prone to failure due through trees falling on it or vandalism.
- Invisible fencing is where a cable is buried on the perimeter which carries a signal and units are fitted to animals that deliver a signal to deter them from crossing the invisible barrier. It is relatively expensive to install but is not intrusive. It is similar to electric fencing and the fencing unit needs maintaining but the fencing is permanent. It can be installed along the

- edge of the roads or tracks.
- Cattle grids are very expensive to install and will need permission from the County Council and consultation with local residents. It is unlikely permission will be given by the county Council as it would entail livestock crossing the highway which would cause too great a risk of collision.

Cattle, ponies or horses are the preferred animals for grazing heath. Animals would either belong to the Cwlwm Seiriol project, Cwm Cadnant Community Council, or to residents (or others) on the condition that the land is not over-grazed. Advice on the timing of grazing and numbers of animals should be sought from management advisers (PONT).

5.7.2 Cutting heath

Cutting of heath should ideally be carried out between October and February during a period of dry weather and when the soil is firm enough to take any machinery that is used. Areas where Sphagnum is present should not be cut. The cutting should be carried out to create a patchwork effect with different ages of heather plants across the heathland. Each area will need cutting every 5 to 10 years according to the amount of growth. Parts of the common have very thin soils and are unlikely to need regular management. Cutting may be done using shears, brushcutter or clearing saw or tractor mounted flail, the removal of cuttings will help prevent soil enrichment and suppression of heather growth.

5.7.3 Burning heath

Grazing is the preferred management option however, if required burning may be done to create small areas of burnt heath, a maximum of 300 square metres each per year, avoiding the wetter areas of heath. It is better to cut fire-breaks prior to burning and carry out controlled burns when the vegetation is relatively damp to prevent its spread. It is preferable to carry out burning after a cold spell in January or February (see 5.4.1). Areas to be cut should be irregular in shape to create as much edge effect as possible and should be no more than 100m².

5.7.4 Cutting scrub

Cutting of scrub can be carried out any time of the year. The scrub should be cut as low as possible and the stumps can be treated with an approved herbicide to prevent regrowth although regrowth may be desired. When cutting and removing scrub, disturbance of the soil should be kept to a minimum. Scrub on the edge of the heath should be cut and removed thus increasing the areas of heath. All cut material should be burned or stacked off the heath.

If burning scrub it should ideally be burned on the day of cutting, which gets rid of it quickly without the effort of removing it. The number of bonfire sites should be limited and their location needs to be carefully considered to limit the spread of fire and damage to habitats. Bonfire sites are sterilised and enriched with nutrients and there are various bryophytes, fungi and insects associated with fire sites in a succession for about four years after the fire, therefore a bonfire site should not be re-used for at least four years. There is a risk that fire sites will be colonised by nutrient-loving invasive plants such as rosebay willowherb, but as the patches will be small, controlling such plants should not be a problem.

The longer piles of cut scrub are left on the ground, the more chance of them being colonised by small mammals, hibernating reptiles and amphibians, etc. So if a pile of scrub is to be burned at a later date, it is best to move it to burn it rather than set fire to the pile where it stands.

5.7.5 Woodland

If felling or clearing trees with a chain saw it should be carried out by trained and insured operators or those undertaking chainsaw training with a qualified trainer. Felling trees close to the powerlines (1 to 2 tree heights, approx 20 to 40m) should be felled by suitably qualified people.

5.7.6 Ponds, Watercourses and Wetlands

Pond management should be done as required, not fixed into a regular cycle. As mentioned above, it is better to do only a fraction of a pond at one time. It may be better to dig new pools than to excavate a pond that has in-filled, e.g. as has been done at Corner Pond.

Ponds should have encroaching vegetation and silt removing late summer to early autumn when water levels are at their lowest. Vegetation should be removed at the same time but can be carried out until early February, removal on the southern side of the pond is important to ensure that there is some sunlight reaching the pond between spring and autumn. Habitat piles should be created between the pond's edge and adjacent scrub, heath or woodland as refugia. Care should be taken to avoid damaging emergent vegetation by not working around the pond when there are high water levels. Refugia should remain undisturbed whilst carrying out any work around the pond.

Watercourses should need little management apart from removing any significant blockages and managing INNS such as Himalayan balsam on the banks to prevent spread. Wetlands should be managed to maintain high water levels in winter months and prevent drying out in summer as far as possible, this may be by preventing drainage, blocking drains or channelling excess water from ponds or watercourses into the area.

5.7.7 Bracken

Bracken can be controlled in summer by cutting, rolling, pulling, trampling by grazing animals or whipping. Rolling is the preferred method to start bringing areas of rank bracken under control as it is the most effective. Bracken rolling should take place between mid-summer (21st June) and end of July to have the maximum effect. Control of bramble and scrub will be needed to facilitate bracken rolling and to allow vegetation such as herb-rich grassland or heath to establish.

5.7.8 Invasive non native species (INNS)

An INNS reduction plan should be created and implemented.

- Himalayan balsam - Hand pull June to September before setting seed and pile plants to compost.
- Cherry laurel - Hand pull or uproot small plants, cut larger plants and treat cut stump with herbicide.
- Montbretia (Crocosmia) – dig up and dispose of plants off site. Spray with herbicide in summer is less effective.
- Snowberry (Symphoricarpos) and Spirea – cut and treat stumps with herbicide.
- Buddleia – cut
- Variegated yellow archangel – uproot and dispose of off site
- Yellow loosestrife – dig up and dispose off site
- Winter heliotrope (Petasites) – treat with approved herbicide during the summer either by spot spray or weed wipe
- Michaelmas daisy (Aster) – pulling when the plant is identifiable or cutting annually in August or treat with approved herbicide either by spot spray or weed wipe.
- Spirea, blackcurrants and raspberries - cut annually and treat cut stems with approved herbicide

6 ACTIONS:



Map 9 showing potential expansion of habitats - shown as hatched areas
QGIS using Bing Aerial photo and digitised data

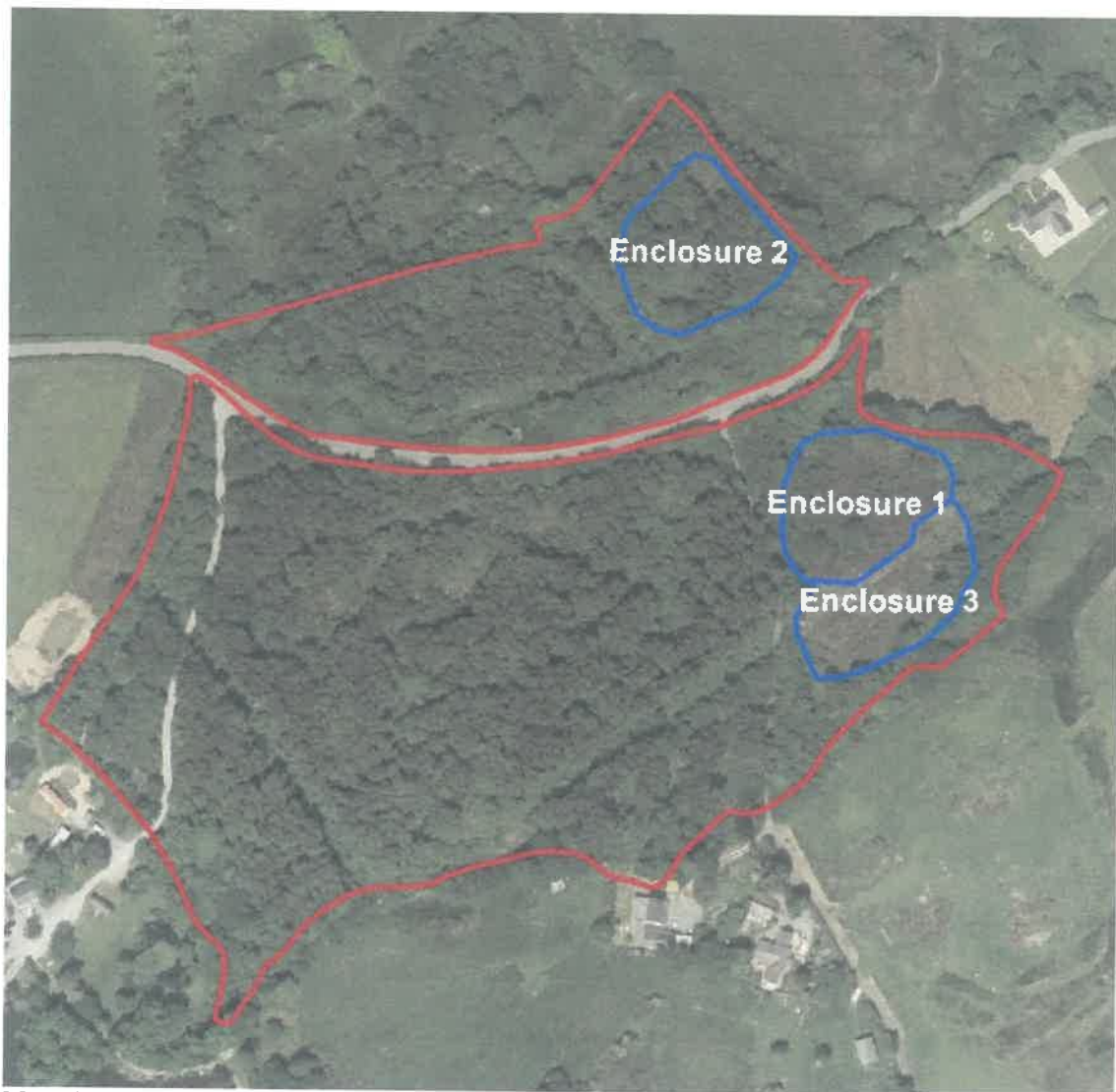
6.1 Grazing

Graze part of the LNR, an area of at least 1,000m² containing a mix of heath and grassland is ideal. The area should be fenced using electric fencing as a temporary stock-proof barrier. The grazing should be at a low density of animals to keep the vegetation in check, and to avoid over-grazing and to prevent poaching. The grazing needs to be monitored on a regular basis and livestock removed before damage to habitats occurs.

Grazing will be managed through electric fencing enclosures and moving stock between these. Three enclosures are shown on the map below. Initially only Enclosures 1 and 2 will be erected and grazed. The heath needs to be carefully grazed for short periods only. Initially the grazing will be by 5 Cameddau ponies for no more than 2 months in either enclosure, ideally 1 month in early spring (March/April) and 1 month in September. Ponies will be removed as soon as they have had the desired impact on the vegetation and before they cause any unacceptable level of poaching.

There could be options for grazing other parts of the woodland to manage ivy, bramble and regeneration. This would provide more potential for moving livestock about.

Compartment 3 is the area where signs of harvest mouse have been recorded. Harvest mouse are sensitive to grazing which can destroy nesting habitat. However, the heathland would benefit from grazing in this area. Harvest mouse are most susceptible to grazing in summer particularly August, therefore a short period of grazing in late autumn, winter or early spring should not have a significant impact. Grazing this compartment should be considered once more data on harvest mouse on the site has been collected. Additionally, it is hoped that by opening out the heath in other areas more habitat will be created which could be suitable for harvest mouse, for example there are areas of suppressed *Molinia* beneath the *Ulex*.



Map 10 Grazing enclosures

QGIS using Bing Aerial photo and PONT data. Contains OS data Crown Copyright and Database Right 2019

6.2 Heath

Heather and gorse should be cut or burned in rotation. Cuttings should be removed from site. This should be done annually or biannually but the heather should be monitored to ensure that there are areas of young and mature heath present in each area of heath.

In general, *European gorse* (*Ulex europeaus*), birch and other scrub should be pushed back from the heathland edge. This does not mean removing all the scrub within this part of the site as scrub has value for some species e.g. woodcock, seen on the site in dense scrub. Some individual young trees should be maintained on the edge of the heath to add structural diversity.

Compartments A, B, C and D.

Small scale cutting should be done to regenerate mature heath. Small patches of heath should be cut to ground level, vegetative regeneration by ericoids is improved by cutting as low to the ground as possible. A low cut can also slow the regeneration of *western gorse* (*Ulex gallii*) thus giving an advantage to the ericoids. All the arisings must be removed and where possible litter removed to create some bare soil for ericoid regeneration by seed. This could be done as a volunteer task using hand tools, only very small patches of vegetation need be cut on a rotational basis e.g. no bigger than 3 metre by 3 metre. Initially areas where *western gorse* (*Ulex gallii*) is becoming dominant should be concentrated on. Avoid areas with *Cladonia portentosa*. The western end of Compartment B and Compartment C bracken is an issue and could be treated. Any *European gorse* (*Ulex europeaus*) and other scrub should be cut and removed.

Compartment E.

The very tall, leggy *European gorse* (*Ulex europeaus*) should be cut low to the ground and the litter layer removed. There are patches of wet ground with *Molinia* within the gorse which could potentially be restored to wet heath/flush vegetation. As the ground is wet it may be advisable to cut this area by hand to avoid damaging the soil.

Compartment F

Complete cutting the *European gorse* (*Ulex europeaus*). The vegetation needs to be cut low to the ground and the litter layer removed completely to remove nutrients and gorse seeds. Stump treating should be considered. In the area of shorter heath small patch cutting as described for Compartments A, B, C and D could be carried out by volunteers. However, clearing the scrub is the priority and the heathland management could be done once this has been completed.

Compartment G.

Cut all of the *European gorse* (*Ulex europeaus*) and open this area to join Compartments F and D. The vegetation needs to be cut low to the ground and the litter layer removed completely to remove nutrients and gorse seeds. Any leggy ericoids within the vegetation should be cut along with the gorse. It is advisable to stump treat *European gorse* (*Ulex europeaus*) otherwise it will rely on grazing and mechanical management to control regrowth.

Compartment H.

Continue to cut scrub and gorse before grazing. Remove all arisings.



Map 11 Heath sub-compartments

QGIS using Bing Aerial photo and PONT data. Contains OS data Crown Copyright and Database Right 2019

6.3 Scrub

Around 50% of the scrub should be pulled or cut by hand or mechanically. Cuttings should be raked up, removed and disposed of off-site. Cut stems should have herbicide applied within 30 minutes of cutting. Cutting should be done every year until the vegetation is under control. To control brambles, up-rooting in winter may also be necessary.

6.4 Wetlands, Ponds and Watercourses

A hydrological survey should be produced, this will steer future actions required on the wetter parts of the LNR. No more than one pond should have silt and vegetation removed every year to ensure there is a variation of open water to vegetated over pond throughout the LNR. Monitor stream corridor to the west and remove serious blockages and fallen branches and trees, stack to the sides as refugia.

6.5 Grassland

The verges are cut by contractors working for the County Council. The verges and grassland of wildlife interest should be cut at optimum times, late summer and possibly early spring. Cooperation needs to be sought from the County Council's Highways to ensure verges are cut at the appropriate time of the year.

6.6 Woodland

In principle the woodland should be a non-intervention area but there are exceptions (see 5.4.4). Tree management for safety should be carried out as soon as possible. Otherwise, felling should take place during November to March. Necessary permission should be sought in July or August for felling in November. Priority should be given to opening up areas of existing heath and safety work along the roads, tracks, paths and to adjacent properties.

6.7 Bracken

Areas of bracken should be rolled, cut or bruised between mid-summer and late July. Cutting or rolling outside this period has less of an effect. This should be done annually until the bracken is under control. Control of scrub and bramble will be necessary to facilitate rolling. Areas may be too small to roll and will be better managed by cutting or bruising during the appropriate period.

6.8 INNS

To control INNS an INNS reduction plan should be created, implemented and monitored. The location of INNS should be accurately mapped and a supporting document produced to show the recommended control methods, risks of spread of the INNS, risks of the control methods, how to mitigate the risks and how to dispose of any material. Monitoring should be put in place to ensure that the reduction plan is working.

6.9 Garden waste

Garden waste needs to be removed as soon as possible. A programme of awareness raising should be carried out to work with local residents to reduce amount of waste being dumped on the common. Monitoring of waste should be carried out on a regular basis and problems dealt with as soon as possible, it may be necessary to install signs and CCTV if the problem becomes acute.

6.10 Roadside trees

Roadside trees and shrubs are cut by contractors working for the County Council to provide the minimum standard for road safety. Site lines along the roads should be investigated and trees and shrubs causing, or likely to cause, problems with visibility should be reduced or removed.

6.11 Public Rights of Way & Access

A route from Llandegfan and Hen Bentref Llandegfan should be identified and waymarked.

A circular route within the LNR should be identified and improved to allow access for all abilities if funds allow.

The path surfaces should be maintained to a reasonable standard. Cutting of trees and shrubs to open up paths should be done on a regular basis to reduce the tunnel effect of encroaching vegetation. The minimum clearance for footpaths should be 1.5 metres wide and 2.5 metres high.

Areas on the eastern edge of the track to Llyn y Gors should be widened to allow for vehicles to pass safely. Care should be taken not to damage habitat. Areas already partly widened by traffic and the area beneath the powerline should be considered as priorities.

6.12 Archaeology

Record archaeological finds as they occur.

6.13 Information and Education

Install new information board and update leaflet. Create information that can be accessed through the internet, social media. Explore other ways to communicate information.

7 ACHIEVEMENTS TO DATE

7.1 Habitats

2001 – Removal of roadside trees for health and safety reasons and to enhance views from the roadside of the heathland areas further into the common. Habitat pile and footpath creation.

2002 - Cutting of common gorse, heather and bramble to create a firebreak to protect surrounding trees. Heathland burning cancelled due to inclement weather conditions.

2003 - Cutting of common gorse, willow clearance and treatment of stumps with herbicide. Brash burning. Habitat pile creation.

2004 – Cutting and burning of common gorse. Willow felling along roadside. Habitat pile creation. Cutting and herbicide treatment of tree regrowth from 2001.

2005 – Birch and willow thinning. Habitat pile creation. Cutting common gorse and treatment with herbicide. Pond clearance.

From 2005, management operations have included footpath improvement and maintenance, drainage improvements, scrub control, and removal of invasive non-native species.

2004 – 2009 – Woodland management through the Forestry Commission's Better Woodlands for Wales grant programme. Thinning of woodland, removal of sycamore, removal of Cotoneaster, scrub control, improvement to footpaths.

2006 - 2018 - Guided walks and volunteer work parties managing scrub and grassland, organised and paid for by Llandegfan Environmental Partnership and including input from AONB volunteers.

7.2 Public Access

Narrow boardwalks were installed 2005 to 2011 and improved 2014 by replacing wire netting with anti-slip strips.

8. MONITORING AND RECORD KEEPING

The principal biological features of the reserve should be surveyed and then monitored at regular intervals to determine if any changes have taken place. All species recording should be done through Cofnod and a data sharing agreement should be maintained with Cofnod to ensure that the data is available and maintained.

Monitoring of habitat work should be carried out to ensure that the work is having the desired effect. Regular updates of mapping of habitats should be carried out using site surveys and more up to date aerial photography. This, combined with monitoring the condition of the habitat, should be used to identify change over time. This can be recorded digitally and made available in map form on a regular basis. This will be an important tool when updating the Management Plan and to update and inform the Action Plan.

Using software such as QGIS should be investigated and training provided to members in the community. Data sharing should be encouraged to help keep records up to date.

Appendices

a. PROCEDURES AND MANAGEMENT STRUCTURE

a.1. Designation

The Local Government Act 1972 allows principal local authorities to delegate to a community / town council the power to declare a LNR under the National Parks and Access to the Countryside Act 1949 (the 1949 Act). This power has been delegated by Anglesey County Council to Cwm Cadnant Community Council, which is the declaring authority. Cwm Cadnant Community Council declared Cyttir Mawr Llandegfan LNR on the 28th of March 2006.

a.2 Ownership

In order to establish a LNR the declaring authority i.e. Cwm Cadnant Community Council, must have a legal interest in the land. This constitutes a) freehold or leasehold possession or b) a written legally binding agreement with the landowner. All of the land making up Cyttir Mawr Llandegfan LNR is owned by Menter Môn. Menter Môn has an agreement with Cwm Cadnant Community Council for them to declare and manage the area as a Local Nature Reserve.

a.3 Consultation

a.3.1 Previous Consultees

The following were consulted prior to the LNR declaration:

- Cwm Cadnant Community Council.
- Local residents.
- Ysgol Llandegfan.
- Local walking groups.
- The Countryside Council for Wales (as they were then known).
- North Wales Wildlife Trust.
- Anglesey County Council.
- Coed Cymru.
- Menter Môn

a.3.2 Consultation in 2018

Along with the above consultees the residents with rights of easement will be consulted.

a.4 The Commons Register

Information regarding the registration of common land, the registration of ownership, and the registration of commoners rights (e.g. grazing rights) is kept in the Commons Register which is to be found at Anglesey County Council's offices in Llangefni, and is open to public inspection.

a.4.1 Commons Registrations

Cytir Mawr Llandegfan has one registration; CL10.

a.4.2 Commoners Rights

Cytir Mawr Llandegfan has no registered commoners rights, however, various properties do have rights of easement across the common. The management of Cytir Mawr Llandegfan as an LNR will not affect any easements registered in the Commons Register.

a.4.3. Welsh Ministers

The creation of new structures on common land (such as paths, car parks, signs and interpretation) requires the permission of Welsh Ministers, which should therefore be obtained prior to implementation.

a.5. Management Structure

a.5.1. The LNR Management Committee

The LNR Management Committee comprises Cwm Cadnant Community Council, and an officer of Menter Môn. Others may be co-opted onto the Committee as advisers.

The main responsibilities are:

- 1) To implement the programme of management as set out in the Management Plan.
- 2) To develop the Management Plan under the guidance of management advisers.
- 3) To ensure that the general guidelines for LNRs as described in the 1949 Act are adhered to (see section 7.6).
- 4) To abide by the terms under which the power to declare the LNR has been delegated to the Community Council by Anglesey County Council.
- 5) To abide by any legal restrictions which may apply.

a.5.2 Management Advisers

The Management Committee can obtain advice from management advisers, who may include those organisations or individuals referred to in this plan and others at the discretion of the Management Committee.

a.5.3 Amendments to the Management Plan

The Management Plan may be amended by the Management Committee in consultation with any management advisers.

a.5.4 Wardening

An individual (or individuals) may be appointed on a voluntary basis to warden the reserve. Main duties can include: generally keeping an eye on the reserve; checking the condition of paths, footpath furniture etc; looking out for illegal activities such as fly-tipping; noting any incidents that may be inconsistent with the aims of the LNR; reporting to the Management Committee at regular intervals; and providing information.

a.6 LNR Guidelines

LNRs are selected on the basis of the following criteria, and should be:

- 1) Of high natural interest in the local context (Site of Special Scientific Interest or near equivalent),
- 2) Of natural interest and of high value in the County / Community context for education or research,
- 3) Of natural interest and of high value in the County / Community context for the informal enjoyment of nature by the public; or:
- 4) Any combination of 1-3.
- 5) Capable of being managed with the conservation of nature as the priority.

a.7. Health and Safety

Risk assessments will be carried out at regular intervals. Appropriate action should then be taken to remedy any significant hazards. Individual risk assessments will be carried out for specific activities, e.g. school visits, guided walks.

a.8 Insurance

Menter Môn has public liability insurance for land in their ownership.

a.9 Planning

A LNR does not enjoy the same immunity from development as land held by the Crown or other government agency. However, the statutory basis for its designation gives a strong foundation for its defence against competing land uses. Common Land has special protection from development in its own right, requiring permission of the Welsh Ministers.

a.10 Bye-laws

If deemed necessary, bye-laws may be applied to control undesirable and unacceptable activities. A set of model bye-laws is available for National Nature Reserves and can be obtained from NRW.

b. AGREEMENTS

b.1. LNR declaration

Anglesey County Council at a meeting on 13 February 2006 agreed to delegate the County Council's power to declare Cyttir Mawr Llandegfan a Local Nature Reserve to Cwm Cadnant Community Council.

b.2 Agreements with Landowners

Cwm Cadnant Community Council has an agreement with Menter Môn to manage Cyttir Mawr Llandegfan as a LNR.

c. HABITAT SURVEYS

NCC Phase 1 Habitat Surveys were carried out in the 1980s. Cofnod, north Wales's biological records centre, have collected and verified species data from various individuals, groups and companies. A recent survey of heathland was carried out by PONT 2019.

d. FUNDING

Funds for the future support of the LNR can be sought from a variety of sources, through Menter Môn or independently. Each funding source will have its own eligibility criteria and terms and conditions. The following is not an exhaustive list:

Natural Resources Wales: NRW grants may be available and can be applied for. NRW grants are discretionary but priority is normally given to the support of LNRs.

The National Lottery Community Fund: *Awards for All* grants programme for community or voluntary groups for projects costing between £300 - £10,000.

People and Places grants programme for community or voluntary groups for projects costing between £10,000 - £500,000.

Heritage Lottery Fund: A variety of grant programmes for projects with costs ranging from £10,000 - £5,000,000.

Other funds are available – see <https://naturalresources.wales/about-us/funding/?lang=en>

Annex 1 - Cyttir Mawr Heathland Restoration PONT

Annex 2 – List of recorded species

Cyttir Mawr Heathland Restoration



J Sherry & H Kehoe February 2019



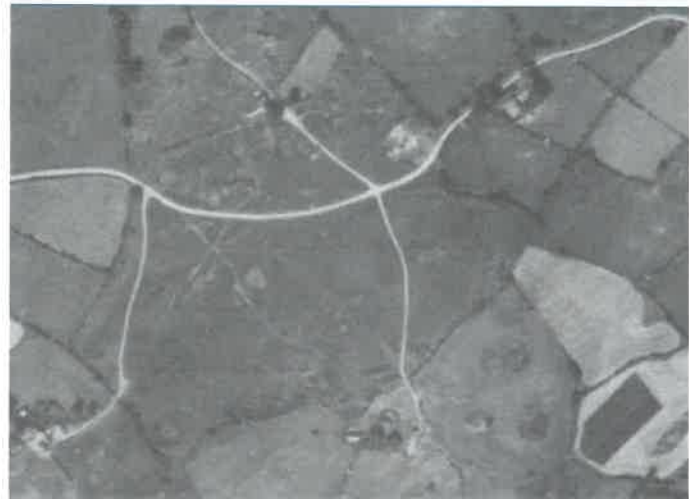
1. Introduction

The heathland found on Cytir Mawr today is a very small remnant of the heathland which was present 30+ years ago. The photo below shows the site in 1945 and Map 1 shows the extent of heathland recorded by the Phase 1 survey in the 1980's. The phase 1 recorded 5.07 hectares of heath

Map 1 Phase 1 Heathland 1980's



Aerial Photo 1945



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Currently there is approximately 0.34 ha of heath to the south of the road, but much of this is scrub-dominated. To the north of the road there is a clearing measuring about 0.05 ha but very little of this can be currently classed as heathland.



Current extent of heath

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2. Condition and Management Requirements of Heathland

2.1 General Condition

Most of the remaining heathland on the site is dry heath and comprises a mix of *Calluna vulgaris*, *Erica cinerea* and *Ulex gallii* (H8 *Calluna vulgaris*- *Ulex gallii* heath) with patches of wet heath/flushing on lower lying areas. The dry heath has a well-developed moss layer typically dominated by *Hypnum* sp. with other common heathland species such as *Pleurozium schreberi*, *Rhytidiadelphus squarrosus* and *Dicranum scoparium*. There are scattered patches of *Carex binervis* and *Carex flacca*. Heathland forbs were not seen at the time of the site visit but typical species such as *Potentilla erecta*, *Hyopchaeris radiacata* and *Plantago lanceolata* have been recorded along with *Viola lactea*, pale dog violet a species which has a very restricted distribution on heathland sites on Llyn and Anglesey. There are some sizable patches of *Cladonia portentosa* growing on mature *Calluna* bushes.

The dry heath is very rank in places and dominated by *Ulex gallii* and in some places *Ulex europeaus* and birch scrub have invaded. Bramble is frequent in the more rank vegetation and there are patches of bracken which appear to have pioneering fronts. There are young trees within the heath principally oak, birch and ash.

Wet areas support flushed heathy vegetation with *Molinia caerulea*, frequent *Erica tetralix*, locally abundant *Narthecium ossifragum* and patches of *Sphagnum* particularly notable are the clumps of *Sphagnum subnitens*.

2.2 Compartments



Compartment A.

This is the most open area of heath and includes both dry heath and flushed wet heath vegetation. The heath under the powerline has been regularly cut and the ground compacted by machinery. There are patches of regenerating ericoids but regular cutting has resulted in the vegetation becoming more open with tussocky *Molinia*. This is also the richest area for *Sphagna*.

The vegetation is generally short with some taller patches of *Ulex gallii*. A proportion of the *Calluna* is senescent, the rest appears to be generally mature with matches of young *Calluna* and *Erica* where it has been cut. *Ulex gallii* becomes more dominant towards the edges of the compartment with occasional bramble.

Possibly area where evidence of harvest mouse was found.



Compartments B and D

Dry heath on slightly elevated land either side of compartment A. *Ulex gallii* is the dominant species along with *Calluna* and *Erica cinerea*. The vegetation is rank in places with *Ulex europaeus*, bramble and relatively dense bracken at the western end of Compartment B. Where the vegetation is more open there is a well-developed moss layer.



Compartment C

Block of relatively mature bracken invaded dry heath. Bracken appears to be spreading into compartment G.



Compartment E

This is a small area of very leggy *Ulex europaeus* with very sparse *Erica cinerea* beneath. There are also a few small flushes with *Molinia* but no *Sphagnum*.



Compartment F.

Short heath *Ulex*-dominated with *Erica cinerea* and *Calluna*. There is a well-developed moss layer and patches of *Carex binervis*. *Ulex europaeus* has been cut on the edges of the patch (stumps have been left rather high). Arisings have been left in brash piles. The patch of heath is very enclosed by encroaching scrub. There is a wet area with *Juncus acutiflorus*.



Compartment G

Very tall *Ulex europaeus* vegetation with dense regeneration birch saplings, bramble and occasional young trees. Sparse leggy *Erica cinerea* is found under the dense canopy beneath. There is a deep layer of litter.



Compartment H

On north side of the road – this is a very small patch of dry heath with sparse leggy *Erica cinerea* and very small amount of *Calluna* amongst *Ulex gallii/europeus*. There is a larger area of wet ground with *Molinia* but sparse *Calluna*. The area had obviously been invaded by birch scrub which has been cleared and stacked and there is abundant bramble.



3. Management

3.1 Management Overview

Lowland heathland is a plagioclimax community and therefore requires ongoing management to prevent succession to scrub and woodland. Typically, lowland heathland is managed by grazing in combination with some vegetation management by cutting, mowing or burning.

The heathland at Cyttir Mawr is in poor condition due to the invasion of scrub, bracken and bramble and the lack of heather management resulting in a large proportion of mature and over-mature heath.

Ideally grazing should be introduced on to the heath on the south side of the road in combination with clearance of gorse, scrub and removal of litter. There are concerns about the impacts of grazing on species particularly harvest mouse but the design and implementation of grazing can take this into account. Without grazing the heath could be managed manually by cutting but experience elsewhere in North Wales on these *Calluna-Ulex* heaths has shown that this is rarely successful without follow-up grazing to control regeneration of *Ulex*, bramble and other scrub. Grazing also develops a varied vegetation structure at a finer scale than can be achieved by mechanical management. This helps to provide niches for a range of associated species and patches of bare ground needed for germination of ericoids particularly, *Calluna*, from seed.

A key objective on the site should be to manage the heath to create a larger open area by removing *Ulex europaeus* and other scrub and controlling bramble and bracken. At present the heath is so fragmented and the edge effect from encroaching scrub, bramble and bracken so significant that the long-term survival of the habitat is doubtful. It is particularly difficult to maintain heaths which have been invaded by *Ulex europaeus* as the nitrogen fixing capacity of the species coupled with the dense litter it produces has a significant impact on soil fertility. Experience on lowland heathland sites on Llŷn, Anglesey, Pembrokeshire, Ceredigion and Great Orme has shown that it is very difficult to restore heath after the removal of dense *Ulex europaeus*. On Cyttir Mawr there is still some ericoid component within the *Ulex europaeus* vegetation and it should be possible to improve the condition of the heath although this will be a slow process.

3.2 Mechanical Management

In general, *Ulex europaeus*, birch and other scrub should be pushed back from the heathland edge. This does not mean removing all the scrub within this part of the site as scrub has value for some species e.g. woodcock, seen on the site in dense scrub and *Ulex europaeus* is an important host for *Orobancha rapum-genistae*.

Some individual young trees should be maintained on the edge of the heath to add structural diversity.

Compartments A, B, C and D.

Small scale cutting to regenerate mature heath. Small patches of heath should be cut to ground level, vegetative regeneration by ericoids is improved by cutting as low to the ground as possible. A low cut can also slow the regeneration of *Ulex gallii* thus giving an advantage to the ericoids. All the arisings must be removed and where possible litter removed to create some bare soil for ericoid regeneration by seed. This could be done as a volunteer task using hand tools, only very small patches of vegetation need be cut on a rotational basis e.g. no bigger than 3 metre by metre. Initially concentrate on areas where *Ulex gallii* is becoming dominant. Avoid areas with *Cladonia portentosa*.

At the wester end of Compartment B and in Compartment C bracken is an issue and could be hand bruised by volunteers with sticks in July and September. The aim is to prevent further spread of bracken.

Any *Ulex europeaus* and other scrub should be cut and removed.

Compartment G.

Cut all the *Ulex europeaus* and open this area to join Compartments F and D. The vegetation needs to be cut low to the ground and the litter layer removed completely to remove nutrients and gorse seeds. Any leggy ericoids within the vegetation will be cut along with the *Ulex*. It may be advisable to stump treat *Ulex europeaus* otherwise rely on grazing and mechanical management to control regrowth.

Compartment E.

The very tall, leggy *Ulex europeaus* should be cut low to the ground and the litter layer removed. There are patches of wet ground with *Molinia* within the *Ulex* which could potentially be restored to wet heath/flush vegetation. As the ground is wet it may be advisable to cut this area by hand to avoid damaging the soil.

Compartment F

Complete cutting the *Ulex europeaus* (do not leave high stumps). Stump treating may be considered (See G and E). In the area of shorter heath small patch cutting as described for Compartments A, B, C and D could be carried out by volunteers. However, clearing the scrub is the priority and the heathland management could be done once this has been completed.

Compartment H.

Continue to cut scrub and gorse before grazing. Remove all arisings.

3.3 Grazing

Grazing will be managed through electric fencing enclosures and moving stock between these. Three enclosures are shown on the map below. Initially only Enclosures 1 and 2 will be erected and grazed. The heath needs to be carefully grazed for short periods only. Initially the grazing will be by 5 Carneddau ponies for no more than 2 months in either enclosure, ideally 1 month in early spring (March/April) and 1 month in September. Ponies will be removed as soon as they have had the desired impact on the vegetation and before they cause any unacceptable level of poaching.



Grazing enclosures

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There could be options for grazing other parts of the woodland to manage ivy, bramble and regeneration. This would provide more potential for moving livestock about.

Compartment 3 is the area where signs of harvest mouse have been recorded. Harvest mouse are sensitive to grazing which can destroy nesting habitat. However, the heathland would benefit from grazing in this area. Harvest mouse are most susceptible to grazing in summer particularly August, therefore a short period of grazing in late autumn, winter or early spring should not have a significant impact. Grazing this compartment should be considered once more data on harvest mouse on the site has been collected. Additionally, it is hoped that by opening out the heath in other areas more habitat will be created which could be suitable for harvest mouse, for example there are areas of suppressed *Molinia* beneath the *Ulex*.

4. Risks

Experience has shown that restoration of *Calluna vulgaris-Ulex gallii* heaths on relatively circumneutral soils is a slow process and the longer they are left unmanaged the more difficult this becomes. Key issues are:

- Lack of ericoid regeneration in areas cleared of *Ulex europeaus*. Ericoid regeneration is likely to be very slow for reasons given above e.g. soil fertility. However, management creates the structural heterogeneity for other heathland species to spread to create a more diverse mosaic. In the long-term ericoids, particularly *Erica cinerea* may regenerate either from seed in gaps created by grazing or from cut rootstock. However, there is a risk that very old rootstocks will not regenerate after cutting.

- Bramble invasion, on many abandoned *Calluna vulgaris-Ulex gallii* heaths, bramble becomes a significant problem after cutting. Ponies will graze bramble and grazing is the only sustainable way of managing the issue.
- Bracken invasion in cut areas. It will be important to control bracken by hand to prevent it spreading on to newly cut heath. Ponies will help trample bracken.
- Ponies need to be managed to ensure they are grazed only for the period of time necessary to have the desired impact on the vegetation.