Developing results-based approaches to supporting the management of common land in Wales – vol. 2: commons fiches

Gwyn Jones, Helen Barnes, Catherine Hughes, Joe Daggett, Tony Little & Nigel Ajax-Lewis

Mynydd Llangatw. Image: Gareth James, Creative Commons Licence

European Forum on
Nature Conservation
and Pastoralism

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European Forum on Nature Conservation and Pastoralism
Penygraig, Llanfair Clydogau, Lampeter SA48 8LJ

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Contents

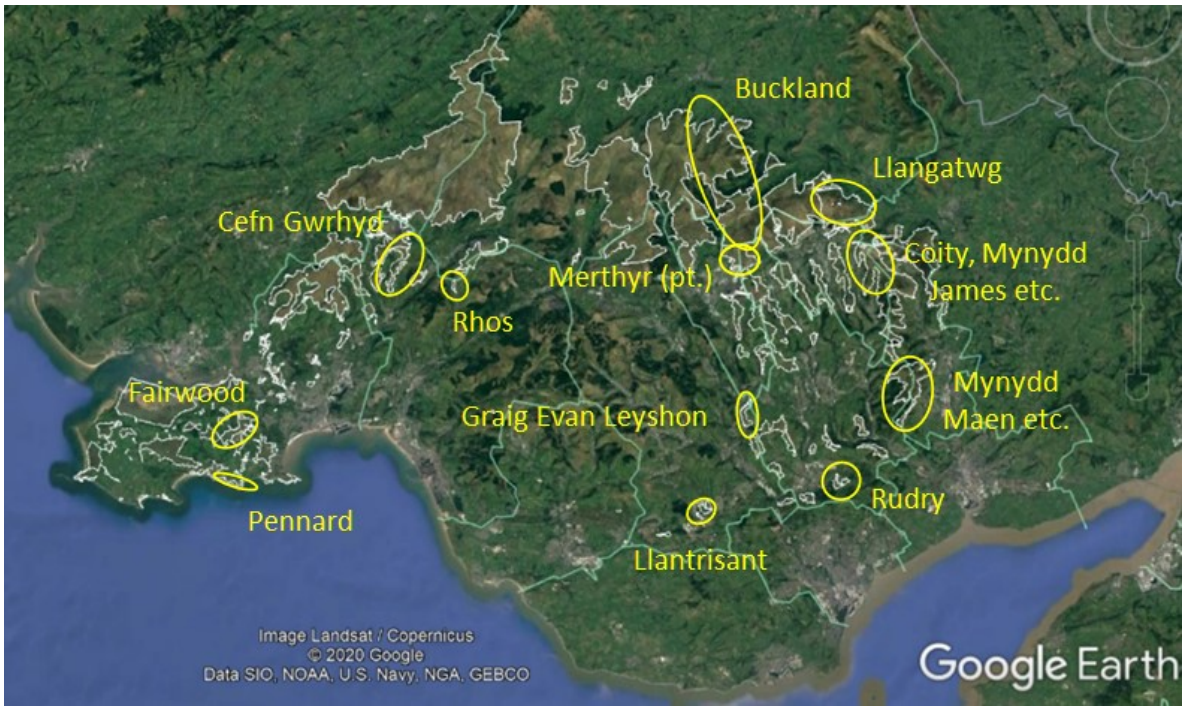
List of abbreviations

AECM	Agri-Environment and Climate Measure
BBNP	Brecon Beacons National Park (Authority)
BPS	Basic Payment Scheme
CCW	Countryside Council for Wales
CDO	Commons Development Officer
CL	Common Land Unit (unit of commons registration)
CM	Cwm a Mynydd LAG
CAP	Common Agricultural Policy
CSM	Common Standards Monitoring
EU	European Union
FRS	Fire and Rescue Service(s)
FUW	Farmers' Union of Wales
GM	Gross margin
GPS	Global Positioning System
HNV	High Nature Value
IACS	Integrated Administration and Control System
JNCC	Joint Nature Conservation Committee
LAG	Local Action Group
LPIS	Land Parcel Information System
LU	Livestock Unit (1 LU is the equivalent of one cow)
NFU	National Farmers' Union
NGO	Non-governmental organisation
NM	Net margin
NPT	Neath-Port Talbot County Borough
NRW	Natural Resources Wales
NSA	National Sheep Association
NVC	National Vegetation Classification
RACT	Rural Action Cwm Tâf LAG
RBAPS	Results-based agri-environment payment scheme (and EU pilot relating to the same)
RCT	Rhondda-Cynon-Tâf County Borough
RSPB	Royal Society for the Protection of Birds
SAF	Single Application Form
WG	Welsh Government
WW	Welsh Water

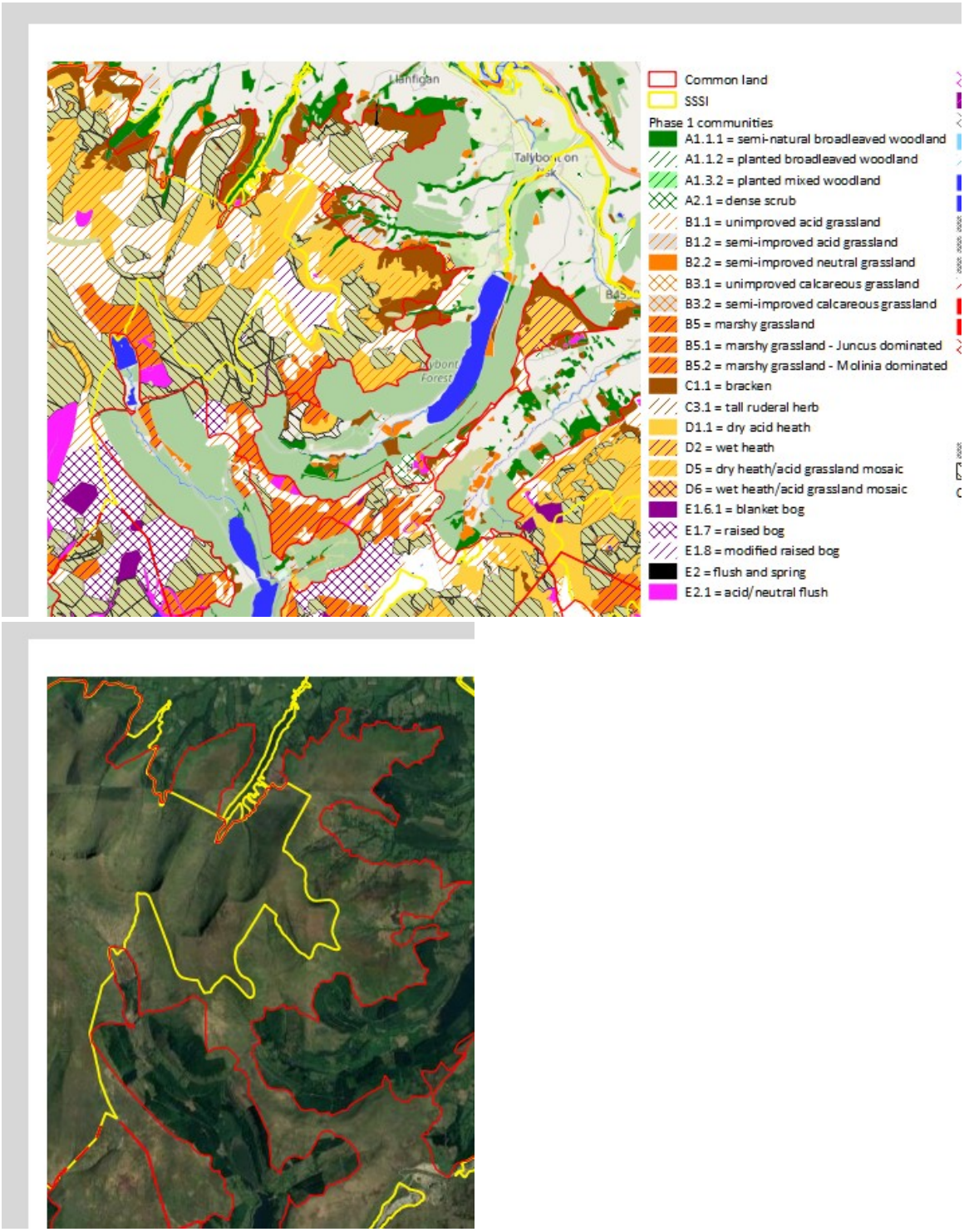
The 12 example commons

Fiches for each of the twelve example commons are given here:

- Buckland Manor
- Cefn Gwrhyd
- Coety and Mynydd James etc.
- Fairwood
- Graig Evan Leyshon
- Llantrisant
- Merthyr pt.
- Mynydd Llangatwg
- Mynydd Maen etc.
- Pennard
- Rhos
- Rudry



Public Goods Assessment – Buckland common (Breconshire CL62)



Phase 1 habitat map and Google Earth image of Buckland common and adjacent areas

Basic data

Grid location: SO02 etc.

Recorded area: 4868 ha and 4768 ha (LPIS gross and net area respectively)

Registered pasture rights (BSCL): 56

BPS claims in mid 2010s: 34

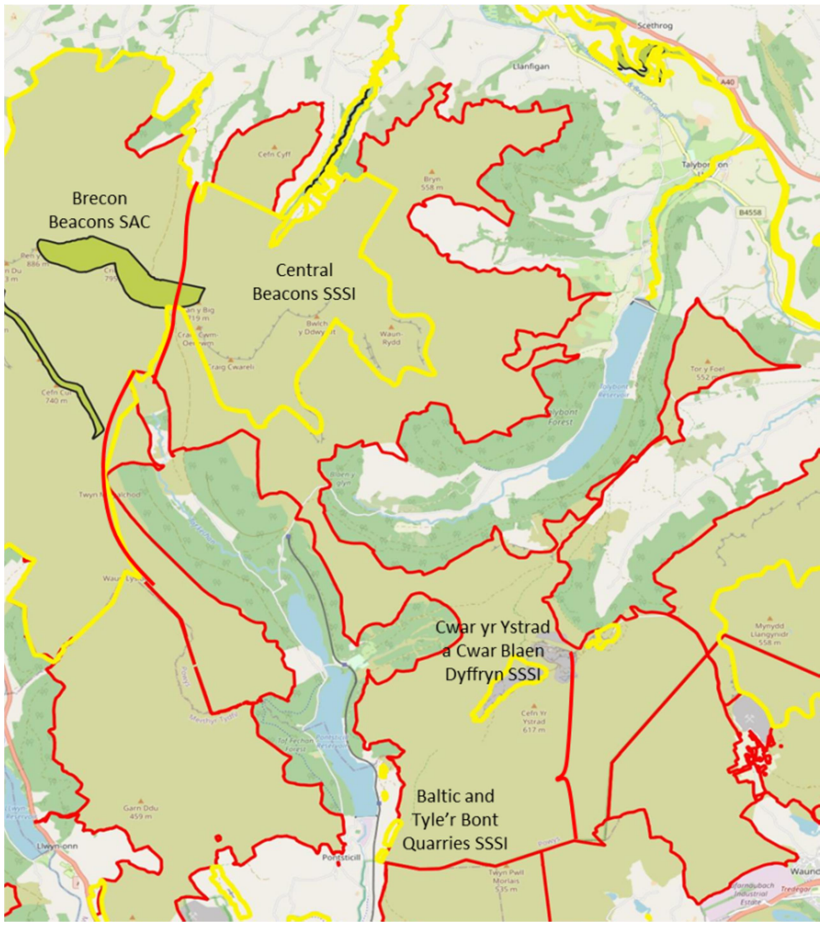
Approximate level of current active use: Approximately 20 active graziers turning out sheep, cattle and ponies

Nature conservation

Within the area of Buckland common lie parts of a number of designated sites:

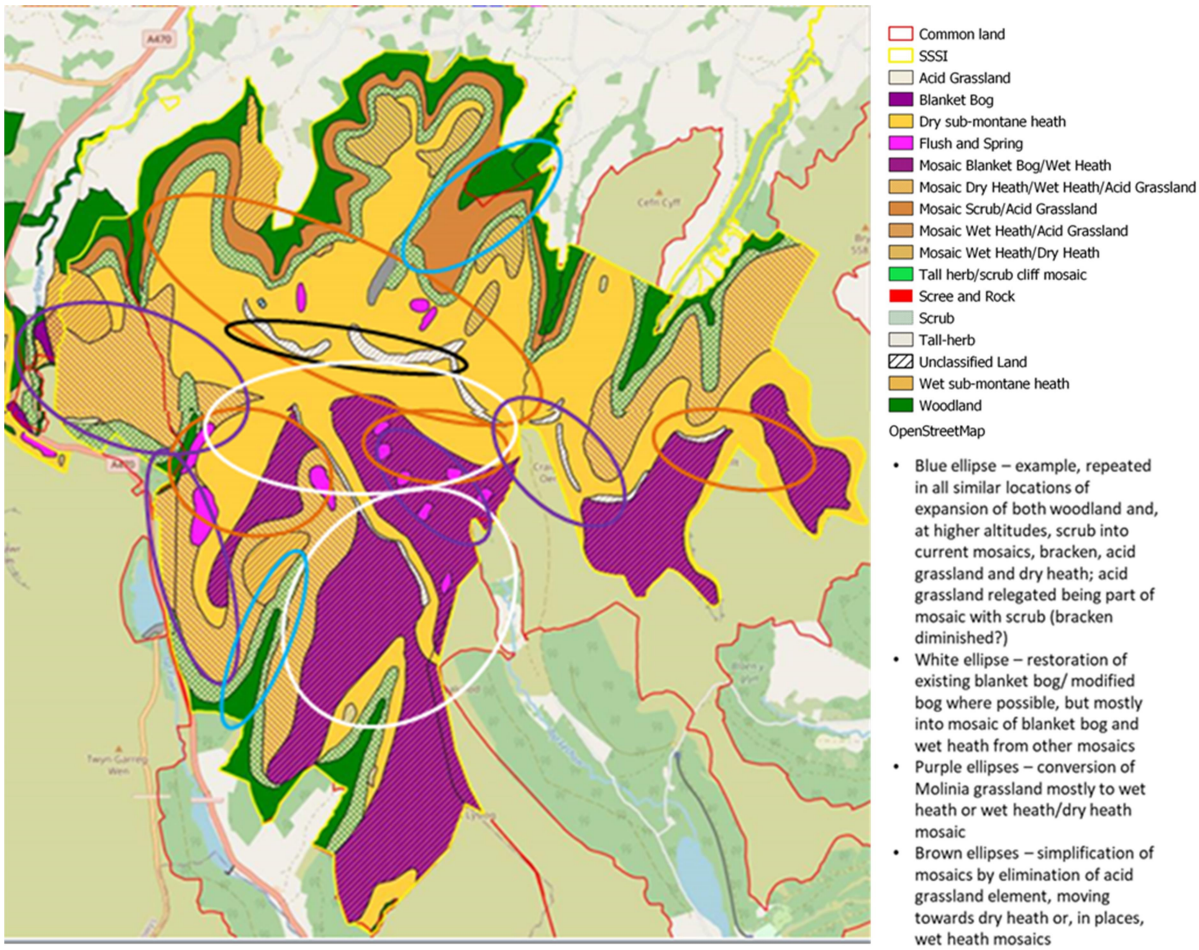
- Brecon Beacons SAC
- Central Beacons SSSI
- Baltic and Tyle'r Bont Quarries SSSI
- Cwar yr Ystrad a Cwar Blaen Dyffryn SSSI

The two quarry SSSI are designated for their geological interest only.



The Brecon Beacons SAC is designated for species-rich cliff communities on acid and more base-rich rocks, including some areas of taller species-rich communities. A small portion of the site lies within the common's boundaries; this was not considered to be in good condition at the time of writing of the management plan.

Here is one interpretation of NRW's priorities for the vegetation communities within the SSSI



NRW's vision summary for the SAC features includes:

- The base-rich sandstone cliffs, including crevices, scree and associated patches of thin soil remains free from disturbance and support typical plants, including mosses, ferns, lichens and liverworts.
- A variety of rare and scarce plants thrive in these areas, including purple saxifrage, green spleenwort, Oeder's apple-moss, lesser rough earwort, several rare hawkweeds, fir clubmoss, dwarf willow, greater streak-moss, serrated wintergreen
- Populations of these species are sufficiently large and widespread to be sustained into the future (currently some populations may be critically low).
- The extent, quality and diversity of heath vegetation are maintained and, where possible, degraded heath is restored to good condition.
- The main heathland areas within the SAC and SSSI have a varied age structure with a mosaic of young heath, mature heath and degenerate heath.
- All factors affecting the achievement of the above conditions are under control

Aside from the SAC features, habitats present include bog, often modified or degraded; wet and dry heath; acid grassland; bracken dominated grassland and small areas of flush and woodland.

NRW's vision for mixed habitats states

For each habitat of particular interest, the area is stable in the long term, its quality and range

of typical species are maintained and the factors that may affect the habitat are under control. For each species of particular interest, the population is stable or increasing and is sustainable in the long term and the factors which affect the species or its habitat are under control.

Carbon storage and sequestration

The common has a number of areas of blanket bog in poor condition, much of which is likely to be suffering from the oxidation of carbon. There are also extensive areas of soils with a shallow peaty horizon, which are important for carbon storage. On the remainder of the common the soil carbon is more closely linked to the current vegetation and the products of its recent decay.
Good carbon storage and active sequestration are dependent on soil having good vegetation cover (Sphagna etc. on bogs) and other habitats being in good condition.

Fire risk management

NRW policy states no burning as a management tool on wet heath. However there is quite some danger of wildfire occurring due to the presence of high fuel land covers (Molinia and bracken in winter; mature heath all year). There is a recent history of burning on the common.

The impact of fires can be considered under the following headings:

- Threat to property. Properties are almost all downslope of the common, though in some cases near areas of high fuel load
- Disruption to road traffic – minimal - minor roads do occur on the common.
- Threat to habitats and species – potentially significant. Fire is not recommended as a management tool for wet heath, though the amount of damage varies considerably. On dry heath, fire is not necessarily damaging, but is not good practice as a tool of first resort. Modified blanket bog is likely to be severely damaged by fire due to the already dried out peat horizons.

Alongside the use of the results-based scorecard, a Fire Management Plan (FMP) for the commons should be drawn up. This FMP should describe how management would aim

- to reduce the incidence and scale of unplanned fires
- to safeguard the most vulnerable features from such fires
- to avoid the use of controlled fires for ongoing management purposes wherever possible
- to set out a programme of work needed to implement the Plan, drawing on a list of fundable non-productive investments

Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows. There are reportedly areas of bare/damaged peat and burnt vegetation which will negatively impact flow regulation.

Water quality

The common abuts directly onto Upper Neuadd reservoir and partly surrounds Pentwyn, Pontsticill and Talybont reservoirs, being separated from them mostly by afforested land or enclosed farmland.

Areas of bare peat, eroded paths, livestock gathering areas and burnt vegetation will contribute negatively to water quality.

Archaeology

The archaeological record for Buckland Manor contains a wealth of features dating from all periods of history; flints, Bronze Age barrows and a number of post-medieval dwellings and features associated with farming and quarrying.

Landscape and amenity

The common falls wholly within the Brecon Beacons National Park.
Public use is high because of the popular location, although only one minor road comes directly onto the common. NRW have noted concerns about rock climbing potentially damaging cliff ledge vegetation, but the majority of leisure users are walkers.

Preliminary Field Assessment

Nature conservation

Time constraints and the lateness of the season mean that only the northern part of the common was assessed on the ground.

The habitats present include large tracts of bracken-dominated acid grass on steep ground from mid-slope down towards the boundary of the common. There is tree & scrub encroachment; encouraging a more coetgae-like habitat would be a biodiversity gain.

The rest of the higher ground is a more heavily grazed mosaic of acid grass with dry heath; often poor in structure and with limited species. Some areas are very heavily grazed, and bracken is spreading on others. There is also a large area of species rich acid grassland, usually quite heavily grazed.

Most diversity is found in the numerous areas of marshy grassland, wet heath, valley mires and flushes, and the biggest gains would be in wet heath areas in valley bottoms if the structure can be managed to open it up for more species, but most have a good range of species at least present just now. One of the largest areas assessed comprises mosaics of acid grass / wet - dry heath with Molinia, including many flushes with greater species diversity. Large tracts of Molinia-dominated marshy grassland which needs more cattle grazing is present at lower end of Taf Fechan (though some cattle were seen). There was evidence of burning and some areas are heavily grazed with poaching and soil erosion.

The areas of modified bog were species-poor, and lacking Sphagnum. There was some evidence of recent hagg reprofiling and gully blocking; these areas may just need time to get wetter and recover.

Carbon storage and sequestration

The recent restoration work on some of the bog areas may in time lead to better carbon storage even sequestration; and any work which can be done to restore bare soil/peat and prevent the burning of vegetation and soil will reduce carbon loss.

Fire risk management

A Fire Management Plan which includes measures such as cutting and maintaining firebreaks to protect the most vulnerable features would be an essential aspect of future commons management.

Water flow regulation

There is good vegetation over most of the common with certain exceptions. The difficult terrain and lack of machinery access make management of vegetation cover by grazing the main practical method.

Water quality

Dŵr Cymru are in the process of implementing beneficial management practices with the graziers as part of their Brecon Beacons Megacatchment initiative.

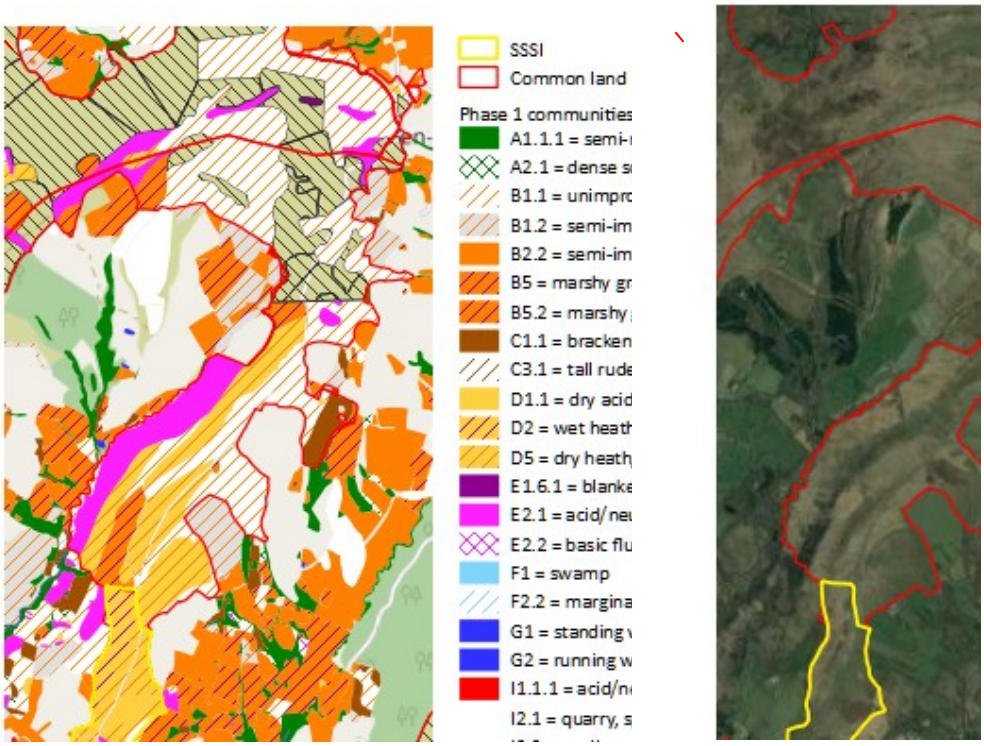
Archaeology

The Welsh Uplands Archaeology Initiative mapped the East Brecon Beacons in 2008 and provide the most up to date information on Buckland Manor. There appear to be no issues with historic features on the common.

Landscape and amenity

Public use of the common remains high.

Public Goods Assessment – Cefn Gwrhyd (West Glam. CL25B)



Phase 1 habitat map of Cefn Gwrhyd and adjacent areas

Basic data

- Grid location: SN71
- Apparent area: 340.15 ha gross, 335.16 ha net LPIS area
- Registered pasture rights (BSCL): 52
- BPS claims in mid 2010s: 15
- Approximate level of current active use: 2 main sheep graziers, some cattle and horses. Less than in recent past
- Level of participation in Glastir (if any): None

Nature conservation

The southern part of the common is a SSSI. The description of the interest reads: *An upland area supporting types of wetland habitats uncommon in the county. The most important of these is a species-rich valley mire in which common cotton-grass,bog-bean, marsh St. John's wort and bog asphodel are abundant; quaking bog communities dominated by common cotton grass and Sphagnum species and several small areas of species-rich spring-fed mire. Surrounding areas are comprised of good examples of the damp acid grassland and drier heath communities to be found in the uplands of the county.*

Habitats on the rest of the common include large Molinia dominated flushes; heath with either heather or bilberry dominant, and heath/acid grass mosaics on coal spoil heaps.

Vision for wet heath:

- The wet heath will be found on moist and generally acidic soils across the commons.
- The wet heath will be characterised by western gorse growing amongst cross-leaved heath and purple moor grass. The gorse will be low growing and does not seem to dominate the heath. The yellow of the gorse and the pink of the cross-leaved heath make a spectacular display. Pink lousewort will be seen growing amongst the mixture of gorse and heath, with grasses and sedges weaving their way through the mix of species such as cotton grass, heath bedstraw, heath milkwort, flea sedge and carnation sedge.
- Sphagnum mosses grow beneath the heath, holding moisture like a sponge. Plants capable of growing in certain very wet areas associated with wet heath like bog asphodel and the insecteating sundews will also be found as you walk around the wet heath.
- The wet heath is not poached by grazing animals, but is evenly and sensitively grazed. There are no invasive species like Rhododendron or Japanese Knotweed growing in the wet heath and willow and birch are found only very thinly scattered throughout the site, mainly on the edges.

Vision for Molinia meadow:

- On the wettest ground, marshy grassland will be found; it will often be found growing in a mosaic with wet heath.
- The marshy grassland will be dominated by tussocks of purple moor grass. The tussocks will provide little sheltered areas where flowers grow and help to provide some shelter for the marsh fritillary butterfly.
- The tussocks are uneven in size, but there will always be young purple moor grass coming though each spring. Only a few of the tussocks will have old and 'rank' purple moor grass growing on them.
- Devil's bit scabious, the food plant for the larvae of marsh fritillary butterflies will be found commonly growing amongst the purple moor grass. Whorled caraway and soft leaved sedge are both scarce plants that will be commonly found in the marshy grassland areas.
- Often heathy plants like cross-leaved heath and gorse will be found in marshy grassland – this is a transition area between the two habitats

Vision for dry heath:

- Dry heath is found on the free-draining parts of the commons. In some parts of the SAC dry heath grows in large continuous areas like at Rhossili Down, in other parts of the SAC, the dry heath grows in mosaics with wet heath and acid grassland. Bell heather and cross-leaved heath grow along side European and western gorse. There is a lack of purple moor grass and sphagnum mosses which tell us that the heath is drier. Heath milkwort, tormentil and heath bedstraw are seen regularly decorating the dry heaths.
- Scrub like birch and overgrown gorse is rare with the dry heaths, except where island of scrub provide some shelter for grazing animals. These islands will be accepted within the heathland landscape.
- Bracken is present within the dry heath and grows around the edges but bracken never dominates stands of dry heath and does not encroach on the dry heath.

- Burning of the heath is only carried out as a controlled management technique to create a mosaic of different ages of heath. There are no signs of burning causing damage or causing bracken to spread.

Carbon storage and sequestration

Most of Cefn Gwrhyd common is covered in stagno-humic gley and stagnopodzol soils. Both of these have a thick peaty upper horizon where a considerable volume of carbon is sequestered. The remainder of the common's soils are brown podzolics, also with an upper organic layer, but less deep and with a lower carbon content and there is likely to be an equilibrium between carbon sequestration and carbon release through the action of micro-organisms. Brown podzolics in particular, being relatively well-drained, also allow for a significant carbon store in the form of live plant roots and the products of their decay.

While the carbon sequestered in these soils is safely secured unless conditions are changed by drainage or severe fires which start burning the soil horizons (and can be safeguarded by remedying any past drainage), it is equally unlikely that any grazing management will significantly increase net sequestration rates.

Fire risk management

The vegetation communities on Cefn Gwrhyd vary considerably in terms of the chance of fire, with the highest likelihood being in continuous western gorse, areas of more mature heather and, in winter, areas dominated by Molinia.

In terms of the issues caused by fire, there is a relatively low risk to houses and other vulnerable property such as forestry plantations. Fire has the potential to cause disruption on the minor road which goes through the common.

Its most significant impacts are likely to be on habitats and their dependent species. NRW advises against burning as management tool on wet heath and fire is damaging to bogs as well as potentially to any peaty soil. Controlled planned fire may be a useful management tool for dry heath communities, but should be used where other practices are not practicable and in conjunction with effective follow-up management of grazing; the aim should be to reduce and eliminate dependence on fire as a management tool

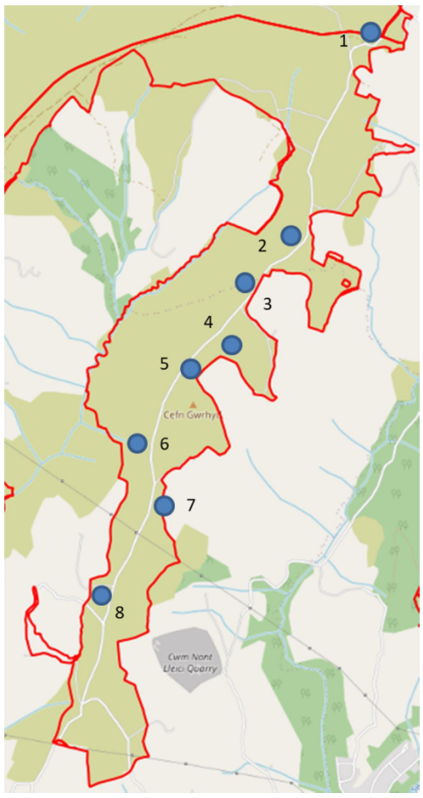
Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows. Good vegetation structure is conducive to both increased infiltration rates and the slowing of surface flows. Conversely, tightly grazed swards, especially on areas with direct access to watercourses during flood events, promote rapid runoff. Intact peaty soils have a spongy upper layer which is good for flow regulation; old cut peat areas often expose the compact and impervious lower layers, while burnt peats tend to be hydrophobic; both make for soils which are poorer at water flow regulation

Water quality

No known water quality issues

Archaeology



The following sites are recorded on Coflein:

1) Cairn
2) Cairn
3) Fever hospital
4) Cairn
5) Cairn
6) Rectangular structure
7) Cairns
8) Cairn

Landscape and amenity

The area is crossed by some minor public roads.
Public use is light.

Preliminary Field Assessment

Nature conservation

The whole of Cefn Gwrhyd has been considered for SSSI status, and the wetter areas of flush and mire in particular are of significant interest, with a diverse range of plant species within the Molinia which dominates them. These include ivy-leaved bellflower, bog pimpernel, lesser skullcap, sundew, and a range of fen meadow species. Signs of otters were also noted here.

Most of the common falls into large blocks of one type of vegetation, including heather or bilberry dominated heathland. Grazing levels are generally lower than they have been, and fires are a regular occurrence, both of these are probably contributing to the dominance of Molinia.

On one of the coal spoil areas, burning seems to have brought about an increase in heather and cross-leaved heath at the expense of heath rush and mat grass, but elsewhere repeated burning has apparently had a negative effect on species diversity and has caused the demise of many anthills.

Carbon storage and sequestration

At the time of visiting the vegetation appeared intact across the site apart from a small area where gorse had been burnt recently, but there are many areas where the shallow peat layer on the drier soils has been seriously compromised, leading to carbon loss and possibly the loss of ability to store carbon again in those areas.

Fire risk management

Although Cefn Gwrhyd was at one time quite heavily grazed, lower stock numbers in recent years have contributed to a build up of fuel load, and the visible extent of numerous uncontrolled fires in recent years attest to this. Mechanical cutting followed by targeted grazing is achievable to reduce the risk of wild fires. As this common is not close to big centres of population, the fire service would not consider it a priority for allocating fire fighting resources.

Water flow regulation

Where fires have burned the soil and removed vegetation this has decreased the ability of the common to slow water flow, but the lower lying flush and mire areas have a high water holding capacity.

Water quality

The River Egel flows along part of the western edge of the common and does not appear to be suffering any water quality issues.

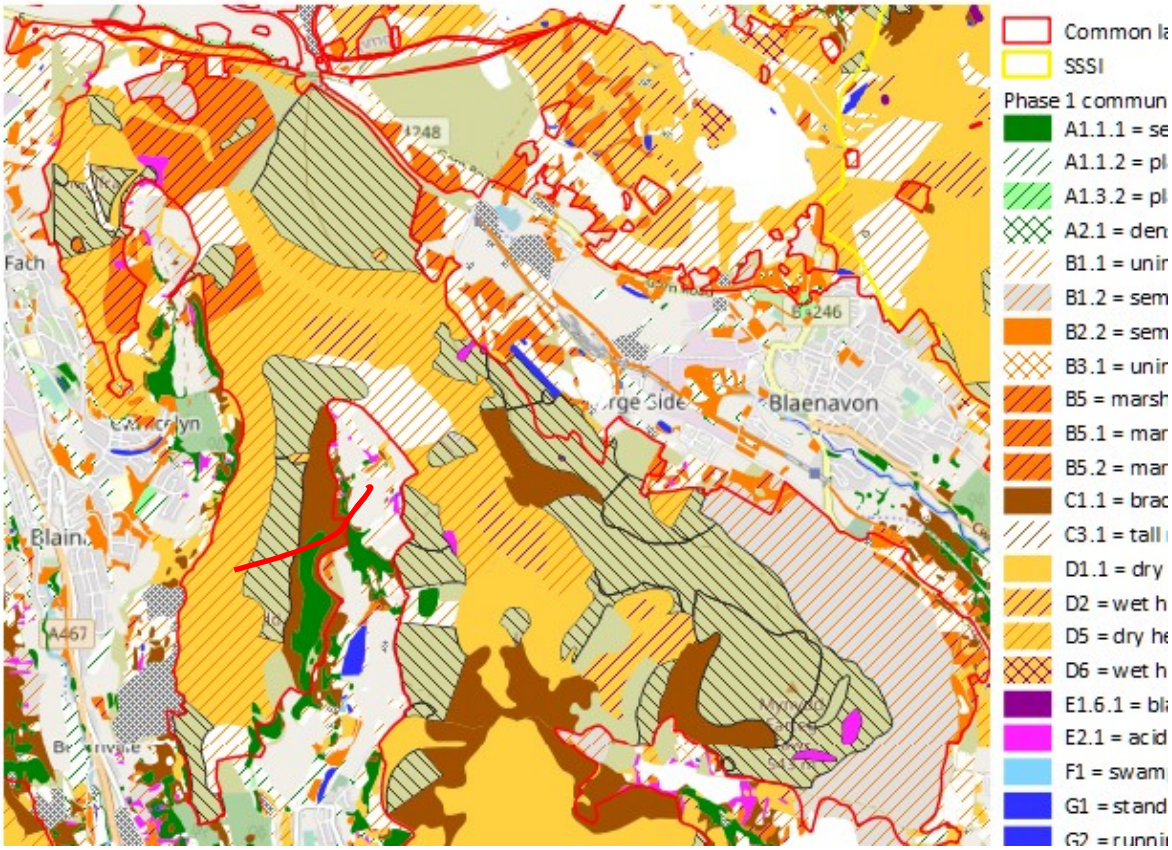
Archaeology

The coal spoil heaps at the northern end, several tracks through different parts of the common, as well as Gwrhyd chapel are more recent additions to the historic record for the common.

Landscape and amenity

There is some light use of the common by walkers.

Public Goods Assessment – Mulfran, Coity & Mynydd James, Gwastad (Gwent (Mon) CL14, 15, 16)



Basic data

Grid location: SO20 etc.

Recorded area: 178.86 ha, 1265.1 ha and 335.03 ha respectively (LPIS net area)

Registered pasture rights (BSCL): 25, 10 and 46 respectively, some for parts of unit

BPS claims in mid 2010s: 7, 10 and 3 respectively

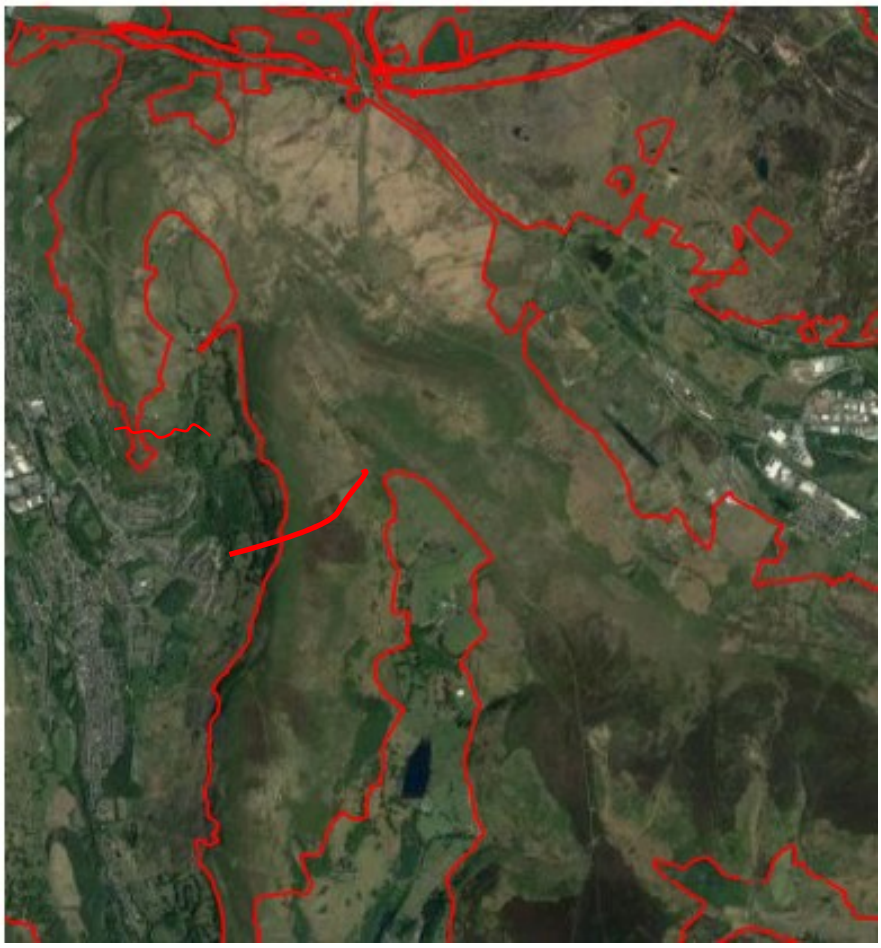
Approximate level of current active use: Up to 6 active graziers across whole area mostly turning just sheep out

Level of participation in Glastir (if any): Glastir Advanced

Nature conservation

Around three years before the time of the BSCL surveys (1993), CCW had undertaken an assessment to see what of the vegetation of the commons met SSSI standard.

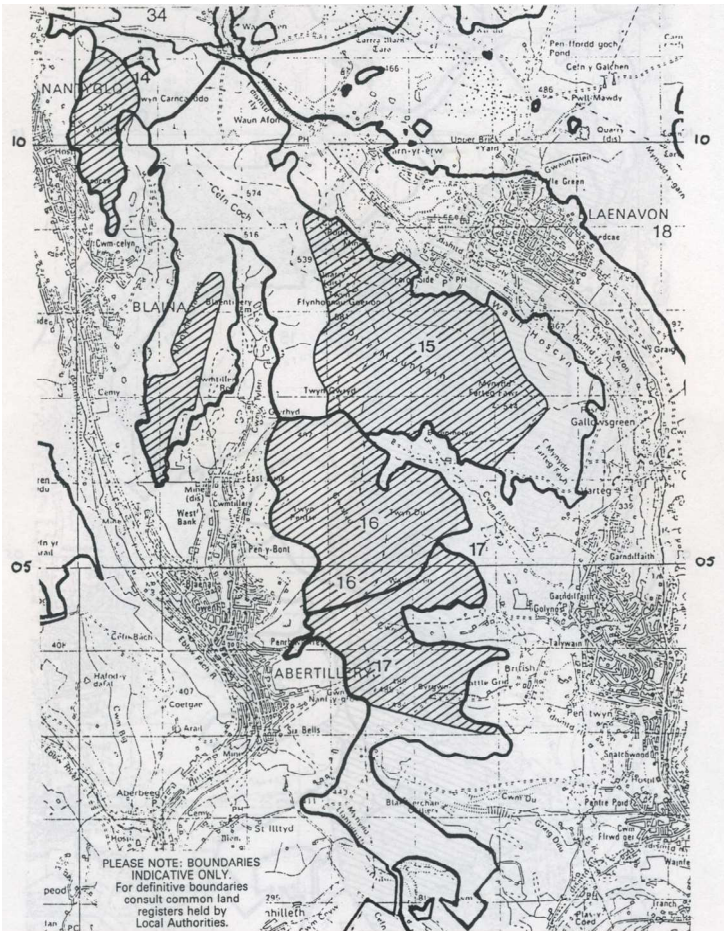
In the case of Mulfran common, the interest takes the form of a variety of flush communities. The most frequent are relatively species-poor soft rush and Sphagnum recurvum flushes, sometimes with carpets of sedges. Others are more species-rich and characterised by sharp-flowered rush and brown mosses. Similar vegetation is found in the 'SSSI quality' area in the north-eastern part of Mynydd James.



Phase 1 habitat map and Google Earth image of Mulfran, Coity and Mynydd James and Gwastad commons and adjacent areas

On Mynydd James and the Gwastad, the particular interest is the range of dry heaths, including some which are more montane and characterised by an abundance of lichens. There are areas of bilberry/crowberry heath which is of rather restricted distribution in Wales.

Looking at the other areas of the common, there are areas of wet heath, of Molinia-dominated marshy grassland, small areas of modified blanket bog, acid grassland and important areas of semi-natural woodland. At the time of BSCL, there was little regeneration visible and few of the usual ground layer species present. The area also contains considerable amounts of 'colliery' spoil of various ages. This could have quite some significance for biodiversity.



Vegetation considered to be SSSI quality by the CCW Wales Field Unit in the late 1980s

Carbon storage and sequestration

Covering as they do the whole height range of the inter-valley ridge, the commons show a range of soil types. On the top of the ridge are mainly stagnopodzols – soils with a thick peaty layer above fairly well draining subsoil. On the bottom of the slopes and climbing up the NE-facing one to meet the stagnopodzols are stagno-humic gleys – soils with a similar peaty upper horizon but poorly drained lower horizons. On the SW-facing slope, there are better drained brown podzolic soils with a very shallow humus-rich upper layer. There are limited areas of modified blanket peat. Also large areas of 'colliery' spoil heaps of various ages, which are generally well drained and have very little organic content.

The peaty horizons of the stagno-humic gleys and stagnopodzols are a very significant store of carbon, albeit one to which sequestration is quite slow. These stores are particularly impacted by drainage (more so for stagno-humic gleys) and damage by fire (more likely for stagnopodzols except when the fires are particularly fierce).

Modified blanket bog is by definition one which whose sequestration performance is at very least sub-optimal; even though the BSCL noted that there was little active erosion, the peat is likely still to be being lost by oxidation by soil micro-organisms. Restoration of a high water table will slow this down even if it is not possible to re-establish an actively-growing blanket bog.

In the brown podzolics and skeletal soils of the spoil heaps, the soil carbon is more closely linked to the current vegetation and the products of its recent decay. The C store in the skeletal soils will be increasing as they mature, but their current immature nature is often connected to their biodiversity interest.

Bracken and Molinia are both vegetation types which sequester a lot of C annually, but then release a significant amount as they die back and the dead litter decays. To maximise the amounts which are not released back into the atmosphere, fires should be avoided.

The semi-natural woodlands represent a significant store of standing C, but if they are mature, the sequestration rate will be slowing down. Encouraging natural regeneration is a positive way of increasing both the store of C and the sequestration rate (since young trees put on a lot of weight quickly).

Fire risk management

There is quite some danger of wildfire occurring on the commons due to

- The presence of high fuel land covers (Molinia and bracken in winter; mature dry heath all year)
- Anti-social behaviour linked to the easy access to low-lying parts of the common from where fires can spread uphill easily (the commons are fortunate in not being crossed by a public road)

The impact of fires can be considered under the following headings:

- Threat to property – minimal except at the lower margins in Cwm Ebwy Fach. Properties are almost all downslope of the common, though in some cases near areas of high fuel load
- Disruption to road traffic – minimal – roads are downslope of the common and the only major road substantially fringing the common is that from Brynmawr to Blaenavon
- Threat to habitats and species – potentially significant. Fire is not recommended as a management tool for wet heath, though the amount of damage varies considerably. On dry heath, fire is not necessarily damaging, but is not good practice as a tool of first resort. Modified blanket bog is likely to be severely damaged by fire due to the already dried out peat horizons

Alongside the use of the results-based scorecard, a Fire Management Plan (FMP) for the commons should be drawn up. This FMP should describe how management would aim

- to reduce the incidence and scale of unplanned fires
- to safeguard the most vulnerable features from such fires
- to avoid the use of controlled fires for ongoing management purposes wherever possible
- to set out a programme of work needed to implement the Plan, drawing on a list of fundable non-productive investments

Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows. Vegetation structure is a key tool in achieving this; the steeper the slope, the greater the need to slow down flows. Bracken is a very

good vegetation for regulating flow; any change in that habitat should not result in large areas of closely-grazed grasslands.

Fire is not conducive to flow regulation. Not only does it reduce the roughness of the surface vegetation, it also impacts on the spongy layers where vegetation merges into soil, which are so important for infiltration, and has the potential to make the surface of the soil hydrophobic.

Water quality

We are not aware of any threat to water quality from the grazing management of the common.

Archaeology

There are many records for the common on the Historic Wales website. The majority are associated with coalmining and quarrying but there are also boundary markers and the wreck of a 2nd WW plane which crashed into Waun Afon. The common is adjacent to Blaenafon World Heritage Site.

Landscape and amenity

The commons is used extensively by walkers, horse riders, mountain bikes and (illegal) off-roaders.

Preliminary Field Assessment

Nature conservation

The vegetation at time of visit in October 2021 was as as noted in BSCL, but on Mulfran an extensive fire occurred in 2019 which has encouraged the Molinia at the expense of heathland. This has also lead to less grazing, as had the state of repair of the boundary fences, mostly owned by the highways authority and other external bodies. Consequently most of the common is very lightly grazed.

Waun Afon, a large bog in the northern part, is Molinia-dominated, and has modified hydrology. Torfaen Council have plans to re-wet it and are currently in discussions with the graziers about this.

A small amount of heather is cut annually for grouse management and some bracken control is carried out as part of the Glastir Advanced contract.

The coal spoil heaps show greater plant and fungal diversity than the rest of the common on the whole.

Areas of broadleaved woodland are diverse and include locally native beech, but also contain some self seeded scots pine and other conifers. Illegal offroading has caused localised damage to habitats.

Carbon storage and sequestration

There is some localised disturbed soil caused by foot and off-roading traffic; otherwise as found in desk assessment above.

Fire risk management

The high fuel load on the common reportedly allowed the 2019 fire to burn for 2 weeks. More cutting of vegetation to form fire breaks and increased grazing would be a practical way of reducing fire risk.

Water flow regulation

No issues

Water quality

There do not seem to be any threats to water quality from grazing management but it is noted that water on the eastern side in particular drain through and out of mine workings and spoil heaps; possible sources of contamination.

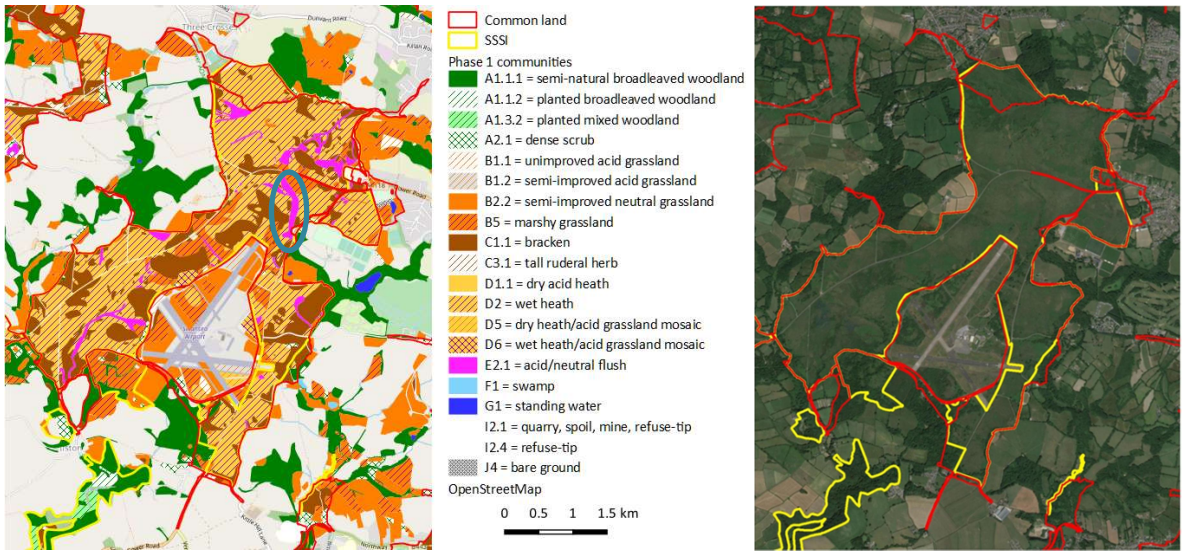
Archaeology

No issues

Landscape and amenity

The common is popular with mountain bikes and scramble bikes, as well as other leisure users.

Public goods assessment - Fairwood Common (West Glam. CL15 (pt.))



Phase 1 habitat map of Fairwood common and adjacent areas

Significant area of Molinia meadow

Basic data

Grid location: SS59

Apparent area (GIS-based): 461.12 ha (747.72 ha gross LPIS area including Clyne common)

Registered pasture rights (BSCL): 127 (incl. Clyne common; provisional pending reconstitution as of 1990)

BPS claims in mid 2010s: 28

Approximate level of current active use: 2-3 flocks of sheep, 3-4 herds of cattle, 2-3 herds ponies

Nature conservation

The common is designated at both UK and European level as part of Fairwood, Pengwern and Welshmoor SSSI and Gower Commons SAC respectively.

The Key Habitats present from the European perspective are considered to be wet heath and Molinia meadow; dry heath is also present. The Key Species present is the marsh fritillary butterfly

Vision for wet heath:

- The wet heath will be found on moist and generally acidic soils across the commons.
- The wet heath will be characterised by western gorse growing amongst cross-leaved heath and purple moor grass. The gorse will be low growing and does not seem to dominate the heath. The yellow of the gorse and the pink of the cross-leaved heath make a spectacular display. Pink lousewort will be seen growing amongst the mixture of gorse and heath, with grasses and sedges weaving their way through the mix of species such as cotton grass, heath bedstraw, heath milkwort, flea sedge and carnation sedge.
- Sphagnum mosses grow beneath the heath, holding moisture like a sponge. Plants capable of growing in certain very wet areas associated with wet heath like bog asphodel and the insecteating sundews will also be found as you walk around the wet heath.

- The wet heath is not poached by grazing animals, but is evenly and sensitively grazed. There are no invasive species like Rhododendron or Japanese Knotweed growing in the wet heath and willow and birch are found only very thinly scattered throughout the site, mainly on the edges.
- **At present, the habitat is considered in unfavourable condition due to**
    - **Low cover of ericaceous species and Sphagnum mosses**
    - **Excessive cover of dwarf gorse and Molinia in some areas**

Vision for Molinia meadow:

- On the wettest ground, marshy grassland will be found; it will often be found growing in a mosaic with wet heath.
- The marshy grassland will be dominated by tussocks of purple moor grass. The tussocks will provide little sheltered areas where flowers grow and help to provide some shelter for the marsh fritillary butterfly.
- The tussocks are uneven in size, but there will always be young purple moor grass coming though each spring. Only a few of the tussocks will have old and 'rank' purple moor grass growing on them.
- Devil's bit scabious, the food plant for the larvae of marsh fritillary butterflies will be found commonly growing amongst the purple moor grass. Whorled caraway and soft leaved sedge are both scarce plants that will be commonly found in the marshy grassland areas.
- Often heathy plants like cross-leaved heath and gorse will be found in marshy grassland – this is a transition area between the two habitats
- **At present, the habitat is considered in unfavourable condition due to**
    - **Encroachment of scrub**

Suitable habitat for the marsh fritillary is:

- Stands of grassland where devil's bit scabious is present and where scrub more than 1 metre tall covers no more than 10% of the stands
- Grassland where the vegetation height is 10-20 cm, with abundant purple moor-grass Molinia caerulea, frequent "large-leaved" devil's-bit scabious Succisa pratensis suitable for marsh fritillaries to lay their eggs and only occasional scrub. In peak years, a density of 200 larval webs per hectare of optimal habitat will be found across the site.
- The marshy grassland will be well sheltered by hedgerows and mature trees.

Vision for dry heath:

- Dry heath is found on the free-draining parts of the commons. In some parts of the SAC dry heath grows in large continuous areas like at Rhossili Down, in other parts of the SAC, the dry heath grows in mosaics with wet heath and acid grassland. Bell heather and cross-leaved heath grow along side European and western gorse. There is a lack of purple moor grass and sphagnum mosses which tell us that the heath is drier. Heath milkwort, tormentil and heath bedstraw are seen regularly decorating the dry heaths.
- Scrub like birch and overgrown gorse is rare with the dry heaths, except where island of scrub provide some shelter for grazing animals. These islands will be accepted within the heathland landscape.

- Bracken is present within the dry heath and grows around the edges but bracken never dominates stands of dry heath and does not encroach on the dry heath.
- Burning of the heath is only carried out as a controlled management technique to create a mosaic of different ages of heath. There are no signs of burning causing damage or causing bracken to spread.
- **Management of this common should not focus on the few areas of dry heath**

Carbon storage and sequestration

Fairwood common is largely underlain by stagnopodzols, i.e. poorly drained clayey soils with a peaty upper horizon. This peaty horizon is a significant carbon store and it should be protected from carbon loss by draining or burning.

Carbon sequestration into the peaty soil layers is likely to be very slow. Sequestration into the herbaceous vegetation, including plant roots, is likely to be modest, given the poorly-drained nature of the soil. Sequestration into dwarf scrub vegetation, where that vegetation is stable over the longer term, is likely to be limited. However sequestration into other scrub and woodland is likely to be significant, as long as it is not accompanied by the oxidation of soil carbon.

The balance between encouraging scrub growth for carbon sequestration and protecting the existing priority habitats from scrub growth is a matter of policy priorities; we have assumed that while scrub is a valuable element in the mosaic, there should not be widespread loss of priority habitat to scrub encroachment. Any reduction in the area of scrub would require a complementary non-productive investment measure.

Fire risk management

There is a high likelihood of unplanned fire on the open areas of Fairwood common due to:

- High fuel loads in the form of European gorse and, seasonally, Molinia
- The number of roads crossing the common and the proximity of large urban centres

Fires on Fairwood have the potential to be high impact because of:

- The large area of wet heath habitats where NRW advises that unplanned burning goes against the maintenance and achievement of favourable condition
- The effect of burning on road traffic across the common

Alongside the use of the results-based scorecard, a Fire Management Plan (FMP) for Fairwood should be drawn up. This FMP should describe how management would aim

- to reduce the incidence and scale of unplanned fires
- to safeguard the most vulnerable features from such fires
- to avoid the use of controlled fires for ongoing management purposes wherever possible
- to set out a programme of work needed to implement the Plan, drawing on a list of fundable non-productive investments

Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows. Fairwood common's stagnopodzol

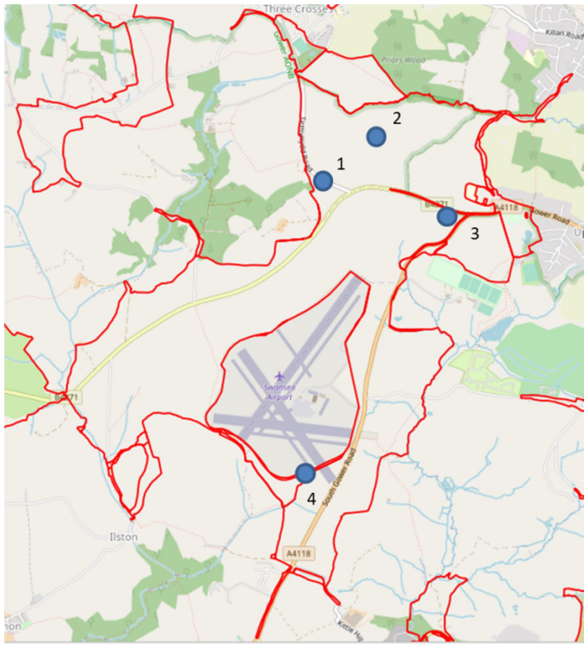
soils are not conducive to infiltration; the aim should rather be to slow the progress of water over the surface and in the upper soil horizon during flood events by having a high catchment roughness especially in the immediate source areas next to watercourses and by retaining natural conditions in and along the watercourses themselves (e.g. meanders, in-channel vegetation and other obstacles to flow).

Fairwood common has a high catchment roughness (vegetation height is likely to be significantly greater than the depth of water flow) both overall and in those locations, for example next to watercourses, which are the immediate source of flood waters. Although Ilston, which lies downstream of part of the common, is flood-prone, there are no obvious issues arising on the common which either contribute to or by adjustment could reduce the incidence or severity of flooding in the village. Published modelling work has suggested that riparian woodland cover be expanded, but a site visit with NRW concluded that the area in question was already well-managed for flood amelioration.

Water quality

No issues arise at present relating to water quality, whether in terms of chemical or biological pollutants or in terms of erosion/sediment load; the common's intact semi-natural vegetative cover and low stocking density management are generally conducive to good water quality outcomes.

Archaeology



The following sites are recorded on Coflein:

1) Round barrow
2) Colliery
3) Military practice trenches
4) Aircraft dispersal pens

Landscape and amenity

The common is visible from a number of busy major and minor roads. It is not visible from a distance. It is part of a series of large lowland commons which form a distinctive feature of the Gower landscape. Landscape and amenity value would only be severely impacted by gross land cover or management changes.

Preliminary Field Assessment

Nature conservation

Generally and surprisingly low species diversity was observed except in wet flushy areas. It was surveyed in October so past peak flowering period, but repeated burning is a very likely additional reason. Most areas of the common are under grazed; Molinia quite long and dominant in most places, often with little signs of grazing. Graziers' willingness to turn animals out is affected by the high numbers of livestock killed on the roads every year. Vegetation structure is poor; some at least due to burning (a combination of poor structure but low levels of litter was observed); heath species in particular often appeared stunted. There are some issues with brambles and bracken encroaching - bracken seems relatively stable but always has brambles growing amongst it, and this is definitely spreading.

Regeneration from woodland, predominantly willow and birch is spreading across the wet heath in particular and is definitely a threat to the key habitats so should be controlled. The mature woodlands around edges of common are of a very different (mixed) character.

Marsh fritillary butterflies used to breed on Fairwood but have not been recorded here for at least 2 years, although with appropriate management they may spread from adjacent commons like Welsh Moor.

Carbon storage and sequestration

Some carbon loss is likely from the recent history of repeated burning, and the cutting back of encroaching scrub, but if a regime of management by grazing could be established, this could be reversed. The imperative on the common is to safeguard the carbon store in its soils, while increasing fire-resilience and reducing the impact of fires over the medium term.

Fire risk management

Frequent burning occurs, sometime as a management method to control gorse. A strip of vegetation is topped along each road which has reduced the incidence of unplanned fires in recent years. A fire management plan would build on this practice.

Water flow regulation

No issues

Water quality

No issues apart from the unquantified effects of uncontrolled burning on the common.

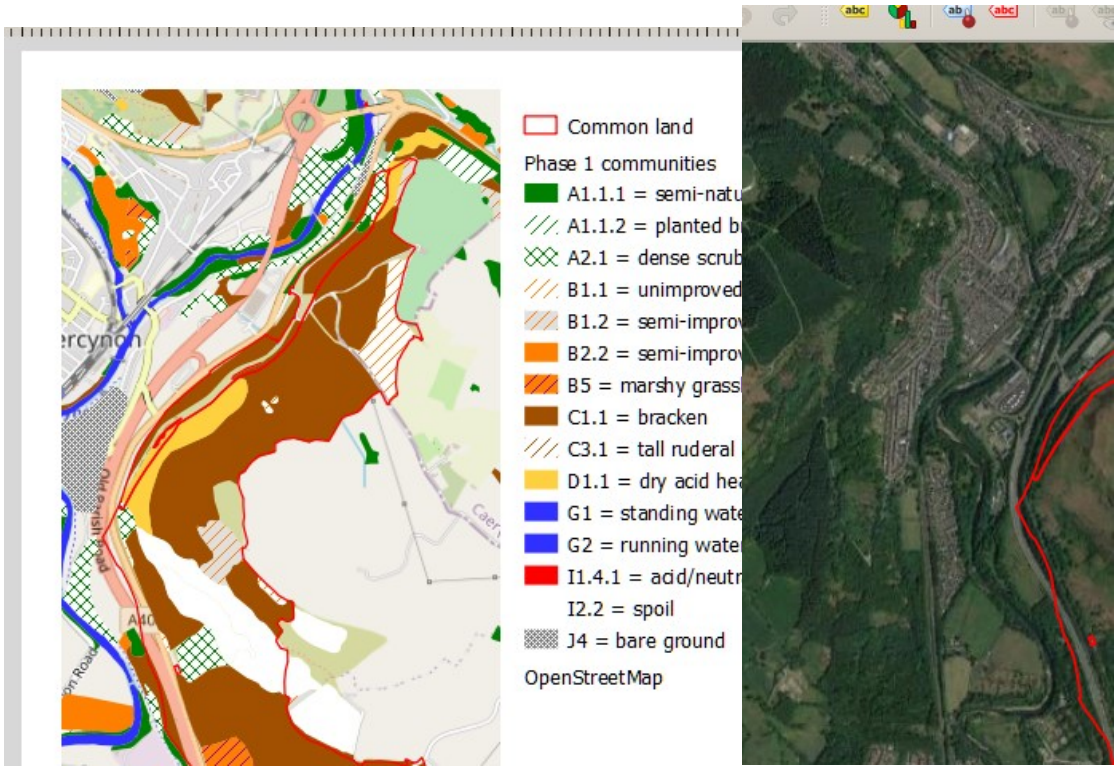
Archaeology

The majority of historic features are associated with the wartime use of the airport.

Landscape and amenity

Although the roads going through the common carry a lot of traffic, amenity use of the common by walkers etc. seems to be quite limited, probably because the rough vegetation makes it difficult to access apart from along existing paths.

Public Goods Assessment – Graig Evan Leyshon (Mid Glam. CL55)



Phase 1 habitat map and Google Earth image of Graig Evan Leyshon and adjacent areas

Basic data

Grid location: ST09
Apparent area (GIS-based): 147.63 ha (LPIS gross area: 124.53 ha)
Registered pasture rights (BSCL): 6 provisional
BPS claims in mid 2010s: 4
Approximate level of current active use: Very light sheep grazing
Level of participation in Glastir (if any): None

Nature conservation

The common is currently dominated by dense bracken, with some scrub. In the south of the common is an area of species-rich marshy grassland, with bog pimpernel, marsh pennywort, devil's bit scabious etc., recorded by the BSCL in 1990. In the centre of the common is a large area of coal spoil which is probably of biodiversity value.

Green woodpecker, ring ouzel and tree pipits have been recorded in recent years

Carbon storage and sequestration

The common can be split into two areas. The northern area is underlain by brown podzolic soils and dominated by bracken. This area has a significant of carbon sequestered in living or recently dead material as well as its decay products. Although organic content is high, it is in a dynamic equilibrium where newly added carbon replaces carbon oxidised by the action of micro-organisms. In this area the question is whether a different equilibrium should be established (e.g. more

trees/scrub and/or less bracken) and what wider public policy objectives such a shift might better address.

The southern area of marshy grassland is underlain by stagno-humic gley soils which are poorly drained and have a significant peaty upper layer. Here a significant amount of carbon is locked 'permanently' in the soil, since there is little or no oxidation by micro-organisms. Permanent sequestration rates are likely to be slower.

In both areas there is a seasonal risk of reoxidation of carbon through fire in the bracken or Molinia litter.

Fire risk management

There is a high chance of wildfire occurrence due to:

- The high seasonal fuel load on both bracken and Molinia areas
- The suburban nature of the common (signs of anti-social behaviour were recorded in the BSCL survey)

The impact of such fires may be surprisingly low because:

- There are few dwellings or business premises upslope
- There are no forestry plantations likely to be affected
- There are no habitats likely to suffer significant long-term damage

Having said that, there are no habitat management or other reasons to promote or encourage wildfire or controlled burns; it is poor practice from both a carbon sequestration and water flow regulation perspective.

Alongside the use of the results-based scorecard, a Fire Management Plan (FMP) for Graig Evan Leyshon should be drawn up. This FMP should describe how management would aim

- to reduce the incidence and scale of unplanned fires
- to safeguard any vulnerable features from such fires
- to avoid the use of controlled fires for ongoing management purposes wherever possible
- to set out a programme of work needed to implement the Plan, drawing on a list of fundable non-productive investments

Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows. The common is steep, so closely grazed habitats are particularly prone to surface flow. However, in its currently state, it is likely to be very good at water flow regulation:

- the colliery spoil is well drained
- the bracken areas have very high infiltration capacity due to the root system, while the litter increased retention times and thus encourages infiltration

- the Molinia areas, while they have a high water content and low infiltration capacity other than in periods of dry weather, have a high surface roughness which lengthens the path to watercourses and slows the flow within them

Water quality

There are no water quality issues stemming from the use of the common for grazing.

Archaeology

The following features are recorded on Coflein:

- Quarry remains found in most areas of the common

1) Colliery magazine
2) Coal workings
3) Aerial ropeway pillar base and coal spoil tip
4) Tramway, trackways
5) Series of 'hollows and mounds'
6) Llanfabon tramroad
7) Series of boundary stones

Landscape and amenity
Public use is mostly confined to the footpaths. The Taff Trail follows the western edge of the common.

Preliminary Field Assessment

Nature conservation
Majority of common (60-70%) is now covered in dense bracken with brambles and Himalayan balsam, often in a mosaic with scattered trees and scrub. Dense woodland (not surveyed as not possible to access) is found along western edge parallel to the main road.

Areas of interest included Calluna-dominated heath on steeper banks and around rock outcrops and old quarries. The spoil heaps have an interesting mosaic of species-rich acid grass, Calluna heath, dense gorse and bare soil.

An area of marshy grassland at southern end (the 'highlight' of the BSCL account) was still open - but inaccessible due to surrounding bracken and scrub.

There are many old / ancient trees - oak, birch and willow - and live anthills.

Carbon storage and sequestration
Field visit confirms desk assessment

Fire risk management
There is a high fuel load here and, as there are pylons carrying electricity going across the common, a Fire Management Plan would help to safeguard local infrastructure as well as biodiversity.

Water flow regulation
No issues seen.

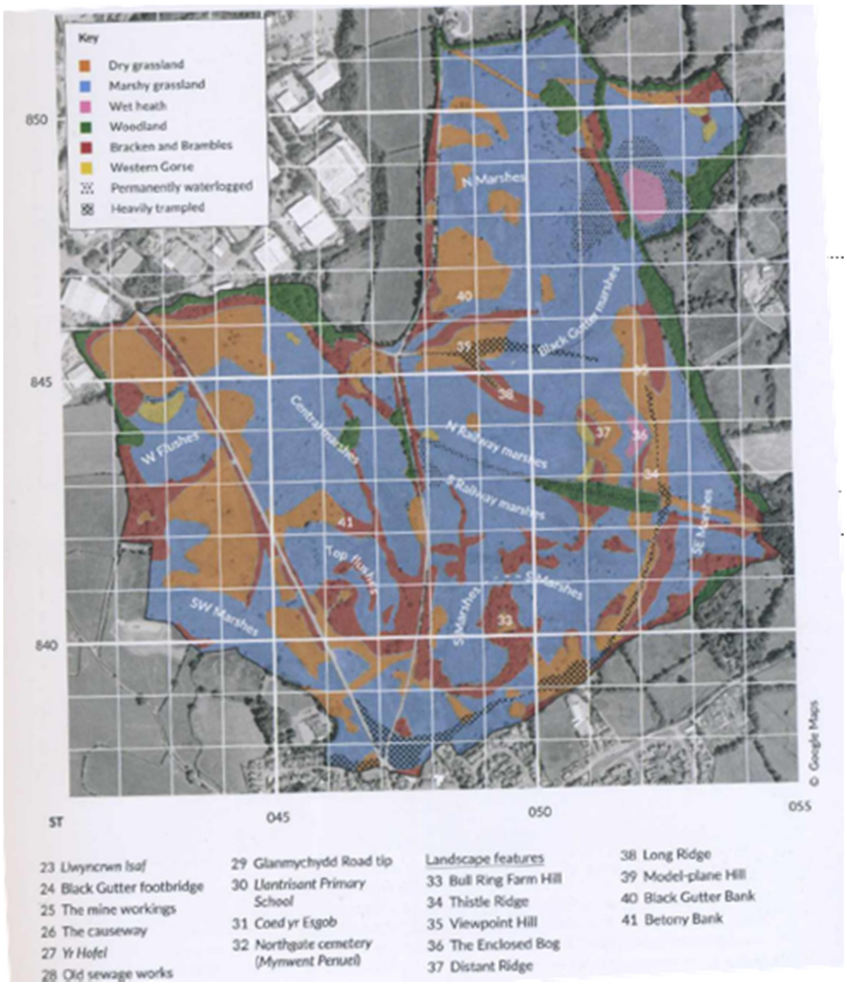
Water quality
No issues seen.

Archaeology
No issues seen apart from high levels of vegetation on archaeological sites.

Landscape and amenity
Very localised high levels of use were observed, including some off-road bike impacts on the spoil heaps (moderate disturbance helps maintain the dynamic nature of the habitat.

Public Goods Assessment – Llantrisant Common (Mid Glam. CL63)

Phase 1 habitat map and Google Earth image of Llantrisant common and adjacent areas



More detailed vegetation map from (Barden 2020)

Basic data

Grid location: ST08

Apparent area: 95.57 ha gross, 94.41ha net LPIS area

Ownership: Owned by the Freemen of Llantrisant, embodied by Llantrisant Town Trust

Registered pasture rights: Variable, because all Freemen (approx. 1200) are eligible to graze common. In practice numbers are authorised by Town Trust on an annual basis. Horses, cattle, pigs and geese are eligible, but not sheep or goats
BPS claims in mid 2010s: 5
Approximate level of current active use: 2-3 graziers with ponies, 2-3 cattle graziers
Participation level (if any) in Glastir: None, but management agreement with NRW begins 2021

Nature conservation

The common makes up the bulk of the larger Llantrisant Common and Pastures SSSI. The description of the interest reads: …*for its extensive area of predominantly acidic marshy grassland in a lowland setting and for smaller areas of species-rich neutral and acidic grassland and soligenous flush. The presence of two plant species are of special interest. Cornish moneywort Sibthorpia europaea grows at the edge of drainage ditches and in marshy grassland on the common. It is nationally scarce and is here at the edge of its geographical range, having a south-western distribution in Britain. The nationally rare liverwort Scapania paludicola, which has been given the name bog earwort, is also associated with marshy grassland on the Common.*

Vision for Molinia meadow:

- On the wettest ground, marshy grassland will be found; it will often be found growing in a mosaic with wet heath.
- The marshy grassland will be dominated by tussocks of purple moor grass. The tussocks will provide little sheltered areas where flowers grow and help to provide some shelter for the marsh fritillary butterfly.
- The tussocks are uneven in size, but there will always be young purple moor grass coming though each spring. Only a few of the tussocks will have old and 'rank' purple moor grass growing on them.
- Devil's bit scabious, the food plant for the larvae of marsh fritillary butterflies will be found commonly growing amongst the purple moor grass. Whorled caraway and soft leaved sedge are both scarce plants that will be commonly found in the marshy grassland areas.
- Often heathy plants like cross-leaved heath and gorse will be found in marshy grassland – this is a transition area between the two habitats

Suitable habitat for the marsh fritillary is:

- Stands of grassland where devil's bit scabious is present and where scrub more than 1 metre tall covers no more than 10% of the stands
- Grassland where the vegetation height is 10-20 cm, with abundant purple moor-grass Molinia caerulea, frequent "large-leaved" devil's-bit scabious Succisa pratensis suitable for marsh fritillaries to lay their eggs and only occasional scrub. In peak years, a density of 200 larval webs per hectare of optimal habitat will be found across the site.
- The marshy grassland will be well sheltered by hedgerows and mature trees.

Carbon storage and sequestration

The common is almost largely underlain by stagno-humic gley soils, which have a thick peaty upper horizon which is a significant store of carbon. In addition, a certain amount of carbon is sequestered in the standing vegetation, both above and below ground. In the case of Molinia, this carbon is

particularly prone to reoxidation, should it catch fire in winter. Having said that, the vast majority of the carbon is in the soil and the carbon store is best protected by avoiding both wildfire and any new drainage works.

Fire risk management

The likelihood of fire is highest on the areas of Molinia and the much smaller patches of bracken, in both cases in the winter period when the plants die back to give a thick layer of flammable litter.

The impacts of such fires would include:

- Limited threat to private and business properties
- Short-term disruption to road traffic on the two roads which cross the common
- Damage to the dominant marshy grassland habitat, likely to lead to a reduction of population or elimination of some notable species.

Fire should be avoided as a management tool in all circumstances, and should never be used as a regular management practice.

Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows. The common is on land with only low to moderate slopes, which in itself gives infiltration a chance to occur. The peaty horizon of the stagno-humic gleys is not particularly favourable to infiltration (and the lower horizons are poorly drained), but the extremely rough associated vegetation has the effect of slowing any surface flows and thereby reducing flood peaks. The common has some areas of shorter vegetation with very low roughness. Should these areas be extensive and connect directly to water courses, this would be a flow regulation concern, but fortunately the areas are limited, being to a large extent associated the main road.

Water quality

We are not aware of any water quality issues arising from grazing management.

Archaeology

No sites are recorded on Coflein. Ordnance survey maps show disused railway line, a historic tramway and mine workings.

Landscape and amenity

The common is crossed by two minor roads. It is immediately adjacent to Llantrisant town and is heavily used for informal recreation.

Preliminary Field Assessment

Nature conservation

Assessments were undertaken during the summer of 2021 through several field visits, including jointly with graziers; Nick Sharp NRW; and David Barden, local botanist (author of *The Wild Plants of Llantrisant Common and Y Gweira* (Barden 2020)).

For the scoring process, the common was divided into four blocks outlined by the existing roads and disused railway line. Several assessment points were identified on the ground within each block. Each block contains mosaics of marshy grassland, both rush and molinia dominated; tightly grazed drier acid/neutral grassland; smaller areas of bracken, brambles & woodland/scrub. Although the different habitat types are fragmented within a block, each type tends to have consistent species composition in terms of the positive indicators listed on the scorecard, with most of the differences between scores at different assessment points being accounted for by structure e.g. grazing very heavy or very light, and the presence of bracken or other potentially dominating species.

The average score for assessment points was 4.5 out of a possible 10. Drier areas, especially close to the road were usually very heavily grazed, although some plants were nevertheless in flower. This is a consequence of the way that horses prefer to graze, and also because they are encouraged to spend time there by members of the public who feed them. The wetter areas, especially where molinia dominates, are much less grazed, and in come areas bracken, bramble and willow scrub is spreading and there is almost no evidence of grazing.

The scoring process illustrated a picture of the common which was agreed in general by NRW; that plant diversity is generally good but parts have the potential to be better where they are undergrazed or overgrazed; and that reducing the cover of bracken and willow scrub in areas will be beneficial for biodiversity. This is borne out by the actions which will be undertaken through the management agreement the Town Trust is negotiating with NRW, to be signed later in 2021.

Where lower scores were influenced by the sward being very heavily grazed, all parties agreed that these were not very high priority areas to try to change management because they will always be heavily used areas, and it would be better to concentrate management efforts there a positive benefit is likely to result.

Marsh fritillary butterflies have not been seen on the common in recent years but their foodplant, devil's bit scabious abounds and a reintroduction plan is being implemented from 2021 by Initiative for Nature Conservation Cymru (INCC).

Carbon storage and sequestration

There is very minor soil disturbance in the form of disturbance by livestock and occasional vehicle tracks through streams and wet areas. Vegetation cover is good, and although some of the trees and scrub which is spreading is scheduled to be cut back in 2021-2026, many will remain. There are two gas pipelines and several water pipes running through the common which may be a future cause of carbon loss should they be dug up for maintenance. However this is outside the control of the graziers.

Fire risk management

The increased grazing and cutting back of scrub planned in the forthcoming NRW Management agreement should reduce fire risk.

Water flow regulation

The mosaic of vegetation types and structures should slow surface water flow, although there are a few areas where tightly grazed well trampled turf exists next to watercourses; potentially leading to faster runoff.

Water quality

Apart from very minor soil disturbance at crossing places, there are gas and water pipelines crossing the common, including one which conducts overland flow from a nearby housing estate. Maintenance or repair of the pipelines could result in localised lower water quality in the future.

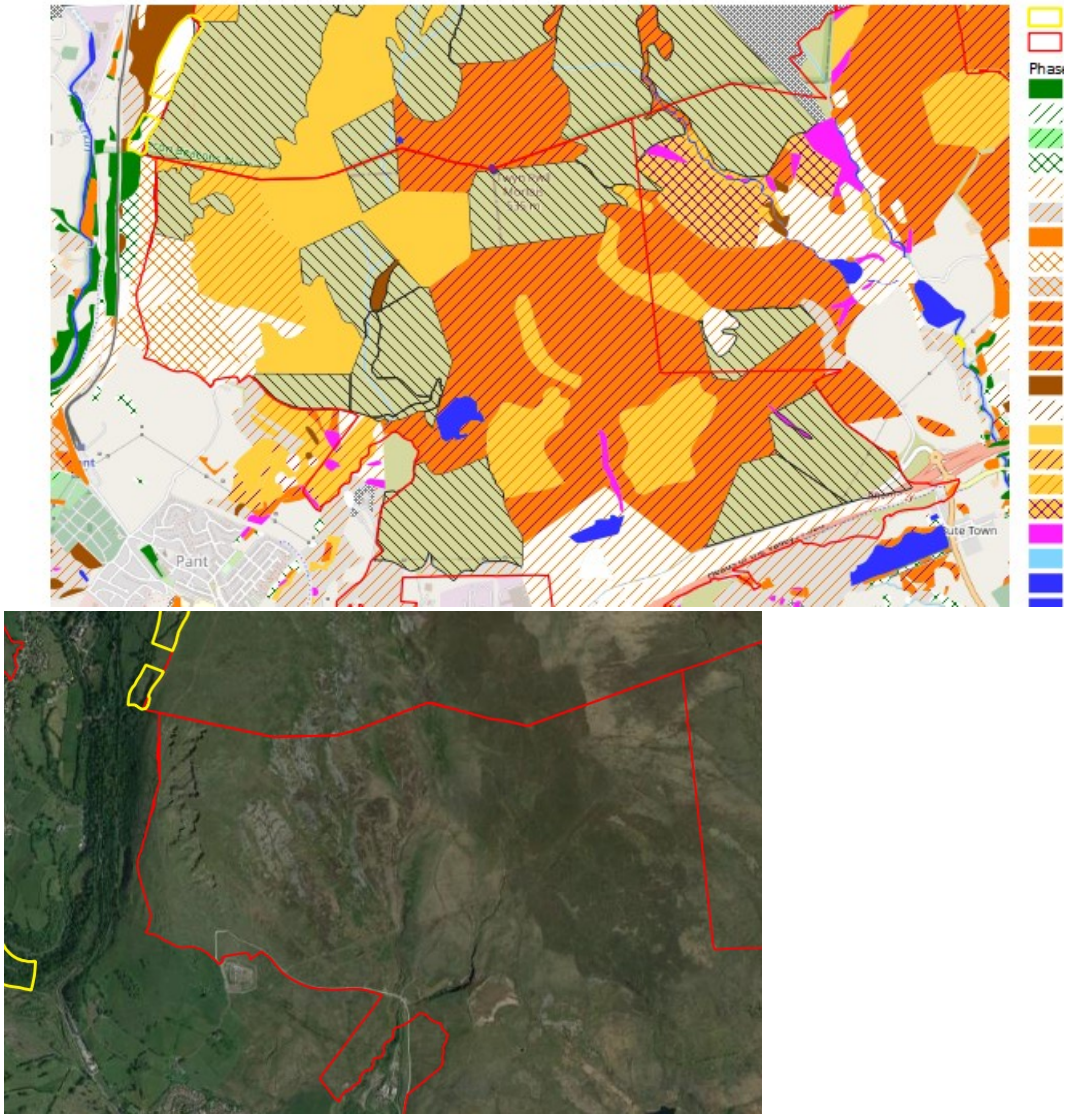
Archaeology

The common itself is a significant historic feature, having been granted to the Freemen of Llantrisant in 1346 by the Black Prince as pasture for their horses and cattle. The 'bounds' are marked by historic features and are still beaten in a ceremony every few years.

Landscape and amenity

Local amenity use includes flying model planes, excercising ferrets, feeding the ponies, nature watching as well as the more usual dog walking and horse riding. Open access to the common is obviously a big part of life in Llantrisant.

Public Goods Assessment – Merthyr & Gelligaer N section (Mid Glam CL38 pt)



Phase 1 habitat map and Google Maps image of Merthyr common (N) and adjacent areas

Basic data

Grid location: ST19

Apparent area (GIS-based): c. 1420 ha

Registered pasture rights (BSCL): 96 on common *as a whole*

BPS claims in mid 2010s: No info.

Approximate level of current active use: 2-3 sheep graziers, several small herds of ponies

Nature conservation

None of the common is designated, but the limestone grassland in the NW continues onto Baltic and Tyle'r Bont Quarries SSSI. There is also some discussion of parts of the common in the 'Mynydd Llangatwg' survey (Grey 2003).

At the time of the BSCL (1990), the area was

A heavily-grazed mixture of Molinia, soft rush, heath rush, mat-grass and bilberry. Common bent and Polytrichum commune are present. Dry rocky areas have bilberry and mat-grass. On the eastern side there is a mosaic of acidic grassland and grassy heath communities. Damper peaty area support Molinia and, rarely, common cotton-grass. Occasional flushes are present e.g. at 095097….. In the SW is a disturbed area which has been built upon and reseeded. In the far NW many disused limestone quarries occur with associated species-rich calcareous grassland. Carline thistle and stemless thistle are frequent and the local ferns green spleenwort and brittle bladder-fern and mossy saxifrage are present on the quarry faces. Small areas of limestone pavement occur but maidenhair spleenwort and herb Robert were the only species recorded there.

From Grey:

At the furthest southern extent of the southward extension of Cefn yr Ystrad, moving away from the moorland towards the agricultural fringes, the vegetation becomes dominated by **M15**, with extensive tracts of **U4**, where grazing is higher. The grazing level here by both sheep and ponies is very high. The heath often looks like a grassland because the *Vaccinium* has been grazed so low, but can be quite species-rich in some places, where the presence of some bog species, such as *Narthecium* and bog sphagna, indicate a partial transition to the **typical sub-community (M15b)**. *Vaccinium myrtillus, Rhytidiadelphus loreus* and *Juncus squarrosus* cover remains high however. The area of collects (**SO082096**) also harbours good stands of **M15**, but is especially noted for the many good tracts of somewhat base-enriched poor-fen (**M6a** and **M6c**). In places, there is a strong calcareous influence giving rise to basic flushes, but there are few visible signs of exposed limestone. However, there are some small cliffs north-west of Pitwellt Pond (**SO077099**), which have some calcareous flushing near the base with many small tracts of **M37**. The influence fades rapidly however and the slopes leading down to the stream are mostly **H18**, **U5**, and bracken communities (**U20**). Of main interest are several ledges bearing tall herb ledge vegetation similar to that described from Craig y Cilau.

Carbon storage and sequestration

The common is made up of two main soil types – poorly drained stagno-humic gleys with their peaty upper horizons on the millstone grit and coal measures and well-drained brown podzolic soils on the limestone, but with small areas of thin ranker soils where the limestone is very close to the surface (and where limestone grassland is present).

The stagno-humic gley soils have a considerable carbon store in their upper peaty horizon – safeguarding this means not draining them and not allowing any grass fires which might occur to affect the soil horizons. In general, such soils will continue to sequester carbon slowly if their hydrology is undisturbed and in the absence of damaging fires.

The brown podzolic soils also sequester carbon, but it is likely that they have reached an equilibrium between carbon in the plants above ground, in the living roots and in the surrounding soil. This equilibrium will shift is there is a change in the grazing pattern or vegetation structure, but this would then settle at a new equilibrium.

Fire risk management

Fire is most likely to occur on the high fuel load areas of the common, especially those within easy access of public roads – areas of Molinia are particularly fire-prone. In general other vegetation communities on the common have a low fuel load, but this could change if the vegetation is altered to being more highly structured.

Fire is likely to be an issue where:

- It poses a threat to houses or the industrial/retail premises adjoining the common
- It has the potential to cause disruption on public roads, not least the Heads of the Valleys trunk road
- It threatens to impact wet heaths and any peatland present, both in terms of the vegetation communities and the stored carbon in the underlying peaty horizons. NRW does not recommend burning as management tool on wet heath.

Alongside the use of the results-based scorecard, a Fire Management Plan (FMP) for the common should be drawn up. This FMP should describe how management would aim

- to reduce the incidence and scale of unplanned fires
- to safeguard the most vulnerable features from such fires
- to avoid the use of controlled fires for ongoing management purposes wherever possible
- to set out a programme of work needed to implement the Plan, drawing on a list of fundable non-productive investments

Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows. Merthyr common's stagnopodzol soils are not conducive to infiltration; the aim should rather be to slow the progress of water over the surface and in the upper soil horizon during flood events by having a high catchment roughness especially in the immediate source areas next to watercourses and by retaining natural conditions in and along the watercourses themselves (e.g. meanders, in-channel vegetation and other obstacles to flow).

On the other hand, infiltration is not usually a problem on brown podzolics, except in cases where the surface is so closely grazed that the water is able to run off extremely easily before infiltrating.

The roughness of Merthyr common varies over the catchment and the terrain has been landscaped by coal spoil heaps, quarry works and water management so flow rates are likely to be variable.

Water quality

This part of Merthyr common is within the catchment of Pengarddu Service reservoir.

Archaeology

Most of the archaeology is industrial in nature and is associated with the limestone quarry and the "Dowlais Free Drainage System" one of the largest such systems set up around 1850 to provide water to the Dowlais ironworks.

Landscape and amenity

With no public road over the common as we define it (the fence along the old Heads of the Valleys road is our boundary), public use and abuse are both much lower than in some neighbouring areas.

Preliminary Field Assessment

Nature conservation

Most of the heathland and Molinia is currently undergrazed, apart from the western half of the southernmost part of the common next to the B4257, because local people frequently feed the ponies and sheep here, encouraging them to linger. Outwith the heathy areas, the sward is quite diverse, and the areas around the limestone quarries are extremely diverse, with a broad range of fungi seen in the autumn.

Carbon storage and sequestration

It is difficult to assess how much of the historical disturbance has affected carbon storage, but there are more recent small scale disturbances caused by livestock which are probably contributing to some carbon loss.

Fire risk management

Although parts of the common, e.g. those which are Molinia or Calluna dominated, have a high fuel load, their distance from easy public access makes them a lower risk, but the proximity of the common to an urban centre and infrastructure make it a priority for drawing up and implementing a fire risk management plan.

Water flow regulation

Historically the Dowlais Free Drainage System has encouraged faster water flow out of this part of the common. Although this has fallen into disuse, it is difficult to assess its ongoing impact on flows out of the catchment.

Water quality

Water quality issues are more likely to be from industrial activity than from grazing management.

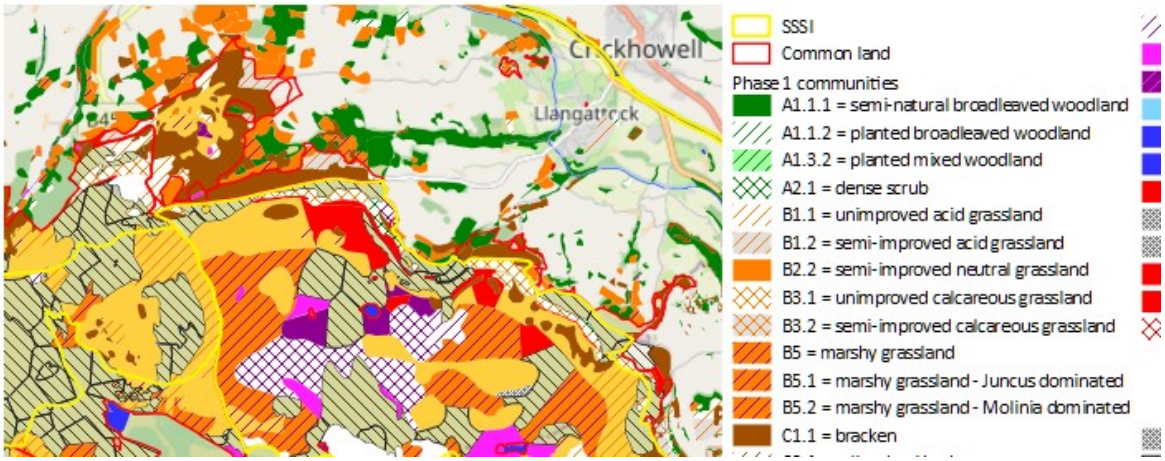
Archaeology

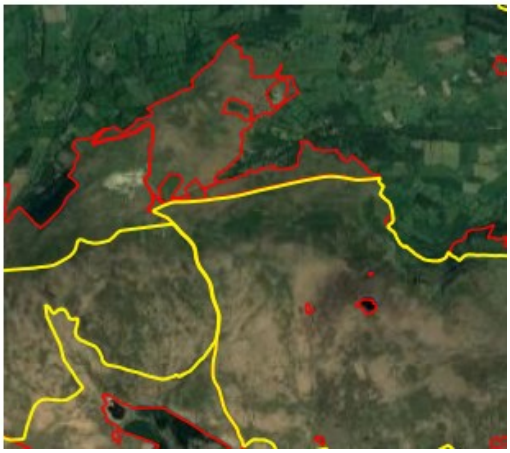
No issues

Landscape and amenity

Local residents feed the ponies and sheep on the southern edge of the common, but most walking, mountain biking and horse riding takes place along the quarry tramroad on the western edge leading to the limestone quarry of Twynau Gwynion, where there is a small amount of damage on spoil heaps by mountain bikes.

Public Goods Assessment – Mynydd Llangatwg (Breconshire CL18, CL19; Gwent-Brecon CL17)





Phase 1 habitat map and Google Maps image of Mynydd Llangatwg and adjacent areas

Basic data

Grid location: SO11 etc.

Recorded area: 1759.75 ha, 175.60 and 67.60ha LPIS gross area and 1713.9 ha, 175.57ha and 58.14 ha LPIS net area (by CL unit respectively)

Registered pasture rights (BSCL): 122, 43 and 23 rights respectively

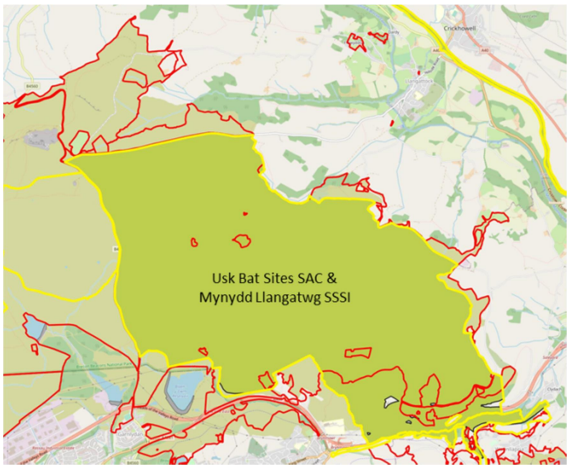
BPS claims in mid 2010s: 38, 18 and 8 respectively

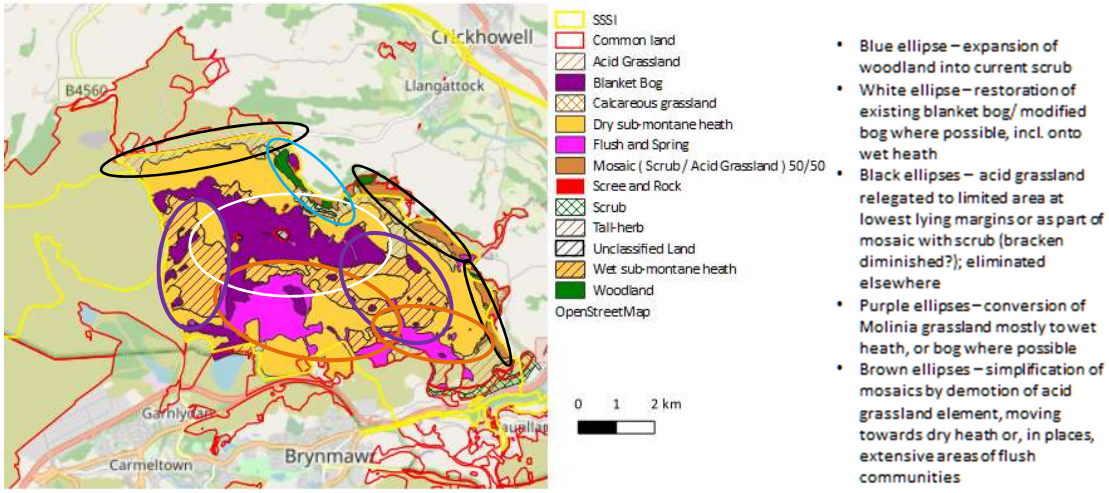
Approximate level of current active use: Grazed mostly by sheep from 2 main graziers, a few ponies also

Glastir participation level (if any): Glastir Advanced

Nature conservation

The bulk of the common falls within both Mynydd Llangatwg SSSI and the Usk Bat Sites SAC.





A possible vision for the habitats of the site

(Grey 2003):

Mynydd Llangatwg is a SSSI, and also incorporates the Craig y Cilau NNR. The latter series of crags and scree slopes associated with limestone workings are part of a wider range of limestone outcrops. This starts with the Craig y Castell immediately to the west, and extends down'most of the eastern boundary of the SSSI with significant rock faces and escarpments as far as Waun Watcyn.

The Craig y Cilau crags, formerly quarried, and now the location of a NNR, are located at the north and north-west extreme of the common. The linear track of these crags takes in a series of cliffs, whose structure has been heavily modified in many places by the quarrying in previous times, though still bearing many crevices and ledges that host a rich ledge vegetation.

Heaps of spoil, often ascending in altitude to a significant proportion of the altitude of the cliffs themselves are often located some 50 to 200 meters in front of the cliff faces. These spoil heaps bear calcareous grasslands and sometimes more fragmentary secondary vegetation that is possibly better described as a calcareous open vegetation community. The front of this spoil, having the same aspect as the cliffs, is exposed to the sun for a greater period of the day, and the vegetation reflects drier

conditions, On the shaded side of the slopes and in the more level band between the spoil and the cliffs, there is little if any direct sunlight. On these shaded slopes the vegetation composition reflects the more shaded and cooler conditions, particularly in that the soil is wetter and harbours more sedges and drought-intolerant species.

Moving away from the influence of the limestone in front of the spoil heaps, and in places where the base of the cliffs abuts direct on the surrounding terrain, the grassland becomes more acidic. The terrain here consists of mostly moderately steep slopes in the shade with rather poorer drainage than in the limestone areas. The turf has constant cover of species of acid grassland.

Over these siopes, there are also extensive tracts of scrub and woodland. Various forms of ash woodland are juxtaposed with blocks of closed canopy Crataegus scrub and more open areas of scattered scrub. At their upper altitudes, these woodlands and scrub often abut onto scree slopes, formed from fine scree, which ascend to the cliffs or spoil heaps above. These are fairly unstable, but along depressed tracts which also act as regions of drainage, there is a sparse vegetation cover that results in the scree being more stable and so able to sustain some open vegetation communities.

At its most well developed area, the region where the slopes level out at the lower altitude lead into a circular zone of basic flush which acts as the lag zone of a small raised mire. The dome of the mire is heavily trampled and grazed, with the vegetation being mostly forms of wet heath or acid grassland.

Above the cliffs, the ground gradually levels out to the plateau vegetation. This extends over most of the western part of the SSSI, and consists of extensive tracts of wet and dry heath with significant areas of blanket mire and poor fen. The majority of this cover is a mosaic of H18 and MI5, but there are regions where much wetter conditions prevail over a wide area. In the latter locations there are large blocks of blanket mire over deeper peat. The surface of the plateau constitutes a doline field, with many shake holes and swallow holes. These often have grassy slopes on the sides, and commonly the basin contains fen vegetation. Occasionally there may be some calcareous vegetation, but this is unusual.

A large part of the north-west of the site, centred on 801715, consists mainly of continuous blocks of blanket mire. Mostly, this is M20, frequently of the species-poor sub-community (M20a), though some of it is of a wetter variant that is in transition to Juncus-Rhytidiadelphus subcommunity of the Trichophorum-Eriophorum mire (MI7c), with abundant semi~aquatic sphagna. Further to the east of this, immediately south of the Craig y Cilau NNR, there are further blocks of blanket mire, but conditions are drier and the main communities represented are the CallunaEriophorum mire (MI9) and the Calluna-Cladonia sub-community of Eriophorum mire (M20b). Small patches of similar blanket mire vegetation may occur in isolated locations elsewhere over this plateau, usually as small oval patches in depressions, or as hilltop vegetation, but it is nowhere so extensive as in the north-western region described above.

Some wetter patches of mire are associated with an area where there is considerable development of extensive systems of poor fen. Centred on 801814, this habitat consists of a patchwork of wet and dry heath interrupted by tracts of Juncus effusus dominated poor fen (M6c). There are however a

significant number of small areas of blanket mire, both Eriophorum mire (M20) and Trichophorum-Eriophorum mire (MI7) scattered through these mire complexes.

Moving east and south-east of the area of fen, the terrain is once again dominated by a gently undulating landscape of wet and dry heaths. Now, however the vegetation can be more complex in places. Juncus-Festuca coarse grassland (U6) becomes quite common and there may be areas of typical Festuca-Agrostis-Galium swards (U4) on sunnier slopes where ponies congregate to graze. Patches of heath or grassland can have scattered scrub, especially Crataegus monogyna and Ulex gallii, and there are stands of Calluna-Ulex gallii heath (H8). Bracken may also become frequent over the heaths at the eastern extremity of the site.

At the south-eastern extent, there are further limestone workings at Blackrock (80220130). Here the associated calcareous grasslands are distinct from those found on the crags further north and west. A more southern type is represented, which in its most extreme form can be assigned to Festuca-Hetictotrichon grassland (CG2). These areas generally are quite grassy, and heavily grazed, as there is a high density of ponies. Bracken, Rubus fruticosus scrub (W25) and both scattered and more closed forms of Crataegus-Hedera scrub (W21) are also abundant in and around the old quarries

The area is already designated a SSSI, and the boundary of the site as defined for the purposes of the current survey coincide entirely with the boundary of the SSSI apart from some areas of exclusion which are mostly agricultural or reservoirs. The wooded slopes of Craig y Cilau have a significant value in their own right as being the only well established tall canopy woodland within the survey area, as well as being a significant / woodland within the region. The latter point is implicit in the designation as a NNR. The woodland is the location of small quantities of the nationally scarce Limestone Fern (Gymnocarpium robertianum).

The calcareous grasslands on the slopes also have a significant value, and as has been described in the previous chapter, expansion of the woodland may affect the amount of cover of these grasslands and vice versa. The woodlands however may have some priority as there are abundant grasslands associated with other limestone outcrops within the SSSI.

The grasslands towards the south of the site, in the vicinity of Blackrock limestone workings may have a different value. The latter are representative of Festuca-Helictotrichon grassland (CG2), and these stands would have to be assessed in relation to the distribution of the community throughout the wider geographical region as it does not occur elsewhere in the current site or in Mynydd Llangynidr.

The scree slopes often support significant colonies of the nationally scarce Limestone Fern (Gymnocarpium robertianum), already referred to above, but these are not thought to be at risk as there are no successional or land use issues that are likely to affect the habitat at present or in the future.

The habitats of the plateau are generally of less value than those associated with the crags, but the areas of wetter blanket mire may increase the value as they are more continuous and extensive than similar stands to the west on Mynydd Llangynidr. Towards the south-east, coming down from the

plateau there may be some value attached to the areas of scrub as these are not found in any quantity elsewhere in the survey region. The slopes with Crataegus-Hedera scrub (W21) are of some note as they are mostly stands of the Brachypodium sub-community (W21c) unlike the stands from Craig y Cilau which are of the urtica-Hedera sub-community (W21a). Also heaths and grasslands with Ulex gallii and an area of Calluna vulgaris-Ulex gallii heath (H8) are unique to the survey region.

Carbon storage and sequestration

The common has a number of areas of blanket bog in varying condition, much of which is likely to be suffering from the oxidation of carbon. More widely, there are large areas of stagno-humic gleys, with their thick upper peaty layers. Safeguarding existing stores from further oxidation and, in the longer term, re-establishing a habitat which can sequester carbon continuously (i.e. blanket bog) are the priorities

Fire risk management

NRW – burning is inappropriate as management tool on wet heath. The common is adjacent to both public roads and urban areas and has many sensitive habitats; producing and implementing a fire management plan is a priority.

Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows. Parts of the south-facing areas of the common were modified to divert water for urban/industrial use in the past. The present-day impacts of these works on flows should be evaluated and any remedial work deemed appropriate should be carried out.

Water quality

Much of the common is within the Usk catchment and there are two reservoirs within the southern boundary, presumably providing water to Brynmawr.

Archaeology

Many features are recorded on Coflein. They are detailed in the RHCAMW Uplands Initiative Mynydd Llangatwg Survey and include sheepfolds, shelters, cairns, round barrows, house platforms, a battle site, iron working and coal mining activity.

Landscape and amenity

The common falls largely within the Brecon Beacons National Park.

The B4560 forms the boundary between Llangatwg and Llangynidr common and provides easy access for walkers, so the common is well used by the public.

Preliminary Field Assessment

Nature conservation

Majority of common has similar vegetation comprising a heathy element (ling, cross leaved heath, bilberry and crowberry) with plentiful Molinia, heath rush, Nardus and other grasses mostly undergrazed. There is local variation in proportions of species, and in the amount of grazing. There

are very few negative impact apart from a few self-seeded conifers (but note the possible effects of historic water management works).

Much of the edge of the common is a mix of limestone grassland, bracken & hawthorn ffridd, and acid grassland, mostly with a good structure. There is significant Western gorse near the old quarries in the south-eastern part. Some parts of the common have been burnt in recent years, showing as damage to some of the ffridd trees and suppression of some ericoids.

There are significant bog areas of varying types; one area near Pwll Gwy-rhoc has Sphagna and typical bog vegetation, minor poaching & bare peat, but to the west of this the bog appears to have been dug for peat historically. It is lower in altitude than the intact bog and is covered with Molinia although some Sphagna and other bog species are also present.

The high number of livestock casualties (58 sheep to date in 2021) on the roads through the common, and risks associated with TB deter some graziers from turning more animals out to graze the common but this would benefit the vegetation.

Carbon storage and sequestration

The soil is generally intact but small areas of bare peat exist on some of the bogs and heathland areas, mostly associated with livestock movements and human activity. The area of bog around Pwll Gwy-rhoc is possibly sequestering carbon although it does also have some bare peat areas. There are significant numbers of trees in the ffridd on the fringes of the common, but little regeneration. There apparently is a gas pipeline and possible water pipes running through the common which may be a future cause of carbon loss should they be dug up for maintenance. However this is outwith the control of the graziers.

Fire risk management

Owing in part to light grazing there is a significant fuel load across the common. Accidental fires have occurred in the recent past. Cutting and maintaining firebreaks and increased grazing would be a practical way of reducing fire risk.

Water flow regulation

The generally good vegetation cover, intact deep peat areas and minimal soil disturbance should be contributing to good infiltration rates and slow overland flows.

Water quality

No obvious water quality concerns noted

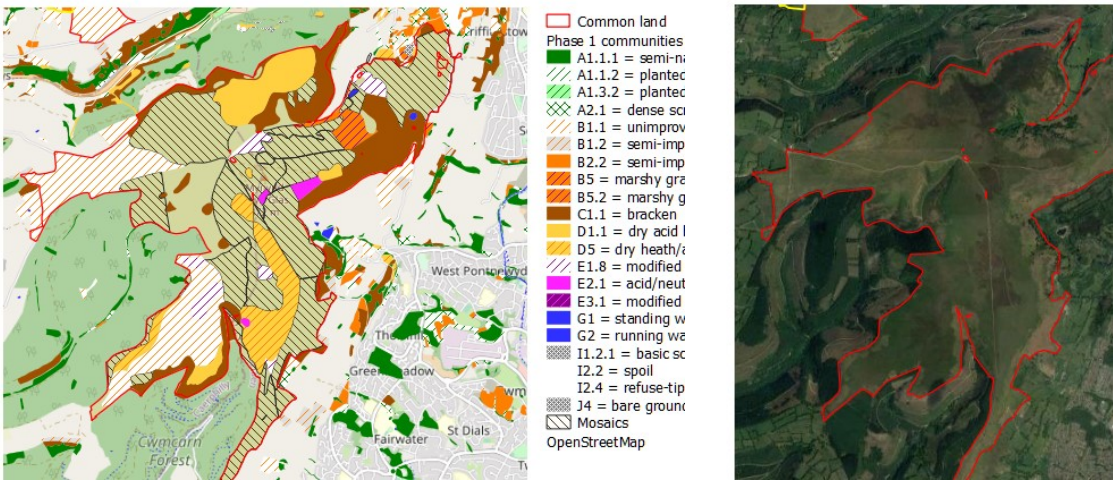
Archaeology

There are many visible historic features on the common but none appear to be at risk of damage apart from overgrowth of vegetation.

Landscape and amenity

The common is well used by walkers, and judging by the quantities of rubbish left in laybys, for picnics.

Public Goods Assessment – Mynydd Maen etc. (Gwent CL25, 26, 27, 28)



Phase 1 habitat map and Google Earth imagery of Mynydd Maen etc. and adjacent areas

Basic data

Grid location: ST29 etc.

Apparent area (GIS-based): 1028.13 ha (LPIS net area: 1017.89 ha)

Registered pasture rights (BSCL): 14, 16, 9 and 11 respectively, some only for part of CL area. (Rightholders not necessarily different individuals between commons.)

BPS claims in mid 2010s: 8, 9, 5, 8 respectively

Approximate level of current active use: 4 active sheep graziers

Nature conservation

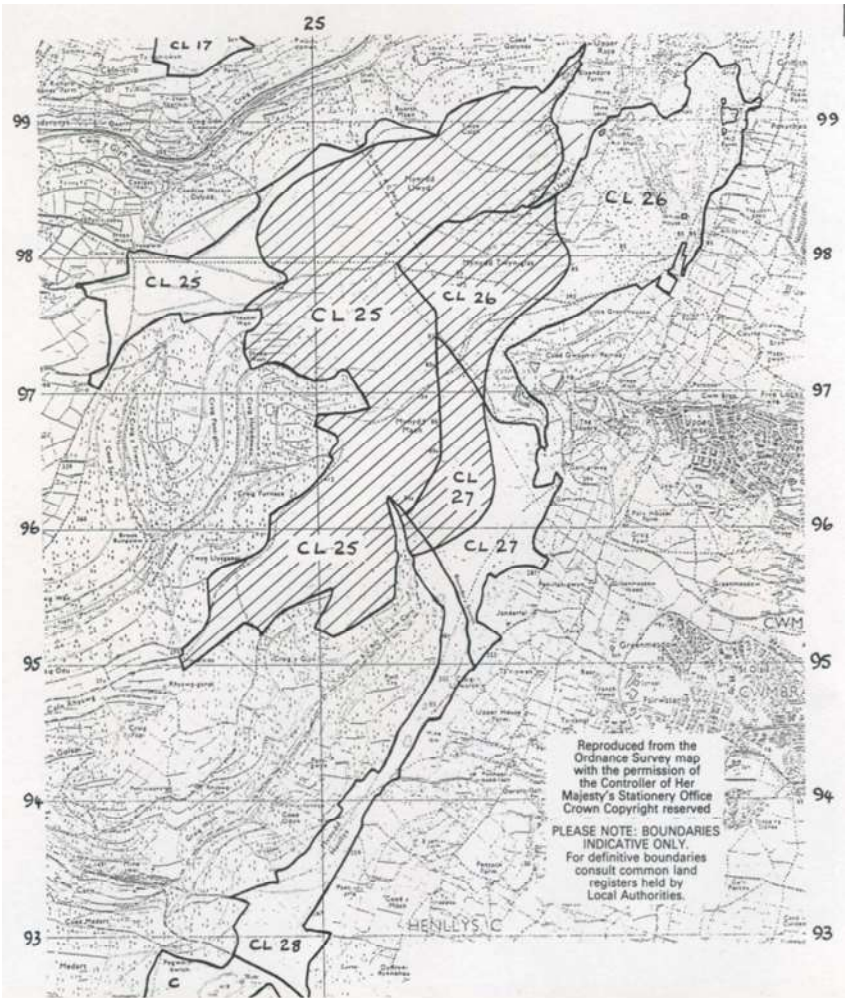
The CCW Field Unit assessed the area in the late 1980s for vegetation communities which met 'SSSI quality' standards, and this is reported in the BSCL account.

The main type of vegetation communities in the area that was considered to reach that standard is dry heath, with a number of sub-types, including a bilberry-crowberry community for which the eastern coalfield commons seem particularly significant in Wales.

Also within that area is some modified blanket bog – thought to be the last remnants of what was once a much larger extent of bog. Some of it is 'wet modified', which is the most favourable for restoration (there has been, and is ongoing, action to do so since BSCL was written).

Gwent Wildlife Trust has identified the pond and associated flushes in Cwm Lickey as being of SINC quality.

There is a small area of limestone grassland along the Mountain Road in the NE of the area.



Area considered by CCW Field Unit as being of SSSI quality in the late 1980s

The SE Wales Natural Resources Management Plan 2015 as quoted in the Mynydd Maen Commons Innovation Plan 2019, has the following relevant management objectives:

To restore heathland habitats to achieve the following:

- Improved current condition of heathland, making it more structurally diverse and suitable to support a range of species such as red grouse, lapwing and skylark, throughout all stages of their life cycles.
- Increased extent of heathland and greater connectivity between habitats
- Increased areas for livestock grazing to be used as part of ongoing management
- Change of livestock, with greater emphasis on cattle rather than sheep grazing
- Commoners given the skills, knowledge and accreditation to play a part in future heather management and contract work
- Increase economic viability of the Commons

To control the spread of bracken to achieve the following:

- Regeneration and improvement of heathland and grassland and associated species particularly red grouse, skylark and lapwing
- Improved landscape permeability and connectivity of priority habitats
- Reduced incidence of Louping Ill in sheep/red grouse due to reduced tick habitat

- Cattle re-introduced to inaccessible areas to reduce reliance on physical/mechanical/chemical control
- Enhanced economic viability of the Commons

To control and eradicate feral trees, aiming to achieve the following:

- Restoration of heathland and grassland habitats
- Improved landscape permeability and connectivity of priority habitats
- Increased populations of species associated with heathland and grassland habitats, particularly red grouse, skylark and lapwing

Re-wetting and restoration of the main peat bog on the commons

- Enhance the biodiversity value of peat bog as a habitat in its own right and for species such as red grouse, lapwing, and skylark
- Climate change regulation through carbon accumulation and storage and reversing the oxidization and release of carbon from dry degrading peat
- Water regulation through slowing of runoff and storage of rainfall
- Potential for provision of summer water for livestock
- Increase fire resilience on the Commons

Carbon storage and sequestration

The commons show a range of soil types. On the top of the ridge are mainly stagnopodzols – soils with a thick peaty layer above fairly well draining subsoil. On the bottom of the slopes and climbing up to meet the stagnopodzols are stagno-humic gleys – soils with a similar peaty upper horizon but poorly drained lower horizons. There are also better drained brown podzolic soils with a very shallow humus-rich upper layer, usually under bracken. There are limited areas of modified blanket peat and also some areas of 'colliery' spoil heaps of various ages, which are generally well drained and have very little organic content.

The peaty horizons of the stagno-humic gleys and stagnopodzols are a very significant store of carbon, albeit one to which sequestration is quite slow. These stores are particularly impacted by drainage (more so for stagno-humic gleys) and damage by fire (more likely for stagnpodzols except when the fires are particularly fierce).

Modified blanket bog is by definition one which whose sequestration performance is at very least sub-optimal; even though the BSCL noted that there was little active erosion, the peat is likely still to be being lost by oxidation by soil micro-organisms. Restoration of a high water table will slow this down even if it is not possible to re-establish an actively-growing blanket bog.

In the brown podzolics and skeletal soils of the spoil heaps, the soil carbon is more closely linked to the current vegetation and the products of its recent decay. The C store in the skeletal soils will be increasing as they mature, but their current immature nature is often connected to their biodiversity interest.

Fire risk management

NRW policy states no burning as a management tool on wet heath. However there is quite some danger of wildfire occurring on the commons due to

- The presence of high fuel land covers (Molinia and bracken in winter; mature dry heath all year)
- Anti-social behaviour linked to the easily accessed parts of the common from where fires can spread easily.

The impact of fires can be considered under the following headings:

- Threat to property. Properties are almost all downslope of the common, though in some cases near areas of high fuel load
- Disruption to road traffic – minimal - minor roads do occur on the common.
- Threat to habitats and species – potentially significant. Fire is not recommended as a management tool for wet heath, though the amount of damage varies considerably. On dry heath, fire is not necessarily damaging, but is not good practice as a tool of first resort. Modified blanket bog is likely to be severely damaged by fire due to the already dried out peat horizons.
- Threats to infrastructure. Damage by fire to the gas pipeline, high voltage pylons and associated infrastructure on the commons would be potentially significant.

Alongside the use of the results-based scorecard, a Fire Management Plan (FMP) for the commons should be drawn up. This FMP should describe how management would aim

- to reduce the incidence and scale of unplanned fires
- to safeguard the most vulnerable features from such fires
- to avoid the use of controlled fires for ongoing management purposes wherever possible
- to set out a programme of work needed to implement the Plan, drawing on a list of fundable non-productive investments

Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows.

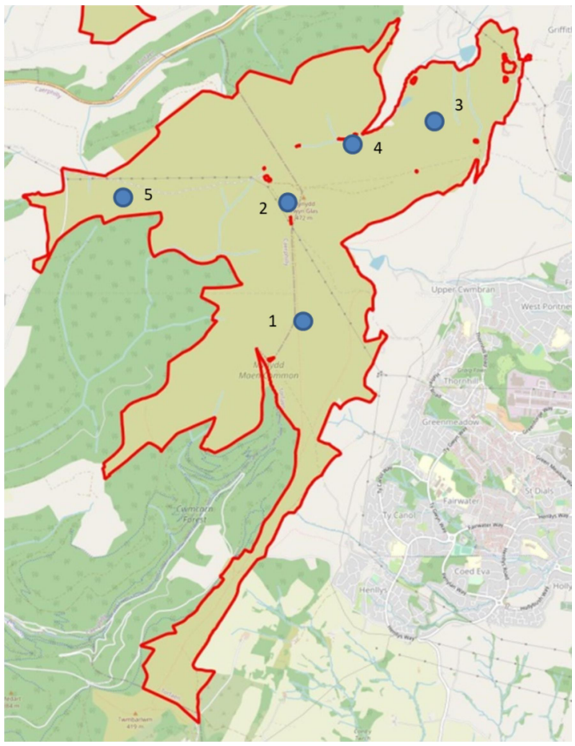
Water quality

We are not aware of any threat to water quality from the grazing management of the common

Archaeology

The following features are recorded on Coflein:

1) Remains of Lockheed Hudson
2) Braided trackways
3) Remains of rifle range
4) Triangular enclosure
5) Possible Bronze Age cairn



Landscape and amenity

The common is used extensively by walkers and other leisure users, and local roads pass through it, giving easy access.

Preliminary Field Assessment

Nature conservation

The most immediately outstanding features on Mynydd Maen are the heathlands, containing a diversity of up to 6 dwarf shrubs within close proximity. Other flowering species within the heaths are of lower diversity but and made up for on the coal heaps and on the narrow band of limestone around the eastern edge. Areas with water, such as Cwm Lickey also contain good biodiversity.

Some of the management practices put forward in the Commons Innovation Plan is being implemented but may need some fine tuning to achieve maximum gains e.g. cutting small patches of heather within a large area rather than mowing it uniformly short. Grazing management is generally good.

The project team feel that a reassessment of the focus on bracken management may be appropriate. Bracken is not necessarily the optimum land cover anywhere within the commons, but it does have some positive aspects, not least in regard to water flow management. Bracken management investment should, if publicly-funded, be clearly delivering better specifically-identified public goods outcomes, preferably ones which can henceforward be delivered through grazing management. Where it can be replaced with species-rich swards or heathland which can then be managed by grazing, there is a clear win, but it just yields more species-poor acid grasslands, where is the benefit to the taxpayer? There is a particular issue in the context of native trees and scrub. NRW is keen to see bracken develop into a coedcae-with-trees habitat on similar SSSI; mowing or

other bracken management operations which cut up regenerating trees or expose them to increased grazing may be counterproductive. The card is designed to promote the asking of such questions.

Carbon storage and sequestration

There is some localised disturbed soil caused by foot and off-roading traffic; otherwise maintenance of the gas pipeline and electricity pylons which traverse the common and pass through blanket bog and heathland pose the biggest risk for carbon loss.

The safeguarding of the carbon in the former blanket bogs is a particular priority. Some reprofiling has already occured, while ditch-blocking to raise water tables is planned. Both of these, when complete will significantly reduce oxidation rates. Oxidation is however unlikely to cease (not to speak of the reinitiation of sequestration) if the track and associated off-roading are not addressed. Note that the prevention of oxidation is a much higher priority for the net carbon balance than reinitiating sequestration; it may be that few areas can progress beyond a carbon neutral state, but this would be a major success.

Fire risk management

A Fire Management Plan which includes measures such as cutting and maintaining firebreaks to protect the most vulnerable features is essential.

Water flow regulation

There is good vegetation cover except along some paths and tracks, particularly those used by off-road motor bikes over blanket bog, which is outside the control of graziers. Bracken plays an important role in this public good and its delivery should be a consideration when contemplating efforts to reduce bracken cover.

Water quality

There do not seem to be any threats to water quality from grazing management but it is noted that some water on the eastern side in particular drains through and out of mine workings and spoil heaps; possible sources of contamination.

Archaeology

Further historic information on the commons is coming to light through the 2021 dig on Twmbarlwm organised by Cymdeithas Twmbarlwm, and research conducted by the Ancient Cwmbran Society.

Landscape and amenity

Well used by leisure seekers, with some accompanying damage to bog areas and on steep slopes by mountain and off-road bikers.

Public Goods Assessment – Pennard Cliffs and Burrows (West Glam. CL13)

Phase 1 habitat map and Google Earth image of Pennard Cliffs and Burrows and adjacent areas

Basic data

Grid location: SS58
Recorded area: 217.52ha LPIS gross area and 193.17ha LPIS net area
Registered pasture rights (BSCL): 46 rights
BPS claims in mid 2010s: 4
Approximate level of current active use: 1 active grazier grazing cattle
Not participating in Glastir.

Nature conservation

The western edge of the common falls into Penard (sic.) Valley SSSI, while the eastern half falls into the Pwll Du Head and Bishopston Valley SSSI; much of the latter is also part of the much larger Limestone Coast of South Wales SAC.

The features of significance in the designated sites are:

- Semi-natural dry calcareous grasslands and scrub (Pwll Du, Penard and SAC)
- Coastal invertebrates (Pwll Du and SAC)
- Hoary rockrose (Pwll Du and SAC)
- Dune grasslands and heaths (Penard) with Isle of Man cabbage southernmost locality

- A range of other maritime grasslands and maritime heath, including both short and taller plant communities and important bryophyte communities and saltmarsh (Pwll Du and Penard)
- Yellow whitlow-grass; nit grass; red hemp-nettle; golden samphire; rock sea-lavender; white horehound; ivy broomrape; spring cinquefoil (Pwll Du); wild asparagus (Penard)
- Chough is not listed as a feature of Community interest in this unit of the SAC, but is present and should be taken into consideration

The SSSI vision for Pwll Du is silent on bracken and scrub, but notes that some bare ground is desirable and that gorse should be present 'in patches'. In the management recommendations, the suggestion of 'light grazing' in the grazing section is somewhat undermined in the section on gorse, bracken and scrub, which states: *Because grazing has been too light in recent years, it may be necessary to remove some of the gorse and bracken that have developed in parts of the site, particularly at the eastern side. Once this has been done, the aim should be to keep further scrub development under control with a suitable level of grazing. Bracken, which can thrive after a fire, also needs to be controlled by cutting or rolling*. Other significant threats identified are invasive cotoneaster and stonecrop from gardens. The vision for Penard is similar, with bracken identified as a particular threat to wild asparagus on that SSSI.

Relevant guidance adapted from the SAC Management Plan includes:

Maritime grasslands and heaths; cliff and crevice vegetation

- Cliff and crevice vegetation occurs naturally on suitably exposed rocky ledges and crevices throughout the site. The variety of vegetation types reflecting the degree of exposure to maritime influences - including communities with thrift, rock and golden samphires, sea lavenders, sea-beet and sea plantain.
- Maritime Grassland present with the following plants common: thrift; spring squill and sea plantain. The maritime grasslands range from short open swards with occasional areas of bare ground to taller, more closed swards where Red Fescue forms tussocks and "mattresses". The more strongly maritime influenced grassland communities on this site, for the most part, occur on the exposed south and south westerly facing slopes.
- Elsewhere, in less exposed situations the grasslands show less maritime influence with species such as cowslips and bluebells occurring. The grasslands also support important populations of typical invertebrates such as ants and butterflies as well as insects associated with open soils, grass roots or dung such as various cranefly and beetle larvae.
- Maritime heath occurs in exposed locations as stands of low, wind-pruned heath dominated by ling and bell heather. Species such as spring squill, milkworts, pale dog violet and sedges are present in stands. This gives way to gorse-dominated dry heath (feature 3) in more sheltered areas.
- Populations of nationally rare and nationally scarce vascular and lower plant species, associated with cliff-crevice, maritime grassland and related calcareous grassland swards are maintained.

- Competitive species indicative of under-grazing, particularly cocksfoot, tor grass, bracken and western gorse are kept in check.
- Non-native plants such as Hottentot fig are absent or rare.

Good condition maritime grassland is characterised by vegetation where, within a 50cm radius:

- There is one or more of sea plantain; spring squill, red fescue and/or thrift
- The sward is <3cm in height
- Must be subject to sufficient grazing to halt succession.

Good condition maritime heath is characterised by vegetation where, within a 1m radius:

- At least 3 of the following are present: spring squill, thrift, sea plantain, buck's-horn plantain, kidney vetch, cat's ear, lesser bird's foot trefoil, common milkwort, heath milkwort, thyme, tormentil, saw-wort, dog violet, pale dog violet, sweet vernal grass, sedge spp., heath grass, heath spotted orchid, early hair-grass or Cladonia spp. of lichen
- Dwarf shrubs have a cover of 25-75%, with at least 2 species present
- Ulex species < 50% cover
- Indicators of negative change, non-native species and scrub or trees are absent
- Bare ground or early successional vegetation should occupy at least 400 cm2 (20x20cm) (1.25%), but not cover more than 25% of the sample.
- Must be subject to sufficient grazing to halt succession.

Grey dune vegetation

This is not a feature of Community interest within the SAC, but the SAC Management Plan guidance is relevant to the western areas of the common.

- The following plants will be common in a short, open sward: squinancywort, carline thistle, eyebrights, autumn gentian, fairy flax, bird's foot trefoil, mouse-eared hawkweed, buck's horn plantain, biting stonecrop, thyme, violet spp., pyramidal orchid
- Distinct patches of open, lichen-rich turf, supporting *Fulgensia fulgens* on *Trichosporum* moss will occur
- Alien species will be absent, and other negative indicator species (such as bracken) will be under control
- Sea Buckthorn will be absent
- Additional general quantified metrics: 30-70% of the sward comprises a species-rich short turf.

Species Rich dune grassland (=SD8):

- Six of the following species present (pass on five spp., if the vegetation height is 7 cms or less):

Asperula cyanchica	Carlina vulgaris,
Cerastium (not fontanum)	Euphrasia spp. (agg.),
Gentianella amarella	Linum catharticum,
Lotus corniculatus,	Pilosella officinarum,
Plantago coronopus	Thymus polytrichus

Viola spp.,

Bare sand/semi fixed dunes (= SD19 and/or CG7d):

- Bare sand >5% or moss and lichen cover >20% plus three of the following:

Arenaria,	Centuary or Blackstonia,
Cerastium (not fontanum),	Echium vulgare,
Erodium,	Euphorbia portlandica,
Fulgensia fulgens,	Sedum acre
Thymus polytrichus	Viola spp.
Anacamptis pyramidalis	

- Non-native or invasive species, including *Hippophae rhamnoides, Hypericum calycinum and Brachypodium pinnatum* are absent.
- Other negative indicators *Rubus* spp. (excluding *R.caesius), Clematis vitalba, Pinus* spp. saplings/seedlings, M*Ligustrum vulgare, Quercus ilex* saplings/seedlings, *Ulex* spp. no more than occasional;
- *Pteridium aquilinum* no more than occasional with a open/thin cover and height <50 cms.
- *Grazing upper limit*: The grazing pressure must not be so high as to break down the vegetation structure or lead to nutrient enrichment (indicated by increases in creeping thistles and/or nettles).
- *Grazing lower limit*: The fixed dune grassland must be subject to sufficient grazing to halt succession to scrub.

Carbon storage and sequestration

Large parts of the site are covered in thin or poorly-developed soils (on the limestone cliffs and sand respectively) and will contain relatively low amounts of carbon. These are examples of carbon storage being sacrificed for the sake of biodiversity.

The small area of saltmarsh will have significant carbon storage and sequestration, but these are unlikely to be threatened by any management or activity which is not in any event a breach of the SSSI regulations. The vegetation on the deeper soil areas further back from the cliff will contain a moderate amount of carbon in both living plants and in the soil profile. The control of bracken and scrub may have the effect of reducing the overall carbon store locally; this may be justified by the unusually high biodiversity interest.

Fire risk management

NRW has a policy of not allowing burning as management tool on maritime grasslands or heaths or on cliff vegetation. Fire risk is low on most of the site, but significant on the maritime heaths and, seasonally, in areas of bracken and possibly scrub. Fire risk management is enhanced by the control of western gorse and bracken and by appropriate grazing management of the other vegetation types.

Water flow regulation

Water flow regulation is not an issue on this coastal site.

Water quality
Other than the avoidance of significant pollution directly into the river, the water quality challenge is low on this site.

Archaeology
Many features are recorded on Coflein including caves, lime kilns, a promontary fort and flint finds.

Landscape and amenity
The common falls within the Gower AONB. The coast path goes through the common. There is a National Trust car park adjacent to the common. A significant area of the west of the common is used as a golf course while still being open to grazing. Many houses in the village of Southgate open directly onto the common. Part of the designated interest in Pwll Du SSSI is geological.

Preliminary Field Assessment

Nature conservation
This is a very varied common, with salt marsh, sand dunes, woodland and scrub, all in good condition albeit affected by the heavy foot traffic which comes along with being part of a popular visitor destination.

The golf course with its roughs (which include dune heath) and greens present some opportunities for nature conservation but changes to management are unlikely.

The main part of Pennard common consists of coastal clifftop grassland and scrub, which falls into 3 zones

1. A mostly narrow band of limestone grassland with exposed rock and shallow soil. This is identifiable by the high proportion of forb leaves in the sward but actual flowers were rare at the time of visit due to lateness of season and exposure to weather coming off the sea. Numerous signs of rabbits were noted here in the form of very tight grazing, droppings and digging. It was also observed that cattle have preferred lying places in this zone, leading to compaction and nutrient enrichment. Suggested management improvements would include restricting grazing to some extent and preventing the cattle from lying on the area, but the size of the rabbit population may present a continuing problem. The short turf is a feeding site for choughs which nest in the area. On the seaward side there are large areas of grasslands in places, albeit steep; structure is often rather rank and in a number of locations scrub, including cotoneaster, is spreading. The slope of some areas is moderate enough for some scrub control to have been carried out in the past – the benefits are still obvious, but the gains will be lost very soon as the areas have not proved maintainable through grazing.
2. Species-poor fairly short mostly non-calcareous grassland through which the coastal path and other more local paths run. Either side of the actual path is impacted by visitors and their dogs. There is a lot of compaction, nutrient enrichment and evidence of dog faeces. The sward composition includes Yorkshire fog, clover, ragwort, creeping buttercup and other agricultural weeds. It is difficult to see how this could be managed differently, except mechanically, and for biosecurity reasons grazing this zone should probably not be

encouraged. Probably not a priority for active management except that there is some encroachment of scrub, bracken and bramble from the third zone.

3. The larger part of the common outside the first two zones is very much dominated by bracken, brambles, Western gorse and hawthorn/blackthorn scrub. There is some plant diversity underneath where the taller vegetation is not too dense. Some has been topped in the recent past and mechanical management is probably the only feasible method of preventing it increasing – where these areas abut zone 2, the benefit for species-richness is sometimes still evident despite regrowth. Much of the area is inaccessible but if it was topped or mown where possible, this would allow some species in the ground layer to increase; provide more open areas for wider biodiversity e.g. choughs; relieve grazing pressure on the cliff edge limestone; and provide more safe areas for livestock away from the path and the cliff edge. Areas of Pwll Du head have been topped in recent years and the sward there shows a good diversity of plants.

Carbon storage and sequestration

The shallow soils and low organic matter content of much of the soil means that this site is less important for carbon storage than many. The taller vegetation including trees and scrub may be reduced to benefit biodiversity which would lead to a small net loss of carbon.

Fire risk management

The greatest fire risk is where western gorse, bracken, trees and scrub are thickest. Most of these areas are close to houses and property. Mechanical control to reduce fuel load and create firebreaks would also have other benefits for biodiversity and should be encouraged.

Water flow regulation

Not an issue

Water quality

Low risk

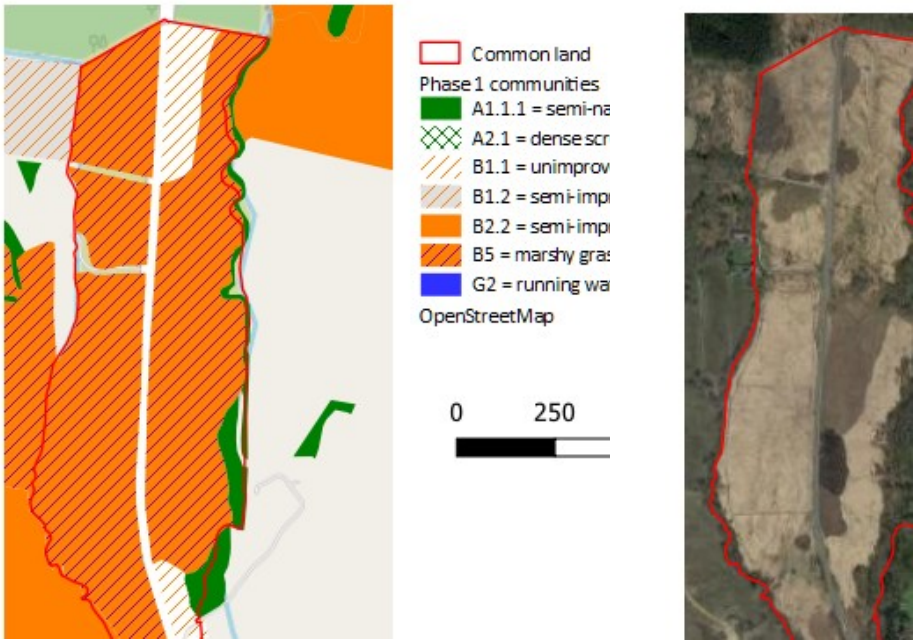
Archaeology

Much of the archaeology is either not visible or inaccessible so there is little risk of damage except where it occurs on the more heavily used areas.

Landscape and amenity

The coast path and other routes running through the common, together with the large car park, amenities of Southgate and proximity of Three Cliffs Bay mean that this common is heavily used by members of the public, dog walkers, horse and bike riders, and of course golfers on the golf course. The main issues arising are in the context of managing cattle in a suburban environment popular with tourists; NoFence collars would seem to have a huge potential on Pennard.

Public Goods Assessment – Rhos (West Glam. CL71)



Phase 1 habitat map and Google Map image of Rhos common and adjacent areas

Basic data

Grid location: SN70
Apparent area (GIS-based): 28.25 ha. LPIS gross area: 28.22 ha; net area 26.81 ha
Registered pasture rights (BSCL): 5 provisional
BPS claims in mid 2010s: 1
Approximate level of current active use: Very little grazing
Level of Glastir participation, if any: Glastir Advanced

Nature conservation

The common is not designated as a SSSI, but is a local Site of Importance for Nature Conservation (SINC).

The common is dominated by Molinia marshy grassland and is mapped as marshy grassland in the national online Phase 1 mapping. However the vegetation is mapped as a mix of marshy grassland and wet heath in the BSCL (1989). Small areas of scrub are present. The overall vision is therefore probably to control the vigour of the Molinia by appropriate grazing, encouraging the wet heathy elements and providing more of a mosaic in what might be described as a Molinia meadow mosaic (see below). Marsh fritillary has been recorded and requires some degree of grazing to provide a mix of shorter, more open vegetation and tussocky shelter (see below).

Vision for Molinia meadow:

- On the wettest ground, marshy grassland will be found; it will often be found growing in a mosaic with wet heath.

- The marshy grassland will be dominated by short- to medium-height tussocks of purple moor grass. The tussocks will provide little sheltered areas where flowers grow and help to provide some shelter for the marsh fritillary butterfly.
- The tussocks are uneven in size, but there will always be young purple moor grass coming though each spring. Only a few of the tussocks will have old and 'rank' purple moor grass growing on them.
- Devil's bit scabious, the food plant for the larvae of marsh fritillary butterflies will be found commonly growing amongst the purple moor grass. Whorled caraway and soft leaved sedge are both scarce plants that will be commonly found in the marshy grassland areas.
- Often heathy plants like cross-leaved heath and gorse will be found in marshy grassland – this is a transition area between the two habitats

Suitable habitat for the marsh fritillary is:

- Stands of grassland where devil's bit scabious is present and where scrub more than 1 metre tall covers no more than 10% of the stands
- Grassland where the vegetation height is 10-20 cm, with abundant purple moor-grass Molinia caerulea, frequent "large-leaved" devil's-bit scabious Succisa pratensis suitable for marsh fritillaries to lay their eggs and only occasional scrub. In peak years, a density of 200 larval webs per hectare of optimal habitat will be found across the site.
- The marshy grassland will be well sheltered by hedgerows and mature trees.

Carbon storage and sequestration

The common is almost entirely underlain by stagno-humic gley soils – soils with a poorly drained clayey subsoil and a thick saturated peaty upper layer. This peaty layer is a significant store of carbon and management should avoid its damage by erosion or drying out. The vegetation on top of it will sequester and add carbon to it relatively slowly. Molinia in particular, being a deciduous grass, produces large quantities of dead material every year and poses a serious fire hazard, which can in the most serious cases impact on the overall carbon store. The control of fire risk by grazing thus has a beneficial knock-on effect on the integrity of the soil carbon store.

Fire risk management

There is a high likelihood of unplanned fire on Rhos common due to:

- High fuel loads seasonally in the form of Molinia
- The main road running along the central axis of the common and the proximity of urban centres

Fires on the Rhos have the potential to be high impact because of:

- The large area of wet heath habitats where NRW advises that unplanned burning goes against the maintenance and achievement of favourable condition
- The effect of burning on road traffic across the common
- The hydrophobic effect of burning on soils can reduce the infiltration capacity of the common, while the reduction in vegetation structure can reduce surface flow travel times, both of which reduce the capacity of land to reduce flood peaks

NRW recommends that burning is not used as a management tool on wet heath. All non-burning methods should be used first of all to try to reinstate grazing and thus to re-impose control on the Molinia element of the sward.

Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows. Though its soils are not particularly good for the infiltration of rainwater, Rhos is not steeply sloping and is covered by vegetation with a good structure for slowing down surface flows.

Water quality

There are no obvious water quality challenges.

Archaeology

None recorded

Landscape and amenity

There seems to be little public use.

Preliminary Field Assessment

Nature conservation

Molinia is very dominant over most of the common. There is also an intermix of cross-leaved heath, heather, deergrass and in places some fen meadow species and trees. The majority is very lightly grazed and has been burned repeatedly in the past, leading to an increase in Molinia and a decrease in the amount of heathland and flowering species. Light grazing with cattle has been reintroduced in 2021, with the help of NoFence collars to keep them away from the fast-moving traffic on the road running through the middle of the common. This is should produce a more varied structure and allow heathers and more delicate flowering species to spread, while not being heavy enough to decrease the amount of Devil's bit scabious and associated tussocks, which benefit marsh fritillary butterflies. This is being done under the guidance of Butterfly Conservation, who found marsh fritillary caterpillars on the site in 2021.

Some bramble is spreading and Japanese knotweed is present in one block. Controlling this kind of vegetation should be a priority. Anthills are present throughout but many have been burnt over recent years.

Carbon storage and sequestration

Most of the soils are very stable and well covered by vegetation apart from one burnt area towards the NW corner which shows damage to soil and runoff channels going to the nearby stream bordering the common. Fires have been an issue in the recent past with visible damage to trees widespread. Increased grazing will hopefully reduce fuel load and lessen the potential for carbon loss in this way.

Fire risk management
Increased grazing should reduce fuel load, and a fire management plan which makes use of the existing tracks and paths with subdivide the common would reduce fire risk.

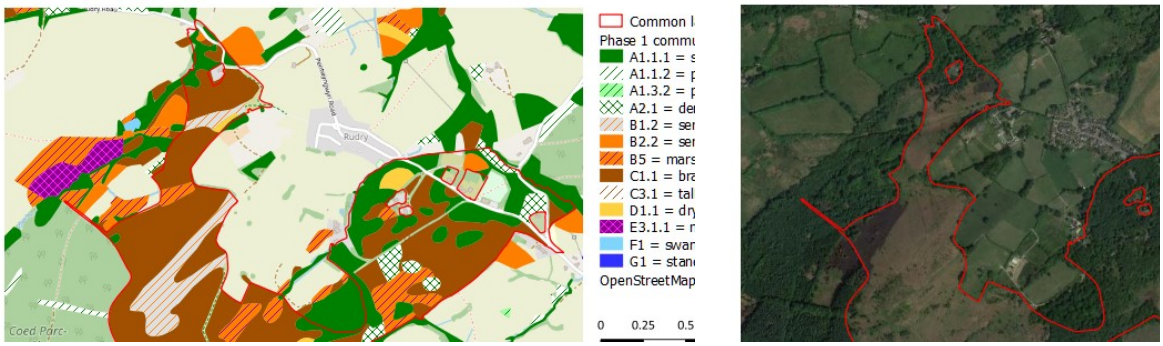
Water flow regulation
There are ditches alongside the road and tracks, and streams bordering both of the long sides of the common, but the surrounding areas are well vegetated. With the exception of the burnt area mentioned under Carbon Storage, there are no particular challenges..

Water quality
No challenges apart from runoff from the burnt area.

Archaeology
None recorded

Landscape and amenity
Little public use although rubbish is strewn along the road verges and fires have historically started from near the roadside.

Public Goods Assessment – Rudry common (Mid Glam. CL42)



Phase 1 habitat map of Rudry common and adjacent areas

Basic data

Grid location: ST18 etc.

Apparent area (GIS-based): 88.4 ha (LPIS net area: 87.5 ha)

Registered pasture rights (BSCL): 10 pending reconstitution

BPS claims in mid 2010s: 2

Approximate level of current active use: None

Nature conservation

Even at the time of the BSCL (1990), the common was largely bracken covered, with scrub already encroaching. Around 10% of the common was marshy grassland (tussocky Molinia with some typical marshy species) and another 10% was dry acid grassland, with small areas of dry heath. Brambles, recorded even then as being scattered in the bracken, seems to have spread further in the interim.

Nightjars are one of several bird species noted on Rudry, including in 2021. Greater horseshoe bats are thought to forage here from nearby recorded roosts

The common is gradually transitioning into woodland, but it has potential as a lightly grazed wood pasture in which the bracken component is much reduced and the marshy grassland and heathy communities are in better condition, creating a more unusual habitat in the region and without prejudicing the existing suite of flora and fauna.

Carbon storage and sequestration

Compared to an acid grassland, the common today has a much larger carbon store, and is actively sequestering carbon both into standing timber and into the soil through the incorporation of bracken roots and litter. On the other hand, the above ground carbon store is extremely vulnerable to re-oxidation by wildfire, given the huge volume of fuel which would burn easily in the right conditions.

It can be argued that a wood pasture habitat, while sequestering a lower volume of carbon in most years, may be a better way of sequestering carbon over the medium term, with the carbon, once stored, being much less vulnerable to re-oxidation.

Fire risk management

The chances of a wildfire are very high at present, due to the high fuel load. SWFRS have undertaken some fire break work mostly along the paths, but the area is still only broken into a small number of very large bracken-dominated blocks.

The impacts of wildfire on this common include:

- Release of a significant amount of sequestered carbon
- Spread of fire into adjacent properties – some residential, but especially forestry plantations
- Limited impacts on traffic on the adjacent minor roads

Alongside the use of the results-based scorecard, a Fire Management Plan (FMP) for Rudry should be drawn up. This FMP should describe how management would aim

- to reduce the incidence and scale of unplanned fires
- to safeguard the most vulnerable features from such fires
- to avoid the use of controlled fires for ongoing management purposes wherever possible
- to set out a programme of work needed to implement the Plan, drawing on a list of fundable non-productive investments

Water flow regulation

Good flow regulation is achieved by maximising the proportion of rainfall which infiltrates into the soil and by slowing down the speed of any surface water flows. Bracken slopes and the soils found on them are some of the best for achieving infiltration. Any change away from bracken should ensure that most of the vegetation on the common is well-structured if water flow regulation is to be safeguarded.

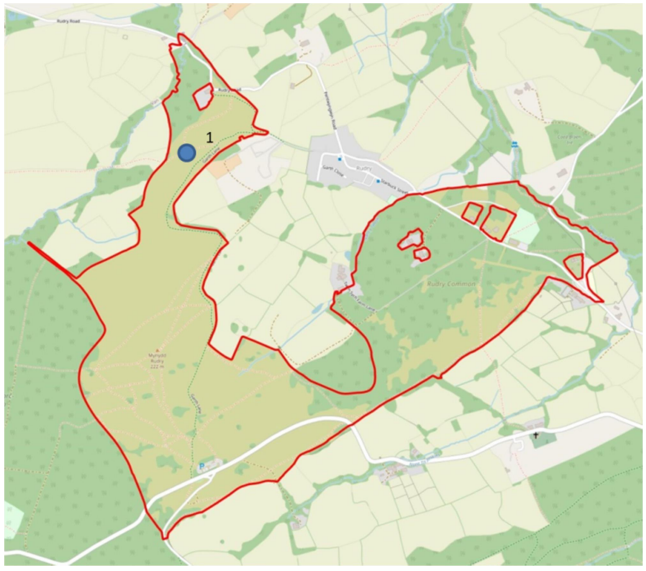
Water quality

Water quality issues are not significant on the common.

Archaeology

The following feature is recorded on Coflein:

1) Ruins of farmstead



There are also a number of bell pits and associated spoil heaps (historical small scale mining operations) scattered throughout the eastern half of the common.

Landscape and amenity

There are some well-used paths on the common and there is a dedicated car park.

Preliminary Field Assessment

Nature conservation

Assessments were carried out from, or close to, paths because away from paths the bracken & bramble is too dense, and there are numerous concealed hazards in the form of bell pits. The majority of the site is dominated by large areas of dense bracken and scrub and older trees – trees mainly birch, oak, rowan and some willow. There are some more open, species-rich areas, notably heath on Mynydd Rudry, and patches of marshy grassland.

Path edges contained a good variety of flowering plants: tormentil, cat's-ear, willow-herbs, common and ribwort plantain, heath bedstraw, knapweed, meadow sweet, white clover, red clover, sheeps sorrel, lesser stitchwort, dandelion, buttercup (meadow and creeping), foxglove, raspberry, bramble, hawkweed, st john's wort, ragwort, marsh thistle, speedwell, birdsfoot trefoil, honeysuckle, common thistle, heather, pineapple weed, wild carrot, black medic, silver weed, sow thistle, hemp agrimony, bindweed, wild clematis, ground elder, wild strawberry, violet, angelica, hogweed, bugle, vetch spp.

Much of the site is arguably exhibiting good ecological function as regards succession to woodland, particularly to the south of the road where the majority of the trees appear <30 years old. At least some of the mature woodland at the eastern end is Ancient Woodland. The common also attracts a variety of birds.

The issue is whether the public good is best served by the whole common going to dense woodland and, in the short to medium term, the danger of wildfire to both the common and adjoining properties, including commerical timber plantations. We see well-managed wood pasture as an extremely rare and valuable habitat, one which is compatible with the whole range of public goods in general, which will be conducive to fire risk reduction and management and which will safeguard the existing suite of species, some of which are rare or declining both locally and nationally.

In view of the practical difficulties of controlling bracken and brambles, and in re-establishing grazing; transition to wood pasture, with active management well-integrated into a fire management plan and working out from the small areas of species rich habitat may be a good way forward.

Carbon storage and sequestration

As per the desk-based assessment.

Fire risk management
A Fire Risk Management Plan is definitely needed. SWFRS are currently engaging proactively with the common and its commoners.

Water flow regulation
No issues

Water quality
No apparent challenge to water quality

Archaeology
The bell pits and other features on the common are known about locally but not recorded on Coflein etc.

Landscape and amenity
The paths on Rudry are well used by leisure users and dog walkers, possibly because much of the common is overgrown and inaccessible. An unofficial downhill mountain bike track has been created in the middle of the common but overall impact is light.