

The Brecon Beacons National Park: a good place for Glastir Sustainable Land Management Scheme



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Executive summary

1. This report sets out the advantages to the Welsh Assembly Government from maximising the deployment of the Glastir Higher Level Scheme within the Brecon Beacons National Park. It is presented in two parts. Part one explains:
 - The strategic importance of the Brecon Beacons National Park to Glastir in terms of potential:
 - o Area contribution to Glastir
 - o Employment contribution to Glastir
 - o Biodiversity contribution to Glastir
 - o Designated sites contribution to Glastir
 - o Climate change vulnerability of the Brecon Beacons National Park
 - o Catchment management potential within the Brecon Beacons National Park and Glastir
 - Other habitats within the Brecon Beacons National Park of importance to Glastir
 - The need for additional information on organic soils to inform Glastir
 - A new business model for deploying Glastir within the Brecon Beacons National Park
 - The Green Valleys Project as a social enterprise model for Glastir.

Part two provides examples of the project opportunities across the Brecon Beacons National Park for working in peat-based, carbon-rich and organo-mineral catchments within the Park. These provide case studies by which the public effectiveness of Glastir might be evaluated. The total estimated area of land covered by these case studies is at least 14,000ha.

2. Wales' National Parks comprise 20% of Wales by area and the Brecon Beacons National Park comprises about 6.7% and the uplands there about 4% of Wales by area.
3. The Brecon Beacons National Park includes 3 of Wales' 4 contiguous upland commons of over 4000ha each. At least 34.6% of the Brecon Beacons National Park is in public or charitable ownership, providing a strategically placed, public facing, citizen-centred deployment of Glastir on a large scale. The Brecon Beacons National Park Authority owns 14.3% of the Park and one of Wales' largest upland Tir Gofal schemes operates within the Park on the Cnewr Estate.
4. Under the UK Climate Impacts Projections 2009, the Brecon Beacons National Park is uniquely affected by a wide range of likely temperature and precipitation changes.
5. To underline its strategic location, the Brecon Beacons National Park affects 10 unitary authority areas, falls within 2 River Basin districts and uniquely is included in 3 of the Wales Spatial Plan Area Strategies, therefore providing a hub for the deployment of Glastir in Wales.
6. Strategic objectives within the final draft Brecon Beacons National Park Management Plan that will support the deployment of Glastir in the Park are summarised in the report. The National Park Management Plan emphasises the important role of landscape management in achieving carbon conservation and sequestration.
7. Deployment of Glastir within the Brecon Beacons National Park will help to achieve priorities set out in the Wales Environment Strategy, One Wales One Planet and the Climate Change Strategy. A range of upland habitat and climate change focussed projects are achievable across the Brecon Beacons National Park; these are described within Part two of this report.

8. Wales' National Parks provide 12,000 jobs, generate annual income of £177 million and contribute £205 million to annual GDP. Of this, the Brecon Beacons National Park provides 3000 jobs, contributes £49m of annual income and £59m of annual GDP. 10% of all environmental employment in Wales is within the National Parks although the per capita ecological footprint, in common with other sparsely populated and remote parts of Wales, is worst within the National Parks.
9. The Wales Environment Minister has stressed the importance of National Parks living up to the Welsh Assembly Government's 2007 policy statement, helping to shape and lead rural policy and practice and using integrated land management as a principal means of responding to climate change.
10. Wales' National Parks provide the country with an early warning system of the impacts of climate change; they are barometers of change and provide test beds for rural renewal.
11. The Brecon Beacons National Park includes a long list of habitats of principal importance to Wales, though some of these, of critical and strategic importance to ecosystem service provision in south Wales, are in ecologically unfavourable condition. The Brecon Beacons National Park includes 64 biological SSSIs. 55% of these are in ecologically unfavourable condition.
12. Strategically, the Brecon Beacons National Park is the source of more than 25 rivers and streams affecting south Wales. It also includes many peat-forming and water storing wetlands, which need to be restored to provide long term benefits. Drinking water for the Valleys and south Wales is supplied from the reservoirs and catchments within the Brecon Beacons National Park, so strategic investment in catchment management in the Park is essential, to provide ecosystem services and lasting public benefits.
13. The Brecon Beacons National Park includes areas of deep peat and degraded bog that are not recognised within strategic reports such as the 2008 ECOSSE report. Therefore buffer zones around the Glastir Higher Level target areas could be included to help offset this shortcoming.
14. The report sets out a useful way of deploying Glastir Higher Level Scheme funds, combining large, landscape-scale projects with investment loans to smaller, start up projects which can attract additional external funding and commercial support. These would create a self-sustaining market for integrated land management enterprises that provide public benefits, improve the market quality of livestock outputs and would help to re-circulate Glastir funds rather than see them spent in just a single purchase transaction.
15. The Green Valleys Project is described, providing an example of small scale investment achieving very large and repeatable public benefits. The project serves as a repeatable model for aspects of Glastir and RDP funding more generally.

PART ONE

The strategic area contribution of the Brecon Beacons National Park to Glastir

Wales' National Parks are custom-designed to deliver Wales' public benefits through Glastir. Glastir objectives fit well with the statutory purposes and duty of National Parks and with the Wales Assembly Government's 2007 National Parks Policy Statement:

"They are places that experiment with new approaches in sustainable development and environmental conservation, providing exemplars of best practice for wider Wales, and helping to shape and lead future rural policy and practice."

In other words, they are test beds where the Welsh Assembly Government can develop rural responses to the changes occurring.

In 2009 the Environment Minister Jane Davidson AM stressed to the Welsh NPAs the importance of leading the rural response to mitigating and adapting to the effects of climate change, through playing a lead role in the implementation of the Wales Environment Strategy and helping to fulfil annual 3% GHG reduction targets under One Wales One Planet. For Wales' National Parks, a principal means of achieving this will be through integrated land management underpinned by strong support via the RDP and Glastir.

Helping organisations, businesses and individuals in the Brecon Beacons National Park to achieve this is consistent with the Welsh Assembly Government's duty under Section 62 of the 1995 Environment Act (amending Section 11 of the 1949 National Parks and Access to the Countryside Act) to have regard to the purposes of conserving and enhancing the natural beauty, wildlife and cultural heritage of the National Park.

Wales' National Parks comprise 20% of Wales by area. Situated above the Heads of the Valleys, the Brecon Beacons National Park is of strategic importance to south Wales as a water supply catchment. The Park comprises 520 square miles or 1346km², about 6.7% of Wales by area. The uplands here comprise about 60% of the Brecon Beacons National Park or about 4% of Wales by area (*Figure 1*). They include some of the largest areas of contiguous, uninterrupted common land in Wales, including 3 of Wales' 4 contiguous commons of over 4000 hectares each (*Figure 2*).

In total, at least 34.6% of the National Park is in public or charitable ownership (*Figure 3*); with large sections of this in the carbon- and organo-mineral-rich uplands (*Figure 1*). There are also several large, private estate owners, anxious to find new ways to keep their land profitable, for example through hydro-electricity generation, biodiversity conservation and other ecosystem services. All of these organisations and landowners offer the option of a public facing, citizen-centred partnership that can assist the Welsh Assembly Government to invest Glastir wisely over a large upland area of Wales.

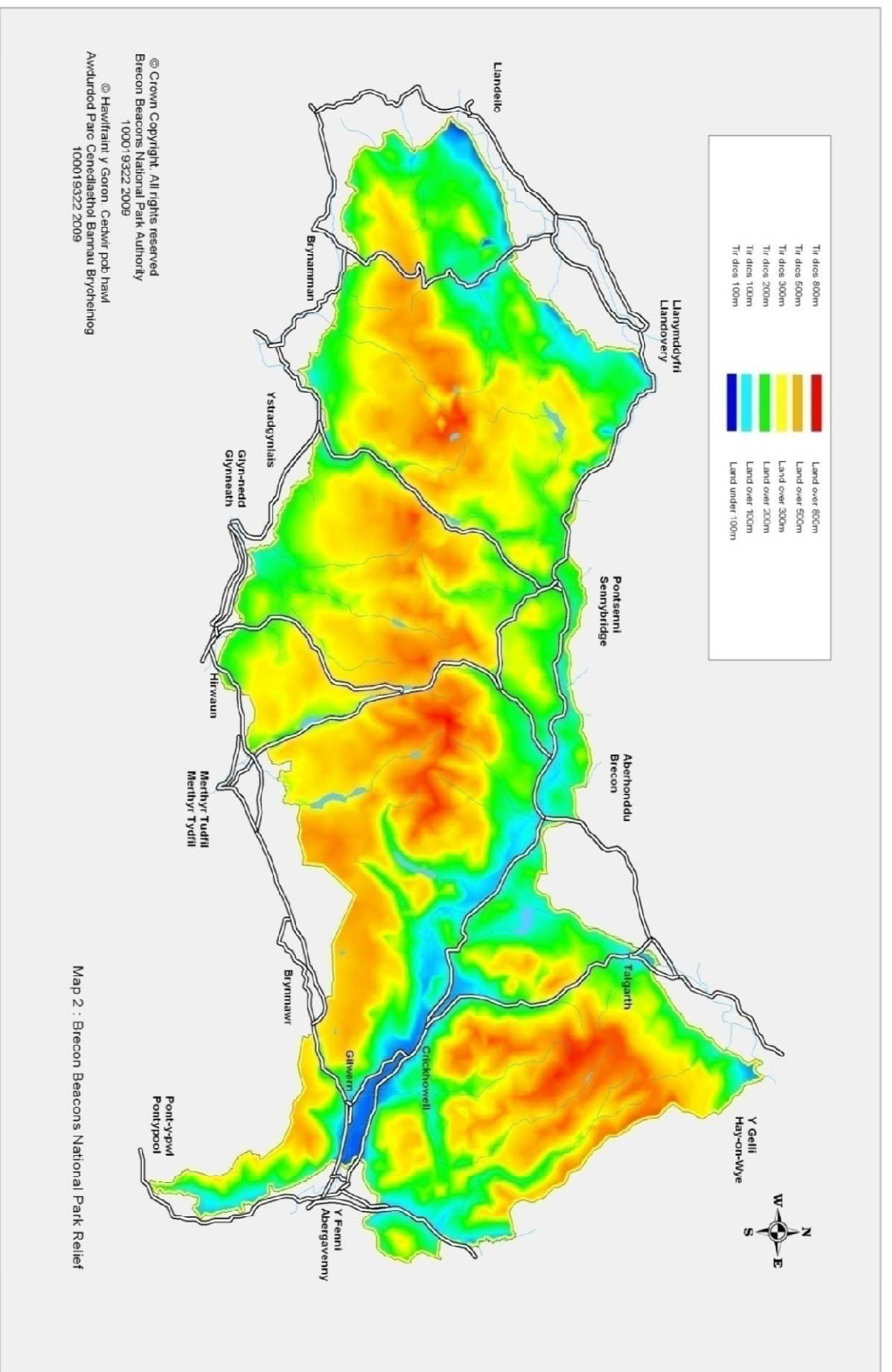


Figure 1

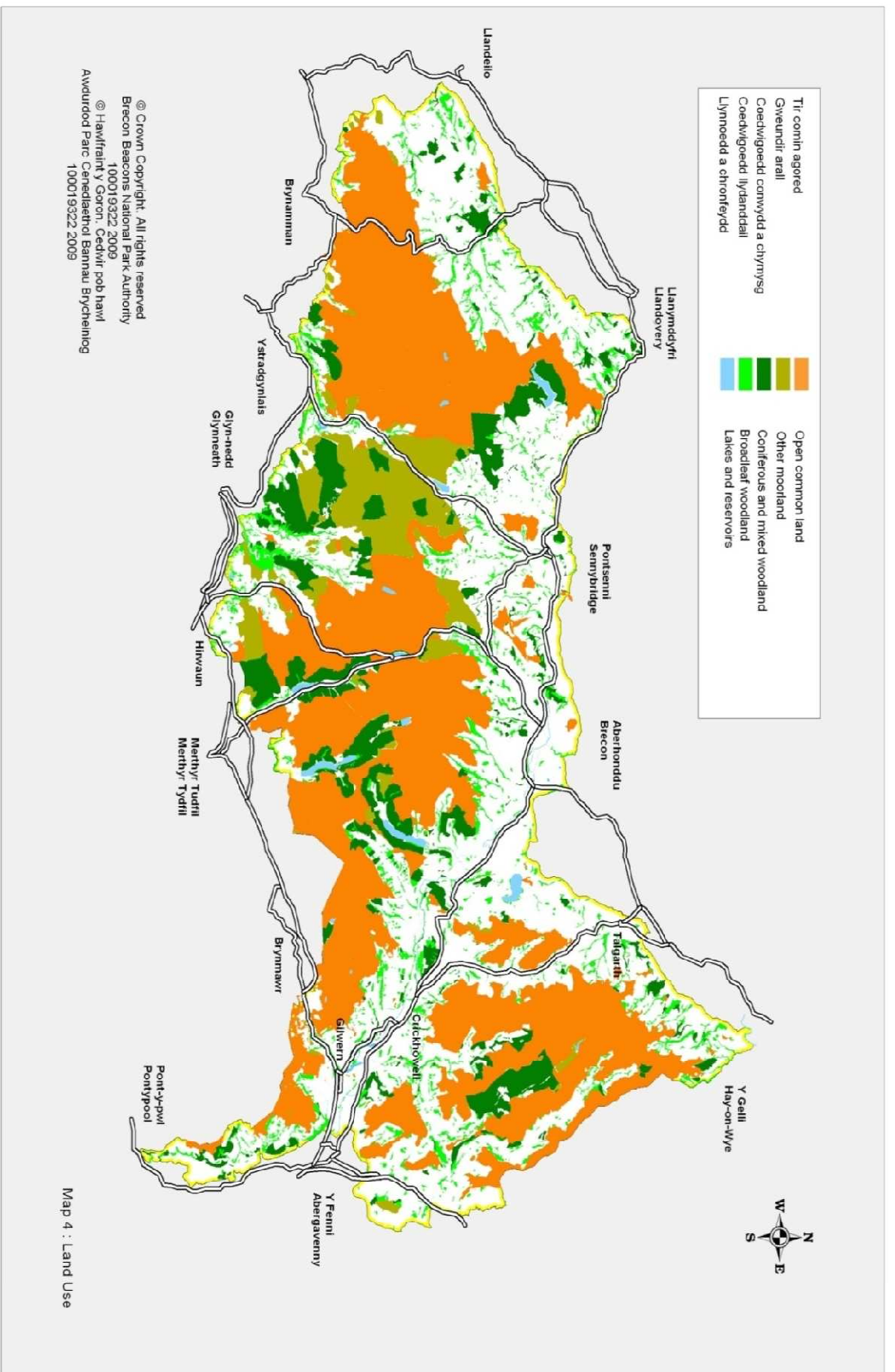


Figure 2

All of the commoners on the larger commons in the Brecon Beacons National Park are represented by active associations, some of which would be large enough to fulfil the role of Commons Councils under the 2006 Commons (Wales) Act.

The Brecon Beacons National Park Authority, owning 14.3% of the Park, is the single largest landowner in the Brecon Beacons National Park and additionally manages a large upland holding on behalf of one of the private estate owners. In addition, the Cnewr Estate within the National Park is one of the largest upland farms in Wales and is currently running one of the largest upland Tir Gofal schemes in Wales too. The Cnewr Estate is adjacent to the areas of contiguous upland common in public ownership.

Figure 3

Landowner	Area owned (hectares)	% of the Park
Countryside Council for Wales	1049	0.8
Dŵr Cymru Welsh Water	5197	3.9
Forestry Commission land*	6401	4.8
Forestry Commission forests**	9622	7.1
National Park Authority	19791	14.3
National Trust	4942	3.7
Total area of Park	134600	100

* excludes land on long lease from Dŵr Cymru Welsh Water

** includes land on long lease from Dŵr Cymru Welsh Water
State of the Park Report 2006

The Brecon Beacons National Park Authority, through its function as a land manager and advisor, local planning authority, access authority and entrepreneur for sustainable projects, education and understanding, provides the essential synergy and local knowledge required to deliver Glastir outcomes.

The Brecon Beacons National Park straddles 7 other unitary authority boundaries and just touches 2 others. It also falls within 3 Wales Spatial Plan Strategy Areas and is of strategic importance to water supplies in south Wales. By focussing Glastir here, the Welsh Assembly Government can provide a strategic hub of Glastir activity within the 10 unitary authority areas involved, within the Brecon Beacons National Park. This would also assist with other RDP activities under Axes 3 and 4. It would be underpinned by the unifying and consistent approach to Protected Area management provided by the Brecon Beacons National Park and the National Park Management Plan.

Like the National Park Management Plan, the Brecon Beacons National Park Authority's Local Development Plan has undergone regulatory assessments through Strategic Environmental Assessment and Habitats Regulations Assessments. Policy issues papers are being prepared for mitigating and adapting to climate change, community development including new community woodlands, sustainable transport, renewable energy including hydro-electricity and anaerobic digestion, agriculture and on-farm

water conservation. These planning-related matters are relevant to and vital for the integration of Glastir outputs, the outcomes of which will be more sustainable and integrated rural lives. These are part and parcel of National Park Management Planning and add together to provide a bigger showcase for Glastir. Therefore the Welsh Assembly Government can achieve significant impact by investing Glastir here.

The final draft of the National Park Management Plan is available via: <http://www.breconbeacons.org/the-authority/planning/strategy-and-policy/npmp/draft-managment-plans-1> and Appendix 1 of this report summarises the Strategic Objectives therein for renewable energy, farming, uplands, woodlands, water resources and soils, which will be adopted with the approval of the Wales Assembly Government in March 2010.

Employment contribution of the Brecon Beacons National Park to Glastir

10% of all employment in the Welsh environment sector is within National Parks and the rate of environmental job employment within National Parks is double that of elsewhere in Wales (Valuing Our Environment 2006). There is great potential within the Brecon Beacons National Park for Glastir to support projects that create the right conditions to roll out the Green Jobs Strategy and to support the Department for Work and Pensions' Future Jobs programme, which is already in development in the Brecon Beacons National Park Authority.

Conversely, together with other remote rural locations in Wales, the per capita ecological footprint is highest, i.e., worst, in Wales' National Parks. Measured as global hectares per capita, the biological ecological footprint for Wales was 5.25 in 2005 (Dawkins et al. 2008). It ranged from 5.3 - 5.46 in the Snowdonia and the Brecon Beacons NPs to 5.18 - 5.29 in the Pembrokeshire Coast NP. Significant investment must be made to reduce the landscape ecological footprint. There is much employment scope to help reverse this situation and landscape management can also help to reduce footprints.

Biodiversity contribution of the Brecon Beacons National Park to Glastir

Collectively, Wales' National Parks include the country's highest and lowest, wettest and driest, warmest and coldest places, and examples of all of Wales' habitats of principal importance. In the Brecon Beacons National Park, the habitats of principal importance include:

<i>Traditional orchards</i>	<i>Upland heathland</i>
<i>Wood pasture & parkland</i>	<i>Upland flushes, fens and swamps</i>
<i>Upland oak woodland</i>	<i>Lowland fens</i>
<i>Lowland beech and yew woodland</i>	<i>Purple moor grass and rush pastures</i>
<i>Upland mixed ash woodland</i>	<i>Reed beds</i>
<i>Wet woodland</i>	<i>Lowland raised bog</i>
<i>Lowland mixed deciduous woodland</i>	<i>Blanket bog</i>
<i>Hedgerows</i>	<i>Rivers</i>
<i>Arable field margins</i>	<i>Ponds</i>
<i>Floodplain grazing marsh</i>	<i>Canal</i>
<i>Lowland meadows</i>	<i>Eutrophic standing waters</i>
<i>Lowland calcareous grassland</i>	<i>Aquifer-fed naturally fluctuating water bodies</i>
<i>Upland calcareous grassland</i>	<i>Inland rock outcrop and scree habitats</i>
<i>Lowland dry acid grassland</i>	<i>Open mosaic habitats on previously developed land</i>
<i>Lowland heathland</i>	<i>Limestone pavement.</i>

Designated sites contribution of the Brecon Beacons National Park to Glastir

There are 64 biological SSSIs covering 26047ha, 15% of the Park area. Between them these have a total of 82 different biological features of importance.

55% of the Park's biological SSSIs are in an ecologically unfavourable conservation status (CCW 2006, Brecon Beacons National Park State of the Park Report). These include upland peat-rich SSSIs such as the Black Mountains SSSI, Blorengge SSSI, Brecon Beacons SAC, Usk Bat Sites SAC and Mynydd Du SSSI, all on contiguous common land. They are located throughout the National Park (Figure 4), presenting different opportunities and challenges.

The poor ecological status of these SSSIs, SACs and the wider upland and riverine landscape in the Brecon Beacons National Park are the result of a variety of environmental conditions, including:

- Historic air pollution and acid rain
- Ongoing nitrate deposition to the uplands
- Oxidation and physical damage of moorland peat and organic soils, caused by overgrazing, erosion, soil compaction, burning and atmospheric pollution
- Acidification of upland waters
- Loss of climax *Sphagnum* bog communities (e.g., *Sphagnum magellanicum* is only known from one site in the Park)
- Poor heather and grass burning management, including over-burning
- Widespread bracken encroachment
- Widespread historic moorland grip blocking
- Drainage and abstraction
- Decline in upland cattle grazing
- Decline in numbers of semi-feral section A Welsh mountain ponies
- Declining farm incomes and increasing age of upland farming community; lack of succession
- Fall out from the 2001 Foot and Mouth outbreak
- Changing weather patterns as a consequence of climate change.

Climate change vulnerability of the Brecon Beacons National Park

The UK Climate Impact Programme 2009 scenarios, UKCP09, illustrate the range within which climatic changes might occur in the Brecon Beacons National Park by 2080. Owing to its geographic location, the range of likely changes is wider across this National Park than across other unified areas of Wales.

The range of likely climatic responses from west to east requiring differing responses in one unified area highlights the strategic role that the Brecon Beacons National Park can play, as a barometer of change.

The range of likely changes includes (UKCP09):

Average summer temperatures in the Brecon Beacons National Park: - in the west of the Park increases are very likely to be between 1-2°C and 5-6°C warmer; in the east of the Park increases are very likely to be between 2-3°C and 6-7°C warmer.

Average summer precipitation in the Brecon Beacons National Park: - summer precipitation is very likely to decline by 40-50% and very unlikely to increase by 0-10%, i.e., the Brecon Beacons National Park may experience between 10% more and 50% less rainfall in the summer months.

Average winter precipitation in the Brecon Beacons National Park: - increases in winter precipitation are very likely to be up to 60-70% in the west and 40-60% in the east.

Without intervention through catchment management, these precipitation changes represent a significant risk to water supplies to south Wales; less rainfall in the summer and more in the winter amounts to a net loss overall because the excess water falling during the winter months will exceed storage capacity and will therefore run off the land into the rivers, exacerbating flood risks.

Catchment management potential within the Brecon Beacons National Park and Glastir

Dŵr Cymru is investing ca. £2m in Wales in catchment management investigations in order to improve water quality (reducing dissolved organic carbon and water discolouration) and from the outset has been in close discussion with the Brecon Beacons National Park Authority about this. Other water utilities in Britain are already investing in catchment management solutions to water quality and conservation and Wales needs to catch up. Catchment management in the BBNP is vital to improve the year round reliability of supplies to south Wales by reducing hydro-peaks and increasing the storage of water within the Park's upland habitats and organic and organo-mineral soils.

In addition to its own land holdings and private management agreements, the Park Authority already manages one land holding on behalf of Dŵr Cymru and together with other public landowners whose ownership abuts their holdings, can work collaboratively to help Dŵr Cymru to achieve its objectives. The 8 active water storage reservoirs within the Brecon Beacons National Park all supply south Wales with drinking water, a region which the Environment Agency's Foresight Programme has stated will be deficient in water supplies within 50 years as a consequence of climate change and rising demand. Therefore a comprehensive catchment management plan within the National Park is vital to maintain these supplies for a large proportion of Wales' population within the Convergence zone, as well as to meet Water Framework Directive obligations.

Dŵr Cymru has already decommissioned 2 reservoirs within the National Park; the Neuadd below Pen y fan and the Grwyne Reservoir in the Black Mountains at the head of the Grwyne Fawr River (part of the River Usk SAC) within the Black Mountains SSSI. The reason that the latter has been commissioned is linked to the water discolouration, dissolved organic carbon content, peat sediment in the reservoir and the excessive costs to Dŵr Cymru in dealing with this in the normal engineered way. According to CCW, these water quality problems can be attributed directly to the lack of catchment management, poor burning management and overgrazing, causing poor ecological condition of the surrounding land; in particular the extent of dry, *Molinia*-dominated wet heath and degraded blanket bog that surrounds the reservoir. A brief summary of the condition of the catchments surrounding Dŵr Cymru's reservoirs is provided in *Figure 5*.

Within the National Park there are large areas of severely degraded blanket bog and wet heath, the degree of erosion and oxidation of which is adversely affecting water quality and natural water storage, in a part of Wales where water quality and supply are critical to a large section of the population. Therefore investment now is vital in order to reverse this situation through large scale habitat restoration. This will also help to revive and reposition the upland farming community here by creating a new incentive to farm and in turn this will enrich the special qualities of Brecon Beacons National Park, in fulfilment of the Welsh Assembly Government's responsibilities under Section 62 of the 1995 Environment Act.

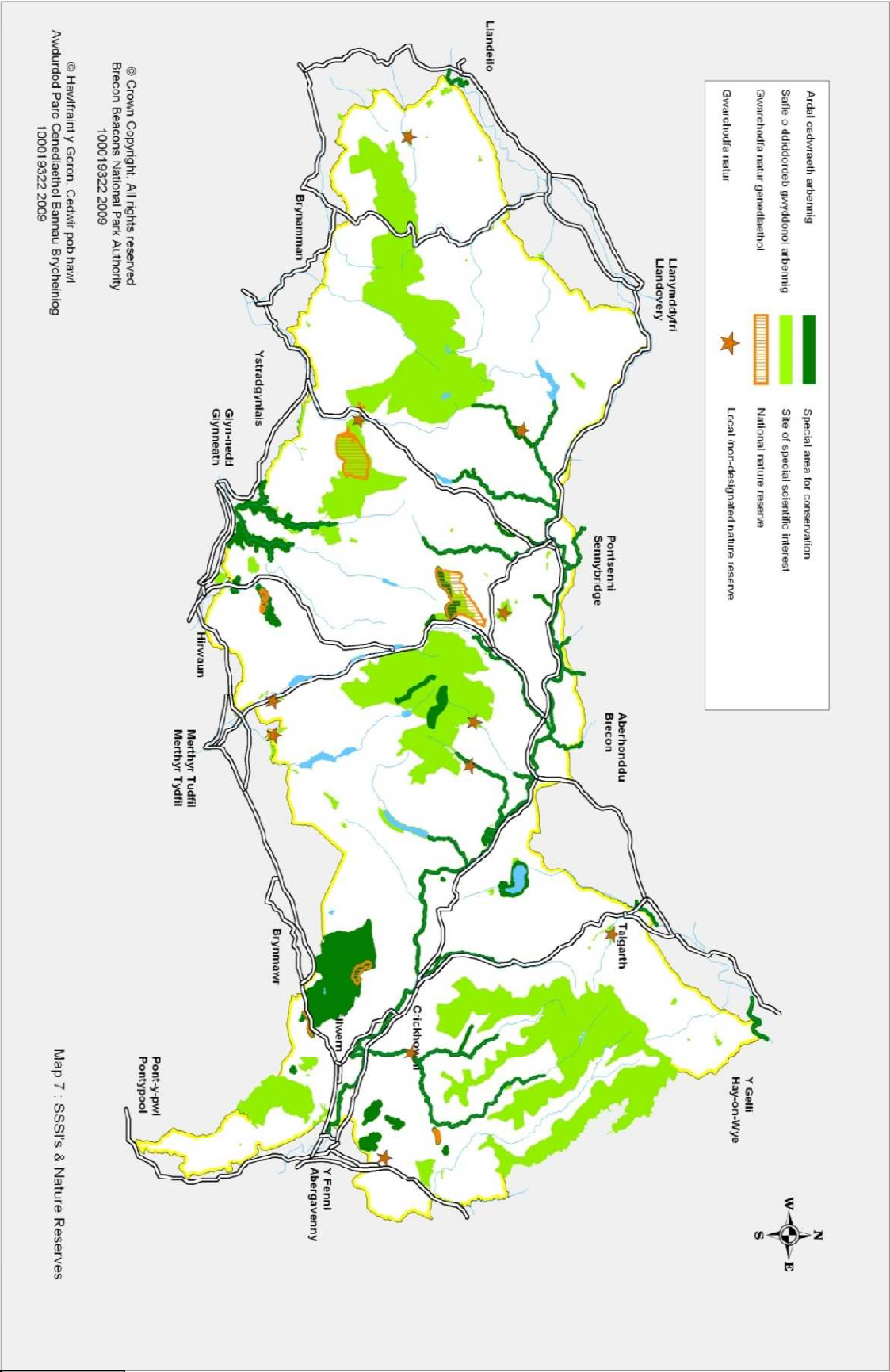


Figure 4

Already during recent public consultations on the River Usk Catchment Flood Management Plan, the Environment Agency Wales has stated that it aims to use catchment management as a principal means of achieving flood control; this can also help to provide other ecosystem services such as clean, reliable water supplies and restoration of wetland habitats within the catchment.

Figure 5

Catchment	Dry heath	Wet heath	Blanket Bog	Organo-mineral soil	Organic/peat soil	Excessive grazing (□) or erosion ¹ (□)	Moorland grips present	Ecological condition (+ve or -ve)
Crai*	□			□		□		-ve
Usk ²	□	□		□			□	-ve
Ystradfellte	□	□	□	□	□	□□	□	-ve
Beacons			□	□	□	□□	?	-ve
Llwynon ²			□		□	□	?	-ve
Cantref ²			□		□	□	?	-ve
Pontsticill ²	□					□	?	-ve
Talybont ²	□	?			□	□	□	-ve
Grwyne Fawr	□	□	□		□	□□	?	-ve

* Crai catchment is upstream of Dŵr Cymru's Great Forest of Brecknock holding where Waun Fignen Felen is located.

¹ Excessive grazing can lead to erosion by changes in vegetation structure and composition, which leads to a reduced rate of infiltration and increased rate of surface runoff, carrying colour and eroded surface sediments with it. So even if there aren't obvious signs of erosion as such, soil losses and suspended solids in the surface runoff might still occur.

² These reservoirs are surrounded by sitka spruce plantations on land leased by the Forestry Commission Wales from Dŵr Cymru; this may mask any problems of erosion; the common land beyond the plantations was invariably overgrazed however. It might also render the water more acidic (see problems with the Severn catchment for example).

The declining numbers of livestock on the upland commons within the Brecon Beacons National Park increase the risk of uncontrolled fires on large areas of dry *Molinia*-dominated moorland, which would further undermine the water quality and water conservation of this strategically important area. Conversely, there are also signs that the peat-forming and water-holding *Sphagnum* mosses are recovering in places where grazing pressure and trampling is reduced, which is also due to improvements in air quality. There is therefore the opportunity to use the experiences in the National Park to re-calibrate grazing practices to maintain and enhance this trend.

Other habitats within the Brecon Beacons National Park of importance to Glastir

Rivers: The River Usk SAC and its floodplain is a vital area to restore. The River is at its abstraction limit and water quality is heavily influenced by the surrounding land use and by the poor ecological condition of its upland catchments, which feed the main river and its SAC tributaries. For example Larsen et al. (2009) demonstrated that the levels of sedimentation within the River Usk are directly affected by the extent of eroding river banks for 500m upstream and the lack of floodplain woodland. He also demonstrated that as the extent of woodland and rough grazing declined, the ecological richness of the river declined too.

The Brecon Beacons National Park is the source of more than 25 rivers and streams , including many significant river systems in south Wales and the Valleys. These include the Usk, Tawe, Twrch, Nedd, Hepste, Cynon, Taf, Rhymney and Ebbw.

More than 18 lakes and reservoirs (Figure 4), and countless wetlands and smaller water bodies are scattered throughout the Park.

Limestone pavement: the Brecon Beacons National Park contains at least 70% of Wales' limestone pavement, a habitat of principal importance to Wales. The extent and ecological status of this habitat is currently being reviewed in a CCW-funded project being undertaken by the National Park Authority. The final extent is likely to be significantly in excess of 70% of Wales' limestone pavement and it is expected that much of this will be found to be ecologically unfavourable, mainly as a consequence of overgrazing and enrichment.

The Park's waters provide habitats for otters, salmon, trout, aquatic insects and native crayfish and previously, water voles. They sustain countless other species, plant communities and habitats, including agricultural ecosystems.

Many of the Park's designated wildlife areas such as National Nature Reserves (NNRs), bat conservation sites and Sites of Special Scientific Interest (SSSIs) are wetland sites. They include wet woodlands, bogs and heath, fens, wet pasture, swamps and open water. These are peat-forming habitats and water-storing habitats, all of which can benefit from integrated management through Glastir.

The need for additional information on organic soils to inform Glastir

The ECOSSE report (2007) is mainly based upon a literature review of published surveys and reports on the distribution of organic (peat-based) and organo-mineral soils in Scotland and Wales. A comprehensive, unified and up to date field assessment was not available, therefore the report synthesises the findings of a range of published sources and a few targeted field samples to demonstrate particular facts. The Brecon Beacons National Park Authority believes that this is very likely to underestimate the extent of organic soils in Wales. For example in 2004, Dr. Dick Thompson, former Director of the National Soil Resources Institute, suggested to the National Park Authority that the Wales Soil Map, produced during the 1970s, failed to identify all areas of deep peat, for example within the Brecon Beacons National Park. Dr. Thompson bore witness to this with the hitherto unrecorded deep peats at Waun Fignen Felen (a site within the National Park); these and others are not marked on the Wales Soil Map at all. Indeed, had the NSRI not been shown this site, recommended by the Brecon Beacons National Park Authority for further study, it is unlikely that it would have been included as one of the few new field samples included in the ECOSSE study.

Table 1.6 of the ECOSSE report illustrates that Waun Fignen Felen scored more highly, on all counts, than the other 2 novel Welsh sample sites listed. For example, the depths of *exposed, severely eroded* peat at Waun Fignen Felen are deeper than the depths of *intact* peat within the Migneint SAC also listed. The question with respect to Glastir therefore is how many hitherto unrecorded areas of deep peat are there in Wales generally or within the Brecon Beacons National Park specifically? It might not be possible to answer this question within the timetable set, therefore the Brecon Beacons National Park Authority recommends that in targeting the Glastir higher level scheme, buffer zones are included around each target area to compensate for the lack of up to date information.

A new business model for deploying Glastir within the Brecon Beacons National Park

With Glastir being targeted at 20% of Wales, the 6.7% occupied by the Brecon Beacons National Park or the 4% occupied by its uplands offer good value for money. The Brecon Beacons National Park Authority recommends the following approach to Glastir investment here, to help establish a farm-based, diverse and responsive carbon and water management market:

- A combination of larger landscape-based projects and smaller 'start up' projects.
- The smaller start up projects would be given a start up 'loan' through Glastir to incubate new land management-based enterprises in soil, water, renewable energy, woodland and biodiversity management, as a means of improving the marque value of their food and livestock enterprises.
- The Brecon Beacons National Park Authority would offer support through supporting Farming Connect to advise these start up businesses, drawing in other advisors too.
- The Brecon Beacons National Park Authority would promote the marquee value of these new businesses through its support to sustainable tourism, which in turn would benefit from the outputs and outcomes of these new businesses.
- The Brecon Beacons National Park Authority and other stakeholders would also help to draw in external investment and corporate sponsorship from sectors that in response to tighter environmental regulations and consumer demand will be looking to invest in carbon and water management and renewable energy. Land-based resource management projects offer these sectors long term and secure investment options because the land resources are always there, providing permanent and essential ecosystem services whilst they are well managed. Investing in this sort of appreciating asset will become a 'sure thing' of increasing social and commercial value; Glastir can provide the seed capital.
- The Welsh Assembly Government would be guaranteed a 'return on its loan' because the start up businesses would be incentivised by the need to maximise and grow the marquee value of their products, i.e., they would want to put in the work to make it successful, calling in the advice and assistance offered when it's needed.
- Corporate support would also guarantee this because providing public benefits will become mandatory through legislation and public demand, so allowing the supported farm businesses to fail would not be an option and the success of the start up venture would provide the Welsh Assembly Government with a ready-made market basis for monitoring the success of this element of Glastir.
- The Welsh Assembly Government could even require a guaranteed capital return on the loan given above a certain threshold, which could then be re-invested in another start up, thereby keeping the Glastir money circulating and growing.
- This approach would help to create a diversified and localised market which would therefore have more resilience and adaptability than a one-size-fits-all approach, vital in the new economic and environmental climate.
- It would also invite new interest in land management and farming, to help build the confidence and entrepreneurship that will be essential beyond the 2013 CAP reforms, as well as raise the profile of this modern approach to integrated land management.

- The larger landscape-based projects would be developed as cluster projects involving other initiatives to maximise the benefits of natural resource management, for example localised food production, wood biomass, hydro-electricity generation, linking with smaller site-based projects (such as county Wildlife Sites management), education and interpretation projects, and so on.
- The smaller start up projects would find further support and gain contextualisation from the landscape scale projects.
- The Green Valleys Organisation (see below) could be invited to assist with the development of community-based carbon neutralisation projects, where for example investment in small scale, community-based hydro-electricity generation produces a profit from sell-back to the National Grid, which is then invested in further energy projects, as well as local food production and upland and wetland habitat restoration.
- Creating this sort of social enterprise could be a very cost-effective model for investing Glastir too.
- This cost-effective and repeatable approach, offered by the Brecon Beacons National Park Authority, would help to ensure that a real, resilient and growing market is established for ecosystem services and public benefits. It offers real scope for Glastir to buy much more than a simple one-off transaction paid to individual farmers and landowners; it guarantees a real entrepreneurial market rather than a range of single 'events' based upon what Glastir can afford. It keeps the money circulating.

The Green Valleys Initiative – An example of small scale investment achieving very large, repeatable and resilient public benefits and public involvement.

Formally launched by the Minister Jane Davidson AM in April 2009, the community-led Green Valleys project (www.thegreenvalleys.org) is working to develop the UK's first carbon negative community in the Dyffryn Cwannon Valley within the Brecon Beacons National Park. The valley may have the capacity to provide five times more energy than the area needs from micro-hydroelectric schemes alone. Its first 3.7kW hydroelectric project was installed in 2008 and a 17 kW community owned hydroelectric generator is to be built in summer 2009. It will generate 190% of the valley's energy needs and reduce the entire community's carbon emissions by 42%. With five other streams already surveyed to supply a further 33kW it will eventually lead to a 94% reduction in carbon emissions, making it a forerunner to become the UK's first carbon neutral valley.

Across the Park more widely, old mills, forgotten water wheels, streams and rivers are being looked at with fresh eyes by local farmers, landowners and residents who are very enthusiastic about the significant potential of hydroelectric schemes in Wales. From a total of 86 potential small scale hydro-electricity sites surveyed to date in the Park, 63 have proven to be feasible. These 63 viable schemes equate to 532 kW of installed capacity, which will power over 1,100 homes and equates to nearly 12% of the domestic electricity requirements of the entire National Park. The net effect on the local economy is already nearly £1.5 million per year additional income, earned from the Park's natural resources; ecosystem services providing a direct income. If everything goes according to plan, in ten

years time the area could be producing £30 million pounds worth of energy. This could be blended very effectively to multiply the benefits of Glastir funding.

In Britain last year there were 13 hydro schemes installed and 6 of those schemes were within the Brecon Beacons National Park, which is the Green Valleys area. These initiatives are also creating local employment by training community members within the Green Valleys area to become hydro-electricity installers. The initiative is driven by the simple idea that linking a revenue stream to uplands will dissuade farmers from wanting to drain the uplands or maintain existing moorland grips because conserving and restoring the upland, carbon-rich and water-rich bogs and soils will provide them and their communities with an intrinsic value outside of agriculture.¹ This can guarantee them a secure income provided by nature, irrespective of what happens to the livestock industry and CAP reform. One farmer already generates at least 16kW and another earns as much from his hydro-electricity payback as he does from his hill sheep enterprise.

In the Brecon Beacons National Park 11 communities have already signed up for the Green Valleys with another 7 communities in the process of joining. They are all volunteers and community members who are working on various projects which aim to reduce CO₂ emissions and also make their communities more sustainable.

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¹ Other reasons to reverse upland drainage include improvements to water quality and water conservation and the potential to reduce lowland flooding.

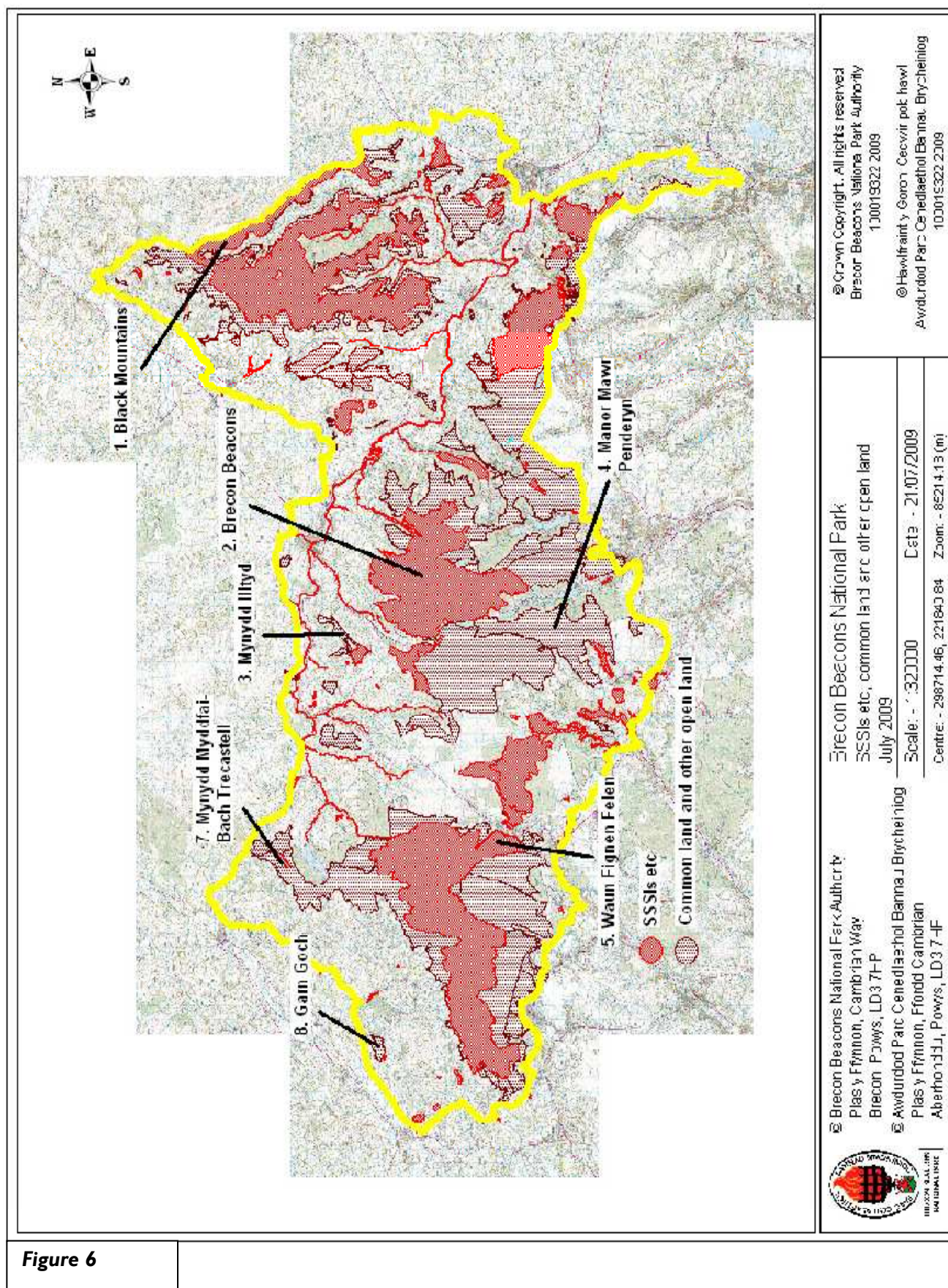
PART TWO

Examples of Glastir case study projects within the Brecon Beacons National Park

The following 8 projects and ideas (*Figure 6*) offer the Welsh Assembly Government a range of large and smaller case studies to apply Glastir in a focussed and strategically important area, the Brecon Beacons National Park. The estimated area of land covered by these case studies is at least 14,000ha.

The common benefits from these projects are:

- Working on commons requires a long lead in time.
- Building trust and shared understanding and objectives with commons' graziers must come first.
- Including elements of projects that provide a tangible and immediate benefit to graziers is very valuable.
- Organisations such as the Brecon Beacons National Park Authority but also other public and voluntary bodies are able to deploy other professional services, such as survey and monitoring, legal services and publicity, thereby improving the chances of success and providing good value for public money.
- As landowner and an active land manager, as well as lead organisation in warden services and public rights of way management, the Brecon Beacons National Park Authority is ideally placed to assist successful scheme implementation and relationship management.
- Developing projects with organisations already versed and skilled in integrated land management is cost-effective.
- The high presence and value of public ownership across a large area of the Park is an asset and potential delivery mechanism for public benefits.
- The number of actively grazing commoners is in permanent decline, making it more difficult and more expensive to continue to maintain commons, let alone to restore ecological condition, without new incentives to do so.



I. The Black Mountains SSSI cross-border partnership project (ca. 3000ha)

Partners

This is a long term partnership established in 2000 to return the SSSI to favourable conservation status. It now involves Natural England, CCW, the Wales Assembly Government, DEFRA, the Brecon Beacons National Park Authority and Black Mountains graziers. A SWES (Sheep Wildlife Enhancement Scheme) agreement has been running in England for a number of years, involving a number of graziers and 1 English HLS scheme is in place for bracken control and shepherding, with a further 2 under negotiation. The Brecon Beacons National Park Authority is one of the landowners, whose ownership crosses into England.



The projects

The projects have benefited from the results of a comprehensive ecological condition survey carried out over the entire area (ca. 40km²) in 2003, which found over 90% of the area to be ecologically unfavourable. This was due to a combination of overgrazing, undergrazing (and over-mature heather), bracken infestation, *Molinea* dominance, trampling, fire damage, chronic erosion and absence of typical species in places.



The National Park Authority has assisted with the SWES scheme and directly implements 2 major pieces of work connected with the Michaelchurch Estate HLS, managing erosion control measures on the Hatterrall Ridge on the Wales-England border, in particular on one large erosion scar of ca. 17 hectares . This involves a combination of its own staff, graziers and volunteers to undertake the works. There will be additional phases of work over the next few years.

The Brecon Beacons National Park Authority has also been commissioned to produce and submit a Commons Act Section 38 application on behalf of NE, to fence off the erosion control works on the English side of the common. This involves extensive discussion with graziers, local people and other relevant organisations.

The Brecon Beacons National Park Authority has also been commissioned by NE to develop a restoration plan on a larger area of eroded peat (c. 40 Ha) also on the Hatterrall Ridge. Given its expertise in erosion control and peatland restoration, in addition to its expertise in upland footpath management, bracken control and controlled moorland burning, the Authority has been charged with investigating suitable techniques, costs and practical considerations to undertaking the works.

The lessons learnt

During the 2001 Foot and Mouth epidemic, a disease control fence was erected across the Black Mountains SSSI following the NW-SE public right of way along the Grwyne Fawr stream. This has remained in place and enabled the organisations involved to envisage a large area offering grazing and a level of control which would enable the development of an agri-environment project.

Within Wales, the Brecon Beacons National Park Authority has significant expertise in working with graziers, developing commons fencing applications, bracken control, controlled heather and grass burning, upland erosion control and footpath restoration.



The project area involves a series of contiguous border commons, one of which crosses the Wales-England border, thereby invoking separate wildlife and agri-environment administrations. The application of the English HLS requires incentives to be developed on the Welsh side, in order to guarantee successful achievement of HLS objectives on the cross-border common. Therefore CCW is exploring the feasibility of a Section 15 agreement (1968 Countryside Act), to control livestock on the Welsh side and the Welsh Assembly Government is investigation options too.

Together, the practical and consultation works have raised the profile of the Brecon Beacons National Park Authority and is improving communication and relationships. The importance of holding local discussions and developing good working relationships with the local graziers cannot be exaggerated. It elicits trust and good intelligence on the state of grazing, the longevity of the farm businesses and the real sheep numbers being turned out etc.

It has also helped to improve other organisations' understanding of upland management issues here and on other commons in the Park, for example special interest organisations that campaign on access to the countryside. It has also encouraged the private estate owners on the SSSI to re-address the management potential of their neglected upland holdings.

Resources deployed so far in restoring ca. 1/3 of the northern scar.

These costs are provided for this case study as an example of how costs might break down for a different site:

Personnel: 316 days

Approx Timings:

Helicopter flights - 2½ days

Timber dams – working in pairs, 12 – 15 dams per day

Plastic pile dams – working in pairs, 25 dams per day

Coir dams – 3m dam takes 15 mins

Laying jute – 100m² takes 2 people approx. 90 mins

Laying heather brash (from bales) 1 bale takes approx 40 mins (heavy work)

Walk in to N burn 35 – 45 mins from standing stone, or Olchon

Walk in to southern burn approx 45 mins from Olchon Court

Total Cost (£75 335 ex VAT) £86 635.00 (inc VAT)

Opportunities for Glastir

- Erosion restoration demonstration project
- Upland commons demonstration project
- Fenced commons demonstration project
- Projects led by public sector stakeholders (including landowner) and statutory agencies working with graziers
- Reversal of carbon-rich peat erosion, through control of upland water tables
- Support to local graziers to provide ecosystem services, given good will already established and trust being developed
- Potential to involve Dŵr Cymru (catchment management around the Grwyne Fawr reservoir)
- Potential to blend with Forestry Commission Wales' upland habitat restoration of clear-felled areas of Mynydd Du Forest on the Grwyne Fawr valley side
- Catchment management for local population that relies upon off-mains drinking water
- Cross-border partnership project.

Offa's Dyke National Trail

The Offa's Dyke National Trail follows the top of the Hatterrall ridge from north to south for approx 13 miles. It crosses county and National boundaries on several occasions. The Brecon Beacons National Park Authority has PROW delegation agreements with Monmouthshire and Powys but not Herefordshire County Council.

However in order to manage the trail in a co-ordinated way Brecon Beacons National Park Authority manages the sections of trail in Hereford on behalf of the Council. CCW/NE/Countryside Agency have invested ca. £200 000 over the past 12 years in path improvements and erosion control along the whole of the ridge. The works in England are paid for by Hereford County Council (at cost), who is grant aided by NE. This arrangement makes sense in terms of the visitor experience – visitors are probably not aware which administrative area they are in. It also makes sense in terms of erosion control – erosion does not stop at administrative boundaries.

The improvements have been undertaken by contractors, National Park staff, volunteers and graziers.

The wider Black Mountains

Almost the entire SSSI (7922ha) is of an ecologically unfavourable status; over-mature heather, historic overgrazing and bracken infestation are particular problems, which will be exacerbated by a combination of climate change (favouring bracken), decline livestock numbers as graziers retire, and insufficient coverage by controlled burning. Together with the Brecon Beacons National Park Authority, the SSSI is owned by a number of estates, only the Brecon Beacons National Park Authority and one small shooting syndicate of which continue to carry out controlled moorland burns.

Brecon Beacons National Park Authority has undertaken other footpath erosion control works on the SSSI with the permission of the landowners. In the 2005-2006 upland footpath erosion survey that informed the Authority's Upland Erosion Strategy, approximately £1.2 million is required for urgent path works in the Black Mountains. This excludes the cost of works on the bare peat areas caused by past burns in the cross-border project, Pen Trumau, Pen Cerrig Calch and above Capel y Ffin.

Of the affected landowners, all of those who responded expressed a willingness to work with the National Park Authority to address it. More recently officers have had early discussions with one of the estates about various potential conservation projects and are awaiting a response.

2. Brecon Beacons proposals (ca. 7000ha +)

Potential partners

National Trust Wales (lead organisation), Honourable Artillery Company, CCW, Brecon Beacons National Park Authority, Dŵr Cymru (all landowners of the project area), Brecon Beacons graziers, NSA Welsh Commons Forum and PONT.

The potential projects

The above partners, led by the National Trust Wales, have issued a statement entitled “*The Brecon Beacons, What do we Want?*” The area covered would include the Brecon Beacons SAC and SSSI (including Craig Cerrig Gleisiad NNR). The BBNPA also owns and manages adjacent areas of contiguous upland common. With all these areas included, the size of the project area would be doubled. It would fall within the European and UNESCO designated

Fforest Fawr Geopark.

Habitats would include blanket bog, wet and dry heath, upland flushes fens and swamps and inland rock and scree communities.

Project objectives would include mixed grazing, bracken management, upland erosion management and shepherding, reversing drainage and increasing infiltration, reducing *Molinia*- and *Nardus*-dominated swards, reducing fire risk, restoring the ecological condition of the priority habitats and supporting viable upland grazing.



Brown, silt-laden water from the Brecon Beacons entering the Cantref Reservoir via the Nant Crew, July 2009. Photos Graham Cowden

Opportunities for Glastir

- Upland commons demonstration project
- SAC management demonstration project
- Support to local graziers to provide ecosystem services
- Catchment management for the Beacons Reservoir catchment

- Potential to blend with Forestry Commission Wales' habitat reversion options for the Nant Ddu Forests
- Projects led by a national charity and landowner, public sector stakeholders and agency (also landowners), working with graziers.

Other benefits

The Brecon Beacons include some of the most iconic landscapes and highly visited upland sites in Britain.

Investment here would achieve high profile outcomes in a highly popular part of Wales, close to Cardiff, and accessible on the A470T, the main north-south arterial trunk road in Wales.

3. Mynydd Illtyd (ca. 248ha)

The partners

Brecon Beacons National Park Authority (landowners), Mynydd Illtyd Graziers Association.

The projects

The common includes Illtyd Pools SSSI, possibly the largest and best example of a raised bog and base-rich fen community in close juxtaposition in Wales (CCW personal communication). The SSSI comprises 2 raised bogs (one of which is on the common) and a fen. The SSSI is also probably the largest site for *Ischnuria pumilio* (scarce blue-tailed damselfly) in Wales. Beyond the SSSI, the common comprises degraded dry heath, now dominated by acid grassland, bracken and gorse scrub. The site was one of the last remaining strongholds for breeding lapwing in the Park; they have not been recorded on the common since 2002. Despite this, it supports a rich, migrant breeding bird community and is one of the few sites in the Park where small pearl-bordered fritillary butterfly are recorded each year (a species of principal importance to Wales). Great crested newt, a European protected species, has also been recorded there (one of the highest sites in Wales) and a strong dragonfly community is there too.

The common lies immediately to the north of Craig Cerrig Gleisiad NNR and is within the European and UNESCO designated Fforest Fawr Geopark.

The common is grazed by hefted sheep and a few ponies. A hill pony improvement society used to exist but has not run on the common for several decades; this has allowed the gorse



Traeth Mawr, Illtyd Pools SSSI. Photo Gill Thompson



Gorse cutting Mynydd Illtyd. Photo Jon Pimm

scrub to spread. One grazier grazes a few Highland cattle.

In the absence of mixed livestock grazing, the National Park Authority cuts areas of gorse each year, to maintain and restore grazing areas for stock away from the sensitive SSSI areas. The gorse brash is collected and flown up to Waun Fignen Felen (see below), where it is spread to protect areas of bare eroded peat there. The graziers cut and harvest bracken each autumn for bedding. These actions, together with a decline in sheep numbers, have led to a slight improvement in ecological status of the common, where heather *Calluna vulgaris* and cross-leaved heath *Erica tetralix* and cotton grasses have recovered. However, the overall decline in stock numbers, including ponies, is leading to a grassier and ranker site around the SSSI. This will become increasingly difficult to graze in future years.

The Park Authority would like to promote the quality meat reared on the common, through its National Park Visitor Centre also based there. However, a scheme has yet to be developed with the graziers. Interpretation at the National Park Visitor Centre provides information about the seasonal cycle on the common and the Brecon Beacons National Park Authority plans to redevelop the centre in the near future; life on the common is likely to be the main interpretation and visitor experience there.

The lessons learnt

Establishing mixed livestock grazing is the only long term, cost-effective means of maintaining and restoring this common.

Using machinery to cut gorse is an expensive way to copy the actions of livestock.

Opportunities for Glastir/other benefits

The Illtyd Pools site is possibly one of the most interesting SSSIs in Wales.

There is a small graziers association, comprising about a dozen graziers.

The National Park Visitor Centre provides a high profile visitor attraction, where the benefits of Glastir can be widely promoted and experienced.

4. Manor Mawr Penderyn (ca. 2000ha)

Partners

Manor Penderyn graziers, CCW, Welsh Assembly Government, Brecon Beacons National Park Authority (landowner).

The Projects

The common lies on a plateau between the Brecon Beacons and the Eastern Great Forest of Brecknock, within the European and UNESCO designated Fforest Fawr Geopark, above the Brecon Beacons Reservoir and the Cantref and Llwynon Reservoirs. It lies to the north of Penderyn, Cwm Cadlan SAC/NNR and Blaen Cynon SAC. Towards the south, it forms the eastern boundary of Waterfall Country, which encompasses the Coedydd Nedd a Mellte SAC. It also lies adjacent to Gwaun Cefn y

Garreg, one of the largest areas of upland wet heath in the Park (and part of a Tir Gofal scheme). The habitats present include blanket bog, wet and dry heath, upland flushes, upland calcareous grassland and limestone pavement.

The common has experienced a history of chronic overgrazing in response to agricultural subsidies and also vicinage by animals from the Eastern Great Forest adding to the pressure. In 2001 a Foot and Mouth disease control fence was erected between the 2 commons. This fence was retained by the National Park Authority on the condition that the Association submitted a Tir Gofal application to improve the ecological quality of the common; thereby justifying retention of the fence. The fence immediately solved the problems of vicinage but did not lead automatically to a recovery of ecological status; this will require active intervention.



In 2003 the Association submitted the Tir Gofal application, which was successful. Whilst not all the graziers were members of the Association (this has since changed), the Association got the support for the application from all but one grazier through the signing of a separate statement of intent. However, the finalised scheme was withdrawn by CCW in 2006 owing to the realisation that one active grazier, not then a member of the Association (he is now), would undermine the terms of the scheme were he to choose to exercise all his grazing rights. Despite this, the Tir Gofal management plan has been fully worked up and is still available to be implemented in a new form under Glastir.

Also, the common is bisected by the section of the A4059 between Hirwaun and the junction with the A470T by the Beacons Reservoir. This road is a significant hazard to livestock and graziers, as well as walkers who might wish to exercise their rights of Open Access on the common. Vehicles, especially haulage vehicles, use the road as a five minute short cut between Hirwaun on the A465T and the A470T. Most vehicles travel at excessive speed. There are regular livestock fatalities on the road and there have been human fatalities and accidents in the past. The Association wishes to see the road fenced off on either side but this would effectively break the common into two separate parcels. Also, it would lay the responsibility for solving the hazard at the door of the vulnerable road users namely the graziers and the landowner; whereas it is legally the responsibility of the traffic authority, through traffic management, to solve this problem.



Since the withdrawal of the Tir Gofal scheme in 2006, the National Park Authority has maintained and strengthened strong working relationships with the Association. It carries out smaller scale

management tasks including controlled burning, mowing of *Molinia*-dominated areas, the placing of feed blocks within these to encourage livestock away from the road and to mob graze the *Molinia*, and liming of areas to create sweet spots for the stock. The feed blocks and liming have been approved by a Welsh Assembly Government ecologist and agri-environment advisor.

The lessons learnt

This is a complex common owing to the history of vicinage from the neighbouring common, the incidence of accidents on the A4059 and the lack of commitment by traffic management authorities to solve these problems.

The BBNPA is preparing a second application under S194 of the 1924 Law of Property Act to retain the fence between the neighbouring commons; the first application was refused.

The ideal management for the common, i.e., mixed livestock grazing (cattle, sheep, ponies), is not possible for as long as the A4059 continues to pose the risks that it does to livestock, graziers and walkers.

Shepherding is not possible given such high risks to people and livestock.

A successful agri-environment scheme requires additional support to secure the co-operation of graziers not signed up to the scheme.

The graziers association has been galvanised by the need to retain the existing fence and the opportunities to work with the Brecon Beacons National Park Authority to carry out small scale habitat management tasks.

In the absence of a Tir Gofal scheme, the good relationships established between the different parties have been maintained through the small scale management tasks.

Opportunities for Glastir

- The former Tir Gofal scheme is ready to implement in a new form as Glastir.
- The 2006 Commons (Wales) Act will ensure that commons associations can reach agreement that supports scheme implementation; most of the hard work has been done here already by the Association.
- The Manor Penderyn Graziers Association is now a trust limited by guarantee with the stated aim of conserving the biodiversity of the common. Supporting an association with this stated aim could offer a useful model for other associations - following implementation of the 2006 Commons (Wales) Act.
- A fenced common demonstration project.
- Controlling traffic and eliminating livestock fatalities on the A4059 is also essential; it is the responsibility of the traffic authorities rather than the commoners or landowner. Implementation of Glastir here would emphasise the importance of this.
- Instigating a range of smaller scale management works in lieu of a scheme is a realistic response to the poor ecological status of the common and could be emulated elsewhere.
- There is potential to blend with the Forestry Commission Wales' Forest Design Plan options for the Garwnant Forest – such a joined up approach would ensure maximum benefit from the available public money.

Other benefits

The location of the common means that it provides a useful link between other existing and potential project areas such as Waterfall Country, the Brecon Beacons and the Valleys Regional Park.

5. Waun Fignen Felen management (ca. 500ha)

Partners

Dŵr Cymru (land owner), Dan yr Ogof Cave Advisory Committee, CCW, PONT, Cardiff School of Biosciences, Clwyd Powys Archaeological Trust, Great Forest of Brecknock graziers, Brecon Beacons Park Society, Brecknock Wildlife Trust, Brecon Beacons National Park Authority (managing the land on behalf of Dŵr Cymru).

The Projects

Waun Fignen Felen is an upland plateau that includes areas of very deep peat on the Great Forest of Brecknock. Since 2004, one area of ca. 20ha has been fenced off. The fence excludes livestock and protects the areas of completely bare and eroding peat which were caused either by a catastrophic fire before the Second World War or by hydro-geological changes beneath the bog. It is part of the Mynydd Du SSSI, within the European and UNESCO designated Fforest Fawr Geopark and lies above the Dan yr Ogof Showcaves NNR (the water quality through which has benefited already from the peat protection work completed). The main habitats are valley bog and wet and dry heath, with areas of calcareous grassland and limestone pavement too.

Restoration of the bog was identified as a priority during the 1995-1998 LIFE-funded Meithrin Mynydd Project. S194 consent (1924 Law of Property Act) was granted in 1999 to fence the most damaged area. The fence was erected in 2004. Following a survey of the eroded area to understand the main sources and sinks for erosion there, the Brecon Beacons National Park Authority has been



implementing a management plan since May 2005, carrying out peat restoration works since that time.

This work has met with considerable success, using a combination of bracken and heather bales and gorse brash (cut from Mynydd Illtyd Common). The bales are spread over the bare peat to retard surface erosion, and to slow and filter surface run off. Coming from another common, it arrives with a ready-made seed bank, which has germinated in the same year, further binding the surface.

In 2008, Dŵr Cymru obtained planning consent from the Brecon Beacons National Park Authority to construct a new water treatment works in Glyn Tawe (Upper Swansea Valley) below the Waun Fignen Felen site. The National Park Authority would have preferred Dŵr Cymru to invest in catchment management to achieve the same ends or at least to offset the long term costs of water treatment works. In the event, a Section 106 agreement was agreed between the 2 parties, eliciting a report prepared by Dŵr Cymru², which underlined the effectiveness of restoring bare peat to reduce dissolved organic carbon and discolouration in water. Further money will be invested in completing a management plan for the site and a Management Forum has also been established involving the partners listed above, to develop an agri-environment scheme for the 500ha area.

The Forum's principal objective is to, "*co-ordinate, collaborate upon and implement a land management plan and scheme to achieve the favourable habitat management and restoration of [the Waun Fignen Felen area denoted on a map].*"

The lessons learnt

The Meithrin Mynydd Project created the consensus amongst organisations and graziers that restoring the site is a priority.

Securing consent to erect the stock exclusion fence, followed by erecting the fence in 2004, was the single most important action because it provided control and prevented further deterioration of the bare peat from ewes rubbing fleeces, trampling and also grazing out the vital cotton grasses.

Common cotton grass, *Eriophorum angustifolium* is the most important plant in the project because it binds the loose peat and colonises the shallow open water areas created.

The restoration work has not relied upon a single large source of finance but has relied on small, annual allocations and grants to carry out small annual increments in restoration. A lot has been achieved using a combination of small amounts of money and common sense.

Focussing on reducing the speed of surface run off and capturing suspended peat sediment has been more important than trying to recreate habitats; the habitats will create themselves and can be influenced by subsequent habitat management.

The works completed to date have produced a marked improvement in the quality and colour of water flowing through the Dan yr Ogof Showcaves NNR and a marked decline in the peat sludge deposited there (Ashford Price, personal communication). This Carboniferous limestone NNR lies beneath the Waun Fignen Felen plateau.

Large projects still require completion, for example damming of the very large gullies (3m – 4m deep and 10m to 15m wide in places.)

² Upland peat erosion at Waun Fignen Felen, Dŵr Cymru March 2009.

Opportunities for Glastir

- To prevent the deterioration of vulnerable deep peats 'upstream' of the fenced off area within Waun Figen Felen and to demonstrate the restoration of a severely damaged bog
- Fenced common demonstration project
- Project expansion potential across another part of one of the largest contiguous blocks of common land in south Wales
- Follow up to the 1998 LIFE-funded Meithrin Mynydd project
- Catchment management around the source of the River Tawe
- Developing a catchment management demonstration project with Dŵr Cymru
- Project led by the public sector stakeholders, and landowners and involving graziers, specialist interest groups and academia.

Other benefits

The site lies adjacent to the Cnewr Estate, one of the largest upland farms and Tir Gofal schemes in Wales; it lies across the Swansea Valley from the Ogof Ffynnon Ddu NNR and SSSI.

The site provides a demonstration projects close to Cardiff and M4.

The Brecon Beacons National Park Authority is focussing on the Upper Swansea Valley as an integrated project area for visitor management and habitat restoration. The Collabor8 Interreg IVB project is active here (see <http://www.breconbeacons.org/the-authority/working-in-partnership/tourism-new/collabor8>).

6. Limestone pavement restoration project (ca. 65ha)

Partners

CCW, Brecon Beacons National Park Authority (both landowners).

The Project

The limestone pavement exposures stretch from the eastern/central part of the Park across to the west of the Park and are within the European and UNESCO designated Fforest Fawr Geopark. The largest single expanse of limestone pavement is the Ogof Ffynnon Ddu NNR, owned and managed by CCW.

A 3 year survey and ecological status assessment project by the Brecon Beacons National Park Authority will be completed in 2010, funded by CCW.

The survey objectives are:

- To create a definitive and accurate record of the extent of the limestone pavement resource within the Brecon Beacons National Park



- To make a basic assessment of the geological and biological status of that pavement
- To identify areas suitable for further botanical surveys
- To identify areas suitable for targeted management to improve biological status.

Once completed, this will give a clear picture of what management actions are required to conserve these areas of pavement; over 70% of all Wales' limestone pavement will be covered by this survey.

Almost all the limestone pavement within the Brecon Beacons National Park is on registered common land; nearly all of it is within Open Access land.

The lessons learnt

Limestone pavement within the Brecon Beacons National Park is qualitatively different from pavement elsewhere in Wales and Britain.

Conservation of limestone pavement within the National Park requires more sensitive grazing management, with or without new fences on common land.

Opportunities for Glastir

To support the conservation of one of the rarest habitats in Wales.

To include measures that restore the biological richness of ecologically poor pavement by removing livestock at critical times of the year.

Other benefits

The pavement falls within the band of Carboniferous limestone that stretches across the south of the Brecon Beacons National Park from west to east. It overlooks the Valleys Regional Park area and therefore provides an additional public benefit for this area.

7. Mynydd Myddfai-Mynydd Bach Treacastell habitat enhancement (ca. 600ha)

Partners

Brecon Beacons National Park Authority (main landowner), Mynydd Myddfai and Mynydd Bach Treacastell graziers, National Grid Gas Plc.

The Projects

The Mynydd Myddfai-Mynydd Bach Treacastell commons fall within the Mynydd Du Landscape of Outstanding Historic Interest and within the European and UNESCO designated Fforest Fawr Geopark, adjacent to the Usk Reservoir and Glasfynydd Forest, and to the north of the



Mynydd Du SSSI. The Waun Ddu SSSI, a valley bog, lies within the project site.

The commons are of an ecologically unfavourable status owing to the dominance of unpalatable grasses, principally *Nardus stricta* and *Molinia caerulea*, encouraged by past overgrazing, burning and atmospheric pollution. The numbers of active graziers and hence livestock, are in decline, leading to a loss of hefting and an encroachment of bracken. This threatens to undermine the long term potential to manage the common sustainably.

In 2007, National Grid Gas Plc commenced construction of the largest natural gas pipeline ever built in Britain, crossing straight through these commons. The entire working width of the pipeline construction, ranging between 48m and 72m in width, was fenced off to exclude livestock and the fences will remain in place until habitat restoration is deemed to have been achieved within them.

Following construction, reinstatement work commenced in 2007 and aftercare and restoration have continued since then. National Grid Gas Plc is required, as a condition of consent, to continue restoration works for 10 years following construction, or as long as it takes. National Grid Gas Plc is also required to implement an enhancement package for the sensitive locations along the pipeline route affected, including this site. This enhancement forms the substance of the project described here and covers the commons both within and outside the fenced off pipeline route across the common.

A fully costed 10 year pilot project has been agreed between all parties, to carry out a series of experimental habitat treatments to restore the ecological quality of the common. The initial funds provided by National Grid Gas Plc amount to ca. £46,000. This is not sufficient to achieve ecological restoration across the entire project area, so additional funding is required.

To attain a landscape supporting a sustainable patchwork of habitat types, from valley mire and wet heath to dry heath and acid grassland, the proposed works aim to expand the areas of residual heather *Calluna vulgaris* and reduce the extent of unpalatable areas. The establishment of these areas would usually be facilitated by temporarily fencing them off to exclude stock. Instead, the Brecon Beacons National Park Authority proposes to draw the stock from these areas by improving the grazing value of selected areas of the common dominated by mat grass (*Nardus stricta*) and purple moor-grass (*Molinia caerulea*) by burning, scarification and liming.

In achieving these objectives the Brecon Beacons National Park Authority aims to enhance the visual landscape to help offset any lasting impression of the pipeline route across the mountain and assist the graziers in their management of the mountain. Over the longer term the Brecon Beacons National Park Authority would wish to promote the successes of this enhancement opportunity within other upland areas of the National Park.

Following a meeting with the relevant grazing associations during November 2008 the Brecon Beacons National Park Authority has confirmed the agreement and co-operation of the commoners with the proposals. Bi-annual meetings will be held with the graziers in spring and early autumn during implementation of the proposed programme of enhancement works to review the outcome of the various treatments applied and the grazing patterns.

The lessons learnt

The procedures surrounding the construction of the pipeline and aftercare have demonstrated the need for National Grid Gas Plc to maintain a full understanding of upland management and in particular commons management issues. Developing trust, seeking advice from affected parties on the best

methods to use, following through with agreed actions and demonstrating the benefits of habitat enhancements have all proven to be snags and opportunities in equal measure.

Opportunities for Glastir

- Demonstration project experimenting with a range of habitat restoration techniques
- Project expansion potential across part of one of the largest contiguous blocks of common land in south Wales
- Follow up to the 1998 LIFE-funded Meithrin Mynydd project
- Catchment management around the source of the River Usk SAC
- Potential to blend with the Forestry Commission Wales' Forest Design Plan options for the Glasfynydd Forest
- Project led by the public sector stakeholder and landowner.

Other benefits

Assisting the restoration of the visual appearance of the Historic Landscape damaged by pipeline construction.

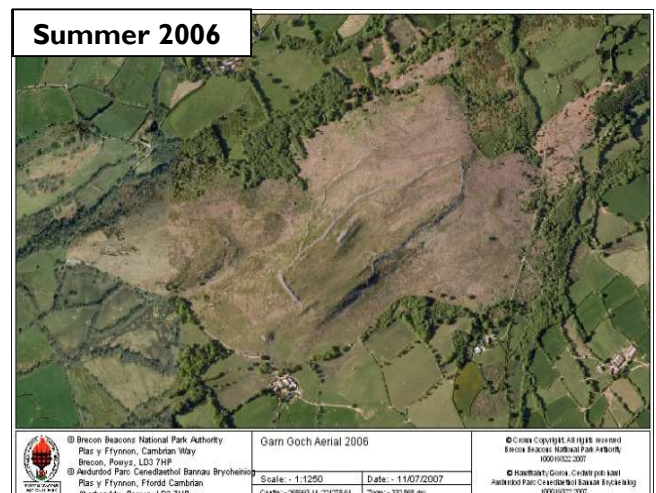
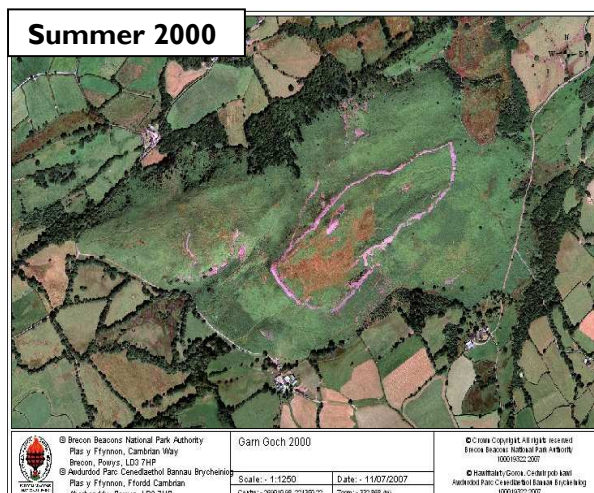
8. Garn Goch Tir Gofal Agreement (ca. 95ha)

Partners

Welsh Assembly Government, Brecon Beacons National Park Authority (landowners), graziers.

The Projects

This Tir Gofal agreement started in 2004 and was the first common in Wales to enter Tir Gofal. The Brecon Beacons National Park Authority, working closely with CCW at the time, was instrumental in the success of the scheme because agreement was secured via a prior legal agreement between each grazier and the Brecon Beacons National Park Authority. This made each grazier individually liable for any failures to implement the scheme. The Brecon Beacons National Park Authority also invested time and money in site preparatory works. Also, the Brecon Beacons National Park Authority provided direct support to assist the graziers to form a Garn Goch Graziers Association.



The site is a Scheduled Ancient Monument, one of the largest Iron Age hill forts in Wales. The habitats present include bog, dry heath and woodland. For a long time, the areas of dry heath were dominated by impenetrable bracken. The first task therefore was to aerial spray the bracken, which has been followed up by knapsack spraying. This has proved very successful. The areas of dry heath are now of an unfavourable-recovering status and in places of an ecologically favourable status.

The lessons learnt

Securing separate legal agreement between all parties prior to the start of the Tir Gofal scheme was essential.

Helping the graziers to establish a new association was essential.

Members of Authority staff have continued to provide whatever staff resources are required to ensure that habitat management works are successful.

Vigilance is required to ensure that the graziers comply with the TG requirements.

Maintaining the presence of grazing livestock is essential to maintain the successes of TG here.

Opportunities for Glastir/ Other benefits

The Tir Gofal agreement will be curtailed by the transition to Glastir.

The measures taken by the Brecon Beacons National Park Authority in the lead up to this agreement provide a model for other commons schemes.

The focus on a Scheduled Ancient Monument rather than a biologically designated site is important; the natural value of the historic environment can be supported by Glastir too.

Appendix I

Brecon Beacons National Park Management Plan: Strategic Objectives of relevance to Glastir implementation and carbon sequestration*

**Only the headline objectives are reproduced here; the explanatory text in the consultation draft NPMP emphasises the role of the Park in conserving and restoring the landscape's carbon sequestration potential.*

Strategic Objectives for Energy

1. Help achieve national targets for greater renewable production through community and domestic scale schemes.
2. Reduce greenhouse gas emissions by minimising energy use.
3. Assist the development of community energy initiatives.
4. Develop the capacity for a localised energy grid.
5. Integrate renewable energy into building and settlement design.

Strategic Objectives for Farming

1. Maintain and enhance viable and productive farming businesses within the uplands so that they are able to deliver private and public objectives to enhance the special qualities of the Park.
2. Integrate and promote public support for sustainable farming.
3. Develop communications and collaboration among land managers, statutory agencies, non-governmental organisations, communities and other interests.
4. Encourage innovative marketing of farm products, for example through the development of local supply chains and landscape branded products.
5. Reduce waste, energy use and pollution from all agricultural activities.
6. Advocate for the establishment of a new rural subsidy system based upon agri-environment and rural development programmes that pay people to provide public benefits in the countryside, particularly the delivery of environmental goods and services.

Strategic Objectives for Woodland Management

1. Capture the existing values of the lower valley native farm woodlands in the National Park and expand these habitats towards the higher slopes where existing forests lie.
2. Manage forests at higher elevations to maintain a sound commercial presence as coniferous forests, contributing to the rural economy whilst offering the opportunity to improve landscape design and create new upland open space via felling.
3. Restore internationally recognised habitats, including upland bogs, heath land and upland oak woods, where the viability and potential exists.
4. Practise continuous cover forestry in forests within the National Park where tree species, aspect, previous management and soils allow.
5. Integrate woodland management into the Local Development Plan within the National Park.
6. Consider and create new community woodlands within easy access of future and existing communities that contribute to the improved sense of health and well-being.

Strategic Objectives for Uplands Management

1. Identify priority areas for organic soil and wetland management.
2. Reduce the extent of invasive alien species.
3. Achieve sustainable farming and ecosystem management.
4. Maximise the opportunities for diversifying the economy through integrated land management skills and services.
5. Demonstrate integrated, sustainable landscape scale conservation on NPA owned land by securing large scale, long term funded projects across the Park.
6. Ensure that uplands management is conducted through an integrated approach whilst utilising and developing local skills and knowledge.
7. Restore and enhance the habitat connectivity across the Park's contiguous upland commons.

Strategic Objectives for Water Resources

1. Maintain or improve the quality of the Park's groundwater, rivers and lakes.
2. Ensure that water resources are used sustainably across all sectors in the National Park.
3. Encourage a co-ordinated approach to national and regional policy so that they are consistent and complimentary.
4. Achieve sustainable conservation management of all existing wetlands, rivers and streams within the National Park.
5. Optimise the Park's capacity for water storage, small scale hydroelectric power and irrigation of locally grown food.
6. Implement objectives within the River Basin Management Plans under the Water Framework Directive to achieve good ecological status for resilient aquatic ecosystems within the Park.
7. Halt the continued acidification of upland soils and waters within the Park.

Strategic Objectives for Soils Resources

1. Protect the Park's soils from degradation and erosion, managing soil and peat resources.