

ENVIRONMENTAL CONSTRAINTS, IMPACTS AND IDENTIFICATION OF LOCAL SEARCH AREAS

We are greatly concerned that:

1. The designation of Local Search Areas has not taken account of environmental constraintsⁱ,
2. Impact assessments i.e. Sustainability, Strategic Environmental or Habitats Regulations Assessments have not been carried out to examine the enormous impacts of this policy.

Note: Local Search Areas (LSAs) must be intended to increase wind energy development across the county. There is otherwise no purpose in their designation since applicants may already put in an application for a wind turbine up to 25MW anywhere in Powys outside the National Park. For an increase in generation over what would happen without LSAs, presumption of approval within LSAs and consequent weakening of environmental protections must be envisaged.

Designation of LSAs has not followed the process set out in the Government Guidance ‘Planning for Renewable and Low Carbon Energy - A Toolkit for Planners’ in terms of application of constraints at strategic stage. Nor have constraints recommended in TAN8 been observed. See below. This undermines the validity of the process, the sale of the identified ‘resource’ and the calculations which rest on identification of that resource. Genuine renewable opportunity which can be developed without disproportionate environmental damage cannot be identified without application of constraints. **All comments within this response to FFC79 regarding the AECOM mapping and maps produced apply equally to the ‘Proposals and inset maps, document number 45’ and must be read as relating to each of the Proposals maps FFCs listed in endnoteⁱⁱ.**

The nature of this policy and the manner of its introduction into the LDP give no grounds for reassurance that environmental concerns will weigh heavily on our council or on the Welsh Government.

The Sustainable Development principles (Welfare of Future Generations Act) require scientific knowledge to aid decision making, application of the precautionary principle, respect for environmental limits – the approach taken in setting this policy flouts all these principles and flies in the face of the Government’s own flagship legislation. They also require engagement and involvement and working in collaboration – another fail. PPW8 (4.6.3) sets out priorities for rural areas:

- *‘sustainable rural communities with access to affordable housing and high quality public services;*
- *a thriving and diverse local economy where agriculture-related activities are complemented by sustainable tourism and other forms of employment in a working countryside; and*
- *an attractive, ecologically rich and accessible countryside in which the environment and biodiversity are conserved and enhanced.’*

These are clearly desirable outcomes, but wholly incompatible with RE policy as currently proposed.

1. IDENTIFICATION OF LSAS – FAILURE TO SCREEN OUT ENVIRONMENTALLY SENSITIVE AREAS

Identification of LSAs has not been carried out in such a way as to screen out environmentally sensitive areas from the LSAs.

Pages 48-9 of AECOM document ‘**Renewable Energy Assessment August 2016 (AECOM)**’ set out constraints applied to wind LSAsⁱⁱⁱ. Page 52 sets out identical constraints applied to solar LSAs.

AECOM document ‘**Renewable Energy Assessment, 2016 – Maps – Wind**’.

- Maps W1 to W7 set out the following process for the designation of wind LSAs: W1: identify constraints; W2: identify areas of sufficient wind speed; W3 identify wind resource based on W1 and W2 above – LSAs first drawn in on maps; W4: prioritise wind resource identified; W5: consider cumulative impacts; Maps W6: the purpose of distinguishing between 5-25MW and 25MW maximum is unclear – LSAs are intended to be 5-25MW; W7: Local Search Areas delineated
- Designation of LSAs at W3 (S4 – solar) stage means **LSAs** take no account of cumulative impacts, even if the ‘**resource**’ within them might.

Maps W5 (S5 – solar) clearly demonstrate that the majority of land **within LSAs** has in fact already been screened out as unsuitable on grounds of:

- Conflict with the constraints above,
- Unsuitability for the renewable technology, or
- Unacceptability on cumulative grounds.

LSAs create a presumption of approval across huge areas of Powys already identified as unsuitable for renewable development i.e. constrained, and will encourage the approval of poorly sited or environmentally undesirable development. See Fig 1. Inclusion within LSAs of so much land already identified as unsuitable for development is not explained or justified. LSAs could have been more tightly drawn around the identified available resource after application of constraints. **There is no satisfactory evidence base for the designation of the LSAs as set out in AECOM maps.**

Failure to apply environmental constraints in designation of LSAs - consequences

‘Resource’ areas shown in the map extracts below (W3 and S4 respectively) are subject to basic constraints (see note ii below). But it is only available *resource* not *LSAs* drawn around that resource which is screened by constraints in note ii. See example (Fig 1) from W5 sheet 3 of 3 REA – unconstrained resource is minimal and the shape and extent of the LSA around that resource is not explained:

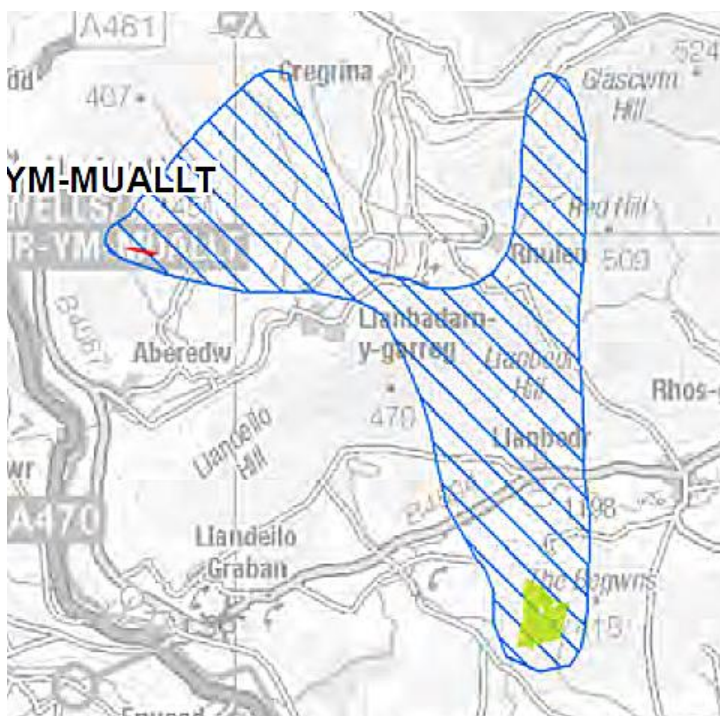


Fig 1

Example – Major SSSIs entirely within LSAs: The exclusion of designated sites from resource areas is one of the constraints applied by AECOM in GIS mapping process – see ii below. But, attached are maps of two SSSIs in the hills above Painscastle: ‘Llandeilo, Rhulen and Llanbedr Hills SSSI’ and ‘Glascwm and Gladestry Hills SSSI’. These two SSSIs together take up most of the upland to the east of the Wye Valley below Builth Wells, across to Gladestry towards the English border and together form one of the largest SSSI sites in Powys. Figs 2 and 3 demonstrate how the entirety of both SSSIs now lie within solar or wind LSAs.

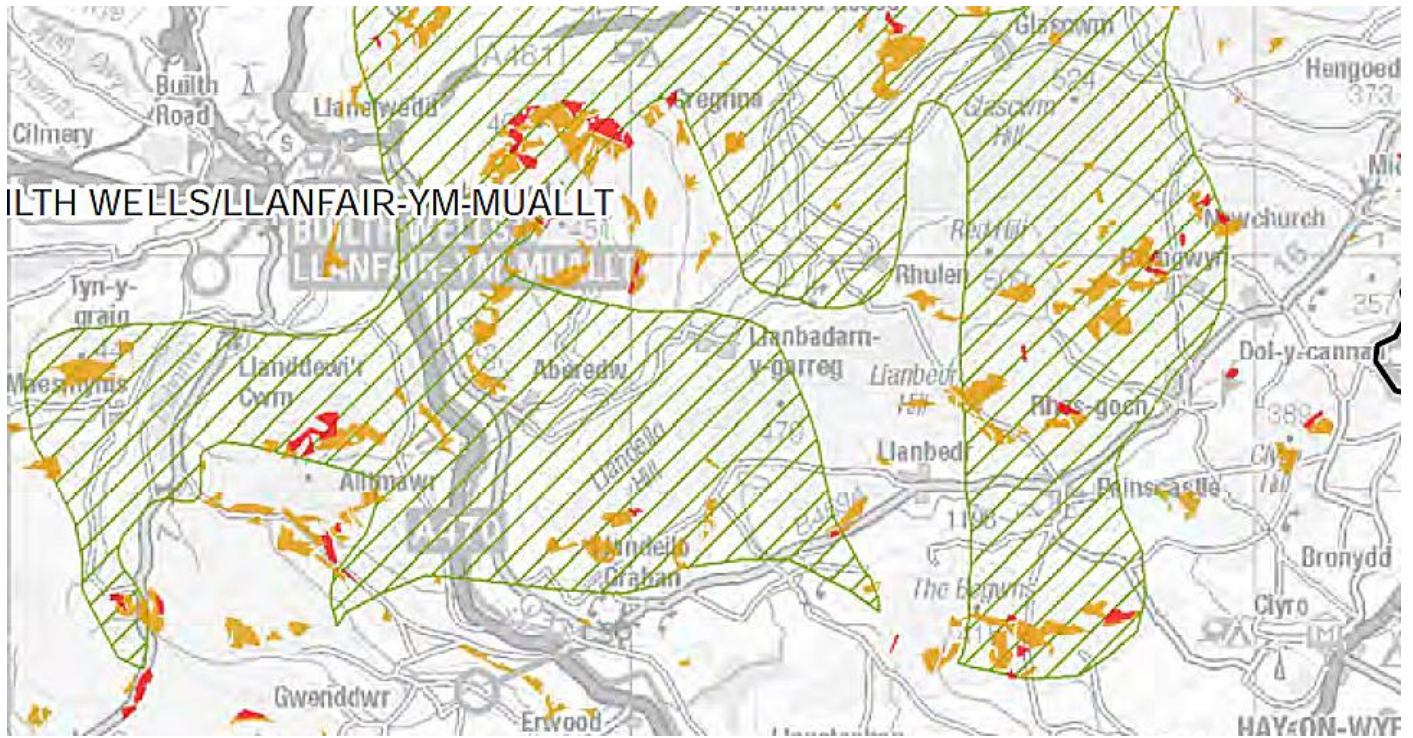


Fig 2

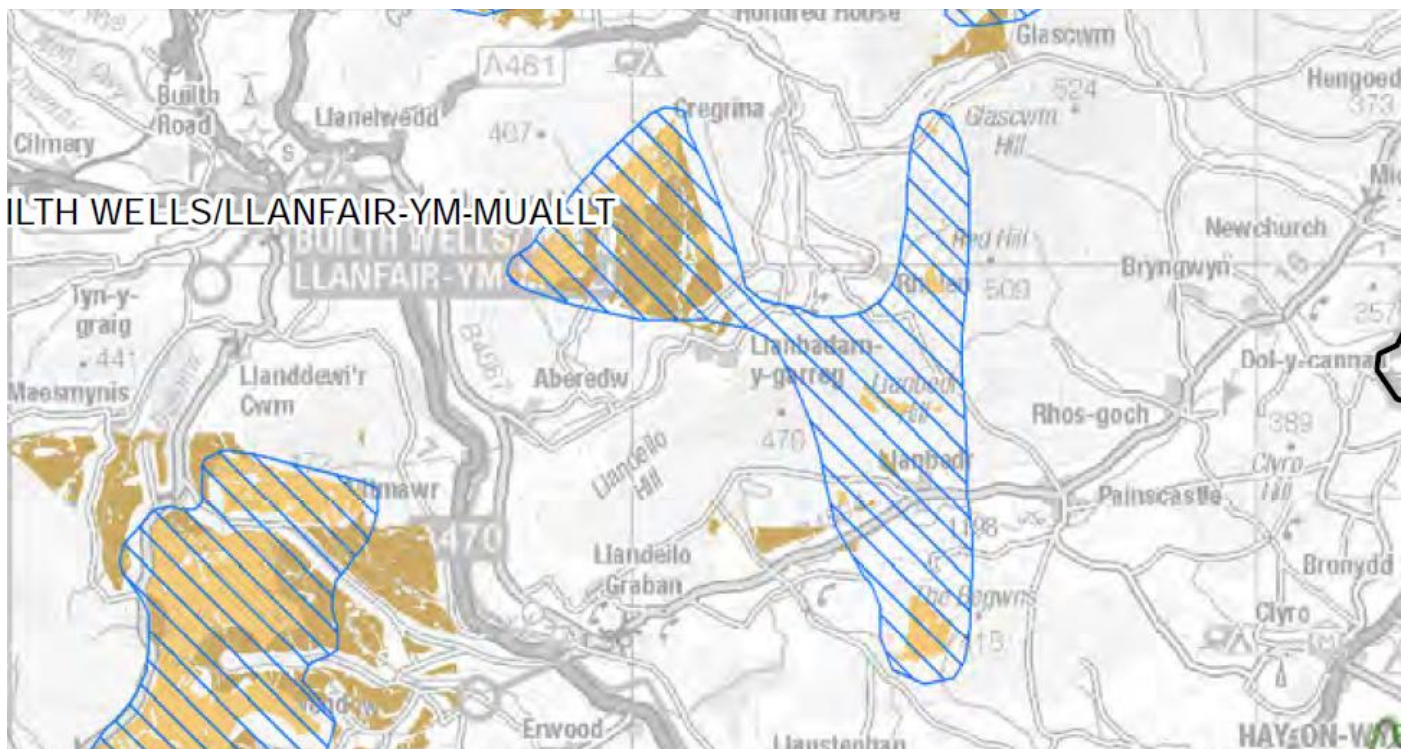


Fig 3

Likely to be replicated across the LSAs and arises from the mismatch between identified resource and LSAs drawn around that resource.

See link to map of SSSIs in Powys^{iv}: there are significant areas of the large SSSIs west of Rhayader and Dylife also within LSAs. It will probably be unavoidable that some smaller SSSIs are within LSAs but considered at application stage but inclusion of these large areas of sensitive environment within LSAs makes no sense.

2. IDENTIFICATION OF LSAS – CONSTRAINTS NOT CONSIDERED

AECOM’s list of environmental constraints applied in the identification of ‘resource’ is not exhaustive. The limitations of the AECOM exercise are repeatedly pointed out:

P19: *‘An exercise can be undertaken whereby areas that are recorded as having a ‘high’ or ‘outstanding’ value attributed to them within the ‘Character & Scenic Quality’ column within the ‘Visual & Sensory’ Layer of LANDMAP can be identified and constrained within GIS maps: this exercise has not be undertaken as part of this assessment.’ ‘Further constraints to onshore wind development not considered within this REA include [and this is not meant to be an exhaustive list] the practical access to sites required for development, landowner willingness for development to go ahead, political will, the time to complete planning procedures and an economic distance to the nearest appropriate electricity grid connection.’*

P30: *‘It should also be noted that the above assessment ignores issues of landowner willingness, transport access and available grid connection and capacity.’ ‘In terms of plant, landowner willingness, political will, the time to complete planning procedures and an economic distance to the nearest appropriate electricity grid connection will all be key considerations but are not included within this assessment.’ ‘This REA has not utilised national grid data but the LPA may wish to investigate overlaying GIS layers of the energy networks data available to them.’*

In these pages of the REA at least, limitations of the study done are set out for Powys, with suggestions of further work to be done. **Powys has chosen to base policy on data which rests on minimal recognition of constraints and therefore overstates unconstrained land resource.**

The following have not been considered:

- Landscape and historic landscape^{1 2} & wild land
- Impact on settings of heritage assets², including interconnectedness of prehistoric/archaeological sites
- Amenity
- Impact on setting of National Trails, Pubic Rights of Way, Open Access Land, outdoor tourism²
- Ecology & Peat uplands & hydrology²
- Access to grid connection¹ & Landscape impacts of potential need for large scale grid connection infrastructure
- Landownership and landowner willingness^{1 2}
- Access to site¹
- Common land and commoners’ rights

¹Identified Toolkit E1.3 as appropriate for consideration at strategic exercise stage, should minimally have been considered

²Identified in TAN8 as requiring consideration at strategic stage, should minimally have been considered

Note that TAN8 3.3 (p58) also recommends exclusion of land with a slope of more than 15°.

To outline very briefly some key concerns:

Landscape/Historic Landscape/wild land:

Radnorshire and Montgomeryshire contain outstanding landscapes, the reason that many people live here, and many others visit, amply evidenced in the following attachments/links:

1. Maps showing the LANDMAP 'High' (county/regional importance) and 'Outstanding' (national/international importance) aspect areas for both the 'Visual and Sensory' and 'Historical Landscape' layers^v.
2. 'Wildness Study in Wales', a report from the Wild Land Research Institute. See Figure 2.7 'Absence of modern human artefacts', and wildness maps Figures 3.1, 3.2 and 3.3 which demonstrate the special qualities of Powys landscapes outside the national park. Landscapes with these qualities of wildness and absence of modern human artefacts are a rare resource in the southern United Kingdom, enjoyed by huge numbers of people, whose visits support the local economy^{vi}.
3. Document showing Annex A to the 1947 Hobhouse Report and UK designated landscapes (attached). Powys hills and the Cambrian Mountains are the largest of the very few areas identified in the 1947 report which have not since been designated AONB or national park. This reinforces their high value.
4. Caring for Historic Landscapes, CADW^{vii}: ***'The contribution of local landscapes to people's quality of life and to the economic well-being of local communities should not be underestimated. Recent research amongst individuals and businesses has clearly shown that one of the main reasons why people invest so much of their time and money in Wales is the quality of the local environment and landscape'***.

Solar parks have greatest landscape impact in hilly areas and are likely to have least generating capacity in mid Wales where rain & cloud cover are more common than in flat coastal areas. GIS mapping confirms this - see SolarGIS maps^{viii} Solar panels are also unable to operate under any but lightest snow so hilltop placing in a cold county with cold winters is not optimal. On November 20th 2016 there is sufficient lying snow on some of the hills identified for solar panels to interfere with generation from solar panels.

Example: the two SSSIs identified above as lying entirely within LSAs also both lie entirely within LANDMAP Historic Landscape 'Outstanding' and Visual and Sensory 'High' aspect areas, and within an area recommended for landscape designation in the Hobhouse report.

Failing to use LANDMAP for screening purpose has resulted in the identification as suitable for energy development of huge areas of rare and important landscapes.

Failing to use LANDMAP has also resulted in the anomalous situation where a 27m turbine having been refused planning permission on 16/11/2015 at Bwlchau on grounds of unacceptable adverse impact on the historic environment, this site will now lie within a solar LSA with a wind LSA just to the west, to the east of

Builth Wells. Where one turbine was previously unacceptable now apparently adjacent solar and wind farms are acceptable.

No consideration has been given to the complex cumulative issues of the two technologies wind and solar within the same view. This has to be a consideration as was confirmed by Inspector Ava Wood re Wood Barn Farm APP/W3520/A/13/2194412.

PPW8 expresses a preference for development on brownfield land, and TAN 8 recommends use of brownfield sites for wind farms outside the SSAs. We do not understand why Powys's pristine hills should be earmarked in preference to significant development on less valuable land.

Amenity

Identification of 'resource' has assumed that a separation distance of 500m from a turbine of 120+m is sufficient to protect rural amenity. This is not in accord with Inspector's decisions about the overbearing nature of turbines close to housing. To give just one local example, Inspector Kay Sheffield (APP/T6850/A/15/3125958) deemed a 45m turbine to be harmful to household visual amenity at a distance or more nearly a km. Topography will play a part and a set, minimal separation distance is unreasonable and certain to result in harms.

Another aspect of amenity is noise. It is particularly disappointing that Powys should accept a recommendation that 500m separation is sufficient for very large turbines when the council has had ample demonstration within the county of noise issues suffered from turbines between 35m and 77m at distances even exceeding a kilometre. Problems encountered have included audible noise, low frequency noise, and amplitude modulation. The topography of the county, the sound box characteristics of our small valleys, the noise trapping qualities of temperature inversions all serve to exacerbate noise problems. This permissive 500m separation distance is likely to lead to overstatement of the 'resource' and resultant poorly sited development and human suffering and ill health.

Note also that the 500m separation distance, now much exceeded in many jurisdictions, and why should the population of Wales deserve less, was put forward at a time when turbines were much smaller.

Loss of amenity, housing blight, potential reduction of tourism income will have a harmful impact on communities. See link for research on impacts of wind farms on rural communities^{ix}. We are already aware of two offers on local houses which are 'on hold' while potential purchasers reconsider, one near Rhulen, Cregrina, the other near Gilwern Hill, Llandrindod. The currently healthy inward migration can be expected to be replaced by exodus.

Another factor in rural Wales is the number of rural homes and farms which rely on private water supplies. Residents have experienced contamination of their water supplies, and the separation distance of 500m will not provide protection against this risk. The potential for pollution is now well evidenced.^x

We believe that policy wording regarding amenity needs to be based on the Lavender Test: *"When turbines are present in such number, size and proximity that they represent an unpleasantly overwhelming and unavoidable presence in main views from a house or garden, there is every likelihood that the property concerned would come to be regarded as unattractive and thus an unsatisfactory (but not necessarily uninhabitable) place in which to live. It is not in the public interest to create such living conditions where they*

did not exist before.” It is not in the interest of Welsh Government or Powys Council to create a situation where housing blight and depopulation become a feature of the county.

There will also be issues of road access and road safety, of speedy access for emergency vehicles, inconvenience to local and visitor journeys.

Impact on setting of heritage assets, including interconnectedness of prehistoric/archaeological sites:

Powys is a landscape of ancient monuments and castles, old towns and listed rural houses. PPW9 ***‘Local planning authorities have responsibility for considering the historic environment as part of their role in preparing development plans and determining planning applications.’*** Impacts on heritage assets can’t be considered in isolation from impacts on the settings of those assets. In particular, in the case of prehistoric and archaeological features on our uplands, the sight lines between those features are an important part of appreciating the setting, but will be lost when every hill is dominated by modern industrial infrastructure.

Example: wind and solar LSAs are planned to sit above and close to the Walton Basin, an ***‘area of international archaeological importance containing spectacular and unique archaeological sites, particularly those dating from the Neolithic, set within an active agricultural landscape’***^{xi}.

Impact on setting of National Trails, Public Rights of Way, Open Access land and outdoor tourism:

Powys enjoys more than 14,000kms of PRowS, the largest network in any county. These are of inestimable benefit to public well-being and the tourism industry which accounts for over 12% of all registered businesses in Powys, and is growing, as well as supplying vital income to local trades and village facilities and providing farm diversification. Day and staying visitors enjoy outdoor pursuits throughout the year and numbers, including international tourists, are increasing steadily.

A Welsh Tourist Board commissioned survey highlighted that *‘the existence of a large number of trails and footpaths was stated as an important reason for visiting rural Wales for 78% of visitors’*^{xii}.

National Trails: Glyndwr's Way is entirely in Powys and one of only two Welsh National Trails. Offa's Dyke has substantial, and arguably the best, sections in the Welsh Marches.

Sustrans cycle routes: NCN 8 (Lon Las Cymru), 81 (Lon Cambria), 818, 825 (Radnor Ring/ Cylch Maesyfged) all have long sections in Powys and are widely promoted. This will now largely sit within LSAs and can be expected to be largely abandoned. Cyclists won't wish to visit an area undergoing major industrial construction.

Long-Distance Horse Trails^{xiii}: There are many long distance BHS routes through Powys, long distance trekking holiday companies, and an extent of bridleways and open country that make Powys a unique experience for riders. This is important both to residents and visitors/tourism.

The appeal of these routes is the uniquely lovely, small scale, intricate and varied landscapes through which they pass. Continuation of Powys's successful tourism income depends on its unique offer and is incompatible with the policy proposed. Appeal APP/T6850/A/13/2198831 sets out impacts on users of rights of way, and amenity loss resulting.

Open Access

Many of Powys's hill tops are commons and/or CROW Act open access land. Another factor which makes Powys so popular for inward migration and for visitors. Solar parks require fencing for security and safety, such that even after the destructive phase of construction, practical access will be substantially diminished.

This policy is incompatible with the Welsh Government's own objectives for public well being, take up of healthy outdoor exercise, good mental health. *'Access to the outdoors for recreation is a key part of our natural resources policy.'*^{xiv'}

Ecology & peat uplands & hydrology

The impacts of renewable technologies on wildlife are well documented, including impact deaths; barotrauma (bats); degradation of habitat through water contamination, excess run-off; degradation of vegetation; disturbance, pollution & hydrological impacts on available wildlife habitat etc. At a time when new legislation is seeking to foster proper protection of ecosystems^{xv} and when Wales's wildlife is really struggling, such that the 2016 State of Nature Wales^{xvi} reports *'of the 218 countries for which BII values have been calculated, Wales is ranked 49th from the bottom'* this is no time to relax environmental protections. In fact, all public bodies have a new 'Biodiversity and resilience of ecosystems duty' imposed on them within the Environment Act (Wales)^{xvii} with which this policy as presently drafted is completely incompatible.

Many of our hilltops, apart from being beautiful and historic places of great value for their recreational and agricultural potential are also peat uplands with the potential for carbon sequestration, potential which is upset by the creation of tracks and concrete foundations and the impacts that has on the hydrological integrity of the peat. Works associated with large scale renewable infrastructure can lead to the degradation, even the collapse, of peat structures, and consequent carbon release alongside habitat degradation. At this time, there is a considerable amount of research going on into the ecosystems benefits (carbon storage, water retention and flood reduction) of careful management and restoration of peat uplands, and the wildlife benefits of such management, exemplified by the work at the Pumlumon Project^{xviii} which is carrying out pioneering work with potential application to all the uplands of the UK. Such work is threatened by neighbouring renewable energy development. The ecological benefits of sensitive management of uplands are jeopardised by imposition of industrial energy infrastructure. Wales could be a leader in sensitive environmental care of its beautiful places, setting an example and demonstrating the ecological, environmental, social, health and well-being and economic advantages of such a policy.

'Where upland moorlands are severely degraded, or where large tracts of eroding peat are exposed, soil carbon is already being washed or evaporated out. In these areas, the growth of Sphagnum moss has been suppressed and heather plants have largely disappeared or are very stunted. This has climate change implications; a 1% loss of soil carbon per year could increase net Welsh carbon emissions by 10%.'^{xix}

'The Welsh uplands and their margins are home to some of our most charismatic and threatened wildlife, as well as vegetation communities that are important not just for the ecological health of upland habitats but also the cultural fabric that makes Welsh uplands so special....The upland landscapes of Wales are important not just for their wildlife and beauty, but for farming, forestry, water management, energy supply and recreation too.'^{xx}

From the UK National Ecosystems Assessment:

‘About 70% of the UK’s drinking water is sourced from MMH [mountains, moorlands and heath] and these habitats buffer water quality against the effects of atmospheric, diffuse and point source pollutants.’ ‘About 40% of UK soil carbon is held by MMH, mainly in upland peaty soils. This presents opportunities for short-term reductions in UK carbon dioxide emissions, both through reducing ongoing losses of soil carbon and further sequestration.’^{xxi}

The entire focus of the RE policy introduced into the LDP is maximisation of generation of renewables, almost entirely wind and solar, but the objective is the reduction of carbon emissions. There is a huge missed opportunity here to find a solution, in the form of restoration of peat uplands which would match this objective and enhance rather than damage local interest, wildlife, water storage, downstream flooding... The 2016 State of Natural Resources Report talks of *‘nature-based solutions such as restoration of GHG emitting degraded peat bogs and woodland planting’* which *‘can help make Wales more resilient to higher temperatures, extreme weather events and the risk of flooding and drought’^{xxii}*.

Access to grid connection & Landscape impacts of potential need for large scale grid connection infrastructure

The AECOM exercise has not constrained ‘resource’ by reference to grid access. This either means that the land resource is overstated or that major new grid infrastructure is envisaged. Each of these possibilities has major environmental impacts, on the one hand the targets are overstated and attempting to achieve them within available ‘resource’ will lead to unsuitable and harmful development, on the other major infrastructure carries with it all its own substantial environmental and landscape costs.

Landownership and landowner willingness

As above the likely overstatement of resource resulting from failing to account for this constraint is likely to lead to harmful development within remaining ‘resource’. No figure of resource which is based on availability of land which may not become available through landowner unwillingness can be robust. Forming policy and targets on the basis of such data is a folly certain to result in environmental damage. The validity of the current exercise is undermined by the inclusion of two tracts of land belonging to the National Trust who have indicated in their own objection their refusal to consider development on their holdings.

Access to site

Much of rural mid Wales is quiet and remote and our wilder places are approached along quiet traffic-free roads, barely more than bridleways and used safely by cyclists, walkers and riders. Failing to exclude from land resource locations which would be difficult to access has to mean either that the targets set are too high for the genuinely available ‘resource’ or that our remote places are to be shaken out of their former quiet existence, with their roads straightened, widened, hedgerows removed (more habitat loss) so that big industry can access the wild places to install industrial infrastructure.

Common land and commoner's rights

Inclusion within the land 'resource' of common land with rights over it held in common by multiple neighbours is again likely to overstate the available 'resource'. Once again, resource and so potential generation is overstated.

Additional information re impacts on some popular visitor/resident attractions

If this policy were enacted, around 40% of the Powys land area outside the Brecon Beacons National Park would be designated for large scale renewable generation. (Powys already has a larger share of SSAs than any other Welsh county, and is making its contribution.) The impact of this on residents and visitors cannot be overstated. This is an enormous land use change, not comparable to anything in recent history perpetrated by a responsible democratic government. We can only begin to suggest some of the principle losses the county will suffer below.

We have not considered grid infrastructure here, we cannot know where it will go, but we can be certain it will compound the damage and introduce new areas of intrusion of modern infrastructure into a quiet rural landscape.

'Visual receptors' will in the main be of the highest sensitivity being local people many of whom live/moved to Powys for its outstanding landscape and visitors who have come for the same reason.

Powys is a place of quiet attractions, small, quiet rural churches, narrow lanes, small scale farmed landscape beneath wild heather moorland, standing stones and ancient burial mounds on the hilltops. It is subtle, with few big name attractions, which might be why our politicians can't understand the appeal of this lovely county to residents and visitors alike. Powys's tourist offer is quiet rurality and outstanding landscape. Some examples of popular places and events –

Brecon Beacons National Park – visitors to which will look north to an utterly changed industrial landscape on the hills to the north which face the park

Glyndwr's Way National Trail – southern half almost entirely within LSAs, northern half through SSA

Wye Valley Walk National Trail – through solar LSA below Builth Wells

Offa's Dyke National Trail – skirting LSAs to the west through Radnorshire

BHS Festival of Endurance 'Red Dragon' international equestrian event – entirely through wind and solar LSAs across hills to the S/SE of Builth Wells

Walking Festivals at Talgarth, Kington and Knighton bring many visitors to the hills of Radnorshire, but may no longer wish to do so

Almost the entirety of the Radnor Ring Sustrans route will be located within LSAs

Both Abergwesyn Common and the Begwns, now largely within LSAs, are hugely popular walking spots, belonging to the National Trust.

Small local riding stables, trekking yards, livery yards, hunts will all have their activities massively curtailed, and the popular businesses Free Rein and Trans Wales Trails will be severely impacted. Free Rein will hardly

be able to operate since riders take trails all across Radnorshire and Montgomeryshire and need to be both safe and to be able to follow a continuous circular route. Trans Wales Trails' flagship route to the coast from Pengefnford will take riders for the better part of the first 3 days of a 4 day ride through LSAs.

The Pales Quaker Meeting House^{xxiii} at Llandegley, a retreat 'replete with sanctity and tranquility' will face a wind farm a couple of km to the east and a solar park just to the south.

Grade I listed buildings which stand to be significantly impacted (either within or just outside LSAs) include St Melangell, Llangynog; Bryndraenog, Beguildy; St Mary Magdalene, Bleddfa; Monaughty House, Llangunlo; Church of St David, Llandew; Church of St Michael, Gladestry; Church of St Mary, Gladestry; Church of St Matthew, Llandefalle; Church of St Bilo, FelinFach; Church of St David, Glascwm; St Stephen, Old Radnor, Lake Vyrnwy Dam; Lake Vyrnwy Straining Tower, St Cewydd, Dissert & Trecoed. These are loved buildings, many of them in very active use, visited and appreciated for their quality and setting. To take just one example: St Melangell, described as '*one of the loveliest small churches in Britain and one of the most remote...offering a contemplative space and opportunities for spiritual refreshment and renewal*'^{xxiv}. This very special place, offering quiet days to visitors, will be sited within the northernmost wind LSA.

Grade II* and Grade II buildings are too many to list. Powys is a country rich with historic architecture. And our hills are replete with archaeology and scheduled ancient monuments.

The British Horse Society promote a number of rides in Radnorshire and Montgomeryshire, used by local people and visitors. The Radnor Forest Ride, 'Fforest Inn, Molecatchers Wood and Castle Hill', 'Fforest Inn, Gwauncestre Hill and Glascwm Ride' and 'Hundred House, Cregrina and Glascwm Ride' will all be located entirely or substantially within LSAs. The Prince Llewellyn, William Morgan and Epynt Way rides will fall partly within LSAs. Visitors have a choice and do not need to come back to a spoilt landscape for their hard earned holiday.

Speaking of the proposed three wind turbine development at Pentre Tump Inspector Nixon stated '*the qualities of simple, uncluttered landform, space and tranquillity would be significantly interrupted by the proposed turbines. Given the extensive network of recreational routes, both close to and further away, from which turbines would be perceived as prominent, dominant or even overwhelming and the level of sensitivity which users of these routes will have to the character of their surroundings, I conclude that the proposed development would have a seriously adverse effect on the character and appearance of the upland landscape and the amenity of its users*'^{xxv}.

Radnorshire Wildlife Trust's popular Gilfach reserve, just north of Rhayader, will sit within a solar LSA with a wind LSA a few km to the east.

Much visited Elan Valley will have a wind LSA a few km to the east; Abbey-cwm-hir will be ringed by wind LSA; Lake Vyrnwy, with its open access areas will border a wind LSA, through which the Pererindod Mehangel Walk will pass.

The Heart of Wales railway line will look to left and right at solar and wind LSAs throughout almost its entire passage through Powys.

Solar LSA from west of Llanfair Caereinion to Glaslyn area has Glyndwr's Way and very large areas of open access in the west.

Solar LSA from Kerry Hills (south of Newtown) to west of Llanidloes has very large areas of open access land e.g. Beacon Hill, Cilfaesty Hill and NW and SW of Llangurig. This also affects the Kerry Ridgeway Promoted Walk, Severn Way, Glyndwr's Way (National Trail) and especially the Wye Valley Walk from its source to Rhayder.

Wind LSA around Abbey Cwmhir has Glyndwr's Way and open access areas.

Wind and Solar LSAs south of Rhayder has large areas of open access land e.g. Bryn and Drumddu.

Solar and Wind LSAs east of Llandrindod and extending down to Brecon Beacons NP has vast areas of open access land e.g (but not giving any idea of the total size of this) near New Radnor, Radnor Forest, Aberedw Hill, Glascwm Hill and Gwaunceste Hill. Much of this would still be considered 'wilderness' land as would that around Llangurig.

Solar LSA NE of Radnorshire SSA: contains Crown land which is also common land with rights to walk/ride anywhere. There will be cumulative issues with Neuadd Goch which is still in planning.

Solar LSA to S of Radnorshire SSA: also contains Crown land which is also common land with rights to walk/ride anywhere. There will be cumulative issues with Garreg Llwyd Hill Wind Farm. This will hugely impact on Glyndwr's Way and the Radnor Ring cycle route.

Solar LSA W of Radnorshire SSA towards Llangurig: this will sit either side of the A470 (See Visit Wales^{xxvi}: *'If you're going to do just one road in Wales, it really ought to be the A470'* and the mountain road to the coast, both of which are major tourist routes. The mountain road is also important to leisure users: *'the tremendous mountain road that soars through the mountains.'* (Visit Wales *'Highways to heaven: the best roads in Wales'*^{xxvii}).

Solar and wind LSAs E and SE of Llandod: Huge tracts of open access land; LSAs will lie either side of the A44, a major tourist route into Wales: *'The A44 takes in some of Wales' most beautiful countryside and makes a long journey west well worth it.'*^{xxviii} Inspector Nixon re turbines at Pentre Tump: *'However, the A44 is a principal leisure route into Wales, recognised as having scenic value. Given this, and the volume of use as a principal route, I regard the effects of the development as perceived by users of the A44 as significant.'*^{xxix}

Wind LSA SW of Rhayader: The Abergwesyn Pass, listed in *'Highways to heaven: the best roads in Wales'* on Visit Wales website^{xxx} will pass through the LSA

The popular Llandegely Rocks common, criss-crossed with public rights of way, location of one of the UK's largest starling roosts, will sit within a solar LSA, adjacent to a wind LSA, and possibly also enjoy its own wind farm, Hendy, currently in planning. Cumulative issues are not addressed.

Open Access Land in Radnor Forest will also now sit in an LSA.

ATTACHMENTS:

CCW Map of Llandeilo, Rhulen and Llanbedr Hills SSSI

CCW Map of Glascwm and Gladestry Hills SSSI

HOBHOUSE National Parks and Conservation Areas maps

ⁱ We will wish to refer to:

Documents and policy

'Proposals and inset maps, document number 45' <http://www.powys.gov.uk/en/planning-building-control/local-development-plan/ldp-stages/>

LDP Further focussed stages evidence documents

Planning Policy Wales 8 and 9 <http://gov.wales/topics/planning/policy/ppw/?lang=en>

Environment Act (Wales) 2016 <http://www.legislation.gov.uk/anaw/2016/3/contents/enacted>

Welfare of Future Generations Act 2015 <http://www.legislation.gov.uk/anaw/2015/2/contents/enacted>

Historic Environment (Wales) Act 2016 <http://www.senedd.assembly.wales/mgIssueHistoryHome.aspx?IId=12573>

TAN 8 <http://gov.wales/topics/planning/policy/tans/tan8/?lang=en>

Water Framework Directive http://ec.europa.eu/environment/water/water-framework/index_en.html

Local Authority services and the water environment <https://naturalresources.wales/media/2627/wfd-docs-eng.pdf>

Environment Agency: Local Authority Services and the Water Environment: Advice Note on the Water Framework Directive for Local Authorities across the Midlands http://www.sustainabilitywestmidlands.org.uk/wp-content/uploads/WFD-LA-Final_Advice_Note_June_2012.pdf

European Landscape Convention <http://www.coe.int/en/web/landscape/home>

Aarhus Convention <http://ec.europa.eu/environment/aarhus/legislation.htm>

Ecological reports and studies

State of Nature Wales 2016 <https://www.bto.org/sites/default/files/publications/state-of-nature-report-2016-wales-english.pdf>

NATURE RECOVERY PLAN FOR WALES <http://gov.wales/docs/desh/publications/160225-nature-recovery-plan-part-1-en.pdf>

State of Natural Resources Report 2016 for Wales <http://www.naturalresources.wales/sonarr?lang=en>

Introducing Sustainable Management of Natural Resources <https://naturalresources.wales/media/678317/introducing-smnr-booklet-english.pdf>

Towards an assessment of the state of UK Peatlands http://jncc.defra.gov.uk/pdf/jncc445_web.pdf

IUCN Peatland Programme Resources <http://www.iucn-uk-peatlandprogramme.org/resources>

UK National Ecosystem Assessment <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>

Unlocking the potential of the Welsh Uplands

<http://www.cprw.org.uk/images/user/CPG%20Upland%20position%20statement%20%2002%2009%2013.pdf>

Habitat use of bats in relation to wind turbines: <http://www.nature.com/articles/srep28961>

Ecological impact assessments fail to reduce risk of bat casualties at wind farms [http://www.cell.com/current-biology/fulltext/S0960-9822\(16\)31188-5](http://www.cell.com/current-biology/fulltext/S0960-9822(16)31188-5)

Comparing bird and bat fatality-rate estimates among North American wind-energy projects [http://www.cell.com/current-biology/fulltext/S0960-9822\(16\)31188-5](http://www.cell.com/current-biology/fulltext/S0960-9822(16)31188-5)

Landis soilscape data <http://www.landis.org.uk/soilscales/>

A review of the impacts of onshore wind energy development on biodiversity <https://www.doeni.gov.uk>

Iolo Williams and the State of Nature Report 2013 <http://www.gwentwildlife.org/node/6762>

Landscapes and historic landscapes

Caring For Historic Landscapes CADW

http://cadw.gov.wales/docs/cadw/publications/Caring_for_Historic_Landscapes_EN_CY.pdf

LANDMAP & LANDMAP guidance

ResPublica 'A Community Right to Beauty' <http://www.respublica.org.uk/wp-content/uploads/2015/07/Right-to-Beauty-Final-1.pdf>

CPAT Radnorshire Hills Survey

http://walesher1974.org/herumd.php?linktable=her_source1_link&group=CPAT&level=3&docid=301337867

<http://www.cpat.org.uk/resource/reports/cpat1088.pdf> Historic Settlements in Radnorshire

[WWW.cpat.org.uk](http://www.cpat.org.uk) Radnorshire Churches Survey, Radnorshire Villages surveys & Montgomeryshire Churches Survey & Montgomeryshire village surveys, Historic Landscapes projects

Noise

https://scotlandagainstspin.org/wp-content/uploads/2013/04/2004_AN_ASSESSMENT_OF_INFRA SOUND_PDF.pdf AN ASSESSMENT OF INFRA SOUND AND OTHER POSSIBLE CAUSES OF THE ADVERSE EFFECTS OF WIND FARMS

<http://www.masenv.co.uk/windfarms>

<https://scotlandagainstspin.org/resources/the-effects-of-wind-farms-on-meditative-retreaters/> Effects of Wind Farms on Meditative Retreaters PDF 2003

<https://www.wind-watch.org/documents/investigation-into-wind-farms-and-noise/> Investigation into wind farms and noise

WHO Guidelines for Community Noise <http://www.who.int/docstore/peh/noise/guidelines2.html>

Other

Economic case for the visitor economy https://www.visitbritain.org/sites/default/files/vb-corporate/Documents-Library/documents/Economic_case_for_the_Visitor_Economy-Phase_2-26_July_2010-FINAL.pdf

Mountain wind farms and mountaineers <http://www.mountaineering.scot/mountain-wind-farm-research>

Powys STEAM Report 2015 www.powys.gov.uk

Gone with the Wind: Valuing the Visual Impacts of Wind turbines through House Prices

<http://www.spatialeconomics.ac.uk/textonly/SERC/publications/download/sercdp0159.pdf>

Agricultural Land Classification <http://publications.naturalengland.org.uk/category/5954148537204736>

Natural England: Solar Parks: Maximising environmental benefits <http://publications.naturalengland.org.uk/publication/32027>

SolarGIS mapping <http://solargis.com/>

ii Please see ‘Proposals and inset maps, document number 45’ <http://www.powys.gov.uk/en/planning-building-control/local-development-plan/ldp-stages/> FFCs

96,99,101,102,104,105,106,107,109,110,111,112,113,117,120,130,140,147,148,149,150,151,152,160,166

Session Four Alliance Proof of Evidence Jill Kibble Tourism and the Economy <http://www.voicesagainstturbines.co.uk/wp-content/uploads/2014/02/Tourism-the-economy-Jill-KIBBLE-POE-1.pdf>

iii

Environmental and Heritage Constraints

Environmental Constraints

AECOM have assumed that there will be no wind energy potential in the following national and regional environmentally designated areas:

- National Nature Reserves [NNR]
- RAMSAR Sites
- Special Areas of Conservation [SAC]
- Special Protection Areas [SPA]
- Sites of Special Scientific Interest [SSSI]
- Broad Leaved Woodland [based on National Forest Inventory]
- Local Nature Reserves

Heritage Constraints

AECOM have assumed that there will be no wind energy potential in the following national and regional historically designated areas:

- Within the tip height [120m] of any Scheduled Monuments [CADW]
- Within the tip height [120m] of any Listed Buildings [CADW]

Physical Constraints

Transport Infrastructure

AECOM have assumed that there will be no wind energy potential within the following distances of key transport infrastructure as identified by OS Strategi Data:

- 170m [tip height plus 50m] of Motorways [based on OS Strategi]
- 170m [tip height plus 50m] of Primary Roads [based on OS Strategi]
- 170m [tip height plus 50m] of Railway Lines [based on OS Strategi]
- 132m [tip height plus 10%] of A-Roads [based on OS Strategi]
- 132m [tip height plus 10%] of B-Roads [based on OS Strategi]

Other Physical Constraints

AECOM have assumed that there will be no wind energy potential within the following distances from inland waters as identified by OS Strategi Data:

- Major River [assumed 10m wide] [based on OS Strategi]
- Secondary River [assumed 5m wide] [based on OS Strategi]
- Minor River [assume 5m wide] [based on OS Strategi]
- Canals [assume 5m wide] [based on OS Strategi]
- Lakes [based on OS Strategi]

Residential Noise Constraints

AECOM have assumed that there will be no wind energy potential in the following residential areas:

- 500m from residential properties [as defined by the LLPG]

Aviation and Radar Constraints

AECOM have assumed that there will be no wind energy potential in the following CAA and MoD aviation exclusion zones as identified within the CAA Visual Flight Rules [VFR] Charts:

- Controlled Airspace [including military aircraft low flying zones, or Tactical Training Areas]
- UK Aerodrome Traffic Zones
- Military Aerodrome Traffic Zones
- High Intensity Radio Transmission Areas
- Aerodromes with instant approach procedures outside controlled airspace

iv <http://www.brecon-and-radnor-cprw.wales/maps/>

v <http://www.brecon-and-radnor-cprw.wales/maps/>

- ^{vi} http://www.wildlandresearch.org/media/uploads/Report_WildMappingWales-v.2-Feb-2015.pdf
- ^{vii} http://cadw.gov.wales/docs/cadw/publications/Caring_for_Historic_Landscapes_EN_CY.pdf
- ^{viii} <http://solargis.com/products/maps-and-gis-data/free/download/united-kingdom>
- ^{ix} https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010020/EN010020-001568-WR_16_Steve%20Wood.pdf
- ^x <https://scotlandagainstspin.org/2014/08/windfarms-water-smoking-gun/>
- ^{xi} <http://welshjournals.llgc.org.uk/browse/viewpage/llgc-id:1191402/llgc-id:1197704/llgc-id:1197766/getText>
- ^{xii} http://www.ecodyfi.org.uk/tourism/Windfarms_research_eng.pdf INVESTIGATION INTO THE POTENTIAL IMPACT OF WIND FARMS ON TOURISM IN WALES
- ^{xiii} See BHS Guidance on renewable generation www.bhs.org.uk Wind-turbine-guidance-for-planners-and-developers, Advice-on-wind-turbines-for-riders-and-carriage-drivers, Wind-turbine-experiences--bhs-2012-survey-results, *BHS Advice on Solar Farms*
- ^{xiv} <http://gov.wales/betaconsultations/environmentandcountryside/improving-opportunities-to-access-the-outdoors/?lang=en>
- ^{xv} Environment Act (Wales) 2016, Welfare of Future Generations Act 2015
- ^{xvi} <https://www.bto.org/sites/default/files/publications/state-of-nature-report-2016-wales-english.pdf>
- ^{xvii} <http://www.legislation.gov.uk/anaw/2016/3/section/6/enacted>
- ^{xviii} <http://www.montwt.co.uk/what-we-do/living-landscapes/pumlumon-project>
- ^{xix} LUCCG (2010) Land Use and Climate Change Report. Welsh Government. Available at: gov.wales
- ^{xx} State of Nature Wales 2016 <https://www.bto.org/sites/default/files/publications/state-of-nature-report-2016-wales-english.pdf>
- ^{xxi} <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx> Chapter 5 Mountains, Moorlands and Heaths
- ^{xxii} State of Natural Resources Report <http://www.naturalresources.wales/sonarr?lang=en>
- ^{xxiii} <http://thepales.webs.com/>
- ^{xxiv} <http://www.st-melangell.org.uk/>
- ^{xxv} Appeal Ref: APP/T6850/A/13/2198831
- ^{xxvi} <http://www.visitwales.com/holidays-breaks/sightseeing-and-tours/the-best-roads-in-wales>
- ^{xxvii} <http://www.visitwales.com/holidays-breaks/sightseeing-and-tours/the-best-roads-in-wales>
- ^{xxviii} http://www.greatestdrivingroads.com/great_roads/A44.html
- ^{xxix} Appeal Ref: APP/T6850/A/13/2198831
- ^{xxx} <http://www.visitwales.com/holidays-breaks/sightseeing-and-tours/the-best-roads-in-wales>