



## CAMPAIGN FOR THE PROTECTION OF RURAL WALES

### **APPENDIX 1. Application of Constraints: Arup vs Aecom methodology**

| AECOM STEPS   | AECOM TOOLKIT <sup>1</sup> WIND (POWYS LDP REA 2017)   | AECOM TOOLKIT <sup>1</sup> SOLAR (POWYS LDP REA 2017)  | ARUP fixed/variable constraints applied to identify unrefined Priority Areas - according to Tables 2 & 3 pp10-11 ARUP 2 <sup>1</sup> - BUT see NOTES:                      | NOTES ON ARUP METHODOLOGY  |
|---|--|--|--|--|
| <b>Step 1: Typology</b>                                 | Wind turbine: 2MW/80m hub height/80m blade-sweep diameter: capacity factor <b>27%</b> ; 1 turbine per 0.5kmsq                      | Solar: Rated output: 5MW Area of Land Required: circa 0.12km <sup>2</sup> Capacity factor <b>10%</b>                               | Wind turbines up to 250m tip height and solar panels. Range of options presented ARUP 1 Appx A pp14-16. Wind C.F <b>27-38%</b> , solar <b>22%</b> . No further info given. | <b>We do not know if all fixed constraints have been applied, but clearly ancient woodlands are not excluded from PAs despite inclusion as 'fixed constraint in ARUP 2<sup>1</sup> Table 2.</b><br>Table 3 indicates a range of 'variable' constraints which ARUP states have been applied in identifying 'unrefined' PAs: <b>most of these variable constraints have not been applied in identifying PAs, and are not considered in refinement process.</b><br><b>This is because, while GIS mapping identified areas constrained by variable constraints, these areas were not excluded from 'unrefined PAs'</b><br><b>If dNDF proceeds, Policy 10 confers reduced, if not removed, protection for all these features.</b> |
| <b>Acknowledged some potential constraints ignored</b>  | <b>Landowner willingness, political will, planning delay.</b><br><b>But post REA talks held with MOD re SENTA training ground.</b> | <b>Landowner willingness, political will, planning delay.</b><br><b>But post REA talks held with MOD re SENTA training ground.</b> | See Errors doc ARUP 11 & 12  | <b>PAs not informed by local resident/environmental NGO input, no investigation of landowner willingness e.g. National Trust re landholding Begwns in PA 7, MOD re PA 8.</b>   |
| <b>Step 2: requirements of technology</b>               | Wind speed < 6.0 m/s   | Slope and topology: 0-3° + 3-15° if SW,S,SE  | <b><u>Not investigated.</u></b>  | <b>PAs do not correlate with wind speed map in ARUP 1 p80. Land slope &amp; orientation not mapped. ARUP 1 recommendations for refinement not taken up.(p25 ARUP 1)</b>  |
| <b>Step 3: environmental &amp; heritage constraints</b> | National Park + 7km buffer   | National Park + 3.5km buffer   | <b>National Park (fixed) extent only - both wind and solar</b><br><b><u>National Park (extent only) excluded</u></b>   | <b>Policy 10 assumes acceptance of landscape change. Conflict with statutory purposes of NPs. Inconsistent, minimal buffering in 'refinement' process. See Errors doc ARUP 1 &amp; 2 (5)</b>   |
|   | AONB + 7km buffer  | AONB + 3.5km buffer  | <b>AONB (fixed) extent only – both</b><br><b><u>AONB (extent only) excluded</u></b>  | <b>Policy 10 assumes acceptance of landscape change. Conflict with statutory purposes of AONBs. Inconsistent, minimal buffering in 'refinement' process.</b>   |
|   |  |  | <b>Landmap V&amp;S layer high and outstanding (variable) – both</b>  | <b>Landmap V&amp;S High has <u>not</u> been excluded. Only PA 2 does <b>NOT</b> contain Landmap V&amp;S High landscapes. Policy 10 <b>removes</b> landscape protection. <b>SEE MAP 1 BELOW.</b></b>  |
|   |  |  | <b>Open Access (variable) - both</b>   | <b>Open access land is <u>not</u> excluded. PA14 in particular contains large areas of Open Access. Policy 10 reduces protection. <b>SEE MAP 2 BELOW.</b></b>  |
|   |  |  | <b>RIGS (variable) – both</b>  | <b>RIGS are <u>not</u> all excluded: e.g. Llandegley Rocks RIGS Grid ref SO 1275 6135 is within PA 6. Policy 10 reduces protection.</b>  |

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|  |  |  | <b>Fforest Fawr Geopark</b> (variable) – both<br><b>Fforest Fawr Geopark excluded</b>                            | <i>Already excluded - inside Brecon Beacons National Park <b>BUT</b> Wales's 2<sup>nd</sup> Geopark Geo Mon Anglesey (720 kmsq) is not listed as a constraint, not excluded.</i>   |
|  |  |  | <b>Unesco biosphere</b> (variable) - both  | <i>PA 5 clips the western edge of the Dyfi biosphere. <b>Not</b> excluded.</i>   |
|  |  |  | <b>World Heritage sites</b> (fixed) – both<br><b>World heritage sites excluded</b>                               |  |
|  |  |  | <b>Conservation areas</b> (fixed) - both   | <i>Conservation Areas <b>not</b> excluded e.g. Rhayader Conservation area inside PA 6.</i>   |
|  | <b>National Nature Reserve</b> extent only                           | <b>National Nature Reserve</b> extent only                   | <b>National Nature Reserve</b> (variable) – both   | <i>NNRs are <b>not</b> excluded: e.g. Rhosgoch NNR is within PA 7. Policy 10 reduces protection.</i>   |
|  | <b>Ramsar sites</b> extent only                                      | <b>Ramsar sites</b> extent only                              | <b>Ramsar sites</b> extent only (fixed) - both   | <i>Ramsar sites <b>not</b> all excluded. Parts of Corsydd Môn a Llyn / Anglesey and Llyn Fens included in PA1</i>  |
|  | <b>SAC + Candidate SAC</b> extent only                               | <b>SAC + Candidate SAC</b> extent only                       | <b>SAC + Candidate SAC</b> extent only (fixed) – both  | <i>SACs are <b>not</b> all excluded – e.g. Rhosgoch SAC is within PA 7, Mynydd Epynt SACs in PA8 Many parts of River Wye SAC lies within PAs. Policy 10 reduces protection.</i>  |
|  | <b>SPA + foraging buffer</b>   | <b>SPA + foraging buffer</b>                                 | <b>SPA</b> extent only (fixed) – both<br><b>SPAs (extent only) are excluded</b>                                  | <i>No foraging buffers. Error(s) in buffering maps - impacts of PAs on SPAs misrepresented in HRA. Policy 10 reduces protection. <b>See Errors doc. Habitats Regulations Assessment (1)</b></i>  |
|  | <b>SSSIs</b> extent only   | <b>SSSIs</b> extent only                                     | <b>SSSIs</b> (variable) - both   | <i>SSSIs <b>not</b> excluded e.g. few km from Crossgates are 25Acre Wood SSSI, Coed Aberdulas SSSI, Cae Cwm Rochas SSSI, Ithon Valley Wodlands SSSI and Cae Llwyn SSSI, just in one small part of PA6. Policy 10 reduces protection.</i> |
|  | <b>Broadleaf Woodland</b> (National Forest Inventory) extent only    |  | <b>Woodland</b> (various assumed excluding ancient woodland) (variable) - both                                   | <i>Woodland <b>not</b> excluded - Policy 10 reduces protection.</i>  |
|  | <b>Ancient Woodlands/'woodlands'</b> (undefined) extent only         | <b>Ancient Woodlands/'woodlands'</b> (undefined) extent only | <b>Ancient woodland</b> (fixed) - both   | <i>Ancient woodland has <b>not</b> been excluded – Policy 10 reduces protection. <b>See Errors doc. ARUP 1 &amp; s (10)</b></i>  |
|  | <b>Local Nature Reserves</b> extent only                             | <b>Local Nature Reserves</b> extent only                     | <b>Not considered.</b>   | <i>Wildlife Trust reserves are not a constraint, not excluded. Policy 10 reduces protection</i>  |
|  | <b>Registered Historic Landscape</b> extent only                     | <b>Registered Historic Landscape</b> extent only             | <b>Historic Landscape</b> (variable) – both<br><b>Registered historic landscapes excluded</b>                    | <i>Because Policy 10 <b>reduces</b> protections a buffer for visual impacts would have been appropriate.</i>   |
|  | <b>SAMs</b> extent only  | <b>SAMs</b> extent only                                      | <b>Not considered.</b>   | <i>Policy 10 and PPW10 reduce protections.</i>   |
|  | <b>Listed Buildings</b> (CADW) 500m                                  | <b>Listed Buildings</b> (CADW) 500m                          | <b>Not considered.</b>   |  |
|  | <b>Watercourses: rivers, canals, lakes</b> (OS Strategi) extent only | <b>Watercourses</b> extent only                              | <b>All inland water</b> (variable) - wind<br><b>Inland waters excluding rivers and canals</b> (variable) - solar | <i>Watercourses are <b>not</b> excluded from PAs</i>   |
|  | <b>Thick peat</b>  | <b>Thick peat</b>  | <b>Peat deeper than 45cm</b> (variable) - both   | <i>PAs include 'areas of varying opportunity', i.e. containing variable constraints, so it is unlikely that deep peat has been excluded.</i>   |
|  |  | <b>Agricultural land Grades 1-4</b>                          | <b>Agricultural land Grades 1 and 2</b> (variable) - both  | <i>Not compliant with Government Policy. <b>See Errors doc. ARUP 1 &amp; 2 (1)</b></i>   |

|   |   |  |   |  |
|---|---|--|---|--|
| <b>Step 4: transport infrastructure constraints</b> | <b>motorways/primary roads/railways</b> topple + 50m = 170m   | Transport infrastructure major and minor extent only   | <u><i>Not considered.</i></u>   |  |
|   | <b>A roads/B roads</b> topple + 10% = 132m  | " "  | <u><i>Not considered.</i></u>   |  |
| <b>Step 5: dwellings and noise buffer</b>           | <b>Buildings</b> (as defined by LLPG) (noise buffer) 500m   | <b>Buildings</b> (construction noise) 500m   | <u><i>Not considered.</i></u>   |  |
|   |   |  | Urban regions (fixed) - both  | <i>Undefined and unexplained – why aren't urban and urban fringe included subject to caveats. Potential for RE e.g. rooftop solar? Brownfield development?</i>   |
| <b>Step 6: Aviation &amp; radar constraints</b>     | <b>Restricted airspace - including UK Aerodrome traffic zones and instrant approach procedures outside controlled airspace</b>  | <b>Controlled airspace (including military aircraft, low flying zones, or tactical training areas)</b> | <u><i>Not considered.</i></u>   | <i>The omission of all air flight constraints except the physical extent of airports and runways, and NATS below, is a basic omission. Wind turbines and solar can pose significant safety challenges to aviation, both commercial and light aircraft. This is another fundamental flaw in the mapping exercise undertaken to determine PAs.</i> |
|   |   | UK Aerodrome Traffic Zones   | <u><i>Not considered.</i></u>   | <i>As above</i>  |
|   |   | Military Aerodrome Traffic Zones   | <u><i>Not considered.</i></u>   | <i>As above</i>  |
|   |   | Aerodromes with instant approach procedures outside controlled airspace                                | <u><i>Not considered.</i></u>   | <i>As above</i>  |
|   |   | CAA: Welshpool Airport CAA 5km buffer  | Airports and runways (fixed) - both                                     | <i>Buffering requirement not observed. Small airfields not excluded: e.g. Lane Farm, Rhosgoch, Powys. This can be addressed at application stage BUT Policy 10 reduces protection.</i>   |
|   | MOD Low Flying Tactical Areas   | MOD Low Flying Tactical Areas  | <u><i>Not considered.</i></u>   | <i>See Errors doc. ARUP 1 &amp; 2 (13) &amp; (14) re requirement for MOD data.</i>   |
|   | SENTA Training Area 10km buffer   | SENTA Training Area 3.5km buffer   | <u><i>Not considered.</i></u>   | <i>PA 8 lies entirely within SENTA 10km buffer, as does the southern tip of PA 6. See Errors doc ARUP 1 &amp; s (11) &amp; (12).</i>   |
|   | Areas constrained by NATS Aviation & RADAR Safeguarding Zones incl. Military Areodr. Traffic Zones, High Intensity Transmission Areas extent using 120m safeguarding zone | High Intensity Radio Transmission Areas  | NATS Specified Communication Systems (fixed) - both                     | <i>Insufficient data in ARUP documents, however AECOM treatment suggests buffering is required. No buffering explicitly mentioned.</i>   |
|   |   |  | NATS navigation Aids and Air Ground Air Communication (variable) - both | <i>As above.</i>   |
| <b>Step 7: prioritise</b>                           | <b>Land &lt; 0.5kmsq</b> tacks/fire breaks/slivers of land  | <b>Land &lt; 12.5Ha</b> insufficient for 5MW Land slivers/firebreaks/tracks                            | <u><i>Not considered.</i></u>   | <i>Inclusion of this constraint in AECOM REA results from greater sophistication of GIS mapping and constraint analysis, in comparison to present exercise.</i>  |

|                                     |   |   |  |   |
|-------------------------------------|---|---|--|---|
|                                     | grid: > 10km from 33/66/132kv   | grid: > 10km from 33/66/132kv   | <i><u>Not considered.</u></i>  | <i>See Errors doc ARUP 1 &amp; s (11). ARUP recommend refinement should consider grid access. This was not done.</i>    |
| <b>Step 8:</b>                      |   | Followed Step 9 refinement  |  |   |
| <b>Step 9: cumulative</b>           | SSAs & all WFs existing/in constr./approved @31.3.17 (incl. outside Powys) 7km buffer | SSAs & all WFs existing (incl. outside Powys which impact on Powys LPA area) extent | <i><u>Not considered.</u></i>  | <i>See Errors doc ARUP 1 &amp; s (11). ARUP recommend refinement should consider existing wind. This was not done.</i>  |
|                                     |   | Existing and consented PV farms treated as built 3.5km buffer                       | <i><u>Not considered.</u></i>  | <i>See Errors doc ARUP 1 &amp; s (11). ARUP recommend refinement should consider existing solar. This was not done.</i> |
|                                     |   |   | Allocated major developments (undefined)- unspecified buffer 'based on size attributes' (variable) - both Unrefined' PAs subjected to refinement process conducted by means of conversations between Welsh Government, NRW & ARUP. | <i>Unclear what 'allocated major developments' are, and what buffers may or may not be applied and why</i>              |
| <b>Final steps &amp; conclusion</b> | <b>NO REMAINING WIND LSAs, therefore NO LANDSCAPE SENSITIVITY REFINEMENT</b>          | <b>SOALR LSAs IDENTIFIED, LANDSCAPE SENSITIVITY STUDY CONDUCTED TO REFINE LSAs</b>  |  |   |

#### <sup>1</sup> BIBLIOGRAPHY:

AECOM Toolkit: Planning for Renewable and Low Carbon Energy - A Toolkit for Planners (September 2015) (<https://gov.wales/publications>)

AECOM Final Report: Powys Renewable and Low Carbon Energy Assessment 2017 (May 2017) <https://en.powys.gov.uk/article/5365/Supporting-Evidence>

AECOM Final Report: Powys Renewable and Low Carbon Energy Assessment 2017 – Maps, Companion Report (May 2017) <https://en.powys.gov.uk/article/5365/Supporting-Evidence>

ARUP 1: Welsh Government Assessment of onshore wind and solar energy potential in Wales Stage 1 - Development of Priority Areas for Wind and Solar Energy (March 2019)

ARUP 2: The Welsh Government Assessment of onshore wind and solar energy potential in Wales Stage 2 - Refinement of Priority Areas for Wind and Solar Energy (June 2019)

#### GLOSSARY:

**AONB** Area of Outstanding Natural Beauty

**CAA** Civil Aviation Authority

**LANDMAP V&S** Landmap Visual & Sensory Layer

**LLPG** Local Land and Property Gazetteer

**MOD** Ministry of Defence

**NATS** National Air Traffic Services

**NGO** non-governmental organisation

**NP** National Park

**OS Strategi** Ordnance Survey Open Data dataset

**PA** Priority Area

**RAMSAR** wetlands designated under the Ramsar Convention

**REA** Renewable Energy Assessment

**RIGS** Regionally important geological and geomorphological sites

**SAC** Special Area of Conservation

**SAM** Scheduled Ancient Monument

**SENTA** Sennybridge Training Area

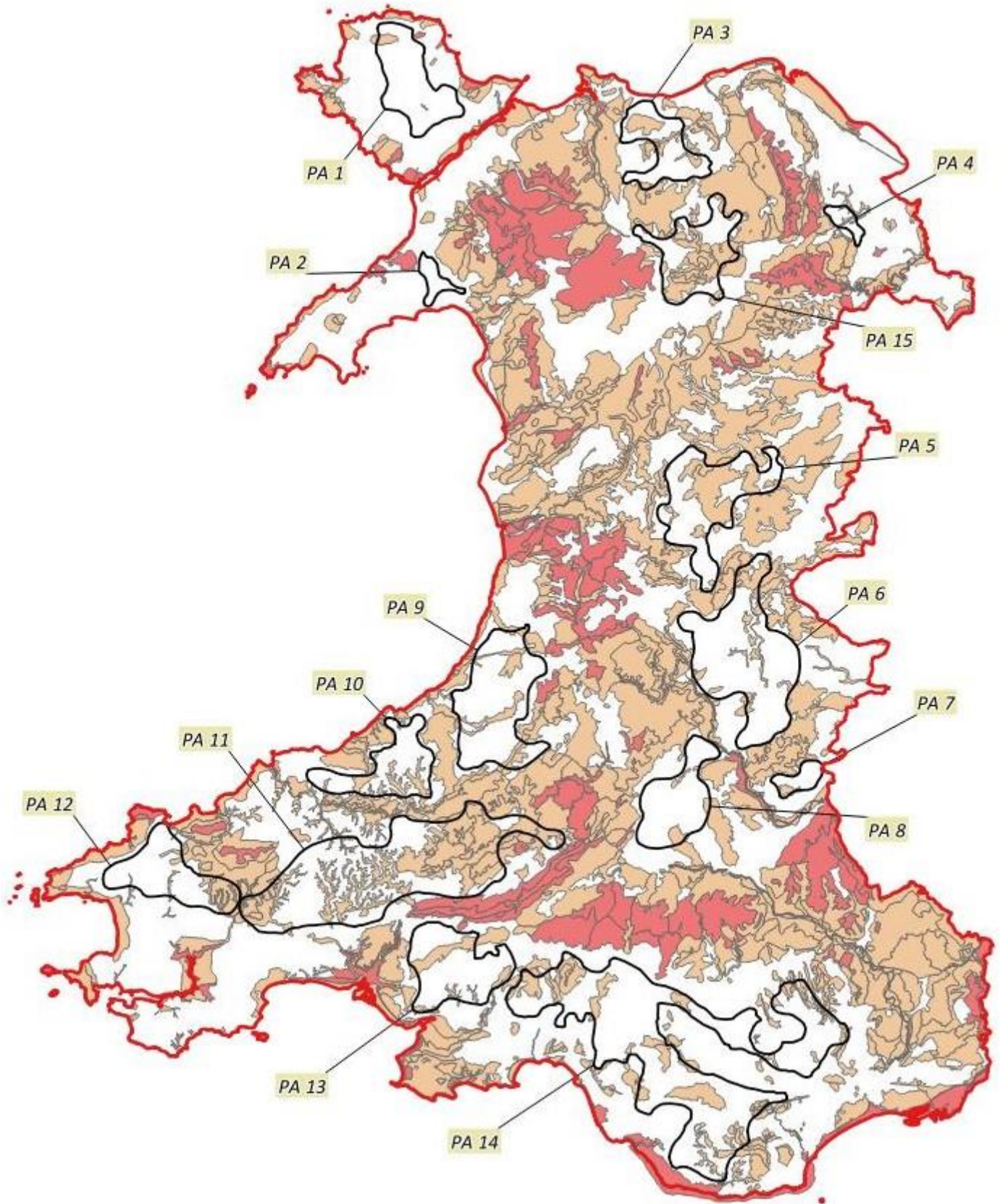
**SPA** Special Protection Area

**SSSI** Site of Special Scientific Interest



**SUPPORTING MAPS TO TABLE ABOVE:**

**Map 1: Priority Areas mapped against Landmap Visual and Sensory High (orange) and Outstanding (red)**





## Welsh Government National Development Framework: Wind & Solar Priority Areas with Open Access Lands

