

**ELECTRICITY ACT 1989**

**THE MID WALES (POWYS) WIND FARMS PUBLIC INQUIRY**

The Electricity Generating Stations and Overhead Line (Inquiries Procedure)  
(England and Wales) Rules 2007

**SESSION 4: MATTERS IN COMMON / CUMULATIVE EFFECTS**

**PROOF OF EVIDENCE ON LANDSCAPE AND VISUAL MATTERS**

By PHILIP RUSSELL-VICK DipLA CMLI

On behalf of POWYS COUNTY COUNCIL

FEBRUARY 2014

**MID-WALES CONJOINED WIND FARM INQUIRY**  
**SESSION 4: Matters in Common/Cumulative Effects**

**LANDSCAPE PROOF OF EVIDENCE**

PG Russell-Vick DipLA CMLI on behalf of Powys County Council

February 2014

<b>CONTENTS</b>	<b>PAGE</b>
1.0 Qualifications and Experience	3
2.0 Scope of Evidence and Methodology	5
3.0 Landscape and Visual Baseline	10
4.0 Landscape Related Planning Policy Context	16
5.0 Cumulative Effects of SSA C Schemes with TACPA Schemes (and Llandinam Grid Connection)	23
6.0 Cumulative Effects of SSA B Schemes with TACPA Schemes (and BNC & BSC Grid Connections)	27
7.0 Cumulative Effects of SSA B with SSA C Schemes and TACPA Wind Farms	34
8.0 CC Grid Connections and Cumulative Effects with SSA B & C Schemes	36
9.0 National Grid 400kV line	41
10.0 SSA C Highway Improvements	46
11.0 Three PCC Scenarios	47
12.0 Conclusions	52

**APPENDICES** (provided under separate cover)

Appendix A Figures (see below)

Appendix B Relevant LANDMAP VSAs

Appendix C Relevant Shropshire Landscape Types

**FIGURES** (in Appendix A)

Figure PRV1 PCC Scenario 1

Figure PRV2 PCC Scenario 2

Figure PRV3 PCC Scenario 3

## 1.0 QUALIFICATIONS AND EXPERIENCE

- 1.1 I am Philip Russell-Vick, a Director of Enplan, landscape, planning and environmental consultants. I hold a Diploma in Landscape Architecture and I am a Chartered Member of the Landscape Institute. I have over thirty years of experience in landscape planning and landscape architecture and have provided consultancy advice on a wide range of residential, commercial, industrial, mineral and other development projects throughout the UK and overseas.
- 1.2 I formed Enplan in December 2000. We offer consultancy advice in fields of landscape architecture, environmental and planning. My landscape and visual impact assessment work has included proposals for the Medway Cement Works and chalk quarry adjoining the North Downs AONB, mixed use redevelopment proposals for the former Shoreham Cement Works in the former Sussex Downs AONB, the 2010 Ryder Cup Golf Course project at the Celtic Manor Resort in South Wales, various major green and brown field residential development projects in the south-east, east and north-east of England, flood defence projects in Oxford, London, Dorset and Somerset, telecommunication developments in The Gower Peninsula AONB, Cornwall AONB, Exmoor and Dartmoor National Parks and the Sussex Downs AONB, various on and offshore wind farm proposals, mainly in Lincolnshire and Nottinghamshire, and a large solar farm in the New Forest National Park. My landscape design experience includes a new visitor's centre for Sir Edwin Lutyens' WWI 'Memorial to the Missing' at Thiepval on the Somme, various historic landscape restorations of Repton, Marnoch, Jekyll and Paxton parks and gardens, a British Construction Industry award winning flood defence project at Weymouth and a proposed 6\* hotel and leisure complex at Mentmore Towers in Buckinghamshire.
- 1.3 Prior to forming Enplan I worked in private practice for seventeen years, during which time I worked on a wide range of projects. Significant infrastructure schemes included the M25 widening J12-15, A1(M) improvements at Peterborough, BAA projects at Heathrow, Gatwick and Stansted and on-shore oil exploration schemes. Development projects included green and brownfield residential schemes, urban regeneration projects in London, south and north Wales and Northern Ireland and urban expansion masterplans. I also worked on several major quarrying and waste disposal schemes as well as flood alleviation projects including the Jubilee River on the Thames. I prepared best practice guides and strategies for various Government agencies and

for the Highways Ministry of Hong Kong and I led the design of and was responsible for the implementation of public spaces and parks, including five new urban parks in Kuwait City.

- 1.4 I have given evidence at a number of major public inquiries such as the Medway Cement Works Call-in inquiries, 'SnOasis', promoted as the UK's the largest indoor winter sports complex near Ipswich, the South Downs National Park Inquiry, redevelopment of the former hospital at Leybourne Grange in Green Belt, 850 dwellings at Bromley also in Green Belt, a scheme for 750 houses at Uckfield, East Sussex, as well as several wind farm inquiries including Crow Holt Wind Farm at Grove, Nottinghamshire, The Grange Wind Farm, Orby Marsh Wind Farm and Gayton le Marsh Wind Farm proposals, all in Lincolnshire, and Asfordby Wind Farm in Leicestershire.
- 1.5 Enplan was appointed by Powys County Council in April 2013 to advise the authority on landscape and planning policy matters in connection with this inquiry and various other wind farm applications they have received both within and outside Strategic Search Areas B & C (SSAs). My co-Director Martin Carpenter deals with planning matters. My specific role since this time has been to review the past stages of work of the Council and their consultants but to form my own overview of the many and significant landscape and visual issues raised and to advise the Council afresh in advance and in preparation for the inquiry. I am familiar with the landscape character of this part of Wales and of the landscape that forms the context of SSAs B and C and route corridors of the various electrical connections. I have visited the area on several occasions in preparing for the inquiry.
- 1.6 I understand my duty to the Inquiry and have complied, and continue to comply, with that duty. I confirm that this evidence identifies all facts which I regard as being relevant to the opinions that I have expressed and that the Inquiry's attention has been drawn to any matters which would affect the validity of those opinions. I believe that the facts stated within this proof are true and that the opinions expressed are correct.

## **2.0 SCOPE OF EVIDENCE AND METHODOLOGY**

- 2.1 This fourth session of the Public Inquiry concerns the cumulative effects of the SSA B and C applications, with the operational, consented and in-planning TACPA schemes before Powys, together with SP Manweb's proposal for the 132kV overhead line connection for the Llandinam Repowering Wind Farm, other potential electricity connections and infrastructure, including the National Grid's proposed 400kV line from the proposed Cefn Coch substation site to the existing line east of Oswestry.
- 2.2 The purpose of my evidence is to define, assess and compare at a 'high level', the landscape and visual effects of various cumulative scenarios of wind farms and connections that appear before the Inquiry and to present conclusions in this respect on behalf of the County Council. These scenarios have been prepared in conjunction with Steve Stapleton and his engineering colleagues at S&C Electric Europe Ltd, advisors to the County Council.
- 2.3 In preparing this evidence I have also had the benefit of the views of Andrew Croft of Atkins (who acted as an expert witness for Powys County Council in Sessions 1 and 3 of the Inquiry) on the impact on designated and non-designated heritage assets and effects on the character and form of the historic landscape. A copy of the report setting out his views accompanies this evidence
- 2.4 The scope of my evidence will include a review of the landscape context or baseline for the various proposals, a brief discussion in respect of planning policy (in so far as it effects my landscape and visual considerations), a high level assessment of the various individual components (where these have not been addressed in evidence elsewhere before the Inquiry) and the in-combination effects of particular components (where relevant and where individual effects have already been considered). I will assess and compare the in-combination effects of the various scenarios and, finally, I will conclude.
- 2.5 The approach and methodology for my assessment is by necessity high level or 'strategic'; this is not an assessment equivalent to that which would be appropriate for an ES or related to a planning application (i.e. at a specific project level). In so far as it is relevant, my approach is in accordance with the 3<sup>rd</sup> Edition '*Guidelines for*

*Landscape and Visual Impact Assessment*<sup>1</sup> (GLVIA 3). GLVIA 3 points to 'Appraisals', at paragraph 1.11, and to LVIA in Strategic Environmental Assessment, at paragraphs 1.12 to 1.14. I prefer a methodology based on the principles of SEA and GLVIA 3 suggests that the approach is to judge how the 'strategy' performs against various stated criteria, with some examples provided at paragraph 1.14. The Glossary to GLVIA 3 defines SEA as "*The process of considering the environmental effects of certain public plans, programmes or strategies at a strategic level*". Whilst this definition alone may not shed much light in respect of the process it seems to me that it does identify an appropriate level of consideration for the exercise required in Session 4 of the Inquiry.

2.6 Based on the examples in the GLVIA 3 I have defined the following seven criteria against which to assess landscape and visual susceptibility, at a high level, to the various development types and the in-combination cumulative effects:

- Protection of designated landscapes (e.g. National Parks, AONBs, designated historic landscapes);
- Compatibility with and protection of landscape fabric and character (e.g. topographic form, landcover pattern, settlement pattern, boundary type, scale, sense of enclosure, condition);
- Protection of tranquillity and remoteness (as defined by LANDMAP);
- Protection of rarity and local distinctiveness (as defined by LANDMAP);
- Protection of scenic value and overall evaluation (as defined by LANDMAP);
- Protection of visual amenity of valued recreational resources (e.g. promoted long distance footpaths and well-recognised viewpoints);
- Protection of visual amenity and landscape settings of settlements.

2.7 In making assessments against these criteria, I rely on the landscape baseline defined by LANDMAP because, in my view, its evaluation is well suited to a high level assessment, rather say, than the more descriptive nature of the Powys Landscape Character Assessment. In the Landscape and Visual Baseline chapter I define a baseline for Landscape and Visual assessment, based substantially on the evidence in LANDMAP and, where necessary, supplemented by my own appreciation of the landscape (for those landscapes in Shropshire). The evidence in LANDMAP, in

---

<sup>1</sup> Landscape Institute, Guidelines for Landscape and Visual Impact Assessment 3rd Edition, 17 April 2013 [CD-CPL-LAN-005]

particular in the Visual and Sensory Aspect Area (VSAA) descriptions, evaluates the key components of each landscape type, specifically 'Scenic Quality', 'Integrity', 'Character', 'Rarity' and evaluates these in overall terms. GLVIA 3 defines sensitivity as "A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor". Whilst I would say that the LANDMAP evaluations do not go as far as to provide a full sensitivity assessment as envisaged by GLVIA 3, they do, nevertheless, provide a strong indicator of likely sensitivity and, when combined with value, susceptibility as well, sufficient for a high level assessment. LANDMAP attributes values to its overall evaluations, although I interpret such values to be indicative of status and not 'formal' in any statutory planning sense. These are as follows:

- Outstanding – of international or national importance
- High – of regional or county importance
- Moderate – of local importance
- Low – of little or no importance

2.8 I have also followed the approach advocated by *LANDMAP Information Guidance Note 3*<sup>2</sup> for the assessment of effects against the LANDMAP criteria. I have concentrated on aspect areas, in particular VSAs, which have an Outstanding or High overall evaluation, or Moderate overall evaluation but with an outstanding or high evaluation in either scenic quality or character evaluation criteria which the guidance indicates "could be starting points for the assessment of significant effects" (refer to section 6.2).

2.9 The study area necessarily extends beyond the boundaries of LANDMAP and into part of Shropshire. I have drawn from 'The Shropshire Landscape Typology' 2006<sup>3</sup> Shropshire County Council publication, using this supplemented with own judgements, to make an equivalent set of assessments as I have with LANDMAP.

2.10 In respect of cumulative impact assessment I have been mindful of the principles of the approach advocated by the March 2012 guidance issued by Scottish Natural

---

<sup>2</sup> LANDMAP Information Guidance Note 3: Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Turbines. CCW. May 2013 [CD-VATT-LAN-005]

<sup>3</sup> Shropshire County Council, The Shropshire Landscape Typology, 2006 [XXXXXXX]

Heritage in ‘*Assessing the Cumulative Impact of Onshore Wind Energy Developments*<sup>4</sup> in respect of assessing cumulative impacts in “*strategic planning*” (pages 6-7 of the guidance). Although I note that this is primarily aimed at defining Development Plan policies rather than the assessment of effects.

2.11 For this high level assessment I have used three categories to define the magnitude of effect (landscape or visual) as follows:

- High = Where the object would be a new dominant or prominent feature which would become a key characteristic or feature and which would change the existing overall character or individual characteristic;
- Medium = Where the object would be a new conspicuous or apparent feature which, whilst a recognisable new element, would not become a key characteristic or feature and would not change the existing overall character or individual characteristic;
- Low = Where the object would be a new inconspicuous or faint feature which would be barely perceived and would not change the existing overall character or individual characteristic.

2.12 The GLVIA 3 requires the process of the assessment of significance to be clearly defined for each project and for this to be expressed as transparently as possible and defines at Table 5.10 a sliding scale of significance (for landscape effects). The 2002 SNH Guidance states that in the absence of unequivocal guidance “*best practice requires that the bases for all judgments are made clear and explicit on a case by case basis*”. I have adopted a ‘simple’ method in which I consider the effects to be either significant or not significant (this is compatible with GLVIA 3), where one that is significant is of sufficient weight to be material to the planning consideration and potentially the decision regarding a nationally important infrastructure project.

2.13 In my assessment I judge that significant landscape and visual effects would likely to occur when the receptor is of *High* susceptibility (or potentially in the case of those LANDMAP VSAAAs identified as Moderate with high scenic value and/or character) and the potential magnitude of effect would be *High*. Such an assessment is,

---

<sup>4</sup> Scottish Natural Heritage, Assessing the cumulative impact of onshore wind energy developments, March 2012 [CD-CPL-LAN-007]

therefore, an indicator of potential significance and potential unacceptability in landscape and visual terms.

- 2.14 In the context of NPS EN-5, discussed further below, such unacceptable effects can be considered to raise the “*serious concerns*” referred to in EN-5. In making such judgements I am mindful of NPS EN-1, in particular paragraph 3.2.3, which states that “.....*Government considers.....it will not be possible to develop the necessary amounts of such infrastructure without some significant residual adverse impacts*” and accept that the landscape and visual harm must equate to more than significant adverse impacts, such impacts being inevitable to some degree.

### **3.0 LANDSCAPE AND VISUAL BASELINE**

#### **Study Area**

- 3.1 The study area for the assessment for this session of the Inquiry includes the landscape context for SSAs B and C, the Meifod Valley east to the border with Shropshire, the Severn Valley to Welshpool and the landscape between Oswestry and north to Wrexham. Whilst I do not define any strict boundaries on a plan for the study area, it is useful to have reference to Figures 5 or 13 of the applicants' conjoined SEI figures; this defines the locations of the various component parts for this cumulative assessment and 20km radii from the two TAN 8 areas. In practice the 20km radii are, in practice, broader than required for this assessment, in respect of the wind farms, but I note these radii do not include study areas for the associated grid connections.
- 3.2 The cumulative assessment of wind farms and associated infrastructure relates only to the landscape context of SSAs B and C. I have previously described this landscape context in my Proofs of Evidence to Sessions 1 and 2. Similarly for the Severn Valley between SSA C and Welshpool, I set out my description of this landscape in my evidence to Session 3 regarding the Llandinam 132kV OHL scheme.
- 3.3 The Meifod Valley is aligned broadly west to east and has been selected by National Grid as the route corridor for their proposed 400kV line. The Meifod Valley is named after the village of Meifod which lies on the valley floor towards the western end of the valley of the River Vyrnwy between Newbridge, where the River Banwy joins the Vyrnwy, and the village of Llansantffraid-ym-Mechain. Typical of the narrow incised valleys of mid-Wales, this upper section of the valley has a small to medium scale with a strong sense of enclosure provided by the steep valley sides with round topped and wooded hills which frame the gently dished valley floor. This section of the valley is scenically attractive, although this is not recognised specifically as such by LANDMAP because, I would suggest, this area of landscape is defined as a small part of a wider landscape type.
- 3.4 At Llansantffraid-ym-Mechain, where the River Vyrnwy is joined by the Afon Cain from the north, the lower section of the valley in the east opens out to form a broader,

flatter valley floor with less defined and more gently undulating valley sides. East of Llansantffraid-ym-Mechain the River Vyrnwy meanders widely across the broad, flat, floodplain forming the border with Shropshire east of Llanymynech. The scale, in contrast with the upper valley, is medium to large scale with a reduced sense of enclosure. Although rural in character, with a strong sense of intactness, this lower part of the valley, in my view does not share the same high level of scenic quality as the upper part in the west.

- 3.5 As described in my evidence to Session 3 of the Inquiry, the landscape character of the Severn Valley is largely defined by physical form of the valley which changes gradually from south-west to north-east, as the valley steadily widens and the sense of enclosure from the valley sides reduces; north-east of Welshpool that gradual change continues with the floodplain becoming the predominant topographical characteristic. There is some enclosure and topographical relief to both sides of the valley floor. The Breidden Hills, to the east, are a significant landform and prominent landmark standing as a marker of the termination of the Shropshire uplands to the south. Whilst to the west the Llanymynech Hill marks the end of the mid-Wales uplands to the west.
- 3.6 North from Oswestry to Wrexham, the lower lying gently undulating topography of Shropshire borders the edge of the Powys and Clwyd uplands. The landscape is heavily settled with small towns and villages and crossed by several busy routes, including the A5, and also by some prominent electrical infrastructure, including the National Grid's 400 kV line from Legacy to Shrewsbury.

### **Published Landscape Character Data and Assessments**

- 3.7 The Study Area includes a large number of LANDMAP aspect areas (refer to Appendix B). Those VSAs with an overall evaluation of Outstanding, High or Moderate with an Outstanding or High evaluation in either scenic quality or character evaluation criteria are set out below in order of overall value, as follows:
- Llanerfyl Mosaic Farmlands (MNTGMVS422) – High (with Outstanding scenic quality evaluation)
  - Waun Ddubarthog Wind Farm (MNTGMVS443) - High

- Kerry Ridgeway (MNTGMVS254) – High
- Llandinam Hill and Scarp Mosaic (MNTGMVS212) – High
- Old Chapel Hill Mosaic (MNTGMVS438) – High
- Upland moor, Kerry Hills (RDNRVS111) – High
- Upland moor, west of Ithon (RDNRVS114) – High
- Upland valleys south of Kerry Hills (RDNRVS128) – High
- Upland moor, Beacon Hill & Gors Lydan (RDNRVS110) – High
- Wye & Ithon valley floors, north (RDNRVS140) – High
- Pont Llogel Farmlands (MNTGMVS278) – High
- Esgair Cwmowen Uplands (MNTGMVS733) – High
- Guilsfield Rolling Farmlands (MNTGMVS612) – High
- Llanfyllin Mosaic South (MNTGMVS962) – High
- Llanfyllin Mosaic North (MNTGMVS875) – High
- Pentre, Erbistock, Eyton and Brynypys (WRXHMVS049) – High
  
- Cefn Carnedd Wooded Hillside (MNTGMVS227) – Moderate (with High scenic quality and High character evaluation)
- Crewgreen to Forden Hill and Scarp (MNTGMVS370) - Moderate (with High scenic quality evaluation)
- Llandyssil Hill and Scarp Grazing (MNTGMVS946) - Moderate (with High scenic quality evaluation)
- Ridge & valley, Ithon sides (RDNRVS130) – Moderate (with High scenic quality evaluation)
- Valley slopes, west Ithon (RDNRVS136) - Moderate (with High scenic quality evaluation)
- Mynydd Lluest Fach (MNTGMVS147) - Moderate (with High scenic quality evaluation)
- Newydd Fynyddog (MNTGMVS363) - Moderate (with High scenic quality evaluation)
- Trannon Uplands Bryn Crugog (MNTGMVS695) - Moderate (with High scenic quality evaluation)
- Maelor South of Wrexham (WRXHMVS052) – Moderate (with High scenic quality evaluation)
- River Severn Flood plain (MNTGMVS650) - Moderate (with High character evaluation)

- Improved upland, west of upper Ithon (RDNRVS123) – Moderate (with High character evaluation)
- Banwy Floodplain (MNTGMVS119) - Moderate (with High character evaluation)
- Vyrnwy Rolling Lowlands (MNTGMVS714) - Moderate (with High character evaluation)

3.8 Four landscape types are relevant to this assessment from the Shropshire Landscape Typology (refer to Appendix C). There is no evaluation within this assessment, simply a description of characteristics. To this extent it is of a parallel with the Powys LCA and no direct comparison can be made with the LANDMAP values. The four types are as follows:

- Wooded River Gorge
- Settled Pastoral Farmlands
- Principal Settled Farmlands
- Riverside Meadows

3.9 This is inevitably a coarse assessment but if applying the LANDMAP approach to these landscapes to provide a 'level playing field' for this high level assessment, my evaluation is as set out in Table 1 below. Of the four only Wooded River Gorge and Riverside Meadows landscape types would meet the indicator test for likely significant effects set out in LANDMAP Guidance Note 3:

**Table 1: Shropshire Landscape Types**

<i><b>Shropshire Landscape Type</b></i>	<i><b>Scenic Quality</b></i>	<i><b>Integrity</b></i>	<i><b>Character</b></i>	<i><b>Rarity</b></i>	<i><b>Overall Evaluation</b></i>
Wooded River Gorge	High	High	High	High	<b>High</b>
Settled Pastoral Farmlands	Moderate	High	Moderate	Moderate	<b>Moderate</b>
Principal Settled Farmlands	Moderate	Moderate	Moderate	Low	<b>Moderate</b>

Riverside Meadows	High	Moderate	High	High	<b>High</b>
----------------------	------	----------	------	------	-------------

### Designated Landscapes

- 3.10 The south-eastern edge of the Snowdonia National Park falls within the study area for Session 4 of the Inquiry. The nearest point to SSA B schemes, the most relevant, is at Nant-y-Dugod, approximately 2.5km to the north-west of the closest Carnedd Wen turbine. The nearest equivalent of Llanbrynmair would be 6km distant. The ZTVs for both schemes indicate that visual impacts and consequently any landscape character effects arising would generally be restricted to the higher parts of the landscape only within the National Park. As per my evidence to Session 1, I do not consider that there would be any significant effects on the National Park arising from the SSA C schemes. I address any cumulative effects with the SSA B schemes below.
- 3.11 As with my evidence to Sessions 1 and 2, the Ceredigion Special Landscape Area lies approximately 17km west of Llandinam Repowering and Llaithddu and some 20km south-west of Carnedd Wen and Llanbrynmair. The ES ZTVs indicate very limited visibility respectively and as the visual effects, both individually and cumulatively with other existing, consented and in-planning wind farms, I do not consider that significant landscape or visual effects are likely for the designated landscape as a whole and I do not consider these further.
- 3.12 The Shropshire Hills AONB lies some 5.5km to the east of Llanbadarn Fynydd and around 12km from Llaithddu and Llandinam Repowering. My cumulative impact assessment of the SSA C schemes in my Session 1 evidence concluded that significant landscape and visual impacts would arise for the AONB from the three schemes before the Inquiry plus those TACPA schemes before the County Council. In respect of the Llandinam 132kV OHL I concluded that there would not be harm to the AONB either individually or cumulatively. No additional significant cumulative effects would occur as a result of other associated infrastructure over and above those set out at session 1, through the SSA B schemes and therefore my cumulative impact assessment for Session 1 stands and I do not consider the AONB further.

## Visual Baseline

- 3.13 The applicants' conjoined SEI figures define ZTVs for all of the various component parts except for the grid connection options north of Oswestry to Legacy (Figures 5 – 10). I take no issue with the accuracy of these.
- 3.14 The main visual receptors in respect of higher sensitivity which fall within the potential ZTVs and that are relevant to a high level assessment are as follows:
- Principal settlements (almost entirely contained within the valleys and therefore less likely to experience significant cumulative visual effects);
  - Promoted long distance trails (the Glyndŵr's Way and Offa's Dyke National Trails and the Kerry Ridgeway and Severn Way Regional Trails);
  - Other Public Rights of Way within the designated landscape areas.
- 3.15 Eight viewpoints have been agreed with the applicants for this Session 4 cumulative assessment. These views are relevant to assessing the cumulative visual effects, both incrementally and in-combination, of the wind farm proposals in SSA B and C, and others operational, consented and in-planning. Most of these are from well-recognised locations where receptors are likely to be towards the very highest end of visual sensitivity. These are as follows:
- Viewpoint 1: Plynlimon (well-recognised viewpoint)
  - Viewpoint 2: Kerry Ridgeway, Two Tumps (well-recognised viewpoint and Kerry Ridgeway regional trail)
  - Viewpoint 3: Garreg Hir
  - Viewpoint 4: Beacon Ring Hillfort (recognised viewpoint and Offa's Dyke national trail)
  - Viewpoint 5: Fron Top (Glyndŵr's Way regional trail)
  - Viewpoint 6: A470, Caersws (historic landscape)
  - Viewpoint 7: B4518, South of St Harmon
  - Viewpoint 8: Foel Dinas (well-recognised viewpoint and Snowdonia National Park)

## 4.0 LANDSCAPE RELATED PLANNING POLICY CONTEXT

### Introduction

4.1 Mr Carpenter has set out Powys' position in respect of planning policy at the Opening Session. The following section of evidence reflects evidence I have given to the Inquiry at previous sessions. For the sake of completeness of my evidence for Session 4 I have considered again my evidence given for Sessions 1 and 2, in respect of TAN 8 and defining the boundaries, as well as for session 3, EN-1, EN-3 and EN-5 respectively, and set this out again below.

### Arup 2004, 2005 and TAN 8

4.2 Arup's 2002-2004<sup>5</sup> work was founded on a substantive sieve mapping exercise using a Geographic Information System (GIS) to store and map various 'layers' of spatial constraint data, principally environmental designations. At a second stage, strategic search areas were identified capable of delivering the Welsh Assembly Government's Renewable energy target of 4 Terrawatt hours by 2010. The methodology employed is summarised in the Executive Summary to the Final Report as follows:

*Arup and its sub-consultants developed further the GIS established during the Stage 1 research contract in accordance with the following methodology:*

*a) An initial screening exercise - 'absolute' and 'variable' environmental and practical constraint data were gathered and mapped. To these were added the outputs from a separate study of the capacity of the electric distribution network in Wales to accommodate distributed generation from renewable energy development. The results allowed the elimination of several broad zones of Wales from the available land for strategic areas. Spare electrical capacity sufficient to accommodate large-scale onshore wind energy developments was shown to be scarce and unevenly distributed. Without the implementation of planned improvements to the network by 2010/2015 in mid- and north-Wales, there would not be sufficient grid capacity to allow achievement of the 4 Terrawatt hour target.*

*b) A refinement exercise – the areas which 'fell-through' the initial screening exercise were subject to a further more detailed review at 1:50 000 scale in which more site-specific constraints (such as the presence or absence of isolated properties, land availability and access) were considered.*

---

<sup>5</sup> Facilitating Planning for Renewable Energy in Wales: Meeting the Target (Arup) July 2004 [ALL-011C]

*c) Testing and validation – In order to inform the subsequent debate about the strategic areas arising from the results of a) and b) above, the draft areas were subject to a further review stage. In this, the derived areas were examined with respect to visibility from National Parks/Areas of Outstanding Natural Beauty/National Trails, visibility of other existing (or committed) wind farms, landscapes likely to be ‘wild’ in character and higher wind speeds. The strategic areas were also subject to a capacity exercise, in which likely scale of developments possible in each was determined (to +/- 50 Megawatts). This was felt to be an important part of conveying the magnitude of development that was required in some areas in order to meet the 2010 target.*

- 4.3 The work was computer based and did not, to the best of my knowledge, involve fieldwork. This work advised the revised draft TAN 8 published in July 2004.
- 4.4 In the winter of 2004 Garrad Hassan and Partners carried out a further technical assessment study<sup>6</sup> of the seven SSAs to provide a view on the capacity of these areas. This work was based on noise limits and was not an assessment of landscape capacity nor did it suggest changes to the boundaries.
- 4.5 Arup was commissioned by the Welsh Assembly Government in December 2004 and the study, reported in June 2005<sup>7</sup>, considered whether the draft SSA boundaries should be amended taking into account matters such as noise and wind speed. This study informed the final TAN 8 of July 2005. The Arup work advised changes to the SSA B draft boundaries, taking into account wind speeds and noise issues at properties. In respect of landscape, visual and cumulative matters the report responded to observations about the lack of reference to LANDMAP and landscape character data and, in particular, that matters of landscape capacity are best dealt with at a regional/local level “*where knowledge and understanding of the areas can be brought to bear*” (paragraph 3.5). An outline methodology was included for consideration by local authorities in this regard.

### **Arup White 2006**

---

<sup>6</sup> Energy Assessment of TAN 8 Wind Energy Strategic Areas of Search (Garrad Hassan and Partners) April 2005 [CD/COM/031]

<sup>7</sup> Facilitating Planning for Renewable Energy in Wales: Meeting the Target (Arup) June 2005 [CD-CPL-MIS-002]

- 4.6 The Arup White Study of 2006<sup>8</sup> was commissioned by Powys County Council as envisaged by Annex D of TAN 8. It was primarily a landscape and visual assessment exercise seeking to identify, what were termed, 'Preferred Areas' within the Strategic Search Areas B and C (SSAs), supported by a range of other technical and environmental data, such as electrical connection information. The report was not consulted upon.
- 4.7 LANDMAP Visual and Sensory value data was used as the basis for the landscape character work from which landscape capacity of the various aspect areas was derived. The methodology employed for this analysis was based upon industry best practice guidance but would appear to have been essentially a 'simple' conversion of landscape sensitivity, as determined by LANDMAP, into landscape capacity, whereby lower sensitivities became higher capacities and so on. The visual work was based on 3D GIS modelling of zones of visibility with a site visit to the areas to verify the desk study.
- 4.8 Ultimately the focus for the study was to determine refined boundaries for the SSAs and to ensure a sufficient yield capacity was available, as follows:

*The results of the relative environmental and landscape performance of the zones or sub-areas of SSA are then brought together in the report within a summary matrix which includes the approximate estimated capacities (in MW) for the respective zones. In bringing the data together in the final summary matrix appropriate weight is given to visual effects. In addition the study has considered the "developable capacity" of the defined zones in terms of the amount of Megawatts ( MW ) of wind energy that may be possible in each, based upon an average yield of 7.5MW per sq. km (typically around 3-5 modern wind turbines) where the areas are not constrained.*

- 4.9 The executive Summary of the 2006 report concluded:

*The study concludes that a land area is required that is slightly larger than the minimum needed to meet the MW indicative capacity figures stipulated in TAN 8; it is therefore recommended that the refined SSA boundaries encompass zones with an estimated cumulative capacity of 125% of the TAN 8 indicative capacity(s). Note that this does not necessarily endorse the ultimate development of the refined SSA boundary to this extent, simply that the TAN indicative capacity figures should be allocated to a slightly*

---

<sup>8</sup> TAN 8 Annex D Study of Strategic Search Areas B (Carno North) and C (Newtown South): Final Issue Report (Arup) January 2006 [CD/COM/017]

*enlarged area to offer a greater degree of spatial flexibility in the planning for onshore wind farms for both the local planning authority and developers. This should ultimately greater facilitate achievement of the Welsh Assembly onshore wind target to 2010 whilst minimising local environmental impacts.*

*TAN 8 contains an indicative target of installed capacity of 290MW for SSA B, Carno North. Therefore sufficient land is needed within SSA B for 290MW x1.25 i.e. 362 MW approx. The implications of the data gathered for this study are that the five environmentally lowest ranked zones within and around SSA B need not be developed.*

*For SSA C Newtown South, TAN 8 contains an indicative target of installed capacity of 70MW. Therefore following the same arguments as above, sufficient land is within needed within SSA C for 70MW x1.25 i.e. 87.5 MW approx. The implications of the data are that the six environmentally lowest ranked zones within and around SSA C need not be developed.*

*It is recommended that the SSA boundaries are therefore modified to remove the environmentally worst performing zones.*

- 4.10 Evidently the 2006 Report was not a detailed landscape and visual assessment; its work is useful and relevant but is indicative only and not of sufficient detail to be reliable enough to the form the basis of a determination of the appropriateness or otherwise of specific development proposals. What the 2006 work did achieve was to develop the 2004 boundaries through a form of sensitivity testing and to test these on the ground, albeit apparently only in a cursory manner.

### **Arup 2008**

- 4.11 The 2008<sup>9</sup> review was commissioned by Powys following the Wern Ddu appeal decision. The brief was as follows:

*The brief for this study, agreed in dialogue with PCC, was to undertake a new local refinement of the boundary of the nationally published Strategic Search Areas (SSAs) for SSA B (Carno North) and SSA C (Newtown South). The new local refinement exercise was to follow the principles as set out below:*

- It was to comply as far as possible with the guidance contained within TAN 8 Annex D.*
- It was not to serve to 'cap' development levels at the TAN 8 indicative capacities (in MW) for each SSA where the data indicated that greater levels of development might be possible i.e. the outcomes were to be*

---

<sup>9</sup> Local Refinement of TAN 8 Strategic Research Areas B and C: Review Exercise, (Arup) April 2008 [CD/COM/10A]

*driven by the landscape capacity of the area, within the context of an overall national policy objective to allow landscape change.*

- 4.12 The study has more landscape and visual focus than the previous work involving a review of the 2006 boundaries plus a 5km 'buffer' to focus the further landscape and visual analysis. The work which was predominantly desk based included further GIS sieve mapping of 'constraints' *"similar to that undertaken by all wind farm developers when selecting sites"* which, again as per the previous study, identified 'unconstrained' land which could then be tested for its *"suitability in landscape and visual terms"*. Again, with the case of the 2006 report, the various zones for analysis were derived from LANDMAP (and were verified in the field).
- 4.13 The computer based visual assessment work involved some assumptions about the sensitivity of receptors and assumed 4 no. 125m high turbines per 1km square but took no account of the presence of existing wind farms (unlike the 2006 study). The likely significance of visual effects was calibrated to distance using the 2002 SNH guidance as a basis. Nevertheless, this study is essentially an exercise in assessing the extent of visibility and is more a study in establishing quantitative effects than it is in qualitative effects (as the results at 2.4.3 reveal); areas which are widely visible perform poorly against those that are more contained.
- 4.14 The effects on settlements were addressed in a similar way. Zones which were visible from several or many settlements up to 15km away performed worse than those which are more enclosed. No apparent account is taken of the much more substantive qualitative effects that would most likely be experienced by those settlements close by.
- 4.15 In as much as this exercise was primarily targeted at refining the 2006 boundaries essentially through extension, not contraction, the additional landscape and visual work undertaken was a reasonable basis, particularly as the edges of many of the otherwise acceptable zones were ruled out where turbines in these locations would potentially impact substantially on more enclosed adjoining areas. However, as I have argued at the Inquiry in respect of SSAs B and C, I firmly believe that the Arup work is not a sound basis for assuming all of the land within the area is similarly suitable for wind farm development. Likewise I am consistent in this regard in respect of the weight to be given to the refined boundaries. They are not and should not be

considered absolute rather they inform the judgement as to what may or may not be acceptable but should yield to the more detailed site specific assessments before this Inquiry. Whilst I accept the TAN 8 policy context, which presumes significant landscape change across the SSAs, the full implications of this stand to be assessed at this inquiry and at a level of detail beyond that employed by the 2004, 2005, 2006 and 2008 studies.

### **National Planning Policy Statements**

- 4.16 In July 2011 the Government published three National Policy Statements relevant to this proposal; NPS EN-1, EN-3 and EN-5 respectively. EN-1 recognises that landscape and visual amenity effects might be the hardest environmental effect to mitigate (paragraph 1.7.2) but, nevertheless, there is a duty on applicants to minimise harm to the landscape and visual amenity, having regard to siting, operational and other constraints and through *“providing reasonable mitigation where possible and appropriate”* (paragraph 5.9.8). EN-3 provides no further consideration of the landscape and visual amenity effects of grid connections over and above EN-1 or EN-5.
- 4.17 Section 2.8 of EN-5 considers the landscape and visual issues raised by overhead line connections and highlights the developer’s statutory duties to have regard to amenity and to mitigate impacts under section 9 of the 1989 Electricity Works Act applies. I highlight references in EN-5 as follows:

- Government does not believe that development of overhead lines is generally incompatible with developer’s statutory duties under section 9 and that *“For the most part these impacts can be mitigated, however at particularly sensitive locations the potential adverse landscape and visual impacts of an overhead line proposal may make it unacceptable in planning terms, taking account of the specific local environment and context”* (paragraph 2.8.2);
- The *“common sense approach”* of the Holford Rules (paragraph 2.8.6);
- That the Government recognises that where there are *“serious concerns”* about adverse effects that alternative routes (including undergrounding) should be considered (paragraph 2.8.8) as part of the balance, taking into account the economic, social and environmental effects as well as the technical difficulties (paragraph 2.8.9);

- That whilst designated landscapes are considered to be the most important it is clear that they are not the only landscapes that should be considered; and
- That the main opportunities for mitigation are network reinforcement (improvements to an existing line), choosing the most suitable type of support and considering planting/screening (paragraphs 2.8.10 and 2.8.11).

## **5.0 CUMULATIVE EFFECTS OF SSA C SCHEMES WITH TACPA SCHEMES (AND LLANDINAM GRID CONNECTION)**

### **Overview**

- 5.1 The Council has previously set out its position in respect of the cumulative landscape and visual effects of the three SSA C wind farm schemes at Session 1, considering the effects of Llandinam Repowering, Llaithddu and Llanbadarn Fynydd together to be unacceptable in landscape and visual terms. The Council also considers the cumulative effects of these schemes together with the TACPA schemes before the Council to be unacceptable. My cumulative landscape and visual assessments in this regard are set out at Section 8.0 and Appendices K and L of my Session 1 proof. In addition to this assessment, the Garreg Lwyd proposal includes for a grid connection route to the Knighton substation via the Teme Valley. The River Teme is the boundary to the Shropshire Hills AONB and, therefore, there is the potential for significant effects upon the national landscape designation.
- 5.2 At Session 3 the Council accepted that the Llandinam 132kV OHL (with the undergrounding section) would be acceptable in landscape and visual terms cumulatively with Llandinam Repowering and/or Llaithddu (both northern and southern arrays) but unacceptable in-combination with Llanbadarn Fynydd and/or Neuadd Goch (and the other TACPA schemes, although Neuadd Goch would be by far the greatest incremental contributor to the in-combination effects). My cumulative landscape and visual assessments are set out at paragraphs 7.20 to 7.22 of my Session 3 proof.
- 5.3 Therefore, within SSA C the Council supports the combination of Llandinam Repowering, Llaithddu (northern array) potentially with Hirddywel (TACPA scheme yet to be formally considered by PCC) and together with the Llandinam 132kV OHL scheme, noting the need to upgrade this proposal to a heavy-duty wood pole 176MVA to Welshpool, with the upgrade of an existing 132kV OHL from Welshpool to Oswestry (refer to Figure PRV 1). I do not consider that this second element, the rebuild, would give rise to any potential significant landscape or visual effects and I do not consider it further. The approval of further wind farm schemes over and above these would require the implementation of the CC1 grid connection, together with the

Cefn Coch substation, and with the increased pressure for 'heavier' grid connection infrastructure from Cefn Coch to Oswestry or Legacy.

**Cumulative Landscape and Visual Assessment of the Preferred PCC Scenario for SSA C (part of Scenario 1)**

5.4 The following table (Table 2) sets out my high level assessments against the seven criteria defined in section 2.0 above. The relevant LANDMAP VSAs (i.e. those with a High overall evaluation or Moderate but with High scenic quality or character evaluations) are as follows:

- Waun Ddubarthog Wind Farm (MNTGMVS443) - High
- Kerry Ridgeway (MNTGMVS254) – High
- Llandinam Hill and Scarp Mosaic (MNTGMVS212) – High
- Old Chapel Hill Mosaic (MNTGMVS438) – High
- Upland moor, Kerry Hills (RDNRVS111) – High
- Upland moor, west of Ithon (RDNRVS114) – High
- Upland valleys south of Kerry Hills (RDNRVS128) – High
- Improved upland, west of upper Ithon (RDNRVS123) – Moderate (with High character evaluation)
- Llandyssil Hill and Scarp Grazing (MNTGMVS946) - Moderate (with High scenic quality evaluation)
- River Severn Flood plain (MNTGMVS650) - Moderate (with High character evaluation)

**Table 2:** Cumulative Landscape and Visual Assessment of the Preferred PCC Scenario for SSA C (part of Scenario 1)

<b>Assessment Criteria</b>	<b>Potential Susceptibility</b>	<b>Potential Magnitude of Cumulative Effect</b>	<b>Potential Significance</b>
Designated Landscapes	Shropshire Hills AONB lies some 12km from Llandinam Repowering and Llaithddu (north). My Session 1 evidence concluded there would not be an impact on character of AONB. My Session 3	Low	Not significant

	evidence concluded that the Llandinam OHL would not be visible from the Shropshire Hills AONB but would cross the Vale of Montgomery registered historic landscape. The OHL impact on character of the registered landscape would be limited due to its low lying, flat topography, open character, some compatibility with the grain and texture of the landscape and presence of other OHL in the vicinity.		
Landscape Fabric and Character	Wind farms would have limited direct impact on landscape fabric of MNTGMVS443 and on its character given the presence of the existing P&L Wind Farm. The OHL route would have a low impact on hedgerow vegetation and trees of MNTGMVS254 and MNTGMVS650 and a low to medium impact on MNTGMVS946.	Low	Not significant
Tranquillity and Remoteness	This part of the study area, in particular the uplands area, exhibits notable degrees of tranquillity and remoteness. Both are identified as qualities of MNTGMVS443, MNTGMVS254, RDNRVS111 & RDNRVS114, tranquillity alone for MNTGMVS212 & RDNRVS128 and remoteness alone for MNTGMVS438 but these all incorporate the presence of the P&L Wind Farm. The replacement of the existing wind farm with fewer but higher turbines over a wider area of MNTGMVS443 would have a low to medium effect on these characteristics.	Low to Medium	Not significant
Rarity and Distinctiveness	This part of the study area exhibits a high degree of rarity and local distinctiveness, including MNTGMVS443, MNTGMVS254, MNTGMVS438, RDNRVS128, Wooded River Gorge and Riverside Meadows. The upland areas identify the P&L Wind Farm as a particular contributor to these qualities and the change to this aspect would therefore be low. The impact of the OHL on these qualities of MNTGMVS254 would be medium (with undergrounding).	Low	Not significant
Scenic Value	This part of the study area exhibits a high degree of scenic value, including MNTGMVS443, MNTGMVS254, MNTGMVS438, RDNRVS111, RDNRVS114, RDNRVS128 and MNTGMVS946. The presence of the P&L Wind Farm is considered by LANDMAP to be a contributor to the qualities of	Low to Medium	Not significant

	MNTGMVS443. There would be a medium cumulative effect on the scenic qualities of MNTGMVS254 and MNTGMVS946, for all of the others, the effect would be low due to restricted visual effects on these areas.		
Visual Amenity: Recreational Receptors	The visual impact on users of Glyndŵr's Way would be medium adverse from certain relatively short lengths, most notably from the vicinity of Bwlch y Sarnau from which the wind farms would have an increased visual presence. Visual impact on Offa's Dyke and Severn Way of the OHL would be low in magnitude.	Low to Medium	Not significant
Visual Amenity: Settlements	The wind farms would be distant from most settlements in the study area, with the hamlet of Bwlch y Sarnau and Pant y Dwr the exceptions and from which the wind farms would have an increased visual presence and the magnitude medium adverse. The OHL would be distant and largely discrete from settlement and the magnitude low to medium.	Low to Medium	Not significant

5.5 The overall in-combination landscape and visual cumulative effects of the scenario including Llandinam Repowering, Llaithddu (north), Hirddywel potentially and an overhead line connection (part underground) to the grid at Welshpool/Oswestry would be limited in magnitude and the impact not significant.

## **6.0 CUMULATIVE EFFECTS OF SSA B WITH TACPA SCHEMES (AND BNC & BSC GRID CONNECTIONS)**

### **Overview**

- 6.1 At Session 2 the Council accepted the cumulative landscape and visual effects of the Llanbrynmair and Carnedd Wen wind farm schemes, together with the other existing and consented wind farms in SSA B (subject to the Council's objection to the Llanbrynmair access and the Carnedd Wen five turbines). Those existing or consented wind farms which are part of the baseline for the cumulative assessment of Llanbrynmair and Carnedd Wen are Carno A&B, Carno Extension, Gemmaes, Mynydd Clogau and the consented, but not yet operational, Tirgwynt.
- 6.2 The assessment below demonstrates that the cumulative landscape and visual effects of these two schemes in-combination with the operational, consented and in-planning (TACPA) schemes, together with their associated connections and infrastructure, would be significant and unacceptable, but I note that it is the incremental effects of the in-planning NSIP and TACPA wind farms that give rise to the significant and unacceptable effects. The in-planning NSIP and TACPA schemes are Gemmaes III (TACPA application refused, appeal pending), Dyfnant Forest (NSIP ES Scoping advanced stage), Mynydd Llest-y-Graig (NSIP ES Scoping advanced stage), Carno Phase III (TACPA application) and Esgair Cwmowen (TACPA).
- 6.3 The Council considers that use of parallel twin 132kV OHL grid connections from the Llanbrynmair and Carnedd Wen sub-stations (BNC 3, 4 and 5, and beyond to the Legacy sub-station) could be acceptable in landscape and visual terms, both in their own right and cumulatively, subject to appropriate detailed design and mitigation, including the consideration of undergrounding and alternative designs such as parallel twin trident poles, to reasonably minimise the landscape and visual effects (refer to Figure PRV 1). In this scenario (PCC Scenario 1), i.e. limited to Llanbrynmair and Carnedd Wen wind farms, the Cefn Coch substation would not be required and the grid connection would need to be made at Legacy (a distance of 70km) on the parallel twin 132kV OHL grid connections.

## **Cumulative Landscape and Visual Assessment of the Preferred PCC Scenario for SSA B (part of Scenario 1)**

6.4 The following table (Table 3) sets out my high level assessments against the seven criteria defined in section 2.0 above. The relevant LANDMAP VSAs and Shropshire Landscape Types (i.e. those with a High overall evaluation or Moderate but with High scenic quality or character evaluations) are as follows:

- Llanerfyl Mosaic Farmlands (MNTGMVS422) – High (with Outstanding scenic quality evaluation)
- Esgair Cwmowen Uplands (MNTGMVS733) - High
- Pont Llogel Farmlands (MNTGMVS278) – High
- Mynydd Lluest Fach (MNTGMVS147) - Moderate (with High scenic quality evaluation)
- Newydd Fynyddog (MNTGMVS363) - Moderate (with High scenic quality evaluation)
- Guilsfield Rolling Farmlands (MNTGMVS612) – High
- Llanfyllin Mosaic South (MNTGMVS962) – High
- Llanfyllin Mosaic North (MNTGMVS875) – High
- Pentre, Erbistock, Eyton and Brynypys (WRXHMVS049) – High
- Maelor South of Wrexham (WRXHMVS052) – Moderate (with High scenic quality evaluation)
- River Severn Flood plain (MNTGMVS650) - Moderate (with High character evaluation)
- Banwy Floodplain (MNTGMVS119) - Moderate (with High character evaluation)
- Vyrnwy Rolling Lowlands (MNTGMVS714) - Moderate (with High character evaluation)
- Wooded River Gorge (Shropshire Landscape Type) - High
- Riverside Meadows (Shropshire Landscape Type) - High

**Table 3:** Cumulative Landscape and Visual Assessment of the Preferred PCC Scenario for SSA B (part of Scenario 1)

<b>Assessment Criteria</b>	<b>Potential Susceptibility</b>	<b>Potential Magnitude of Cumulative Effect</b>	<b>Potential Significance</b>
Designated Landscapes	The south-east boundary of the Snowdonia National Park would lie some 2.5km from the nearest Carnedd Wen turbine and 6km from Llanbrynmair. My Session 2 evidence identified that whilst there would be some visual significant cumulative effects there would not be significant cumulative character effects or effects on the Special Qualities. The OHL grid connections would not be perceptible from the National Park.	Low to Medium	Not significant
Landscape Fabric and Character	The wind farms would have a noticeable beneficial impact on the existing landscape fabric of the site (i.e. the clearance of afforestation and restoration of moorland) but, in any case, the VSAs directly affected are not valued for their intrinsic character although this character effect would be perceived from nearby VSAs, however, this would be outweighed by the adverse effects of the wind turbines, including notably MNTGMVS422. The OHLs would potentially have a low to medium impact on hedgerow vegetation and trees of MNTGMVS650, Wooded River Gorge and Riverside Meadows.	Low to Medium	Not significant
Tranquillity and Remoteness	This part of the study area, in particular the relatively lightly settled agricultural landscapes and river valleys (MNTGMVS422, MNTGMVS278, MNTGMVS612, WRXHMVS049, WRXHMVS052 and MNTGMVS650), exhibit notable degrees of tranquillity, with remoteness isolated to the uplands areas (MNTGMVS147, MNTGMVS733 and MNTGMVS363). The effect of the wind farms on the sense of remoteness of those upland VSAs to the south would be barely perceptible and of low magnitude due the presence of Carno	Low to Medium	Not significant

	A&B, Carno Extension, Mynydd Clogau and Tirgwynt (consented). The effect of the OHLs on the tranquillity of the lower lying areas would locally be high but this effect would drop off within only several hundred metres due to the restricted are of visual effect. Overall the effect on this characteristic of these VSAs is considered to be low to medium.		
Rarity and Distinctiveness	This part of the study area exhibits a high degree of rarity and local distinctiveness across large areas, including MNTGMVS422, MNTGMVS278, MNTGMVS962, WRXHMVS049, WRXHMVS052, MNTGMVS650, MNTGMVS119, Wooded River Gorge and Riverside Meadows. Those more upland farming landscapes, such as MNTGMVS422 would be more affected (Medium) by the presence of the wind farms than would the low lying landscapes of Shropshire and Wrexham, because of the existing presence of OHLs in these landscapes and relatively contained effect of wood pole OHLs.	Low to Medium	Not significant
Scenic Value	Much of the study area exhibits a high degree of scenic value, including MNTGMVS422 (which is Outstanding), MNTGMVS278, MNTGMVS147, MNTGMVS363, MNTGMVS612, MNTGMVS733, MNTGMVS962, MNTGMVS875, WRXHMVS049, WRXHMVS052, MNTGMVS650, Wooded River Gorge and Riverside Meadows. There would be a medium cumulative effect on the scenic qualities of MNTGMVS422 and low to MNTGMVS278 due to the presence of the wind farms, for all of the others, the effect would be low due to restricted visual effects on these areas of the OHLs.	Medium on MNTGMVS 422 Low to remainder	<b>Significant for MNTGMVS 422 because of its Outstanding Scenic value</b> Low for the remainder
Visual Amenity: Recreational Receptors	The visual impact on users of Glyndŵr's Way would be high adverse from certain relatively short lengths, most notably from close to the wind farms. Some high level and notable viewpoints from within the National Park would be Medium/High.	Medium to High	<b>Significant</b>
Visual Amenity: Settlements	The wind farms would be distant from most settlements in the study area, with the exceptions of the Banwy Valley villages of Foel, Llangadfan and Llanerfyl to the north and Carno Valley	Medium to High	<b>Significant</b>

	<p>villages of Llanbrynmair, Llan, Talerdigg and Carno to the south. However, the visual impact would be Low at these settlements except for Foel and Llangadfan where it would be High/Medium. The OHL would run past Meifod (potentially undergrounded here), Llansantffraid-ym-Mechain, Llanymynech and Pant but largely discrete from settlement except in the north at Oswestry in which views of other OHL and other built infrastructure are not uncommon and the magnitude Low to Medium.</p>		
--	---	--	--

6.5 The overall in-combination landscape and visual cumulative effects of the scenario including Llanbrynmair and Carnedd Wen (subject to the Council’s objection to the Llanbrynmair access and the Carnedd Wen five turbines) and the parallel twin 132kV OHL grid connections to Legacy would give rise to a significant landscape effect, although this would be limited to the scenic value of one VSAA but one outstanding value, and some significant visual effects, including on users of a national trail, from viewpoints within the National Park and several settlements. Nevertheless, overall these would not be so significant in extent or degree to be unacceptable effects in landscape and visual terms.

**SSA B Alternative Scheme Combinations**

6.6 The TACPA Carno III scheme (45MW) could be included and make a grid connection without the need for a major new substation at Cefn Coch and its power exported to Legacy via the same twin wooden pole system as required by Llanbrynmair (90MW) and Carnedd Wen (135-150MW, depending on the five objected to by PCC), or through an upgrade of one or both OHLs to 176MVA heavy duty wood pole OHLs. This is an ‘extension’ to PCC’s Scenario 1 which would not require a significant change to the grid connections already required by Llanbrynmair and Carnedd Wen.

6.7 The Council is currently considering the Carno III scheme and recognise that its clustering effect with the existing Carno array assists in limiting its overall impacts, although its currently proposed scale may not be acceptable. Notwithstanding that as proposed, there would potentially be individual landscape and visual effects of the Carno III scheme, its incremental part of the in-combination cumulative effects of Carno III with a heavy duty OHL would not increase the overall cumulative landscape

and visual effects substantially and not markedly over and above those identified in Table 2 above.

- 6.8 The addition of other SSA B located schemes would increase the likelihood of the need for the Cefn Coch substation and an upgrade of the wooden pole OHL grid connection to an L7 small steel lattice tower (27m high) single OHL. Such a solution could, I understand, accommodate up to around 450-600MVA, depending on the conductors, as opposed to the approximate maximum of circa 350MW on parallel twin wood poles (132kV up to 176MVA). It would need to run from Cefn Coch to Legacy, there being inadequate capacity at the Oswestry substation. This would have similar consequences for the OHL grid connection out from Cefn Coch as would the CC grid connection from SSA C and be similar, therefore, to the PCC Scenario 2 shown on Figure PRV 2.
- 6.9 The current in-planning Nant-y-Moch scheme in SSA D (140-176MW) has a proposed grid connection to the substation at Cefn Coch. Its capacity could be provided for by the L7 small steel lattice OHL grid connection in a scenario with Llanbrynmair, Carnedd Wen and Carno III (up to 461MW in total). The in-planning TACPA scheme Esgair Cwmowen (45MW) or in-scoping NSIP scheme Mynydd Lluest-y-Graig (50MW) could also be accommodated within the capacity of the L7 small steel lattice grid connection but the larger in-scoping NSIP Dyfnant Forest scheme (80-120MW) could not, individually or with others. Scenarios with the inclusion of schemes beyond 600MW capacity in total of an L7 OHL would generate the need for the National Grid's 400kV line from Cefn Coch to the existing line at Oswestry.
- 6.10 An L7 small steel lattice tower grid connection between Cefn Coch and Legacy would lead to an increase in landscape and visual effects over and above those of the twin wood pole system due to the increased height of the installation (from 14m to 27m), the appearance of the construction (from 'simple' double twin uprights, i.e. four poles, to a lattice construction) and the material (timber to steel). The height would be the major factor; at 14m the twin wood poles would be at or below the tree-line, especially in the river valleys where the topography is flat, whilst the 27m high structures would always exceed the height of the tree-line, greatly increasing the 'real', as opposed to theoretical, ZTV and increasing the magnitude of visual effect, particularly on the valley settlements. Such effects would be less readily absorbed in landscape character terms and the current levels of tranquillity, rarity/distinctiveness

and scenic value of the river valley and adjacent landscapes would be more likely to be adversely affected. In my view, 'serious concerns' as defined in EN-5 would be likely to be triggered in the Meifod Valley and undergrounding would be required in the upper section of the valley. Detailed landscape and visual assessment would be required by the Council and the effects would have to be considered having regard to the need. There is the potential for significant individual and cumulative effects and for this connection to be found unacceptable in landscape and visual terms.

## **7.0 CUMULATIVE EFFECTS BETWEEN SSA B AND SSA C SCHEMES AND TACPA WIND FARMS**

### **Overview**

- 7.1 The Council does not consider that unacceptable in-combination cumulative landscape effects would occur between the wind farm schemes before the Inquiry in SSA B and C (over and above those in-combination cumulative landscape effects that would occur separately with the SSA B and C schemes).
- 7.2 From a few sensitive locations, in particular weather conditions, there is the potential for additional significant visual effects (over and above those in-combination cumulative visual effects that would occur separately with the SSA B and C schemes). The area likely to be affected would be the landscape between SSA B and C where the sole visual effects of either would not be significant but together they would (e.g. Viewpoint 3 below). However, the number of locations would be limited to the higher areas of ground, whilst noting that the area of open upland/moorland of a level to provide clear open views of all schemes, between the two SSAs, is limited. Such visual effects, limited in extent and relatively in degree, do not render any or all of the schemes unacceptable.
- 7.3 Utilising the selected list of seven viewpoints for the conjoined cumulative visual assessment, in my assessment the visual assessment would be as follows:
- Viewpoint 1: Plynlimon – neither of the SSA B or C schemes, would on their own or in-combination give rise to significant cumulative visual effects.
  - Viewpoint 2: Kerry Ridgeway, Two Tumps – the SSA C schemes would on their own give rise to a significant cumulative visual effect but the SSA B schemes would not incrementally add markedly to that significance.
  - Viewpoint 3: Garreg Hir - the SSA B schemes would on their own be close to giving rise to a significant cumulative visual effect but with the SSA C schemes, seen in the right conditions, these could in-combination give rise to a significant cumulative visual effect.
  - Viewpoint 4: Beacon Ring Hillfort - neither of the SSA B or C schemes, would on their own or in-combination give rise to significant cumulative visual effects.

- Viewpoint 5: Fron Top - the SSA C schemes would on their own give rise to a significant cumulative visual effect but the SSA B schemes would not incrementally add to that significance.
- Viewpoint 6: A470, Caersws - neither of the SSA B or C schemes, would on their own or in-combination give rise to significant cumulative visual effects.
- Viewpoint 7: B4518, South of St Harmon - the SSA C schemes would on their own give rise to a significant cumulative visual effect but the SSA B schemes would not incrementally add to that significance.
- Viewpoint 8: Foel Dinas - the SSA B schemes would on their own give rise to a significant cumulative visual effect but the SSA C schemes would not incrementally add markedly to that significance.

7.4 The selected cumulative photomontages illustrate all of the schemes before the Inquiry plus the in-planning NSIP and TACPA schemes. They do not illustrate the grid connection proposals or alternatives and have not been selected for this purpose. All of these have been considered in Sessions 1 and 2 of the Inquiry and I have given my assessment of the visual effects at each in respect of the relevant schemes. Whilst many of these highlight cumulative visual effects, many of which are clearly significant in nature, on their own they do not necessarily indicate the acceptability or otherwise of a scheme or combination of schemes, but they do taken overall illustrate the potential for very wide ranging and severe visual effects if all or many of the schemes currently in-planning were to come forward.

## **8.0 CC GRID CONNECTIONS AND CUMULATIVE EFFECTS WITH SSA B & C SCHEMES**

### **Overview**

- 8.1 The Council considers that the CC1 132kV OHL route, together with its connections to Neuadd Goch and Llanbadarn Fynydd (CC2 and 3 respectively) to be unacceptable in its own right in landscape and visual terms and cumulatively with operational, consented and in-planning wind farms and other infrastructure. The route corridor of CC1 would have a significant and unacceptable impact on the landscape character, including several landscapes of High overall evaluation as considered by LANDMAP, and significant and unacceptable visual impacts along its length.
- 8.2 I have set out above the Council's preference for the SSA C schemes in Scenario 1, i.e. Llandinam Repowering and Llaithddu (north), together potentially with Hirddywel subject to formal consideration (some 156MW in all). Should the Council consider the combined effects of Hirddywel and the other two schemes to be acceptable in accordance with my advice, the electricity generated would I understand, be capable of being accommodated on an upgraded Llandinam 176MVA OHL. Exceeding this capacity would require the CC1 route from SSA C to a Cefn Coch substation together with the need to upgrade the grid connection route to Legacy to a L7 small steel lattice.
- 8.3 A combination of Llandinam Repowering and Llaithddu (both north and south arrays) or Llandinam Repowering and Llanbadarn Fynydd, which would amount to 164MW or 161.5MW respectively, is individually just capable of being accommodated on an upgraded Llandinam OHL, however, the Council object to the southern array of Llaithddu and Llanbadarn Fynydd on landscape and visual grounds. The implementation of all three schemes before the Inquiry, with or without Hirddywel, would inevitably lead to the CC1 route because of the limit on capacity at Welshpool in addition to the Llandinam OHL. This is PCC's Scenario 2 as illustrated on Figure PRV 2.
- 8.4 As I understand the SP Manweb proposal for the CC1 connection this would consist of a single 14m high twin wood pole 132kV OHL. This would run from Bryn Cwmyrhiwdre, close to the head of the Ithon Valley, some 32km north to the Cefn Coch substation. It would run east-west over the Waun Ddubarthog ridge, north towards Llanidloes across the Moelfre undulating foothills, where it would cross the Severn Valley, north over the Oakley Park hill area before crossing the Caersws Basin west of Caersws. Then north

again, through minor valley systems through the Mynydd Garth-pwt hill area, before crossing the Carno Valley west of Carno village, before climbing again up, alongside Garreg Hir, onto the Esgair Cwmowen ridge and to the Cefn Coch substation.

8.5 A principal concern with this route corridor (beyond the Council's concern that it is not necessary in the context of its objection to many of the wind turbines in SSA C) is that the route corridor, largely by necessity, cuts across the natural grain of the topography, running perpendicular to the essentially west to east valley system and climbing up and through one area of high land after another. In this context the CC1 proposal does not perform well when compared with the Holford Rules which seek to avoid such alignments because of the likely unsympathetic and adverse landscape and visual outcomes. Along this route corridor various diversion alternatives are indicated in the current proposals. Several of these are likely to be preferable in landscape terms because they follow the topography more sympathetically, for example the diversion in the Oakley Park hill area, although they are not themselves without some considerable effects. There is the increased likelihood of impacting on private property and increasing visual impacts on local residents, as some of these alternatives seek to follow the lower lying areas. The route over the Esgair Cwmowen area would pass through an exposed remote landscape and, notwithstanding the presence (Mynydd Clogau with Tirgwynt consented) and the potential presence of wind turbines, the clutter of this infrastructure would have a significant adverse impact.

8.6 Further 'in principle' concerns are related to the likely heavy vegetation loss along some of the length of the route, because of the small to medium scale of the field pattern in certain areas and wooded character of some of the minor valleys the route seeks to follow, and the subsequent character impacts on an area of countryside without any other significant or similar overhead infrastructure. Whilst I would accept that the character of such landscapes can restrict the extent of the effects due to limiting the extent of visibility, nevertheless, locally to the line the effects are likely to be physically more substantial than in larger scale more open (and flatter) landscapes.

### **Landscape and Visual Assessment of CC1, CC2 and CC3**

8.7 The following table (Table 4) sets out my high level assessments of CC1 against the seven criteria defined in section 2.0 above. The relevant LANDMAP VSAs (i.e.

those with a High overall evaluation or Moderate but with High scenic quality or character evaluations) are as follows:

- Waun Ddubarthog Wind Farm (MNTGMVS443) – High
- Kerry Ridgeway (MNTGMVS254) – High
- Old Chapel Hill Mosaic (MNTGMVS438) - High
- Esgair Cwmowen Uplands (MNTGMVS733) – High
- Cefn Carnedd Wooded Hillside (MNTGMVS227) - Moderate (with High scenic quality and High character evaluation)
- Trannon Uplands Bryn Crugog (MNTGMVS695) - Moderate (with High scenic quality evaluation)
- Improved upland, west of upper Ithon (RDNRVS123) – Moderate (with high character evaluation)

**Table 4:** Landscape and Visual Assessment of CC1, CC2 and CC3

<b>Assessment Criteria</b>	<b>Potential Susceptibility</b>	<b>Potential Magnitude of Effect</b>	<b>Potential Significance</b>
Designated Landscapes	No issues arise in respect of Snowdonia National Park or the Shropshire Hills AONB. The route would run parallel (some 1.5 – 2km distant) to the west boundary of the Caersws Registered Historic Landscape for a length around 5km but likely to be only visible from the designated landscape from within the open landscape of the Severn Valley. Visual impact would be limited.	Low	Not significant
Landscape Fabric and Character	The OHL route corridor would potentially have a considerable impact on the small to medium scale field pattern and fine grain of the landscapes in MNTGMVS254, MNTGMVS438, MNTGMVS227 and RDNRVS123.	Medium to High	<b>Potentially Significant</b>
Tranquillity and Remoteness	Tranquillity and Remoteness are strong characteristics of the upland areas of MNTGMVS443, MNTGMVS254 and MNTGMVS733, noting that the former is	Medium	Not significant

	<p>considered by LANDMAP to be enhanced by the presence of the P&amp;L wind farm.</p> <p>The greatest impact would be at Esgair Cwmowen. Remoteness is a characteristic of the lower lying areas MNTGMVS438 and MNTGMVS695. The effect of the OHL on the remoteness of the lower lying areas would locally be high but this effect would drop off within only several hundred metres due to the restricted are of visual effect. Overall the effect on this characteristic of these VSAs is considered to be medium.</p>		
Rarity and Distinctiveness	<p>The study area exhibits an overall moderate level of local distinctiveness and rarity, with high levels prevalent in MNTGMVS443, MNTGMVS254 and MNTGMVS438.</p>	Low to Medium	Not significant
Scenic Value	<p>High levels of scenic value are exhibited across most of the study area including MNTGMVS443, MNTGMVS254, MNTGMVS438, MNTGMVS733, MNTGMVS227 and MNTGMVS695.</p>	Medium to High	<b>Potentially Significant</b>
Visual Amenity: Recreational Receptors	<p>From Waun Ddubarthog to Oakley Park the route would cross over Glyndŵr's Way national trail twice and pass within 100m on one other occasion. The route would also pass over the Severn Valley Way regional trail at Oakley Park and run adjacent to it for 1km. Visual impact would be High on both routes and many other public rights of way as well.</p>	High	<b>Significant</b>
Visual Amenity: Settlements	<p>The route would be largely distant from settlement. The scattered properties at Newchapel, villages of Oakley park and Clatter would experience some visual impact.</p>	Low to Medium	Not significant

8.8 The significant impacts would be to the existing landscape fabric and character of the small to medium scale farmed landscapes, the wooded character of the minor valleys and the open landscape of Esgair Cwmowen; the visual effects on the national and regional trails and, most significantly of all, to the high scenic value of the study area

through which most of the route corridor would run. Whilst potentially none of these impacts alone or in-tandem would trigger 'serious concerns' at any one specific point in the landscape, such as to require the need for undergrounding, the accumulation of many other high adverse effects across a wide area and diversity of landscapes mean that the route would be potentially unacceptable in landscape and visual terms.

- 8.9 In respect of the cumulative effects of CC1, CC2 and CC3 with the wind farms and other infrastructure, such effects would be limited to the route corridors within SSA C, where there would be some significant cumulative effects with wind farms and the Llandinam 132kV OHL, and at Cefn Coch with the SSA B schemes and infrastructure. However, the CC1, CC2 and CC3 routes would not in themselves be a major incremental part of those significant effects

## **9.0 NATIONAL GRID 400kV LINE**

### **Overview**

- 9.1 The Council considers that the route corridor of the 400kV National Grid connection between the proposed Cefn Coch sub-station and the Oswestry sub-station would have a significant and unacceptable impact on the landscape character of a substantial area of the northern Powys landscape, including in particular parts of the Vyrnwy Valley and several landscapes of High overall evaluation as considered by LANDMAP, as well as significant and unacceptable visual impacts along its length. The Council recognises the reduction of overall effects provided by the proposed undergrounded length along part of the Meifod Valley but considers that this would not adequately mitigate the landscape and visual harm of the scheme overall.
- 9.2 The scheme for the 400kV line would involve steel lattice towers typically 46.5m high and some 360m apart running for around 50km north-east from the Cefn Coch substation, across the Banwy Valley and into the Meifod Valley at Newbridge, where it would be undergrounded for 13km along the base of the valley to 1km east of the A490 road. From here it would run overground following the Meifod Valley and the course of the River Vyrnwy to Llanymynech where it would run east of Oswestry to join the existing 400kV line at Woolston. Other route options have been considered and consulted upon by National Grid, for example a more southerly set of options and variants have been looked at via the Severn Valley and Welshpool. The route currently preferred by National Grid has the advantage of being the shortest length between the two end points and for its length along the Meifod Valley at least, it would follow the general grain of the topography. However, this route corridor's 'advantages' are also something potentially shared by the other less significant grid connection options.
- 9.3 At a high level the route corridor and its effects can be split into four sections: From the Cefn Coch substation to Newbridge, the undergrounded section in the upper part of the Meifod Valley, the lower overground section in the Meifod Valley and the section into Shropshire to Oswestry.

The section from Cefn Coch to Newbridge is not a particularly good landscape 'fit' with topography. Whilst the route initially follows a shallow valley with an open

character, it has by necessity to drop down, across and up the valley sides, perpendicular to the grain of the Banwy Valley, before similarly dropping down into the Meifod Valley near Newbridge. This route is significantly harmful to the character of the Banwy Valley as a whole (bearing in mind its importance as a settled area and east-west transport corridor). The proposed undergrounded second section is absolutely necessary to mitigate the serious concerns that would otherwise arise in the context of the narrow, settled and highly scenic upper part of the valley. The lower part of the valley in the third section has a greater scale than the upper part and some more capacity to absorb the effects. However, significant effects would occur to adjoining landscapes on the valley's edge and visual impacts to settlements and scattered property. The fourth section in Shropshire is predominantly flat to gently undulating and has a broad, open character with a large scale. The effects in this section would be significant locally but not widespread because of the inherent scale of this landscape.

### **Landscape and Visual Assessment of the National Grid 400kV Line**

9.4 The following table (Table 5) sets out my high level assessments against the seven criteria defined in section 2.0 above. The relevant LANDMAP VSAs and Shropshire Landscape Types (i.e. those with a High overall evaluation or Moderate but with High scenic quality or character evaluations) are as follows:

- Esgair Cwmowen Uplands (MNTGMVS733) - High
- Pont Llogel Farmlands (MNTGMVS278) – High
- Guilsfield Rolling Farmlands (MNTGMVS612) – High
- Llanfyllin Mosaic South (MNTGMVS962) – High
- River Severn Flood plain (MNTGMVS650) - Moderate (with High character evaluation)
- Banwy Floodplain (MNTGMVS119) - Moderate (with High character evaluation)
- Vyrnwy Rolling Lowlands (MNTGMVS714) - Moderate (with High character evaluation)
- Riverside Meadows (Shropshire Landscape Type) - High

**Table 5:** Landscape and Visual Assessment of the National Grid 400kV Line

<b>Assessment Criteria</b>	<b>Potential Susceptibility</b>	<b>Potential Magnitude of Effect</b>	<b>Potential Significance</b>
Designated Landscapes	Designated landscapes are too distant to be significantly affected.	Low	Not significant
Landscape Fabric and Character	Valley and small scale landscapes adjoining the Banwy Valley vulnerable to major development changes to their fabric and character, e.g. MNTGMVS119 and MNTGMVS278, where the impacts would potentially be significant. Some landscapes adjoining the Meifod Valley would be sensitive to major development changes such as MNTGMVS612 and MNTGMVS962, because their integrity and character depends to degree on adjoining characteristics, i.e. views across the valley.	Medium to High	<b>Potentially significant in local areas</b>
Tranquillity and Remoteness	Tranquillity and remoteness are only exhibited together in the Esgair Cwmowen part of the study area, i.e. MNTGMVS733. The 400kV line would have a significant effect on the sense of both in this area as would the proposed wind arms and associated other infrastructure. Tranquillity is also experienced in the small scale farmlands by the Banwy Valley, MNTGMVS278, and along the Meifod Valley, MNTGMVS650 and Riverside Meadows. Again both would be significantly affected by the OHL, notwithstanding the undergrounded section.	Medium to High	<b>Potentially significant</b>
Rarity and Distinctiveness	The study area exhibits considerable areas of rarity and local distinctiveness in the valley areas, i.e. MNTGMVS650, MNTGMVS119 and Riverside Meadows. The loss to the local distinctiveness of the	Medium to High	<b>Potentially significant</b>

	lower Meifod Valley would be significant.		
Scenic Value	High scenic value is associated with the upland parts of the study area affected including the Meifod valley side to the north, rather than the valley floors, i.e. MNTGMVS733, MNTGMVS278, MNTGMVS612 and MNTGMVS962. The impacts on the scenic qualities of some of the adjoining landscapes are likely to be significant because of the high degree of visual effect of the OHL.	Medium to High	<b>Potentially significant</b>
Visual Amenity: Recreational Receptors	Glyndŵr's Way would cross the route of the corridor at Meifod village, by which the route would be undergrounded. There would be no significant visual effects on this section of the route. The route would pass over Offa's Dyke path where this crosses the valley at Llanymynech. The visual impact on this national trail would be significant for a 3km length.	High	<b>Potentially significant</b>
Visual Amenity: Settlements	Several settlements (and many scattered and more isolated property) would be affected in the lower Meifod Valley including Llansantffraid-yr-Mechain, Llanymynech, Llandysilio, Maesbrook, Pant, Llyncllys, Crickheath, Woolston and West Felton.	High	<b>Significant</b>

9.5 The National Grid 400kV line would have a widespread range of landscape and visual impacts. In the section from Cefn Coch to Newbridge, it would be significantly out of scale with the landscape of the Banwy Valley and adjoining landscape and harmful to the scenic value of the Pont Llogel Farmlands. In the upper section of the Meifod Valley a length of undergrounding would be essential but considerable concern still remains over the precise length of undergrounding and the locations for the substantial sealing compounds required. In the lower section of the valley there would be an impact on landscape character and the sense of tranquillity of the river landscapes as well as significant visual effects to a large number of settlements. In the section from the border into Shropshire the concern relates to high and significant visual impacts on settlement and on Offa's Dyke national Trail. The 400kV scheme would be individually and cumulatively significantly harmful and unacceptable in

landscape and visual terms even allowing for 13km undergrounding in the Meifod Valley.

## **10.0 SSA C HIGHWAY IMPROVEMENTS**

### **Overview**

- 10.1 In relation to the construction of the SSA C schemes, the Council accepts that there may be the requirement for localised highway improvements at the Mochdre Industrial Estate and at Builth Wells, where a temporary bridge and related highway links may be required to cross the River Wye. The Council considers that the landscape and visual effects of these may be acceptable subject to detailed design and appropriate mitigation but would seek to reserve its position until such details are available.
- 10.2 The improvements at the Mochdre Industrial Estate, at Newtown, would appear to require a short length of new link road from the industrial estate to the A483. Whilst there would be some earthworks and vegetation loss the impacts are considered to be low key in landscape and visual terms and the Council would not object on these grounds, should the requirements prove necessary.
- 10.3 The current details for the temporary bridge and links at Builth Wells are limited for a proper assessment to be undertaken. From the information that is available a temporary link could potentially be formed without a significant or irreversible landscape and visual effect. Again the Council would not object to appropriate proposals, as long as they were necessary.

## 11.0 THREE PCC SCENARIOS

### Overview

- 11.1 Figures PRV 1, 2 and 3 show in diagrammatic form three scenarios. The first, PCC Scenario 1, illustrates what the Council considers is an appropriate level of provision which can be provided in an acceptable way in landscape and visual terms. The second demonstrates an arrangement which requires the need for the implementation of CC1, 2 and 3 from SSA C to Cefn Coch, which in turn could be a trigger point for the need to go from a wooden pole grid connection solution to Legacy, to an L7 small steel lattice tower grid connection to Legacy. The third demonstrates a 'do-maximum' solution which would include for all of the NSIP and TACPA wind farms and which would also trigger the need for the 400kV grid connection, although the actual trigger point for this is driven by the capacity of the L7 small steel tower solution.
- 11.2 PCC Scenario 1 would include in SSA C Llandinam Repowering, Llaithddu (north) and potentially Hirddywel (subject to Council approval), with their grid connection via the Llandinam 132kV OHL but upgraded to a heavy duty twin wood pole system to carry 176MVA. Table 6 below sets out the relative capacities and demonstrates that the upgraded Llandinam OHL could carry the electricity generated. The scenario is limited in SSA B Carnedd Wen (less the 5 turbines) plus Llanbrynmair with its grid connection via double twin wood pole 132kV OHLs to the substation at Legacy. Table 6 includes the generating capacity of the existing (all operational post 2006) and the consented SSA B wind farms. These generate 91.25MW and all export their power either via the existing 33kV systems or the existing Carno to Newtown 132kV OHL. In total PCC Scenario 1 would have a generating capacity of some 477MW, or less 31MW if one removes the current capacity of the existing P&L Wind Farm. I note that the TAN 8/Garrad Hasan indicative thresholds are 70 and 98MW for SSA C and 290 and 430MW respectively for SSA B; 360-528MW in total.
- 11.3 As set out above, the TACPA scheme Carno III is currently before the Council. It might be considered to be acceptable, in whole or in part by the Council. Its capacity is 45MW and its generation could be accommodated on the double twin wood pole grid connection. This would increase the total generation in SSA B to some 275MW exported

via the double twin wood pole system and at, or close, to its capacity. The total SSA B and C generation would rise to some 522MW.

- 11.4 A further variable to PCC Scenario 1 would be the inclusion of Nant-y-Moch in SSA D. This would generate some 140-176MW with the current proposal to export this to the grid via the Cefn Coch substation. This connection would trigger the need for an L7 small steel lattice tower solution to Legacy.

**Table 6: PCC Scenario 1**

<i>Existing Schemes (consented post TAN 8)</i>	<i>Proposed Schemes</i>	<i>Existing Capacity (MW)</i>	<i>Proposed Capacity (MW)</i>	<i>Total Capacity (MW)</i>
Carno A+B		33.6		
Mynydd Clogau		14.45		
Carno Extension		15.6		
Tirgwynt		27.6		
	Carnedd Wen (exc. 5)		140	
	Llanbrynmair		90	
<b>SSA B Totals</b>		<b>91.25</b>	<b>230</b>	<b>321.25</b>
	Llandinam Repowering (nett of P&L)		102 (71)	
	Llaithddu (north)		27.6	
	Hirddywel (subject to Council approval)		27	
<b>SSA C Totals</b>			<b>156.6 (125.6)</b>	
<b>TOTALS (nett of P&amp;L)</b>		<b>91.25</b>	<b>386.6 (355.6)</b>	<b>477.85 (446.85)</b>

- 11.5 As set out in sections 5.0, 6.0 and 7.0 I consider that whilst significant cumulative landscape and visual effects would occur with PCC Scenario 1 (one significant landscape effect, although this would be limited to the scenic value of one VSAA but with a LANDMAP scenic value evaluation of Outstanding, and some significant visual effects, including on users of a national trail, from viewpoints within the National Park and several settlements) I do not consider these to be unacceptable.

- 11.6 PCC Scenario 2 includes all three of the proposals before the Inquiry in SSA C (both parts of Llaithddu) and B (without the proposed modification to Carnedd Wen). Llaithddu

and Llanbadarn Fynydd cannot be served by the Llandinam 132kV OHL and require the connection north to Cefn Coch, identified as CC1. On the basis that all of the generation of Hirddywel, Llanbadarn Fynydd and Llaithddu would utilise CC1, some 148MW would be added to the 240-285MW generated by Carnedd Wen, Llanbrynmair and potentially by Carno III (some 433MW), exceeding, I understand, the capacity of double twin wood poles (some 350MW) and requiring the L7 small steel lattice tower solution. The Nant-y-Moch scheme could add up to a further 176MW at Cefn Coch, taking the total to 609MW which would be at the limit of the L7 small steel lattice system.

- 11.7 Table 7 shows that the total generating capacity of SSA B with the existing and consented schemes would be 376.25MW and SSA C some 250.6MW, achieving a total of 626.85MW (or 31 less taking out the existing P&L generation).

**Table 7:** PCC Scenario 2

<i>Existing Schemes (consented post TAN 8)</i>	<i>Proposed Schemes</i>	<i>Existing Capacity (MW)</i>	<i>Proposed Capacity (MW)</i>	<i>Total Capacity (MW)</i>
Carno A+B		33.6		
Mynydd Clogau		14.45		
Carno Extension		15.6		
Tirgwynt		27.6		
	Carnedd Wen (inc. 5)		150	
	Llanbrynmair		90	
	Carno III		45	
<b>SSA B Totals</b>		<b>91.25</b>	<b>285</b>	<b>376.25</b>
	Llandinam Repowering (nett of P&L)		102 (71)	
	Llaithddu (all)		62.1	
	Llanbadarn Fynydd		59.5	
	Hirddywel (subject to Council approval)		27	
<b>SSA C Totals</b>			<b>250.6 (219.6)</b>	
<b>TOTALS (nett of P&amp;L)</b>		<b>91.25</b>	<b>535.6 (504.6)</b>	<b>626.85 (595.85)</b>

- 11.8 PCC Scenario 2 would, however, give rise to a range of potential individual and cumulative landscape and visual effects which I consider to be unacceptable. These

include the individual effects of an L7 small steel lattice tower connection combined with the significant individual and cumulative effects of Llaithddu (south), Llanbadarn Fynydd and the CC1, 2 and 3 grid connections.

11.9 PCC Scenario 3 includes for all of the NSIP and TACPA wind farms and would require the 400kV grid connection. The total capacity of the 400kV OHL solution is, I understand, some 1600-1800MW. Table 8 illustrates that the currently known maximum this would carry would be some 620MW, or so, from SSA B schemes, 148MW via CC1 from SSA C and 176MW from Nant-y-Moch in SSA D and a total of 944MW; well within the capacity of the proposed 400kV line. The total generating capacity of all the SSA B and C schemes is nearly 1000MW. This scenario would be give raise to significant and unacceptable cumulative landscape and visual effects across both SSAs and across a range of high value landscapes in and around these SSAs.

**Table 8:** PCC Scenario 3

<i>Existing Schemes (consented post TAN 8)</i>	<i>Proposed Schemes</i>	<i>Existing Capacity (MW)</i>	<i>Proposed Capacity (MW)</i>	<i>Total Capacity (MW)</i>
Carno A+B		33.6		
Mynydd Clogau		14.45		
Carno Extension		15.6		
Tirgwynt		27.6		
	Carnedd Wen (inc. 5)		150	
	Llanbrynmair		90	
	Carno III		45	
	Dyfnant Forest		80-120	
	Mynydd Lluest-y-Graig		50	
	Cemmaes III		18-27.6	
	Esgair Cwmowen		45	
<b>SSA B Totals</b>		<b>91.25</b>	<b>478-527.6</b>	<b>569.25- 618.85</b>
	Llandinam Repowering (nett of P&L)		102 (71)	
	Llaithddu (all)		62.1	
	Llanbadarn Fynydd		59.5	
	Hirddywel (subject to Council approval)		27	
	Garreg Lwyd		46	

	Bryngydfa		36	
	Neuadd Goch		27	
<b>SSA C Totals</b>			<b>359.6</b> <b>(390.6)</b>	
<b>TOTALS (nett of P&amp;L)</b>		<b>91.25</b>	<b>837.6-887.2</b> <b>(806.6-</b> <b>856.2)</b>	<b>928.85-</b> <b>978.45</b> <b>(897.85-</b> <b>947.45)</b>

## 12.0 CONCLUSIONS

12.1 This fourth session of the Public Inquiry concerns the cumulative effects of the SSA B and C applications, with the operational, consented and in-planning TACPA schemes before Powys, together with SP Manweb's proposal for the 132kV overhead line connection for the Llandinam Repowering Wind Farm, other potential electricity connections and infrastructure, including the National Grid's proposed 400kV line from the proposed Cefn Coch substation site to the existing line east of Oswestry.

12.2 I have defined the following seven criteria against which to assess landscape and visual susceptibility, at a high level, to the various development types and the in-combination cumulative effects:

- Protection of designated landscapes (e.g. National Parks, AONBs, designated historic landscapes);
- Compatibility with and protection of landscape fabric and character (e.g. topographic form, landcover pattern, settlement pattern, boundary type, scale, sense of enclosure, condition);
- Protection of tranquillity and remoteness (as defined by LANDMAP);
- Protection of rarity and local distinctiveness (as defined by LANDMAP);
- Protection of scenic value and overall evaluation (as defined by LANDMAP);
- Protection of visual amenity of valued recreational resources (e.g. promoted long distance footpaths and well-recognised viewpoints);
- Protection of visual amenity and landscape settings of settlements.

12.3 The study area for the assessment for this session of the Inquiry includes the landscape context for SSAs B and C, the Meifod Valley east to the border with Shropshire, the Severn Valley to Welshpool and the landscape between Oswestry and north to Wrexham, refer to Figures 5 or 13 of the applicants' conjoined SEI figures; this defines the locations of the various component parts for this cumulative assessment and 20km radii from the two TAN 8 areas.

12.4 The cumulative assessment of wind farms and associated infrastructure relates only to the landscape context of SSAs B and C. I have previously described this landscape context in my Proofs of Evidence to Sessions 1 and 2. Similarly for the Severn Valley between SSA C and Welshpool, I set out my description of this

landscape in my evidence to Session 3 regarding the Llandinam 132kV OHL scheme.

### **Cumulative Landscape and Visual Assessment of the Preferred PCC Scenario for SSA C (part of Scenario 1)**

- 12.5 The Council has previously set out its position in respect of the cumulative landscape and visual effects of the three SSA C wind farm schemes at Session 1, considering the effects of Llandinam Repowering, Llaithddu and Llanbadarn Fynydd together to be unacceptable in landscape and visual terms. The Council also considers the cumulative effects of these schemes together with the TACPA schemes before the Council to be unacceptable. Within SSA C the Council supports the combination of Llandinam Repowering and Llaithddu (northern array) with potentially Hirddywel (TACPA scheme – subject to formal consideration) and together with the Llandinam 132kV OHL scheme, noting the need to upgrade this proposal to a heavy-duty wood pole 176MVA to Welshpool, with the upgrade of an existing 132kV OHL from Welshpool to Oswestry.

### **Cumulative Landscape and Visual Assessment of the Preferred PCC Scenario for SSA B (part of Scenario 1)**

- 12.6 At Session 2 the Council accepted the cumulative landscape and visual effects of the Llanbrynmair and Carnedd Wen wind farm schemes, together with the other existing and consented wind farms in SSA B (subject to the Council's objection to the Llanbrynmair access and the Carnedd Wen five turbines). Those existing or consented wind farms which are part of the baseline for the cumulative assessment of Llanbrynmair and Carnedd Wen are Carno A&B, Carno Extension, Cem maes, Mynydd Clogau and the consented, but not yet operational, Tirgwynt.
- 12.7 The overall in-combination landscape and visual cumulative effects of the scenario including Llanbrynmair and Carnedd Wen (subject to the Council's objection to the Llanbrynmair access and the Carnedd Wen five turbines) and the parallel twin 132kV OHL grid connections to Legacy would give rise to a significant landscape effect, although this would be limited to the scenic value of one VSAA but one which has a LANDMAP scenic value evaluation of Outstanding, and some significant visual effects, including on users of a national trail, from viewpoints within the National Park

and several settlements. Nevertheless, overall these would not be so significant in extent or degree to be unacceptable effects in landscape and visual terms.

### **Cumulative Effects between SSA B and SSA C Schemes and TACPA Wind Farms**

- 12.8 The Council does not consider that unacceptable in-combination cumulative landscape effects would occur between the wind farm schemes before the Inquiry in SSA B and C (over and above those in-combination cumulative landscape effects that would occur separately with the SSA B and C schemes). From a few sensitive locations, in particular weather conditions, there is the potential for additional significant visual effects (over and above those in-combination cumulative visual effects that would occur separately with the SSA B and C schemes). The area likely to be affected would be the landscape between SSA B and C where the sole visual effects of either would not be significant but together they would (e.g. Viewpoint 3 below). Such visual effects, limited in extent and relatively in degree, do not render any or all of the schemes unacceptable.

### **Landscape and Visual Assessment of CC1, CC2 and CC3**

- 12.9 The Council considers that the CC1 132kV OHL route, together with its connections to Neuadd Goch and Llanbadarn Fynydd (CC2 and 3 respectively) to be unacceptable in its own right in landscape and visual terms and cumulatively with operational, consented and in-planning wind farms and other infrastructure. The route corridor of CC1 would have a significant and unacceptable impact on the landscape character, including several landscapes of High overall evaluation as considered by LANDMAP, and significant and unacceptable visual impacts along its length. The significant impacts would be to the existing landscape fabric and character of the small to medium scale farmed landscapes, the wooded character of the minor valleys and the open landscape of Esgair Cwmowen; the visual effects on the national and regional trails and, most significantly of all, to the high scenic value of the study area through which most of the route corridor would run. Whilst potentially none of these impacts alone or in-tandem would trigger 'serious concerns' at any one specific point in the landscape, such as to require the need for undergrounding, the accumulation

of many other high adverse effects across a wide area and diversity of landscapes mean that the route would be potentially unacceptable in landscape and visual terms.

### **Landscape and Visual Assessment of the National Grid 400kV Line**

- 12.10 The Council considers that the route corridor of the 400kV National Grid connection between the proposed Cefn Coch sub-station and the Oswestry sub-station would have a significant and unacceptable impact on the landscape character of a substantial area of the northern Powys landscape, including in particular parts of the Vyrnwy Valley and several landscapes of High overall evaluation as considered by LANDMAP, as well as significant and unacceptable visual impacts along its length. The Council recognises the reduction of overall effects provided by the proposed undergrounded length along part of the Meifod Valley but considers that this would not adequately mitigate the landscape and visual harm of the scheme overall.
- 12.11 The National Grid 400kV line would have a widespread range of landscape and visual impacts. In the section from Cefn Coch to Newbridge, it would be significantly out of scale with the landscape of the Banwy Valley and adjoining landscape and harmful to the scenic value of the Pont Llogel Farmlands. In the upper section of the Meifod Valley a length of undergrounding would be essential but considerable concern still remains over the precise length of undergrounding and the locations for the substantial sealing compounds required. In the lower section of the valley there would be an impact on landscape character and the sense of tranquillity of the river landscapes as well as significant visual effects to a large number of settlements. In the section from the border into Shropshire the concern relates to high and significant visual impacts on settlement and on Offa's Dyke national Trail. The 400kV scheme would be individually and cumulatively significantly harmful and unacceptable in landscape and visual terms even allowing for 13km undergrounding in the Meifod Valley.

### **PCC Scenario 1**

- 12.12 Table 6 above includes the generating capacity of the existing (all operational post 2006) and the consented SSA B wind farms. These generate 91.25MW and all export their power either via the existing 33kV systems or the existing Carno to Newtown 132kV OHL. In total PCC Scenario 1 would have a generating capacity of

some 477MW, or less 31MW if one removes the current capacity of the existing P&L Wind Farm. I note that the TAN 8/Garrad Hasan indicative thresholds are 70 and 98MW for SSA C and 290 and 430MW respectively for SSA B; 360-528MW in total.

- 12.13 As set out in sections 5.0, 6.0 and 7.0 I consider that whilst significant cumulative landscape and visual effects would occur with PCC Scenario 1 (one significant landscape effect, although this would be limited to the scenic value of one VSAA but with a LANDMAP scenic value evaluation of Outstanding, and some significant visual effects, including on users of a national trail, from viewpoints within the National Park and several settlements) I do not consider these to be unacceptable.

### **PCC Scenario 2**

- 12.14 PCC Scenario 2 includes for all three of the proposals before the Inquiry in SSA C (both parts of Llaithddu) and B (without the proposed modification to Carnedd Wen). Llaithddu and Llanbadarn Fynydd cannot be served by the Llandinam 132kV OHL and require the connection north to Cefn Coch, identified as CC1. On the basis that all of the generation of Hirddywel, Llanbadarn Fynydd and Llaithddu would utilise CC1, some 148MW would be added to the 240-285MW generated by Carnedd Wen, Llanbrynmair and potentially by Carno III (some 433MW), exceeding, I understand, the capacity of double twin wood poles (some 350MW) and requiring the L7 small steel lattice tower solution. Table 7 shows that the total generating capacity of SSA B with the existing and consented schemes would be 376.25MW and SSA C some 250.6MW, achieving a total of 626.85MW (or 31 less taking out the existing P&L generation).

- 12.15 PCC Scenario 2 would, however, give rise to a range of potential individual and cumulative landscape and visual effects which I consider to be unacceptable. These include the individual effects of an L7 small steel lattice tower connection combined with the significant individual and cumulative effects of Llaithddu (south), Llanbadarn Fynydd and the CC1, 2 and 3 grid connections.

### **PCC Scenario 3**

- 12.16 PCC Scenario 3 includes for all of the NSIP and TACPA wind farms and would require the 400kV grid connection. The total capacity of the 400kV OHL solution is, I

understand, some 1600-1800MW. Table 8 illustrates that the currently known maximum this would carry would be some 620MW, or so, from SSA B schemes, 148MW via CC1 from SSA C and 176MW from Nant-y-Moch in SSA D and a total of 944MW; well within the capacity of the proposed 400kV line. The total generating capacity of all the SSA B and C schemes is nearly 1000MW. This scenario would be give raise to significant and unacceptable cumulative landscape and visual effects across both SSAs and across a range of high value landscapes in and around these SSAs.

- 12.17 In conclusion, I consider the landscape and visual effects of PCC Scenario 1, which allows potentially for Hirddywel and potentially with some or part of Carno III, both subject to a Council's future approval, and the associated wood pole grid connection infrastructure to be acceptable.