

Electricity Act 1989 (Sections 36, 37, 62(3) & Schedule 8) Town and Country Planning Act 1990 (Section 90) and the Electricity Generating Stations and Overhead Lines (Inquiries Procedure) (England and Wales) Rules 2007

Application by Vattenfall, Dated 30 November 2007 for Consent under Section 36 of the Electricity Act 1989 to Construct and Operate a 59.5MW Wind Turbine Generating Station in Powys, Mid Wales ('Llanbadarn Fynydd')

Landscape and Visual Proof of Evidence

Ian Gates BA(Hons) MLD. CMLI

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1. Introduction

1.1 Qualifications and Experience

- 1.1.1 My name is Ian Gates and I am an Associate Director at AMEC Environment and Infrastructure where I run a landscape team specialising in landscape and visual impact assessment. I hold the degree of Bachelor of Arts in Geography and a Master of Landscape Design. I have been a chartered Landscape Architect (Member of the Landscape Institute CMLI) since 1990.
- 1.1.2 Over the past twenty years I have worked mainly in landscape planning and since the late 1990s have concentrated on landscape and visual impact assessment (LVIA). Over this latter period I have undertaken over 200 LVIA's for a projects at a wide variety of scales and locations in the UK and occasionally abroad. Since 2000 I have worked upon LVIA's for an estimated 40 wind farm projects across the UK, including a dozen projects in Wales that have been located in Strategic Search Areas (SSAs) B, C, E, F and G as well as some smaller wind energy proposals outside SSAs.
- 1.1.3 I have lived in northern Powys for over ten years having moved to the area specifically to enjoy its environmental qualities and landscapes. As such I regularly undertake outdoor activities, principally cycling and hill walking. It was undertaking these activities in locations such as the Kerry Ridgeway and Beacon Hill that I was introduced to the relevant parts of Powys and south Shropshire prior to any professional associations commenced in 2006.
- 1.1.4 Landscape assessment advice on wind farm projects has varied in response to the site location, landscape and visual characteristics and the exact nature of the wind farm proposal. In all cases there is inevitably some degree of significant landscape and visual effect as a result of the layout or scale of the development. These landscape and visual effects may be negative, neutral or positive to varying degrees. The consultation advice that I have offered wind farm developer clients has ranged from advising them on landscape feasibility, providing design reviews of turbine layouts to consultation on potential cumulative landscape and visual issues. These consultations have often resulted in the redesign of wind farm proposals in terms of the numbers,

specifications and layouts of the turbines and, on occasion, recommendation not to proceed with the project.

- 1.1.5 The LVIAs that I have undertaken in Wales have necessitated use of the LANDMAP approach to landscape character assessment. Many of the wind farm LVIAs that I have undertaken have involved undertaking cumulative landscape and visual assessments and residential visual amenity assessments for all residential properties located within a specified distance of the proposed turbines.

1.2 Appointment

- 1.2.1 AMEC (then operating under the name Entec) were appointed by Vattenfall to undertake the EIA and manage the planning application and accompanying EIA for Llanbadarn Fynydd in 2006. I managed and made substantial contributions to the LVIA that was included in the 2007 Environmental Statement (ES) (AD/VATT/003). In contributing to the 2007 LVIA I undertook a number of site visits to the application site, its immediate environs and many of the middle and long distance viewpoints. In preparing this Proof of Evidence I have reviewed the LVIA that forms a chapter in the 2007 ES (AD/VATT/003) and it remains my professional opinion that it provided an accurate summary of the landscape and visual conditions that existed at the time of the submission of the planning application, particularly bearing in mind that the proposed turbine layout and specification at Llanbadarn Fynydd has not changed since the 2007 application.
- 1.2.2 In October 2012 I was reappointed the Applicant to provide Supplementary Environmental Information (SEI) (AD/VATT/018) in preparation for the forthcoming appeal as well as to act as Vattenfall's Landscape Witness at the forthcoming Appeal. In preparing the SEI consideration was given to the changes in the baseline situation, particularly in the area in a 10km radius around the Llanbadarn Fynydd application site, which is termed the detailed study area, and to the changes in the cumulative baseline: at the time of Llanbadarn Fynydd Wind Farm's application in late 2007 it was the only wind farm proposed in or in close proximity to SSA C in addition to the existing Llandinam Wind Farm (originally known as Penrhyddlan and Llidiartywaun Wind Farm) which was constructed in 1992. By 2013 there are now six wind farm proposals within SSA C plus the proposed Llanbadarn Fynydd Wind Farm.

- 1.2.3 Other changes that were necessary to incorporate within the SEI (AD/VATT/018) included the completion and quality assurance of all layers of the LANDMAP database for Montgomeryshire and Radnorshire. The completion of the LANDMAP database facilitated the compilation of the Powys Landscape Character Assessment in 2008 which draws upon and complements the LANDMAP database. In undertaking the SEI I have made a number of additional site visits between October 2012 and June 2013 in a wide variety of weather conditions. These site visits have included, but not been restricted to, walking the closest two sections of Glyndwr's Way, open access land, the western part of the Kerry Ridgeway, identifiable public rights of way within and close to the application site and visiting many of the cumulative viewpoints as well as driving along roads, visiting local settlements and visiting other proposed wind farm sites in SSA C.
- 1.2.4 Having been involved in the Llanbadarn Fynydd Wind Farm application for over six years and having confirmed that I still consider it to be acceptable in landscape and visual terms, I agreed to represent the Applicant at this Appeal.
- 1.2.5 In preparing this Proof of Evidence I can confirm that I understand my duty to the Inquiry and have complied, and will continue to comply, with that duty. I confirm that this evidence identifies all the facts that I regard as being relevant to the professional opinion that I have expressed and that the Inquiry's attention has been drawn to any matter that would affect the validity of that opinion. I believe that the facts stated within this Proof of Evidence are true and that the opinions expressed are correct.

1.3 Scope of Evidence

- 1.3.1 My evidence considers the main issues that have been identified during the course of the Llanbadarn Fynydd Wind Farm's Section 36 application period by Powys County Council. This includes reports or reviews produced for the Council by landscape and visual consultants and the landscape reasons for refusal set out in the Council's Updated Outline Statement of Case (OBJ-0020OSOC-2). In the same manner the Proof also takes into consideration the issues that have been raised by Natural Resources Wales (NRW) formerly the Countryside Council for Wales (CCW) although it should be noted that they have not objected on landscape and visual grounds.

- 1.3.2 Landscape and visual impacts were one of the seven reasons for objection given in the Minutes of the Powys County Council Cabinet Meeting of March 2012. RFO6 stated that one of the reasons for refusal was “*The unacceptable landscape and visual impact of the applications including the detrimental effect upon tourism...*” In Powys County Council’s subsequent Outline Statement of Case (OBJ-002-OSOC-2) more arguments in support of this objection were advanced which relate primarily to potential effects upon the Shropshire Hills AONB and that the application site and surrounding area is at present “*almost entirely ‘untouched’ by wind farm development ... and would set a precedent for other wind farm development in the same landscape unit.*”
- 1.3.3 This evidence will set out the justification as to why I believe that Llanbadarn Fynydd is an appropriate location in landscape and visual terms at which to construct and operate the proposed 17 turbine wind farm including its ancillary components and the minor works to the local road network that will be required to deliver the turbine components to the application site. In preparing my proof I have re-examined the LVA prepared for the 2007 LVIA (AD/VATT/003) and the SEI issued in February 2013 (AD/VATT/018) and reviewed the relevant papers and reports that relate to landscape and visual effects that could be generated by other SSA C wind farm applications, principally those at Llaithddu and Llandinam Repowering which form part of this conjoined Inquiry.
- 1.3.4 As already stated I was the principal author of the 2007 LVIA (AD/VATT/003) and that subject to the changes to the baseline and the cumulative situation since 2007 which have been addressed in the SEI of February 2013 and in the appendices that accompany this Proof, I adopt the 2007 LVIA chapter as part of my evidence. I likewise adopt the information contained in the text and appendices of the SEI (AD/VATT/018, 18A, 18B & 18C) as part of my evidence allowing for the minor changes in the turbine layouts of Llaithddu and Llandinam Wind Farms which were published subsequent to the publication of the Llanbadarn Fynydd SEI in February 2013. Consequently my Proof of Evidence should be read in conjunction with the 2007 LVIA chapter and the February 2013 SEI as, in order to minimise repetition and to focus on the main landscape and visual issues, my Proof is not intended to be an LVIA in its own right.
- 1.3.5 My Proof of Evidence does not attempt to discuss planning policy interpretation. Instead it concentrates upon providing a detailed examination of the reasons for

refusal set out by Powys County Council (OBJ-002-OSOC-2) which relates primarily to landscape character (although not within the context of either LANDMAP or the Powys Landscape Character Assessment). Additionally information is provided on other landscape and visual concerns which the Outline Statements of Case indicate will be raised in landscape and visual evidence to be presented by Powys County Council and third parties. This evidence is likely to relate to residential visual amenity at nearby residential properties and people walking, cycling or riding local public rights of way or access land as well as to the landscape and visual effects of the various cumulative scenarios that could arise within SSA C.

- 1.3.6 It is important to note that some landscape and visual issues have been deferred into Session 4 of the Conjoined Inquiry and as such will not be considered in the Session 1 Proof. This include potential cumulative effects with regard to wind energy developments beyond SSA C; cumulative effects of the works necessary on the route(s) via which the turbines would be transported to SSA B and C; and the different grid connections including the proposed 132kV Llandinam – Welshpool grid connection and the other 132kV connections that are proposed to link SSA C to the proposed new hub substation to be located at Cefn Coch.

1.4 Structure of Evidence

- 1.4.1 My Proof of Evidence is structured to avoid unnecessary repetition of information that was contained in the 2007 ES (AD/VATT/003) and the February 2013 SEI (AD/VATT/018). Nevertheless given the complex nature of the Inquiry and the manner in which the detailed nature of some of the proposed development has altered since the publication of the SEI, it has been necessary to amend some of the figures and assessments set out in the SEI. Where such amendments have been necessary any changes in the results of the component of the landscape or visual assessment will be emphasised in the Proof's text.
- 1.4.2 Section 2 sets out the methodological framework under which the Proof and its appendices have been prepared.
- 1.4.3 Section 3 is concerned with the provision of a project description and a brief summary of the background information. This is necessary to gain an understanding of the main landscape and visual issues that need to be taken into consideration in the refutation of

Powys County Council's overarching reason for refusal on general landscape and visual grounds as well as the later specific reasons associated with the effects upon and landscape links with the Shropshire Hills AONB and the Council's argument that the 'Llandinam Ridge' is a preferable location for the location of turbines within SSA C.

- 1.4.4 The key findings of the 2007 LVIA (AD/VATT/003) are set out to demonstrate the limited number of predicted significant landscape and visual effects and to provide the context necessary for a more detailed examination of some of the landscape and visual effects. In a similar manner a brief overview of the LVIA component of the February 2013 SEI (AD/VATT/018) will be provided leading onto the explanation for the amended assessment information that is contained in the Proof's appendices which will require a brief summary of the cumulative wind farm baseline in SSA C.
- 1.4.5 Section 3 also contains a brief review of the most pertinent attributes of the landscape baseline and the visual baseline which will facilitate an understanding of the assessment that will be set out in subsequent sections of the Proof.
- 1.4.6 The penultimate subsections of Section 3 provide a summary of the main points that have been raised in consultations and /or in responses with Natural Resources Wales (NRW, formerly CCW) and in the Report presented to the Powys County Council Planning Committee in March 2012 that was prepared by planning officers which drew upon reports and reviews previously commissioned by Powys County Council. Finally the key findings of the LVIAs that have been prepared for the other two proposed SSA C wind farms at the Conjoined Inquiry in SSA C: Llaithddu and Llandinam Repowering will be set out. In particular the Proof will draw out any conclusions assessed by their authors with regard to the potential cumulative relationship between either of these proposed wind farms and the proposed wind farm at Llanbadarn Fynydd.
- 1.4.7 With regard to figures produced for this Proof, the ten figures included within the main Proof itself are referred to as Figures 1-10 with no further definition. All other figures are contained in appendices and are referenced to the appropriate appendix using the form Appendix LVIA X.

2. Assessment Methodology

2.1 Introduction

- 2.1.1 Since the preparation of the LVIA in 2007 and the preparation of the LVIA SEI in February 2013, the Landscape Institute and the Institute of Environmental Management and Assessment has issued their 3rd Edition of the ‘*Guidelines on Landscape and Visual Impact Assessment*’, (GLVIA3) in April 2013 (CPL/LAN/005).
- 2.1.2 All the previous landscape and visual assessments undertaken for Llanbadarn Fynydd Wind Farm have been undertaken under the previous but then current second edition of the GLVIA (CPL/LAN/004). In revisiting the assessment as part of development of the Proof consideration has been given as to whether to adopt a GLVIA3 based methodology. Given that it is widely accepted that the principles behind GLVIA3 remain the same as for GLVIA2 and that the main change is a greater emphasis upon the use of professional judgement and providing transparency in showing how the assessment’s conclusions have been determined, it is considered that the approach that has been adopted throughout the LVIA’s for Llanbadarn Fynydd accords with this new emphasis.
- 2.1.3 In drawing this conclusion I have referenced the guidance that has been provided by the Landscape Institute’s Technical Committee on the transition from GLVIA2 to GLVIA3 as published on the website of the Landscape Institute. This states that “*In general terms the approach and methodologies in the new edition are the same*” and that “*An assessment started using GLVIA2 should be completed using that edition.*”

2.2 Assessment Methodology

- 2.2.1 Specific assessment guidance on the landscape and visual assessment of wind farms in Wales in relation to LANDMAP is provided by Natural Resources Wales in their

publication, ‘*LANDMAP Information Guidance Note 3: Using LANDMAP for Landscape and Visual Impact of Onshore Wind Farms*’. The latest version of this guidance is dated May 2013 i.e. it was published subsequent to the landscape assessment contained in the February 2013 SEI (CPL/LAN/008). Instead the amended assessment of effects upon landscape character as represented by LANDMAP aspect areas in the SEI was undertaken in accordance with the then current version of Guidance Note 3 that was published in June 2010 (VATT/LAN/005). As confirmed in a conversation with NRW’s LANDMAP Officer in March 2013 there is no substantial difference in the methodological approach advocated between the June 2010 and May 2013 versions of the guidance.

2.2.2 In addition, this assessment takes account of the most recent guidance produced by Scottish Natural Heritage (SNH) on cumulative assessment entitled ‘*Guidance Assessing the Cumulative Impact of Onshore Wind Energy Developments*’ Version 3, March 2012 (CPL/LAN/007) and ‘*Siting and Design Windfarms in the Landscape, Version 1*’ December 2009 (VATT/LAN/002). In particular, this latter document (page 34, para 5.5) advises the consideration of three thresholds of cumulative wind farm development and levels of effect as follows:

- “*The windfarms are seen as separate isolated features within the landscape character type, too infrequent and of insufficient significance to be perceived as a characteristic of the area;*
- *The windfarms are seen as a key characteristic of the landscape, but not of sufficient dominance to be a defining characteristic of the area; and*
- *The windfarms appear as a dominant characteristic of the area, seeming to define the character type as a ‘windfarm landscape character type.’”*

2.2.3 The same document (VATT/LAN/002, page 37) also provides a list of key principles to consider in respect of landscapes with multiple wind farms as follows:

- “*Multiple wind farms will result in different types of cumulative effect. For each wind farm or strategy concerning potential wind farms, the most appropriate cumulative design objectives should be established, while also taking into account existing developments.*

- *Some landscape character types will be able to accommodate multiple wind farms, while this may be inappropriate within others. Generally, it will be preferable for wind farm development to be limited in its range of landscape character type within a particular area, to avoid reduction in the distinction between types.*
- *Individual wind farms should generally appear visually separated from one another in a landscape, unless specifically designed to create the appearance of a single combined wind farm.*
- *Different forms of wind farm development should respond to different landscape character types, to ensure wind farm landscapes complement the landform in their positioning, extent and density.*
- *Wind farms should not unacceptably dominate settlements.*
- *Wind farms should take account of existing focal points in the landscape, which may be neighbouring wind farms.*
- *Multiple wind farm development should not change distinctive skylines or occupy the major proportion of a skyline from key viewpoints or receptors.*
- *Extensions should consolidate the scale, size, and mass of the existing development; if the new turbines are compatible with the existing ones the resulting wind farm should relate to the area's landscape character in extent and scale."*

Wind Farms and the Nature of Potential Effects

2.2.4 Wind turbines and wind farm development are by their nature tall, visible structures, indeed, both PPS 22 the Companion Guide and the National Policy Statement for Renewable Energy Infrastructure EN-3 (CD/COM/002) para 2.7.48 note that '*Modern onshore wind turbines that are used in commercial wind farms are large structures and there will always be significant landscape and visual effects from their construction and operation for a number of kilometres around a site.*' Importantly, these documents also note that wind farms are a reversible form of development (CD/COM/002, para 2.7.17). The existence of what would be inevitable, significant effects does not mean that a wind farm proposal should be considered unacceptable and consent refused. Rather, the decision makers will then consider the project overall

and consider whether any negative effects would significantly and demonstrably outweigh the benefits.

- 2.2.5 Wind farms do give rise to a considerable range of opinions, from strongly negative to strongly positive, with a wide range of opinion lying between these two positions. However, this assessment is not an assessment of public opinion and I have taken a precautionary approach, which assumes that the nature of the effects would be negative unless otherwise stated.
- 2.2.6 The landscape and visual effects of wind turbines can be directly experienced through the observation of existing wind farms within this area such as the existing Llandinam Wind Farm or Bryn Titli Wind Farm. It is worth noting that the nature of these effects is in a different category to other more permanent and solid development such as housing developments or road infrastructure projects. Perhaps most notably, wind farm development co-exists with other features of the landscape, rather than replacing or removing them as in the case of more conventional built development.
- 2.2.7 Wind farm development is also visually permeable and although views may be interrupted, they are not screened or prevented. Generally speaking, wind farms have a 'small' development footprint that preserves much of the physical elements of the landscape, but entails the addition of tall structures, which are unavoidably visible over longer distances, generating to visual effects. These visual effects however, are mitigated to some extent by the nature of wind turbines as discussed above and the topographical variation present in the local and wider landscape around the Llanbadarn Fynydd site and from some parts of the surrounding area by the screening effects of successive layers of trees, hedgerows, plantations and shelterbelts within the landscape.
- 2.2.8 A further, important difference from other forms of development is the reversibility of the landscape and visual effects at the decommissioning stage. Decommissioning would involve the removal of all of the above ground features, which in this case would include the removal of the turbines, crane hardstandings, control building, and anemometry mast, leaving only the turbine foundations below ground. This action would effectively reverse almost all of the landscape and visual effects, with only the access tracks remaining visible in the fields where the presence of access tracks is already a local landscape feature.

3. Project Description and Background

3.1 Project Description

3.1.1 The Llanbadarn Fynydd Wind Farm would consist of 17 turbines with a maximum blade tip height of 126.5m and a hub height of 80m, together with ancillary infrastructure and equipment as follows:

- A single anemometry mast (80m high) and its crane pad to be located south of Turbine 10;
- One single storey control building (20m x 10m) to be located in a hard standing compound (40m x 25.5m) to be located ~280m west of Garn. Plus an estimated 10km of underground cable trenching linking turbines and the control building;
- Turbine foundations and crane pads associated with each turbine with a total land-take requirement of 924m² (22m x 42m) of which approximately one third will be back dressed with topsoil and reincorporated into agricultural land-use. Transformer kiosks will be located besides the base of all the turbine towers;
- Onsite access tracks (average 5m width) with a total length of 12.5km of which 2.3km are already existing; and
- Changes at the access points where the site access tracks meet or cross the two minor roads that traverse the application site.

3.1.2 In addition during the 12 month long construction period the following ancillary infrastructure and equipment would be present:

- Two contractors' compounds: one on the north-western edge of the application site (30m x 30m) and a slightly larger one sited more centrally close to Garn (50m x 50m);
- A borrow pit to be located on the eastern edge of the application site.

3.1.3 These features are shown on the site layout plan in Figure 1.

- 3.1.4 Construction would take place over an estimated 12 month period after which the operational life of the wind farm would be 25 years. At the end of this period the site would be decommissioned.
- 3.1.5 The application for the grid connection between the site control building and the electricity distribution network will be subject to a separate consent process. At present the distribution network operator: SPEN, has identified a corridor option (CC1) for linking SSA C to the proposed National Grid 'hub' substation at Cefn Coch. CC1 would enter SSA C from the west crossing the Waun Ddubarthog Ridge to the south of the site of the proposed Llandinam Repowering Wind Farm. The voltage of the potential crossing of the Ithon Valley to allow a connection to be extended to the eastern part of SSA C would be dependent upon the number of turbines located within and hence the generation capacity of the eastern part of SSA C. The Ithon Valley crossing could be between 33kV and 132kV and is likely to be a wooden pole connection. The route corridor that is shown on SPEN's latest plans available on their mid Wales connections website would cross the Ithon Valley in the vicinity of Gwynant and be routed in a south-westerly direction in the vicinity of Ddullui Bank. It is understood that the route of the proposed route corridor across the Ithon Valley will be further refined by SPENs environmental consultants in late summer 2013.

3.2 Landscape and Visual Impact Assessment November 2007

- 3.2.1 The LVIA formed Chapter 7 of the Environmental Statement issued in November 2007 (AD/VATT/003) and was compiled in accordance with the second edition of the GLVIA and the guidance on wind farm LVIAs from Scottish Natural Heritage (SNH) that was current in 2007. It utilised the LANDMAP database that was available at the time and was published prior to the completion of the Powys Landscape Character Assessment. It utilised a 31.5km radius defined study area but concentrated upon potential landscape and visual receptors and the potential effects that they could sustain within an 11.5km radius detailed study area. This was because the assessors' experience and reviews of other wind farm LVIAs strongly indicated that significant effects would be likely to be restricted to receptors located within this detailed study area.

- 3.2.2 As well as the landscape elements and patterns within the application site which could sustain direct effects and potential indirect effects upon the Shropshire Hills Area of Outstanding Natural Beauty (AONB), potential effects upon landscape character were assessed utilising twenty eight LANDMAP Visual and Sensory Aspect Areas (VSAAs) in Wales and two landscape character types as identified in the Shropshire Landscape Typology in England. The landscape assessment for the operational period concluded that significant landscape effects would be sustained in parts or the entirety of the four host VSAAs. In the parts of the four VSAAs within the application site and in its immediate surrounding area the turbines would become one of the key landscape characteristics. Hence were the LANDMAP VSAAs to be reviewed once Llanbadarn Fynydd Wind Farm became operational, the consequence would be the derivation of a new VSAA centred upon the wind farm in which the presence of turbines would be a key characteristic along with the rolling and incised topography, managed appearance and semi-regular shape of the field pattern, the presence of angular coniferous plantations and the regular availability of extensive outward views to other VSAAs.
- 3.2.3 For other VSAAs or parts or sub-areas of the host VSAAs¹ located either in the Ithon Valley or at separation distances in excess of approximately 1.5km the magnitudes of landscape change that were assessed as be generated by the operation of Llanbadarn Fynydd Wind Farm would not exceed 'medium' which allied with the low or medium sensitivity possessed by these VSAAs (as defined by reference to the relevant survey collector questions in the LANDMAP database for each VSAA) would not result in a level of landscape effect that would be significant.
- 3.2.4 With regard to the Shropshire Hills AONB the landscape assessment concluded that the operation of Llanbadarn Fynydd Wind Farm would generate a low magnitude of landscape change and therefore the effects would be not significant. Key factors set out in the rationale for this assessment included the minimum separation distance of 5.5km, the fact that whilst any landscape effects would be indirect via a visual effects pathway less than 5% of the AONB would be within the blade tip ZTV (utilising a 31.5km radius), the fact that turbines at Llandinam have been visible from some

¹ Under the draft version of LANDMAP that was available for Radnorshire in 2007 some VSAAs were distributed over several locations, for example the VSAA 'Improved Upland south of the Kerry Hills' coded 'O' in the LVIA was divided into seven different 'sub-areas'.

western parts of the AONB since 1992 and that the presence of a turbine array in a small proportion of outward views would not undermine the AONB's key characteristics.

- 3.2.5 The visual assessment identified 189 individual or groups of visual receptors including residents at 87 properties² located within 3km of any proposed turbine, 42 individual or small groups of public rights of way (PRoWs) and four PRoW networks. Significant visual effects were assessed for residents in 13 properties (four of which were owned by landowners with a financial interest in the Wind Farm); 16 PRoWs; one PRoW network; Sections 3 and 4 (northbound walkers only) of Glyndwr's Way; westbound walkers on the western part of the Kerry Ridgeway; and recreational receptors on the open access land around Cilfaesty Hill. These receptors would be located within 5km of any of the proposed Llanbadarn Fynydd turbines and this number of significant visual effects is considered to be relatively low for a seventeen turbine wind farm.
- 3.2.6 The cumulative assessment was undertaken within the prevailing cumulative baseline in late 2007 in which Llanbadarn Fynydd was the only wind farm proposal in SSA C, although the existing Llandinam Wind Farm was also present. Significant cumulative visual effects were assessed at five of the 21 viewpoints selected for the LVIA where the incremental effect of introducing the Llanbadarn Fynydd turbines would make an otherwise not significant cumulative visual effect into a significant cumulative effect in successional or more often simultaneous views. The cumulative landscape assessment was undertaken in accordance with the then prevailing SNH Guidance³ and concluded that in general Llanbadarn Fynydd's presence would only have small-scale incremental effects upon the landscape character, aesthetics and designations. Consequently no significant cumulative effects were assessed for any LANDMAP aspect areas or the Shropshire Hills AONB.
- 3.2.7 Until the submission of the landscape and visual SEI information in February 2013 no additional LVIA work was undertaken for Llanbadarn Fynydd Wind Farm and no additional information was requested by any consultees. Hence all the comments provided by CCW and landscape consultants working for Powys County Council

² Ten of which were considered to be unoccupied or derelict.

³ Cumulative Effect of Wind Farms. Guidance Version 2. Scottish Natural Heritage. April 2005.

relate to this 2007 LVIA. These reviews and comments will be discussed in Section 3.7.

3.3 Landscape and Visual Impact Assessment Supplementary Environmental Information February 2013

- 3.3.1 The LVIA SEI (AD/VATT/018) was required to address the changes to the baseline situation, and more pertinently the changes to the possible future cumulative scenarios that had taken place over the intervening five years. There have been a limited number of physical changes to the landscape and visual baseline in the application site and within the detailed study area, as will be set out in more detail in Section 3.4.
- 3.3.2 Published information regarding the landscape character baseline had changed considerably over this period due to the completion of the LANDMAP database and its subsequent use to inform the Powys Landscape Character Assessment that was published in 2008. The majority of the study area is sited within Wales and consequently by 2013 was covered by a comprehensive LANDMAP database for all five LANDMAP aspect layers as opposed to just the Visual and Sensory Aspect Layer⁴ as was available in 2007. Also in quality assuring the LANDMAP database changes had been made to the definitions, boundaries and responses to the Collector Survey Questions for some of the VSAs that were covered by the application site or located close by. These changes needed to be reflected in a revised landscape assessment which could also now be scoped and undertaken in accordance with guidance produced by (at that time) CCW on the use of LANDMAP in undertaking landscape assessments for onshore wind farms⁵.
- 3.3.3 Consequently the SEI provided an opportunity to set out the baseline and guidance changes and revisit the landscape assessment. The SEI therefore scoped in 14 VSAs; four Historic Landscape Aspect Areas (HLAAs) and three Cultural

⁴ The other LANDMAP aspect layers are Geological Landscape, Landscape Habitats, Historic Landscape, and Cultural Landscape.

⁵ LANDMAP Information Guidance Note 3: Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Farms. CCW. June 2010. This has subsequently been replaced by a slightly revised version issued by Natural Resources Wales in May 2013.

Landscape Aspect Areas (CLAAs) as well as six Powys Landscape Character Areas (LCAs).

- 3.3.4 The visual baseline had not altered so markedly and only three new residential visual receptors were identified in comparison with the visual baseline in 2007. However the SEI provided an opportunity to revise the level of detail that had been gathered with regard to the closest (and therefore most vulnerable) residential visual receptors to provide a more detailed visual assessment. It also allowed the SEI to include consideration of potential effects upon residential visual amenity which was a concept that was only just beginning to emerge when the original visual assessment was undertaken in 2007. In line with best practice potential effects upon residential visual amenity were assessed for the 37 properties located within 1.5km of any proposed Llanbadarn Fynydd turbine. Potential effects upon residential amenity as a result of the presence of Llanbadarn Fynydd were assessed on a seven point scale using criteria including the length of the turbine array, separation distances and the orientation of the properties to ascertain if the Llanbadarn Fynydd turbine array could be considered to have an ‘overbearing effect’ on a property or result in ‘unsatisfactory living conditions’ arising at that property. The principal outcome of the residential visual amenity survey was that residents in none of the properties would sustain the highest level of ‘substantial’ effects, but residents at four properties would sustain the second highest ‘moderate/substantial’ effects. These residential properties are all under the control of landowners with a financial interest in the proposed wind farm.
- 3.3.5 As already noted the main change between 2007 and 2013 has been the submission of Section 36 applications for six wind farms in SSAC in addition to Llanbadarn Fynydd. The SEI considered the potential for non-SSA C wind farms to contribute to the generation of cumulative landscape and visual effects but following a review of cumulative ZTVs showing the interaction between groups of the non-SSA C wind farms and Llanbadarn Fynydd it was determined that the non-sequential elements of the cumulative assessment should be restricted to assessing the interaction of Llanbadarn Fynydd with the six other proposed SSA C wind farms. In order to assess the relative contributions to overall cumulative landscape and visual effects that could be made by the proposed wind farms in the eastern side of SSA C (including Llanbadarn Fynydd) and on the western side of SSA C (including Llaithddu and

Llandinam Repowering) the SSA C wind farms were divided into an eastern group (Group 1) and a western group (Group 2).

3.3.6 The cumulative landscape assessment in Section 3.7 of the SEI (AD/VATT/018) used a tabular approach allied with a detailed explanatory rationale to assess both the total level of cumulative landscape effects and the incremental effect of Llanbadarn Fynydd Wind Farm upon the Shropshire Hills AONB, the 21 LANDMAP⁶ aspect areas and six Powys LCAs under the following scenarios:

- All SSAC wind farms with and without Llanbadarn Fynydd;
- All Group 1 wind farms (Bryngydfa, Garreg Llwyd and Neuadd Goch Bank) with and without Llanbadarn Fynydd; and
- All Group 2 wind farms (Llaithddu, Llandinam Repowering and Hirddywel) with and without Llanbadarn Fynydd.

3.3.7 The cumulative landscape assessment concluded that Llanbadarn Fynydd Wind Farm would only make a limited contribution to potential cumulative landscape effects upon landscape character as represented by LANDMAP aspect areas and Powys LCAs. Significant incremental cumulative landscape effects that would result from the operation of Llanbadarn Fynydd Wind Farm were assessed as being likely to arise in four LANDMAP VSAAs, a single LANDMAP HLAA and a single Powys LCA. No significant cumulative landscape effects were assessed for the Shropshire Hills AONB.

3.3.8 The cumulative visual assessment was based upon the consideration of the same scenarios as for the cumulative landscape assessment that are listed in paragraph 4.3.6. These were applied to two large groups of visual receptors. Firstly, a viewpoint based assessment; and secondly an assessment for the same group of 36 properties (or small groups of properties) located within 1.5km of any turbine.

3.3.9 The 53 cumulative viewpoints were selected following a review of all the viewpoints that had been utilised in the seven LVIA's that had been prepared for the SSA C wind farms. The cumulative viewpoint assessment concluded that the incremental effect of

⁶ By 2013 the changes to the visual and sensory aspect area LANDMAP database had resulted in the previous four host VSAAs becoming just three VSAAs. However as these three VSAAs are extensive the assessment has subdivided them in order to provide a greater level of detail.

the operation of Llanbadarn Fynydd Wind Farm could result in significant cumulative effects being experienced at 10 of the 53 cumulative viewpoints. At six of these viewpoints the significant cumulative visual effects would arise in a scenario where Llanbadarn Fynydd would be operational with only Group 2 wind farms i.e. Llaithddu and Llandinam Repowering Wind Farms and the much smaller (nine turbines) Hirddywel Wind Farm.

- 3.3.10 The cumulative visual assessment at the closest residential properties concluded that the incremental effect of the operation of Llanbadarn Fynydd Wind Farm could result in significant cumulative effects being experienced by residents at 15 of the 36 properties. At ten of these properties the cumulative visual effects would be generated by the presence of turbines at Llanbadarn Fynydd along with turbines at the Group 2 (Western) wind farms i.e. primarily with turbines at Llaithddu and/or at Llandinam Repowering.
- 3.3.11 The final section of the cumulative assessment in the SEI assessed the potential effects upon the residential visual amenity at the closest properties i.e. the 36 individual or small groups of properties within 1.5km of any of the proposed Llanbadarn Fynydd Wind Farm's turbines under scenarios with the other six proposed SSA C wind farms. Once again the emphasis was upon the incremental contribution that would be provided by the proposed Llanbadarn Fynydd turbines. This exercise allowed an understanding to be gained as to which wind farms could have a role in determining the cumulative effects upon residential visual amenity at each property and what the incremental role of the Llanbadarn Fynydd turbines could be. Naturally as the properties included were selected on the basis of their proximity to Llanbadarn Fynydd Wind Farm it was to be expected that the assessment exercise concluded that the presence of some or all of its turbines would increase the cumulative effect upon residential visual amenity at all but four of the residential properties (where topography would ensure either no or only one or two upper blade tips of the Llanbadarn Fynydd turbines would be visible).
- 3.3.12 The cumulative residential visual amenity assessment resulted in the level of effect upon residential visual amenity increasing at most of the 36 properties. Residents at one property (Lower Foel) could sustain the highest ('substantial') level of effect under some scenarios whilst six properties could sustain 'moderate/substantial' levels of effect and 13 properties could sustain 'moderate' levels of effect.

3.3.13 The assessment was structured to allow conclusions to be drawn as to the incremental role of the so-called Group 2 turbines, principally Llaithddu and Llandinam Repowering. The results demonstrated that turbines at these wind farms would have only a minor role in generating cumulative effects upon residential visual amenity for residents at the 36 properties. Due primarily to the length of their array turbines at Llaithddu could make a contribution to effects upon residential visual amenity for residents at 14 properties, whilst turbines at Llandinam Repowering could only make a contribution for residents at seven properties. The overarching conclusion drawn was that due to a minimum separation distance of over 3km between any of the properties and the turbines at Llaithddu and Llandinam Repowering Wind Farms these wind farms' turbines would be susceptible to screening. It was also concluded that residents in properties located on the east side of the Ithon Valley it would usually be apparent that any visible Llaithddu and Llandinam Repowering turbines are located on the opposite side of the Valley.

3.4 LVIA Additional Environmental Information Appended to Proof of Evidence August 2013

3.4.1 The Llanbadarn Fynydd SEI was submitted in February 2013 (AD/VATT/018) with the SEIs for Llaithddu and Llandinam Repowering being submitted in June and April 2013 respectively (AD/FWLC/050A-C and AD/CPL/019). Review of these SEIs showed that both wind farm layouts had been altered compared with the layouts that were available at the time that the Llanbadarn Fynydd SEI was prepared (December 2012-February 2013). Both proposed wind farms have reduced the number of turbines in their proposed layouts:

- Llaithddu's proposed layout now consists of 29 turbines were it to operate on its own (Option 1) and 27 turbines were it to be operational alongside an operational Llandinam Wind Farm (Option 2);
- Llandinam's proposed layout now consists of 34 turbines which is a reduction from the original proposal of 42 turbines in 2008 and 39 turbines in 2011. The turbines that have been removed were located at the northern and north-western parts of the array and were removed to reduce landscape and visual effects upon the northern part of the Waun Ddubarthog Ridge and the Caersws River Bowl.

- 3.4.2 As a consequence of these layout changes it was necessary to review many of the LVIA figures that were provided in the appendices for the February 2013 Llanbadarn Fynydd SEI to ascertain if they required amending. Initially comparative blade tip ZTVs were produced for both Llaithddu and Llandinam Repowering Wind Farms showing the blade tip ZTV for the layout used in the February SEI against ZTV produced by the final SEI layouts. These comparative ZTVs are shown in **Appendix LVIA 3 Figures 1 - 4**.
- 3.4.3 With regard to Llaithddu the comparative ZTVs for the wider and detailed study areas in **Appendix LVIA 3 Figures 1 and 2** show that the layout changes would have no effect upon the distribution of ZTV. For Llandinam Repowering the distribution of the blade tip ZTVs in **Appendix LVIA 3 Figures 3 and 4** shows that the amendments appear to have succeeded in strongly reducing, if not removing, the visibility of the Llandinam Repowering Wind Farm's turbine array in the Caersws River Bowl. There would be a minor reduction in the visibility of the proposed Llandinam Repowering Wind Farm in some small areas on the northern side of the Severn Valley but no changes in the extent of the ZTV in and around the upper Ithon Valley. Consequently it was determined that the cumulative ZTVs that were produced for the February SEI remain accurate and valid.
- 3.4.4 Although the layout changes have a minimal effect upon the distribution of the ZTVs, they could alter the appearance of Llaithddu and Llandinam Repowering's turbine arrays in views available to some visual receptors. Hence it was considered that changes could be generated in the cumulative wireframes that were produced for the 53 cumulative viewpoints (Appendix 3D in the February 2013 SEI, AD/VATT.018A); the viewpoints from 44 locations along the sections of Glyndwr's Way that pass through SSA C (Appendix 3E in the February 2013 SEI, AD/VATT/018B); the five viewpoints from where cumulative photomontages were produced (Figures 3.153-3.177 AD/VATT/018C) and the cumulative residential visual amenity wireframes from each of the closest 37 properties (Appendix 3F in the February 2013 SEI, AD/VATT/018B). Consequently this Proof of Evidence is accompanied by a series of appendices containing amended versions of these figures showing the latest Llaithddu and Llandinam Repowering Wind Farm's turbine layouts.
- 3.4.5 For the cumulative viewpoints, Glyndwr's Way viewpoints and the cumulative photomontage viewpoints the production of these amended figures has allowed the

opportunity to also provide wireframes and photomontages for a wider range of the pertinent potential SSA C cumulative scenarios. Hence Appendices LVIA 4 - 6 contain wireframes and/or photomontages that each show:

- All the proposed SSA C wind farms;
- Llaithddu, Llandinam Repowering and Llanbadarn Fynydd Wind Farms;
- Llaithddu and Llanbadarn Fynydd Wind Farms; and
- Llandinam Repowering and Llanbadarn Fynydd Wind Farms.

3.4.6 A comprehensive review has been undertaken of all the amended visualisations to assess if the small-scale changes to the layouts at Llaithddu and Llandinam Repowering would alter any of the assessments contained in the February 2013 SEI. Given the location of the dropped and repositioned turbines within the Llaithddu and Llandinam Repowering layouts and the minimal changes observed in the comparative ZTVs, the outcome of the assessment is that these changes would not alter the magnitudes of landscape or visual change assessed for any of the landscape or visual receptors included in the 2007 and 2013 assessments.

3.4.7 The need to amend many of the SEI figures has also provided an opportunity to respond to comments that have been received from Natural Resources Wales (NRW) during the course of correspondence regarding the Statement of Common Ground between NRW and the Applicant's landscape witnesses. In particular the opportunity has been taken to include existing⁷, consented and proposed single turbines in the amended wireframes and photomontages as requested by NRW. Information upon the single turbines was obtained initially from Powys County Council's planning website with an updating of the master map that was contained in Appendix 3G in the February 2013 SEI (AD/VATT/018B). Detailed information on all existing, consented and proposed single wind turbines was subsequently obtained from a review of planning applications on Powys County Council's planning website. All the existing, consented and proposed single wind turbines located inside SSA C or within 10km of SSA C were included.

⁷ Existing single turbines are part of the existing baseline and, if present in a particular view, would have been shown on the base photography that was taken in December 2012 and January 2013.

- 3.4.8 Single turbines that would potentially be visible from any viewpoint or residential property have been shown on the series of wireframes that show all the wind farms in SSA C and, where potentially visible, on any of the cumulative residential visual amenity wireframes. In an indication of the low contribution to cumulative landscape and visual effects that could be made by single turbines they only appear on 24 of the 69 cumulative wireframes. Wireframes also show that consented or proposed single turbines would potentially be visible from cumulative photomontage viewpoints 4 and 5, consequently they have been shown on the cumulative photomontages for all SSA C wind farms from these two cumulative viewpoints. (Appendix LVIA 5 Figures 17 and 22). The amended cumulative wireframes and cumulative photomontages have subsequently been reviewed to assess whether the single turbines' periodic and limited presence could potentially alter any of the LVIA's conclusions, particularly with regard to landscape character, effects upon recreational receptors undertaking Glyndwr's Way and residential visual amenity. The review of the cumulative wireframes and photomontages in Appendices LVIA 4 - 6 shows that unless a viewpoint is located in close proximity to one of the single turbines, given that the majority of the single turbines are under 20m high to blade tip, the single turbines soon become minor visual elements even before the screening that will often be available from nearby and intervening vegetation cover is taken into account. The review concluded that single turbines would not alter the previously assessed magnitudes of landscape, visual or cumulative change for any receptor or at any viewpoint.
- 3.4.9 In line with emerging best practice and guidance from several planning barristers the SEI had reduced the separation distance threshold for inclusion of residential properties in the residential visual assessment to 1.5km from the closest Llanbadarn Fynydd turbine. However, during the Statement of Common Ground consultations NRW also requested that residential visual amenity assessments be extended to all properties over a minimum separation distance from the nearest turbine of 2.5km. Hence Appendix LVIA 2 contains an expanded version of the residential visual amenity proformas and wireframes that were contained in Appendix 3B in the February SEI (AD/VATT/018A). The expanded assessment includes 69 properties reflecting the additional properties located at separation distances of between 1.5km and 2.5km and is supplemented by photographs and aerial photography for each of the

63 properties from which Llanbadarn Fynydd Wind Farm would be theoretically visible on Appendix LVIA 2 Figures 1 - 63.

- 3.4.10 Site visits have been made to these properties (within the confines of needing to remain on publicly accessible land, roads and PRoWs at all times) to confirm the relevant details. These site visits revealed that since the compilation of the SEI one new residential property has been constructed within the 1.5km offset. This property is located on the opposite side of the minor road to Pen-y-Bank in the south-eastern quadrant of the application site. The distribution of the final selection of properties included in the residential visual amenity assessment is shown in Figure 9.
- 3.4.11 The results of the expanded and amended residential visual amenity and cumulative residential visual amenity assessments will be set out in Sections 9 and 10 of this Proof.

3.5 Landscape Baseline

The Application Site

- 3.5.1 Full details of the landscape baseline are set out in Section 7.3 in the 2007 LVIA (AD/VATT/003) and the limited number of subsequent changes are set out in Section 3.2 of the February 2013 SEI (AD/VATT/018). This section is merely intended to draw out the most relevant factors that are pertinent to some of the discussions on specific landscape issues in Sections 4 and 5 of this Proof.
- 3.5.2 The Llanbadarn Fynydd Wind Farm application site covers 683ha of rolling topography above the eastern side of the Ithon Valley which is narrow in its upper section. The topography plan for the detailed study area (Figure 3.14 in the February 2013 SEI, AD/VATT/018C) shows that the application site and the eastern part of SSA C is close to the edge of a undulating plateau which mainly lies at elevations of between 350m AOD and 450m AOD although the western edge of the application site descends into the Ithon Valley to a height of ~330m AOD. Topographic variation within the application site is provided mainly by the presence of Cwm Nant-ddu which is a north-south aligned tributary valley of the Gwenlas Brook which is itself a tributary of the River Ithon which it joins at Llanbadarn Fynydd. The Gwenlas Valley is also at an elevation of ~320m AOD along the south-eastern boundary of the application site and is the primary influence upon the topography of its eastern part.

Cwm Nant-ddu is a small but steep-sided valley which extends into the central and north-eastern parts of the application site. North of Cwm Nant-ddu there is a broad broken ridgeline on a north-east to south-west alignment around Carn Bryn-llwyd. Topographically this is the south-western extension of the higher ground around Banc Gorddwr (489m AOD) and Cilfaesty Hill (528m AOD) which are outside the application site.

- 3.5.3 North of this higher ground the topography falls in a gentle and irregular manner to the upper reaches of the Ithon Valley. The higher ground around Carn Bryn-llwyd is visually important because it effectively prevents views from the northern parts of the application site to the central and southern parts and vice versa. It also marks the boundary between two of the LANDMAP VSAs within the application site.
- 3.5.4 The application site's landcover is dominated by improved and semi-improved grassland that has been converted to more intensive pastoral use from moorland such as that found nearby on Banc Gorddwr. The intensity of the agricultural improvements is reduced in the northern part of the application site. Across much of the central and southern parts of the application area the land has been divided into medium to large sized, regular-shaped fields where the improved grassland offers a smoother and more verdant appearance than the moorland and semi-improved grassland that often predominates in the surrounding area.
- 3.5.5 The contrast is often emphasised by the use of post and wire fences to provide field boundaries which serves to increase the sense of exposure away from the Cwm Nant-ddu and Gwenlas Valleys. There are some exceptions to the extensive use of fencing which may reflect the landownership pattern. The upper part of the Cwm Nant-ddu Valley around the properties of Garn and Blaen-nant-du has a high level of hedgerow cover including some smaller, more irregular fields and a moderate level of hedgerow trees. The south-western part of the application site north of Esgairuchaf is characterised by the use of narrow, mixed coniferous and deciduous shelterbelts whilst in the central part of the site close to PRoW LD676 the strongly linear field boundaries are formed by clipped coniferous hedgerows.
- 3.5.6 Otherwise across the majority of the application site tree cover is mostly provided by small angular and sometimes linear blocks of coniferous plantations. Their colour and form can act as a contrast which draws the eye in views, especially when they are sited

on an elevated location. The felling of a couple of these plantations in the eastern part of the application site between 2007 and late 2012 shows that such plantations can be treated as an agricultural resource. Tree cover tends to increase in the vicinity of any built development, particularly residential properties.

3.5.7 Although the descriptions in the databases for the host LANDMAP VSAs note that remoteness is a perceptual and sensory quality, the application site contains nine residential properties (although it is believed that one: Blaen-nant-du is long term unoccupied) with others being located close to its edge. These are mostly farmhouses and therefore are surrounded by outbuildings and barns. Agricultural activities also necessitate the provision and use of a network of farm tracks across much of the application site as well as occasional isolated barns and sheep or cattle pens. Hence whilst there is only limited public access across much of the application site, it does not have a sense of being isolated or of 'wildness'.

3.5.8 Site visits undertaken in late 2012 and 2013 demonstrate that development and agricultural intensification is ongoing within and immediately around the application site. At least two coniferous plantations have been felled, a large new barn has been erected close to Springfield; a new residential property has been constructed in the south-eastern part; and another modern residential property has been built close to Esgairuchaf along with two large new poultry sheds and an improved access road.

3.5.9 A key consideration of the landscape baseline as far as the application site's suitability to host a wind farm is concerned is that it is an intensively farmed, agricultural landscape. Its landcover and landscape patterns have been substantially modified by human activity and the LANDMAP database description for the VSA 'Improved upland, south of Kerry Hills' (RDNRVS122) which is one of the three host VSAs states that the result of this land-use history is that the landscape is '*discordant*' with the existing management being '*generally inappropriate*' because '*farming is generally too intensive and unsuitable...*' and '*intensive farming reduces integrity*'. The consequence is that a good proportion of the application site has a low evaluation for scenic quality (Survey Collector Question VS46) being described in the LANDMAP assessors' response as '*visually unattractive due to intensive farming*', making the area '*fairly typical hill country*' (response to Survey Collector Question VS49). The response to Survey Collector Question VS50 regarding overall evaluation states that this is '*moderate to low*' because the '*landscape value has been degraded*'

by intensive farming with conversion of rough grassland/moorland areas to improved grassland... making this VSAA ‘not particularly memorable.’

- 3.5.10 The LANDMAP VSAA database entries for the two other host VSAs: ‘Upland Moor, Kerry Hills’ (RDNRVS111) and ‘Upland Valleys south of Kerry Hills’ (RDNRVS128) are more positive but both of these VSAs are spatially extensive and the LANDMAP assessors’ responses to the Survey Collector Questions do not necessarily reflect the situation that prevails in the parts of these VSAs that are located within or close to the application site. This was one of the reasons that the landscape assessment has subdivided all three of the host VSAs. Hence the site visits show that the south-western part of ‘Upland Moor, Kerry Hills’ (RDNRVS111) is a transitional area with ‘Improved upland, south of Kerry Hills’ (RDNRVS122) due to its lower elevation, increased presence of semi-improved or even improved grassland and small, angular coniferous plantations and the presence of a minor road. The fact that this is a transitional area may be tacitly recognised by it being largely excluded from the area of Open Access Land which extends over much of RDNRVS111.
- 3.5.11 With regard to RDNRVS128 the site visits indicate that whilst topography and the resultant sense of enclosure, shelter and relative isolation apply to much of Cwm Nant-ddu, they are less applicable to the south-eastern part of the application site which is on the slopes of the Gwenlas Valley. This is a broader valley than Cwm Nant-ddu with an estimated eight residential properties being located in the relevant section along with partial public vehicular access and a bridleway (LD712) that is accessible by 4WD (as well as by foot, horse and bike). The Gwenlas Valley’s southern and south-eastern slopes are more gentle than those in Cwm Nant-ddu and the fields, although slightly smaller than those in RDNRVS122, remain angular in shape. They possess a declining hedgerow pattern and are mainly given over to the same improved and semi-improved grazing as undertaken across much of RDNRVS122.

SSA C

- 3.5.12 SSA C extends across much of the upper Ithon Valley and at LANDMAP Level 3 classification consists of Upland Valleys and their sometimes steep sides (the Ithon, Gwenlas and the upper Teme Valleys plus the smaller Cwm Nant-ddu); the rolling

plateaux and their shoulders that are incised by these valleys; and around the SSA's periphery by upland moorland. The latter land-use type is restricted to the three most elevated areas that are only partially within SSA C: the south-western end of the Kerry Ridge, the rolling moorland around Warren Hill and Gors Lydan and the eastern side of the Waun Ddubarthog Ridge.

- 3.5.13 South of the application site the eastern side of the Ithon Valley possesses a more varied, rolling topography as a result of the presence of some steep-sided tributary valleys and the ridgelines that separate these valleys. Fron Top is one such a ridgeline which separates the Gwenlas Valley to the north from the valley formed by Llymwynt Brook.
- 3.5.14 The area to the east of the application site shares several similarities with the application site in terms of land-use and topography and as far as the English border this area is covered by two of the same VSAs as the application site: RDNRVS122 and RDNRVS128. Observations made during site visits are that this area generally is more open and exposed mainly because of a reduction in the amount of tree cover with fewer hedgerow trees and a greater reliance upon post and wire field boundaries. This places increased emphasis upon the landscape role of the periodic coniferous plantations, especially those sited on the summits of the rounded hills such as Bryngydfa. Apart from being passed through by a section of Glyndwr's Way, public access in this area is limited to a handful of dead end footpaths and a couple of 'other routes with public access' along farm tracks.
- 3.5.15 The western side of the Ithon Valley shares many of the characteristics of the application site which include:
- the main land-use being improved and semi-improved grassland that has been converted from the moorland which is now restricted to the land on the Waun Ddubarthog Ridgeline at elevations in excess of approximately 450m AOD;
 - the angular field pattern with field sizes generally increasing with elevation;
 - the use of post and wire fencing;
 - the periodic presence of small, angular coniferous plantations;

- locally undulating topography but not distinctive topographical features that might increase the sense of place;
- relatively positive sensory and perceptual qualities apart from the noise and movement from A483 in some areas on the lower valley sides; and
- a sense of exposure.

3.5.16 However there are also a number of differences with the eastern side and the application site which include:

- the more gradual slopes up from the bottom of the Ithon Valley which ensures the lower valley slopes have a closer relationship to the River Ithon and the busy A483 in the valley bottom;
- a settlement pattern that whilst being largely based upon scattered farmsteads also is more linear along the minor road from the A483 to Bwlch-y-Sarnau in the vicinity of St. David's Well;
- the presence of extensive blanket coniferous plantations with contrasting colours, textures and hard edges e.g. Red Lion Hill;
- in some locations e.g. around Ddullui Bank and west of Esgairdraenllwyn, the use of narrow shelterbelts around angular fields provides a local sense of enclosure and a sense of organisation that is alien. They emphasise the field pattern and draw the eye in some views from the eastern side of the Ithon Valley adding a sense of place that according to some of the answers to the LANDMAP Survey Collector Questions (for RDNRVS126; RDNRVS115; RDNRVS123, and RDNRVS125) is generally low in this area; and
- the role that is played by the Waun Ddubarthog Ridge in providing a sense of enclosure and a backdrop in many western views. The 103 turbines that have been grouped along the Ridge since 1992 at Llandinam Wind Farm can be prominent landscape elements and contribute to providing a sense of place as is noted in the LANDMAP database for the Waun Ddubarthog VSAA (MNTGMVS443).

3.5.17 The landscape role that has been played by the soon-to-be decommissioned 46.5m blade tip height turbines at Llandinam varies according to the entries in response to the

Collector Survey Questions in the databases for different LANDMAP databases. In the responses provided in the database for Llandinam's host VSAA (MNTGMVS443) these turbines are considered to be positive landscape elements in that they provide a sense of place as '*the wind turbines contrast with the natural vegetation cover and contribute to the uniqueness and its (the VSAA's) sense of place*' and the turbines and moorland vegetation are stated to '*complement each other*'. Indeed one question response states that '*rhythmic movement of the wind turbines lend a feeling of tranquillity to the area*' and another emphasises that the turbines should not be considered as detractive elements. The turbines are considered to make a major contribution to the MNTGMVS443's high value, although in responses to future management requirements it is stated that further wind farm development in MNTGMVS443 should be limited.

- 3.5.18 In contrast some of the entries in the databases for the RNDRVS123 state that Llandinam Wind Farm is a detractive element in outward views and that it is a '*major threat*' to the current integrity and condition of the visual and sensory features of this VSAA. It is notable that the presence of the Llandinam turbines is not referenced in the databases for any of the other LANDMAP VSAA's in SSA C including those located substantially or completely on the eastern side and the extensive Kerry Ridgeway VSAA (MNTGMVS254).

3.6 Visual Baseline

- 3.6.1 The topographical variations in and around the application site that were noted in Section 3.5 ensure that entire application site is never visible from any point within it or close to it. This can be demonstrated by reference to the internal views contained in the LVIA figures from 2007 and the 2013 SEI (AD/VATT/005 and AD/VATT/018C). In particular the northern part of the application site has little visibility from the central and southern parts and vice versa due to the ridge of slightly higher ground that runs through Carn Bryn-llwyd north of Garn and Springfield. Views out of Cwm Nant-ddu (if access can be gained) and to a lesser extent the upper and middle sections of the Gwenlas Valley are limited by the rising valley sides. Further afield to the north-east views out of the upper section of the Teme Valley are similarly restricted by topography.

- 3.6.2 Views in and around the application site are however only affected by vegetation cover at a limited number of locations e.g. the section of the minor road that descends into the Ithon Valley past Garn that passes through one of the characteristic coniferous plantations. Generally the level of tree cover only serves to partly filter, frame or screen some views, although characteristically levels of tree cover tend to be higher around residential properties and farmsteads to provide shelter. Their visual role in these locations is often supported by the presence of outbuildings and barns associated with the farms' operation.
- 3.6.3 Across a large majority of the application site away from the Cwm Nant-ddu and some short-lived, enclosed sections of the Gwenlas Valley people, usually termed visual receptors in LVIA's, possess relatively open views in most directions. In such views the horizon is usually rounded and smooth and will contain few features apart from maybe one of the slightly more elevated coniferous plantations or a handful of hedgerow trees. The horizon is usually formed by a mixture of close and middle distance slightly rising ground, often the vivid green of improved pasture, and longer outward views that can extend to more elevated areas. These include views north-east to Cilfaesty Hill and to a lesser extent the gentle, rounded highpoints on the western section of the Kerry Ridgeway beyond; Warren Hill, Beacon Hill and Stanky Hill to the south-east and the only slightly undulating Waun Ddubarthog Ridge to the west. The moorland vegetation on these slightly more elevated hills and ridges can provide a visual contrast with the improved or semi-improved grassland in the fore- and middle ground that in the right lighting conditions draws the viewer's eye.
- 3.6.4 Conversely the nearest section of the Ithon Valley is not visible from locations in the application site due to the so-called 'tabletop effect' which is intensified by the steepness of the eastern side of the section of the Ithon Valley on the western edge of the application site. At a more local scale Cwm Nant-ddu is only fully visible in southern views from open sections of the relatively elevated minor road that runs past Garn and Springfield. Likewise the presence of the Gwenlas Valley is not discernible from any parts of the application site to the west of the other north-south aligned minor road within it. Hence in most views available from publicly accessible locations within the application site and its immediate surrounding area the visual impression is that one is located on a moderately elevated, undulating plateau.

- 3.6.5 In order for a view to be appreciated it has to be accessible to people or visual receptors which with the exception of people working outside i.e. farm workers at Llanbadarn Fynydd, and residents in properties, means publicly accessible locations. As noted in paragraph 3.5.7 and shown on **Figure 8** there are only nine residential properties (with a tenth being built close to Pen-y-Bank) within the application site with a further 27 properties or small groups of properties located within 1.5km. These properties are concentrated on the south-east edge and in the north-east part of the application site.
- 3.6.6 The nearest settlement is Llanbadarn Fynydd which is located 1.8km south of the closest turbine (Turbine 10 at a ground level of 410m AOD) at an elevation of approximately 300m AOD. It is mostly within the blade tip ZTV for at least some of the turbines although it should be emphasised that the calculation of the ZTV has not taken into account the presence and screening potential provided by the built development and relatively high levels of tree cover in Llanbadarn Fynydd. As befits the county with the lowest population density in Wales other settlements are infrequent and usually located in valley bottoms. As such as combination of separation distance and their low elevation will ensure that such settlements are well outside the blade tip ZTV for any of Llanbadarn Fynydd Wind Farm's turbines as shown in Figure 3.6 of the February 2013 SEI (AD/VATT/018C) and at a larger scale in Appendix LVIA 3 Figure 13. Settlements that are within the 11.5km radius detailed study area but which are well outside the blade tip ZTV include Dolfor, Felindre, Llanbister, Bwlch-y-Sarnau, Pentre, Kerry and Newtown.
- 3.6.7 This has the consequence that most visual receptors with views of the application site and also with views of the proposed turbines, would be people undertaking outdoor activities, usually people walking (and less frequently cycling or riding) public rights of way or using Open Access Land. The other visual receptor group are drivers and any passengers in vehicles using the two minor roads that cross the application site or which run close by. Whilst Statements of Case prepared by some of the opponents of the proposed SSA C wind farm developments state that this part of eastern mid-Wales is heavily dependent on tourism, consideration needs to be given to the likely usage of the PRoW networks within the application site and in the 3km offset area. This was the area that was adopted in the 2007 LVIA for the assessment of visual effects upon

recreational receptors using PRoWs and is shown in Figure 3.34 in the February 2013 SEI (AD/VATT/018C).

- 3.6.8 In the preparation of the original 2007 LVIA, the SEI and the Proof of Evidence AMEC's landscape assessors have attempted to walk the overwhelming majority of the PRoWs and in the Open Access Areas shown on Figure 3.34 of the February 2013 SEI (AD/VATT/018C). Over this period site visits have been undertaken in all seasons and in a variety of weather conditions. Although it does not represent a comprehensive survey, it should be noted that during extensive walks, sometimes undertaken on several occasions, over Cilfaesty Hill, the Ring and Banc Gorddwr, along Kerry Ridgeway, along Glyndwr's Way from Felindre to Abbeycwmhir; over Hirddywel on the Waun Ddubarthog Ridge to Fowler's Arm Chair, and over Beacon Hill and Pool Hill on weekends, weekdays and public holidays, no other walkers, riders or cyclists have ever been passed.
- 3.6.9 Having been resident in Powys for over a decade and being a keen hill walker I am aware that across the County a proportion of the PRoW routes that are shown on Ordnance Survey maps often do not exist on the ground and/or are difficult to follow due to obstructions. Hence in the preparation of this Proof AMEC's assessors have undertaken site visits to ascertain the actual existence, signage, condition and ease of walking along all the PRoWs within the application site and a good proportion of those within 3km concentrating upon those on the western side of the Ithon Valley where it was assessed in 2007 that some recreational receptors would sustain significant visual effects.
- 3.6.10 The results of this exercise are shown in Figure 10 It can be deduced from this figure that levels of public access into the application site are highly likely to be much lower than might be assumed from an initial review of the 1:25,000 Ordnance Survey map. Key findings include that none of the ten PRoWs within the application site are signed; indeed signage is rare apart from on Glyndwr's Way. As noted by the Cabinet Report of March 2012 prepared by Powys County Council's Head of Regeneration and Development this PRoW network within the application site is '*disjointed*'⁸ and

⁸ Powys County Council Cabinet Report Appendix 1a. Prepared by the Head of Regeneration and Development. March 2012. Paragraph 3.24.

that the PRoWs are ‘*not heavily used*’⁹. Indeed some cannot be used because they cannot be followed due to obstruction by fencing and woodland such as LD674 which in theory leads up Cwm Nant-ddu from the south. Its central and northern sections can be followed although there is no indication on the ground but this section can only be accessed using either LD676 from the west or LD675 from the east. Once again neither of these footpaths is marked on the ground with signage or so-called ‘desire lines’. The short, isolated PRoW LD673 cannot be found and would seem to serve no practical purpose now that Nanty is a completely derelict property. LD671, LD719 and LD677 can be followed but there is no signage or any indication on the ground of the route. LD 698 cannot be followed along the route shown and whilst LD672 is signed close to its south-eastern end it is crossed by a barbed wire fence.

- 3.6.11 Another consideration for the visual baseline is the role of overt man-made visual elements in the views that are available in SSA C and the detailed study area overall. As already noted in the landscape baseline many of the so-called ‘natural’ elements in the typical views available to visual receptors are the consequence of, or have been heavily affected by human activities. These include the smooth textured, uniform verdant green of the pastoral grassland in the fields and the coniferous plantations. Indeed even the moorland on the more elevated areas requires periodic management in order to retain its appearance and function. More overt human elements include the scattered residential properties and their outbuildings and barns. Whilst some of the older properties and buildings are constructed in a more vernacular style; more recent built development has tended to be constructed in a uniform, ‘modern’ style that is not necessarily redolent of rural locations. Examples include the recently constructed second property at Esgairuchaf and the bungalow under construction opposite Pen-y-Bank. More visually prominent are the occasional large poultry sheds e.g. at Esgairuchaf or large barns such as the one besides Garn.
- 3.6.12 There are no substantial, man-made vertical elements in or close to the application site, although the 80m high anemometer mast has been located in the south-western part of the application site since November 2006. Concern has been raised about the potential LVIA role of single turbines but under the present baseline conditions no single turbines are readily discernible in views from within or close to the application

⁹ Ibid. Paragraph 6.12c.

site. The first location where single turbines are readily apparent in views is the western end of the Kerry Ridgeway where single turbines at and close to Dolfor can be seen in northern views over the Severn Valley. There are no nearby mobile phone masts or transmitter masts although the twin masts at Moel Iart at the northern end of the Waun Ddubarthog Ridge some 7km away can be discerned in some north-western views from within and around the application site.

- 3.6.13 The 103no. turbines at Llandinam Wind Farm on the central part of the Waun Ddubarthog Ridge have been visual elements in many views available across SSA C and the more extensive detailed study area for over 20 years. They are sited at a minimum separation distance of 5.3km from any of the proposed Llanbadarn Fynydd Wind Farm's turbines. With a blade tip height of 46.5m these turbines do not have the same scale as those proposed for any of the SSA C wind farms. However, as acknowledged in some of the LANDMAP aspect area database entries, they have introduced large scale vertical elements and the circular movement of the blades into the views of a number of visual receptors over this period.
- 3.6.14 The cumulative ZTV in Figure 7.13iv in the 2007 LVIA (AD/VATT/005) shows that the existing Llandinam Wind Farm's turbines are visible to visual receptors across the more elevated parts of the application site but not from parts in the Ithon, Gwenlas and Cwm Nant-ddu Valleys and therefore not from most of the residential properties. Site visits have confirmed that Llandinam's turbines are visible across ~ 55° of a section of the elevated, far western horizon, although they have also shown that in cloudy or wet weather the atmospheric conditions may prevent the turbines being visible. The rotation of the turbines is generally visible but is often not readily apparent in casual views. Overall drawing upon observations made periodically over nearly seven years the assessors conclude that Llandinam's turbines whilst being readily discernible in views available to visual receptors on the eastern side of the Ithon Valley, cannot be legitimately considered to be dominant or prominent visual elements. Instead their visual role is restricted to providing visual interest in western views and emphasising the manner in which the Waun Ddubarthog Ridge completely prevents any long distance views to the upper Severn and upper Wye Valleys to the Ridge's west.
- 3.6.15 Finally the visual baseline provides a brief review of the entries in the various LANDMAP databases with regard to the visual role of the existing Llandinam turbines and the visual characteristics and importance of outward views in determining

the characteristics of aspect areas, particularly VSAs. As already noted the presence of the existing turbines at Llandinam Wind Farm in outward views is only noted in the entries for one VSA (RDNRVS123) other than its host VSA. This would indicate that the LANDMAP assessors did not consider that its visual role extended into the Ithon Valley and across to its eastern side. The responses to the Survey Collector Question on the availability of detractive views for the SSA C VSAs show that other factors such as the A483 (for RDNRVS136) or ‘*harsh lines of forestry*’ (RDNRVS115) are considered detractive whilst the Llandinam turbines are not mentioned. Perhaps of most relevance to the visual assessment of the proposed Llanbadarn Fynydd Wind Farm is the entry for this Survey Collector Question for one of the host VSAs: RDNRVS122 Improved Upland, south of Kerry Hills. The response states that there are detractive outward views ‘*up from the valleys to rather bland hills*’.

3.7 Main Points contained in the Officer’s Reports to Committee and CCW (NRW) Responses

3.7.1 The responses from the Countryside Council for Wales (CCW) are contained in letters dated 1st May 2008 and 15th February 2012 (VATT/LAN/013 & 014). The opinion of Powys County Council, up until the issue of their Statement of Case, is contained in the Cabinet Report prepared by the Council’s Head of Regeneration and Development prepared in March 2012. This Cabinet Report draws heavily upon a Report prepared in December 2008 by Ove Arup and Partners Ltd for Powys County Council titled ‘*Powys Onshore Windfarms – Llanbadarn Fynydd Development Control Support*’ to be termed the Arup Development Control Support Report in this Proof (VATT/LAN/016).

Countryside Council for Wales (now NRW)

3.7.2 The first CCW response was contained in a letter dated 1st May 2008 (VATT/LAN/013) which dealt specifically with their response to the LVIA. The letter states in bold that ‘*CCW does not object to the scheme, but recommend a change to minimise the impact of the scheme on landscape and visual amenity*’. As is set out in Annex 1 which was attached the change that was required concerned the design of the access track from the A483 to the western contractors’ compound. The route of this track has subsequently been amended to take account of CCW’s concerns.

- 3.7.3 Otherwise Annex 1 contains no criticisms of the landscape and visual effects of the proposed Llanbadarn Fynydd Wind Farm or of the contents and methodology of the 2007 LVIA. In paragraph 1 CCW state that *'In general the site appears to be well chosen in the context of limiting landscape impact.'* Whilst CCW disagreed with the magnitude of visual change that was assessed for two of the viewpoints used in the visual assessment, CCW conclude that *'Notwithstanding this, the ES generally reaches reasonable conclusions about the visual impact of the proposal.'* In particular it should be noted that CCW acknowledge that they were consulted on viewpoint selection and that they are satisfied that *'the viewpoints, photomontages and wireframes used in the LVIA, are adequate and appropriate.'*¹⁰ Finally with regard to the cumulative assessment which at this stage only included the existing Llandinam Wind Farm in SSA C, CCW noted that *'Future likely wind farm development within the SSA will undoubtedly lead to cumulative impacts. However, TAN 8 implicitly accepts landscape change within Strategic Search Areas.'*
- 3.7.4 The second CCW letter dating from February 2012 (VATT/LAN/014) covers all the environmental issues with 'landscape and visual amenity' only accounting for a short section. In this section CCW repeat the quote set out at the end of the last paragraph regarding the acceptance of landscape change within SSAs and repeat their one specific concern about the western access track's visual prominence.

Powys County Council – Arup Report 2008

- 3.7.5 Powys County Council appointed Arup to produce reports for SSA C wind farm proposals *'to assist in the determination of the acceptability of the identified impacts ...'* i.e. not to technically review the Environmental Statements including the LVIA but to ascertain if on the basis of the landscape and visual and ecological assessments contained in the ES Llanbadarn Fynydd Wind Farm was acceptable. The Arup Development Control Support Report (VATT/LAN/015) defines a number of acceptability criteria which it states are based upon Arup's experiences in conducting similar exercises in other SSAs in Wales and in north-eastern England. It also emphasises that these acceptability criteria *'...cannot, and are not intended to be applied as rigid rules governing acceptability, thus poor performance against one*

¹⁰ It should also be noted that in a similar manner on page 17 of the Arup Development Control Support Report it is stated that *'The graphics provided to illustrate the LVA are of a high standard, and the photomontages and wireframes are considered to provide a good representation of the views of the turbines that would be available.'*

criterion does not mean that the application is unacceptable. It is also of relevance to note that in the same introductory section (Section 2.2.1) Arup's state that although cumulative effects are largely outside the scope of the Report '*... good performance against (Arup's) criteria is likely to indicate acceptability whether the impacts result from single or multiple projects.*'

3.7.6 In developing criteria the Report (VATT/LAN/015) explicitly acknowledges that wind turbines are inevitably prominent features in some views and will become defining features of some landscapes. Nevertheless the criteria developed seek to identify if turbines could have dominant effects on sensitive landscape and visual receptors and generate '*serious distortion*' of sensitive landscape character. On the basis of their experience Arup's defined three visual criteria and three landscape criteria against which to review the acceptability of Llanbadarn Fynydd Wind Farm. These are summarised below firstly for the three visual criteria and then the three landscape criteria:

- 1) Avoid unacceptable visual effects upon residential properties i.e. residential visual receptors. This can be achieved by ensuring that residential properties have no more than three turbines within 1km radius and/or turbines located within 2km should occupy no more than a cumulative 120° of the full theoretical 360° field of view;
- 2) Avoid unacceptable visual effects upon recreational visual receptors. This can be achieved by adopting the same criterion regarding the turbine array occupying no more than a cumulative 120° of the field of view;
- 3) Avoid '*over dominant*' effects on the skyline from '*key or sensitive viewpoints*'. This can be achieved by ensuring that in such views the turbines are located back from any breaks of slope such as edges of plateaux, valley sides and hill fringes;
- 4) Avoid distorting the landscape's sense of scale. This can be achieved by avoiding juxtaposition of turbines and well defined landform e.g. cwms or scree slopes, and also areas of '*complex land cover*';
- 5) Avoid severe effects upon '*sensitive local landscape character*'. This can be achieved by ensuring that wind farms are located in '*zones with a landscape sensitivity of less than medium-high*'. This criterion relates to earlier detailed

work on refining the boundaries of SSA C that Arup had undertaken for Powys County Council in 2006¹¹ and 2008¹² (CD/COM/010, 010A);

- 6) Avoid poor quality and cluttered wind farm layouts. This can be achieved by the wind farm's layout responding positively to its landscape setting and minimising negative phenomena such as blades overlapping or turbines 'stacking' or 'ghosting'¹³.

3.7.7 Despite the approach set out in its introduction the Report does review the LVIA and concludes on page 19 that following a site visit '*...this LVA is considered to contain a fair description of the existing landscape and the landscape and visual impacts associated with the proposed Llanbadarn Fynydd Wind Farm.*' In section 3.3 the Report (VATT/LAN/015) sets out detailed reviews of the degree to which the six landscape and visual acceptability criteria are met by Llanbadarn Fynydd Wind Farm. These can be summarised as follows:

3.7.8 1) Avoid unacceptable visual effects upon residential properties. The Report estimates that eight of the 87 residential properties located within 3km in the 2007 LVIA would have more than three turbines located within 1km and that at seven of these properties the turbine array would extend beyond 120°. These figures will have increased by one with the construction of the second property at Esgairuchaf subsequent to the publication of this Report.

3.7.9 AMEC does not dispute these results. However they should be qualified by pointing out that of the eight (nine with the new property) properties with three or more turbines within 1km five are in the ownership of landowners with a financial interest in the scheme (Garn; Springfield; Hafod-fach; Esgairuchaf and the new property close to Esgairuchaf) and three are not inhabited: Blaen-nant-ddu is being restored and is understood to be under a covenant to prevent it becoming a fulltime residence were the wind farm to become operational. Nanty and the property next to it are ruins with no apparent surviving means of access. Hence only residents at Lower Crochan

¹¹ Arup and White Consultants for Powys County Council. TAN 8 Annex D Study of Strategic Search Areas B (Carno North) and C (Newtown South) Final Issue Report. January 2006.

¹² Ove Arup and Partners for Powys County Council. Local Refinement of TN 8 Strategic Search Areas b and C Review Exercise. April 2008.

¹³ 'Ghosting' is a term used to describe the appearance of turbines when seen one behind the other.

actually fall into this category. However as is acknowledged in the tabular entry for Lower Crochan, its location at the foot of the steep slope on the eastern side of the Ithon Valley would result in only two hubs (Turbines 9 & 10) and a single blade tip (Turbine 7) potentially being visible above the close distance and elevated eastern horizon. As shown in the Lower Crochan sheet in the Revised Residential Visual Amenity Information that is contained in LVIA Proof of Evidence (Appendix LVIA 1 Figure 16) and assessed in the visual assessment proforma in Appendix LVIA 2 of this Proof Property 16) the residents' main angle of view must be west and the blades' presence would represent only a slight level of adverse visual effect.

- 3.7.10 With regard to the properties with an angle of view of the turbine array in excess of 120°, Nanty and the property next to it can be excluded and the other five (six) are all under the control of landowners with a financial interest. It should be noted that AMEC conducted a similar exercise in preparing the February 2013 SEI where the results are summarised in Table 3.5. This shows that Arup were incorrect in ascribing Esgairuchaf (and therefore by default the new property located close to it) with an angle of view in excess of 120°. The angles of view from these properties (which are to the north and not the south as stated by Arup) would be 75° and 65° respectively.
- 3.7.11 2) Avoid unacceptable visual effects upon recreational visual receptors. The Report (VATT/LAN/015) notes that due to proximity recreational receptors using some sections of the 10 PRowS that are located within the application site will find their field of view that is occupied by the turbines considerably exceeding 60°. Notwithstanding the difficulties in finding and following these PRowS as set out in Section 3.6.10 and indicated on Figure 10 such an effect at such close distances is inevitable although as also noted in the baseline topographical variations across the application site would prevent views of all the turbines and would be likely to reduce the sense of being surrounded by turbines for any determined recreational visual receptors using the PRowS on the application site.
- 3.7.12 With regard to potential effects on recreational visual receptors following Glyndwr's Way the Report is factually incorrect. At its closest point (the southern right hand turn between Bryn Mawr Cottage and Gwenlas) Glyndwr's Way is 1.0km, not 1.2km, from the nearest turbine (Turbine 17) and the turbine array would theoretically extend over an angle of 60° not 45°. This is still just acceptable under the criteria adopted by Arup. However it should be noted that the wireframe produced from the closest

nearby residential property (Property 34 - Lower Fiddler's Green) in SEI Appendix 3B (AD/VATT/018A) shows that the rising eastern side of the Gwenlas Valley would restrict potential views to only one hub (Turbine 17) and two upper blade tips (Turbines 14 and 15) over an angle of view of 22° i.e. well within Arup's criterion.

3.7.13 3) Avoid 'over dominant' effects on the skyline from 'key or sensitive viewpoints'. The Report (VATT/LAN/015) acknowledges the potential for the turbines to have this effect when viewed by receptors in some sections of the Gwenlas and Cwm Nant-ddu Valleys. However, notwithstanding the issue of gaining access to the Cwm Nant-ddu, it concludes that the turbines that would be located near valley sides are '*... located back from the break of slope.*' The wireframes in Appendix 3B of the February 2013 SEI (AD/VATT/018A) from residential properties in the Gwenlas Valley from property no. 29 (Dolfryn) to property no. 36 (Waen) show that in western views from properties in the central and upper parts of the Valley only Turbine 17 would be consistently visible from its lower blade tip upwards above the gently rising western side of the Valley. South of Gwenlas Farm more turbines would become potentially visible reaching a maximum of seven of which up to four could be visible below their hubs. Where just blade tips would be visible there would be good potential for screening by vegetation cover. The only exception would be residents at Ddol which being located further away on the eastern slope of the Gwenlas Valley would afford its residents with views of up to 11 turbines. However the turbine array would extend over only 75° over a minimum separation distance of 1.1km but aerial photographs and views from the bridleway LD723 indicate that residents would have nearby outbuildings and trees to provide some screening in these western views. It is assessed that whilst the upper turbines and blade tips would be conspicuous and that Turbine 17 could be considered to be prominent from some parts of the Gwenlas Valley their presence could not be considered to generate over dominant effects upon these residential visual receptors and their properties.

3.7.14 4) Avoid distorting the landscape's sense of scale. The Report (VATT/LAN/015) expresses some concern that turbines might have this effect upon the Cwm Nant-ddu Valley, thereby slightly contradicting the response to Criterion 3, but acknowledge that such views would be rarely available. The Report also acknowledges that views of individual turbines in close proximity to trees when they could distort the trees' sense of scale would be restricted to a close distance views where such an effect is

unavoidable. Plus once again the poor levels of access to most of the application site will minimise the potential incidences of this potential adverse effect.

- 3.7.15 5) Avoid severe effects upon ‘*sensitive local landscape character*’. The Arup Development Control Support Report (VATT/LAN/015) does not enter into an assessment of effects upon LANDMAP aspect areas or Powys Landscape Character Areas in responding to this criterion. Instead the Report refers back to smaller landscape character zones which were defined by Arup across much of SSA C in undertaking their review exercises in 2006 and 2008 (CD/COM/010, 010A). This exercise divided the application site into three zones that were called: Banc Gorddwr; Pen-y-Bank North; and Rhiw Garn. For each zone the Report utilised attributes derived from the LANDMAP database to grade the suitability of each zone to host a large scale wind farm against 17 criteria. These were amalgamated to assess the zone’s suitability on a five point scale from ‘low’ to ‘high’. A review of the detailed tables for these three zones in the 2008 Review Report¹⁴ shows that all three zones were attributed only medium-low landscape character sensitivity to large scale wind farms.
- 3.7.16 6) Avoid poor quality and cluttered wind farm layouts. On this criterion the Arup Development Control Support Report concludes that ‘*The Llanbadarn Fynydd Wind Farm would be located within a relatively large scale landscape and appears generally well laid out in response to the landscape setting. The proposed turbines are sited so as to form a generally rhythmic pattern within the landscape with no significant outliers.*’ The Report does note that in views from some viewpoints there will be incidents of turbine clustering and blade overlap but a certain number of such incidents will always arise with regard to medium and large scale wind farms.
- 3.7.17 In the Report’s summary Arup’s conclude that Llanbadarn Fynydd Wind Farm is ‘*broadly acceptable in landscape and visual terms.*’ Arup’s main concern was effects upon residential visual amenity noting the ‘*potentially unacceptable*’ effects upon eight residential properties within or close to the application site. However as has been demonstrated in paragraph 3.7.9 only one of these properties is not uninhabited or owned by landowners with a financial interest in the Wind Farm and effects upon this

¹⁴ Ove Arup and Partners for Powys County Council. Local Refinement of TN 8 Strategic Search Areas B and C Review Exercise. April 2008.

properties residential visual amenity would be negligible due to its low elevation and foreshortened views to the application site. However the Report concludes these “potentially unacceptable” impacts¹⁵ *‘in our view do not justify a recommendation for refusal.’*

Powys County Council – Cabinet Report 2012

3.7.18 The Planning Officer’s appraisal of Llanbadarn Fynydd Wind Farm is set out in Section 6 of the Cabinet Report (VATT/LAN/016). It draws upon the Arup Reports of 2006 and 2008 on SSA C (CD/COM/010, 010A) and the Arup Development Control Support Report produced in 2008 (VATT/LAN/015). Following on from the latter the Cabinet Report notes that *‘... the proposal is located in an area of medium to low landscape sensitivity...’* and that cumulative impacts with regard to existing wind farms such as Llandinam *‘are considered to be acceptable.’* It also reiterates that CCW have not objected on landscape and visual grounds and that Powys County Council consider that visual impacts are of more concern than landscape impacts due to the presence of some nearby residential visual receptors.

3.7.19 The Cabinet Report (VATT/LAN/016) consequently considers in more detail visual effects upon a selection of the closest residential properties. It is notable that it does emphasise that the closest properties are *‘associated properties i.e. owned by the beneficiaries of the project...’* and that *‘... in such circumstances the standards for visual, noise, shadow flicker etc are relaxed...’* In the next paragraph following a detailed review of the visual effects upon the residents at Lower Foel the Cabinet Report (VATT/LAN/016) concludes that *‘... it would be hard to justify a refusal on the grounds of harm to visual amenity.’* The Cabinet Report (VATT/LAN/016) also reviews Arup’s threshold of acceptability based upon turbines extending over 120° of the full 360° potential view and its application to Llanbadarn Fynydd. It concludes that *‘... it is unlikely that the impacts identified would carry sufficient weight to justify a refusal.’*

3.7.20 Notwithstanding the advice and conclusions in their landscape consultant’s report and the Cabinet Report (VATT/LAN/016) prepared by their Head of Regeneration and Development Powys County Council’s Planning Committee resolved to refuse a

¹⁵ Quotation marks are from the text in the Arup Development Control Support Report

recommendation for planning permission on the basis of *‘the unacceptable landscape and visual impact of the application including the detrimental effect upon tourism and other economic factors.’*

3.7.21 In their Updated Outline Statement (OBJ/002/OSOC-2) Powys County Council expand upon these reasons to provide two main reasons why the proposed Llanbadarn Fynydd Wind Farm is unacceptable. These centre upon:

- effects upon landscape character and harmful effects upon the Shropshire Hills AONB; and
- wind farm development in SSA C should be restricted to the Llandinam Ridge and that Llanbadarn Fynydd wind Farm’s operation would *‘set a precedent for the development of other wind farm development in the same landscape unit.’*

3.7.22 The substance of these reasons will be examined in Sections 4 and 5 in this Proof.

3.8 Key Findings of LVIAs (Llandinam Repowering and Llaithddu)

3.8.1 The two other SSA C wind farm proposals that are included in the conjoined public inquiry both issued substantial SEIs after the SEI had been submitted for Llanbadarn Fynydd in February 2013. The LVIA sections in these SEIs have been reviewed in order to gain an understanding of how the LVIA assessors for Llandinam Repowering and Llaithddu have assessed the cumulative effects of their proposed development with Llanbadarn Fynydd Wind Farm.

Llaithddu Wind Farm

3.8.2 The SEI for Llaithddu Wind Farm (AD/FWLC/050A-C) uses ZTV analysis to conclude that there would be few areas where turbines at Llanbadarn Fynydd and Llaithddu Wind Farms would be seen without some turbines at the more elevated Llandinam Repowering Wind Farm also being visible. Areas where the three wind farms could be visible in combined or more often successional views are stated to be from the *‘extensive areas of high land’* on the western and eastern sides of the Ithon Valley, some areas within the Ithon Valley and *‘smaller areas of elevated land extending east and south from Llanbadarn Fynydd.’* Llanbadarn Fynydd would make no contribution to any cumulative effects west of Llandinam Repowering Wind Farm.

This overview broadly accords the cumulative ZTV shown in Figure 3.131 in the February SEI.

- 3.8.3 The Llaithddu SEI (AD/FWLC/050A-C) considers cumulative landscape character effects with regard to just two of the Powys LCAs: M32 Waun Ddubarthog and R17 Bwlch-y-Sarnau Uplands. The SEI's conclusions regarding the cumulative landscape role that could be played by Llanbadarn Fynydd's turbines are relatively brief. In M32 Waun Ddubarthog it concludes that Llanbadarn Fynydd and any other of the wind farm proposals in the eastern part of SSA C could only have '*limited effects*'¹⁶ upon this LCA compared with schemes east of the Ithon Valley. This assessment broadly agrees with the conclusions on Llanbadarn Fynydd Wind Farm's cumulative role in landscape effects upon LCA M32 that were reached by AMEC in Table 3.36 in the February 2013 SEI for the three western SSA C wind farm proposals (Termed Group 1 turbines) and also in Table 8.1 in later in this Proof specifically for Llaithddu and Llandinam Repowering.
- 3.8.4 With regard R17 Bwlch-y-Sarnau Uplands the cumulative assessment in the SEI (AD/FWLC/050A-C) states that on its own Llanbadarn Fynydd could generate a medium magnitude of landscape change in the closest north-eastern part of LCA R17 where the operation of Llaithddu would also generate a medium magnitude of landscape change. This would cause '*a slight intensification within this area.*' AMEC's assessment with regard to the landscape effects upon LCA R17 is set out in Table 3.4 in the February 2013 SEI (AD/VATT/018). This states that Llanbadarn Fynydd Wind Farm's operation would generate a negligible magnitude of for LCA R17 as a single landscape receptor. It is likely that in the closest part of LCA R17 the magnitude of landscape change that would be generated by the operation of Llanbadarn Fynydd would locally increase. However the fact that it would be readily apparent that Llanbadarn Fynydd's turbines would be on the opposite side of the Ithon Valley whilst five of Llaithddu's proposed turbines would be within LCA R17 with a further four within a rotor blade sweep of it, would result in the magnitudes of landscape change generated by Llaithddu and Llanbadarn Fynydd being unlikely to be the same i.e. medium.

¹⁶ Paragraph 5.5.1 in Fferm Wynt Llaithddu SEI. Volume 2 Landscape and Visual Impact Assessment Text. LDA Design. June 2013.

The Llaithddu SEI's (AD/FWLC/050A-C) visual cumulative assessment is based on assessment undertaken at a selection of eight viewpoints. As set out in Table 6 in the Llaithddu SEI under the scenarios where Llaithddu would be operational with either Llanbadarn Fynydd alone or Llanbadarn Fynydd and Llandinam Repowering, significant cumulative visual effects would be experienced by visual receptors at four viewpoints (Viewpoints 1, 4, 11 and 34). However a review of the supporting text in Section 5.6.2 reveals that the turbines at Llanbadarn Fynydd would not be visible from Viewpoints 4 and 34. At Viewpoint 1 (David's Well) turbines at Llanbadarn Fynydd Wind Farm are assessed as making the largest incremental contribution to cumulative visual effects of all the proposed western SSA C wind farms as it is the closest. At Viewpoint 11 (Two Tumps on Kerry Ridgeway) the assessment concludes that the largest incremental visual role would be played by turbines at Neuadd Goch Bank.

Llandinam Repowering Wind Farm

3.8.5 In the main text of the SEI for Llandinam Repowering Wind Farm¹⁷ (AD/CPL/009) a cumulative viewpoint analysis is utilised to assess both cumulative landscape and visual effects. However the two summary tables (Tables 6.5 and 6.6) do not distinguish between separate wind farm proposals so it is not possible to gain an understanding as to what incremental cumulative role could be played by turbines at Llanbadarn Fynydd.

3.8.6 Appendix 6.1 (AD/CPL/010) contains a more detailed appraisal and assessment for 27 viewpoints. These have been reviewed to try and gain a greater understanding of what incremental landscape and visual role could be played by turbines at Llanbadarn Fynydd Wind Farm. The turbines at Llanbadarn Fynydd could theoretically be visible in cumulative views from 11 of the 27 viewpoints. Once again the cumulative assessment does not seek to assess the incremental role of individual proposed wind farms but a review of the text and the tabular information upon horizontal angles of view that would be occupied by different turbine arrays including Llanbadarn Fynydd's turbine array allows the conclusion to be drawn that the Llandinam Repowered Wind Farm's LVIA assessors concluded that turbines at Llanbadarn Fynydd Wind Farm would make minor or negligible incremental contributions at nine

¹⁷ Llandinam Windfarm Repowering and Extension. Supplementary Environmental Information. April 2013. Celt Power Ltd.

of these 11 viewpoints. At two viewpoints it is implied that Llanbadarn Fynydd's turbines could result in a moderate incremental contribution to cumulative landscape or visual effects. These viewpoints are at Two Tumps on Kerry Ridgeway and Black Mountain in the Shropshire Hills AONB. At the former it is acknowledged that Llanbadarn Fynydd turbines would have a lesser landscape and visual role than the turbines at the other three proposed wind farms in the eastern part of SSA C. At the latter viewpoint the commentary merely notes that Llanbadarn Fynydd's turbines would, along with turbines in a combined array with turbines at all the other proposed SSA C wind farms.

4. Landscape Designations

4.1 Introduction

- 4.1.1 There are two national landscape designations located within or close to the 31.5km study area for the Llanbadarn Fynydd Wind Farm: Snowdonia National Park and Shropshire Hills AONB.
- 4.1.2 Snowdonia National Park which is located at least 35km to the northwest of the closest turbine at Llanbadarn Fynydd and completely outside the blade tip ZTV. Potential landscape effects upon it were scoped out of the landscape assessment due to the lack of a potential effects pathway over such separation distances which would result in the National Park sustaining no landscape effects from the operation of Llanbadarn Fynydd Wind Farm.
- 4.1.3 In the 2007 LVIA (AD/VATT/003) operational effects of the operation of Llanbadarn Fynydd Wind Farm upon the landscape character and integrity of the Shropshire Hills AONB was assessed as not significant. The AONB would sustain a low magnitude of landscape change which combined with its ascribed high landscape sensitivity would result in a moderate level of landscape effect. As the minimum separation distance of 5.5km between a proposed Llanbadarn Fynydd Wind Farm turbine (Turbine 17) any landscape effects upon the AONB would be indirect and sustained via a visual effects pathway.
- 4.1.4 In the course of undertaking the original LVIA consultation was undertaken with officers at the Shropshire Hills AONB at the scoping stage and later when seeking agreement upon the selection of viewpoints for inclusion in the LVIA. No response was received from the Shropshire Hills AONB Officer. Likewise no comments or objections have subsequently been received from the AONB Partnership who are responsible for the management of the AONB. Similarly the issue of effects upon the AONB has never been raised by CCW (NRW) or in any of the Arup Reports or the Cabinet Report produced for Powys County Council (VATT/LAN/016).
- 4.1.5 Nevertheless in Powys County Council's Updated Statement of Case (OBJ/002/OSOC-2) RFO6 the landscape and visual reason for refusal i.e. the

‘unacceptable landscape and visual impact of the application’ has been expanded to state that the unacceptable impacts are due to the fact that there will be *‘considerable harmful landscape effects, including upon the AONB’* which it is claimed is located in the *‘same landscape unit’* as the application site. Consequently it is necessary to consider the potential landscape effects upon the Shropshire Hills AONB in more detail to confirm the conclusions of the 2007 LVIA and the assessment of cumulative landscape effects that was contained in Table 3.7 in the February 2013 SEI. This will be accomplished by reviewing the AONB’s key characteristics and attributes and then examining how the presence of Llanbadarn Fynydd Wind Farm’s proposed turbines, on their own or in combination with other proposed wind farms in SSA C could affect these characteristics and attributes.

4.2 Key Characteristics and Attributes of Shropshire Hills AONB

4.2.1 The prevailing landscape character assessment across Shropshire, including the Shropshire Hills AONB, is the Shropshire Landscape Typology¹⁸ (VATT/LAN/010) whilst the key characteristics of the AONB are defined in its Management Plan. At the time of the original assessment the Management Plan covered the period 2009-2014 (VATT/LAN/011), but in reviewing this issue we have also consulted the draft Management Plan for 2014-2019 which was issued for public consultation in June 2013 (VATT/LAN/012).

4.2.2 The Shropshire Hills AONB covers an area of 804km² and it extends south-east beyond Ludlow and north-east as far as the Wrekin near Telford. The Draft Management Plan (VATT/LAN/012) contains a “Statement of significance and special qualities of the Shropshire Hills AONB” which sets out ten attributes or key elements in the landscape. This are:

- Hills including the Clun Forest which is one of the ranges of hills that are stated to have their *‘own distinctive character’*;
- Farmed landscape including the manner in which hedgerow patterns and trees give many of the AONB’s landscape types a sense of maturity;

¹⁸ The Shropshire Landscape Typology. Shropshire County Council. September 2006.

- Woodlands with the AONB having a higher than national average coverage of ancient and semi-natural woodland;
- Rivers and river valleys with high quality rivers flowing through valleys that vary from steeped sided dingles to broad dales;
- Geology with some of the greatest geological variety of any comparable area in the UK;
- Wildlife with its transitional position and long history of relatively sympathetic management the AONB contains a range of valuable habitats;
- Culture and opportunities for enjoyment which notes that several well known authors have been inspired by the Shropshire Hills;
- Heritage with the survival of a wide range of ancient features;
- Scenic and environmental quality with the availability of panoramic views '*across and beyond the AONB*'. The statement refers to '*contrasts from relatively wild hills and valleys to softer, settled landscapes...*'; and
- Tranquillity with the AONB being described as a '*haven of tranquillity – peace and quiet, dark skies and unspoilt views.*'

4.2.3 It is the final two attributes in this list which mention outward views that the operation of Llanbadarn Fynydd Wind Farm could have most potential to impact upon. The Management Plan also sets out seven 'key issues' the AONB Partnership identify a the most significant. Even though SSA C has been defined by TAN 8 since 2005 and proposals for wind farm development submitted from 2007 onwards, none of the seven key issues relate to wind farm development or even to the more overarching scenic or environmental quality key characteristic.

4.2.4 It should also be noted that the Draft Management Plan 2014-2019 (VATT/LAN/012) proposed the adoption of the concept of a wider Shropshire Hills area as a 'zone of influence' for the AONB. This zone of influence is shown in Figure 5 in the Management Plan but it shows that this zone of influence does not extend into Wales and closer to SSA C or the Llanbadarn Fynydd Wind Farm application site.

4.2.5 The AONB Management Plan Policy does consider wind turbines both within the AONB and also outside the AONB. On page 36 the plan policy states that *'Decisions on proposals for wind turbines outside the AONB should take account of potential effects within the AONB, especially the extent of visibility and significance of the viewpoints affected, and potential cumulative effects with existing structures. Land within 5km of the AONB is unsuitable for any large scale wind farm development and should be excluded from any Search Areas.'*

4.2.6 The 2009-2014 AONB Management Plan (VATT/LAN/011) as referenced in the 2007 LVIA (AD/VATT/003) defined landscape types within the AONB. Consequently the two landscape types that were located primarily within the part of the AONB that was within the 11.5km radius detailed study area were included as landscape character receptors in the landscape assessment. The draft 2014-2019 Management Plan (VATT/LAN/012) makes no reference to these landscape character types. Hence in considering the potential similarities between the 'landscape unit' in which the Llanbadarn Fynydd Wind Farm would be located and the landscape of the Shropshire Hills AONB the landscape assessment will revert to the landscape character types defined in the Shropshire Landscape Typology (VATT/LAN/010) for the parts of the AONB within the detailed study area and that are partly within the hub height ZTV i.e. a similar filtering approach to that which has been used with LANDMAP aspect areas in Wales. The two landscape character types that fulfil these criteria are:

- High Enclosed Plateau – this landscape character type is concentrated in the Clun Forest part of the AONB where it is the most extensive landscape character type. It is summarised in the Typology as *'...high, rolling medium to large scale, upland landscapes with predominantly open views.'* Tree cover is low and fields are regular and geometric in which moderate to low intensity pastoral farming is undertaken;
- Wooded Hills and Farmlands – this landscape character type is also concentrated in the Clun Forest area. The slopes are rounded facilitating more extensive farmland with blocks of woodlands on steeper slopes that have sometime been extended by coniferous planting. In summary *'the sloping topography gives rise to medium to large scale landscape that offer framed and sometime filtered views.'*

Their distribution is shown on Figure 3.29 in the February 2013 SEI.

4.3 Review of Potential Landscape Effects upon Shropshire Hills AONB

- 4.3.1 The key characteristics that would be most vulnerable to adverse effects from wind farm developments in SSA C would be scenic and environmental quality and tranquillity. Such effects could only arise in parts of the AONB from where the proposed turbines could be seen i.e. parts within the blade tip or more definitely within the hub height ZTV. The blade tip and hub height ZTVs for the part of the AONB within the defined study area and across the entire AONB are shown in Figures 2 - 5. A ZTV for ground level components of the wind farm has also been produced in Figure 6.
- 4.3.2 The hub height ZTV extends over 5.1% of the entire AONB and 44% of the 27km² of the AONB within the detailed study area. An indication of the scale and prominence of the turbines at Llanbadarn Fynydd was provided in the 2007 LVIA (AD/VATT/005) by a wireframe visualisation over a separation distance of 7.8km from Viewpoint 16 on Black Mountain near Anchor in the Clun Forest. In the February 2013 SEI (AD/VATT/018C) this was supplemented by the inclusion of a further five viewpoints from within the south-western quadrant of the AONB and two from its central parts. These viewpoints were selected from the review of the viewpoints used for all the SSA C LVIAs. In the SEI these are Viewpoints 35, 36, 38, 39, 41, 52 and 53. Cumulative wireframes showing all the SSA C wind farms from these viewpoints are available in Appendix 3D of the February 2013 SEI (AD/VATT/018A) whilst cumulative wireframes showing the various potential combinations of Llanbadarn Fynydd, Llaithddu and Llandinam Repowering Wind Farms from these viewpoints are shown in Proof of Evidence Appendix LVIA 4.
- 4.3.3 The wireframes show that the Llanbadarn Fynydd Wind Farm's turbines would form an array along a section of the flat, smooth western horizon in outward views from some elevated and open locations, particularly in the High Enclosed Plateau Landscape Character Type. In the views available in good or reasonable weather conditions from the Clun Forest part of the AONB Llanbadarn Fynydd Wind Farm's turbines will be discernible but over separation distances of 5.5km – 18km the turbines would not be conspicuous or prominent landscape features in outward views. In a

proportion of views such as from Viewpoint 35 from Bettws-y-crwyn only the turbines' blade tips could potentially be seen and only rarely would Llanbadarn Fynydd's turbines stand above the horizon to their full height hence in reality their visual role would be likely to be even less that is implied by the distribution of the ZTV.

- 4.3.4 It should also be noted that there have been turbines in many of these outward views for over 20 years due to the presence of the turbines at the existing Llandinam Wind Farm. It is acknowledged that these are considerably shorter turbines that are located at a greater separation distance from the AONB. However they are more numerous and can be discerned in views from more elevated locations in the Clun Forest part of the AONB in the detailed study area. Hence there is an established precedent for the type of indirect landscape effect that would result from wind farm development in SSA C. There is no indication in the two Management Plans or in the Shropshire Landscape Typology that the presence of the Llandinam turbines undermines the AONB's scenic and environmental qualities or its tranquillity levels. It is assessed that the periodic presence of a turbine array in middle or long distance outward views in one direction would not affect nine of the ten special qualities listed in paragraph 4.2.2 and effects upon the tenth special quality: outward views, would not be significant.
- 4.3.5 Consideration need to be given to the assertion that the Llanbadarn Fynydd Wind Farm application site is sited within a 'landscape unit' that extends eastwards across the border to encompass the Shropshire Hills AONB. The corollary of this argument as advanced in Powys County Council's Updated Outline Statement is that this 'landscape unit' should be accorded the same high value as the AONB. In reviewing this statement a number of factors need to be taken into consideration. Firstly, at present Powys County Council have produced no further information upon how this 'landscape unit' has been defined and how it relates to LANDMAP aspect areas, the Powys Landscape Character Assessment or the Shropshire Landscape Typology. Secondly the associated statement that granting permission for the operation of Llanbadarn Fynydd '*...would set a precedent for other wind farm development in the same landscape unit*' does not take into account the fact that at least a proportion of this 'landscape unit' has been selected as a Strategic Search Area in TAN 8 following

an extensive evaluation and sieving process and that its boundaries have subsequently been reviewed in detail in the Arup Reports of 2006 and 2008 (CD/COM/010, 010A).

4.3.6 With regard to the suggestion that the Shropshire Hills AONB and the application site are part of the same 'landscape unit' and therefore are of a similar high landscape value it is necessary to review the relevant landscape character information contained in LANDMAP, the Powys Landscape Character Assessment (CD/COM/017), the Shropshire Landscape Typology (VATT/LAN/010) and, to a lesser degree, the present and draft AONB Management Plans (VATT/LAN011, 012). The review shows that there are undoubted similarities at a regional scale between the Clun Forest part of the AONB and the application site and its immediate surrounding area. These relate to similar topographies based upon a moderately elevated plateau incised by the upper reaches of rivers and their tributaries and similar land-uses based upon the importance of semi-improved and improved grassland used for livestock grazing. There is however minimal intervisibility between the application site under its existing situation and even the closest parts of the AONB as is demonstrated in the 1m high turbine base ZTV that is shown in Figure 6.

4.3.7 Whilst there are similarities between the application site and the Clun Forest part of the AONB as would be expected given the minimum separation distance between them of 5.5km, there are also a number of differences at a more detailed level. These include:

- the slightly lower elevations of the summits and plateau areas in the Clun Forest part of the AONB;
- the presence of larger blocks of coniferous forestry in the Clun Forest part of the AONB compared with the small angular blocks that characterise the application site and its immediate surrounding areas;
- the Clun Forest part of the AONB is noted as having a low population density, however it is still higher than that of the SSA C with the farms and hamlets being more evenly distributed. This results in a correspondingly higher density of minor roads and a greater sense of public access as well as a commensurate reduction in the perception of remoteness and isolation; and

- the higher degree of retention and management of some key landscape features that has taken place within the AONB with regard to the retention of field boundary hedgerows whereas in the area between the application site and the AONB many field boundaries are formed by post and wire fencing.

4.3.8 The review of the distribution and principal attributes of the aspect areas of the five LANDMAP aspect layers defined between the application site and the AONB shows that the purported 'landscape unit' identified by Powys County Council's landscape consultant is not readily identifiable. The Powys Landscape Character Assessment (CD/COM/017) is based upon the combination of the five LANDMAP aspect layers and therefore provides the most appropriate tool to use in this review. This shows that whilst LCA M29 Kerry Hill forms a continuous link from the northern edge of the application site to the northern boundary of the Clun Forest part of the AONB, in the direct line between the application site and the AONB to the east and north-eastern there are several intervening LCAs. As well as those associated with the Teme Valley itself, there are also relatively large areas that are within R11 Beacon Hill LCA and R7 Teme Hillside LCA where as the application site is within LCA R12 Ithon Valley and LCA R18 Ithon Valley Hillside.

4.3.9 A review of the evaluations provided by LANDMAP databases for aspect areas which from R11 Beacon Hill LCA and R7 Teme Hillside LCA shows that the latter has mainly moderate evaluations interspersed with some high evaluations across its component LANDMAP aspect areas. The former has high and outstanding evaluations except for its component visual and sensory aspect areas which have only moderate evaluations. The preponderance of moderate evaluations, especially with regard to visual and sensory aspect areas, for the intervening LANDMAP aspect areas, especially visual and sensory aspect areas, would imply that the landscape assessors who undertook the LANDMAP assessments and subsequently quality assured the assessments did not conclude that this part of eastern Powys shares the same outstanding landscape value as the landscape in the adjoining AONB. This casts doubt upon the assertion that the 'landscape unit' in which the application site is located should be considered to have the same value as the Shropshire Hills AONB.

4.4 Summary

4.4.1 The 2007 LVIA concluded that there would be no significant effects upon any nationally designated landscapes. This included the Shropshire Hills AONB which at its closest point is sited within 5.5km of the proposed Llanbadarn Fynydd Wind Farm. However to give a sense of proportion about the relative proximity of the AONB it should be noted that only 27km² of the 804km² total area of the AONB is located within the 11.5km radius detailed study area for Llanbadarn Fynydd Wind Farm. This equates to 3.4% of the total area of the AONB. The hub height ZTV, which takes no account of screening provided by vegetation cover or built development or of the increasing role of weather conditions in determining the availability of longer distance views, shows that theoretical visibility of the turbines would only be possible from 5.1% of the AONB.

4.4.2 No responses or objections have ever been received from the AONB landscape officer or from the AONB's Management Board. The draft AONB Management Plan (VATT/LAN/012) states that land within 5km of the AONB boundary is unsuitable for large scale wind farm development but Llanbadarn Fynydd Wind Farm would be sited outside this proposed 'buffer zone'. There are plenty of examples in England and Wales where a wind farm development using similar height turbines has been permitted within 5km of an AONB. These include:

- Knabs Ridge Wind Farm, Harrogate - less than 1km from Nidderdale AONB;
- Tow Law Wind Farm, County Durham – 1.5km from North Pennines AONB;
- South Stainmore Wind Farm, Yorks which is within the North Pennines AONB;
- Kessingland Wind Farm, Suffolk – 0.5km from Suffolk Coast AONB;
- Goonhilly Downs Wind Farm Repower, Cornwall – within Cornwall AONB; and
- Blue Sky Wind Farm, Northumberland – 4km from Northumberland Coast AONB.

4.4.3 There is an existing precedent in the form of the existing Llandinam Wind Farm which is discernible above the same section of the western horizon in some outward views from elevated locations in the closest, Clun Forest part of the AONB. The designation in TAN 8 of SSA C in 2005 close to the western edge of the AONB ensured that

additional turbines would become a feature in some outward western views within the AONB. There is no readily available evidence that the partial presence of Llandinam's 103 smaller turbines has undermined any of the AONB's ten stated special qualities including potentially vulnerable qualities of tranquillity and scenic quality.

- 4.4.4 The suggestion made in Powys County Council's Updated Statement of Case (OBJ002/OSOC-2) that there are the application site and the AONB are part of the 'landscape unit' and that these areas should be judged to be of 'comparable quality' has been reviewed. Whilst at a regional level the closest parts of the AONB in Clun Forest and the application site share some similarities there are also important differences in their landscape attributes which are reflected in the relevant entries in LANDMAP (and hence the Powys Landscape Character Assessment) and the Shropshire Landscape Typology. No definition of the extent and attributes of this 'landscape unit' have, as yet, been provided. Nevertheless the review shows that the land-use and landscape history of the AONB along with the implementation of sympathetic landscape management policies in the AONB for several decades have resulted in a landscape that exhibits many attributes commensurate with its high value. The application site and the area between it and the AONB share some characteristics but there are sufficient differences to ensure that they cannot be legitimately considered to be part of the same 'landscape unit'. Likewise differences in factors such as landscape management, levels of intensity of agricultural improvements, and field boundary types result in LANDMAP generally ascribing only moderate and periodic high values to the various aspect areas of different aspect layers found in this area where as if these aspect areas were of comparable, national value as the Shropshire Hills AONB then it would be expected that LANDMAP's assessors would have given a good proportion of these different aspect areas high or outstanding evaluations.

5. Landscape Character

5.1 Introduction

- 5.1.1 Landscape character in Wales is assessed and categorised within the LANDMAP system which is based upon the identification and evaluation of landscape attributes organised as five different types of aspect area. These are visual and sensory aspect areas (VSAAs); geological landscape aspect areas (GLAAs); landscape habitat aspect areas (LHAAs); historic landscape aspect areas (HLAAs) and cultural landscape aspect areas (CLAAs). Some local authorities such as Powys County Council have used the LANDMAP information to define their own landscape character areas (LCAs) at a county scale. The Llanbadarn Fynydd Wind Farm LVIA has always based its landscape assessment on current LANDMAP information and the guidance provided by CCW and now NRW on how to utilise LANDMAP in undertaking LVIAs for large wind farm developments. In 2007 the LANDMAP surveys were incomplete and only in draft form but subsequently all the LANDMAP surveys were completed and quality assured and the Powys Landscape Character Assessment (CD/COM/017) was published. These baseline changes were picked up in the February 2013 SEI (AD/VATT/018).
- 5.1.2 Effects upon landscape character have not been explicitly stated in the landscape and visual reason for objection. However in Section 4 it has been demonstrated that there could be no significant effects upon the sole landscape designation partly located within the defined study area. Likewise the LVIA concludes that there would be a minimal loss of landscape elements on site aside from a small proportion of the regionally extensive improved and semi-improved grassland. Consequently it must be assumed that when in RFO6 (OBJ/002/OSOC-2) reference is made to '*the unacceptable landscape ... impact of the applications...*' reference is being made to supposedly unacceptable landscape impacts upon one or more LANDMAP aspect areas or Powys LCAs.
- 5.1.3 A review of the main effects upon landscape character will also help to rebut a second line of argument that is promulgated in Powys County Council's Updated Statement of Case (OBJ/002/OSOC-2). This is the unsubstantiated suggestion that the eastern

part of the SSA C is ‘*a much less preferable option*’ compared to concentrating any future wind energy development on ‘Llandinam Ridge’ and that Llanbadarn Fynydd Wind Farm’s operation would result in ‘*considerable harmful landscape effects*.’

- 5.1.4 The landscape effects upon LANDMAP aspect areas will be reviewed. The review will concentrate upon visual and sensory aspect areas (VSAAs) but in line with advice offered in the series of LANDMAP guidance notes that have been issued by CCW and subsequently NRW ¹⁹ (VATT/LAN/005 and CPL/LAN/008) attention is also given to potential effects upon attributes of the other four LANDMAP aspect areas. Subsequently this section contains a brief review of the effects upon the host and closest of the Powys LCAs which were only defined in 2008 (using the completed LANDMAP database) and as such could not be included in the 2007 LVIA but which were assessed in detail in the February 2013 SEI.
- 5.1.5 The distribution and evaluation of the LANDMAP aspect areas that were selected for inclusion in the detailed and defined study area in accordance with LANDMAP Information Guidance Note 3 are shown in Figures 3.17 – 3.28 in Volume 2 of the February 2013 SEI (AD/VATT/018C). Figure 3.29 in the same document shows the distribution of the Powys LCAs within the detailed study area.

5.2 LANDMAP VSAAs

- 5.2.1 The detailed assessments for the 39 LANDMAP VSAAs that were selected by the application of LANDMAP Guidance Note 3 (VATT/LAN/005) are set out in Appendix 3A of the February 2013 SEI (AD/VATT/018A). The summary of these separate assessments is set out in Table 3.3 in Volume One: Main Text of the SEI (AD/VATT/018). In undertaking the landscape assessments in 2007 and in 2103 the host VSAAs were subdivided in order to allow their assessment to be undertaken at a finer level of detail to gain more accurate conclusions as all three host VSAAs (RDNRVS111; RDNRVS122; AND RDNRVS128) are spatially extensive VSAAs and/or are distributed over more than one location. In the 2013 SEI each host VSAA was subdivided into three sub-areas, hence Table 3.3 actually contains 45 entries for VSAAs.

- 5.2.2 The landscape assessment contained in the February 2013 SEI (AD/VATT/018) concluded that negligible magnitudes of landscape changes would be sustained by 28 VSAs (or VSA sub-areas); low magnitudes of landscape changes by eight VSAs (or VSA sub-areas); medium magnitudes of landscape changes by six VSAs (or VSA sub-areas); and high magnitudes of landscape changes by three VSA sub-areas. The distribution of VSAs colour-coded for the four different categories of magnitude of landscape change is shown in Figure 6 of this document whilst the distribution of the VSAs colour-coded for the seven categories of level of landscape effect is shown in Figure 7.
- 5.2.3 The distribution of the different magnitudes of landscape effect and hence of the different levels of landscape effect confirm the commonsense assumption that, notwithstanding some site specific factors, magnitudes of landscape changes will be greatest in VSA located in close proximity to the principal source of the landscape changes; the proposed 17 turbines. High magnitudes of landscape change are confined to locations within no more than 1.5km of any turbine although in some areas within this separation distance, principally the Gwenlas Valley and the closest parts of the Ithon Valley, the magnitude of landscape change is assessed as being medium or even low. This is because of the difference in elevation between the valley bottoms and the incised plateau upon which the turbines would be located would ensure that only the upper sections of the turbines located closest to these valleys could be discernible from within the valleys. This phenomenon is illustrated in the large scale blade tip ZTV shown in Appendix LVIA 3 as well as in a number of the 360° wireframes prepared from properties in these locations that are contained in Appendix LVIA 7.
- 5.2.4 Medium magnitudes of landscape change have been assessed for VSAs or parts of large or sinuous VSAs within 4-5km in most directions with the exception of the north. In this direction the sharp topographical descent into the Severn Valley in VSA MNTGMVS254 has the consequence of removing the effects pathway so that effects upon this VSA and others in the Severn Valley are minimised or removed altogether. The landscape assessment in the February 2013 SEI (AD/VATT/018)

¹⁹ LANDMAP Information Guidance Note 3. Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Turbines. NRW. May 2013. This replaces a previous versions temporary version form May 2012 and the initial version issued in June 2010.

chose not to subdivide any VSAs except for the three host VSAs hence the value given to some VSAs in Table 3.3 in the SEI Main Text (AD/VATT/018) and on Figure 6 of this document represents the worst case magnitude of landscape change for that VSA. The same principle applies to the eight VSAs that have been assessed as sustaining a low magnitude of landscape change.

- 5.2.5 For all the VSAs other than the three host VSAs the detailed assessments in the SEI Main Text show that the presence (or relatively frequently, the partial presence) of some of the Llanbadarn Fynydd Wind Farm turbines would not significantly adversely affect their key characteristics as set out in the response to the Collector Survey Questions in the LANDMAP database. A detailed review of the databases for all 39 VSAs included shows that the presence of detractive, or indeed attractive, landscape elements in neighbouring or nearby VSAs is infrequently noted. As already noted in paragraph 3.5.16 the presence of the turbines at the present Llandinam Wind Farm is only mentioned in the response to Collector Survey Questions about elements in detractive or attractive outward views from one adjacent VSA. Turbines can be clearly discernible or even conspicuous from some parts of a VSA without becoming a key characteristic, especially if their presence is not discernible across a good proportion of that VSA. With regard to Llanbadarn Fynydd it is assessed that such a situation would arise in VSAs such as MNTGNVS254, RDNRVS114, RDNRVS136, RDNRVS140; RDNRVS117 and RDNRVS110 amongst others.

The Host Visual and Sensory Aspect Areas

- 5.2.6 The three host VSAs will be considered in more detail to demonstrate:
- Their suitability to host a seventeen turbine wind farm in comparison with other potential locations in the eastern part of SSA C; and
 - To refute the outline argument that has been advanced by Powys County Council that TAN 8 capacity guidelines can be met through development on the Llandinam Ridge.
- 5.2.7 RDNRVS111 – Upland Moor, Kerry Hills – This VSA includes the northern part of the application site and would host five turbines. From the application site it extends north-eastwards in a broad band along the southern side of the Kerry Ridgeway to encompass the rounded hills of Cilfaesty Hill and Bryn Coch. It has a functional link

with another host VSAA: RDNRVS122 – Improved Upland, South Kerry Hills but whilst RDNRVS111 is characterised by the predominance of moorland land cover RDNRVS122 is characterised by semi-improved and improved grassland land cover and is generally at a lower elevation. Despite this functional link to the south the LANDMAP database also states that the main outward views are to and across the Severn Valley to the north i.e. away from the application site. Although RDNRVS111 is open and tranquil upland moorland with high scenic value it lacks distinctive features to provide it with a unique sense of place and the response to Survey Collector Question 49 on rarity states that this type of landscape is ‘*well represented across the County.*’

- 5.2.8 Site visits have noted some subtle differences in some key characteristics in the part of RDNRVS111 within and closest to the application site. The south-western part of RDNRVS111, west of the minor road and the summit of Y Foel is at a slightly lower elevation and it is notable that it is outside the Open Access Land designation which extends over the remainder of RDNRVS111. The part of RDNRVS111 where the five turbines and lengths of access track would be located has been subject to agricultural improvement being sub-divided into angular shaped fields where the land-use is semi-improved and improved grassland. This land-use and field boundary pattern is the same as that which applies across much of VSAA RDNRVS122 which covers a good proportion of the application site to the immediate south. Another landscape feature in this south-western fringe that is more characteristic of RDNRVS122 is the presence of a number of small angular plantations. Some of these plantations, including one at Carn Bryn-llwyd, and the change in the colour and texture of the land-cover in this south-western part of RDNRVS111 can be seen in the south-western field of view in the internal photography from Internal Viewpoint 1 in Figures 3.9a and 3.9b in Volume 2 of the February 2013 SEI (AD/VATT/018C).
- 5.2.9 Hence the assessment concludes that the landscape characteristics of the part of RDNRVS111 that is within the application site has more similarities with the RDNRVS122 to the immediate south than with the majority of RDNRVS111. Hence whilst it is acknowledged that as stated in the LANDMAP database RDNRVS111 possesses a high landscape sensitivity this should be reduced in its south-western part to be more in accordance with the medium landscape sensitivity that has been ascribed

to RDNRVS122. As such it is suitable for the location of a limited number of turbines.

- 5.2.10 This assessment is supported by the detailed analysis that was undertaken in the Local Refinement Study that was undertaken by Arup for Powys County Council in 2008 (CD/COM/010 & 010A). Under this study the LANDMAP database was used to define more detailed landscape zones in SSA C. The western part of RDNRVS111 was incorporated in Zone C2b: Banc Gorddwr which following a review of 17 criteria, 13 of which were derived from LANDMAP, was assessed as possessing medium-low landscape character sensitivity noting that it was enclosed upland grassland.
- 5.2.11 As assessed in the SEI the presence of the turbines with their contrasting form, height, scale and movement would be certain to generate high magnitudes of landscape change in the part of RDNRVS111 west of the minor road. In this part of RDNRVS111 the turbines will be dominant landscape features but this situation would not extend to the central and eastern parts of RDNRVS111. In the central part of RDNRVS111 around Banc Gorddwr, Cilfaesty Hill and Bryn Coch the turbines would be prominent landscape elements and their presence and movement would be likely to have an adverse effect upon some of the VSAA's sensory and perceptual characteristics such as remoteness and tranquillity. Overall it is assessed that indirect landscape effects would generate a moderate magnitude of landscape change which combined with RDNRVS111's high sensitivity would result in significant landscape effects.
- 5.2.12 Significant landscape effects would not extend to the eastern part of RDNRVS111 around the low boggy summits of Bryn and Y Drain. This is because as shown in the ZTV in Figure 3.37 in Volume Two of the February 2013 SEI (AD/VATT/018C) the blade tip ZTV coverage is limited to the upper slopes of Bryn and most of the eastern part of RDNRVS111 is outside the blade tip ZTV. Also site visits to this area indicate that outward views are more likely to be directed to the upper Teme Valley to the south or the Clun Forest to the east.
- 5.2.13 Hence because RDNRVS111 has high evaluation and high landscape sensitivity, the landscape assessment concluded that landscape effects would be significant in its western and central parts, although not in its eastern part. In the western and central parts there would be a reduction in some of its perceptual and other sensory qualities

but otherwise the presence of the turbines on the fringe and beyond the VSAA would not undermine RDNRVS111's other key characteristics such as outward views to the north and the integrity of its well managed moorland. The part of the VSAA where the turbines would be located and where the magnitude of landscape change would be highest does not exhibit many of RDNRVS111's key landscape characteristics. Instead it exhibits many shared landscape characteristics with RDNRVS122 to its immediate south which make it a suitable location to host turbines.

- 5.2.14 RDNRVS122 – Improved Upland, South of Kerry Hills – this VSAA is located in seven separate sub-areas on the eastern side of the Ithon Valley. Ten turbines would be located in the two western-most sub-areas. As noted in paragraph 5.2.6 LANDMAP assessors considered that it has a functional link with RDNRVS111 to the north and RDNRVS128 which extends along the valleys that often separate RDNRVS122's sub-areas. Importantly land-cover consists almost entirely of improved grassland in large, angular fields bound by post and wire fences and in some places trimmed coniferous hedgerows. LANDMAP describes the resultant effect as '*unnatural*' and '*visually unattractive*' and comments that the intensive pastoral farming that is undertaken in these fields as being intensive and '*inappropriate*'. The fields of improved grassland and their boundaries are apparent in Internal Viewpoints 3 and 4 in Figures 3.11 and 3.12 in Volume 2 of the February 2013 SEI (AD/VATT/018C). These show the verdant colour of the fields, their uniformity and blandness as well as the relative absence of any 'naturalistic' landscape elements.
- 5.2.15 As set out at length in Section 1.3.30 in the February 2013 SEI the LANDMAP commentary for RDNRVS122 is largely negative. It considers the VSAA to possess only '*low*' scenic quality and to be '*fairly typical hill country*.' Hence LANDMAP ascribes it with only 'moderate to low' value which is one of the lowest evaluations provided by LANDMAP for any of the aspect areas included in the landscape assessment. A review of the sensitivity derived from LANDMAP for all the included aspect areas in Table 3.3 in the February 2013 SEI (AD/VATT/018) shows that none of aspect areas has been assessed with low value.
- 5.2.16 Consequently it is assessed that in the two western sub-areas of RDNRVS122 the introduction of turbines would represent the introduction of large scale, man-made elements into a landscape that has already experienced a large amount of landscape change through twentieth century agricultural intensification. These changes have

resulted in a landscape that is considered to be perceptually less attractive than most other parts of the study area.

- 5.2.17 This assessment is again supported by Arup's Local Refinement Study (CD/COM/010 & 010A) in which the two western sub-areas of RDNRVS122 are incorporated into Zone C4: Pen-y-Bank North and Zone C5: Rhiw Garn. Using the LANDMAP database the Study concluded that Zones 4 and 5 possess low-medium landscape character sensitivity. Key supportive landscape considerations set out in the review proformas for the Zones 4 and 5 include their plateau topography, smooth skyline, lack of sensitive landscape features, the absence of settlements, large scale of land cover and landform, and openness.
- 5.2.18 The presence of ten turbines within this VSAA with a further seven turbines located nearby would be certain to result in a high magnitude of landscape change in the two western sub-areas of RDNRVS122 as assessed in the SEI. This assessment does not extend to the other five sub-areas of RDNRVS122. With regard to the four small eastern sub-areas sited on the slopes of the upper Teme Valley the blade tip ZTV in Figure 3.37 in Volume Two of the February 2013 SEI (AD/VATT/018C) shows that due to intervening topography and the unfavourable aspect in some parts of the upper Teme Valley visibility of the Llanbadarn Fynydd wind Farm turbines would be limited in these sub-areas and generally restricted to some upper blade tips.
- 5.2.19 The larger central sub-area of RDNRVS122 is mostly within the blade tip ZTV but the assessment concluded that the presence of Llanbadarn Fynydd's turbines at separation distances of between 1km and 4.5km would generate a medium magnitude of landscape change. Influential factors would include intervening rolling topography that would often screen the lower sections of turbines, the landscape backdrop provided by the western side of the Ithon Valley against which the turbines would be seen in western views and the fact that in these western views the existing turbines at Llandinam Wind Farm are already discernible.
- 5.2.20 In summary both LANDMAP and the refinement study commissioned by Powys County Council conclude that RDNRVS122 has a medium-low landscape sensitivity due primarily to extensive agricultural improvements. These have altered almost all of the naturalistic landscape elements and undermined the VSAA's sense of place. The resultant relatively simple, uniform landscape is already intensely managed with

an unnatural appearance. It has a weak sense of time depth. The assessment concludes that these are attributes which make RDNRVS122 suitable to host a wind farm of the capacity proposed at Llanbadarn Fynydd.

5.2.21 RDNRVS128 – Upland Valleys South of Kerry Hills – This is an extensive VSAA which extends into the application site along Cwm Nant-ddu and the western side of the Gwenlas Valley. The majority of the VSAA extends north-east into the upper Teme Valley and its tributaries where it is up to 6km away from the application site. It is noteworthy that under the draft LANDMAP database that was available at the time of the compilation of the 2007 LVIA RDNRVS128 was considered to have an outstanding overall evaluation but under the final quality assured LANDMAP this was reduced to a high overall evaluation.

5.2.22 Turbine 11 and Turbine 12 would be sited on the boundary of RDNRVS128 and RDNRVS122 set back from the top of the western side of Cwm Nant-ddu. The February 2013 SEI considered whether the location of these two turbines should be considered to be in RDNRVS122. This is because LANDMAP states that the justification of RDNRVS128's boundaries is *'the change from smaller traditional fields on lower land and larger fields on higher land.'* However aerial photography shows that these turbines would be located in two fields of semi-improved grassland that are similar in size, shape and cropping to the fields in RDNRVS122. These fields are sited one field back from Cwm-Nant-ddu and at 391m AOD and 395m AOD the turbines' base heights are comparable those of other turbines located in RDNRVS122. The assessment that Turbines 11 and 12 are more accurately considered to be located in the less sensitive RDNRVS122 is reinforced by fact that the boundaries of landscape character areas, including aspect areas, should not be considered as definitive lines but as transitional zones. Also there is support in the comment on page 30 of the Powys Onshore Windfarms – Llanbadarn Fynydd Development Control Support Report from December 2008 which confirms that although these turbines are *'located near the Valley sides they are located back from the break of slope.'*

5.2.23 The presence of some turbine hubs and blade tips in the Cwm Nant-ddu would result in a high magnitude of landscape change due to effects upon some of its perceptual and sensory qualities, although its inaccessibility has the consequence that these qualities are not readily appreciated. It has been assessed that even the partial presence of some of the turbines would result in them becoming co-dominant

landscape elements in Cwm-Nant-ddu along with the distinctive, steep-sided topography and that they would generate a high magnitude of landscape change. However the turbines' operation would not result in the loss of any landscape elements within Cwm-Nant-ddu or anywhere else within RDNRVS128, and the complete absence of any sections of access tracks or wind farm ancillary components would ensure that access levels would not be increased from their existing very low level. This would reduce effects upon some of the valued perceptual and sensory attributes of RDNRVS128 in general and Cwm-Nant-ddu in particular.

5.2.24 In the central part of RDNRVS128 which is focused upon the Gwenlas Valley, the February 2013 SEI concluded that the presence of the eastern-most turbines above a section of the elevated western horizon for much of the Gwenlas Valley would result in a medium magnitude of landscape change and therefore significant landscape effects. This magnitude of landscape change reflects the relative proximity and hence the scale of the eastern turbines and the contrast that would be provided by their movement. It should however be noted that many of the landscape characteristics of the Gwenlas Valley part of RDNRVS128 result in it being less sensitive to landscape change than the Cwm Nant-ddu part of RDNRVS128. In particular baseline studies have shown that the Gwenlas Valley contains a moderate number of residential properties and some large farm businesses which require access roads and which generate vehicular movement. It consequently has higher levels of access; indeed unlike Cwm Nant-ddu it is easy to walk along the length of the Valley on a PRoW. Some of the large farm businesses including Ddol and Gwenlas have numerous outbuildings and surrounding fields contain old agricultural machinery. Taken together these factors reduce the role of many of perceptual and sensory factors and contribute to a reduction in the overall condition of the landscape.

5.2.25 As noted in 5.2.21 in reality there is often not a firm line 'on the ground' between VSAs and site visits indicate that in exhibiting certain landscape attributes the Gwenlas Valley, particularly the section north of Gwenlas, shares some characteristics with the less sensitive RDNRVS122 sub-areas of which lie close to its east and west. These include medium to large angular fields given over to extensive tracts of improved grassland; reliance upon post and wire fences for field boundaries; an almost complete absence of tree cover away from residential properties; gently sloping valley sides; and a sense of openness and mild exposure as opposed to enclosure. All these

characteristics are redolent of RDNRVS122 and have the consequence of making this sub-area less sensitive to the changes that would be generated by the presence of up to eight turbine upper sections and blade tips.

- 5.2.26 In summary the assessment of effects upon landscape character as encapsulated in the closest LANDMAP VSAs concludes that significant landscape effects will be sustained in the closest sub-areas of the three host VSAs. Of these three VSAs the LANDMAP database provides a strong indication that RDNRVS122 has lower landscape sensitivity than other VSAs in SSA C with the database for this VSA containing considerable number negative comments on its attributes. This VSA contains ten of the proposed turbines. Analysis has been presented that shows that in two key locations the boundaries of the more sensitive RDNRVS128 with RDNRVS122 should be considered to be transitional. This indicates that Turbines 11 and 12 to the west of the Cwm Nant-ddu sub-area of RDNRVS128 should be considered to also be located in RDNRVS122. Also that parts of the Gwenlas Valley sub-area of RDNRVS128 exhibit several landscape attributes that reduce its landscape sensitivity and would favour its incorporation within RDNRVS122.
- 5.2.27 Detailed analysis also indicates that the part of the third host VSA: RDNRVS111 in which five turbines would be located also shares many characteristics with the less sensitive RDNRVS122. In this south-western fringe other characteristics which increase the overall sensitivity of RDNRVS111 to the presence of turbines are reduced or are absent. Hence it is concluded that Llanbadarn Fynydd Wind Farm has been carefully designed to concentrate the high magnitudes of landscape change that will be generated by its operation in an area of comparatively low landscape sensitivity to such development. This conclusion is supported by the detailed approach that was applied to by Powys County Council's own landscape consultants in undertaking a refinement of SSA C (VATT/LAN/015).
- 5.2.28 Although no wind farm development has taken place in the part of SSA C on the eastern side of the Ithon Valley it is relevant to observe that the turbines at the existing Llandinam Wind Farm are generally discernible from within the application site. It is likewise important to emphasise that the absence of close by wind energy development does not mean that the Llanbadarn Fynydd Wind Farm applications site and its immediate environs is an area of pristine landscape possessing high value and qualities. In reality it is an area that over the course of the twentieth century sustained

high levels of landscape change leaving few older landscape features and adopting land-use patterns and an intensity of agricultural management that are untypical for this part of mid Wales. These factors strongly indicate that the Llanbadarn Fynydd site is amongst the most suitable locations in SSA C to accommodate a wind farm with conclusion being supported by the fact that of the three SSA C sites at the Conjoined Inquiry it is the only site that has consistently been almost entirely located within the boundaries of SSA C under all three of SSA C's different boundaries.

5.3 Other LANDMAP Aspect Areas

5.3.1 In accordance with LANDMAP Guidance Note 3 (VATT/LAN/005) the LVIA component of the February 2013 SEI (AD/VATT/018) included an assessment of the effects of the operation of Llanbadarn Fynydd Wind Farm on the other four types of aspect area defined under LANDMAP. Whilst the assessor's experience in undertaking wind farm LVIA's in Wales indicates that reviews of the attributes of the geological, landscape habitat, historic landscape and cultural landscape rarely reveal attributes that are strongly supportive of the suitability of a location for wind energy development, reviews can reveal key landscape characteristics that would militate against a wind energy development being located in a particular aspect area.

5.3.2 Application of the criteria set out in the then current LANDMAP guidelines scoped out many of the non VSSA aspect areas in the study area leaving a total 17 non VSAA aspect areas. The distribution of these aspect areas, their LANDMAP evaluation and the distribution of the blade tip ZTV across these aspect areas are shown in Figures 3.19 – 3.28 and 3.37-3.41 in Volume Two of the February 2013 SEI (AD/VATT/018C). The effects upon these aspect areas were assessed in Sections 1.1, 1.2, 1.4 and 1.5 in Appendix 3A of the February 2013 SEI (AD/VATT/018A) and are summarised in Table 3.3 in the Main Text of the February 2013 SEI (AD/VATT/018). The latter shows that the magnitude of landscape change assessed for these aspect areas never exceeds low and is often negligible. Consequently no significant effects upon any LANDMAP aspect areas were assessed, except the already discussed visual and sensory aspect areas (VSAAs). Several considerations emerged from this component of the landscape character assessment which confirmed the suitability of the Llanbadarn Fynydd Wind Farm site.

- 5.3.3 Most landscape habitat aspect areas (LHAAs) were scoped out, including across much of the application site itself. This is because of the low landscape habitat sensitivity that has been accorded to most LHAAs within and around the application site. This is supportive of the observations and assessment that most of the Llanbadarn Fynydd Wind Farm application site has been subject to agricultural improvement which has changed much of the land-cover leaving few pre-twentieth century landscape elements. The only part of the application site which is covered by a LHAA of high sensitivity (RDNRVSLH018 – Mosaic) is a small proportion of the northern part encompassing a single turbine and short length of access track. Direct effects would be minimal and upon improved grassland whilst the presence of the turbines outside this LHAA could have no effects upon its key characteristics associated with the presence of a mosaic of different habitats.
- 5.3.4 The two GLAAs that cover the site are very extensive hence any direct effects arising from the construction of foundations or the use of borrow pits would be negligible at the scale of these GLAAs. The sites that are of geological interest in these GLAAs are all sited at least 7km away from the application site and their integrity would be unaffected hence negligible magnitudes of geological landscape change are assessed.
- 5.3.5 The nine HLAAs which fulfil the LANDMAP guidance criterion of having high or outstanding overall evaluations extend across approximately half the detailed study area but only a small proportion of the application site, principally the Cwm Nant – ddu and lower Gwenlas Valleys. As these are parts of the application site where no works are proposed there will be no potential for direct effects upon any historic landscape elements in sensitive HLAAs. Effects upon historic landscapes and the settings of any cultural heritage features have been assessed in the Historic Environment sections of the ES and SEI.
- 5.3.6 The five CLAAs which fulfil the LANDMAP guidance criteria for inclusion do not extend across the application site itself as it does not contain any CLAAs with more than medium overall cultural landscape evaluation. Consequently the closest included CLAAs are those along the bottom of the Ithon Valley (RDNRCL010) and along the Kerry Ridgeway (MNTGMCL048). Any effects from the operation of Llanbadarn Fynydd Wind Farm would consequently be indirect. LANDMAP would appear to be unclear as to whether the presence of turbines should be assessed as a positive or a negative type of effect. One of the included CLAAs is

MNTGMCL017/RNDRCL023 based upon the presence of the existing Llandinam Wind Farm. At Level 3 of the LANDMAP classification the role of the turbines influencing the definition of the CLAA has resulted in the CLAA being placed in the ‘industrial’ Level 3 classification category. However the database also states that this CLAA’s outstanding evaluation is a consequence of the wind farms representing ‘*an outstanding cultural presence in the landscape.*’ This implies that the presence of a wind farm can be, at least on occasion, perceived as enhancing the cultural landscape in the surrounding area and as such wind farms should be located in CLAA’s with medium or low overall evaluations which would include the Llanbadarn Fynydd application site.

5.4 Powys Landscape Character Areas (LCAs)

5.4.1 The distribution of the Powys LCAs identified in the Powys Landscape Character Assessment of 2008 (CD/COM/017) is shown in Figure 3.29 in Volume Two of the February 2013 SEI (AD/VATT/018C) whilst their relationship to the blade tip ZTV is shown in Figure 3.42 in the same document. The latter is of relevance because beyond the application site landscape effects would be restricted to indirect effects which in the main can only be experienced by a visual effects pathway i.e. the turbines have to be discernible. The SEI included nine Powys LCAs: three of which are partly located within the application site. These are:

- R12 – Ithon Valley – the distribution of this LCA within the application site closely accords with that of LANDMAP VSAA RDNRVS128 – Upland Valleys South of Kerry Hills;
- R18 – Ithon Valley Sides – the distribution of this LCA within the application site closely accords with that of LANDMAP VSAA RDNRVS122 – Improved Upland South of Kerry Hills; and
- M29 – Kerry Hill - the distribution of this LCA within the application site closely accords with that of LANDMAP VSAA RDNRVS111 – Upland Moor, Kerry Hills.

This accordance with the boundaries of LANDMAP VSAAS is to be expected given that the Powys LCAs are derived almost entirely from analysis of LANDMAP data with an emphasis upon that provided for the visual and sensory aspect areas.

- 5.4.2 Given the close relationship between LANDMAP and the Powys Landscape Character Assessment undertaking detailed analysis of both would result in double counting of landscape effects. Most of the factors noted in Section 5.3 with regard to the three host VSAs are applicable to the corresponding Powys LCAs. The landscape assessment is based upon assessing how the operation of the Llanbadarn Fynydd Wind Farm could impact upon the key characteristics of each Powys LCA. These key characteristics have been transferred across from the Survey Collector Questions in the component LANDMAP aspect areas and can sometime be highly site specific e.g. relating to a site specific nature conservation or geological designation making an assessment of effects on landscape character of some Powys LCAs difficult. Also the scale of many of the Powys LCAs is such that a single site specific landscape change would be unlikely to generate a magnitude of landscape change that would be experienced across enough of any Powys LCA for it to be assessed as sufficient to cause a significant effect upon that LCA's key characteristics. For this reason the landscape assessment for Llanbadarn Fynydd has consistently concentrated upon LANDMAP aspect areas, although in the following paragraphs brief consideration will be provided as to what characteristics of the three host Powys LCAs would be supportive of the presence of an operational wind farm in that LCA
- 5.4.3 R12 – Ithon Valley – within the application site this LCA extends up Cwm Nant-ddu as far as the crossroads between the two minor roads near Blaen Nant-ddu (residential property) and also covers the south-eastern part of the application site which descends into the Gwenlas Valley in the vicinity of Cwm-garthen (residential property). None of the turbines would be located in this Powys LCA so it would sustain no direct loss of landscape elements. Powys LCA R12 only has two stated key landscape characteristics concerning an SSSI located well away from the site and concerning the evolution of sheep farming as the dominant agricultural activity. Neither of these key landscape characteristics would be affected by the operation of Llanbadarn Fynydd Wind Farm. As has been stated elsewhere the presence of the turbines from the valleys within and close to the application site would be reduced by the tabletop effect and the location of the turbine bases back from the main breaks of slope. The northern

valleys in this LCA are also characterised by higher levels of tree and hedgerow cover which can provide some screening and filtering of views, although this is not the case in the part of the Gwenlas Valley. Overall it is assessed that by avoiding any direct effects and pulling the turbines back from the tops of the valley sides to reduce the potential for localised domination by the turbines Llanbadarn Fynydd Wind Farm has minimised the landscape effects that would be sustained by this Powys LCA.

5.4.4 R18 – Ithon Valley Hillsides – This LCA extends along the eastern and western sides of the upper Ithon Valley but does not extend above elevations of approximately 450m AOD where the moorland land cover remains largely intact. Away from the steeper hillsides the LCA is characterised by the large proportion of improved grassland and the prominence of angular fields. In some parts of the LCA on the western side field boundaries are emphasised by distinctive narrow shelterbelts which are one of the three listed key landscape characteristics. However such shelterbelts are not a feature of the application site except for a few examples around Esgairuchaf in the south-western part of the application site. Consequently the presence of turbines at Llanbadarn Fynydd would not undermine the landscape role of the much more extensive shelterbelt networks in the vicinity of Ddullui Bank and Esgairdraenllwyn.

5.4.5 Another key characteristic is that this is a transitional area *‘from valley to upland’*. This is a characteristic that would not be altered by the presence of a wind farm as it relates to underlying topography, landform and land cover none of which would be altered were Llanbadarn Fynydd to become operational. The final key characteristic is another rather vague cultural landscape characteristic demonstrating *‘the evolution of land-use from prehistory to the historical to the present day...’* In this context of the landscape of LCA R18 acting as a palimpsest the presence of a wind farm within this LCA could be interpreted as being another stage in the evolution of this transitional zone. It also shows that the application site and the LCA in general are not a static, unaltering landscape but are a landscape where periodic change has taken place and should not necessarily be automatically assumed to be adverse.

5.4.6 M29 – Kerry Hill – this large LCA extends over both sides of the Kerry Ridgeway and the upper slopes of the Severn Valley hence much of the LCA’s aspect is orientated northwards away from the application side. As shown on Figure 3.42 in Volume Two of the February 2013 SEI (AD/VATT/018C) the blade tip ZTV is restricted to the southern part of LCA M29 where its coverage is only partial. The southern edge of

LCA M29 enters the northern part of the application site in the vicinity of Turbine 1 and has the smallest presence within the application site of the three Powys LCAs. It would host Turbine 1 and a short section of access track. Its footprint within the application site is only about a third of that of its corresponding LANDMAP VSAA: RDNRVS111. This would imply that the observation made in Section 5.2.7 that many of the landscape characteristics of this transitional zone between LANDMAP VSAA: RDNRVS111 and RDNRVS128 are more redolent of the more intensely farmed VSAA/LCA were recognised when the boundaries of Powys LCAs M29 and R18 were assessed.

- 5.4.7 The Powys LCA identifies seven key landscape characteristics for LCA M29. Two of these relate to specific features: Offa's Dyke and Mellington Hall which are located in the eastern part of the large LCA and therefore are located well away from the application site outside the blade tip ZTV. They will be unaffected. A further two key landscape characteristics relate to the Vale of Montgomery Registered Landscape of Outstanding Historic Interest in Wales which as shown in Figure 7.8 in the 2007 LVIA (AD/VATT/005). This designation is located at least 13km from the application site in the eastern part of LCA M29 outside the blade tip ZTV and as such would remain unaffected by the operation of Llanbadarn Fynydd Wind Farm.
- 5.4.8 Two of the key landscape characteristics are more general observations. One is that the LCA includes some of the highest areas along the Radnorshire border and that these areas are 'wild' and '*expansive with a tranquil moorland character.*' These perceptual and sensory attributes must have been noted over the past twenty years when the turbines at Llandinam Wind Farm would have been discernible from the western parts of the LCA. However as shown by the ZTV in Figure 3.42 in Volume Two of the February 2013 SEI (AD/VATT/018C) it is acknowledged that Llanbadarn Fynydd's turbines would be conspicuous in southern views from parts of LCA M29 around the western end of the Kerry Ridgeway and Cilfaesty Hill. The role of Llanbadarn Fynydd in this part of the LCA is illustrated in the photomontage from Two Tumps on the Kerry Ridgeway that is contained in Figures 3.62 & 3.63 in Volume Two of the February 2013 SEI (AD/VATT/018C). In the closest part of LCA M29 the turbines would become prominent and within about 1km they would be co-dominant. In these parts of the LCA the turbine's height, scale and movement would reduce the sense of wildness and tranquillity however most of the perceptual

characteristics that contribute to these perceptions would remain in place. It is assessed that these perceptual key characteristics would remain applicable to LCA M29.

- 5.4.9 The second more general observation concerns land-use and land cover. As only a single turbine and a short section of access track would be located in this LCA direct effects would be minimal and would affect improved grassland as opposed to the open upland grazing that is a key land-use. There would be no losses or changes elsewhere in the LCA and even on the minute part that would be sited within the operational wind farm the present pastoral land-use would continue. Hence this key characteristic would be unaffected.
- 5.4.10 The final key landscape characteristic is the presence of the Kerry Ridgeway and its provision of '*views over very long distances in all directions*' and its time depth. The manner in which Llanbadarn Fynydd Wind Farm's turbines would appear in southern views is illustrated in the aforementioned photomontage in Figures 3.62 & 3.63 in Volume Two of the February 2013 SEI (AD/VATT/018C) where they would be new conspicuous landscape elements. However the valued long distance views are available in all directions and several times the LANDMAP commentaries state that the most widely available and principal views are across the Severn Valley to the north. Likewise it should be noted that whilst the presence of turbines will alter the composition of a view such as the southern views from the sections of the Kerry Ridgeway, mainly the section west of Two Tumps, their presence does not stop that view being available.
- 5.4.11 Overall it is concluded that the operation of Llanbadarn Fynydd Wind Farm would have limited effects upon two of the seven stated key landscape characteristics of Powys LCA M29. Direct effects would be minimal and indirect effects limited to its more elevated western parts. These landscape effects would be greatest in a small part of the LCA where land-use pattern and landcover is not typical and have more in common with the adjacent LCA R18 and are more favourable to accommodating wind farm development.

5.5 Summary

- 5.5.1 As with most wind farm developments using 126.5m high turbines Llanbadarn Fynydd Wind Farm's turbines would become dominant or co-dominant landscape elements within most areas within approximately 1.5km. Beyond this the turbines would be likely to be prominent landscape elements over separation distances of up to approximately 4km. There would be exceptions to this generalisation, principally the more enclosed and sheltered areas in valleys such as Cwm Nant –ddu, the upper Ithon Valley, the upper Teme Valley and, to a lesser extent, the Gwenlas Valley. The consensus from LANDMAP is that valley bottoms are more intimate, enclosed and sensitive landscapes than the transitional, intensively farmed landscape in which the turbines would be sited and the greatest magnitudes of landscape change would be sustained.
- 5.5.2 Detailed examination of the landscape character within the application site demonstrates that a strong case can be presented that all seventeen turbines and the overwhelming majority of the ground level infrastructure would be located in areas that share most or all the key landscape characteristics with LANDMAP VSAA RDNRVS122 or Powys LCA R18. These are landscape character areas which exhibit landscape characteristics that are less vulnerable to the changes that the presence of an operational wind farm would bring. LANDMAP VSAA RDNRVS122 and to a lesser extent Powys LCA R18 have already sustained extensive landscape change due to twentieth century agricultural intensification and associated land-use changes. These changes have served to reduce the prevalence of what are generally considered to be beneficial perceptual and sensory qualities such as naturalness, wildness and time depth which could be reduced by the presence of a wind farm.
- 5.5.3 Boundaries between visual and sensory aspect areas are better considered as transitional zones as opposed to firm lines on the ground. A review of land cover patterns, field boundaries and detailed local topography implies that Turbines 11 and 12 are at least sited in a transitional zone between RDNRVS128 and RDNRVS122 to the west of Cwm Nant-ddu. Likewise Turbines 1, 2, 3, 4 and 6 are located in the northern part of the application site which exhibits as many landscape characteristics of RDNRVS122 as it does of RDNRVS111.

5.5.4 Many of these factors have been recognised in recent landscape studies of the application site and its role within SSA C and at wider scales. Consequently the most spatially extensive Powys LCA and LANDMAP VSAA within and immediately around the application site have been accorded relatively low evaluations and landscape sensitivity in LANDMAP and subsequently in the Powys LCA and in the Arup studies commissioned by Powys County Council. It is concluded that whilst the turbines would become co-dominant landscape characteristics within and often immediately around the application site, their presence would not undermine many of the application site's existing key landscape characteristics such as its rolling topography, angular field patterns punctuated by small coniferous plantations and its overall intensively managed appearance. Indeed such characteristics are more suited to the accommodation of a wind farm than sites in more elevated locations where more naturalistic land cover prevails and positive perceptual and sensory characteristics are often more readily apparent.

6. Visual Receptors

6.1 Introduction

6.1.1 One of the reasons given by Powys County Council for their objection to the proposed Llanbadarn Fynydd Wind Farm was its '*unacceptable landscape and visual impact*', although the Updated Statement of Case for Powys County Council (OBJ/002/OSOC-2) does not set out which visual receptors would sustain an unacceptable visual impact. However in the Cabinet Report of March 2012 the Planning Officer states that it is visual impact that is '*the most cause for concern*'. Hence the key issues with regard to the visual impacts that will be generated by the operation of Llanbadarn Fynydd will be summarised. It is acknowledged that wind farm developments will almost inevitably result in significant visual effects being experienced by some people or visual receptors, usually those in relatively close proximity to the turbines and that proportion of these visual receptors will consider these visual changes to be adverse. However to demonstrate that Llanbadarn Fynydd Wind Farm is located in a suitable location and has been designed to minimise the generation of significant visual effects this section provides a summary of the visual effects previously assessed to demonstrate their overall acceptability.

6.2 Visual Receptors located in Settlements

6.2.1 The visual effects upon residents in 19 settlements were included in the visual assessment in 2007. At 16 of these settlements it was assessed that visual receptors would sustain no effects because the settlement is well outside Llanbadarn Fynydd Wind Farm's blade tip ZTV. This reflects the fact that many settlements in Powys and western Shropshire are located along valley bottoms. This situation applies even comparatively nearby settlements such as Beguildy, Felindre and Llanbister.

6.2.2 The only settlement that is within the blade tip ZTV as shown on the enlarged ZTV in Appendix LVIA 3 would be Llanbadarn Fynydd itself. This blade tip ZTV indicates that the number of turbines that could be seen above the elevated northern horizon would vary across the village. In a limited number of locations no turbines would be

potentially be seen by residential receptors. The ZTV was prepared without taking account of the screening and filtering effects that can be provided by vegetation cover and built development. Llanbadarn Fynydd has a relatively loose morphology but some screening is provided by nearby buildings including barns and garages. Site visits indicate that levels of tree cover within and immediately around the settlement are relatively high which reduces the availability to residential receptors of the requisite northern views from within their properties and gardens as well as when moving around the settlement.

- 6.2.3 A photomontage viewpoint was selected at a location on the more elevated eastern side of Llanbadarn Fynydd from where 15 of the 17 turbines would potentially be visible in a framed view. This winter view photomontage is shown in Figure 3.55 in February 2013 SEI Volume 4 (AD/VATT/018C). It demonstrates that the relatively high levels of tree cover, a proportion of which is coniferous, would be capable of screening even some of the closer turbines that would otherwise be visible down to the lower sections of their towers. Hedgerow and shelterbelt trees in the middle ground would be capable of screening the blade tips of the more northerly turbines. The 2007 visual assessment concluded that residential visual receptors in Llanbadarn Fynydd would sustain no more than a low magnitude of visual change and hence sustain a medium level of visual effect if they had access to a northern view such as shown in the photomontage. Many of Llanbadarn Fynydd's residential visual receptors would possess less clear northern views and consequently lower magnitudes of visual change. It is assessed that none of the residential visual receptors living in Llanbadarn Fynydd would sustain in excess of a low magnitude of visual change from the partial presence of some of the turbines.

6.3 Visual Receptors located in Isolated Residential Properties

- 6.3.1 Visual effects upon residents in properties located outside villages and hamlets are an assessment of the changes in these residents' main views from within their property. An assessment of the potential effects of Llanbadarn Fynydd Wind Farm upon the wider concept of their residential visual amenity was undertaken separately and will be summarised in Section 7.

- 6.3.2 Powys is the least densely populated county in England and Wales. Population densities in the detailed study area are relatively low and properties are mostly restricted to locations on valley bottoms or lower valley sides. There are occasional farms or cottages at higher elevations, usually in sheltered locations. Properties are usually surrounded by gardens that frequently include vegetation cover capable of providing at least some screening or filtering of views in some directions. Farms tend to also be surrounded by outbuildings including on occasion large barns. They also tend to have higher levels of tree cover, sometimes planted to screen farm buildings.
- 6.3.3 Effects upon visual receptors in properties within 3.0km of any of Llanbadarn Fynydd Wind Farm's turbines were assessed in the 2007 visual assessment where it is summarised in Table 7.12 (AD/VATT/003)). 87 properties or occasionally small groups of properties were identified and included in this visual assessment although five were derelict and one unoccupied (Blaen Nant-ddu). Significant visual effects were assessed for visual receptors at twelve occupied properties²⁰ of which four are under control of landowners with a financial interest in the proposal.
- 6.3.4 The assessment was reviewed in the February 2013 SEI with more detailed proformas completed for 36 properties or small groups of properties within 1.5km of any turbine. These proformas accompanied by wireframes are contained in Appendix 3B of the February 2013 SEI (AD/VATT/018A). In the interim period one new residential property was constructed. This was close to Esgairuchaf and is also under the ownership of someone with a financial interest in the wind farm. Site visits undertaken more recently have shown that another property is close to completion close to Pen-y-Bank in the south-eastern part of the application site. This is also under the ownership of someone with a financial interest in the wind farm.
- 6.3.5 Following correspondence with NRW subsequent to the submission of the SEI it was determined to extend the detailed assessment of visual effects on residential receptors to once again include all properties up to 2.5km from any turbine. This has the consequence that visual effects upon 69 properties or small groups of properties have been completed. The assessment's conclusions on the visual effects upon residents in nearby properties are summarised as:

- Ten properties are derelict or uninhabited;
- Residents in 13 properties would sustain medium or high magnitudes of visual change and therefore would sustain significant visual effects;
- Residents in 40 properties would sustain low or negligible magnitudes of visual change and therefore would sustain visual effects that would be not significant; and
- Residents in six properties would be outside the blade tip ZTV and would have no views of the turbines and would therefore sustain no visual effects.

6.3.6 For residents in some properties within or in close proximity to the application site medium or high magnitudes of visual change will be generated by the relative proximity of the closest turbines, especially if they are visible down to their lower sections or the base of the turbine tower. However the properties where this type of visual effect will arise are the ones under the ownership of landowners with a financial interest (Springfield; Hafod-fach; Garn; Esgairuchaf and the recent property close to it) and as such should be afforded less emphasis. The residual properties occupied by the remaining landowners with a financial interest are located in the south-eastern part of the application area (Pen-y-Bank; the new house opposite Pen-y-Bank, Cwmgarthen; Dolfryn; and Cwm Mawr) benefit from the screening provided by the rising topography to their north and north-west as the Gwenlas Valley side ascends to the incised rolling plateau where the turbines would be located. The rising valley side would screen the lower sections of the towers of turbines in the southern part of the application site and completely screen views of the more northerly turbines.

6.3.7 This phenomenon is sometimes referred to as the ‘table top effect’ and it is a key reason for the low number of significantly residential visual receptors around the Llanbadarn Fynydd Wind Farm. The topographical variation and the settlement pattern of most residential properties being located in the valleys have the consequence that residents at a good proportion of the properties within 2.5km would have only very partial views of the hubs, and/or just the upper blade tips of the closest turbines above an elevated horizon. A good example of a residential property where

²⁰ In the 2007 visual assessment it was assessed that residents in a thirteenth property at Llety-meiriol on the south-east side of Gwenlas Valley would sustain significant visual effects however this property is now just a barn with no permanent residents.

this would take place is Lower Crochan in the Ithon Valley as illustrated in the wireframe from this property in Appendix LVIA 7. At some properties this phenomenon can be augmented by tree cover close to the top of the rising slope.

- 6.3.8 The other residential visual receptors that would sustain medium or high magnitudes of visual change that would result in significant visual effects tend to reside in properties where the nearby topography prevents the tabletop effect from taking place. This applies to residential visual receptors at Lower Camnant because it is located at the top of the Ithon Valley before the river has become more incised hence in the view towards Llanbadarn Fynydd Wind Farm the valley side slopes are more gentle. The other residential properties whose residents would sustain significant visual effects are located at elevations comparable with those of the application site which could allow their residents to have views across an intervening valley to the turbines. Without effective close by scoping from vegetation or possibly built development, these views could include the entire turbine array and the full length of the turbine towers could be visible. This situation could arise for residential visual receptors at a limited number of properties on the western side of the Ithon Valley, principally Esgairdraenllwyn; Glen Ithon Lodge; School House; and Banc-Newydd as well as at a single property: Esgairwyndwn, on Fron Top.
- 6.3.9 It should also be noted with reference to the large scale blade tip ZTV presented in Appendix LVIA 3 that unlike most wind farms, Llanbadarn Fynydd has the benefit of generating a relatively compact main ZTV due to advantageous topography. This has the consequence that in most directions beyond a relatively short distance there are no residential properties due to elevation i.e. beyond approximately 3.5km to the west, whilst in other directions the main ZTV fragments within less than 6km. Whilst there are a handful of properties in fragments of the blade tip ZTV at separation distances of 7-8km in the Clun Forest to the east or on the slopes of the central Ithon Valley to the south, at such separation distances magnitudes of visual change would be highly unlikely to exceed negligible or, at worst, low and consequently would not result in significant visual effects being sustained by their residents.
- 6.3.10 Overall the visual assessment shows that only residential visual receptors at only thirteen properties would sustain significant visual effects as a result of the operation of Llanbadarn Fynydd Wind Farm. This represents approximately twenty percent of

the isolated residential properties within 2.5 km any of the turbines²¹ excluding the proportion of properties that are now derelict. The greatest separation distance to the nearest turbine over which significant visual effects would be experienced by a visual receptor at an isolated property would be 2.1km (Glen Ithon Lodge). These are low absolute and relative numbers for a seventeen turbine, 59.5MW capacity wind farm that are strongly indicative that Llanbadarn Fynydd Wind Farm should be considered to be acceptable in visual terms.

6.4 Visual Receptors using National and Regional Trails

6.4.1 Reference to Figure 3.33 in Volume 4 of the February 2013 SEI (AD/VATT/018C) shows that sections of one national and two regional trails pass through the 11.5km radius detailed study area. A summary of the visual effects that are likely or certain to be experienced by recreational visual receptors walking, cycling or riding along the relevant sections of these trails is set out below.

Glyndwr's Way

6.4.2 Glyndwr's Way extends across Powys in a 210km long horseshoe route and has been a national trail since 2002. It has been subject to a large number of alterations over the past decade. In particular the section that originally followed the minor north-south road through the site has been diverted further to the east along the eastern side of the upper Gwenlas Valley. Most guides to Glyndwr's Way divide the route up into day long sections assuming walkers start at Knighton with the sections where recreational visual receptors could have views of Llanbadarn Fynydd Wind Farm being Sections 2, 3 and 4. Reviews of internet articles and blogs on the Way indicate that it is little used with some bloggers commenting on the absence of other walkers. This mirrors the Witness's experience of walking Sections 2, 3 and 4.

6.4.3 Section 2 is routed from Llangunllo to Felindre and would provide recreational visual receptors with potential views along four relatively short-lived elevated lengths: around Stanky Hill; over Black Mountain; over Warren Bank; and over the un-named hill south of Felindre. The wireframe and panoramic photograph in Figure 7.14xvii in the 2007 ES (AD/VATT/005) is from the latter length of the Way. As assessed in

²¹ Or fifteen percent of the inhabited residential properties located within 3km of any turbine.

Table 7.12 in the 2007 LVIA (AD/VATT/003) recreational receptors would sustain periodic effects that would not exceed a low magnitude of visual change that would be not significant.

- 6.4.4 Section 3 is routed from Felindre in the Teme Valley to Llanbadarn Fynydd in the Ithon Valley. A series of 360° wireframes has been produced from 15 locations along Section 3 and they form part of Appendix LVIA 6. Section 3 enters the blade tip ZTV of Llanbadarn Fynydd Wind Farm between Rhuvid and Hope Castle Farm about 3km west of Felindre once the Way's route has ascended out of the upper Teme Valley. From this point onwards until the final descent into Llanbadarn Fynydd the Way stays within the blade tip ZTV, usually for 13-17 turbines although potentially visible turbine numbers decrease in the upper Gwenlas Valley.
- 6.4.5 The turbines would be a constant presence in western views in all but the most inhospitable weather conditions, although along many lengths they would not be present in a walker's forward field of view. At its closest in the upper Gwenlas Valley the Way is only 1km away from the nearest turbine, although this is the same section where the western side of the Gwenlas Valley would reduce the number of turbines visible to four turbines and four upper blade tips. Some of the most open and elevated views across almost the entire application site are available from the section along Fron Top. A photomontage has been produced from this location and is shown in Figures 1 to 5 in Appendix LVIA 5. The consistent availability of the views, their relative openness and the relative proximity of the Llanbadarn Fynydd turbines would have the consequence of recreational receptors sustaining high magnitudes of visual change and significant visual effects along most of Section 3.
- 6.4.6 Section 4 is routed from Llanbadarn Fynydd to Abbey Cwmhir. After Llanbadarn Fynydd the direction that the Way is routed will ensure that the turbines would only be visible 'behind' walkers following the Way in the direction proscribed in most guidebooks as opposed to in their main field of view, although the requisite 360° field of view is often available. A further series of 360° wireframes has been produced from a further seven locations along Section 4 and they form part of Appendix LVIA 6. Continuous potential views would peter out to the south of the summit of Moel Dod and would then become available along elevated section between Yr Allt and Ysgwd-ffordd before the Way descends into the valley formed by Bachell Brook.

6.4.7 A photomontage has been produced in winter conditions from the summit of Moel Dod and is shown in Figures 6 to 10 in Appendix LVIA 5. This shows that over a separation distance of at least 3.4km the Llanbadarn Fynydd turbines would be prominent although clearly on the far side of the intervening Ithon Valley. From the comparative elevation of the summit of Moel Dod at 462m AOD the turbine towers are largely seen against a backdrop of smooth, north-eastern horizon formed by Cilfaesty Hill and the western end of the Kerry Ridgeway although neither is at all topographically distinctive in this view.

6.4.8 The 2007 visual assessment concluded that the relative prominence of the turbines from the first half of Section 3 would for northbound walkers (who are probably a small minority of the low numbers of recreational receptors who walk the Way) generate medium magnitudes of visual change resulting in significant visual effects. However for the majority of walkers who will be south (or east) bound, the turbine array will be 'behind' them and as such its visual role will diminish. When this is taken into account along with the fact that for the final third of this section they will have no views, it was assessed that they would sustain low magnitudes of visual change. Consequently for these walkers visual effects would be not significant.

Some subsequent, short-lived elevated sections of the Way pass through fragments of the blade tip ZTV. However over much longer separation distances and with other closer operational wind farms sometimes present in the same views the visual role of Llanbadarn Fynydd's turbines will be negligible. Given that walking the full length of the Way takes between nine and twelve days and that the Way's route passes close to several operational wind farms, the presence of the Llanbadarn Fynydd turbines for approximately two days' walking would be highly unlikely to be significant upon the Way as a whole. Also whilst the LVIA has adopted the precautionary principle of assuming that visual effects will be experienced as adverse effects this is not necessarily true for recreational receptors undertaking long distance walks. Long distance walkers (or cyclists and riders) may derive benefits from the presence of fixed tall elements i.e. turbines, as they form landmarks aiding direction finding and providing a fixed reference point in views. This could be especially important for the early sections of Glyndwr's Way as the hills that it passes through are generally indistinct in their outlines and do not offer reference points and help in route finding which the turbines could do.

Kerry Ridgeway

- 6.4.9 This is a 24km long route between Cider House near Dolfor and Bishop's Castle that always remains at an elevation above 300m. The availability of long distance views is one of its main attractions although views northwards over the Severn Valley are particularly favoured. The central section of the Ridgeway is covered by a couple of extensive coniferous forestry plantations which screen outward views.
- 6.4.10 The blade tip ZTV just reaches most of this central section of the Ridgeway but the coniferous plantations would screen or at least filter the views of recreational visual receptors towards the upper sections of the turbines in their south-western views. An indication of the scale of the turbines where open views are available is provided in the wireframe from close to Kerry Pole where the turbines would be at least 7.6km away.
- 6.4.11 Recreational visual receptors would only have continuous views of Llanbadarn Fynydd's turbines from the western-most 1.5km of the Ridgeway between Two Tumps and the end at the Cider House car park. At present when descending westwards along this section the long Llandinam turbine array is readily discernible over a minimum separation distance of 7.5km. A couple of single turbines in the Dolfor area are also visible to the north.
- 6.4.12 The view from Two Tumps is illustrated in a photomontage in Appendix LVIA 5. This shows that the Llanbadarn Fynydd turbines would be seen in a 35° array at a slightly lower elevation with the lower sections of the turbine towers mostly screening by the intervening topography. Its turbines would be prominent elements in south-western views but not in the direct forward line of view of westbound recreational visual receptors. Llanbadarn Fynydd's turbines would similarly be visible for eastbound recreational visual receptors on their ascent to Two Tumps but subsequently the turbines would be 'behind' these receptors for the remaining 22km of the Ridgeway. It is therefore assessed that recreational visual receptors using the Ridgeway would sustain medium magnitudes of visual change when using the western-most 1.5km of the Ridgeway which would result in significant visual effects. However for the remaining ninety percent of the Ridgeway visual effects would not exceed low, especially for eastbound users.

Severn Way

6.4.13 A short section of the Severn Way passes through the northern edge of the detailed study area around Newtown which is well away from the blade tip ZTV. Most of the Way's route is at low elevations in the Severn Valley and would consequently be outside the blade tip ZTV. Recreational receptors could potentially have limited long distance views from the start of the Way on Plynlimon and also from around Welshpool. In reality recreational visual receptors using these sections would be unlikely to readily discern the Llanbadarn Fynydd turbines over separation distances well in excess of 20km.

6.5 Visual Receptors using Local PRow Network

6.5.1 A map showing the distribution of PRowS within 3km of any turbine with their definitive map code is shown in Figure 7.4 in the 2007 LVIA (AD/VATT/005). However this has been supplemented by a new map on Figure 10 of this document which shows the accessibility and ease with which these PRowS can be found and followed on the ground. This is because site visits have shown that none of the PRowS in and around the application site are evident on the ground. Some others simply cannot be followed due to obstacles or ground conditions, whilst aside from Glyndwr's Way only one PRow is actually signposted. Hence it is considered that simply relying on Figure 7.4 gives an erroneous impression of the accessibility of the application site and the closest section of the Ithon Valley.

6.5.2 It is also germane to note that in preparing this Proof and its appendices AMEC landscape architects spent six days in and within 2km of the application site in optimal summer conditions. During this period they recorded one other person using any of these PRowS. Hence whilst the visual assessment in the 2007 LVIA included an assessment of 42 different PRowS or small groups of PRowS plus a further four networks of PRowS on the western side of the Ithon Valley, in reality these visual effects would be experienced by only a handful of highly determined recreational visual receptors from one year to the next.

6.5.3 The visual assessment contained in the 2007 LVIA concluded that any recreational visual receptors using 16 of the PRowS and one network would sustain significant visual effects. This assessment remains valid due to the proximity of the turbines to these PRowS and the subsequent scale and dominance of the turbines when viewed

from sections of PRowS across open fields. Given the relatively high density of PRowS present on both the western and eastern sides of the upper Ithon Valley this number of significant effects is relatively low and coupled with the low levels of usage for most of these PRowS this number of significant effects should not be used to justify a refusal for visual reasons.

6.6 Visual Receptors using Local Road Network

- 6.6.1 The visual assessment in the 2007 LVIA included five 'A' and 'B' roads and concluded that no visual receptors travelling in vehicles along these roads would sustain more than a medium magnitude of visual change. This would be sustained by visual receptors in vehicles using relatively short-lived sections of the A483 and the B4355. The most extensive views for southbound visual receptors on the A483 would be available around Gwynant to the north of the application site and vehicular receptors travelling in both directions would have short-lived views of the western access track around Hafod-fach.
- 6.6.2 A photomontage from the Gwynant section of A483 was provided in Figure 7.11xi in the Volume Three of the 2007 ES (AD/VATT/005) which shows that for a short section of the A483 the Llanbadarn Fynydd turbine array would be visually prominent in the southbound vehicular receptors' main view. Such views would be short-lived and once the A483 enters the more narrow section of the Ithon Valley the steeply rising eastern valley side would foreshorten views screening all but the hubs and upper blade tips of a few of the turbines on the western side of the application site.
- 6.6.3 Medium magnitudes of visual change would also be experienced by the smaller number of vehicular visual receptors travelling south on the B4355 between Dolfor and Knighton. One or more of Llanbadarn Fynydd's turbines would potentially be visible from a 2.5km section around the Cider House as it crosses the western end of the Kerry Ridgeway. The clearest views of the turbine array would be from short sections of the road north and south of the Cider House. Further south screening is provided by Banc Gorddwr before views of the upper sections of up to eight turbines could be possible for approximately 1.5km before the B4355 descends into the Teme Valley.

- 6.6.4 The 2007 visual assessment did not include the two minor roads that cross the site and which would be subject to some minor junction changes where crossed by Llanbadarn Fynydd's access tracks. The changes required at the access track crossings and entrances will be concentrated on the north-south minor road that links Llanbadarn Fynydd village to the B4355 and cumulatively these would generate a medium magnitude of visual change for the limited number of vehicular visual receptors who travel along this minor road. This section of the minor road is relatively open, is bound by post and wire fencing and two nearby small coniferous plantations have been felled since 2007. Hence these works would not require the loss of key visual elements and will be undertaken in locations that as set out in Section 5 have been assessed in LANDMAP and in the Arup studies as possessing low-medium landscape sensitivity.
- 6.6.5 Visual effects generated as a consequence of the single crossing point on the east-west aligned minor road would be negligible. Regardless of the localised visual effects of the access improvement works, which will readily be assimilated into vehicular visual receptors' short-lived views early in the operational period, the principal visual effects would be generated by the presence of the closest turbines. They would be co-dominant visual elements and as there is almost no screening present alongside these minor roads. Hence they would be a constant presence whilst travelling across the application site or for short sections to the east around Rhiw Porthnant (as shown in the photomontage from Viewpoint 1 in Figure 7.11i in the 2007 ES (AD/VATT/005) and to the north. Vehicular visual receptors using these two short sections of minor road would consequently sustain high magnitudes of visual change.

6.7 Summary

- 6.7.1 In preparing this Proof of Evidence I have reviewed the visual assessment contained in the 2007 LVIA and conclude that with a couple of amendments that it remains accurate. One of the thirteen properties whose residents were assessed as sustaining significant visual effects has been discovered to be non-residential and should therefore be excluded. This is Llety-mieriol and its removal reduces the number of properties where the residents would sustain significant visual effects down to twelve properties. However the construction of a new property close to Esgairuchaf since 2007 where significant visual effects will be experienced by its residents has meant

that the number of properties whose residents would sustain significant visual effects remains thirteen. This is a low number for a seventeen turbine wind farm and represents only about twenty percent of residential properties within 2.5km of any turbine.

- 6.7.2 This percentage figure does not take into account residential visual receptors in properties in Llanbadarn Fynydd who it is assessed would not sustain significant visual effects. No residential visual receptors in any settlement would sustain significant visual effects.
- 6.7.3 Superficially the group of visual receptors that would experience the greatest number of significant visual effects would be recreational visual receptors using the relatively dense local PRow network. However site visits have demonstrated that this network is almost completely unsigned and often no evidence of the PRow is available on the ground. Some PRows are simply impassable. Hence it is concluded that numerically these visual receptors would amount to a small number of people and undue weight should not be given to these significant visual effects.
- 6.7.4 The detailed study area is not well served by national and regional trails. Significant effects would be experienced by recreational receptors using the final 1.5km at the western end of the Kerry Ridgeway where other turbines have been a feature in views for twenty years. Glyndwr's Way passes within 1km of the application site at its closest point. Periodic views would be available to the limited number of people who walk the Way from short sections along Section 2 which would not be significant. Significant visual effects would be experienced by walkers travelling along all but the first 3km of Section Three between Felindre and Llanbadarn Fynydd and along the first half of Section 4 between Llanbadarn Fynydd and the summit of Moel Dod. The total length of the sections where walkers could sustain significant visual effects as a consequence of the presence of Llanbadarn Fynydd's turbines would be 14km out of the total length of Glyndwr's Way of 210km. Hence in the overall context of a recreational visual receptor walking Glyndwr's Way the assessment concludes that visual effects would not be significant.
- 6.7.5 The road network in the study area tends to be concentrated in the valleys and is therefore mainly outside Llanbadarn Fynydd's blade tip ZTV. High magnitudes of visual change would be experienced by vehicular visual receptors travelling

southwards along short-lived sections of the A483 and the B4355. In addition high magnitudes of visual change would also be experienced by the smaller number of vehicular visual receptors using the sections of the two minor roads that cross the application site augmented along some brief sections by the engineering works where these roads meet the access tracks associated with the wind farm.

- 6.7.6 Overall it is assessed that the location of Llanbadarn Fynydd Wind Farm slightly below the most elevated areas in the detailed study area, the topography of the detailed study area, the wind farm's layout and the distribution of different categories of visual receptors would coalesce to minimise the number of visual receptors that would be affected by the wind farm's operation. These factors would also ensure that the number of visual receptors that would sustain significant visual effects would likewise be minimised. Hence it is concluded that Llanbadarn Fynydd wind Farm should be considered to be visually acceptable.

7. Residential Visual Amenity

7.1 Introduction

7.1.1 Residential visual amenity is a concept that is still evolving with regard to wind farms but at its core is the whether or not the operation of turbines at a wind farm would result in the turbines having an ‘overbearing’ effect upon residents at a property and/or whether the turbines’ presence would result in ‘unsatisfactory living conditions’ arising at a property.

7.1.2 The following factors can have an influence upon residential amenity and have been taken into account in the assessments included in the LVIA chapter of the SEI issued in February 2013 and in this Proof:

- Number, height and length of array of the turbines;
- The horizontal extent of the visible turbine array i.e. the extent to which the property is surrounded, or even located within, the proposed Llanbadarn Fynydd Wind Farm;
- Separation distance (closest and furthest visible turbines);
- Orientation of properties;
- Whether views from the property would be direct or oblique;
- The rooms affected and their uses (this will only rarely be able to be ascertained fully);
- The impact on the curtilage of the property, which could include any garden(s); driveway and patio;
- The effects of any screening by vegetation or nearby built development; and
- The context and nature of any intervening structures e.g. sited within an industrial setting or within a farm complex.

- 7.1.3 These factors are taken into account in attributing each included property with a level of effect upon residential visual amenity on a seven point scale: substantial; moderate/substantial; moderate; slight/moderate; slight; negligible; or no effect. Unlike visual effects per se, there is no explicit guidance as to what level of effect should be considered significant in regard to residential visual amenity. The assessment is therefore restricted to assessing level of effect, but not significance.
- 7.1.4 Residential visual amenity was assessed in passing in the 2007 LVIA being considered in the residential visual assessment proformas that were completed for all the properties within 3 km. A more detailed residential visual amenity assessment was undertaken in the course of preparing the February 2013 SEI. In line with emerging best practice the spatial scope of the 2013 residential visual amenity assessment was reduced to properties sited within 1.5 km from any proposed turbine. This study area included 36 individual or small groups of residential properties with a 360° wireframe being produced from each property. These wireframes and revised proformas were included in Appendix 3B of the SEI (AD/VATT/018A).
- 7.1.5 Subsequent to the submission of the SEI in February 2013 during discussions with NRW on the Statement of Common Ground, NRW adopted the position that the residential visual amenity assessment should extend to all properties within 2.5 km of any proposed turbines. The location of these properties is shown in Figure 9.
- 7.1.6 Consequently in the preparation of this Proof of Evidence the opportunity has been undertaken to further revise the residential visual assessment which now includes 69 residential properties²². The results of the most recent residential are set out in full in Appendix LVIA 2. For each property the following information is provided:
- A completed proforma whose format remains as per the proformas used in the February 2013 SEI. Only minimal changes have been made to the proformas for properties within 1.5 km that were completed for the February 2013 SEI;
 - A wireframe showing Llanbadarn Fynydd's turbines only; and
 - An information sheet showing i) an aerial view showing the property, the seventeen turbine locations and the horizontal angle of view encompassing all the

²² Note that at three of these properties: Garn, Esgairdraenllwyn and Waen a cottage or a barn conversion has been identified so the total number of properties in the residential visual assessment is 72.

visible turbines; ii) a close up aerial view of the property with the residents' likely main direction of view highlighted; iii) the most open view towards the property that is available from either a publicly accessible location or from within land owned by one of the landowners with a financial interest in the wind farm; iv) a photograph towards the application site from a publicly accessible location as close to the property as possible. Information sheets have only been provided for the 63 properties whose residents would theoretically have views of one or more turbines i.e. those within the blade tip ZTV.

7.2 Results of the Residential Visual Amenity Assessment

7.2.1 The results of the residential visual amenity survey for all properties located within 2.5 km of any Llanbadarn Fynydd turbine are set out in Table 7.1. The entries for properties 1-36 in this table have not altered from the entries for these properties in Table 7.1 in the Volume One of the February 2013 SEI (AD/VATT/018).

Table 7.1 Results of Residential Visual Amenity Assessment for Properties Within 2.5 km of Any Turbine

Property Name and Code No.	Minimum Separation Distance	Angle of Visible Turbine Array	Effect upon Residential Visual Amenity
1. Butterwell	970 m	75°	Moderate
2. Blaen-nant-du	660 m	125°	N/A - Uninhabited under a covenant
3. Springfield	560 m	160°	Moderate/Substantial
4. Garn and Garn Cottage	515 m	230°	Moderate/Substantial (both properties)
5. Lower Foel	880 m	60°	Moderate
6. Ty-cam	750 m	N/A	N/A - derelict
7. Camnant	1 280 m	50°	Slight/ Moderate
8. Lower Camnant	850 m	65°	Moderate
9. Ty'n-y-waun	1 510 m	50°	N/A (derelict property)
10. Esgairdraenllwyn and Cottage	890 m	85°	Moderate and Slight
11. Hafod Fach	540 m	120°	Moderate
12. Ithon Hall	1 380 m	50°	Slight

Table 7.1 (continued) Results of Residential Visual Amenity Assessment for Properties Within 2.5 km of Any Turbine

Property Name and Code No.	Minimum Separation Distance	Angle of Visible Turbine Array	Effect upon Residential Visual Amenity
13. Pen Ithon Bungalow	1 320 m	70°	Slight/Moderate
14. Upper Crochan	660 m	N/A	No residential property remains at this location
15. Crochan	750 m	100°	Moderate
16. Lower Crochan Farm	615 m	110°	Negligible
17. Dolaucwmfrwd	1 110 m	50°	Slight
18. Dolaucwmfrwd Bungalow	1 030 m	50°	Slight
19. Dolafon	1 350 m	None	No Effect
20. Dol y Garn	1 450 m	1° - single blade tip	No Effect
21. Lower Esgair	1 530 m	None	No Effect
22. Brookview Bungalow	1 410 m	50°	Slight
23. Cedar Bungalow	1 460 m	30°	Slight
24. Clover Ridge	1 400 m	10°	Negligible
25. Esgairuchaf	460 m	70°	Moderate
26. New House at Esgairuchaf	690 m	65°	Moderate
27. Cwmgarthen	800 m	90°	Slight
28. Pen-y-Bank	680 m	110°	Slight
29. Dolfryn	1 110 m	90°	Slight/ Moderate
30. Cwm Mawr	840 m	95°	Slight
31. Ddol	1 150 m	75°	Slight/ Moderate
32. Gwenlas	820 m	55°	Negligible
33. Lower Gwenlas	780 m	50°	Negligible
34. Lower Fiddler's Green	900 m	25°	Slight/ Moderate
35. Fiddler's Green	870 m	20°	Slight/ Moderate
36. Waen plus two barn conversion holiday lets	1 580 m	30°	Negligible (Waen) Slight (Barn Conversions)
37. New House at Pen y Bank	747 m	105°	Slight/Moderate
38. Bwlch-y-Llyn	1 815 m	5°	Negligible
39. Dol Frwynog	2 045 m	5°	Negligible
40. Converted church nr Ddol	2 165 m	25°	Negligible
41. Ddol	2 283 m	25°	Negligible
42. Gravel Farm (derelict)	2 496 m	1° - single blade tip	N/A (derelict property)
43. Hopes Castle Farm	2 461 m	16°	Negligible

Table 7.1 (continued) Results of Residential Visual Amenity Assessment for Properties Within 2.5 km of Any Turbine

Property Name and Code No.	Minimum Separation Distance	Angle of Visible Turbine Array	Effect upon Residential Visual Amenity
44. Bryn Mawr Cottage	1 820 m	25°	Slight
45. Sign	2 113 m	No view	No Effect
46. Llymwynt	2 399 m	No view	No Effect
47. Fron	2 053 m	No view	No Effect
48. Esgairwyndwn	1 719 m	55°	Moderate
49. Pen lan (derelict)	2 088 m	40°	N/A (derelict property)
50. Tyllwyd	2 214 m	No view	No Effect
51. Tynyddol (derelict)	2 392 m	10°	N/A (derelict property)
52. Sunnybank (derelict)	1 783 m	35°	N/A (derelict property)
53. Bedwlydion (derelict)	1 743 m	40°	N/A (derelict property)
54. Rhos Farm	1 856 m	45°	Slight
55. Rhos Bungalow	1 679 m	45°	Moderate
56. Glen Ithon Lodge	2 117 m	55°	Moderate
57. School House	2 081 m	55°	Moderate
58. Banc Newydd	1 818 m	60°	Moderate
59. Pen y Cwm Farm	1 663 m	65°	Slight
60. Pen y Cwm Cottage	1 645 m	65°	Negligible
61. White house near Pen y Cwm Bridge	1 618 m	45°	Slight/moderate
62. Barn conversion nr Pen y Cwm Bridge	1 512 m	65°	Negligible
63. Modern house nr Pen y Cwm Bridge	1 545 m	70°	Negligible
64. Glan yr Afon	1 987 m	25°	Slight
65. Blue Lins Farm	2 485 m	1° - single blade tip	Negligible
66. Cider House	2 428 m	15°	Negligible
67. New House near Blue Lins Farm	2 350 m	5°	Negligible
68. Llyn Dwr	2 380 m	40°	Slight
69. Derelict House near Llyn Dwr	2 220 m	40°	N/A (derelict property)

7.2.2 The distribution of the seven possible levels of effect upon their inhabitants' residential visual amenity is summarised in Table 7.2.

Table 7.2 Different Levels of Effect for Residential Visual Amenity Assessment for Properties Within 2.5 km of any Turbine at Llanbadarn Fynydd Wind Farm

Level of Effect	No. of Residential Properties
Substantial	0
Moderate/Substantial	3
Moderate	13
Slight/Moderate	8
Slight	15
Negligible	16
No Effect	7
Derelict or Uninhabited	10

7.2.3 The three properties whose residents could potentially sustain a moderate/substantial level of effect upon their residential visual amenity would be: 3) Springfield and 4) Garn and Garn Cottage. These properties are all under the control of landowners with a financial interest in the development.

7.2.4 The moderate/substantial level of effect at these properties is a consequence of the location of the properties towards the centre of the application site. This ensures that the properties are close to some of the turbines increasing the potential for them to be considered to be ‘overbearing’ and also that the turbine array would extend around more than one elevation of the property. This could increase the potential or residents to feel surrounded by turbines. As shown in Table 7.1 the potential angles of view occupied by the turbine array at these properties would vary from 130° to 225°. However, as shown in these properties’ information sheets in Appendix LVIA 2, all these properties benefit from extensive adjacent screening tree cover (some of which is coniferous) and/or farm buildings in the manner that is typical of hill farms in mid-Wales.

7.2.5 The 13 properties whose residents could potentially sustain a moderate level of effect upon their residential visual amenity would be: 1) Butterwell; 5) Lower Foel; 8) Lower Camnant; 10) Esgairdraenllwyn (although not the associated cottage); 11) Hafod Fach; 15) Crochan; 25) Esgairuchaf; 26) the recent property close to

Esgairuchaf; 48) Esgairwyndwn; 55) Rhos Bungalow; 56) Glen Ithon Lodge; 57) School House; and 58) Banc Newydd.

7.2.6 Hafod Fach; Esgairuchaf; and the recent property close to Esgairuchaf are under the control of landowners with a financial interest in the development. The same factors set out in Paragraph 7.2.4 also apply to these properties but with the exception of Hafod Fach they are located further away from any of the turbines and consequently have lower inclusive horizontal angles of view. These are all below the 120° threshold that was applied by Powys County Council's landscape consultants in the 2008 Development Control Support Report (VATT/LAN/015).

7.2.7 Specific factors that apply to these properties and their residents that should be emphasised include:

- Four of the properties (Lower Camnant; Esgairdraenllwyn; Hafod Fach; Crochan) are located in the Ithon Valley close to the busy A483 whose presence would be likely already reduce residential visual amenity at these properties;
- Esgairdraenllwyn's Cottage is located to the rear (west) of the main property on the northern side of an enclosed courtyard and is heavily screened;
- Rhos Bungalow, Glen Ithon Lodge, School House and Banc Newydd are all in comparatively elevated locations on the western side of the Ithon Valley and the relative absence of screening in close proximity to their eastern or north-eastern elevations would allow relatively open views of the full turbine array but closest turbines would be 1.7 km-2.1 km away and whilst visually prominent in some views the turbines could not be considered 'overbearing' and could not result in 'unsatisfactory living conditions' at any of these properties;
- Esgairwyndwn has an elevated location close to Fron Top and relatively open views to the full turbine array at approximately the same elevation across the Gwenlas Valley to the north. However with an array of ~55° and unaffected views in three directions there could be no sense of the property being surrounded. The constant presence of the intervening Gwenlas Valley would emphasise the sense of separation;
- Esgairuchaf and associated property are close enough to Turbines 10 and 12 for these to be on the cusp of being overbearing in northern views, especially from

Esgairuchaf. Apart from the residents' financial interest in the wind farm other mitigating factors are that Esgairuchaf's main garden is on its southern side, it has some nearby mature trees to filter northern views and it is located on the edge of large working farm including four large poultry sheds and has seen a large amount of change over the past decade;

- At Lower Foel mitigating factors include the fact that six turbines would not be visible; that of the ten turbines located over 1.2 km away five would only have upper blade tips potentially visible and most importantly that the property is located in a copse of mature trees. With an angle of view of $\sim 60^\circ$, a sheltered setting and no turbines visible in two, maybe three directions residents could not legitimately consider themselves to be surrounded but Llanbadarn Fynydd's turbines will be a constant presence when using the access drive which is routed over a kilometre from the east across open moorland and semi-improved grassland;
- At Butterwell rising topography around Carn Bryn-llwyd has the benefit of effectively screening four of the six northern turbines and leaving Turbine 2 only visible from the hub upwards. Additional screening and filtering would be provided by nearby tree cover. Only five turbines could potentially be visible to close to their full lengths and whilst Turbine 17 would be 1.1 km away the other four would be over 1.4 km away, hence none of the turbines could be legitimately considered to be overbearing.

7.2.8 With regard to the remaining residential properties, nine are derelict and eight would provide their residents no views (or would potentially see one upper blade tip). These properties are either located at the bottom of the Ithon Valley where its eastern (or northern) sides are especially steep or on the south-facing slope of the sharp Fron Top ridgeline.

7.2.9 The remaining 37 properties tend to be located towards the periphery of the 2.5 km offset or are located in the Gwenlas Valley where the influence of the 'table top effect' would often be influential although most of these properties also benefit from high levels of screening and/or are working farms. The group of properties at the head of the Teme Valley are on the edge of the blade tip ZTV. They do not have a strong visual relationship with the application site and their setting is formed by the Valley

which is relatively enclosed at this point. The final identifiable group of residential properties are those clustered around Pen-y-Cwm Bridge. They share a similar elevation and separation distance with the four properties to the south that have been assessed as sustaining a 'moderate' level of effect upon their residential visual amenity. However they are not located on the upper side of the small valley formed by the Llaithddy Brook with ground immediately falling away in the angle of view to Llanbadarn Fynydd. Instead most are located on a south-facing slope and benefit from high levels of mature, parkland tree cover in their immediate vicinity which forms their immediate setting and which is likely to be the primary influence upon their residential visual amenity.

- 7.2.10 Whilst the interpretation of the situation outlined in this section is a matter for the Inspector, over recent years there have been a number of wind farm appeal decisions where residential visual amenity has been a factor. A brief review of some recent decisions will put the situation at Llanbadarn Fynydd in context, although it is recognised that, as many of the Inspectors' Appeal Decision letters state, each decision must be made on the context of the properties potentially affected and the wind farm hence there can be no mechanistic test.
- 7.2.11 At Earl's Hall, Tendring in Essex (VATT/LAN/017) a proposed wind farm consisting of five 125 m to blade tip turbines was proposed in a location with 167 dwellings within 800 m. The closest dwelling was 600 m away and possessed no screening. The Inspector allowed the appeal. At Kelmarsch (VAT/INS/001) in Northamptonshire the proposal consisted of six 126.5 m to blade tip turbines which were within 470 m and 510 m of the two nearest properties whose residents had no financial involvement in the wind farm. Following consideration of factors including the properties' orientation away from the wind farm, the high level of screening and the orientation and arrangements of rooms and gardens. The Inspector concluded that taken together these factors would combine to prevent the turbines from being 'overbearing' or 'overwhelming' for residents at these two properties.
- 7.2.12 Similarly at Burnthouse Farm in Cambridgeshire (VATT/INS/003) a proposal consisting of three 100 m blade tip height turbines was proposed that would have been entirely sited within 420 m-550 m of four properties. The Inspector did not find that the turbines' presence would be likely to make these properties 'unattractive places in which live' in terms of the tests previously applied by other Inspectors. Finally at

Cleek Hall, Selby in Yorkshire (VATT/INS/005) a proposal composed of five 127 m blade tip height turbines would have been sited with 1 km of 11 properties. Following a detailed review of the likely effects of the turbines at each of these properties including consideration of the turbines' rotational movement, the Inspector allowed the appeal.

- 7.2.13 In summary it is concluded that Llanbadarn Fynydd wind Farm is well located and designed with regard to potential effects upon residential visual amenity. No properties and residents would be likely to experience the highest levels of effect upon their residential visual amenity i.e. to find the turbines to be 'overbearing' nor would their presence result in 'unsatisfactory living conditions' arising at any properties. Outside of Llanbadarn Fynydd itself there are only 52 inhabited properties or small groups of properties with any view of the turbines and of these properties those that would sustain the greatest level of effects are under the control of landowners with a financial interest in the wind farm. The construction two new properties within the application site since the planning application was submitted in 2007 indicates that potential effects upon residential visual amenity are not a universal concern.

8. Cumulative Landscape Effects (SSA C)

8.1 Introduction

8.1.1 Cumulative landscape and visual effects were not one of the landscape and visual reasons for objection as set out in Powys County Council's Updated Statement of Case (OBJ/002/OSOC-2). Likewise in Annex 1 of their comments on the planning application and ES in 2008 CCW in the subsection 'Cumulative Effects' stated that *'Future wind farm development within the SSA will undoubtedly lead to cumulative landscape impacts. However, TAN 8 implicitly accepts landscape change within Strategic Search Areas.'* Nevertheless cumulative landscape issues are likely to be an issue for many third parties and those pertaining to Llanbadarn Fynydd need to be set out in the Proof to provide a basis for examination during Session One of the Public Inquiry.

8.1.2 In line with the discussions that took place at the preliminary session for the Public Inquiry the examination of cumulative issues at Session One will be restricted to turbines in SSA C. Examination of any cumulative landscape effects that might arise as a result of the interaction between wind farms in SSA C and SSA B will take place in Session Four. During the preparation of the Statements of Case the landscape witnesses decided that due to the lack of an actual route for any of the proposed grid connection works and in the expectation that more detailed proposals will become available by the fourth quarter of 2013 that any cumulative issues involving the grid connections should also be deferred until the Session Four.

Cumulative Landscape Assessment in 2007 LVIA

8.1.3 Llanbadarn Fynydd was the first wind farm application to be submitted in SSA C consequently when the cumulative landscape assessment was undertaken the only other wind farm development in SSA C was the existing Llandinam Wind Farm. The presence of its 103 turbines with a 46.5 m height to blade tip was taken into account throughout the assessment as part of the baseline. The cumulative landscape assessment was undertaken in accordance with the then current SNH guidance and concluded that generally the introduction of Llanbadarn Fynydd Wind Farm would

only have a small-scale incremental effects upon landscape character and designations. Also it concluded that significant cumulative landscape effects would not be generated in combination with the existing Llandinam Wind Farm due to the minimum separation distance of 5.3 km²³ and the key characteristics of the potentially affected landscape character areas as represented by the LANDMAP visual and sensory aspect areas would be not significantly affected.

Cumulative Landscape Assessment in 2013 SEI

- 8.1.4 The cumulative situation in SSA C had changed considerably over the six years between the submission of the Llanbadarn Fynydd Wind Farm planning application and the SEI. The main change was that by late 2012 there were six other wind farms planning applications submitted in SSA C for a total of 124 turbines with blade tip heights of between 99 m and 126.5 m. Also as noted several times previously the LANDMAP evaluation had been completed and quality assured and the Powys Landscape Character Assessment undertaken which altered the landscape baseline.
- 8.1.5 The cumulative landscape assessment in the SEI was undertaken in accordance with the latest SNH Guidelines (CPL/LAN/007). These Guidelines lay stress upon the need for cumulative assessments to '*...the focus should be on the key cumulative effects which are likely to influence decision making, rather than the assessment of every potential cumulative effect.*' (CPL/LAN/007, Paragraph 66). One of the principal aims of cumulative assessment is to identify the magnitude of additional cumulative change which would be generated by the proposed development i.e. Llanbadarn Fynydd Wind Farm, in conjunction with other wind farms i.e. the other six wind farms proposed for SSA C. This approach allows the identification of the incremental level of landscape effect associated with Llanbadarn Fynydd Wind Farm and whether this would be significant.
- 8.1.6 A review of the 2007 CLVIA along with reviews of the LVIA's prepared for the other six proposed wind farms strongly indicated that one of the main cumulative issues was the interaction between wind farms on the western side of the Ithon Valley and those on the eastern side, including Llanbadarn Fynydd. To this end the SEI adopted an approach in which a division was made between the wind farms proposed for the

²³ This separation distance was erroneously stated to be 7.2 km in the 2007 LVIA.

eastern side – Group 1, and those on the western side – Group 2. Cumulative landscape effects were assessed for each group on its own and with the addition of Llanbadarn Fynydd, plus the six Group 1 and Group 2 wind farms together and then the six Group 1 and Group 2 wind farms together plus Llanbadarn Fynydd.

- 8.1.7 These six scenarios were applied to a range of the now current landscape receptors including the Shropshire Hills AONB, relevant LANDMAP aspect layers (not confined to visual and sensory aspect areas) and Powys Landscape Character Areas. In order to adhere to the SNH Guideline's maxim to focus upon receptors with the greatest potential to sustain significant landscape effects any landscape receptors in the main SEI landscape assessment that were assessed as sustaining only negligible magnitudes of landscape change from Llanbadarn Fynydd's operation were not taken through to the cumulative landscape assessment. This sieving process left 36 landscape receptors for inclusion in the cumulative landscape SEI. The results of the SEI cumulative landscape assessment are set out in Section 3.7 of the Volume One of the SEI (AD/VATT/018).
- 8.1.8 Subsequent to the submission of the Llanbadarn Fynydd SEI in February 2013, SEIs were also produced for the Llaithddu and Llandinam Repowering Wind Farms (AD/FWLC/050A-C and AD/CPL/019). These showed that the layouts for both these wind farms had changed with numbers of turbines at both schemes being reduced in order to respond to consultees' comments and to reduce some potential effects. The final turbine layouts are shown in Appendix LVIA 1 Figure 1. Turbine numbers at Llaithddu have been reduced to 29 if it were to operate without Llandinam Repowering also being operation and 27 if the two wind farms were to operate together. Turbine numbers at Llandinam Repowering have been reduced to 34 with some of the northern-most turbines on previous layouts being removed.
- 8.1.9 In addition in subsequent discussions with NRW it was requested that single turbines within 10 km of SSA C were also included in the CLVIA. The latest information on the status and distribution of single turbines is shown in the map from Powys County Council in LVIA PoE Appendix 1 along a spreadsheet showing the details of these single turbines.
- 8.1.10 These layout changes required that changes be made to most of the figures that were produced to accompany the February 2013 SEI including ZTVs, wireframes from the

53 selected cumulative assessment viewpoints for all wind farms SSA C wind farms (Appendix 3D in the SEI, AD/VATT/018A); the wireframes from the 22 viewpoints along Glyndwr's Way (Appendix 3E in the SEI, AD/VATT/018B) and the photomontages from five selected cumulative viewpoints. The revised figures are presented in LVIA Appendices 3-6. In revising the wireframes and the photomontages the opportunity has also been to refine the scenarios presented. Hence each wireframe or photomontage visualisation shows: i) all SSA C turbines plus single turbines ii) Llanbadarn Fynydd, Llaithddu and Llandinam Repowering; iii) Llanbadarn Fynydd and Llaithddu iv) Llanbadarn Fynydd and Llandinam Repowering.

8.1.11 The results of the revised cumulative landscape assessment upon all the landscape receptors assessed as sustaining low, medium or high magnitudes of landscape change from the operation of Llanbadarn Fynydd Wind Farm on its own are set out in Table 8.1. For each landscape receptor this table shows whether or not the addition of Llanbadarn Fynydd Wind Farm's turbines would make the difference between cumulative effects being significant or not significant against a number of scenarios. In line with the overriding approach advocated by the current SNH Guidance (CPL/LAN/007) the results of the cumulative landscape assessment summarised in Table 8.1 are set out below for '*...the key cumulative effects which are likely to influence decision making.*'

Table 8.1 Summary of Cumulative Landscape Effects and the Incremental Role of Llanbadarn Fynydd Wind Farm

Landscape Receptor	Receptor Sensitivity	Minimum Distance from Area Within Blade Tip ZTV to Nearest Llanbadarn Fynydd Turbine	Llanbadarn Fynydd		Llandinam Repowering and Llaithddu				Llandinam Repowering, Llaithddu and Hirddywel				Bryngydfa, Garreg Llwyd and Neuadd Goch Bank				All SSAC Wind Farms and Single Turbines			
			Magnitude of Landscape Change	Significance of Non-cumulative Effect	Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd	
					Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd
Shropshire Hills AONB	High	5.7 km	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant
LANDMAP Visual and Sensory Aspect Area MNTGMVS254: Kerry Ridgeway	High	0.7 km	Low	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant
LANDMAP Visual and Sensory Aspect Area MNTGMVS443: Waun Ddubarthog Wind Farm	High	3.2 km	Low	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	Medium	Significant	Medium	Not Significant	High	Significant	High	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS110: Upland Moor, Beacon Hill and Gors Lydan	High	1.9 km	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS111: Upland Moor, Kerry Hills West of Llanbadarn Fynydd-Dolfor Road (AMEC Subdivision)	High	Host	High	Significant	Low	Not Significant	High	Significant	Low	Not Significant	High	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS111: Upland Moor, Kerry Hills between Llanbadarn Fynydd-Dolfor Road and Bryn Coch (AMEC Subdivision)	High	0.8 km	Medium	Significant	Low	Not Significant	Medium	Significant	Low	Not Significant	Medium	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS111: Upland Moor, Kerry Hills east of Bryn Coch	High	3.5 km	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS114: Upland Moor, West of Ithon	High	1.8 km	Low	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant	High	Significant	High	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS115: Upland Moor, North and West of Abbeycwmhir	Medium	2.4 km	Low	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	Low	Not Significant	Low	Not Significant	Medium	Not Significant	Medium	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS117: Moorland, East of Ithon	Medium	5.3 km	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant

Table 8.1 (continued) Summary of Cumulative Landscape Effects and the Incremental Role of Llanbadarn Fynydd Wind Farm

Landscape Receptor	Receptor Sensitivity	Minimum Distance from Area Within Blade Tip ZTV to Nearest Llanbadarn Fynydd Turbine	Llanbadarn Fynydd		Llandinam Repowering and Llaithddu				Llandinam Repowering, Llaithddu and Hirddywel				Bryngydfa, Garreg Llwyd and Neuadd Goch Bank				All SSAC Wind Farms and Single Turbines			
			Magnitude of Landscape Change	Significance of Non-cumulative Effect	Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd	
					Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd
LANDMAP Visual and Sensory Aspect Area RDNRVS122: Improved Upland South of Kerry Hills - Two Western Subareas (AMEC Subdivision)	Medium	Host	High	Significant	Low	Not Significant	High	Significant	Low	Not Significant	High	Significant	Medium	Not Significant	High	Significant	Medium	Not Significant	High	Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS122: Improved Upland South of Kerry Hills - Central Subarea (AMEC Subdivision)	Medium	1.0 km	Medium	Not Significant	Low	Not Significant	Medium	Not Significant	Low	Not Significant	Medium	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS123: Improved Upland West of Upper Ithon	Medium	0.6 km	Medium	Not Significant	High	Significant	High	Not Significant	High	Not Significant	High	Not Significant	Medium	Not Significant	Medium	Not Significant	High	Significant	High	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS128: Upland Valleys south of Kerry Hills - Cwm Nant-ddu (AMEC Subdivision)	High	Host	High	Significant	Negligible	Not Significant	High	Significant	Negligible	Significant	High	Not Significant	Low	Not Significant	High	Significant	Low	Not Significant	High	Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS128: Upland Valleys South of Kerry Hills - Gwenlas (AMEC Subdivision)	High	0.2 km	Medium	Significant	Negligible	Not Significant	Medium	Significant	Negligible	Not Significant	Medium	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS130: Ridge and Valley, Ithon Sides	Medium	1.3 km	Medium	Not Significant	Low	Not Significant	Medium	Not Significant	Low	Not Significant	Medium	Not Significant	Medium	Not Significant	Medium	Not Significant	High	Significant	High	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS136: Valley Slopes, West Ithon	Medium	0.5 km	Medium	Not Significant	Negligible	Not Significant	Medium	Not Significant	Negligible	Not Significant	Medium	Not Significant	Low	Not Significant	Medium	Not Significant	Low	Not Significant	Medium	Not Significant
LANDMAP Visual and Sensory Aspect Area RDNRVS140: Wye and Ithon Valley Floors North	High	0.4 km	Low	Not Significant	None	n/a	n/a	n/a	None	n/a	n/a	n/a	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant
LANDMAP Historic Landscape Aspect Area MNTGMHL124: Kerry Hills	High	0.7 km	Low	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant

Table 8.1 (continued) Summary of Cumulative Landscape Effects and the Incremental Role of Llanbadarn Fynydd Wind Farm

Landscape Receptor	Receptor Sensitivity	Minimum Distance from Area Within Blade Tip ZTV to Nearest Llanbadarn Fynydd Turbine	Llanbadarn Fynydd		Llandinam Repowering and Llaithddu				Llandinam Repowering, Llaithddu and Hirdydwel				Bryngydfa, Garreg Llwyd and Neuadd Goch Bank				All SSAC Wind Farms and Single Turbines			
			Magnitude of Landscape Change	Significance of Non-cumulative Effect	Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd	
					Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Landscape Change	Significance of Cumulative Effect	Magnitude of Landscape Change	Significance of Incremental Effect of Llanbadarn Fynydd
LANDMAP Historic Landscape Aspect Area RDNRHL121: Kerry Ridgeway	High	0.7 km	Low	Not Significant	Low	Significant	Low	Not Significant	Low	Significant	Low	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant
LANDMAP Historic Landscape Aspect Area RDNRHL613: Upper Ithon	High	Host	Low	Not Significant	Low	Not Significant	Medium	Significant	Low	Not Significant	Medium	Significant	Low	Not Significant	Medium	Significant	Medium	Significant	Medium	Not Significant
LANDMAP Historic Landscape Aspect Area RDNRHL984: Beacon Hill	High	2.2 km	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Medium	Significant	Medium	Not Significant
LANDMAP Cultural Landscape Aspect Area MNTGMCL017/RDNRCL023: Windfarms/ Wind Farm Landscape	High	2.6 km	Low	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	Low	Not Significant	Low	Not Significant	High	Significant	High	Not Significant
LANDMAP Cultural Landscape Aspect Area RDNRCL010: River Ithon Valleys and Tributaries	High	0.5 km	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant
LANDMAP Cultural Landscape Aspect Area RDNRCL024: Llanbadarn Fynydd	High	1.4 km	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant
Powys Landscape Character Assessment LCA R12: Ithon Valley	Medium	0.1 km	Medium	Not Significant	Negligible	Not Significant	Medium	Not Significant	Negligible	Not Significant	Medium	Not Significant	Low	Not Significant	Medium	Not Significant	Medium	Not Significant	Medium	Not Significant
Powys Landscape Character Assessment LCA R18: Ithon Valley Sides	Medium	Host	Medium	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
Powys Landscape Character Assessment LCA M29: Kerry Hill	High	Host	Low	Not Significant	Low	Not Significant	Medium	Significant	Low	Not Significant	Medium	Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant
Powys Landscape Character Assessment LCA R9: Llanbister-Penybont Uplands	Medium	4.5 km	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant
Powys Landscape Character Assessment LCA R11: Beacon Hill	Medium	1.0 km	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Medium	Significant	Medium	Not Significant	High	Significant	High	Not Significant
Powys Landscape Character Assessment LCA M32: Waun Ddubarthog	High	2.5 km	Low	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	Medium	Significant	Medium	Not Significant	High	Significant	High	Not Significant

8.2 Cumulative Landscape Effects – Llandinam Repowering and Llaithddu Only

Shropshire Hills AONB

- 8.2.1 As noted in Section 4 the operation of wind farms in SSA C could potentially have effects upon two of the AONB's key characteristics: scenic and environmental quality and tranquillity. The landscape assessment for Llanbadarn Fynydd operating on its own concluded that its presence low down on a compact section of the western horizon in middle and long distance views from a limited number of open, elevated locations would result in a low magnitude of landscape change. These would combine with the AONB's high landscape sensitivity to produce a medium magnitude of landscape change which would be not significant.
- 8.2.2 Given the role of the visual effects pathway in determining landscape effects for the AONB, an indication of the potential changes to that assessment can be attained by reviewing the cumulative wireframes for the cumulative scenarios involving Llaithddu and Llandinam Repowering from the eight cumulative viewpoints located within the AONB. These are Viewpoints 16, 35, 36, 38, 39, 41, 52 and 53 for which cumulative wireframes have been provided in Appendix LVIA 4.
- 8.2.3 This review shows that the addition of either Llaithddu or Llandinam or both wind farms would extend the combined turbine array. Whilst there would be differences in scale between the turbines due to differing separation distances these differences would be quite subtle and may not be immediately discernible. Hence from most viewpoints the two or three wind farms would be perceived as a single large wind farm. There would be an exception in the northern part of the Clun Forest area of the AONB as at Viewpoints 36 and 38 the wind farms would take the appearance of two separate wind farms: Llanbadarn Fynydd and the southern turbines at Llaithddu combining as one array whilst Llandinam Repowering and the northern turbines at Llaithddu would form a second, separate array. In the occasional views over distances of 30 km or more from elevated locations in central part of the AONB all the turbines would be so small scale and low on the horizon that the combination of turbines would be irrelevant.

8.2.4 The assessment concludes that at all eight viewpoints none of the potential scenarios would generate magnitudes of cumulative landscape change in excess of low. Whilst from some viewpoints turbines at Llanbadarn Fynydd would make a greater incremental contribution to cumulative landscape effects than the turbines at either Llaithddu or Llandinam Repowering, at none of the eight viewpoints would the addition of Llanbadarn Fynydd Wind Farm to a scenario comprising either or both Llaithddu or Llandinam Repowering Wind Farms increase the magnitude of cumulative landscape change to above low. Therefore it is assessed that cumulative landscape effects upon the Shropshire Hills AONB would never be significant under any of the scenarios involving Llanbadarn Fynydd, Llaithddu and Llandinam Repowering Wind Farms with the AONB's key characteristics, including scenic and environmental quality and tranquillity remaining in place.

LANDMAP VSAAs

8.2.5 As already noted the turbine layouts at Llaithddu and Llandinam Repowering have both subsequently been amended which has necessitated the provision of new sets of visualisations to accompany this Proof. Subsequently I have reviewed the assessments undertaken in Tables 3.8-3.36 in Volume One of the SEI (AD/VATT/018) to confirm if the conclusions reached in these tables remain valid under the amended layouts. This review confirmed that the amendments would not alter the assessments in these tables for the scenarios involving Llaithddu and Llandinam Repowering with the two exceptions of RDNRVS115: Upland Moor North and West of Abbeycwmhir and RDNRVS123 Improved Upland west of Upper Ithon. In Tables 3.14 and 3.18 in Volume one of the February 2013 SEI (AD/VATT/018) the magnitudes of landscape change with the Group 2 turbines (Llaithddu, Llandinam Repowering and Hirddywel) was assessed as medium. Following reviews of the SEIs produced for these wind farms (REFs) and the relevant visualisations contained in the LVIA Appendices 4 and 5, I have revised my assessment and now consider that the operation of the Llaithddu and/or Llandinam Repowering Wind Farms would result in high magnitudes of landscape change for much of RDNRVS123 and the northern sub-area of RDNRVS115. These conclusions are based on the fact that these two VSAAs will host a proportion of Llaithddu Wind Farm and be close to the Llandinam Repowering Wind Farm and also because the LVIAs that have been undertaken for Llaithddu and Llandinam Repowering assess significant effects in at least parts of these VSAAs.

- 8.2.6 In order to adhere to the advice in the current SNH Guidance, this and subsequent subsections in Section 8.2 will concentrate upon the VSAs where significant landscape effects have been assessed for Llanbadarn Fynydd, Llaithddu or Llandinam Repowering Wind Farms either individually or under any cumulative scenario involving the three wind farms in the February 2013 SEI. This is shown in the summary Table 8.1 which is drawn from the entries in Tables 3.8-3.36 in Volume One of the SEI (AD/VATT/018) with the two amendments discussed in Section 8.2.5.
- 8.2.7 Table 8.1 shows that under scenarios where one or both of Llaithddu and Llandinam Wind Farms are operating in tandem with Llanbadarn Fynydd Wind Farm significant cumulative landscape effects within which Llanbadarn Fynydd's turbines would have an incremental role, other than those where Llanbadarn Fynydd would result in significant effects regardless of whether other wind farms were operational²⁴, would be sustained in:
- RDNRVS115 Upland Moor North and West of Abbeycwmhir; and
 - RDNRVS123 Improved Upland West of Upper Ithon.
- 8.2.8 In both these VSAs the cumulative landscape assessments undertaken for Llaithddu and Llandinam Repowering Wind Farms concluded that those wind farms operating on their own would result in significant landscape effects. Consequently the incremental effect of adding Llanbadarn Fynydd Wind Farm to a scenario where Llaithddu and/or Llandinam Repowering Wind Farm is operational would not make the difference between significant or not significant landscape effects being sustained in either of these VSAs.
- 8.2.9 These VSAs are located on the western side of the Ithon Valley but consideration needs to be given the potential for Llanbadarn Fynydd Wind Farm to make the difference between significant and not significant cumulative effects being sustained by the valley bottom and eastern side VSAs.
- 8.2.10 Table 8.1 shows that for VSA RDNRVS110: Upland Moor. Beacon Hill and Gors Lydan the cumulative magnitude of change under the scenario where all three wind farms are operational would be low and that the incremental effect of Llanbadarn

²⁴ These are sub-areas of RDNRVS111, RDNRVS122 and RDNR128 as discussed in depth in Section 5 of this Proof.

Fynydd Wind Farm would be to increase the magnitude of cumulative landscape change from negligible to low. Hence Llanbadarn Fynydd Wind Farm's incremental cumulative landscape effect would be not significant.

- 8.2.11 For VSAA RDNRVS130: Ridge and Valley, Ithon Sides the cumulative magnitude of change under the scenario where just Llaithddu and Llandinam Repowering Wind Farms are operational would be low and that the incremental effect of Llanbadarn Fynydd Wind Farm would be to increase the magnitude of cumulative landscape change from low to medium. Hence Llanbadarn Fynydd Wind Farm's incremental cumulative landscape effect would be not significant.
- 8.2.12 Finally for RDNRVS136: Valley Slopes West Ithon the cumulative magnitude of change under the scenario where just Llaithddu and Llandinam Repowering Wind Farms are operational would be negligible and that the incremental effect of Llanbadarn Fynydd Wind Farm would be to increase the magnitude of cumulative landscape change from negligible to medium. Hence Llanbadarn Fynydd Wind Farm's incremental cumulative landscape effect would be not significant.
- 8.2.13 In summary, aside from sub-areas of Llanbadarn Fynydd Wind Farm's three host VSAs, for VSAs in the bottom of the Ithon Valley or to its east the addition of the turbines at Llanbadarn Fynydd would not be sufficient in any of the VSAs to raise the magnitude of cumulative landscape change from insignificant with Llaithddu and/or Llandinam Repowering operational on their own or in tandem to significant.
- 8.2.14 In arriving at this conclusion I am aware that there will be a small number of locations within these VSAs where the introduction of Llanbadarn Fynydd Wind Farm will incrementally increase the cumulative magnitude of landscape effects to medium or high thereby resulting in significant cumulative landscape effects in the parts of the VSAA around that viewpoint. A good example of this phenomenon would be at Cumulative Viewpoint 1 on Fron Top as shown in Appendix LVIA 5 which is sited just inside RDNRVS130: Ridge and Valley, Ithon Sides. Nevertheless I maintain that across these VSAs as a whole i.e. treating them as a single landscape receptor, the introduction of Llanbadarn Fynydd would not result in significant cumulative landscape effects being generated.

Other LANDMAP Aspect Areas

- 8.2.15 The cumulative landscape effects that would be sustained by some of the cultural landscape aspect areas (CLAAs) and historic landscape aspect areas (HLAAs) in SSA C have been assessed in Tables 3.24-3.30 in Volume One of the February 2013 SEI (AD/VATT/018). The other CLAAs and HLAAs plus all the geological landscape aspect areas (GLAAs) and landscape habitat aspect areas (LHAAs) were excluded from the cumulative landscape assessment because in the main landscape assessment these aspect areas were all assessed as sustaining only negligible magnitudes of changes as a result of the operation of Llanbadarn Fynydd. Consequently the wind farm's introduction into any scenario would be highly unlikely to make the incremental difference between cumulative landscape effects being significant or not significant.
- 8.2.16 The seven HLAAs and CLAAs where Llanbadarn Fynydd Wind Farm's operation would generate low magnitudes of landscape change are listed in Table 8.1. The magnitudes of landscape change in these HLAAs and CLAAs that would be generated by the operation of Llaithddu and Llandinam Wind Farms has been assessed as varying between negligible at three more distant HLAAs and CLAAs located in the bottom of the Ithon Valley or on its eastern side to high for the CLAA that would host these wind farms. This CLAA is already defined by the presence of the turbines at the existing Llandinam Wind Farm hence the presence of Llanbadarn Fynydd Wind Farm on the opposite side of the Ithon Valley would only incrementally reinforce one of the CLAAs key characteristics.
- 8.2.17 The only HLAA where the introduction of Llanbadarn Fynydd Wind Farm would raise the cumulative magnitude of landscape change from low with just Llaithddu and Llanbadarn Fynydd operating to medium with the introduction of Llanbadarn Fynydd would be RDNRHL613 Upper Ithon. This is one of the host HLAAs for Llanbadarn Fynydd although it does extend along much of the eastern side of the upper Ithon Valley. As it is evaluated as possessing high sensitivity, a medium cumulative magnitude of landscape change would result in a significant cumulative landscape effect. The response to Collector Survey Question HL41 concerning the justification for the HLAA's overall high evaluation states that this is primarily due to the survival of a range of fieldscapes which represent different phases of historical activity from

the medieval period onwards. These interspersed with '*limited outbreaks of prehistory.*'

- 8.2.18 The presence of turbines at Llaithddu, Llandinam and/or Llanbadarn Fynydd would not have any direct effects upon the field patterns or prehistoric remains as none of turbines are actually located within this HLAA. However it is possible that the presence of the turbines could diminish the landscape role presently fulfilled by the fieldscapes, especially on the hills and ridgelines that are topographically characteristic of the eastern side of the Ithon Valley. Consequently, although there will have been no physical effects upon them, it could be perceived that the historic fieldscapes would have a reduced role in determining the landscape character of this HLAA. Although the turbines at Llaithddu and particularly those at Llandinam Repowering would have a greater separation distance reference to the cumulative blade tip ZTV for these three wind farms in Figures 11 and 21, Appendix 3 shows that their ZTV is more extensive across RDNRHL613 than the blade tip ZTV of Llanbadarn Fynydd Wind Farm so the incremental contributions of Llanbadarn Fynydd and Llaithddu and Llandinam Repowering would be likely to be similar.

Powys LCAs

- 8.2.19 Six of the Powys LCAs have been included in the cumulative landscape assessment. These have been included using the same criterion as for other landscape receptors: that only those LCAs where the operation of Llanbadarn Fynydd Wind Farm without any other SSA C wind farms would result in a low or greater magnitude of landscape change have been included. These LCAs nevertheless extend across most of the detailed study area. For none of the six LCAs has it been assessed that the operation of Llanbadarn Fynydd Wind Farm alone would result in significant landscape effects but there is potential that Llanbadarn Fynydd's operation could make the incremental difference between not significant and significant cumulative landscape effects being generated in tandem with Llaithddu and/or Llandinam Repowering Wind Farms. Each LCA will be briefly assessed.
- 8.2.20 LCA R12 Ithon Valley. The key characteristics of this narrow sinuous LCA are concerned with the River Ithon itself and its ecological importance and the manner in which the cultural evolution of landscape through sheep farming can be discerned. The A483 is considered to be an adverse feature. Although some of Llanbadarn

Fynydd's turbines would be located close to the east of the LCA, the steepness of the eastern valley sides at the upper end of the Valley would ensure the 'tabletop effect' would be present and Llanbadarn alone would generate a medium magnitude of landscape change. A combination of separation distances and intervening topography would ensure that turbines at Llaithddu and Llandinam Repowering Wind Farms would not be even theoretically visible from much of this LCA even before screening from the moderate level of tree cover, mainly from hedgerow trees, is taken into account. For example as shown by the cumulative blade tip ZTV shown in Figures 11 and 21 in LVIA PoE Appendix 3 no views of Llandinam Repowering would be even theoretically available from within either the Gwenlas or the Cwm Nant-ddu Valleys. Hence it is assessed that individually or together Llaithddu and Llandinam Repowering could only have a negligible effect upon LCA R12's key landscape characteristics. Hence whilst the introduction of Llanbadarn Fynydd to the scenarios involving Llaithddu and/or Llandinam Repowering would result in the cumulative magnitude of landscape change increasing from negligible to medium, a medium magnitude of cumulative landscape change combined with a medium landscape sensitivity would still result in a cumulative landscape effect that would be not significant.

- 8.2.21 LCA R18 Ithon Valley Sides. There are only three stated key characteristics of this extensive LCA one of which related to extensive views towards the Waun Ddubarthog ridgeline and the present Llandinam Wind Farm. Another of key landscape characteristic is the same undefined cultural landscape characteristic regarding the cultural evolution of landscape through sheep farming as applied to LCA R12. The importance of north-western views is stated and, as shown in the cumulative photomontage from Cumulative Viewpoint 4 near Ddullui Bank shown in LVIA PoE Appendix 5, Figures 18-20, the Llaithddu and Llandinam Repowered turbine arrays will be much more prominent in many north-western views that the present Llandinam turbines. This leads to the assessment concluding that under this scenario LCA R12 would sustain a high magnitude of cumulative landscape change. This assessment is supported by the extensive blade tip ZTV across LCA R18 generated by the Llaithddu and Llandinam Repowering Wind Farms as shown in Appendix LVIA 3 Figures 11 and 21.

- 8.2.22 Under this assessment when the cumulative landscape effect is already significant without Llanbadarn Fynydd Wind Farm's turbines being present, their introduction could not further increase the cumulative magnitude of landscape change beyond high. Nevertheless it is acknowledged that Llanbadarn Fynydd's turbines would increase the role of turbines in LCA R18 although it is not clear from the supporting text in the Powys LCA whether this would be considered to be reinforcing a beneficial key landscape characteristic.
- 8.2.23 LCA M29 Kerry Hill. This extensive LCA, which extends north-eastwards well beyond the 11.5 km boundary of the detailed study area, is allocated seven key landscape characteristics in the Powys LCA. However four of these relate to specific features located in its eastern part which will be completely or largely unaffected by any of the three wind farms. The most vulnerable key characteristics are those concerned with the Kerry Ridgeway and perceptual characteristics associated with its elevation and moorland habitats. The relative landscape roles of the three wind farms in the western part of LCA M29 can be discerned from a review of the photomontage from Cumulative Viewpoint 3 near Two Tumps of the Kerry Ridgeway shown in Appendix LVIA 5, Figures 13-15.
- 8.2.24 The assessment is Table 3.33 in Volume One of the February 2013 SEI (AD/VATT/018) concluded that either the presence of Llanbadarn Fynydd's turbines or those at Llaithddu and Llandinam would generate low magnitudes of landscape change. However if Llanbadarn Fynydd were to be introduced in a scenario where both Llaithddu and Llandinam Repowering were operational, as well as the existing single turbine at Dolfor, it is assessed that the cumulative magnitude of visual change would increase to medium. When combined with LCA M29's high landscape sensitivity this would result in a moderate/substantial level of cumulative landscape effect that would be significant. In this instance the incremental effect of the addition of Llanbadarn Fynydd Wind Farm would be significant. This would be due to its greater proximity compared with Llaithddu and Llandinam Repowering which would always clearly be sited on the far or western side of the upper Ithon Valley and the ~85° extent of the combined turbine array.
- 8.2.25 LCA R9 Llanbister-Penybont Uplands. This is another extensive LCA from within which views of the Llanbadarn Fynydd Wind Farm's turbines would always be at least 4.5 km away. Llaithddu's turbines would always be a minimum distance of ~7 km

away, whilst those at Llandinam Repowering would always be a minimum distance of ~9.5 km away. Hence on their own or together it is assessed that Llaithddu and Llandinam Repowering would only generate a negligible magnitude of landscape change within this LCA. This is particularly true given that the LCA's key landscape characteristics are concerned with a geological designation and two site specific cultural heritage designations as opposed to outward views or perceptual qualities which would be more vulnerable to change from the presence of turbines outside the LCA.

- 8.2.26 The closer proximity of the turbines at Llanbadarn has been assessed as generating a low magnitude of landscape change for LCA R9. If all three wind farms were operational it is assessed that due to the minimal changes that could effects the key landscape characteristics the cumulative magnitude of landscape change would be low. Hence whilst the introduction of Llanbadarn Fynydd would raise the cumulative magnitude of landscape change this would not result in significant cumulative landscape effects upon LCA R9.
- 8.2.27 LCA R11 Beacon Hill. Despite its name this LCA extends northwards as far as the upper Gwenlas and Teme Valleys. Most of its five stated key characteristics are actually the same as some other LCAs including the all encompassing cultural landscape characteristic concerning the evolution of sheep farming. However one key characteristic is the availability of '*expansive views over all the surrounding land, especially open to the west with views of large scale wind farms along the upland ridge of Waun Ddubarthog*'. However the wireframes from Viewpoints 32 and 34 in Appendix LVIA 4 show that from the eastern part of the LCA all the turbines would be small scale landscape elements and it is not clear if the turbines' presence is considered to be a positive or a negative characteristic. If it is the former then the introduction of any or all of the three wind farms in such views could be considered to enhance this key landscape characteristic. However reference to the cumulative ZTV map for these three wind farms in Appendix LVIA 3 Figures 11 and 21 shows that the three wind farms would only be visible from the more elevated parts of the LCA i.e. just over fifty percent.
- 8.2.28 The landscape assessment is Table 3.35 in Volume One of the February 2013 SEI (AD/VATT/018) concluded that either Llaithddu and/or Llandinam Repowering would only result in a negligible magnitude of landscape change mainly due to the

separation distance and the resultant small-scale of their turbines in western views. The closer proximity of Llanbadarn Fynydd Wind Farm and consequently the slightly larger scale of its turbines would generate a low magnitude of landscape change. Nevertheless as at the neighbouring LCA R9 it is assessed that were all three of these wind farms to operate simultaneously the magnitude of cumulative landscape change would not exceed low. This is verified by the two cumulative wireframes from Viewpoints 32 and 34 which indicate that the scale and length of the combined turbine array in western views would not make their presence a key landscape characteristic. None of the other key landscape characteristics would be affected by all three wind farms operating together.

8.2.29 LCA M32 Waun Ddubarthog. As this is the host for all the Llandinam Repowering Wind Farm's turbines and all but five of Llaithddu's turbines individually or together they would generate high magnitudes of landscape change across this LCA. The importance of the existing, smaller wind turbines in determining the key characteristics of the LCA is apparent in the title of the LCA. Once the existing Llandinam Wind Farm has been decommissioned and were neither Llaithddu or Llandinam Repowering permitted so that Llanbadarn Fynydd would be operating on its own, it would result in a low magnitude of landscape change due to its presence in eastern views given that the availability of 'dramatic views' is given as one of the LCA's visual and sensory characteristics.

8.2.30 Given the high magnitude of landscape change generated by Llaithddu and Llandinam Repowering Wind Farms the incremental effect of the introduction of Llanbadarn Fynydd Wind Farm could not further increase cumulative landscape effects and could not be significant.

8.3 Cumulative Landscape Effects - All SSA C Wind Farms and Single Turbines

Shropshire Hills AONB

8.3.1 The exercise described in Section 8.2 was repeated using the cumulative wireframes for all SSA C turbines at the eight selected cumulative viewpoints in the Shropshire Hills AONB. Under any scenarios in which Bryngydfa and/or Garreg Llwyd Wind Farms were operational, turbines at these wind farms would generally extend the

combined turbine array to the south and appear as larger turbines more proud above the western horizon. This would apply to the viewpoints in the closest Clun Forest part of the AONB as well as the viewpoints in the central parts.

8.3.2 Bryngydfa and Garreg Llwyd Wind Farms would consequently always play the largest incremental role of any of the SSA C wind farms in generating the cumulative magnitude of landscape change that would be experienced by the AONB. Turbines at Neuadd Goch and particularly those at Llanbadarn Fynydd would have a lesser role whilst those at Llaithddu, Llandinam and Hirddywel would usually make the lowest incremental contribution to cumulative landscape effects.

8.3.3 Nevertheless it is critical to emphasise that as shown in Table 8.1 even under a scenario where all seven SSA C wind farms are operational cumulative landscape effects upon the Shropshire Hills AONB would be not significant. It has to be noted that the eight cumulative viewpoints are not representative of the views that will be available from the AONB: they have been specially selected because they provide open and elevated views to the west and SSA C. It has already been demonstrated that any potential views at all for Llanbadarn Fynydd Wind Farm's turbines would be restricted to 8% of the AONB, consequently no cumulative landscape effects to which Llanbadarn Fynydd would be contributing could be experienced across 92% of the AONB.

8.3.4 The introduction of the Llanbadarn Fynydd Wind Farm's turbines would never increase the magnitude of cumulative landscape change and therefore the level of cumulative landscape effects upon the Shropshire Hills AONB. This would always be low and not significant and the AONB's key characteristics would remain as stated in the 2014-2019 Draft Management Plan (VATT/LAN/012).

LANDMAP VSAAs

8.3.5 The assessment of the incremental effects of the introduction of Llanbadarn Fynydd Wind Farm into a scenario where all the proposed wind farms in SSA C are operation is set out in the four right hand columns in Table 8.1. This shows that without the presence of turbines at Llanbadarn Fynydd I assess that cumulative landscape effects would be significant for 11 VSAA's or VSAA subareas as follows:

- MNTGMVS254 Kerry Ridgeway;

- MNTGMVS443 Waun Ddubarthog Wind Farm;
- RDNRVS110 Upland Moor, Beacon Hill and Gors Lydan;
- RDNRVS111 Upland Moor, Kerry Hills – all three AMEC sub-areas;
- RDNRVS114 Upland Moor West of Ithon;
- RDNRVS122 Improved Upland South of Kerry Hills- Central Sub-Area;
- RDNRVS123 Improved Upland West of Upper Ithon;
- RDNRVS128 Upland Valleys South of Kerry Hills – Gwenlas Sub-Area; and
- RDNRVS130 Ridge and Valley, Ithon Sides.

8.3.6 For all these VSAAs the introduction of Llanbadarn Fynydd would make a contribution to overall cumulative landscape effects but it would not make the difference between these effects being significant or not significant. However this situation would arise for sub-areas of two of the host VSAAs. These would be:

- RDNRVS122 Improved Upland South of Kerry Hills-Two Western Sub-Areas; and
- RDNRVS128 Upland Valleys South of Kerry Hills – Cwm Nant-ddu Sub-Area.

8.3.7 These two VSAAs would respectively sustain medium and low magnitudes of landscape change from the operation of the other six SSA C wind farms. As host VSAAs they would both sustain high magnitudes of landscape change as a result of the operation of Llanbadarn Fynydd Wind Farm. Consequently the incremental effect of the addition of Llanbadarn Fynydd under any potential combination of SSA C wind farms would be to raise cumulative landscape effects to significant in these two VSAA sub-areas.

LANDMAP Other VSAAs

8.3.8 As shown in the four right hand columns in Table 8.1 if all six SSA C wind farms were to be operational without Llanbadarn Fynydd Wind Farm significant effects would be experienced in four HLAAs: MNTGMHL124; RDNRHL121; RDNRHL613; and RDNRHL984 plus on CLAA: MNTGMCL017/RDNRCL023. This is partly because these aspect areas have been given a high overall evaluation in

their LANDMAP databases so when they sustain a medium magnitude of cumulative landscape change the resultant level of cumulative effects would be medium/high and therefore significant. At the two remaining CLAAAs: RDNRCL010 and RDNRCL024 the cumulative magnitude of landscape change for the other six SSA C wind farms has been assessed as low and consequently cumulative landscape effects without Llanbadarn Fynydd Wind Farm being operational will be not significant.

8.3.9 The assessments undertaken in Tables 3.24-3.30 in Volume One of the February 2013 SEI concluded that for all seven HLAAs and CLAAAs the introduction of Llanbadarn Fynydd's turbines to the scenario of all other SSA C wind farms being operational would never lead to an increase in the cumulative magnitude of landscape change. Consequently for RDNRCL010 and RDNRCL024 the cumulative magnitude of landscape change would remain low and not significant regardless of whether Llanbadarn Fynydd Wind Farm is operational. This lack of influence from Llanbadarn Fynydd Wind Farm is due to the absence of any direct effects as its turbines would always be located outside any of these HLAAs and CLAAAs. Indirect effects on HLAAs and CLAAAs are often difficult to quantify in respect to some of the key characteristics exhibited by these HLAAs and CLAAAs such as the presence of the River Ithon (RDNRCL010) or the 'high archaeological content' found on the Kerry Ridgeway (RDNRH121).

8.3.10 In conclusion for aspect areas other than visual and sensory aspect areas under the scenario in which all the SSA C wind farms are operational with 131 turbines, the introduction of the additional 17 turbines at Llanbadarn Fynydd would not incrementally 'tip the balance' making a previously not significant landscape effect into a significant landscape effect for any non-VSAA aspect area.

Powys LCAs

8.3.11 A review of Tables 3.31-3.36 in Volume One of the February 2013 SEI (AD/VATT/018) has led to one amendment being made which is incorporated in the summary in Table 8.1. This refers to LCA R9 where the magnitude of cumulative landscape change for all SSA C wind farms without Llanbadarn Fynydd Wind Farm has been increased from medium to high. This is to fully take account of the fact that LCA R9 will be the host LCA for all 35 of the Bryngydfa and Garreg Llwyd Wind Farms' turbines. Under the scenario of the other six SSA C wind farms being

operational significant cumulative landscape effects will be sustained by three LCAs: LCA M29; LCA R18 and LCA M32. This conclusion remains the same once the turbines at Llanbadarn Fynydd are added to this scenario.

- 8.3.12 With regard to the incremental role that could be played by the introduction of the Llanbadarn Fynydd turbines the same principal line of argument as was set out in Section 8.3.9 above would apply. This is that in a scenario where there would be 131 turbines with a blade tip height of at least 99.5 m operating in SSA C, the introduction of an additional 17 turbines at Llanbadarn Fynydd would be unlikely to incrementally raise the cumulative magnitude of landscape change from low to medium or medium to high thereby potentially making it significant. The LCAs with the greatest potential would be those hosting the Llanbadarn Fynydd turbines which are mainly LCA R18 with one turbine in LCA M29. However as these LCAs would already be sustaining significant cumulative effects as a consequence of either hosting other wind farms' turbines or the close proximity of a large proportion of the 131 turbines they would already be sustaining significant cumulative landscape effects so the introduction of Llanbadarn Fynydd's turbines would not make the difference between cumulative landscape effects being significant or not significant.

8.4 Summary

- 8.4.1 Firstly it should be reiterated that when TAN 8 introduced the concept of Strategic Search Areas there was an implicit assumption that within the SSAs themselves significant cumulative landscape effects would be inevitably be generated but that these effects would be acceptable.
- 8.4.2 With regard to landscape designations the cumulative landscape assessment concludes that the operation of Llanbadarn Fynydd Wind Farm would not lead to an incremental increase in cumulative landscape effects upon the Shropshire Hills AONB under any scenario. The integrity and key attributes of the AONB would be retained.
- 8.4.3 The cumulative landscape assessment that was undertaken in the SEI and which has been expanded upon in this Proof shows that under the scenario of Llaithddu and Llandinam Repowering Wind Farms operating alone on the western side of the Ithon Valley significant landscape effects would be sustained by three VSAs; three HLAs or CLAs; and two Powys LCAs. The addition of Llanbadarn Fynydd Wind

Farm would increase the numbers of landscape receptors that would sustain significant cumulative landscape effects by a further five VSAs and one HLAA. These are the VSAs where Llanbadarn Fynydd Wind Farm would have a significant incremental would be located on the eastern side of the Ithon Valley. They would therefore extend the geographic spread of the significant cumulative landscape effects. However in mitigation these additional VSAs are all host VSAs for Llanbadarn Fynydd Wind Farm. Consequently it would be expected that the presence of Llanbadarn Fynydd Wind Farm's turbines would make the difference between cumulative landscape effects being not significant and significant. Also in attempting to allow the landscape assessment to overcome some of the differences associated with large or multi-part VSAs AMEC sub-divided Llanbadarn Fynydd Wind Farm's three host VSAs into nine sub-areas. All five of the addition significantly affected VSAs are more geographically compact AMEC sub-areas.

8.4.4 Under the scenario where all the proposed SSA C wind farms are operational the scope for the cumulative incremental landscape effects generated by Llanbadarn Fynydd to be incrementally significant would be considerably reduced. At the same time the total number of significantly affected landscape receptors would increase to 20: 11 VSAs; five HLAs or CLAs; and four Powys LCAs, with a commensurate increase in geographical spread, primarily to the east of the Ithon Valley due to the influence of the turbines at Bryngydfa, Garreg Llwyd and Neuadd Goch Bank Wind Farms. Conversely in this cumulative scenario the number of LANDMAP aspect areas and Powys LCAs where turbines at Llanbadarn Fynydd would make the largest incremental contribution to cumulative effects would decrease to just two VSAs. These would be the geographically compact VSA subdivisions of two of the three host VSAs extending over the Cwm Nant-ddu Valley and the two western sub-areas of RDNRVS122 Improved Upland South of Kerry Hills which would host the majority of the Llanbadarn Fynydd Wind Farm's turbines.

8.4.5 At a more descriptive level the cumulative landscape assessment concludes that there would not be a widespread perception that the upper Ithon Valley had become an extensive wind farm landscape from Waun Ddubarthog in the west to Deuddwr Brook Valley south of Felindre in the east. Instead it is more likely that the public perception will be that two moderate sized areas to the east and west of the Ithon Valley will emerge in which there will be landscapes within approximately 1 km of any turbine in

which wind farms are dominant or co-dominant landscape elements along with topography and landcover. Such landscapes are sometimes referred to as 'wind farm landscapes' and with regard to the SSA C wind farms they would be set back from the top of the sides of the Ithon Valley.

8.4.6 These areas will be usually be surrounded by a landscape type or landscape types within which the turbines would be prominent landscape elements along with other key landscape characteristics. These key characteristics could be physical such as field boundary patterns or the presence of tributary valleys and intervening ridgelines or relate to sensory and perceptual characteristics such as a sense of openness or exposure or the availability of long distance views. The geographical extent of these areas where turbines would be a key landscape characteristic would vary in accordance with landcover types and in particular with topography. It is important to note that with regard to Llanbadarn Fynydd and potential cumulative landscape effects with wind farms proposed on the eastern side of the Ithon Valley these landscape types would be unlikely to extend into many of the nearby valleys where the overwhelming majority of residential properties are located along with the main roads. Hence the upper section of the Teme Valley would be excluded as would the Ithon Valley itself. The latter's topography aided by the generally good levels of tree cover on its steeper eastern side and in the hedgerows on the more gentle slopes on its western side would strongly reduce the presence of the turbines at all the SSA C wind farms in the upper Ithon Valley. In the bottom of the upper Valley the key landscape characteristics, aside from the aforementioned topography and tree cover, would remain the River itself and the A483. A review of the cumulative ZTVs within the upper Ithon Valley as shown in Figure 3.109 in Volume Two of the SEI (AD/VATT/018C) provides confirmation that the potential landscape role for the turbines in the bottom of the Ithon Valley would be limited.

8.4.7 Consequently it is assessed that significant cumulative landscape effects in which turbines at Llanbadarn Fynydd Wind Farm would have an incremental role would generally be restricted to the upland areas on the eastern and western sides of the upper Ithon Valley and the southern side of the western end of the Kerry Ridgeway. Under the scenario of Llanbadarn Fynydd operating with one or both of Llaithddu and Llandinam Repowering Wind Farms Llanbadarn Fynydd would only make a significant incremental contribution to cumulative landscape effects on the western

side of the Ithon Valley. Under the scenario of Llanbadarn Fynydd operating with all the other SSA C wind farms, any significant incremental contributions to cumulative landscape effects would be restricted to the wind farm site itself and its immediate surrounding environs.

9. Cumulative Visual Effects

9.1 Introduction

- 9.1.1 The assessment of cumulative effects utilises the cumulative visual assessments undertaken at 53 cumulative viewpoints in the February 2013 SEI (AD/VATT/018). Cumulative wireframes for the assessed cumulative scenarios from these viewpoints are included in Appendix LVIA 4 and their locations are shown on the three figures at the front of the Appendix. The 53 viewpoints include the original 21 viewpoints used in the 2007 LVIA supplemented by a selection of the viewpoints that were used in the LVIAs prepared for the other six SSA C wind farm LVIAs. The viewpoint assessments were set out in Tables 3.37-3.89 in Volume One of the February 2013 SEI (AD/VATT/018). These have been amalgamated into a single table for the Proof. This is Table 9.1 and the opportunity has been undertaken to add an assessment of the cumulative visual effects with just Llaithddu and Llandinam Repowering Wind Farms as opposed to Hirddywel, Llaithddu and Llandinam Wind Farms which were combined together as 'Group2 wind farms' in the SEI.
- 9.1.2 All the relevant photomontage and wireframe visualisations prepared for the February 2013 SEI have been amended to account for the layout changes undertaken at Llaithddu and Llandinam Repowering Wind Farms subsequent to the submission of the Llanbadarn Fynydd SEI. The review of the amended visualisations has confirmed that the changes to the layouts at Llaithddu and Llanbadarn Repowering Wind Farms would not alter any of the assessments made in the individual cumulative viewpoint assessment tables.
- 9.1.3 The cumulative visual assessment does not rely just upon the cumulative viewpoint assessment but instead utilises the analysis that it contains to aid a consideration of the potential cumulative effects upon the full range of visual receptors that have been identified in the 2007 LVIA and the 2013 SEI. The visual receptors have been separated into five principal groups which reflects the approach adopted throughout the visual assessment and which is advocated in both the second and third editions of the GLVIA.

- 9.1.4 As shown in Table 9.1 Llanbadarn Fynydd Wind Farm operating on its own in SSA C would generate significant visual effects at 16 of the 53 cumulative viewpoints over a maximum separation distance of 4.4 km. Table 9.1 also shows that I assess that Llaithddu and Llandinam Repowering Wind Farms operating on their own would generate significant visual effects at eight cumulative viewpoints. This figure should not be interpreted as indicating that Llanbadarn Fynydd Wind Farm is more visually prominent than the Llaithddu and Llandinam Repowering Wind Farms would be. This arises because the selection of the 53 cumulative viewpoints had a natural bias towards viewpoints where Llanbadarn Fynydd Wind Farm would contribute relatively high magnitudes of visual change. As noted in Section 9.1.1, 21 of the cumulative viewpoints were from the 2007 LVIA (AD/VATT/003) and were selected under the ‘worst case’ principal from publicly accessible locations where one or more visual receptor groups were likely to have their most open views of the proposed Llanbadarn Fynydd Wind Farm. Also the need to select only cumulative viewpoints that are within the blade tip ZTV of Llanbadarn Fynydd Wind Farm introduces an inevitable bias into the selection process.
- 9.1.5 The remainder of the section on cumulative visual effects will follow a similar approach to the preceding cumulative landscape effects section by reviewing the results of the cumulative visual assessment for two cumulative scenarios: firstly for Llanbadarn Fynydd Wind Farm operating in association with the other two SSA C wind farms that have been included in Session One (Llaithddu and Llandinam Repowering); and secondly for Llanbadarn Fynydd Wind Farm operating in tandem with all six of the proposed SSA C wind farms. For each of these scenarios potential cumulative effects upon residential visual amenity have been assessed for the 62 residential properties or small groups of properties that are inhabitable and within the agreed 2.5 km offset.

Table 9.1 Summary of Cumulative Visual Effects at Cumulative Viewpoints

Viewpoint	Receptor Sensitivity	Distance to Nearest Llanbadarn Fynydd Turbine	Llanbadarn Fynydd		Llandinam Repowering and Llaithddu				Llandinam Repowering, Llaithddu and Hirddywel				Bryngydfa, Garreg Llwyd and Neuadd Goch Bank				All SSAC Wind Farms and Single Turbines			
			Magnitude of Visual Change	Significance of Non-cumulative Effect	Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd	
					Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd
1: High Point at Rhiw Porthnant	Medium, Low	0.9km	High	Significant	Low	Not Significant	High	Significant	Low	Not Significant	High	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
2: Minor Road 200m South of Rhos	High, Medium, Low	1.6km	High	Significant	None	n/a	High	n/a	None	n/a	n/a	n/a	Low	Not Significant	High	Significant	Low	Not Significant	High	Significant
3: Bryn Mawr Cottage	High, High, Low	1.6km	High	Significant	Negligible	Not Significant	High	Significant	Negligible	Not Significant	High	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
4: Fron Top	High, High, Low	1.8km	High	Significant	Low	Not Significant	High	Significant	Low	Not Significant	High	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
5: Properties on Minor Road North of Llanbadarn Fynydd	High, High, Low	1.8km	Medium	Significant	None	n/a	n/a	n/a	None	n/a	n/a	n/a	None	n/a	n/a	n/a	None	n/a	n/a	n/a
6: Gateway on A483 near Gwynant	Medium, Low	2.0km	Medium	Not Significant	Low	Not Significant	High	Significant	Low	Not Significant	High	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
7: Minor Road to West of Pen-y-cwm	Low	2.3km	Medium	Not Significant	Low	Not Significant	High	Not Significant	Low	Not Significant	High	Not Significant	Medium	Not Significant	High	Not Significant	Medium	Not Significant	High	Not Significant
8: Summit of Moel Dod	High, Medium	3.3km	Medium	Significant	Medium	Significant	High	Not Significant	Medium	Significant	High	Not Significant	Medium	Significant	High	Not Significant	High	Significant	High	Not Significant
9: Viewing Platform at Two Tumps on the Kerry Ridgeway	High, Medium	3.3km	Medium	Significant	Medium	Significant	High	Not Significant	Medium	Significant	High	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
10: Minor Road to Llandinam, near Bryndadley	High, Low	4.0km	Medium	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	Medium	Significant	High	Not Significant	High	Significant	High	Not Significant
11: Minor Road Above Moelfre City	High, Medium, Low	4.4km	Medium	Significant	Low	Not Significant	Medium	Significant	Low	Not Significant	Medium	Significant	Negligible	Not Significant	Medium	Significant	Low	Not Significant	Medium	Significant

Table 9.1 (continued) Summary of Cumulative Visual Effects at Cumulative Viewpoints

Viewpoint	Receptor Sensitivity	Distance to Nearest Llanbadarn Fynydd Turbine	Llanbadarn Fynydd		Llandinam Repowering and Llaithddu				Llandinam Repowering, Llaithddu and Hirddywel				Bryngydfa, Garreg Llwyd and Neuadd Goch Bank				All SSAC Wind Farms and Single Turbines			
			Magnitude of Visual Change	Significance of Non-cumulative Effect	Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd	
					Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd
12: Glyndwr's Way in the Vicinity of Ysgwd-ffordd	High	6.0km	Low	Not Significant	Low	Not Significant	Medium	Significant	Low	Not Significant	Medium	Significant	Low	Not Significant	Medium	Significant	Medium	Significant	Medium	Not Significant
13: Glyndwr's Way above Cefn Pawl	High	6.1km	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
14: High Point on Minor Road Near Bronllys	High, Medium, Low	6.4km	Low	Not Significant	Low	Not Significant	Medium	Significant	Low	Not Significant	Medium	Significant	Low	Not Significant	Medium	Significant	Medium	Significant	Medium	Not Significant
15: Kerry Ridgeway North-west of Anchor	High, High, Low	7.6km	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant
16: Near Crossroads Two Miles South of Anchor	Low	7.8km	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Medium	Not Significant	Medium	Not Significant	Medium	Not Significant	Medium	Not Significant
17: Barn Conversions at Bryn Helig	High, High, Low	8.4km	Negligible	Not Significant	None	n/a	n/a	n/a	None	n/a	n/a	n/a	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant
18: Entrance to Caravan Park at Ty'n-y-cwm	High, Medium, Low	14.6km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant
19: Track Above Cefn-y-bryn	High, Medium, Low	15.4km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant
20: Bridleway Above Bwlch-llwyn Bank	Medium	20.2km	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant
21: A483 Layby South of Camnant Bridge	Low	0.5km	High	Not Significant	None	n/a	n/a	n/a	None	n/a	n/a	n/a	High	Not Significant	High	Not Significant	High	Not Significant	High	Not Significant

Table 9.1 (continued) Summary of Cumulative Visual Effects at Cumulative Viewpoints

Viewpoint	Receptor Sensitivity	Distance to Nearest Llanbadarn Fynydd Turbine	Llanbadarn Fynydd		Llandinam Repowering and Llaithddu				Llandinam Repowering, Llaithddu and Hirddywel				Bryngydfa, Garreg Llwyd and Neuadd Goch Bank				All SSAC Wind Farms and Single Turbines			
			Magnitude of Visual Change	Significance of Non-cumulative Effect	Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd	
					Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd
22: Minor Road North of Llanbadarn Fynydd	Low	0.7km	High	Not Significant	Negligible	Not Significant	High	Not Significant	Negligible	Not Significant	High	Not Significant	High	Not Significant	High	Not Significant	High	Not Significant	High	Not Significant
23: Cilfaesty Common	Medium, Low	1.6km	High	Significant	Medium	Not Significant	High	Significant	Medium	Not Significant	High	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
24: North of Llaethdy	High, Medium, Low	1.9km	High	Significant	None	n/a	n/a	n/a	None	n/a	n/a	n/a	Medium	Significant	High	Not Significant	Medium	Significant	High	Not Significant
25: Footpath North-east of Devil's Elbow	Medium	2.4km	High	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
26: Kerry Ridgeway, Cider House	High, High, Low	2.6km	Medium	Significant	Medium	Significant	High	Not Significant	Medium	Significant	High	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
27: Glog Hill	Medium	2.9km	High	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
28: Minor Road Near Ddullui Bank	High, Low	3.0km	High	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	Medium	Significant	High	Not Significant	High	Significant	High	Not Significant
29: Bridleway, Black Gate	Medium, Low	3.0km	Medium	Not Significant	Medium	Not Significant	High	Significant	Medium	Not Significant	High	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
30: Minor Road North of David's Well	High, Low	3.7km	Low	Not Significant	High	Not Significant	High	Not Significant	High	Not Significant	High	Not Significant	Low	Significant	Low	Not Significant	High	Significant	High	Not Significant
31: Minor Road Near Gwyrhyd	High, Low	3.9km	Medium	Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
32: Black Mountain	High, Medium	6.4km	Low	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	High	Significant	High	Not Significant	High	Significant	High	Not Significant
33: B4356 Between Llanbister and Crug	High, Medium, Low	6.9km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant
34: Access Land at Beacon Hill	Medium	8.0km	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Medium	Significant	Medium	Not Significant	High	Significant	High	Not Significant
35: Bettws-crwyn	High, Low	9.3km	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant

Table 9.1 (continued) Summary of Cumulative Visual Effects at Cumulative Viewpoints

Viewpoint	Receptor Sensitivity	Distance to Nearest Llanbadarn Fynydd Turbine	Llanbadarn Fynydd		Llandinam Repowering and Llaithddu				Llandinam Repowering, Llaithddu and Hirddywel				Bryngydfa, Garreg Llwyd and Neuadd Goch Bank				All SSAC Wind Farms and Single Turbines			
			Magnitude of Visual Change	Significance of Non-cumulative Effect	Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd	
					Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd
36: Kerry Ridgeway Picnic Area	High, Medium, Low	10.0km	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Medium	Significant	Medium	Not Significant	Medium	Significant	Medium	Not Significant
37: Dolforwyn Castle	High, Medium	13.6km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant
38: Two Crosses	High, Low	13.9km	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant
39: Offa's Dyke Path Near Llanfair Hill	High, High	14.5km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant
40: Footpath on the North Side of Garreg Llwyd	Medium	16.3km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant
41: Shropshire Way, North of Bicton	High	16.8km	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant
42: Llandrindod Wells	High, Low	17.6km	Negligible	Not Significant	None	n/a	n/a	n/a	None	n/a	n/a	n/a	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant
43: Garreg Hir	Medium	18.1km	Low	Not Significant	Medium	Not Significant	Medium	Not Significant	Medium	Not Significant	Medium	Not Significant	Low	Not Significant	Low	Not Significant	Medium	Not Significant	Medium	Not Significant
44: Great Rhos	Medium	18.3km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant
45: B4389 Near Belan Deg	High, Low	20.4km	Negligible	Not Significant	Low	Not Significant	Low	Low	Low	Not Significant	Low	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant
46: B4389 Near Carn Gafallt	Medium	20.9km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant
47: Access Land at Carno Wind Farm	Medium	21.6km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant
48: A490 at Cilcewydd	High, Low	24.6km	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant
49: Bryn y Fedwen	High, Medium, Low	27.8km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant

Table 9.1 (continued) Summary of Cumulative Visual Effects at Cumulative Viewpoints

Viewpoint	Receptor Sensitivity	Distance to Nearest Llanbadarn Fynydd Turbine	Llanbadarn Fynydd		Llandinam Repowering and Llaithddu				Llandinam Repowering, Llaithddu and Hirddywel				Bryngydfa, Garreg Llwyd and Neuadd Goch Bank				All SSAC Wind Farms and Single Turbines			
			Magnitude of Visual Change	Significance of Non-cumulative Effect	Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd		Without Llanbadarn Fynydd		With Llanbadarn Fynydd	
					Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd	Magnitude of Visual Change	Significance of Cumulative Effect	Magnitude of Visual Change	Significance of Incremental Effect of Llanbadarn Fynydd
50: Glyndwr's Way near Llanbrynmair	High	30.0km	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	n/a	n/a	n/a	n/a	Negligible	Not Significant	Negligible	Not Significant
51: Pumlumon Fawr	Medium	30.5km	Negligible	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Low	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Low	Not Significant	Low	Not Significant
52: Long Mynd	Medium	30.9km	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant
53: Shropshire Way, Long Mynd	High, High	31.5km	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant	Negligible	Not Significant

9.2 Llandinam Repowering and Llaithddu Only

Introduction

- 9.2.1 The cumulative ZTVs that are of relevance to this section are shown in Figures 16-21 in Appendix LVIA 3. There would be four cumulative viewpoints from where no turbines at either Llaithddu or Llandinam Wind Farms would be visible to visual receptors. These would be Cumulative Viewpoints 2, 5²⁵, 17 and 21. The absence of any turbines at Llaithddu and Llandinam Repowering Wind Farms is due to the rising ground to immediate west or south of these viewpoints, of which all except Cumulative Viewpoint 17 are close to the bottom of the Ithon Valley.
- 9.2.2 The cumulative visual assessment in the February 2013 SEI concluded that the incremental effect of the presence of Llanbadarn Fynydd Wind Farm would be sufficient to make cumulative visual effects significant for visual receptors sited close to that cumulative viewpoint at nine cumulative viewpoints. These would be Cumulative Viewpoints 1; 3; 4; 6; 11; 12; 14; 23 and 29.

Visual Receptors in Settlements

- 9.2.3 Reference to the cumulative blade tip ZTV for Llanbadarn Fynydd, Llaithddu and Llandinam Repowering in Figures 20 and 21 in Appendix LVIA 3 shows that the village of Llanbadarn Fynydd is the only settlement in the 11.5km radius detailed study area where turbines at Llanbadarn Fynydd Wind Farm could make a contribution to the cumulative visual effects potentially sustained by residential visual receptors in their properties and gardens or moving around their settlement. The cumulative ZTV in Figure 21 indicates that some Llaithddu turbines should be visible from the centre of the village and that turbines at all three wind farms should be visible from around the New Inn. Nearby tree cover is likely to ensure that this situation would not arise in reality.
- 9.2.4 It is assessed that in any cumulative views available to Llanbadarn Fynydd's residents under this cumulative scenario Llanbadarn Fynydd Wind Farm's turbines would always make the largest incremental contribution to cumulative visual effects. The

²⁵ The cumulative wireframes produced from Viewpoint 5 in Appendix LVIA 4 do show that two upper blade tips of Llaithddu turbines would potentially be visible low above the western horizon but in reality these would be almost certain to be screened by the relatively high levels of tree cover within and around the village of Llanbadarn Fynydd.

turbines at Llaithddu would make the second largest incremental contribution but cumulative visual effects would not be significant for Llanbadarn Fynydd's residents.

- 9.2.5 Nevertheless as shown in the cumulative blade tip ZTVs in Figures 16-21 in Appendix LVIA 3 under this cumulative scenario there would be several settlements where turbines from Llaithddu and/or Llandinam Repowering Wind Farms would potentially be visible to residential visual receptors with no incremental contribution from Llanbadarn Fynydd's turbines. In the detailed study area these settlements would include Dolfor, Pentre, Mochdre, Bwlch-y-Sarnau, Llanbister, the western half of Llandinam and most of Newtown.

Visual Receptors in Isolated Residential Properties

- 9.2.6 As the Llanbadarn Fynydd Wind Farm's visual assessment has concentrated upon residential visual receptors in properties within a 2.5 km offset around any of the Wind Farm's turbines there is once again an inherent bias towards residential visual receptors for whom Llanbadarn Fynydd's turbines would be likely to make the greatest incremental contribution to cumulative visual effects. This is particularly true for residential visual receptors in properties located on the eastern side of the Ithon Valley. Reference to the cumulative ZTV in Figure 21 of Appendix LVIA 3 shows that neither Llaithddu nor Llandinam Repowering Wind Farms' turbines could contribute to cumulative visual effects for residential visual receptors in the Gwenlas Valley or the upper Teme Valley. Indeed under this scenario these residents would experience no cumulative visual effects.

- 9.2.7 Many residential properties on the western side of the Ithon Valley are also closer to Llanbadarn Fynydd's turbines than they are to the turbines at either Llaithddu or Llandinam Repowering. In addition the site visits and details set out in Appendix LVIA 2 for the 69 properties within 2.5 km of Llanbadarn Fynydd's turbines show that many of these properties are located with an east-facing aspect and are orientated to have their main elevation facing across the Ithon Valley. Some of those properties located towards the bottom of the Ithon Valley have rising topography to the immediate west which foreshortens their residents' western views towards Llaithddu and Llandinam Repowering. Examples of this situation would arise at Esgairdraenllwyn (property No.10) regardless of the high level of tree cover to the immediate west of this property. Local topographic variation would ensure that

residents at some properties on the lower western side could potentially have views of a proportion of the turbines at Llaithddu and Llandinam Repowering Wind Farms with Crochan (property 14) being a good example.

- 9.2.8 A reversal of these conditions could apply on the eastern side of the Ithon Valley and the ZTVs in Figure 21 in Appendix LVIA 3 show that at the base of the steep eastern valley side only turbines at Llaithddu and/or Llandinam Repowering would be visible but there are no properties in this linear fragment of the cumulative ZTV. The cumulative visual situation at Hafod Fach (property no. 11) is the closest example of this cumulative visual situation as shown in the wireframe in Appendix LVIA 2 in which 19 Llaithddu and Llandinam Repowering turbines could be at least partly visible above a section of the western horizon. Nevertheless in all these properties the turbines at Llanbadarn Fynydd Wind Farm would make the largest incremental contribution to cumulative visual effects for these residential visual receptors.
- 9.2.9 Further up the gently sloping, western sides of the Ithon Valley there are seven residential properties to the north of Pen-y-Cwm Bridge whose residents would potentially have more extensive views of the Llaithddu and Llandinam Repowering turbines due to their slightly increased elevation and increased proximity. These are properties No.s 12, 13, 60-64. However the detailed information for these properties that is contained in Appendix LVIA 2 shows that their residents' western views are often screened, or at least filtered, by nearby mature tree cover, often associated with the dense parkland tree cover associated with Penithon Hall (property No.12). Hence the cumulative visual assessment concludes that for residential visual receptors at these properties the turbines at Llanbadarn Fynydd Wind Farm would make the largest incremental contribution to any cumulative visual effects under this scenario.
- 9.2.10 Different local factors influence the cumulative visual effects that could be sustained by residents of four properties to the south of Pen-y-Cwm Bridge. These are property No.s 56-59, three of whose residents have been assessed as sustaining significant visual effects from the operation of Llanbadarn Fynydd Wind Farm on its own. These properties are located on the short east-facing slopes of the small valley formed by Llaithddy Brook which ensures that they have rising ground to their immediate west. As shown on the cumulative blade tip ZTV in Figure 21 in Appendix LVIA 3 this compact area is outside the blade tip ZTV for the Llaithddu and Llandinam Repowering Wind Farms, hence their turbines could make no contribution and there

would be no cumulative visual effects under this scenario. The cumulative ZTV in Figure 21 in Appendix LVIA 3 shows that a similar situation would prevent any potential cumulative visual effects under this scenario for residential visual receptors at Rhos Farm and Rhos Bungalow (property No.s 54 and 55).

- 9.2.11 A review of the cumulative ZTVs that are shown in Figures 16-21 in Appendix LVIA 3 shows that aside from the 62 inhabited properties in the 2.5 km offset from Llanbadarn Fynydd Wind Farm's turbines, there would be only a few more distant isolated residential properties where turbines at Llanbadarn Fynydd Wind Farm could make any incremental contribution to the cumulative visual effects potentially experienced by their residents. These are likely to be restricted to residents in a few properties to the west of Stepaside which is west of Newtown and a few properties on west-facing slopes in the Black Mountain area of the Clun Forest in Shropshire both of which small groups are sited a minimum of 7 km away from the closest Llanbadarn Fynydd turbine.
- 9.2.12 In contrast the cumulative ZTV in Figure 21 in Appendix LVIA 3 shows that the ZTVs for Llaithddu and Llanbadarn Fynydd Wind Farms are more extensive. Consequently they include a considerable number of isolated residential properties on the north-facing slopes down to the Severn Valley and the lower lying area to the west of the Waun Ddubarthog Ridge for whom Llanbadarn Fynydd Wind Farm could make no contribution to cumulative visual effects.

Visual Receptors using National and Regional Trails

- 9.2.13 A full consideration of the cumulative sequential visual effects upon the recreational visual receptors following Glyndwr's Way will form part of Session Four. Nevertheless I have included a brief review of the relative cumulative contributions of the three wind farms included under this scenario for the three sections of Glyndwr's Way that are partially located within the Llanbadarn Fynydd Wind Farm's blade tip ZTV. As shown in the series of cumulative wireframes that are shown in Appendix LVIA 6 from locations along these sections of Glyndwr's Way and in the analysis contained in Section 3.8.2 of Volume One of the February 2013 SEI (AD/VATT/018) the turbines at Llaithddu and Llandinam Repowering would only make intermittent contributions to the not significant cumulative visual effects that would be experienced by recreational visual receptors on Section 2 of Glyndwr's

Way. As shown in the cumulative wireframes from Viewpoints 13, 32 and 34 contained in Appendix LVIA 4 in western views from some elevated lengths although Llanbadarn Fynydd Wind Farm's turbines would be closer and therefore larger visual elements, the turbines at Llaithddu and Llandinam Repowering Wind Farms will be more numerous, have longer arrays and often be sited right on the horizon as opposed to slightly below for Llanbadarn Fynydd's turbines. Hence it is assessed that Llanbadarn Fynydd and Llandinam Repowering Wind Farms would generate approximately equal incremental contributions to cumulative visual effects for these recreational visual receptors. The incremental contribution of Llaithddu Wind Farm is assessed as being lower. The cumulative ZTV in Figure 21 of Appendix LVIA 3 shows that turbines at all three wind farms would be visible from the same elevated lengths of this section of the Way.

- 9.2.14 The cumulative ZTV in Figure 21 of Appendix LVIA 3 shows that along Section Three from Felindre to Llanbadarn Fynydd the turbines at Llanbadarn Fynydd Wind Farm would theoretically only be visible on their own for the short length of the Way that is routed in and out of the upper Gwenlas Valley. For the remainder of this section turbines at all three wind farms should make a contribution to the recreational receptors' cumulative visual effects. A review of the wireframes produced from locations 8-15 along Section 3 as shown in Appendix LVIA 6 shows that due to their proximity the turbines at Llanbadarn Fynydd will consistently make the largest incremental contribution to cumulative visual effects along Section 3. This is only to be expected because as previously assessed the operation of Llanbadarn Fynydd Wind Farm on its own has been assessed as generating significant effects in its own right for recreational receptors walking Section 3 of the Way. These assessments can be verified by reference to the cumulative photomontage prepared for this scenario from Fron Top that is shown in Figures 3a and 3b in Appendix LVIA 5.
- 9.2.15 On Section 4 it is assessed that the incremental roles played by the three wind farms would become similar as the route of the Way climbs out of the Ithon Valley. This can be shown in the cumulative photomontage prepared for this scenario from the summit of Moel Dod that is shown in Figures 8a and 8b in Appendix LVIA 5. For the generally elevated section south of Moel Dod the relative incremental roles of the turbines at the three wind farms would vary depending on screening from local topography until the route of the Way descends south-westwards at Ysgwd-ffordd.

From this point onwards Llanbadarn Fynydd's turbines would cease to make any further incremental contributions for recreational visual receptors on Section 4. Indeed from this point onwards Llanbadarn Fynydd's turbines would cease to make any further incremental contributions to cumulative visual effects for the remainder of the Way.

- 9.2.16 The only regional trail where there would be potential for the operation of Llanbadarn Fynydd Wind Farm to make a large contribution to cumulative visual effects would be along the western part of the Kerry Ridgeway. A review of the relevant blade tip ZTVs in Appendix LVIA 3 shows that there would be a couple of short lengths of the Ridgeway where Llanbadarn Fynydd's turbines could be seen in isolation under this scenario. Lengths of the Ridgeway where turbines at Llaithddu and/or Llandinam Repowering could potentially be seen without turbines at Llanbadarn Fynydd account for longer lengths, particularly on Kerry Hill itself. Reference to Table 3.45 in Volume One of the February 2013 SEI (AD/VATT/018) and Table 9.1 for the cumulative viewpoint at Two Tumps shows that the incremental contribution of Llanbadarn Fynydd and Llaithddu and Llandinam Wind Farms has been assessed as the same. It is relevant to note that significant visual effects would be generated by Llanbadarn Fynydd Wind Farm operating alone and by Llaithddu and Llandinam operating together. These significant cumulative visual effects would be restricted to the westernmost 2 km of the Ridgeway.

Visual Receptors using local PRowS

- 9.2.17 The caveats concerning the ease with which recreational visual receptors can identify and follow many of the PRowS around the Llanbadarn Fynydd application site and on both sides of the upper Ithon Valley in general as summarised on Figure 10 in this Proof should be borne in mind for this group of visual receptors. The cumulative visual effects that would be sustained by the limited number of recreational visual receptors using these PRowS would be similar to those outlined for residential visual receptors in subsections 9.2.6-10. These can be summarised as:
- Due to their proximity Llanbadarn Fynydd Wind Farm's turbines would always make the largest incremental contribution for recreational visual receptors using

any elevated PRow located between the Ithon Valley as far east as the Deuddwr Valley²⁶;

- Further to the east e.g. on Black Mountain and Beacon Hill (Cumulative Viewpoints 32 and 34 in Appendix LVIA 4) there would be no significant cumulative visual effects with Turbines at Llaithddu and Llanbadarn Fynydd resulting in low magnitudes of visual change;
- On the immediate west side of the Ithon Valley, separation distances, aspect and the screening would ensure that Llanbadarn Fynydd's turbines would usually make a larger incremental contribution to cumulative visual effects than either Llaithddu or Llandinam Repowering. For PRowS routed further to the west this situation begins to change due to decreasing separation distances from Llaithddu and Llandinam Repowering turbines and the corresponding reduction in the visual effectiveness of the shelterbelts and other tree cover. Conversely Llanbadarn Fynydd's turbines become more distant and more susceptible to screening. A number of PRowS converge around Ddullui Bank close to the site of cumulative photomontage 4 with this scenario shown in Figures 18a-18d in Appendix LVIA 5. This cumulative photomontage shows that for recreational visual receptors using PRowS in this area Llanbadarn Fynydd's turbines would make a lesser incremental contribution to cumulative visual effects than the turbines at either Llaithddu or Llandinam Repowering Wind Farms;
- Llanbadarn Fynydd would be the only one of these three wind farms that would impact upon the views of recreational visual receptors using PRowS in the Gwenlas Valley; the section of the Ithon Valley south of the village of Llanbadarn Fynydd; and the area on the west side of the Ithon Valley around Dolaucwmffrwd. In contrast Llanbadarn Fynydd wind Farm's turbines could make no incremental contribution to the effects from Llaithddu and/or Llandinam Repowering Wind Farms on users of PRowS in the extensive areas listed in 9.2.12.

Visual Receptors Using Local Roads

9.2.18 Sequential visual effects on road users (or vehicular visual receptors) travelling on the 'A' roads will be addressed in Session 4. The same broad conclusions about the

²⁶ This is the tributary valley of the Teme Valley that runs south from Felindre.

incremental role that would be played by Llanbadarn Fynydd's turbines in comparison with those at Llaithddu and Llandinam that have been outlined above for recreational visual receptors on local PRowS and residential visual receptors in nearby properties will apply to this group of visual receptors.

9.3 Cumulative Residential Visual Amenity

9.3.1 This component of the cumulative assessment considers the potential for residents in isolated properties to sustain an increase in effects upon their residential visual amenity as a consequence of Llanbadarn Fynydd Wind Farm operating in tandem with Llaithddu and/or Llandinam Wind Farms as opposed to on its own. The latter situation has already been assessed in detail in Section 7 of this Proof.

9.3.2 The assessment has been confined to the same properties as for the main residential visual amenity assessment i.e. all residential properties within 2.5 km of any of the Llanbadarn Fynydd turbines. As a consequence there is a strong likelihood that Llanbadarn Fynydd's turbines will make the largest incremental contribution to any effects upon cumulative residential visual amenity of these properties. Nevertheless consideration needs to be given to the potential for the introduction of Llaithddu and/or Llandinam Repowering Wind Farms to increase the level of effects upon residential visual amenity by one or more categories e.g. from slight/moderate to moderate. Given that there would be minimum separation distances of 4.6 km between any Llanbadarn Fynydd Turbine and any Llaithddu or Llandinam Repowering turbine, even a property on the west of the 2.5 km offset from Llanbadarn Fynydd would be at least 2.1 km from a Llaithddu or a Llandinam Repowering turbine. Hence it would be highly unlikely that a Llaithddu or a Llandinam Repowering turbine could be considered to be 'overbearing'. However given the linear layouts of the Llaithddu and Llandinam Repowering turbine arrays the question needs to be addressed of the potential for their operation to result in a sense of being surrounded by the cumulative turbine array for residents at some properties.

9.3.3 The assessment has been undertaken using the cumulative wireframes produced for each property that are contained in Appendix LVIA 7 and with reference to the property information sheets that are included in Appendix LVIA 2. Only the 24 properties whose residents were assessed as potentially sustaining a slight/moderate or

above level of effect upon their residential visual amenity in the main assessment were taken forward into the cumulative residential visual amenity assessment. This is because an incremental cumulative increase upon a negligible or slight initial level of effect upon residential visual amenity would not potentially lead to 'unsatisfactory living conditions' arising at that property. The results of the cumulative residential visual amenity assessment are summarised in Table 9.2.

Table 9.2 Review of Potential Cumulative Effects upon Residential Visual Amenity at Selected Properties within 2.5 km of Llanbadarn Fynydd Wind Farm

Property ID and Name	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd Wind Farm Operating Alone	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd, Llaithddu and Llandinam Repowering Wind Farms Operating Together	Wind Farm Making the Largest Incremental Contribution	Rationale	Effect Upon Residential Visual Amenity from All SSA C Wind Farms and Single Turbines	Wind Farm Making the Largest Incremental Contribution	Rationale
1) Butterwell	Moderate	Moderate	Llanbadarn Fynydd	Turbines at Llandinam Repowering would not be seen from Butterwell because of rising topography. The eight turbines at the southern end of the Llaithddu array would be small scale minor element along an array of ~8° at a separation distance of over 7.5km.	Moderate/Substantial	Llanbadarn Fynydd	Llanbadarn Fynydd has longest array of ~75° and although Neuadd Goch Bank has one turbine within 1km rising topography of Carn Bryn-llwyd screens views from the property to that turbine and all but two of the Neuadd Goch Bank turbines.
2) Blaen-nant-du	Moderate/Substantial	Moderate/Substantial	Llanbadarn Fynydd	Turbines at Llandinam Repowering would not be seen from Blaen-nant-du because of rising topography. 12 turbines at the southern end of the Llaithddu array would be a small scale minor element along an array of ~15° at a separation distance of over 7km, although views to them are highly likely to be screened by an intervening agricultural building.	Moderate/Substantial	Llanbadarn Fynydd	No turbines from schemes other than Llanbadarn Fynydd and Llaithddu would be visible from Blaen-nant-du due to screening by intervening landform.
3) Springfield	Moderate/Substantial	Moderate/Substantial	Llanbadarn Fynydd	Turbines at Llandinam Repowering would not be seen from Springfield because of rising topography. Eleven turbines at the southern end of the Llaithddu array would be a small scale minor element along an array of ~14° at a separation distance of ~7km, although views to them are unlikely from windows on the house due to the angle of view and partial screening from a belt of conifers.	Moderate/Substantial	Llanbadarn Fynydd	Llanbadarn Fynydd has the longest array of ~160°. Rising landform to the north, east and south-east will screen all but the blade-tip of a single turbine at each of Neuadd Goch Bank, Bryngydfa and Garreg Llwyd Wind Farms.
4) Garn and Garn Cottage	Moderate/Substantial	Moderate/Substantial	Llanbadarn Fynydd	Turbines at Llandinam Repowering would not be seen from Garn and its Cottage because of rising topography. The eight turbines at the southern end of the Llaithddu array would be a small scale minor element along an array of ~10° at a separation distance of ~6km, although they views to them are highly likely to be screened by an intervening agricultural building.	Moderate/Substantial	Llanbadarn Fynydd	Llanbadarn Fynydd has the longest array of ~230° and will include the closest visible turbines to Garn and Garn Cottage. In addition to Llanbadarn Fynydd and Llandinam some blade tips of Neuadd Goch Bank and blade-tips and hubs of Bryngydfa and Garreg Llwyd Wind Farms would be glimpsed above the ridges to the north-east and south-east but would be minor, low-level elements in comparison with the Llanbadarn Fynydd turbines.

Table 9.2 (continued) Review of Potential Cumulative Effects upon Residential Visual Amenity at Selected Properties within 2.5 km of Llanbadarn Fynydd Wind Farm

Property ID and Name	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd Wind Farm Operating Alone	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd, Llaithddu and Llandinam Repowering Wind Farms Operating Together	Wind Farm Making the Largest Incremental Contribution	Rationale	Effect Upon Residential Visual Amenity from All SSA C Wind Farms and Single Turbines	Wind Farm Making the Largest Incremental Contribution	Rationale
5) Lower Foel	Moderate	Moderate	Llanbadarn Fynydd	A wireframe indicates all 34 turbines of the Llandinam Repowering and the northernmost 12 of the Llaithddu turbines would be visible and identified as a single array of ~45° at a minimum separation distance of over 4.5km. Given the separation distance the Llandinam and Llaithddu turbines would not be overbearing and given the filtering of views to the majority of those turbines from the house by a belt of conifers close to Lower Foel they are unlikely to increase the effect upon residential visual amenity.	Moderate/Substantial	Neuadd Goch Bank	Neuadd Goch Bank would appear in an array of ~130° to the north and east at a minimum separation distance of ~900m. They would not overlap with the Llanbadarn Fynydd turbine array. Of the nine turbines of Neuadd Goch three would be completely or largely screened except for their blade-tips by intervening landform to the east. Views to the north to Neuadd Goch Bank from the house would tend to be more open than those in other directions as there is less intervening tree cover to the north of the house. Turbines at Neuadd Goch and Llanbadarn Fynydd would be visually prominent when using the property's long access drive.
7) Upper Camnant	Slight/Moderate	Moderate	Llanbadarn Fynydd	A wireframe indicates 29 of the Llandinam Repowering turbines and the northernmost 12 of the Llaithddu turbines would be visible and identified as a single array of ~55° at a separation minimum separation distance of over 3.5km. Given the separation distance the Llandinam and Llaithddu turbines would not be overbearing but they would appear in relatively open views to the west.	Moderate	Llanbadarn Fynydd	The hubs of four turbines at Neuadd Goch would appear over an elevated horizon to the north-east of the property. The rising topography combined with partially intervening agricultural buildings would provide some sense of separation reducing the likelihood of any sense of the Neuadd Goch turbines being overbearing.
8) Lower Camnant	Moderate	Moderate	Llanbadarn Fynydd	A wireframe indicates that ~18 of the Llandinam Repowering turbines and six of the Llaithddu turbines would be visible to the west, however, an intervening garage/workshop and trees/hedge on a bank and mound adjacent to the road are likely to screen views out to these turbines	Moderate/Substantial	Llanbadarn Fynydd	Nine turbines of Neuadd Goch would appear in relatively open views to the north-east in an array of ~67°. The minimum separation distance of ~1.3km to nearest turbine combine with its partial screening by rising topography would mean that these turbines are unlikely to be overbearing. However, the addition of views to the Neuadd Goch from windows on the northern and eastern elevations would incrementally increase the potential for residents to feel surrounded hence the rise in the effect.

Table 9.2 (continued) Review of Potential Cumulative Effects upon Residential Visual Amenity at Selected Properties within 2.5 km of Llanbadarn Fynydd Wind Farm

Property ID and Name	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd Wind Farm Operating Alone	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd, Llaithddu and Llandinam Repowering Wind Farms Operating Together	Wind Farm Making the Largest Incremental Contribution	Rationale	Effect Upon Residential Visual Amenity from All SSA C Wind Farms and Single Turbines	Wind Farm Making the Largest Incremental Contribution	Rationale
10) Esgairdraenllwyn and Cottage	Moderate and Slight	N/A	N/A	A wireframe indicates that no views are likely to Llandinam Repowering or Llaithddu to due to screening by topography.	Moderate and Slight	Llanbadarn Fynydd	A wireframe indicates that the 9 turbines of Neuadd Goch would be visible to the north-east although at a minimum separation distance of ~2.2km and would therefore not be overbearing. Some partial screening of the Neuadd Goch array by intervening conifer plantation would limit the potential for residents to feel surrounded by turbines.
11) Hafod Fach	Moderate	Moderate	Llanbadarn Fynydd	A wireframe indicates that turbines at Llandinam Repowering would not be seen from Hafod Fach because of rising topography. Thirteen turbines at the southern end of the Llaithddu array would be a small scale minor element along an array of ~30° at a separation distance of ~4.6km.	Moderate	Llanbadarn Fynydd	A wireframe indicates that the upper parts of five turbines of Neuadd Goch would be visible to the north-east but these are likely to be screened by an intervening conifer plantation. Nine Hirdydwel turbines would be visible but given the separation distance would appear as a minor part of the Llaithddu array.
13) Pen Ithon Bungalow	Slight/Moderate	Slight/Moderate	Llanbadarn Fynydd	A wire frame indicates that 26 turbines of Llaithddu and 23 turbines of Llandinam would be visible to the west. However, vegetation around the property is likely to screen or filter the majority of these turbines which would be at a minimum separation distance of ~3.5km.	Slight/Moderate	Llanbadarn Fynydd	A wireframe indicates that some turbines of Neuadd Goch, Bryngydfa and Garreg Llwyd would be partially visible as relatively small scale elements beyond the Llanbadarn Fynydd turbines. These turbines are likely to be susceptible to screening/filtering by intervening roadside and parkland trees.
15) Crochran	Moderate	Moderate	Llanbadarn Fynydd	A wireframe indicates that no turbines of the Llandinam array would be visible due to intervening landform. The wireframe indicates that seven turbines of Llaithddu would be visible to the west but these would be screened by intervening agricultural buildings.	Moderate	Llanbadarn Fynydd	A wireframe indicates that parts of 4 turbines at Neuadd Goch would be partially visible to the north. However, these would appear a minor element beyond the turbines at Llanbadarn Fynydd being at a minimum separation distance of ~3.6km.
25) Esgairuchaf	Moderate	N/A	N/A	A wireframe indicates that no turbines at Llandinam and Llaithddu would be visible due to intervening landform.	Moderate	Llanbadarn Fynydd	A wireframe indicates turbines from Bryngydfa and Garreg Llwyd would be visible as relatively minor elements at a minimum separation distance of ~3km to the east but these are likely to be screened or filtered by an intervening belt of trees.

Table 9.2 (continued) Review of Potential Cumulative Effects upon Residential Visual Amenity at Selected Properties within 2.5 km of Llanbadarn Fynydd Wind Farm

Property ID and Name	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd Wind Farm Operating Alone	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd, Llaithddu and Llandinam Repowering Wind Farms Operating Together	Wind Farm Making the Largest Incremental Contribution	Rationale	Effect Upon Residential Visual Amenity from All SSA C Wind Farms and Single Turbines	Wind Farm Making the Largest Incremental Contribution	Rationale
26) New House at Esgairuchaf	Moderate	N/A	N/A	A wireframe indicates that no turbines at Llandinam and Llaithddu would be visible due to intervening landform.	Moderate/Substantial	Llanbadarn Fynydd	A wireframe indicates turbines from Bryngydfa and Garreg Llwyd would be visible as relatively minor elements at a minimum separation distance of ~3km to the east but these would appear centrally in the principal direction of view from the property and would incrementally increase the potential for residents to feel surrounded.
29) Dolfryn	Slight/Moderate	N/A	N/A	A wireframe indicates that no turbines at Llandinam and Llaithddu would be visible due to intervening landform.	Moderate	Llanbadarn Fynydd	A wireframe indicates that hubs of a total of ten hubs from turbines of Bryngydfa and Garreg Llwyd would be visible to the east and north east at a minimum separation distance of ~1.7km to the east. Given the separation distance these turbines would not be overbearing but as they would appear in views from an additional elevation of the house their presence may incrementally increase the potential for residents to feel surrounded. It should be noted that no turbines would be visible in the central parts of views from the house's principal south-eastern elevation.
31) Ddol	Slight/Moderate	Slight/Moderate	Llanbadarn Fynydd	A wireframe indicates that upper parts of 12 turbines at Llaithddu with 5 upper blade tips of turbines at Llandinam. However these turbines would a very minor small scale element at a minimum separation distance of ~6.7km would be susceptible to screening and filtering by intervening trees and agricultural buildings.	Slight/Moderate	Llanbadarn Fynydd	Although a wireframe indicates some partial views to upper parts of turbines at Bryngydfa and Garreg Llwyd, they are likely to be screened by intervening belts and blocks of woodland.

Table 9.2 (continued) Review of Potential Cumulative Effects upon Residential Visual Amenity at Selected Properties within 2.5 km of Llanbadarn Fynydd Wind Farm

Property ID and Name	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd Wind Farm Operating Alone	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd, Llaithddu and Llandinam Repowering Wind Farms Operating Together	Wind Farm Making the Largest Incremental Contribution	Rationale	Effect Upon Residential Visual Amenity from All SSA C Wind Farms and Single Turbines	Wind Farm Making the Largest Incremental Contribution	Rationale
34) Lower Fiddler's Green	Slight/Moderate	N/A	N/A	A wireframe indicates that no turbines at Llandinam and Llaithddu would be visible due to intervening landform.	Moderate	Garreg Llwyd and Bryngydfa	Wireframes indicate partial views to two turbines of Neuadd Goch to the north and turbines of Bryngydfa and Garreg Llwyd at a minimum separation distance of ~1.0km in partial views to the south-east. Bryngydfa and Garreg Llwyd are likely to be interpreted as a single array of ~60°. However, views out to Neuadd Goch, Bryngydfa and Garreg Llwyd are likely to be partially screened and filtered by garden vegetation, limiting the potential for residents' to feel surrounded or the turbines to appear overbearing.
35) Fiddler's Green	Slight/Moderate	N/A	N/A	A wireframe indicates that no turbines at Llandinam and Llaithddu would be visible due to intervening landform.	Moderate	Garreg Llwyd and Bryngydfa	Wireframes indicate partial views to two turbines of Neuadd Goch to the north and turbines of Bryngydfa and Garreg Llwyd at a minimum separation distance of ~1.1km in partial views to the south-east. Bryngydfa and Garreg Llwyd are likely to be interpreted as a single array of ~57°. However, views out to Neuadd Goch, Bryngydfa and Garreg Llwyd are likely to be partially screened and filtered by garden vegetation, limiting the potential for resident's to feel surrounded or the turbines to appear overbearing.
37) New House at Pen y Bank	Slight/Moderate	N/A	N/A	A wireframe indicates that no turbines at Llandinam and Llaithddu would be visible due to intervening landform.	Moderate	Garreg Llwyd	Wireframes indicate views, some partial, to nineteen turbines at Garreg Llwyd at a minimum separation distance of ~2.0km and partial views to five turbines at Bryngydfa. These turbines would likely be interpreted as a single array in a principal view from the property to the east over ~45°, although they would not be overbearing due to an intervening valley providing a sense of separation. It should be noted that although closer, the Llanbadarn Fynydd turbines would be partially screened by landform and would not appear in principal view from the property. It should be noted that the property's other principal view, to the south would not include any turbines and thus residents are unlikely to have a legitimate sense of feeling surrounded.

Table 9.2 (continued) Review of Potential Cumulative Effects upon Residential Visual Amenity at Selected Properties within 2.5 km of Llanbadarn Fynydd Wind Farm

Property ID and Name	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd Wind Farm Operating Alone	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd, Llaithddu and Llandinam Repowering Wind Farms Operating Together	Wind Farm Making the Largest Incremental Contribution	Rationale	Effect Upon Residential Visual Amenity from All SSA C Wind Farms and Single Turbines	Wind Farm Making the Largest Incremental Contribution	Rationale
48) Esgairwyndwn	Moderate	Moderate	Llanbadarn Fynydd	A wireframe indicates a total of over 50 turbines from Llandinam and Llaithddu combined would be visible to the west and north-west, appearing as a single array over ~57° at a minimum separation distance of ~6km. However, the majority would be screened in views from ground floor windows by an intervening agricultural building and this combined with the separation distance and the combined angle of all turbines visible in this scenario (~110°) would not mean that the turbines would not give residents a legitimate sense of being surrounded.	Moderate	Llanbadarn Fynydd	Upper parts of six turbines of Neuadd Goch would appear as relatively small scale elements beyond the Llanbadarn Fynydd turbines and therefore would not be overbearing and would not contribute to a sense of being surrounded. Turbines at Hirdydwel would be read as a minor part of the same array as Llandinam and Llaithddu and therefore would not be overbearing and would not contribute to a sense of being surrounded.
55) Rhos Bungalow	Moderate	N/A	N/A	A wireframe indicates that no turbines at Llandinam and Llaithddu would be visible due to intervening landform.	Moderate	Llanbadarn Fynydd	Turbines of Neuadd Goch would appear as relatively minor elements beyond the Llanbadarn Fynydd turbines. Turbines of Bryngydfa and Garreg Llwyd would appear as a more distant single array at a minimum separation distance of ~ 4.7km to the east of Rhos Bungalow and would also be a relatively minor element. The total horizontal angle of view to all turbines would be ~85° and the principal south-western view would remain free of turbines, except at a highly oblique angle.
56) Glen Ithon Lodge	Moderate	N/A	N/A	A wireframe indicates that no turbines at Llandinam and Llaithddu would be visible due to intervening landform.	Moderate	Llanbadarn Fynydd	Approximately thirty turbines, combined from Neuadd Goch, Garreg Llwyd and Bryngydfa would be visible or partially visible as relatively low and minor elements beyond the Llanbadarn turbines at a minimum separation distance of ~4.4km and thus are unlikely to contribute to any sense of being overbearing or surrounding the residents.
57) School House	Moderate	N/A	N/A	A wireframe indicates that no turbines at Llandinam and Llaithddu would be visible due to intervening landform.	Moderate	Llanbadarn Fynydd	Approximately thirty five turbines, combined from Neuadd Goch, Garreg Llwyd and Bryngydfa would be visible or partially visible as relatively low and minor elements beyond the Llanbadarn turbines at a minimum separation distance of ~4.4km and thus are unlikely to contribute to any sense of being overbearing or surrounding the residents.

Table 9.2 (continued) Review of Potential Cumulative Effects upon Residential Visual Amenity at Selected Properties within 2.5 km of Llanbadarn Fynydd Wind Farm

Property ID and Name	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd Wind Farm Operating Alone	Effect Upon Residential Visual Amenity from Llanbadarn Fynydd, Llaithddu and Llandinam Repowering Wind Farms Operating Together	Wind Farm Making the Largest Incremental Contribution	Rationale	Effect Upon Residential Visual Amenity from All SSA C Wind Farms and Single Turbines	Wind Farm Making the Largest Incremental Contribution	Rationale
58) Banc Newydd	Moderate	Moderate	Llanbadarn Fynydd	A wireframe indicates that no turbines at Llandinam would be visible due to intervening landform. Upper parts of approximately twelve turbines at Llaithddu may be visible to the south-west although of these only 5 hubs would be visible and the cumulative layering of hedgerow trees on intervening rising ground are likely to screen or filter the turbines. It should be noted that the Llaithddu turbines would not appear in the principal direction of view from the property.	Moderate	Llanbadarn Fynydd	Approximately thirty five turbines, combined from Neuadd Goch, Garreg Llwyd and Bryngydfa would be visible or partially visible as relatively low and minor elements beyond the Llanbadarn turbines at a minimum separation distance of ~4km and thus are unlikely to contribute to any sense of being overbearing or surrounding the residents.
61) White House near Pen y Cwm Bridge	Slight/Moderate	Slight/Moderate	Llanbadarn Fynydd	A wireframe indicates that approximately 55 turbines combined from those of Llandinam and Llaithddu would be visible in an array of ~105° on the south-western, western and north-western horizon. However, the Llandinam and Llaithddu turbines would be at a minimum separation distance of ~3.4km from the property and would be filtered and partially screened by a line of mature trees alongside the property.	Slight/Moderate	Llanbadarn Fynydd	Some tips and/or hubs of approximately ten turbines combined from Bryngydfa and Garreg Llwyd would be visible as relatively minor, low and small scale elements beyond the Llanbadarn Fynydd Turbines and therefore are unlikely to increase any sense of the turbines surrounding or overbearing residents.

- 9.3.4 Table 9.2 shows that under the scenario of Llanbadarn Fynydd Wind Farm operating with Llaithddu and/or Llandinam Repowering Wind Farms, the level of effect upon residential visual amenity will only increase at one property. This would be Upper Camnant where the Llaithddu and Llandinam Repowering turbine array would be likely to result in lengthy turbine arrays being visible on two sides of the property potentially contributing to a sense for residents that the property is surrounded by turbines, although the level of effect is only likely to increase from slight/moderate to moderate. At the other 23 properties the operation of the Llaithddu and/or the Llandinam Repowering wind Farms would not increase effects upon residential visual amenity.

9.4 All SSA C Wind Farms

Introduction

- 9.4.1 Brief consideration also needs to be given to the visual role that would be played by Llanbadarn Fynydd Wind Farm in a scenario under which all seven proposed SSA C wind farms were operational along with any existing, consented and proposed single turbines within 10 km of SSA C. Under this scenario Llanbadarn Fynydd Wind Farm would be contributing 17 turbines out of a total of 131 turbines in SSA C, 61 of which would be sited on the eastern side of the River Ithon.
- 9.4.2 A consideration that should be taken into account when assessing the visual role that would be played by Llanbadarn Fynydd Wind Farm under this scenario is that in scenarios with a greater number of turbines present, especially on the eastern side of the Ithon Valley, the incremental visual contribution of Llanbadarn Fynydd's turbines would generally decrease. This would be particularly true for visual receptors at a greater separation distance.
- 9.4.3 Table 9.1 shows that under the scenario of the six SSA C wind farms operating without Llanbadarn Fynydd Wind Farm there will be significant cumulative effects for visual receptors sited at, or close to, 20 of the 53 selected cumulative viewpoints. The addition of turbines at Llanbadarn Fynydd would have the effect of incrementally increasing the magnitude of cumulative visual change by a large enough increment to result in significant cumulative visual effects being experienced by visual receptors at

or close to two additional cumulative viewpoints. These cumulative viewpoints would be:

- Cumulative Viewpoint 2: Minor road close to Rhos (on the western side of the Ithon Valley); and
- Cumulative Viewpoint 11: Minor road close to Meolfre City.

The cumulative viewpoint location plan is shown in Appendix LVIA 4 and the cumulative wireframes for this scenario from these two viewpoints are shown in Appendix LVIA 4.

9.4.4 At Cumulative Viewpoint 2 approximately 15 upper sections of turbines at Bryngydfa and Garreg Llwyd Wind Farms would potentially be visible above the elevated north-eastern and northern horizon. The Llanbadarn Fynydd turbines would be closer, larger and more visually prominent raising the cumulative magnitude of visual change from low to medium.

9.4.5 At Cumulative Viewpoint 11 a good proportion of the Llaithddu, Llandinam Repowering and Hirddywel turbines would form a long array along the north-western horizon but will be small-scale visual elements. The closest Llanbadarn Fynydd turbine would be 4.4km away but they would be medium-sized visual elements in northern views occupying $\sim 25^\circ$ of the northern skyline thereby extending the cumulative array. As at Cumulative Viewpoint 2 Llanbadarn Fynydd's turbines would be closer, larger and more visually prominent raising the cumulative magnitude of visual change from low to medium for visual receptors nearby.

9.4.6 In the remainder of this section using the same subheadings for the five main categories of visual receptor as used in Section 9.2 brief comments about the potential incremental visual role of Llanbadarn Fynydd Wind Farm within this scenario of all wind farms being operational in SSA C will be provided. It is not intended that this section should be considered to be a combined cumulative visual assessment for SSA C.

Visual Receptors in Settlements

9.4.7 The only settlement where Llanbadarn Fynydd's turbines would make any contribution to cumulative visual effects would be the village of Llanbadarn Fynydd.

The cumulative ZTV in Figure 3.109 in Volume Two of the February 2013 SEI (AD/VATT/018C) indicates that across some of the village turbines at wind farms other than Llanbadarn Fynydd and Llaithddu could contribute to cumulative visual effects. However as shown in the cumulative wireframe from Cumulative Viewpoint 5 in Part One of Appendix LVIA 4 this situation will not apply throughout the village. It is assessed that under any potential development scenario involving Llanbadarn Fynydd Wind Farm, its turbines would make the greatest incremental contribution to cumulative visual effects experienced by Llanbadarn Fynydd village's residents.

Visual Receptors in Isolated Residential Properties

- 9.4.8 The generic point concerning the likely reduction in the incremental role that would be played by Llanbadarn Fynydd's turbines under this cumulative scenario is applicable to this group of visual receptors. A review of the cumulative wireframes prepared for all the residential properties within 2.5 km of any Llanbadarn Fynydd turbine that are contained in Appendix LVIA 7 has been undertaken to assess which wind farms would be likely to make the largest incremental contribution to cumulative visual effects and if any broad patterns can be identified.
- 9.4.9 As anticipated turbines at Llanbadarn Fynydd Wind Farm would make the largest incremental contribution or would be the only potentially visible turbines for residential visual receptors at just under half the properties. These would be the properties located within the application site boundaries which are mostly inhabited by residents who have a financial interest in the development. They would also include residential visual receptors in many of the properties located in the Ithon Valley including those around Pen-y-Cwm Bridge and further south alongside the road to David's Well.
- 9.4.10 In the Gwenlas Valley the visual role of turbines at Garreg Llwyd Wind Farm becomes increasing important and the incremental roles that would be played by these turbines and those on the opposite side of the Valley at Llanbadarn Fynydd would become approximately equal. Further north along the Valley turbines at Neuadd Goch Bank Wind Farm would assume a greater incremental visual role.
- 9.4.11 At the top of the Gwenlas Valley and for residential visual receptors in properties in the upper Teme valley turbines at Neuadd Goch Bank would assume a greater

incremental visual role that the small number of turbines at Llanbadarn Fynydd that would potentially be visible above the elevated south-western horizon.

- 9.4.12 For residents in the properties located towards the eastern edge of the 2.5 km offset area: Bryn Mawr Cottage and Hope Castles Farm the proximity and numbers of turbines at Garreg Llwyd and the northern part of Bryngydfa would ensure that they would make the greatest incremental contribution. Turbines at Llanbadarn Fynydd would make only a small incremental contribution with the northern part of their array being largely screened by rising topography to the immediate north-west in the form of the slopes of the hill called Bryn Mawr.
- 9.4.13 For residents in the three properties on the south-facing slope of Fron Top on the south-eastern fringe of the 2.5 km offset area Llanbadarn Fynydd's turbines would be screened by the rising topography of Fron Top. The wireframes in Appendix LVIA 4 show that turbines at Garreg Llwyd Wind Farm would make the greatest incremental contribution to visual effects with those at Bryngydfa having a lesser incremental role
- 9.4.14 With regard to the five properties close to the north-western edge of the 2.5 km radius offset area, two (Property No.9: Ty'n-y-waun and property No.69) are derelict. Of the other three properties Llanbadarn Fynydd's turbines would make a minimal incremental contribution to the residents' cumulative visual effects at property 65: Blue Lins Farm and property no. 67: New house by Blue Lins Farm. At property 68: Llyn Dwr Llanbadarn's turbine array to the south-east would make a moderate contribution in the same manner as turbines at Neuadd Goch Bank close to its north. Nevertheless greater incremental contributions would be made by the nearby single turbine and the extended turbine arrays of Llaithddu and Llandinam Repowering Wind Farms.
- 9.4.15 Finally for residents in properties to the north the proximity of the nine turbines at Neuadd Goch Bank would provide these turbines with the greatest incremental contribution to cumulative visual effects. At Lower Foel (property No.5) it is assessed that the turbines at Neuadd Goch Bank would make a marginally larger incremental contribution than those at Llanbadarn Fynydd because residents' views to the north where the Neuadd Goch Bank turbine array is sited are more open and six of Neuadd Goch Bank's turbines would potentially be visible down to their lower blade sweep as opposed to only four of Llanbadarn Fynydd's turbines. At Cider House

(property No.6) the elevated intervening topography provided by Banc Gorddwr would provide considerable screening of Llanbadarn Fynydd's turbine array. However as the nine turbines at Neuadd Goch Bank would be located closer and on Banc Gorddwr they would make markedly greater incremental contribution to the cumulative visual effects that would be experienced by residents than the six partially visible, more distant six Llanbadarn Fynydd turbines.

Visual Receptors using National and Regional Trails

- 9.4.16 Cumulative wireframes for this scenario have been produced for 22 locations between Beacon Hill and Ysgwd-ffordd on Sections 2, 3 and 4 of Glyndwr's Way which are located Part One of Appendix LVIA 6. A review of these wireframes has been undertaken to assess along which lengths recreational visual receptors walking the Way would sustain significant visual effects and subsequently along which lengths would the incremental contribution of Llanbadarn Fynydd's wind farms be the greatest.
- 9.4.17 The review concluded that walkers on the Way would sustain significant cumulative effects from Location Viewpoint 8 on Section 3 until Location Viewpoint 18 on Section 4. The assessment of the incremental visual role that would be played by Llanbadarn Fynydd's turbines concludes that they would provide the greatest incremental contribution for approximately 4 km from the summit of Fron Top across the Ithon Valley until the slopes of Moel Dod. They would also make an equal contribution with turbines at Garreg Llwyd and Bryngydfa for the open length of the Way that descends into and then ascends out of the Gwenlas Valley over approximately 1.5 km. The final length where Llanbadarn Fynydd's turbines would make an equal incremental contribution to cumulative visual effects would be at Location Viewpoints 20-22 south of Moel Dod. The cumulative wireframes and field observations showed that varying topography and elevation along this length results in the composition of view and consequently the proportions of different wind farms that would be visible would vary over only short distances.
- 9.4.18 Along the majority of the length of the Way which is within Llanbadarn Fynydd Wind Farm's blade tip ZTV Llanbadarn Fynydd's turbines would not make the greatest incremental contribution. Indeed the assessment concludes that generally they would only make a minor contribution except for the three relatively short lengths listed in

Section 9.4.17. Along Section Three between Felindre and Llanbadarn Fynydd village the wind farms that would make the largest incremental contribution would be Bryngydfa and Garreg Llwyd which together contribute 35 turbines. Turbines at these wind farms would be visually dominant for the Way's walkers between Location Viewpoints 8 and 13²⁷ due to the short separation distances to turbines on the northern and then the western edges of the Garreg Llwyd and Bryngydfa turbine arrays. Indeed along short lengths of the Way close to Rhuvid Bank and the hill of Bryngydfa walkers would pass within a couple of hundred metres of individual turbines at Bryngydfa and then Garreg Llwyd.

- 9.4.19 With regard to Kerry Ridgeway reference should be made to the cumulative wireframes from cumulative viewpoints in Part One of Appendix LVIA 4 produced from Cumulative Viewpoints 9, 15 and 36 which are sited on the Ridgeway. A cumulative photomontage from Cumulative Viewpoint 9: Two Tumps has also been produced and is available in Appendix LVIA 5, Figures 2 to 5.
- 9.4.20 These visualisations show that under this scenario Llanbadarn Fynydd's turbines would never make the greatest individual incremental contribution to the cumulative visual effects that would be sustained by recreational visual receptors walking, riding or cycling along the Ridgeway. From central sections as represented by Cumulative Viewpoints 15 and 36 the longer turbine arrays and larger number of turbines visible at Garreg Llwyd and Bryngydfa Wind Farms would ensure that these wind farms would make a greater incremental contribution to cumulative visual effects although these would not be significant along this section of the Ridgeway.
- 9.4.21 From a location just to the east of Two Tumps it is assessed that for westbound recreational visual receptors the greatest incremental role would be played by the turbines at Neuadd Goch Bank Wind Farm. As shown in the cumulative photomontage Neuadd Goch Bank's turbines are markedly closer and therefore larger in the southern views available to westbound recreational visual receptors once these views open up. Although Llanbadarn Fynydd's turbines would be closer than the combined array of turbines at Garreg Llwyd and Bryngydfa and the two arrays would have the same length, the density of the combined Garreg Llwyd and Bryngydfa turbine array would ensure that it would make a similar incremental contribution to

²⁷ With the previously noted exception of approximately 1.5km of the Way in the Gwenlas Valley.

the Llanbadarn Fynydd turbine array within the overall cumulative visual effects that would be sustained by the Ridgeway's users.

Visual Receptors using local PRowS

9.4.22 The cumulative viewpoint wireframes (Part One of Appendix LVIA 4) and the cumulative wireframes from the properties within 2.5 km of any Llanbadarn Fynydd Wind Farm turbine (Appendix LVIA 7) show that under the full SSA C scenario Llanbadarn Fynydd's turbines would continue to make the greatest incremental contribution to the cumulative visual effects that would be sustained by the limited number of recreational visual receptors using these PRowS. This assessment applies to the PRowS that cross the application site and those on the closest parts of the western side of the Ithon Valley.

9.4.23 As already noted further to the west of the Ithon Valley the incremental role that would be played by Hirddywel and in particular Llaithddu and Llandinam Repowering Wind Farms would increase. To the east as indicated in the subsections on residential visual receptors and recreational receptors on Glyndwr's Way the incremental roles of turbines at Garreg Llwyd and Bryngydfa Wind Farms would increase. In the Gwenlas Valley the incremental contributions of Llanbadarn, Garreg Llwyd and Bryngydfa Wind Farms would be broadly equal. Further to the east i.e. closer to Garreg Llwyd and Bryngydfa Wind Farms, their incremental role will increase whilst that of the visible turbines at Llanbadarn Fynydd would commensurately decrease.

9.4.24 With regard to the limited number of PRowS to the north of the application site as well as the Open Access Land on Banc Gorddwr and southern and western slopes of Cilfaesty Hill, the closer proximity of the nine Neuadd Goch Bank turbines would ensure that they would make a greater incremental contribution to cumulative visual effects than the more distant Llanbadarn Fynydd turbines.

Visual Receptors Using Local Roads

9.4.25 The local minor roads where turbines at Llanbadarn Fynydd Wind Farm would generate the greatest incremental contribution to cumulative visual effects would be the sections of the two minor roads that pass through the application site and the section of the minor road to David's Well and Bwlch-y-Sarnau between Pen-y-Cwm Bridge and David's Well on the western side of the Ithon Valley.

- 9.4.26 With regard to the two minor roads that cross the application site, it is relevant to note that Neuadd Goch Bank Wind Farm's turbines located to the north of the west-east minor road will make a considerable incremental contribution to cumulative visual effects for vehicular receptors on the that road. Likewise Neuadd Goch Bank's turbines will make the greatest incremental contribution for vehicular receptors travelling along the section of the north-south minor road over Banc Gorddwr.

9.5 Cumulative Residential Visual Amenity

- 9.5.1 Table 9.2 shows the changes under the all SSA C wind farms operating scenario for residents in the 24 inhabited properties within 2.5 km of any of the Llanbadarn Fynydd turbines where effects upon residential visual amenity from Llanbadarn Fynydd Wind Farm alone have been assessed as slight/moderate or above. When the cumulative wireframes in Appendix LVIA 7 are reviewed along with the property information sheets and proformas in Appendix LVIA 2, it is concluded that residents in nine properties would experience an increase in the level of effect upon their cumulative residential visual amenity. Of these nine increases eight would be as a consequence of the operation of one or more of Bryngydfa, Garreg Llwyd and Neuadd Goch Bank Wind Farms. The increase at Upper Camnant (property No.7) would remain due to the presence of the long turbine array at Llandinam Repowering and Llaithddu Wind Farms.
- 9.5.2 At four of the eight properties (Property No.1: Butterwell; property No.5 Lower Foel; property No.8: Lower Camnant; and property No.26: new house at Esgairuchaf) the increase in the level of effect upon residential visual amenity would be from moderate to moderate/substantial. At the other four properties (Property No.29: Dolfryn; property No.34: Lower Fiddler's Green; property No.35: Fiddler's Green; and property No.37: New house at Pen-y-Bank) the increase would be from a slight/moderate level of effect to a moderate level of effect. In these circumstances the incremental contribution that would be made by Llanbadarn Fynydd Wind Farm to effects upon residents' cumulative residential visual amenity would decrease. Indeed at Lower Foel it is assessed that the turbines at Neuadd Goch Bank would make the greatest incremental contribution to residential visual amenity. At Fiddler's Green and Lower Fiddler's Green it would be a combination of Garreg Llwyd and Bryngydfa and

at the new property close to Pen-y-Bank the greatest incremental contribution would be made by Garreg Llwyd's turbines.

9.6 Summary

9.6.1 The cumulative visual assessment has utilised cumulative wireframes from 53 cumulative viewpoints and cumulative photomontages from five of these cumulative viewpoints. In addition it has utilised cumulative wireframes for the two main potential cumulative scenarios from all residential properties within 2.5 km of one of Llanbadarn Fynydd's turbines and cumulative wireframes from 22 location viewpoints sited along the potentially affected sections of Glyndwr's Way. The 53 cumulative viewpoints included the 21 viewpoints selected for inclusion in the 2007 LVIA augmented by 32 viewpoints that were selected from a review of the viewpoints used in the LVIA's prepared for the other six SSA C wind farms.

9.6.2 The results of the cumulative visual assessment at these 53 cumulative viewpoints is summarised in Table 9.1. This shows that if it were to operate on its own, Llanbadarn Fynydd Wind Farm would generate significant visual effects for visual receptors located at, or close to, 18 cumulative viewpoints. Under the scenario of Llanbadarn Fynydd operating in tandem with Llaithddu and Llandinam Repowering Wind Farms it was assessed that turbines at Llanbadarn Fynydd would make a significant incremental contribution to cumulative visual effects at nine cumulative viewpoints. This difference in viewpoint numbers is because at some cumulative viewpoints it is assessed that turbines at Llaithddu and Llandinam Repowering would generate significant visual effects in their own right, whilst at other cumulative viewpoints turbines at Llaithddu and Llanbadarn Fynydd Wind Farms would not be visible and consequently there would be no cumulative visual effects under this scenario.

9.6.3 The turbines at Llanbadarn Fynydd would contribute to cumulative visual effects for residential visual receptors in one settlement. This would be the village of Llanbadarn Fynydd where turbines at Llanbadarn Fynydd Wind Farm would make the greatest incremental contribution to cumulative visual effects. In some parts of the village some of the turbines at Llanbadarn Fynydd Wind Farm would be the only potentially visible turbines in residents' views. Cumulative visual effects would not be significant for residential visual receptors in the village of Llanbadarn Fynydd. This

conclusion would still apply under the scenario where all the SSA C wind farms are operational.

- 9.6.4 With regard to cumulative visual effects being sustained by residential visual receptors in isolated residential properties the cumulative visual assessment concludes that under the scenario of Llanbadarn Fynydd Wind Farm operating with just Llaithddu and Llandinam Repowering Wind Farms, Llanbadarn Fynydd's turbines would make the largest incremental contribution to cumulative visual effects at all the properties within 2.5 km except for a small number of residents in properties located to the north-west on the western side of the River Ithon.
- 9.6.5 The key conclusion concerns residents in properties including Esgairdraenllwyn and those located around Pen-y-Cwm Bridge and alongside the David's Well road on the western side of the Ithon Valley. For the residents at these properties Llanbadarn Fynydd's turbines would continue to make the greatest incremental contribution to any cumulative visual effects. This is due to these properties' elevation, their eastern aspect and provision of good levels of screening in potential western views towards the Llaithddu and Llandinam Repowering turbine arrays. Towards the western edge of the 2.5 km offset area where visual receptors of all categories are approximately equidistant from turbines at Llanbadarn Fynydd and Llaithddu and Llandinam Repowering Wind Farms the incremental contribution from the latter two wind farms would be greater than that of Llanbadarn Fynydd's turbines. This situation will definitely apply around Ddullui Bank.
- 9.6.6 Under the scenario where all the SSA C wind farms are operational, Llanbadarn Fynydd's turbines would continue to make the greatest incremental contribution to cumulative visual effects for residents in these properties on the western side of the Ithon Valley. However for residents in the majority of properties in the Gwenlas Valley the incremental contribution of the turbines at Garreg Llwyd, and occasionally Bryngydfa, Wind Farms would often equal and sometimes exceed the incremental contribution of the Llanbadarn Fynydd turbines. At the top of the Gwenlas Valley the turbines at Neuadd Goch Bank would become increasingly influential and they would be responsible for the most of the low level of cumulative visual effects that could be experienced by residential visual receptors in the upper Teme Valley. This situation would also apply to residents in the couple of residential properties to the north of the Llanbadarn Fynydd Wind Farm.

- 9.6.7 Along Section 2 of Glyndwr's Way there would be no significant cumulative visual effects. Llanbadarn Fynydd's turbines would make the greatest incremental contribution to cumulative visual effects along this section under the Llanbadarn Fynydd, Llaithddu and Llandinam Repowering scenario. However their incremental role would diminish sharply under the all SSA C wind farms scenario with the introduction of the closer and more extensive turbine combined array formed by the 35 turbines in Garreg Llwyd and Bryngydfa Wind Farms.
- 9.6.8 Along Section 3 and as far along Section 4 as Moel Dod Llanbadarn Fynydd's turbines would make a greater incremental contribution to cumulative visual effects than the more distant turbine arrays at Llaithddu and Llandinam Repowering Wind Farms. This situation would alter markedly under the all SSA C wind farms scenario. Under this scenario the siting of Bryngydfa and Garreg Llwyd's turbines immediately to the south and then the east of the Way would ensure significant cumulative visual effects would be experienced by the recreational visual receptors using lengths of the Way from Rhuvid Bank, west of Felindre as far as Fron Top. Llanbadarn Fynydd's turbines would only assume the greatest incremental role for the length of the Way along Fron Top and up the western side of the Ithon Valley.
- 9.6.9 For recreational receptors using the Kerry Ridgeway under the Llanbadarn Fynydd, Llaithddu and Llandinam Repowering scenario it is assessed that significant cumulative visual effects would be limited to recreational visual receptors travelling along the westernmost 2 km of the Ridgeway. It is also assessed that the turbines at Llanbadarn Fynydd would make an equal incremental contribution to that made by the combined array formed by turbines at Llaithddu and Llandinam Repowering wind Farms. Were the all SSA C wind farms scenario to arise, it is assessed that the closer proximity and/or the greater turbine numbers and hence longer combined array length of the turbines at Garreg Llwyd and Bryngydfa Wind Farms and then, further west, of the Neuadd Goch Bank Wind Farm, would ensure that turbines at Llanbadarn Fynydd Wind Farm would never be responsible for the greatest incremental contribution to cumulative visual effects that would be experienced by recreational visual receptors travelling along the Ridgeway.
- 9.6.10 Finally with regard to potential cumulative effects upon residential visual amenity an assessment has been undertaken in Table 9.2. This shows that turbines at Llanbadarn Fynydd Wind Farm would continue to make the greatest contribution to cumulative

effects upon residential visual amenity at most of the properties within 2.5 km of the Llanbadarn Fynydd turbines. The levels of effect upon residential visual amenity would rise for residents at only one property under the Llanbadarn Fynydd, Llaithddu and Llandinam Repowering scenario. This is because turbines at Llaithddu and Llandinam Repowering would be too distant to be considered ‘overbearing’ at these properties.

- 9.6.11 Under the all SSA C wind farms operational scenario residents at an additional eight properties would be likely to sustain an increase in the level of effect upon their residential visual amenity. At one property (Lower Foel) turbines at Neuadd Goch Bank would supplant turbines at Llanbadarn Fynydd in providing the greatest incremental contribution to effects upon residential visual amenity. At a further three properties (Fiddler’s Green, Lower Fiddler’s Green and the new property close to Pen-y-Bank) turbines at Garreg Llwyd and Bryngydfa would supplant turbines at Llanbadarn Fynydd in providing the greatest incremental contribution to effects upon residential visual amenity.



10. Conclusions

10.1 Introduction

10.1.1 In my Proof I have taken account of the changes to the baseline, particularly to the cumulative baseline, that have taken place since the original LVIA was prepared in 2007 (REF). Most of these changes were addressed and assessed in the February 2013 SEI. However subsequent to the submission of the SEI there have been changes to the turbine layouts at Llaithddu and Llandinam Repowering Wind Farms. It is assessed that these changes have no effect upon the conclusions drawn in the 2007 LVIA (REF) or the February 2013 SEI, nevertheless this Proof is accompanied by seven appendices which contain revised versions of ZTVs and visualisations that were produced to accompany the SEI.

10.2 Consensus of Opinion

10.2.1 My Proof has summarised the aspects of Llanbadarn Fynydd Wind Farm's application history that are of relevance to the LVIA and provided a detailed consideration of the response to the LVIA that was commissioned by Powys County Council and provided by their landscape consultants in the 2008 Powys Onshore Windfarms Development Control Support Report (REF). It has demonstrated that this Report utilised a number of criteria for assessing the landscape and visual acceptability of Llanbadarn Fynydd Wind Farm which has been developed by Powys County Council's landscape consultants in similar exercises in Wales and England. I confirm that under each of the six criteria adopted the Report found that Llanbadarn Fynydd Wind Farm was acceptable even if for a limited number of landscape and visual receptors the criteria were not fully met. The Report concluded that Llanbadarn Fynydd Wind Farm was *'broadly acceptable in landscape and visual terms.'*

10.2.2 Powys County Council's consultants' main concern was potential effects upon residential visual amenity but in the consultants' professional opinion these concerns *'... do not justify a reason for refusal.'* In my Proof I have taken the opportunity to demonstrate that most of the consultants' concerns with regard to residential visual

amenity for residents in properties within the application site are unfounded. This is because three of the properties identified in the 2007 visual assessment are uninhabited and would remain so during the wind farm's operational period. Another five properties, now increased to six with the new house close to Esgairuchaf, are under the control of landowners with a financial interest in the scheme.

- 10.2.3 With regard to consultee responses I also note that in their responses CCW did not object to the scheme stating that *'In general the site appears to be well chosen in the context of limited landscape impact.'* This is a conclusion that I agree with and which is confirmed by the LVIA and this Proof. Consequently there is a consensus of professional opinion regarding Llanbadarn Fynydd Wind Farm's acceptability under a variety of landscape and visual criteria.

10.3 Limited Landscape Effects

- 10.3.1 The operation of Llanbadarn Fynydd Wind Farm would not require the loss of any distinctive landscape elements. The Wind Farm's layout has been designed to ensure that the turbines are located on the least sensitive parts of the application site away from the breaks of slope at the tops of the Ithon, Gwenlas and Cwm Nant-ddu Valleys.
- 10.3.2 There is only one national landscape designation with the potential to sustain landscape effects from the operation of Llanbadarn Fynydd Wind Farm. This is the Shropshire Hills AONB which is located a minimum of 5.5 km east of Llanbadarn Fynydd, although it is pertinent to note that only 3.5% of the total area of the AONB is located within the 11.5 km radius detailed study area where professional consensus is that significant landscape effects from wind farm developments are most likely to be generated. No consultation response was received from the AONB officers and they have not lodged an objection.
- 10.3.3 The operation of Llanbadarn Fynydd Wind Farm could affect two of the ten key characteristics of the AONB as defined in the AONB Management Plan including external views. The LVIA has demonstrated that only limited changes would arise from Llanbadarn Fynydd's presence along a short section of the western horizon, mainly because such views could only be theoretically possible from the 5.1% of the AONB that is within the hub height ZTV. No significant effects have been assessed under any cumulative scenario.

- 10.3.4 The professional opinion that I share with CCW (now NRW) that the site is well chosen in the context of limiting landscape impacts is verified by the assessment of effects upon landscape character. This assessment has adhered to NRW guidance (REF) by including all five types of LANDMAP aspect areas as well as the Powys Landscape Character Assessment which it is acknowledged introduces an element of double counting into the landscape assessment.
- 10.3.5 The characteristics of the application site as defined in the LANDMAP database are indicative of the site's ability to accommodate a wind farm of Llanbadarn Fynydd's specification. A large proportion of the site has sustained extensive landscape change during the twentieth century. The consequence is that it is atypical of the landscape found in much of SSA C and upland mid-Wales in general. The site's main landcover is semi-improved and improved grassland as opposed to unimproved moorland and across much of the site sub-division into angular-shaped fields by post and wire fences or in some parts coniferous hedgerows has taken place. The pasture's management has provided the site with an intensively managed appearance which is enhanced by the presence of small, angular coniferous plantations and sometimes shelterbelts.
- 10.3.6 These landscape features combine to provide landscape character that across the large majority of the site, outside the Cwm Nant-ddu Valley and away from its northern edge, that has resulting in LANDMAP assessing that it only has '*a low to moderate value*' which LANDMAP rounds up to a moderate overall evaluation. Likewise Powys County Council's own landscape consultants in undertaking two reviews of the SSA C (REFS) have ascribed the Llanbadarn Fynydd site with a low-medium value. In this baseline context my landscape assessment concludes that, whilst significant landscape effects from this scale and type of development are inevitable as was recognised in the definition of SSA C, these significant landscape effects will only be experienced in the host and closest parts of three LANDMAP visual and sensory aspect areas (VSAAs). These will be:
- RDNRVS111 Upland Moor, Kerry Hills which will sustain significant landscape effects in its western part;
 - RDNRVS122 Improved Upland, South of Kerry Hills which will sustain significant landscape effects in the two western-most of its seven geographically separate sub-areas; and

- RDNRVS128 Upland Valleys, South of Kerry Hills which will sustain significant effects in its western part.

10.3.7 For the remainder of these three LANDMAP VSAs as well as for other VSAs and other types of LANDMAP aspect area effects would not be significant. This is because whilst Llanbadarn Fynydd's turbines may be discernible from parts of these aspect areas, their presence would not undermine the key landscape characteristics of these LANDMAP aspect areas as defined in their databases.

10.3.8 The Llanbadarn Fynydd site is also covered by three of the Powys Landscape Character Areas (LCAs). These are R12 – Ithon Valley; R18 – Ithon Valley Hillides; and M29 – Kerry Hill. For the same reasons that apply to the assessment of effects upon LANDMAP aspect areas upon which the Powys LCAs are based, it is assessed that significant landscape effects will be restricted to a small proportion of each of these LCAs that are within the Llanbadarn Fynydd site or its immediate environs extending to a maximum of approximately 1.5 km in any direction.

10.3.9 In summary I conclude that the landscape characteristics that are exhibited by the Llanbadarn Fynydd site are more suited to the accommodation of a wind farm than other sites in more elevated locations where more naturalistic landcover is prevalent and positive perceptual and sensory characteristics are more readily apparent.

10.4 Limited Visual Effects

10.4.1 The significant visual effects that would be generated by the operation of Llanbadarn Fynydd would be severely limited in comparison with those that would be likely to be generated by the operation of a wind farm with the same specification in most upland locations. One key factor is that Llanbadarn Fynydd has been sited away from the most elevated locations in this area and this ensures that Llanbadarn Fynydd's blade tip ZTV is relatively compact.

10.4.2 The baseline distribution of many of the most sensitive categories of visual receptors combines with Llanbadarn Fynydd's compact ZTV to minimise the number of visual receptors that could sustain visual effects. This is particularly applicable to residential visual receptors in settlements which usually account for the greatest number of potential visual receptors for a wind farm development. Turbines at Llanbadarn Fynydd Wind Farm could only be seen from one settlement which is the village of

Llanbadarn Fynydd. The turbines will not be universally visible, especially when screening from the moderately high level of tree cover is taken into account and Llanbadarn Fynydd's residents will not sustain significant visual effects. As such Llanbadarn Fynydd Wind Farm accords with the principle that wind farms should not 'unacceptably dominate settlements' that is listed in the SNH document '*Siting and Design of Windfarms in the Landscape*' (VATT/LAN/02).

- 10.4.3 Powys has a low population density and most residential properties are located in valley bottoms or on lower valley sides. Consequently most residential visual receptors do not have extensive views across the Llanbadarn Fynydd site and benefit from the foreshortening of their views by the rising valley sides which is sometimes termed the 'tabletop effect'. They also frequently benefit from screening and filtering of their views by the coalescence of layers of vegetation cover which is usually denser in the valleys. A good proportion of residential properties are farmhouses which tend to be partly surrounded by large outbuildings, including barns and poultry sheds, as well as by tree cover for shelter. Consequently residential visual receptors at these properties can benefit from higher levels of screening in their outward views.
- 10.4.4 Significant visual effects have been assessed at elevated viewpoints up to 4.4 km from the closest turbine, although significant visual effects will only be sustained by residential visual receptors at individual properties up to 2.1 km away. These three properties are at a similar elevation to the Llanbadarn Fynydd site, are in an open location on the west side of the Ithon Valley and have an eastern aspect. Nevertheless of the 69 properties²⁸ that are located within 2.5 km, ten are derelict or will not be inhabited due to a covenant and six are outside the blade tip ZTV. The visual assessment concludes that significant visual effects will only be experienced by residents in 13 properties, five of which are under the control of landowners with a financial interest in the scheme. Another consideration is that a combination of topography and the settlement pattern results in few isolated residential properties being located within the blade tip ZTV beyond 2.5 km from the site.
- 10.4.5 Significant visual effects will be experienced by recreational receptors using sections of one national trail: Glyndwr's Way, and one regional trail: the Kerry Ridgeway. At its closest point Glyndwr's Way is 1 km to the east of the Llanbadarn Fynydd site and

²⁸ Three of which have associated cottages or barn conversions giving a total number of properties of 72.

the wind farms turbines will generate significant visual effects for the users of the Way for the majority of the 12 km long Section Three between Felindre and Llanbadarn Fynydd village and the first 4 km of Section 4 between Llanbadarn Fynydd and Abbey Cwmhir, although along the latter section significant effects would only apply to northbound recreational visual receptors whilst guidance for walking the Way advocates walking south along Section 4. The experiencing of significant visual effects for a maximum of ~14 km has to be considered in the context of the Way being 210 km long.

- 10.4.6 On the 24 km long Kerry Ridgeway the turbines at Llanbadarn Fynydd would be visible to westbound recreational visual receptors for less than a third of the Ridgeway once screening by adjacent coniferous forestry is taken into consideration. The turbines would not appear in the key elevated views northwards over the Severn Valley and significant visual effects would only be experienced along the final section west of Two Tumps. Along this section recreational visual receptors have experienced views of the existing Llandinam P & L Wind Farm for over twenty years.
- 10.4.7 Significant effects upon users of local public rights of way (PRoWs) will also be restricted to PRoWs within and immediately around the Llanbadarn Fynydd site plus some PRoWs on the western side of the Ithon Valley. However it is important to take into consideration that these PRoWs are not frequently used and the number of recreational visual receptors affected would be small. Site visits has demonstrated that many of these PRoWs are not signed and/or are not visible on the ground with some being impassable.
- 10.4.8 The concept of residential amenity has become an important consideration at many wind farm sites in recent years. A detailed residential visual assessment was undertaken as part of the February 2013 SEI and has been expanded in the appendices to this Proof to respond to comments from NRW. Residential visual amenity was also one of the criteria used by Powys County Council's landscape consultants in their review of the acceptability of Llanbadarn Fynydd. The key considerations are whether any of the turbines could be legitimately considered to be 'overbearing' and whether the length of the turbine array could give the sense to residents that they are surrounded by turbines. The conclusion of the residential visual amenity assessment is that none of the properties would sustain the highest level of effects upon their residential visual amenity. Residents at three properties within the site would sustain

the second highest ‘moderate/substantial’ level of effects but these are all under the control of landowners with a financial interest in the scheme and as such I assign them a higher threshold of tolerance. Residents at a further 13 properties would sustain a ‘moderate’ level of effect. These results are low for a 17 turbine wind farm and are indicative that the Llanbadarn Fynydd site is a suitable site for this type of wind farm development.

10.5 Cumulative Landscape and Visual Effects

- 10.5.1 At Session One discussion on cumulative issues is restricted to effects with wind farms and other development within SSA C. Cumulative effects were not a key consideration under the baseline that was in place at the time of the 2007 LVIA. A cumulative landscape and visual assessment was included in the February 2013 SEI and this was undertaken in accordance with the current guidance provided by Scottish Natural Heritage. Cumulative options that were included in this assessment were Llanbadarn Fynydd operating with the two other SSA C wind farms included in the conjoined Public Inquiry: Llaithddu and Llandinam Repowering and all six proposed SSA C wind farms plus Llanbadarn Fynydd. The cumulative assessment has concentrated on the incremental landscape and visual effects for key landscape and visual receptors that would arise from the introduction of Llanbadarn Fynydd Wind Farm.
- 10.5.2 A key conclusion is that the separation distance of 4.6km between Llanbadarn Fynydd Wind Farm and the closest Llaithddu and Llandinam turbines allied to the topography and landcover patterns on the western side of the Ithon Valley severely limits the potential for significant cumulative visual effects to be sustained by the moderate number of visual receptors that are located in between Llanbadarn Fynydd and the other two wind farms. Very few of these visual receptors, who are mostly residential visual receptors, have the availability of the requisite open successional views to the east and the west. Consequently I consider that Llanbadarn Fynydd Wind Farm would appear to be visually separated from Llaithddu and/or Llandinam Repowering Wind Farm and as such accords with the principle of separation listed in the SNH document ‘*Siting and Design of Windfarms in the Landscape*’ (VATT/LAN/02).

- 10.5.3 The combination of separation distances, intervening topography and landcover patterns will also prevent the formation of what is frequently termed a '*wind farm landscape*' across the upper Ithon Valley. I conclude that there will always be a clear separation between the turbine array that would be formed by Llaithddu and/or Llandinam Repowering Wind Farms on and just to the east of the Waun Ddubarthog Ridgeline and Llanbadarn Fynydd Wind Farm on the eastern side of the Ithon Valley. There are several LANDMAP visual and sensory aspect areas and several Powys LCAs located in this intermediate section of the Ithon Valley which would not sustain significant landscape effects as a consequence of the operation of any of the three wind farms. It is assessed that even if all three wind farms were to be operational whilst the presence of the turbines in outward views from these VSAs or LCAs may become an one of their key characteristics, their presence would not affect the overwhelming majority of their existing key characteristics which are usually more concerned with landscape features, patterns and attributes occurring within the VSAA or LCA.
- 10.5.4 Under the scenario of all the SSA C wind farms being operational, the consequence would be the formation of two wind farm landscapes. One would be the Waun Ddubarthog Ridgeline consisting of Llaithddu, Llandinam Repowering and Hirddywel Wind Farms. The second would feature Llanbadarn Fynydd along with Neuadd Goch Bank, Garreg Llwyd and Bryngydfa Wind Farms and would extend from the top of the eastern side of the Ithon Valley eastwards as far as the valley south of Felindre that is formed by Deuddwr Brook. However the same baseline landscape factors that apply to the western side of the Ithon Valley allied with the separation distance between the two groups of wind farms would prevent the formation of a single wind farm landscape across SSA C.
- 10.5.5 If all four wind farms were to become operational in the eastern part of SSA C there would be 61 turbines of which Llanbadarn Fynydd would be contributing 17 turbines. In this scenario Llanbadarn Fynydd's turbines would only be occasionally responsible for generating the necessary incremental increase in the magnitude of visual change necessary to raise the level of visual effect sustained by a visual receptor from not significant to significant. Such situations would be most likely to arise for visual receptors located in the Gwenlas Valley who would already be experiencing visual effects from the presence of some of the turbines at Garreg Llwyd, Bryngydfa and/or

Neuadd Goch Bank Wind Farms. With regard to Section Three of Glyndwr's Way which would pass through close to turbines at all four eastern wind farms, it is assessed that the presence of Garreg Llwyd and Bryngydfa Wind Farms would result in significant visual effects being experienced by walkers travelling between Rhuvid Bank and Fron Top regardless of the presence of Llanbadarn Fynydd.

10.6 Conclusions

- 10.6.1 There is a strong rationale for a wind farm to be located at the Llanbadarn Fynydd site within SSA C, particularly on the basis of the landscape characteristics of the site. There are some significant effects likely to be experienced by a small number of local residents, people using approximately 14 km of a 210 km long national trail and a small number of people using local public rights of way and open access areas. These effects will be limited in their spatial extent and in the numbers of visual receptors that will be affected and should be considered to be acceptable, especially in the context of an SSA.
- 10.6.2 Llanbadarn Fynydd Wind Farm is of an appropriate scale and would be located in a landscape which has a relative low overall evaluation under the nationally adopted methodology for assessing landscape character. Significant landscape effects will be restricted to the site itself and its immediate environs where substantial landscape change has already taken place over the past century.
- 10.6.3 Drawing upon my evidence and the LVIA, it is my professional opinion that the range and nature of the landscape and visual effects should be regarded as acceptable.

Figures
