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## Mid Wales (Powys) Conjoined Wind Farms Public Inquiry:

Application by RES UK & Ireland Limited, dated 27 March 2009 for consent under Section 36 of the Electricity Act 1989 to construct and operate a 100MW wind turbine generating station in Powys, Mid Wales ('Llanbrynmair')

Proof of Evidence by ir. Marc van Grieken, Principal of LUC, FLI, BNT on behalf of RES UK & Ireland Ltd.

**RES/LVIA/POE/ Marc van Grieken/SSA-B/Session4**

24<sup>th</sup> February 2014

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**Client:** RES UK & Ireland Ltd.

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# 1 The Witness

## Introduction

- 1.1 My name is Marc van Grieken. I am a landscape architect and Fellow of The Landscape Institute. I provided details of my relevant experience in my proof submitted to Session 2 of this Public Inquiry and do not repeat here, I have included this information as Appendix 1 to this proof.
- 1.2 I have given landscape and visual advice in respect of more than 120 wind energy proposals across the UK. Since I became involved in the assessment of effects on landscape and visual receptors of wind farms and other developments I have made return visits to constructed schemes in order to check whether the predicted effects (which I reported in the LVIA or in evidence to a public inquiry) are reflected in the actual experience of seeing the constructed development in the landscape. I have found that the effects were as predicted. I have also visited numerous wind farms where I have had no involvement, throughout the UK and in the Netherlands, France, Spain and New Zealand.
- 1.3 I believe this has given me a thorough understanding of the effects of wind farms on the landscape and views, and provides me with a reference base to inform the judgement, which is required on a project specific basis, as to whether effects are considered significant in EIA terms. At the time of presenting oral evidence I will have just returned from New Zealand where I have ran four all day training workshops about the 3rd edition of the Guidelines for Landscape and Visual Impact Assessment (GLVIA) on behalf of the Education Foundation of the New Zealand Institute of Landscape Architects (NZILA). This recent work has further informed my experience of identifying thresholds of significance.

## Statement of Truth

- 1.4 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 facts which I regard as being relevant to the opinion that I have expressed and that the Inquiry's attention has been drawn to any matter which would affect the validity

of that opinion. I believe that the facts stated within this proof are true and confirm that the opinions expressed are my own and professionally independent.

## 2 The Evidence

- 2.1 This Proof of Evidence is prepared in relation to cumulative landscape and visual matters to be considered during Session 4 of the Mid Wales (Powys) Conjoined Wind Farms Public Inquiry.
- 2.2 During the Opening Session of the Inquiry, the Inspector stated that evidence in relation to cumulative effects of the proposed wind farm developments would be heard during the relevant sessions. During Session 1, evidence in respect of cumulative effects between proposed wind farm developments located within Technical Advice Note 8: Planning for Renewable Energy (TAN8) <sup>1</sup> Strategic Search Area C (SSA-C) (Llandinam, Llanbadarn Fynydd and Llaithddu Wind Farms) was heard. During Session 2, evidence in respect of cumulative effects between proposed wind farm developments located within Strategic Search Area B (SSA-B) (Carnedd Wen and Llanbrynmair Wind Farms) was heard.
- 2.3 Session 4 of the Inquiry is reserved for the consideration of common matters and potential cumulative effects which may arise between development of wind farms within SSA-B and SSA-C, and in relation to the associated grid infrastructure.

### Session 2 Evidence

- 2.4 Session 2 of the Inquiry considered the cumulative landscape and visual effects of Llanbrynmair against a baseline of operational, consented and proposed wind farms located within SSA-B as outlined in my Proof of Evidence [RES/LVIA/POE/Marc van Grieken/SSA-B].
- 2.5 The August 2013 CSEI and my Proof of Evidence for Session 2 of the Inquiry included detailed consideration of cumulative landscape and visual effects arising from the introduction of Llanbrynmair within SSA-B.
- 2.6 Within Session 2 of the Inquiry, no evidence was led in respect of the cumulative landscape and visual effects of Llanbrynmair against the background of the strategic grid proposals being developed by National Grid (NG) and SP Manweb

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<sup>1</sup> Planning Policy Wales - Technical Advice Note 8: Planning for Renewable Energy (2005) Welsh Assembly Government.

(SPM) to connect proposed wind farm developments located within TAN8 SSAs of Mid Wales to the wider electricity distribution network. Indeed the responsibility of assessing the landscape and visual and cumulative landscape and visual effects of the proposed transmission infrastructure falls to NG and SPM respectively.

## Session 4 Evidence

- 2.7 In this evidence for Session 4, I will not reconsider the cumulative effects already explored within Session 2, but will focus on the potential cumulative effects arising between SSA-B and SSA-C from the introduction of the five proposed wind farm developments and associated grid infrastructure in addition to the baseline of existing and proposed wind energy developments.
- 2.8 This Proof of Evidence does not aim to reiterate the cumulative landscape and visual effects identified within the Cumulative Landscape and Visual Impact Assessment (CLVIA), nevertheless, appropriate reference is made to the CLVIA within the August 2013 CSEI [Chapter 4, CD/RES/BAC/009] where necessary.
- 2.9 In summary, this Proof of Evidence considers the cumulative interaction between SSA-B and SSA-C schemes, and the additional contribution Llanbrynmair and its proposed grid connection infrastructure would make to the potential cumulative landscape and visual change experienced within the Mid Wales (Powys) area.

## Structure of the Evidence

- 2.10 My evidence for Session 4 is structured as follows:
- **Section 1** is introductory;
  - **Section 2** outlines my evidence to the Inquiry in relation to cumulative landscape and visual matters;
  - **Section 3** sets out relevant guidance in respect of scope, methodology and policy relevant to this evidence;
  - **Section 4** outlines the relevant additional information for this inquiry since the submission of information for Session 2;
  - **Section 5** outlines the cumulative landscape and visual issues raised within the Statements of Case for PCC, NRW and The Alliance;

- **Section 6** details the current proposed grid connection information;
- **Section 7** covers my consideration of potential cumulative landscape and visual effects between SSA-B and SSA-C;
- **Section 8** contains a summary of my findings, and my conclusions.

## 3 Approach and Methodology

### Introduction

- 3.1 This evidence has been prepared in accordance with relevant guidance with respect to the assessment of cumulative landscape and visual effects of wind farms (see Relevant Guidance section below).
- 3.2 Reference is also made to:
- the updated landscape and visual impact assessment (LVIA) and cumulative landscape and visual impact assessment (CLVIA) undertaken by LUC [Chapter 4, in Volume I of August 2013 CSEI, CD/RES/BAC/009];
  - the Grid Connection Options Review produced by Mott MacDonald on behalf of RES, Vattenfall, FWL and RWE [AD/RES/040];
  - Grid Session 4 Evidence: SEI on Grid Connection Scenarios produced by LUC on behalf of RES, Vattenfall, FWL and RWE [AD/RES/041];
  - the December 2013 SEI [Volumes I-III, AD/RES/042], including the following documents:
    - Llanbrynmair Grid Connection Route: Grid Connection Assessment – Environmental Review [Volume II, Appendix 2.3, AD/RES/042].
    - Conjoined Cumulative Landscape and Visual Graphics – Graphics and Visualisations [Volume III, Section 3.2, AD/RES/042].
  - Session 4 (Matters in Common/Cumulative) Statement of Case on behalf of Powys CC [PCC-SOC-Session4];
  - Natural Resources Wales Statement of Case for Session 4: Matters in Common and Cumulative Effects [CON-003-SOC-S4];
  - Session Four Matters in Common/Cumulative Effects Alliance Statement of Case [ALL/SOC/S4];

## Relevant Guidance

- 3.3 The 3<sup>rd</sup> edition of the Guidelines for Landscape and Visual Impact Assessment (GLVIA3)<sup>2</sup> [CD-CPL-LAN-005] deals with the assessment of cumulative landscape and visual effects in chapter 7.
- 3.4 Paragraph 7.2 references the 2<sup>nd</sup> Edition of the GLVIA<sup>3</sup> (2002) [CD-CPL-LAN-004], which defines cumulative landscape and visual effects as those that: *'result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.'* [Landscape Institute and IEMA, 2002: 85].
- 3.5 Paragraph 7.3 of GLVIA3 notes that there is an increasing emphasis on exploring the cumulative effects of wind farm developments and references the SNH 2012 cumulative guidance<sup>4</sup> [CD-CPL-LAN-007], which defines cumulative effects as: *'the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of the set of developments, taken together'* [SNH, 2012: Paragraph 7, page 4].
- 3.6 Paragraph 48 of the SNH 2012 guidance further defines cumulative landscape and visual effects. Cumulative landscape effects *'can impact on either the physical fabric or character of the landscape, or any special values attached to it'* (SNH, 2012: paragraph 48, page 10). Cumulative visual effects are effects that can be caused by combined visibility, which *'occurs where the observer is able to see two or more developments from one viewpoint'* and/or sequential effects which *'occur when the observer has to move to another viewpoint to see different developments'* [SNH, 2012: Paragraph 50, page 11].
- 3.7 GLVIA3 finds that cumulative assessment is an area of evolving practice and the approach should reflect the specific characteristics of both the development proposal and the location. Paragraph 7.4 of GLVIA3 confirms that assessors should *'keep abreast of relevant new guidance that may emerge in relation to particular forms of development and give careful thought to an appropriate approach'*. It explains that cumulative assessments can become very substantial

<sup>2</sup> Landscape Institute and Institute of Environmental Management & Assessment (April 2013), *Guidelines for Landscape and Visual Impact Assessment 3<sup>rd</sup> Edition*

<sup>3</sup> Landscape Institute and Institute of Environmental Management & Assessment (2002), *Guidelines for Landscape and Visual Impact Assessment 2<sup>nd</sup> Edition*

<sup>4</sup> SNH (2012) *Assessing the Cumulative Impact of Onshore Wind Energy Developments*

tasks and that this makes it very important to agree the approach on a case-by-case basis. GLVIA3 notes that the scope of cumulative landscape and visual effects must be agreed at the outset in discussion with the competent authority, in this case PCC, and consultation bodies, in this case NRW.

- 3.8 GLVIA3 goes on to state in paragraph 7.5 that the challenge is to keep the task reasonable and proportionate to the nature of the project and, *'Where the competent authority and other stakeholders are uncertain about the preferred approach the landscape professional may have to exercise judgement about what is appropriate and proportionate, and be able to justify the approach taken.'*
- 3.9 The guidance finds that the emphasis in EIA is on the identification and assessment of likely significant effects rather than a comprehensive cataloguing of every conceivable effect that may occur.
- 3.10 The guidance goes on to discuss what cumulative effects should include. This section of the guidance refers to EIA regulations and complex interrelationships between different environmental factors, including for example in paragraph 7.7 the relationship between noise effects and visual effects. Paragraph 7.8 states that *'Of greater importance for LVIA are the cumulative landscape and visual effects that may result from an individual project that is being assessed interacting with the effects of other proposed developments in the area'* and poses two key questions: 1. *'what types of cumulative effects should be considered?'* and 2. *'What past, present or future proposal should be considered, either for the same or different types of development?'*
- 3.11 Paragraph 7.11 suggests that the cumulative assessment could relate to one or a combination of:
- *'other examples of the same type of development;*
  - *other types of development proposed within the study area, including those that might arise as an indirect consequence of the main project under consideration; and*
  - *in the case of large, complex projects, different scheme components or associated ancillary development that in some cases may require their own planning consent.'*

## Relevant Policy

### National Policy Context

3.12 TAN8 outlines that cumulative landscape and visual assessment should be a consideration for developers submitting planning applications for wind energy developments within the identified SSAs. However, TAN 8 states that *'development specific assessments are unlikely to consider the effects of a fully developed SSA'* which is in part due to two reasons:

- *'it would be unreasonable for a developer to consider the effects of other wind turbines within those (as yet) undeveloped parts of an SSA and;*
- *taken in isolation, developer-specific CLVIAs are unlikely to provide the objective data to allow the local planning authority to consider which parts of an SSA can best be developed whilst minimising landscape change.'*

[TAN8, Para. 6.2, Pages 60-61].

3.13 Section 8 of the advice note, outlines supplemental information on cumulative landscape and visual impact, the overall scope and likely extent of acceptable impacts: *'The degree of cumulative impact is a product of the number of and distance between individual wind farms, the inter-relationship between their Sub-areas of Visual Influence (ZVI), the overall character of the landscape and its sensitivity to wind farms, and the siting and design of the wind farms themselves. It is important to recognise that cumulative effects consist of both those upon visual amenity as well as effects on the landscape. The degree of cumulative impact also gives rise to the notion of thresholds, beyond which impacts may not be acceptable.'* [TAN8, Para. 8.2, Page 63].

3.14 Given that *'Within (and immediately adjacent) to the SSAs, the implicit objective is to accept landscape change i.e. a significant change in landscape character from wind turbine development.'* [TAN8, Para. 8.4, Page 63], there is an inevitable consequence that the construction of wind energy developments within the SSAs defined by TAN8 will lead to significant landscape change within the SSAs and the immediately adjacent landscape, and when developments are considered in combination, will lead to cumulative landscape effects within these areas.

3.15 Section 8 summarises by stating that *'TAN 8 (and the work on which it is based), therefore, considered cumulative landscape and visual impacts at the all-Wales*

*level. The strategy adopted is a means of concentrating the impact of wind turbines in a relatively small proportion of the country in areas that are, on balance, technically, practically and environmentally better able to accommodate such impacts than other parts of Wales.* [TAN8, Para. 8.5, Page 63].

- 3.16 At the local level, the cumulative landscape and visual effects on the SSA within which they are situated and the immediately adjacent landscape have been assessed for each of the five proposed wind farm developments which are the subject of the Mid Wales (Powys) Conjoined Wind Farms Public Inquiry. This is consistent with TAN8, which concludes: *'At the local level, accepted thresholds of change, having regard to nationally developed energy capacity targets, can be established by more detailed assessments.'* [TAN8, Para. 8.6, Page 63]. The cumulative landscape and visual effects of Llanbrynmair are assessed in the CLVIA [Chapter 4, in Volume I of August 2013 CSEI, CD/RES/BAC/009].

### **Local Policy Context**

- 3.17 At the local level, the key planning policy relevant to cumulative landscape and visual effects of this proposal is Policy E3 of the Powys Unitary Development Plan (UDP) 2001–2016 which sets out criteria for the acceptability of wind farm developments, one of which is that *'they do not unacceptably adversely affect the environmental and landscape quality of Powys, either on an individual basis or in combination with other proposed or existing similar developments where the cumulative impact of proposals in combination with other approved or existing wind farms would be significantly detrimental to overall environmental quality'*.
- 3.18 I note that this local development plan policy should be viewed in the context of the SSAs identified within the Mid Wales area by national planning policy outlined in TAN8.

### **Scope of this Evidence**

- 3.19 Having reviewed the relevant guidance I have applied my professional judgement to define the scope of this evidence, as follows.
- 3.20 Cumulative effects from the addition of Llanbrynmair to other existing, consented or proposed wind farms in SSA-B, were fully assessed within the CLVIA contained within the August 2013 CSEI [Chapter 4, Volume ICD/RES/BAC/009] and were considered as part of Session 2. Cumulative effects resulting from the

introduction of Llanbrynmair in combination with other types of development proposed within the study area which will arise as a consequence of the project, such as the proposed Llanbrynmair grid connection, are considered in this evidence. With reference to the guidance recommending consideration of the '*combined effect of a set of developments, taken together*' [SNH, 2012: Para 7, page 4] I have interpreted the proposed developments within SSA-B as a set of developments, and the proposed developments within SSA-C as a set of developments. I will therefore consider the potential for significant landscape and visual effects as a result of the interaction of the developments within SSA-B, with those in SSA-C.

- 3.21 It is important to highlight that the scope of my evidence is limited to the contribution that the turbines of Llanbrynmair, its ancillary infrastructure (access tracks, transformers, substation, wind monitoring mast etc.) and associated access road modifications will make to the overall pattern of development within Mid Wales (Powys). I am not required to assess the landscape and visual effects of the proposed National Grid infrastructure, including the National Grid substation proposed at Cefn Coch, nor the proposed SPM grid connection infrastructure or the offsite highway improvement works along the strategic access route outlined in the strategic Traffic Management Plan (sTMP) [CD-COM-TRA-001], other than those specifically assessed and considered in Session 2 relating to the Llanbrynmair Access within the Nant yr Eira Valley. Nevertheless I will briefly consider the off-site highway improvement works along the strategic access route.
- 3.22 Clearly if all proposed developments, along with their associated infrastructure, are to proceed to construction and operation, there will be an accumulation of landscape and visual effects. This will affect the character of SSA-B and SSA-C and the landscape immediately adjacent, and views from within and from outside these areas. This is a consequence of TAN 8 policy, which has been highlighted in previous sessions of this Inquiry, and is unavoidable.
- 3.23 I understand that for the local community and people in Mid Wales (Powys) the main concern may relate to the totality of the cumulative effects of all past, present and future proposals, and that local people may not wish to distinguish between the finite contribution made by the introduction of Llanbrynmair, for

example, to the totality of effects as compared with the contribution made by, for example, Carnedd Wen.

- 3.24 However, it is not my role to assess the contribution that Carnedd Wen makes: this is the responsibility of the Carnedd Wen applicant and advisers. It is also not my responsibility to assess the contribution that the SSA-B and SSA-C developments make to the overall combined or total effect. In my view, my role as a landscape architect is to highlight the likely extent of significant cumulative landscape effects as a result of the introduction of Llanbrynmair when added to the baseline of existing, consented and proposed developments within the study area, and to highlight the likely significant cumulative visual effects and changes in visual amenity that can be attributed to Llanbrynmair. In my view Mr Jeffrey Stevenson, the landscape architect representing RWE Npower Renewable's, is required to do the same with respect to Carnedd Wen Wind Farm and likewise the landscape architects acting on behalf of applicants for wind energy developments located in SSA-C. These landscape architects have individually set out the potential contribution their scheme makes to the overall total cumulative landscape and visual effects.
- 3.25 A suite of documents is available, setting out the conclusions reached with respect to the cumulative effects of each of the schemes. It is my understanding that all landscape architects have considered the potential for significant cumulative interaction between developments within SSA-B and those in SSA-C, and the potential for sequential cumulative visual effects as a consequence of moving from SSA-B to SSA-C (or vice versa).
- 3.26 Using and interpreting this suite of information, PCC, NRW and the Inspector are able to consider firstly the likely range and number of significant cumulative effects, and secondly the overall totality of effects of the developments proposed, on the Mid Wales landscape and visual resource. Finally, this information will allow the decision maker to form a judgement in respect of the overall acceptability of these effects in the overall planning balance. This is clearly a planning matter which goes well beyond the role and responsibility of a landscape architect.
- 3.27 The aim of my evidence is to contribute to this suite of information, to allow the Inspector to draw his conclusions when considering the planning balance.

## Methodology for Assessment of Cumulative Effects

3.28 As set out in the Scope section above, the aim of this evidence is to consider the potential for cumulative landscape and visual effects resulting from the introduction of Llanbrynmair, and to consider the potential for significant cumulative interaction between developments within SSA-B and those in SSA-C.

3.29 The CLVIA distinguishes between several types of cumulative impact:

- *landscape impacts, including:*
  - *impacts on the physical fabric of the landscape;*
  - *impacts on landscape character; and*
  - *impacts on landscapes of special value (i.e. designated landscapes); and*
- *impacts on views, including:*
  - *impacts on landscape character; and*
  - *combined impacts, where several developments are within the observer's arc of vision at the same time;*
  - *successive impacts, where the observer has to turn to see the various developments; and*
  - *sequential impacts, when the observer has to move to another viewpoint to see different developments.*

[SNH 2012, paragraphs 48-50]:

3.30 The CLVIA has been undertaken according to the method outlined in the CLVIA for Scenarios A and B [Chapter 4, in Volume I of August 2013 CSEI, CD/RES/BAC/009].

3.31 This evidence has been informed by the conjoined cumulative landscape and visual graphics document [Volume III, Section 3.2, AD/RES/042]. Refer to Section 4 of this proof for further details.

## Direction of Effects

3.32 I refer to evidence presented during Session 2, whereby for the purpose of this assessment and as part of this evidence I adopt a precautionary approach and judge all effects identified in the assessment to be adverse, whilst noting that some people will not necessarily experience the effects as negative.

## 4 Additional Information

- 4.1 Additional information, of relevance to potential cumulative landscape and visual effects, has been made available, and lodged before the Public Inquiry since the submission of information to Session 2.
- 4.2 This information is summarised below and considered, where applicable, later in this proof in relation to potential cumulative landscape and visual effects.

### National Grid Mid Wales Connection Project

- 4.3 Since the submission of information for Session 2 of the Inquiry, a preferred NG 'hub' substation location west of Cefn Coch has been identified and published within the NG Mid Wales Connection Project Substation Site Report<sup>5</sup>. Figure 3 of the conjoined cumulative landscape and visual graphics document [Volume III, Section 3.2, AD/RES/042] shows the latest preferred route for the 400kV connection between the Cefn Coch NG 'hub' substation and the NG Lower Frankton Grid Supply Point, and the wider electricity distribution network, was published within the NG Mid Wales Connection Project Draft Route Report<sup>6</sup>.

### SPM Mid Wales Connections Project

- 4.4 In September 2013, SP Manweb published its Stage 2 Report<sup>7</sup> and Phase 3 Report<sup>8</sup> which provide further information about the preferred route corridors and potential route lines, to connect proposed wind farm developments in SSA-B and SSA-C to the new 'hub' substation at Cefn Coch. Figure 3 of the conjoined cumulative landscape and visual graphics document [Volume III, Section 3.2, AD/RES/042] shows the latest strategic proposals for the SPM Mid Wales Connections Project,

<sup>5</sup> National Grid, (September 2013). *Mid Wales Connection Project, Connecting Wind Farms through Mid Wales and Shropshire: Substation Site Report* (Draft for Consultation)

<sup>6</sup> National Grid, (September 2013). *Mid Wales Connection Project, Connecting Wind Farms through Mid Wales and Shropshire: Draft Route Report* (Draft for Consultation)

<sup>7</sup> SP Manweb, (September 2013) *Supplementary Routeing Methodology & Route Corridors Appraisal - Stage Two Report*

<sup>8</sup> SP Manweb, (September 2013). *SP Mid Wales Connections: Line Routeing Methodology & Appraisal - Phase 3 Report*

- 4.5 Following the publication of this additional information, the five wind farm applicants commissioned the publication of a number of reports as evidence for Session 4. These reports were lodged in December 2013 as Supplementary Environmental Information (SEI) and are summarised below.

### Connection Options Review

- 4.6 This report [Appendix 2.1, Volume II, AD/RES/040] has been prepared by Mott MacDonald on behalf of Vattenfall, Fferm Wynt Llaithddu Cyf (FWL), RES UK & Ireland Limited (RES) and RWE Npower Renewables Limited (RWE) to provide a technical assessment of the options available for connecting Llanbrynmair, Carnedd Wen, Llanbadarn Fynydd and Llaithddu wind farms to the grid and the infrastructure that each option will require. The report also considers the Section 37 of the Electricity Act 1989 application made by SPM to connect Celtpower's Llandinam Wind Farm Repowering to the grid.
- 4.7 The report assesses the likely connection options based on a range of potential consent decision scenarios as a result of this public inquiry ranging from one wind farm to all proposals being granted consent.

### Grid Session 4 Evidence SEI on Grid Scenarios

- 4.8 This report [Appendix 2.2, Volume II, AD/RES/041, 041a-b] has been prepared by LUC (on behalf of Vattenfall, FWL, RES and RWE) in response to questions which were raised at this Inquiry regarding the environmental effects of the proposed Mid Wales Grid Connection Projects. The report is based on environmental information produced by the five wind farm developers, NG and SPM. The report sets out the findings of a high level assessment of environmental effects of the possible alternative grid connection options.

### Llanbrynmair Grid Connection Route - Environmental Assessment

- 4.9 This document [Appendix 2.3, AD/RES/042] reviews and updates environmental advice relating to the proposed Llanbrynmair grid connection route. This document should be read in conjunction with the August 2013 CSEI [Appendix 4.4, Volume II, CD/RES/BAC/009].

4.10 The review concludes that the revised NG 'hub' substation location will not substantially alter the conclusions reached in the 2010 and 2011 high level environmental assessments undertaken by LUC, relating to Designated Landscapes, Landscape Character, Visual Amenity and Habitats.

### Conjoined Cumulative Landscape & Visual Graphics & Visualisations

4.11 In November 2013, LUC was commissioned to produce conjoined cumulative landscape and visual graphics and visualisations on behalf of the five wind farm applicants (RES, RWE, Vattenfall, FWL and Celtpower).

4.12 This document [Volume III, Section 3.2, AD/RES/042] informs the evidence in relation to cumulative landscape and visual effects between SSA-B and SSA-C for consideration during Session 4 of the Inquiry. It was agreed by the landscape architects representing the five wind farm applicants that in addition to the material supplied by the individual applicants, a set of information common to all applicants would be of assistance to the Public Inquiry. The document provides additional cumulative landscape and visual evidence for Session 4.

4.13 A study area of 20km radius from the outer extents of SSA-B and SSA-C has been used, to encompass the maximum potential extent at which significant cumulative landscape and visual effects could occur.

4.14 Wind energy developments located within the study area include operational, and consented wind farms, wind farms with an existing planning application, wind farms currently at appeal/public inquiry and a small number of proposed wind farms which are currently at design/scoping stage of development. Feed in Tariff (FiT) or single turbine wind energy schemes located within a 5km radius of each of the five applicant wind farms were also included.

4.15 In addition to wind energy developments, Session 4 will also consider the strategic grid connection proposals developed by NG and SPM to connect proposed onshore wind farm developments located within the TAN8 SSAs of Mid Wales (Powys) to the local electricity system and the wider National Electricity Transmission System. The proposed grid connection infrastructure required to connect the five applicant wind farms published by NG and SPM in 2013 is currently limited to 100m wide route corridors based on wood pole (up to 14m in

height) and steel tower (up to 26m – 47m in height) Overhead Line (OHL) infrastructure, with no fixed pole or tower positions.

- 4.16 Considering the amount of information available, a precautionary approach has been taken to the consideration of landscape and visual effects associated with the strategic grid connection proposals.
- 4.17 Zones of Theoretical Visibility (ZTV) have been generated for grid connection infrastructure located along the central point of the route corridors, extending to 1km from the outer extents of the route corridor for grid connections where wood poles are proposed and extending to 2.5km from the outer extents of the route corridor where steel towers are proposed.
- 4.18 CZTVs have been produced to illustrate the potential visibility of wind energy developments and their associated grid connection infrastructure within both SSA-B and SSA-C, and the contribution each of the five applicant wind farms has to the overall pattern of theoretical visibility of wind energy development across this region of Mid Wales.
- 4.19 Eight Conjoined Cumulative Viewpoints (CCVPs) were identified to illustrate the theoretical combined and successive visibility of wind energy developments located in both SSA-B and SSA-C. Each viewpoint demonstrates theoretical visibility of at least one of the five applicant wind farms, in both SSA-B and SSA-C, and is illustrated with existing baseline photography, wireframe visualisations and photomontage visualisations.

## 5 Statements of Case

- 5.1 This section of my proof sets out the key points raised in statements of case by PCC, NRW and The Alliance in relation to cumulative landscape and visual matters.

### Powys County Council (PCC)

- 5.2 The statement of case from PCC [PCC-SOC-Session4] sets out the key concerns held by the council in relation to potential cumulative landscape and visual effects. The three matters of concern are outlined as:

*'The acceptability in landscape and visual terms of the sections of grid infrastructure necessitated by various combinations of wind farms.*

*The acceptability in landscape and visual terms of the cumulative impacts of the application schemes between SSA-B and SSA-C.*

*The acceptability in landscape and visual terms of the works required to permit strategic transport access to the wind farms.'*

[Paragraphs 4.1.1-4.1.3, Page 6]

### Grid Infrastructure

- 5.3 In relation to the acceptability of grid infrastructure to connect the Llanbrynmair Wind Farm, PCC states: *'PCC considers that the parallel twin 132kV OHL connections from the Llanbrynmair and Carnedd Wen sub-stations (to the proposed sub-station at Cefn Coch and/or beyond to the Oswestry sub-station) could be acceptable in landscape and visual terms, both in its own right and cumulatively, subject to appropriate detailed design and mitigation, including the consideration of undergrounding and alternative designs such as parallel twin 'trident' poles, to reasonably minimise the landscape and visual effects..'* [Paragraph 4.2.3, Page 7].
- 5.4 PCC conclude in paragraph 9.1 that *'While there will be impacts from the grid infrastructure associated with the applications from SSA-B they will not be*

*unacceptable from the two applications before this inquiry. This is likely to change if future applications are permitted in SSA-B.'*

- 5.5 In relation to the acceptability of grid infrastructure to connect the Cefn Coch 'hub' substation to Lower Frankton, PCC states: *'PCC considers that the route corridor of the 400kV National Grid connection between the proposed Cefn Coch sub--station and the Oswestry sub--station would have a significant and unacceptable impact on the landscape character of a substantial area of the northern Powys landscape, including in particular parts of the Vyrnwy Valley and several landscapes of High overall evaluation as considered by LANDMAP, as well as significant and unacceptable visual impacts along its length. PCC recognises the reduction of overall effects provided by the proposed undergrounded length along part of the Vyrnwy Valley but considers that this would not adequately mitigate the landscape and visual harm of the scheme overall.'* [Paragraph 4.2.4, Page 7].

### **Cumulative implications between SSA-B and SSA-C**

- 5.6 PCC states that no *'unacceptable cumulative landscape and visual effects would occur between the wind farm schemes before the Inquiry in SSA-B and C'*. It is however their opinion *'that from a few sensitive locations, in particular weather conditions, there is the potential for significant visual effects'* [Paragraph 4.3.1, Page 7-8], arising as a result of interactions between wind energy developments located in SSA-B and SSA-C.
- 5.7 PCC states that although they accept the *'cumulative landscape and visual effects of the Llanbrynmair and Carnedd Wen wind farm schemes, together with the other existing wind farms in SSA B (subject to PCC's objection to the Llanbrynmair access and the Carnedd Wen five turbines). PCC will provide evidence to demonstrate that the cumulative landscape and visual effects of these two schemes in combination with the operational, consented and in planning (TACPA) schemes, together with their associated connections and infrastructure, would be significant and unacceptable.'* [Paragraph 4.3.2, Page 7]

### **Transport Works**

- 5.8 It is understood from PCCs statement of case that there are no landscape and visual concerns in relation to the strategic transport network matters associated with SSA-B and/or Llanbrynmair they will address during Session 4.

## Natural Resources Wales (NRW)

- 5.9 The statement of case from NRW [CON-003-SOC-S4] sets out their key concerns in relation to potential cumulative landscape and visual effects.
- 5.10 NRW's primary concern relates to the proposed wind farms and grid connections being treated separately in any assessment of landscape and visual effects. They state whether *'it is possible in practice to assess properly the cumulative impacts of the proposals and thus minimise their impacts.'* [Paragraph 3.2, Page 3]
- 5.11 NRW states that the grid connections *'will produce potentially significant cumulative landscape and visual effects when considered in combination with the proposed wind turbine sites.'* and that *'no assessment of the cumulative effects of grid connections has been provided by the applicants at this stage.'* [Paragraph 3.3 -3.4, Page 3-4]. NRW believe that a high level assessment should be undertaken to assess the cumulative effects of the wind farm proposals and outlined proposals for the grid connections, *'in order to provide the level of assessment required by EN5 and to comply with the requirements of the EIA Regulations.'* [Paragraph 3.4, Page 4].
- 5.12 NRW state that the applicants have failed to *'provide a comprehensive assessment relating to cumulative ZVIs and photo-montages to illustrate the cumulative impacts from key viewpoints, in combination with other consented wind farm and proposals in Powys. NRW will outline that the lack of such information makes it impossible to assess properly the cumulative landscape and visual effects of the schemes.'* [Paragraph 3.5, Page 4].
- 5.13 NRW have particular concerns regarding cumulative effects on the Snowdonia National Park and the Glyndŵr's Way National Trail, and outline that the *'landscape of Mid Wales outside of SSAs should not become characterised by wind turbines, and that the appearance of large wind turbines in the landscape across Mid Wales - either singly or in groups - should not become the norm.'* [Paragraph 3.8, Page 5].
- 5.14 NRW believe that there is *'insufficient cumulative assessment information to date to examine whether the wider landscape and visual effects of the proposed wind farms and their associated grid connections infrastructure proposed for both SSA B and SSA C have been minimised'*. Adding that *'the absence of a cumulative impact assessment for landscape and visual impacts will make it difficult to*

*identify those aspects of the developments that could and should be amended to comply with national policy.*' [Paragraph 3.9, Page 5].

## The Alliance

- 5.15 The statement of case from The Alliance [ALL/SOC/S4] sets out their key concerns in relation to potential cumulative landscape and visual effects, and their approach to session 4. The Alliance aims to *'examine the cumulative scenarios in terms of landscape and visual effects arising from consideration of the five proposed wind farm schemes before the Inquiry, their proposed grid connections and other proposed, consented and operational wind farms associated with SSA-B and SSA-C.'* [Paragraph 6, Page 2].
- 5.16 The Alliance state there will be *'significant cumulative effects on the character and special qualities of the landscape within, around and between the SSAs, and also significant cumulative effects on the visual amenity and experience of users of National and Regional Trails.'* [Paragraph 6, Page 2].

## Response

- 5.17 I address the issues raised by concerned parties in respect of cumulative landscape and visual effects, including those made in the Statements of Case as outlined above throughout the following sections of this proof. I address the issues raised, but do not repeat my evidence where the same, or similar, issue is repeated in different responses. The fact that I do not name each of the parties who raised issues does not in any way suggest that I give different weight to points made by those parties.

## 6 Proposed Grid Connections

### Llanbrynmair Wind Farm Grid Connection

- 6.1 A (new) grid connection for Llanbrynmair does not form part of the Section 36 application for the wind farm and the assessment of any potential grid connection is limited to a high-level Grid Connection Assessment originally submitted as SEI in 2010 and subsequently included within the August 2013 CSEI [Appendix 4.4, Volume II, A – Supporting Appendices, CD/RES/BAC/009].
- 6.2 LUC was originally commissioned by RES in June 2010 to undertake a 'high-level' assessment of potential 132kV OHL grid connection routes between the proposed Llanbrynmair onsite substations and the potential National Grid substation search areas (E - Aberbechan and F – Cefn Coch).
- 6.3 The purpose of the assessment was to identify a number of environmentally and technically feasible broad route corridors, which could be followed by OHL grid infrastructure to connect Llanbrynmair to a 400kV NG 'hub' substation at Cefn Coch. This was based on the identification of environmental and technical constraints, and the consideration of landscape and visual routeing principles.
- 6.4 In November 2013, LUC was commissioned by RES to undertake a review of the original report in relation to potential landscape and visual and ecological effects. This review is included in the December 2013 SEI [Appendix 2.3, Volume II, AD/RES/042]. The review concludes that: *'The content and findings of the LUC studies are still current and will remain as such until more detailed information about the Mid Wales Connections Project is made publicly available to RES and other developers by SPM and National Grid. At this time it is not considered feasible that a more detailed grid connection routeing study can be provided.'* [Paragraph 1.4].
- 6.5 Based on the findings of the original grid connection routeing assessment and the updated environmental review, I am satisfied that an environmentally and technically feasible broad route corridor has been identified.

## Strategic Grid Connection Options

- 6.6 The latest proposed outline grid connection corridors to connect the wind farms were published by SPM in September 2013, as outlined in Section 5 of this proof. At present the information available is limited to 100m wide route corridors within which a preferred OHL route will be identified during the EIA process to be undertaken by SPM.
- 6.7 The LUC grid connection scenarios report [Appendix 2.2, AD/RES/041, AD/RES/041a and AD/RES/041b] outlines the findings of the high level desk based assessment of the environmental effects of the various grid connection options. The report does not seek to assess the cumulative environmental effects of each connection scenario, as that requires a level of information and assessment that is not currently available.
- 6.8 Nevertheless, the LUC report summarises the potential environmental effects, including landscape and visual amenity, associated with each connection scenario. Scenarios 3, 4, 5, 6 and 7, and Scenarios 8a and 8b, which include the connection of Llanbrynmair, summarise the potential effects on landscape and visual amenity as follows:
- *'Landscape and visual effects are likely to arise along the routes of this scenario, however the effects will be localised and will diminish rapidly with distance from the route;*
  - *Views are also variable depending on localised topography and tree cover;*
  - *Localised significant effects have been identified for visual receptors utilising a proportion of the footpaths, roads and residential properties sited close to the routes of this scenario;*
  - *Landscape and visual effects are likely along line route section 1 of BNC 3, BNC 4 and BNC5. However, these elements of this scenario will be screened from some receptors and directions. The OHL may potentially be seen alongside other above ground equipment such as overhead electricity lines and the turbines of the planned wind farms.*
  - *Effects are likely for landscape and visual receptors around the substation at Cefn Coch than the SP Manweb Collector Substation: Option A. It is anticipated that there would be unrestricted and filtered views of the*

*substation at Cefn Coch from the surrounding area, and it would potentially be seen alongside above ground equipment such as overhead electricity lines and the turbines of the planned wind farms.'*

[Tables 4-6, AD/RES/041]

- 6.9 I believe that the above documents, along with the information provided by each developer within their individual application and SEI information, provide sufficient information to enable the Inspector to come to a judgement on the overall acceptability of the combined or total cumulative landscape and visual effects from the five wind farm proposals and their likely grid connections.

### Landscape and Visual Effects - Grid Connections

- 6.10 The conjoined cumulative graphics document [Section 3.2, Volume III, AD/RES/042] includes A3 and A0 figures showing the route corridors proposed by SPM and NG to connect the proposed wind farms to the wider electricity distribution network, as outlined in Section 5 of this proof. Figure 5 and Figure 13 within this document show the proposed NG and SPM grid connection networks and the theoretical visibility of the proposed infrastructure.

#### Wood Pole OHLs

- 6.11 Significant landscape and visual effects associated with proposed Heavy Duty Wood Pole (HDWP) line grid connections (typically a maximum of 14m in height) are judged to be limited to a 1km offset of the proposed OHL line route. Given that the current grid connection corridors are 100m wide, ZTVs were generated based on line routes centred within these corridors and extending to a distance of 1km from the outer extents of the route corridor (therefore the total extent of ZTV extends to a width of 2.1km).

#### Steel Tower OHLs

- 6.12 Significant landscape and visual effects associated with proposed steel tower (typically a maximum of 26m/47m in height) grid connections are judged to be limited to a 2.5km offset of the proposed OHL line route. Given that the current grid connection corridors are 100m wide, ZTVs were generated based on line routes centred within these corridors and extending to a distance of 2.5km from

the outer extents of the route corridor (therefore the total extent of ZTV extends to a width of 5.1km).

## Proposed Llanbrynmair Grid Connection

- 6.13 The SPM Line Routeing Methodology and Appraisal – Phase 3 Report states that Llanbrynmair will most likely be connected to the National Grid ‘hub’ substation at Cefn Coch via a 132kV HDWP OHL and short section of 132kV steel tower OHL (BNC 3-4-5).
- 6.14 The proposed route descends into the small-medium scale valley of the Nant y Graig Lwyd and traverses a shoulder of moorland, remaining behind the ridge where possible. Between Cwnderwen and Cors yr Ebolion, the route crosses medium to large-scale upland pasture, largely avoiding the coniferous plantations of Ffridd-Rhyd-Ddu, before passing across larger-scale moorland plateau, avoiding the highest ground where possible. From the head of Nant Wythan the line will be carried to the Cefn Coch ‘hub’ substation on steel towers. These will likely be visible in more distant views as outlined above, including from the Banwy Valley to the north, however the towers will be partially back clothed or screened by coniferous forestry at Mynydd Carreg-y-big in some views.

## Potential Landscape Effects

### *Landscape Character Effects*

- 6.15 The SPM preferred 132kV route corridor (BNC 3-4-5) shown on Figure 3 and Figure 13 is located solely within the Cambrian Mountains Regional Character Area (RCA). Potential significant effects as a result of the proposed grid connection will be limited to local landscape character effects, with direct effects along the final route of the infrastructure and indirect effects on the perceptual character of the surrounding landscape where it crosses the Nant yr Eira Valley and Llanbrynmair Moors, extending to approximately 1km and diminishing with distance.
- 6.16 The introduction of the grid connection will lead to a significant landscape character change to a localised area at the northern end of the Cambrian Mountains RCA. This will occur as a result of the change to the sense of naturalness that is noted as a key characteristic of this RCA, however the

extensive undulating plateau, incised valleys and extensive panoramic views of the RSA will remain.

- 6.17 The proposed grid connection will cross several Landscape Character Areas (LCAs) defined within the Powys Landscape Character Assessment. The Dyfnant Forest/Llanbrynmair Moors (M5), Tregynon/Llanerfyl (M13) and Esgair Cwmowen (M14) LCAs will experience direct and indirect characterising effects along the final route and the immediate surrounding landscape, from the introduction of the grid infrastructure.
- 6.18 It is judged there are likely to be significant landscape effects along the final route of the grid infrastructure, and the immediate surrounding area up to approximately 1km. The characterising effect will diminish with distance, and overall the landscape effect on the Cambrian Mountains RCA and the Dyfnant Forest/Llanbrynmair Moors (M5), Tregynon/Llanerfyl (M13) and Esgair Cwmowen (M14) LCAs is not likely to be significant, taking account of the limited geographic extent of the characterising effect.
- 6.19 Effects on specific LANDMAP aspect areas have not been considered, however it is my opinion that significant landscape effects upon LANDMAP aspect areas, including visual and sensory aspect areas, will not extend beyond 1km from the final proposed route of the grid connection.

#### *Implications for Designated Landscapes*

- 6.20 It is judged that the proposed Llanbrynmair grid connection will not result in additional landscape effects on the Snowdonia National Park and North Ceredigion Upland Special Landscape Area (SLA) considered within the LVIA and CLVIA.

#### **Potential Visual Effects**

- 6.21 Figures 5 and 13 shows the extent of theoretical visibility of the proposed grid connection. Given the size of the likely proposed grid connection infrastructure, (HDWP OHL of 14m in height and steel tower OHL of 26m in height), it is judged that significant visual effects are not likely to extend beyond 1km and 2.5km respectively from the final route of the grid connection.
- 6.22 Within close proximity (approximately 100-200m) the grid connection infrastructure will form an additional new feature in views across the upper reaches of the Nant yr Eira Valley and the open moorland and pasture to the east. The wood pole line may be seen on the skyline above Nant yr Graig Lwyd by

receptors travelling through, and a small number of residential properties within, the Nant yr Eira Valley, however visibility will be in the context of Llanbrynmair and other SSA-B wind farms. The wood pole line would be seen by receptors on the Glyndŵr's Way above the Nant yr Graig Lwyd and from within the Nant yr Eira valley, however visibility would again be viewed in the context of Llanbrynmair which will form the key feature in these views.

- 6.23 On the south side of the Nant yr Eira Valley, the route will be back clothed by forestry and where crossing the open moorland plateau beyond Cors yr Ebolion the wood pole line will be a minor element in this open landscape, avoiding higher ground where possible, and viewed in the context of the Tirgwynt turbines. Where the line becomes steel tower, visibility is likely to extend across a wider area, however views of the towers will be in the context of the adjacent Tirgwynt turbines to the west and the Cefn Coch 'hub' substation and will rarely be viewed in isolation.
- 6.24 Visual effects will extend beyond the extents of the ZTVs shown on Figures 5 and 13, however in more distant views the infrastructure will form a minor element in the view, often appearing back clothed against the surrounding topography and forestry plantations, and always in the context of nearby wind farm developments and associated infrastructure located within SSA-B.
- 6.25 Sequential views of the proposed grid connection will be possible from the Glyndŵr's Way National Trail as outlined above, the minor road between Llanerfyl and Talerddig, and the minor road between Mynydd yr Hendre and Cefn Coch. Views of the OHL infrastructure will be limited in their extent, and most often in the context of Llanbrynmair and other SSA-B wind farms and their associated infrastructure. No additional significant sequential visual effects arising from visibility of the Llanbrynmair grid connection are predicted from these routes.

### **Potential Cumulative Effects**

- 6.26 The SPM Line Routeing Methodology and Appraisal – Phase 3 Report states that Carnedd Wen will most likely be connected to the National Grid 'hub' substation at Cefn Coch via a separate OHL located within the same route corridor (BNC 3, 4, 5), and that the OHLs connecting the two schemes would run in parallel. The location of the two grid connections in close proximity to one another will minimise the potential extent of characterising landscape effects and visual effects.

- 6.27 In the event that both wind farms and grid connections coexist in the landscape, the addition of the Llanbrynmair grid connection will lead to additional, albeit localised cumulative effects along the grid connection route and the immediate surrounding area, however these will be in the context of neighbouring wind farms and grid connections within SSA-B. I consider that in this context, these cumulative landscape and visual effects will not be significant.
- 6.28 Given the distance between the proposed SSA-B and SSA-C wind farms and their associated grid connections, I am satisfied that no additional significant cumulative effects will be experienced within SSA-C or its immediate surroundings as a result from the introduction of the Llanbrynmair grid connection, and that additional effects associated with the Llanbrynmair grid connection will be contained within the extents of SSA-B.

## Conclusions

- 6.29 I conclude that a grid connection between Llanbrynmair and the Cefn Coch 'hub' substation can be accommodated within the landscape without, in my view, unacceptable landscape and visual effects. In cumulative terms, it is considered that if Carnedd Wen is to be consented, along with its proposed HDWP OHL grid connection to Cefn Coch, the two proposed grid connections could coexist in parallel within the landscape without unacceptable landscape and visual effects. I draw this conclusion in the context of the anticipated significant landscape and visual change as a direct consequence of implementing the TAN 8 policy.
- 6.30 It is noted that PCC are in agreement with the above: '*PCC considers that the parallel twin 132kV OHL connections from the Llanbrynmair and Carnedd Wen sub-stations (to the proposed sub-station at Cefn Coch and/or beyond to the Oswestry sub-station) could be acceptable in landscape and visual terms, both in its own right and cumulatively, subject to appropriate detailed design and mitigation, including the consideration of undergrounding and alternative designs such as parallel twin 'trident' poles, to reasonably minimise the landscape and visual effects..*' [Paragraph 4.2.3, Page 7].
- 6.31 A full Environmental Impact Assessment (EIA) of the final proposed grid infrastructure between Llanbrynmair and the NG 'hub' substation at Cefn Coch will be produced by SPM, including a consideration of cumulative landscape and

visual effects. NG will undertake a similar assessment as part of the application process for the proposed 'hub' substation at Cefn Coch and the OHL grid connection infrastructure between the Cefn Coch 'hub' substation and Lower Frankton in Shropshire.

## 7 Cumulative Landscape and Visual Effects between SSA-B and SSA-C

- 7.1 This section of my proof draws on the graphics and visualisations provided within the Conjoined Cumulative landscape and visual – graphics and visualisations document [Section 3.2, Volume III, AD/RES/042].
- 7.2 The proposed turbines of the wind farms within SSA-B and SSA-C are separated by a minimum distance of 20km. At this distance it is judged that there is no potential for significant cumulative interaction between SSA-B and SSA-C. This section of my proof confirms the limited opportunity for additional significant cumulative landscape and visual effects from the introduction of Llanbrynmair and its grid connection to a baseline which includes all existing, consented and proposed wind farms and grid connections.
- 7.3 In my opinion the significant cumulative landscape effects are not likely to extend beyond those which were identified within the individual LVIA and CLVIAs of each of the other five proposed wind farms.

### Cumulative Landscape and Visual Effects

- 7.4 A third scenario (Scenario C), in addition to the two scenarios (Scenarios A and B) assessed in the CLVIA [Chapter 4, in Volume I of August 2013 CSEI, CD/RES/BAC/009] has been considered in this proof, as described below:
- **Scenario C:** Llanbrynmair in the context of existing, consented and proposed wind farms in SSA-B and SSA-C (wind farms and single turbines listed in Table 2 of the conjoined cumulative landscape and visual graphics document [Volume III, Section 3.2, AD/RES/042]).

### Cumulative Landscape Effects

- 7.5 The CLVIA assessed the addition of Llanbrynmair to the landscape change within the northern end of the Cambrian Mountains RCA in two scenarios. Scenario A assessed the addition of Llanbrynmair to a baseline of operational and consented

wind farms, and a significant (moderate) cumulative landscape effect was recorded, where the wind farm would introduce a new group of turbines north of the Carno group.

- 7.6 Scenario B assessed the addition of Llanbrynmair to operational, consented and proposed wind farms, where Llanbrynmair would appear as an extension to the proposed Carnedd Wen Wind Farm and fit within the pattern of development within SSA-B. This was judged not to result in a significant additional change in landscape character.
- 7.7 In scenario C the introduction of Llanbrynmair will lead to a low magnitude of change, in conjunction with other wind energy developments, in the landscape character of SSA-B and the immediate surrounding area of Mid Wales (Powys). The sensitivity of this area to wind energy development is judged to be medium, and combined with the low magnitude of change is judged to result in a cumulative effect of minor significance.

### Cumulative Visual Effects

- 7.8 The CLVIA concluded that in Scenario A, there will be significant (moderate) cumulative (additional) effects on views from five viewpoints (CVP 1, 2, 9, 10, 13) and significant (major) cumulative effects would be experienced from the minor road between Llanerfyl and Talerdigg and from a section of the Glyndŵr's Way National Trail between Pen Coed and Brynaere.
- 7.9 In Scenario B the CLVIA concluded that there would be significant, (albeit lesser) moderate, additional effects on views from the Glyndŵr's Way National Trail between Pen Coed and Brynaere and from CVP8 on the Glyndŵr's Way crossing Pen Coed. Major significant effects on views will continue to be experienced from the minor road between Llanerfyl and Talerdigg.
- 7.10 In Scenario C the significant cumulative visual effects are not expected to extend beyond those which were identified within the individual LVIA's and CLVIA's of each of the five proposed wind farms.

### Zone of Theoretical Visibility (ZTV) Analysis

- 7.11 This section of my Proof of Evidence evaluates the evidence provided in the Zone of Theoretical Visibility (ZTV) figures included within the conjoined cumulative graphics document [Section 3.2, Volume III, AD/RES/042].
- 7.12 The ZTV shown on Figures 4 and 12 indicates that combined or successive visibility of the proposed wind farms in SSA-B and SSA-C is limited. The ZTV illustrates where only proposed wind farms in SSA-B (Llanbrynmair and Carnedd Wen) will be visible (shown in blue), where proposed wind farms in SSA-C (Llandinam Repowering, Llanbadarn Fynydd and Llaithddu) will be visible (shown in green) and where combined or successive views of at least one wind farm from both SSA-B and SSA-C will be visible (shown in orange).
- 7.13 Areas of the ZTV where intervisibility is possible between the proposed SSA-B and SSA-C wind farms (shown in orange) are generally limited to small areas on higher ground between SSA-B and SSA-C. These are focussed across two bands of elevated upland hills and plateau. Combined visibility is indicated across a proportion of the Cambrian Mountains, running from the north-east of SSA-B to the south-west of SSA-C, and elevated areas of the undulating plateau landscape between Welshpool to the north-east and Rhayader to the south-west of SSA-C. Visibility within valleys that lie between SSA-B and SSA-C (including the Caersws Basin, the Carno, Severn, Trannon and Clywedog Valleys) is generally limited to either SSA-B or SSA-C schemes, with very limited areas where wind farms located in both SSAs are visible.
- 7.14 Figures 6 and 6a illustrate the additional contribution Llanbrynmair makes to the extent of theoretical visibility of wind energy development in the Mid Wales area. The green areas of the ZTV indicate the theoretical visibility of existing and proposed wind energy developments and their associated grid infrastructure within SSA-B, where Llanbrynmair makes no contribution. The orange areas of the ZTV indicate the extent of theoretical visibility of SSA-B wind energy developments and their proposed grid connections, including where Llanbrynmair and/or its proposed grid connection make a contribution to the visibility of wind energy development located SSA-B. The pink areas of the ZTV indicate where Llanbrynmair and/or its proposed grid connection are visible in isolation, making a contribution to the visibility of wind energy developments in SSA-B which would otherwise not arise.

7.15 It is evident from Figures 6 and 6a that the addition of Llanbrynmair to the baseline of SSA-B wind farm developments, introduces only limited additional theoretical visibility of wind farm development (pink areas of ZTV), where no other SSA-B wind energy developments or their proposed grid connections are visible. These small pockets of visibility are limited to views from low lying valleys near Glantwymyn, Dolfach, Llanbrynmair and the Caersws Basin, where distant pitched views towards Llanbrynmair are possible.

### **Conjoined Cumulative Viewpoints**

7.16 Eight Conjoined Cumulative Viewpoints (CCVPs) were identified and agreed with PCC through consultation with Mr Philip Russell-Vick DipLa CMLI, to illustrate the theoretical combined and successive visibility of wind energy developments located in both SSA-B and SSA-C. Each viewpoint demonstrates theoretical visibility of at least one of the five proposed wind farms, from both SSA-B and SSA-C, and is illustrated with existing baseline photography, wireframe visualisations and photomontage visualisations.

7.17 Except CCVP 6, located in the Caersws Basin, each of the eight viewpoints was previously used in the assessment of visual effects, and/or cumulative visual effects in at least one of the assessments of the five proposed wind farms, as covered in sessions 1 and 2 of this inquiry. An evaluation of the additional cumulative visual effect Llanbrynmair contributes from each of these viewpoints is detailed below.

#### *CCVP 1: Plynlimon*

7.18 This viewpoint was included in the LVIA (VP20) and CLVIA (CVP6) of Llanbrynmair included in the August 2013 CSEI [Chapter 4, Volume I, CD/RES/BAC/009]. No significant visual or cumulative visual effects were identified from this viewpoint in the LVIA or CLVIA (Minor in the LVIA and scenarios A and B of the CLVIA). The sensitivity of receptors at this viewpoint is judged to be high, since the viewpoint is a popular outdoor recreational destination and located within the North Ceredigion Uplands SLA, where focus is on the landscape and views.

7.19 The introduction of Llanbrynmair in Scenario C will add an additional wind farm development to SSA-B, extending the Carnedd Wen group of turbines to the right of the view. However, the Carno group will remain the closest group to the viewpoint [CCVP1, View A, Page 1-2]. Wind energy developments in SSA-C are

visible as a separate cluster of developments to the east, south-east of the viewpoint [CCVP1, View B, Page 1-2]. The additional visual change from the introduction of Llanbrynmair in views from this viewpoint will be of a low magnitude and the additional effect will be **minor**.

*CCVP 2: Kerry Ridgeway, Two Tumps*

- 7.20 This viewpoint was included in the Llanbrynmair LVIA (VP 22) and CLVIA (CVP 8). No significant visual or cumulative visual effects were identified from this viewpoint in the LVIA or CLVIA (Minor in the LVIA and scenarios A and B of the CLVIA). The sensitivity of receptors at this viewpoint is judged to be high, since the viewpoint is on the advertised Kerry Ridgeway Recreational Trail.
- 7.21 The introduction of Llanbrynmair in Scenario C will add an additional wind farm development to SSA-B, with turbines appearing alongside the turbines of Carnedd Wen and Tirgwynt [CCVP 2, View C, Page 1-2], although they will not extend visibility of turbines across a new proportion of the skyline in distant views to the north-west from this viewpoint. SSA-C wind energy developments form a more prominent feature in views from the viewpoint [CCVP 2, View B, Page 1-2], appearing much closer in views to the south-west. The addition of Llanbrynmair will nevertheless result in a perceptible additional change, albeit of a low magnitude, which will result in an additional effect of **minor** significance.

*CCVP 3: Garreg Hir*

- 7.22 This viewpoint was included in the Llanbrynmair CLVIA (CVP 10). Significant cumulative visual effects were identified from this viewpoint in the CLVIA (Moderate in scenario A and minor in scenario B). The sensitivity of receptors at this viewpoint is considered to be high, as it represents views of receptors using the location for outdoor recreation. Views are also possible towards the Snowdonia National Park and there may be a focus on views of the surrounding landscape.
- 7.23 The addition of Llanbrynmair into views north, north-west from this viewpoint [CCVP 3, View A, Page 1-2] will appear to extend Carnedd Wen towards the viewpoint and leftwards across the view. The turbines will not however, be new features in the available view and will not introduce turbines to an otherwise undeveloped part of the skyline, as Cemmaes 2 and Cemmaes are visible on the skyline beyond. Tirgwynt and Esgair Cwmowen form the key focus of the view towards SSA-B. To the south, south-east [CCVP 3, View C, Page 1-2] the SSA-C

wind energy developments are visible on the distant horizon as two distinct clusters of wind turbines.

- 7.24 The turbines of Llanbrynmair will form a part of the SSA-B set of wind energy developments and will not extend the field of view occupied by turbines. Although perceptible from this location, the additional change to the view from the introduction of Llanbrynmair is considered to be of a low magnitude and result in an additional effect of **minor** significance.

*CCVP 4: Beacon Ring Hillfort*

- 7.25 This viewpoint was included in the Llanbrynmair CLVIA (CVP 14). No significant cumulative visual effects were identified from this viewpoint in the CLVIA (Minor in scenario A and negligible in scenario B). Receptors at this viewpoint are considered to be of high sensitivity, since it represents views of receptors from a cultural heritage asset on the Offa's Dyke National Trail.
- 7.26 The SSA-C wind energy developments are visible in views to the south-east from this viewpoint [CCVP 4, View A, Page 1-2] and form a distinct cluster of wind farms on the distant horizon. Llanbrynmair will be visible in views to the west from this viewpoint [CCVP 4, View b, Page 1-2]. The addition of Llanbrynmair will not interfere with views of the skyline of the Snowdonia National Park, but appear as an extension alongside the turbines of Carnedd Wen, leading to a barely perceptible magnitude of change, resulting in an effect of **negligible** significance.

*CCVP 5: Fron Top*

- 7.27 This viewpoint was not previously used in the LVIA or CLVIA of Llanbrynmair and therefore no assessments of Scenarios A and B were previously made. The sensitivity of receptors at this viewpoint is considered to be high, since the viewpoint represents views of receptors from Offa's Dyke National Trail. Views west, north-west towards the wind energy developments located in SSA-C are the main focus of views from this viewpoint [CCVP 5, View A, Page 1-2], with turbines appearing across a large proportion of the available skyline, and Llanbadarn Fynydd appearing in the foreground of the view to the north, north-west.
- 7.28 Llanbrynmair is visible on the distant horizon, beyond the wind farms located in SSA-C, to the north-west of the viewpoint [CCVP 5, View B, Page 1-2]. The turbines form a minor element in the view, occupying a small proportion of the

available view and appearing alongside those of Carnedd Wen and Tirgwynt, as one wind farm across the Llanbrynmair Moors. The SSA-C schemes of Llanbadarn Fynydd and Neuadd Goch Bank form the main focus of the view from this viewpoint, with turbines occupying views from the south-west, clockwise to the north-west. The addition of Llanbrynmair results in a barely perceptible magnitude of change and a cumulative visual effect of **negligible** significance.

*CCVP 6: A470, Caersws*

- 7.29 This viewpoint was not previously used in the LVIA or CLVIA for Llanbrynmair, and therefore no assessments of Scenarios A and B were previously made. The viewpoint is not included in the visual assessments undertaken by the four other proposed wind farm developments. Its inclusion as a CCVP was at the request of Mr Philip Russell-Vick DipLa CMLI following consultation with Mr Jeffrey Stevenson, the landscape architect acting on behalf of Carnedd Wen.
- 7.30 The viewpoint is located within the Caersws Basin, in a lowland position offering distant views to surrounding higher ground and represents views of transitory receptors travelling through the Caersws Basin on the A470. The sensitivity of receptors at this viewpoint is considered to be low, since receptors will be travelling at speed through the landscape.
- 7.31 Llandinam Repowering is the only SSA-C wind energy development visible from this viewpoint [CCVP 6, View A, Page 1-2] approximately 4km to the south-east, with turbine blade tips appearing above the skyline to the south when travelling south along the A470. Carno I and Carno III are visible to the west, north-west appearing as one development above the skyline when travelling on the A470.
- 7.32 Four of the Llanbrynmair turbines are visible to the north, north-west, appearing on the distant horizon of the Llanbrynmair Moors in views along the Carno Valley [CCVP 6, View B, Page 1-2]. The bare ground ZTVs indicate visibility from across the Caersws Basin and the route of the A470. Llanbrynmair will increase the number of turbines visible alongside those of Carnedd Wen, however at approximately 17km, the turbines will be largely unnoticeable to receptors travelling through the landscape of the Caersws Basin and vegetation will intermittently screen views of turbines from this route and the surrounding area. The turbines form a minor element in the view, appearing at an oblique angle to the direction of travel when travelling north-east along the A470. The addition of

Llanbrynmair will result in a barely perceptible magnitude of change and a cumulative visual effect of **negligible** significance.

*CCVP 7: B4518 South of Harmon*

- 7.33 This viewpoint was not previously used in the Llanbrynmair LVIA or CLVIA. The viewpoint represents receptors crossing higher ground when travelling north on the B4518. The sensitivity of receptors at this viewpoint is judged to be low as they will be passing at speed through the landscape.
- 7.34 Wind farms located in SSA-C are visible to the north, north-east [CCVP 7, View B, Page 1-2] when travelling north along the B4518. Llandinam Repowering, Llaithddu and Hirddywell Wind Farms form the key focus of the view, occupying a substantial proportion of the skyline to the north.
- 7.35 SSA-B schemes are visible as a separate set of wind farms approximately 29km to the north [CCVP 7, View A, Page 1-2], with Tirgwynt appearing as the closest wind farm to the viewpoint. Llanbrynmair will appear as an extension to Carnedd Wen at this distance. The addition of Llanbrynmair will not increase the spread of turbines within the available view and will result in a barely perceptible magnitude of change and a cumulative visual effect of **negligible** significance.

*CCVP 8: Foel Dinas*

- 7.36 This viewpoint was included in the Llanbrynmair LVIA (VP 4) and CLVIA (CVP 4). No significant visual effects were identified from this viewpoint in the LVIA or CLVIA (Minor in the LVIA and scenarios A and B of the CLVIA). The sensitivity of this viewpoint is judged to be high due its location in the Snowdonia National Park.
- 7.37 Views towards SSA-B and SSA-C are possible to the south-east from this viewpoint [CCVP 8, View B, Page 1-2]. SSA-B wind energy developments appear in the mid-distance of the view, occupying a large proportion of the skyline across the Llanbrynmair Moors. SSA-C wind energy developments are barely perceptible on the distant skyline beyond the wind energy developments of SSA-B. Although turbines will be perceptible from this viewpoint, the individual wind energy developments will not be distinguishable, instead forming a cluster of turbines as a minor feature of the view in the far distance.

- 7.38 The introduction of Llanbrynmair will result in a small additional change, where turbines will appear less prominent beyond those of Carnedd Wen, although will contribute to filling the gap between Carnedd Wen and the Cemmaes Wind Farms. The additional change is judged to be of a low magnitude, resulting in an additional cumulative visual effect of **minor** significance.
- 7.39 In summary, for those viewpoints used to assess visual effects in the LVIA and CLVIA and subsequently included as conjoined cumulative viewpoints and assessed in this proof of evidence (CCVP 1, 2, 3, 4 and 8), the addition of Llanbrynmair is judged to lead to a low or barely perceptible magnitude of additional visual change, resulting in non-significant cumulative visual effects (minor or negligible). For the additional three viewpoints (CCVP 5, 6, 7), the addition of Llanbrynmair to the baseline of Scenario C is judged to result in non-significant cumulative visual effects due to a low or barely perceptible magnitude of additional visual change. This confirms my judgement that no significant cumulative visual effects will be experienced between wind energy developments in SSA-B and SSA-C.

### Cumulative Sequential Visual Effects on Routes

- 7.40 This proof does not aim to reassess all the specific routes which were assessed within the CLVIA [Chapter 4, CD/RES/BAC/009], but instead focuses on routes where receptors may potentially experience significant cumulative visual effects (sequential effects) when travelling through the Mid Wales area within, and between SSA-B and SSA-C.
- 7.41 The following routes which are considered were included at the request of Mr Philip Russell-Vick DipLa CMLI following consultation with Mr Jeffrey Stevenson, the landscape architect acting on behalf of Carnedd Wen.

#### *A458 – between Welshpool and Mallwyd*

- 7.42 Receptors travelling on this main road have a low sensitivity because they are passing at speed through the landscape. Figures 6 and 6a indicate that visibility of Llanbrynmair from this route will always be in the context of other SSA-B wind farms, most notably Carnedd Wen. The turbines will be seen to the south of the A458 and appear as one wind farm alongside Carnedd Wen across the skyline of

the Llanbrynmair Moors. Visibility of SSA-C schemes in isolation is limited to a section of the route north of Welshpool as shown on Figures 8-10.

- 7.43 It is judged that the additional cumulative magnitude of change to views from this route will be barely perceptible, resulting in a **negligible** cumulative visual effect.

*A470 – between Llangurig and Dolgellau*

- 7.44 Receptors travelling on this road have a low sensitivity because they are passing at speed through the landscape. As outlined in the assessment from CCVP 6, a small number of the Llanbrynmair turbines will be visible to the north, north-west, appearing on the distant horizon of the Llanbrynmair Moors in views along the Carno Valley. Receptors travelling on the A470 within the Caersws basin will experience this glimpsed view from a short section of the route, which will be intermittently screened by roadside and intervening vegetation.

- 7.45 Figures 6 and 6a illustrate that Llanbrynmair will be theoretically visible in isolation (shown in pink on the ZTV) from short sections between Caersws and Glantwymyn. Views will be limited to blade tips and will be intermittently screened by vegetation. Visibility of SSA-C schemes in isolation is limited to a section of the route north-west of Caersws as shown on Figures 8-10.

- 7.46 It is judged that the additional cumulative magnitude of change to views from this route will be low, resulting in a **negligible** cumulative visual effect.

*A483 – between Oswestry and Llandrindod Wells*

- 7.47 Receptors travelling on this road are judged to have a low sensitivity because they are passing at speed through the landscape. Figures 6 and 6a illustrate that there will be limited theoretical visibility of Llanbrynmair from the A483, restricted to short sections south of Four Crosses and Newtown at a distance of over 23km. Llanbrynmair will be largely imperceptible at this distance and will appear as one wind farm in the context of Carnedd Wen. The ZTV indicates will be no areas where the turbines are visible in isolation (shown in pink on the ZTV). Visibility of SSA-C schemes in isolation is extensive along this route, as shown on Figures 8-10, and it is likely that distant visibility of turbines within SSA-B will be largely unnoticeable to most receptors.

7.48 It is judged that the additional cumulative magnitude of change to views from this route will be barely perceptible, resulting in a **negligible** cumulative visual effect.

#### *Glyndŵr's Way National Trail*

7.49 This route is a National Trail, where focus is likely to be on the landscape, therefore receptor sensitivity is considered to be high. As identified in the CLVIA, the addition of Llanbrynmair will introduce additional visibility of turbines from the Glyndŵr's Way within the Nant yr Eira Valley, where the wind farm will appear more prominent than other SSA-B schemes from this short section of the trail, leading to a local significant cumulative effect. When Scenario C is considered, the significant (**moderate**) cumulative effect will remain locally within 5km (between Pen Coed and Brynaere). SSA-C developments introduce limited visibility of turbines to the northern extent of the trail between Welshpool and Llanwddyn, however the trail passes through SSA-C where theoretical visibility of wind farm development is extensive between Pool Hill and Llyn Clywedog Reservoir.

7.50 Therefore the addition of Llanbrynmair will lead to a barely perceptible magnitude of change for the route as a whole resulting in a **negligible** cumulative visual effect for the national trail route as a whole. It is noted that anticipated significant landscape and visual effects on the national trail are a direct consequence of implementing the TAN 8 policy.

#### Cumulative Landscape & Visual Effects of the sTMP

7.51 Landscape and visual effects associated with the Llanbrynmair access route were covered in Session 2 and are not repeated here, however the implementation of the sTMP [CD-COM-TRA-001], which requires engineering modifications and landscape mitigation works, may result in potential cumulative landscape and visual effects.

7.52 The works include the creation of lay by areas (passing places), lay over areas and physical works required as a result of swept path and vertical alignment analysis.

7.53 An Environmental Assessment of the sTMP has been undertaken. This document [Appendix 2.4, Volume II, AD/RES/040] has been prepared by AMEC on behalf of

Vattenfall, FWL, RES and RWE. The document sets out the potential environmental effects arising from the highway works proposals contained within the sTMP. The report concludes that no significant landscape and visual effects, including cumulative effects, were identified as a result of the works set out in the sTMP for the proposed transport of wind turbine components into mid Wales SSAs from Ellesmere Port.

## 8 Conclusions

- 8.1 Implementation of the TAN 8 policy will inevitably result in significant change in the landscape and visual environment of the developed windfarms and their immediate surroundings. For the avoidance of doubt I judge these effects to be adverse.

### Cumulative Landscape & Visual Effects between SSA-B and SSA-C

- 8.2 I acknowledge that significant cumulative landscape and visual effects will be experienced within the Mid Wales (Powys) area as a result of the implementation of TAN 8 policy, however I do not consider that additional significant cumulative visual effects will occur as a result of the addition of Llanbrynmair in combination with other wind farm schemes located in SSA-C.
- 8.3 Overall, the additional contribution Llanbrynmair makes to the cumulative landscape and visual effects of wind energy development within the TAN 8 SSAs of Mid Wales is judged to be no greater than those assessed in the CLVIA [Table 4.43, Chapter 4, CD/RES/BAC/009].
- 8.4 Overall I am of the view that the proposed development can be accommodated within this landscape, in the context of the existing, consented and proposed wind farms within Mid Wales (Powys) area. I conclude that the effects identified are acceptable from a landscape and visual perspective (thereby complying with Policy E3 of the Powys Unitary Development Plan 2001 – 2016) and, which is identified for large scale wind energy development through the implementation of TAN8 and national energy planning policy.

### Llanbrynmair Grid Connection

- 8.5 In terms of the proposed Llanbrynmair grid connection, it is my opinion that the addition of the required grid connection infrastructure will lead to additional landscape and visual effects which will be contained within 1km of any HDWP OHL and within 2.5km of any steel tower OHL, diminishing with distance.

- 8.6 The additional landscape effects arising as a result of the proposed grid connection will increase the extent of significant effects identified within the LVIA and CLVIA of Llanbrynmair, however the overall significance of the landscape effect on the Cambrian Mountains RCA and the relevant Powys LCAs will not increase, with the proposed grid connection infrastructure forming a minor element of landscape change in the context of other wind farms, substations and grid infrastructure located within SSA-B where *'the implicit objective is to accept landscape change'* [Para. 8.4, Page 63, TAN8].
- 8.7 No additional landscape effects will occur for the Snowdonia National Park and North Ceredigion Upland Special Landscape Area (SLA) as a result of the proposed grid connection.
- 8.8 Additional significant visual effects arising as a result of the proposed grid connection will be limited to within 1km of any HDWP OHL and within 2.5km of any steel tower OHL, however these effects will more often than not be in the context of views of Llanbrynmair and neighbouring wind farms in SSA-B. Additional significant visual effects will not be experienced by receptors on the Glyndŵr's Way or within the Snowdonia National Park as a result of the proposed grid connection.
- 8.9 In cumulative terms, significant cumulative landscape and visual effects will arise from the introduction of Llanbrynmair and its associated grid infrastructure, in combination with other wind farms and grid infrastructure located within SSA-B. I am satisfied that potential cumulative landscape and visual effects will not be significant and will be acceptable in landscape and visual terms.

# Appendix 1

## The Witness

- A1.1 My name is Marc van Grieken. I am a landscape architect and Fellow of The Landscape Institute. I am a Principal and Director of LUC based in LUC's Glasgow office. LUC is a multi-disciplinary Environmental Consultancy embracing the core disciplines of Landscape Architecture, Urban Design, Planning, Ecology and Land Management. LUC has offices in Glasgow, London, Bristol and Edinburgh. The company is a 'Quality Mark Registrant' with the Institute of Environmental Management and Assessment (IEMA).
- A1.2 I joined Land Use Consultants in January 1985, became Managing Associate of our Glasgow office in 1990 and a Principal of the practice in 1992. From 1986 to 1987, I worked for Rotterdam City Council Urban Planning Department in lieu of military service.
- A1.3 I qualified as 'ingenieur' (ir.) in agricultural sciences at the Agricultural University in Wageningen, the Netherlands. This is equivalent to a British MSc degree. I am on the register of landscape architects in the Netherlands. I am a member of the Landscape Institute's Professional Review Group (PRG) which annually appraises the accreditation of the landscape architecture course at the Edinburgh School of Architecture and Landscape Architecture (ESALA).
- A1.4 In 2011, I was appointed by the Landscape Institute to the Advisory Panel which oversaw the recent publication of the third edition of the Guidelines for Landscape and Visual Impact Assessment (GLVIA 3) [CPL-LAN-005] and the panel continues to act in response to any substantive issues that may arise relating to the new guidance.
- A1.5 In 2013, I was appointed to the Landscape Institute's Technical Committee with responsibility for dealing with issues related to Landscape Character Assessment (LCA) and representing the Landscape Institute with respect to the updated guidance for the 'Visual Representation of Wind Farms' by Scottish Natural Heritage.
- A1.6 In 2006 I was appointed as landscape architect to the Design Review Panel of Architecture and Design Scotland (A&DS) and since 2011 I have been a member

of A&DS' Design Forum and in this role I am regularly involved in critical design reviews of development projects in Scotland that are considered of National or Regional significance. An example of such project is the review of the siting, design, and landscape mitigation of a proposed substation in connection with electricity transmission infrastructure on Orkney.

A1.7 My experience in Landscape Architecture covers a wide range of projects across Scotland, the UK and the Netherlands. I have worked on projects at a range of scales, for both public and private sectors.

### EIA/LVIA and Public Inquiry Experience

A1.8 I have extensive experience with Landscape and Visual Impact Assessment (LVIA) and the Cumulative Landscape and Visual Impact Assessment (CLVIA) of wind farms and other major infrastructure projects and I set out my experience specifically related to wind energy below. I have also been responsible for LVIA's of other types of development including:

- the LVIA of the Channel Tunnel, for Department of the Environment (1985-86), operational;
- the LVIA of the Cairngorm funicular railway, for the Cairngorm Chairlift Company (1994), operational;
- the LVIA of the Eurocentral rail freight terminal and its associated 350ha commercial/business development, for Scottish Enterprise (1992), operational;
- the LVIA of Low Moss and Addiewell Prisons for the Scottish Prison Service (2006), operational;
- the LVIA of the St Andrews Bay golf resort development comprising a five-star hotel and two number 18 hole golf courses, for the St Andrews Bay development company (1998-2001), operational;
- the LVIA of the proposed western extension of the St Andrews (2003), awaiting development;
- the LVIA of several proposed urban developments and regeneration projects

## Wind energy and energy related experience

A1.9 Since 2000 I have been involved in landscape and visual impact assessment of wind farm proposals ranging from single turbine feed in tariff applications to the 155 turbine single largest consented and now operational Clyde wind farm. In addition to undertaking landscape and visual impact assessment I have been involved with numerous predevelopment landscape feasibility studies. The latter type of studies are increasingly being used by wind energy development companies to inform their in-house decision-making process prior to taking a development forward into full planning. Other factors such as option agreements, preliminary cultural heritage advice and preliminary advice in respect of other environmental factors also inform such development decisions. Overall I estimate that I have given professional landscape and visual advice in respect of more than 120 wind energy proposals across the UK. A selection of schemes is listed below:

- In November 2013 I gave evidence in respect of landscape and visual effects, including cumulative landscape and visual effects and effects on visual amenity from residential properties, to Session 2 of the Mid Wales (Powys) Conjoined Wind Farms Public Inquiry in relation to Llanbrynmair Wind Farm;
- In December 2013 I gave evidence in respect of landscape and visual effects including effects on visual amenity from residential properties to the Dunsland Cross public inquiry on behalf of Bolsterstone Innovative Energy (Holsworthy) Ltd. The appeal was allowed and planning permission granted in January 2014;
- In July 2013 I gave evidence in respect of visual amenity from residential properties at the Fauch Hill public inquiry on behalf of Fauch Hill sustainable energy Ltd. The decision is pending;
- In 2012 I gave evidence in respect of landscape and visual effects including effects on visual amenity from residential properties to the Druim Ba public inquiry on behalf of Druim Ba Sustainable Energy Ltd. Appeal dismissed in July 2013;
- Balnacoil Wind Farm (2012-ongoing) - Landscape and Visual Feasibility appraisal, Landscape and visual impact assessment and cumulative landscape and visual impact assessment. Application submitted;

- Kennoxhead Wind Farm (2012-ongoing) - Landscape and Visual Feasibility appraisal, Landscape and visual impact assessment and cumulative landscape and visual impact assessment. Application submitted;
- Glen App Wind Farm (2011-ongoing) - Landscape and visual impact assessment and cumulative landscape and visual impact assessment. Application submitted;
- Bamff Wind Farm (2011-ongoing) - Landscape and visual impact assessment and cumulative landscape and visual impact assessment. Appeal pending;
- Neart na Gaoithe Onshore Grid Connection and Offshore Wind Farm (2011-ongoing) - strategic seascape and visual impact assessment of this large scale offshore wind farm and the landscape and visual impact assessment for the onshore works on behalf of Mainstream Renewable Power. Application submitted;
- Langham Wind Farm (2011) - Landscape Expert Witness at the public local inquiry on behalf of RWE Npower Renewables. The appeal was dismissed;
- Solwaybank Wind Farm (2010) - Landscape and visual impact assessment and cumulative landscape and visual impact assessment on behalf of RES UK & Ireland Ltd. Application submitted;
- Black Law Wind Farm Extension Grid Connection Project (2010-ongoing) - Routeing study and landscape and visual impact assessment for a proposed overhead grid connection. Application Submitted;
- Mid Wales Grid Connection Project (2009-2010) - Landscape and visual work and the development of methodologies for the routeing stages on behalf of Scottish Power Energy Networks;
- Black Craig Wind Farm (2009) - LVIA and Landscape Expert Witness services. Appeal dismissed;
- Roos Wind Farm (2009) - Landscape Expert Witness. The appeal was upheld;
- Swinford Wind Farm (2009) - Landscape Expert Witness. The appeal was upheld and the wind farm is operational;
- Barmoor Wind Farm (2008-9) - Landscape Expert Witness at conjoined public inquiry with two other wind farms. The appeal was upheld;

- South West Scotland Grid Connection Project (2008) - Routeing and landscape and visual impact assessments. Consented;
- Kelburn Wind Farm (2008) - Landscape Expert Witness. The appeal was upheld and the wind farm is operational;
- Clyde Wind Farm (2006) - LVIA and Landscape Expert Witness. The appeal for 152 turbines was upheld and the wind farm is operational;
- Mountboy Wind Farm - Landscape Expert Witness at conjoined inquiry with Montreathmont Moor Wind Farm (2008). Appeals dismissed;
- LVIA of Tiree Island Community Wind Farm, Argyll and Bute (2006). Operational;
- Green Knowes Wind Farm LVIA and Landscape Expert witness (2006). The appeal was upheld and the wind farm is operational;
- Ardrossan Wind Farm Extension LVIA, North Ayrshire (2006). Operational;
- Dun Law Wind Farm Extension LVIA, Scottish Borders (2005). Operational;
- Invercassley Wind Farm, Highland (2005) LVIA and landscape expert witness. Appeal dismissed;
- Gigha Island Community Wind Farm, Argyll and Bute (2004) LVIA. Operational;
- Ewe Hill Wind Farm, Dumfries and Galloway (2004) LVIA. Six turbines Consented;
- Dounreay Wind Farm PLI (2004) LVIA and landscape expert witness, appeal dismissed;
- Gordonbush Wind Farm, Highland (2003) LVIA. Operational;
- Kilpatrick Hills Wind Farm, West Dunbartonshire (2003). Withdrawn;
- Greenock (Corlic Hill) Wind Farm, Inverclyde (2003) LVIA. Application refused;
- Braes of Doune Wind Farm, Stirling, (2002) LVIA. Operational;
- Ardrossan Wind Farm, North Ayrshire (2002) LVIA. Operational;
- Beinn Tharsuinn Wind Farm, Highland (2002) LVIA. Operational;

- Windy Standard Wind Farm Extension, Dumfries and Galloway (2001) LVIA. Operational.

A1.10 Since I became involved in the assessment of effects on landscape and visual resource of wind farms and other developments I have made numerous return visits to constructed schemes in order to check whether the predicted effects (which I reported in the LVIA or in evidence to a public inquiry) are reflected in the actual experience of seeing the constructed development in the landscape. I have found that the effects were as predicted. I have also visited numerous wind farms throughout the UK where I had no involvement and in the Netherlands, France, Spain and New Zealand. Overall I believe this has given me a thorough understanding of the effects of wind farms on the landscape and views and provides me with a reference base to inform the judgement, which is required on a project specific basis, whether effects are considered significant in EIA terms.

### Other Relevant Experience

A1.11 As part of a 'Call off, or 'term-Contract' with Scottish Natural Heritage, I have given internal landscape advice to SNH staff on the landscape and visual impact assessment (including cumulative assessments) for four wind farm applications in different parts of Scotland. This advice considered the completeness and adequacy of the submitted LVIAs and provided a draft landscape and visual response to the various applications.

A1.12 On behalf of Northumberland Council, I have been responsible for the review of the LVIA and CLVIA for two wind farm applications within Northumberland. The review considered the completeness and adequacy of the submitted assessments and provided an evaluation of the landscape and visual effects of the proposals.

A1.13 On behalf of Staffordshire Council, I have reviewed the LVIA for a wind farm development in Staffordshire. This review included considering the predicted effects of the proposal on an AONB and provided an evaluation of the landscape and visual effects of the proposals in the light of detailed comments made by the Council's in-house landscape advisor.

A1.14 On behalf of Natural England, I have provided training to Natural England staff throughout the English Regions who are dealing with wind energy case work in respect of Natural England's approach to "Making space for renewable energy:

assessing on-shire wind energy development” (adopted by NE Board on the 25<sup>th</sup> November 2009 and published by NE on the 1<sup>st</sup> January 2010 [CD/RES/LAN/002] and contributed to in-house NE training on “Responding to Development Proposals on Landscape and Visual Grounds”.

A1.15 In 2005, I worked for 5 weeks in New Zealand advising a locally based environmental consultancy on design and assessment of wind energy proposals, gave lectures on the subject to landscape architecture courses in Auckland, Wellington and Christchurch and provided verbal advice and guidance to Wellington Regional Council in respect of various wind energy developments.

A1.16 In April 2010, I delivered a key note speech about “Wind farms and Landscape in the UK” to the New Zealand Wind Energy Association annual conference and a lecture about “Climate Change and Landscape in Scotland” to the New Zealand Institute of Landscape Architects’ annual conference.

A1.17 I have also provided advice to the Regional Planning Authority of the Flevoland Province in the Netherlands with respect to siting and design for wind energy developments.