

APPENDIX 3.2 - CONJOINED CUMULATIVE GRAPHICS



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The Mid Wales (Powys) Conjoined Wind Farms Public Inquiry
Supplementary Environmental Information (SEI):
Conjoined Cumulative Landscape & Visual Graphics & Visualisations

December 2013



Fferm Wynt Llaithddu



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Project Title: The Mid Wales (Powys) Conjoined Wind Farms Public Inquiry
Supplementary Environmental Information (SEI):
Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Applicants: Llanbrynmair Wind Farm, RES UK & Ireland Ltd.
Carnedd Wen Wind Farm, RWE Npower Renewables
Llandinam Wind Farm Repowering, Celt Power Ltd.
Llanbadarn Fynydd Wind Farm, Vattenfall UK
Llaithddu Wind Farm, Fferm Wynt Llaithddu

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V1.0	19.12.2013	Final	SD/JN/DW	DW	MvG





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December 2013

Prepared by LUC in association with:

Jeffrey Stevenson Associates



LDĀDESIGN



Planning & EIA
Design
Landscape Planning
Landscape Management
Ecology
Mapping & Visualisation

LUC GLASGOW
37 Otago Street
Glasgow G12 8JJ
Tel: 0141 334 9595
Fax: 0141 334 7789
glasgow@landuse.co.uk

Offices also in:
London
Bristol
Edinburgh



FS 566056
EMS 566057

Land Use Consultants Ltd
Registered in England
Registered number: 2549296
Registered Office:
43 Chalton Street
London NW1 1JD
LUC uses 100% recycled paper

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- Figure 13** Existing Grid Connection Network and Zone of Theoretical Visibility of Proposed Grid Connections (A0 folded figure included in sleeve at rear)

Visualisations

- CCVP1** Plynlimon (8 pages, fold out panoramic figure)
- CCVP2** Kerry Ridgeway, Two Tumps (6 pages, fold out panoramic figure)
- CCVP3** Garreg Hir (8 pages, fold out panoramic figure)
- CCVP4** Beacon Ring Hillfort (4 pages, fold out panoramic figure)
- CCVP5** Fron Top (6 pages, fold out panoramic figure)
- CCVP6** A470, Caersws (4 pages, fold out panoramic figure)
- CCVP7** B4518 South of St Harmon (4 pages, fold out panoramic figure)
- CCVP8** Foel Dinas (6 pages, fold out panoramic figure)

Introduction

Background

- 1.1 In November 2013, LUC (Land Use Consultants) was commissioned to produce conjoined cumulative landscape and visual graphics and visualisations on behalf of the five wind farm applicants involved in the Mid Wales (Powys) Conjoined Wind Farm Public Inquiry:
- Llanbrynmair Wind Farm, RES UK & Ireland Ltd.
 - Carnedd Wen Wind Farm, RWE Npower Renewables
 - Llandinam Wind Farm Repowering, Celt Power Ltd.
 - Llanbadarn Fynydd Wind Farm, Vattenfall UK
 - Llaithddu Wind Farm, Fferm Wynt Llaithddu
- 1.2 It was felt 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 Inquiry. This approach had been employed during Session Two with respect to consideration of the cumulative effects of the proposed Carnedd Wen and Llanbrynmair wind farms and it was considered that the same approach would greatly assist Session Four considerations. The information contained within this document forms the baseline of cumulative landscape and visual evidence for Session Four – Matters in Common/Cumulative Effects at the Mid Wales (Powys) Conjoined Wind Farms Public Inquiry. The landscape witnesses acting on behalf of the five wind farm applicants will draw on the content of this document as part of their evidence for Session Four of the Public Inquiry.
- 1.3 The primary purpose of the document is to inform the consideration of potential cumulative visual effects which may occur from the development of wind energy schemes located within TAN 8¹ Strategic Search Areas B and C (SSA-B and SSA-C) and associated grid connection infrastructure located within the wider Mid-Wales region, and cumulative visual effects which may arise from the development of the five wind farm schemes represented at the Public Inquiry. The information contained within the document should be read in conjunction with the relevant Environmental Statement (ES) and Supplementary Environmental Information (SEI) submitted by each applicant before the Public Inquiry.
- 1.4 Prior to and following the commencement of Session 1 of the Conjoined Public Inquiry, the five Applicants noted above undertook consultation with both Powys County Council (PCC) and Natural Resources Wales (NRW) to determine whether a conjoined approach to the cumulative assessment could be beneficial to the Public Inquiry. This was set out in the Applicant's letters to PCC and NRW of 4 March 2013 and 11 July 2013.
- 1.5 Prior to the preparation of the document preliminary consultation was undertaken between the landscape consultants acting on behalf of the five wind farm applicants and the landscape consultant acting on behalf of PCC to outline the information to be produced for Session Four of the Public Inquiry. As a result of the discussion, agreement was reached concerning the cumulative viewpoints set out in **Table 1**, the approach concerning Cumulative Zones of Theoretical Visibility (CZTVs) and the overlaying of the schemes' grid connection information (at the time of writing) onto the SSA-A and SSA-B CZTV's.

Study Area

- 1.6 A study area of 20km radius from the outer extents of SSA-B and SSA-C has been used, to encompass the maximum extent of which significant cumulative landscape and visual effects are predicted. The study area and TAN 8 SSAs are shown on **Figure 1** and **Figure 11**.

Cumulative Baseline

- 1.7 Wind energy developments located within the study area are listed in **Table 2** and shown on **Figure 2**, including 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 development².
- 1.8 Feed in Tariff (FiT) wind energy schemes located within a 5km radius of each of the five applicant wind farms have been included, informed by data provided by NRW in June 2013 and supplemented by information available through the PCC online planning application portal³. These are listed in **Table 2** and shown on **Figure 2**.
- 1.9 Scottish Power Energy Networks (SPEN) and National Grid, the electricity network operators, are currently developing proposals for the connection of 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 is shown on **Figure 3**. This information was published by SPEN and National Grid in 2013 and is currently limited to 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. 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 will be used and extending to 2.5km from the outer extents of the route corridor where steel towers are proposed. This is illustrated on **Figure 5** and **Figure 13**.

¹ Welsh Assembly Government, Technical Advice Note (TAN) 8, 'Planning for Renewable Energy,' Planning Policy Wales, July 2005

² Limited information is available for some design/scoping stage wind energy developments included in Table 2

³ <http://planning.powys.gov.uk/portal/servlets/ApplicationSearchServlet>

Conjoined Cumulative Viewpoints

- 1.10 Eight Conjoined Cumulative Viewpoints (CCVPs) were identified as outlined below in **Table 1** and shown on **Figure 4** and **Figure 12**.

Table 1: Conjoined Cumulative Viewpoints

Conjoined Cumulative Viewpoint	Grid Reference		Theoretical Visibility of Conjoined Inquiry Wind Farms
	X	Y	
CCVP1. Plynlimon	278966	286934	Theoretical visibility of all five wind farms
CCVP2. Kerry Ridgeway, Two Tumps	311816	285136	Theoretical visibility of all five wind farms
CCVP3. Garreg Hir	299898	297784	Theoretical visibility of all five wind farms
CCVP4. Beacon Ring Hillfort	326418	305802	Theoretical visibility of all five wind farms
CCVP5. Fron Top	310919	278786	Theoretical visibility of all five wind farms
CCVP6. A470, Caersws	303186	290992	Theoretical visibility of Carnedd Wen, Llanbrynmair & Llandinam Repowering Wind Farms
CCVP7. B4518 South of Harmon	298599	270686	Theoretical visibility of all five wind farms
CCVP8. Foel Dinas	284404	314412	Theoretical visibility of all five wind farms

- 1.11 Each of the viewpoints in **Table 1** was chosen 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 from both SSA-B and SSA-C and is illustrated with existing baseline photography, wireframe visualisations and photomontage visualisations.
- 1.12 The included angle of view from each viewpoint is dependent upon the theoretical visibility of wind energy schemes included in **Table 2** from the viewpoint location.
- 1.13 Wind energy developments theoretically visible from each of the CCVP are indicated in **Table 2** along with the distance between each wind energy development and CCVP.

Cumulative Zones of Theoretical Visibility (CZTVs)

- 1.14 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. These figures are provided in A3 and A0 format, as **Figures 6 – 10** and **6a – 10a**.

Table 2: Cumulative Wind Energy Developments

Wind Energy Development Code ⁴	Wind Energy Development Name	Development Status ⁵	No. of Turbines	Height to Blade tip (m)	Rotor Diameter (m)	Strategic Search Area (SSA)	CCVP1 Distance ⁶ (km) from/visibility in wireframes ⁷	CCVP2 Distance (km) from/visibility in wireframes	CCVP3 Distance (km) from/visibility in wireframes	CCVP4 Distance (km) from/visibility in wireframes	CCVP5 Distance (km) from/visibility in wireframes	CCVP6 Distance (km) from/visibility in wireframes	CCVP7 Distance (km) from/visibility in wireframes	CCVP8 Distance (km) from/visibility in wireframes
Five Applicant Wind Farm Developments														
n/a	Llanbrynmair	Appeal/Public Inquiry	30	126.5	93	SSA-B	21.5	25.7	8.3	29.7	30.0	15.6	32.9	12.1
n/a	Carnedd Wen	Appeal/Public Inquiry	50	137	90	SSA-B	22.4	27.1	9.7	29.7	31.6	17.2	34.6	9.5
n/a	Llandinam Repowering	Appeal/Public Inquiry	34	> 121.2	80	SSA-C	23.8	7.1	12.8	29.5	7.8	5.3	10.7	34.9
n/a	Llanbadarn Fynydd	Appeal/Public Inquiry	17	125	90	SSA-C	30.5	3.3	18.1	28.6	1.8	10.6	14.0	40.6
n/a	Llaihddu ⁸	Appeal/Public Inquiry	27	> 115.5	71	SSA-C	24.8	8.0	14.8	31.7	6.5	7.6	7.7	36.4
Wind Farm Developments														
1	Braich Ddu Farm	Operational	3	90	60	Outside SSAs	58.2	56.6	43.0	43.1	62.7	49.8	70.1	31.2
2	Bryn Titli	Operational	22	48.5	37	Outside SSAs	17.6	20.4	22.6	44.3	17.4	17.8	6.0	39.2
3	Carno I	Operational	56	54	45	SSA-B	14.3	21.3	7.7	35.4	24.2	11.1	24.6	19.0
4	Carno II	Operational	12	80	62	SSA-B	15.9	23.3	7.8	35.4	26.5	12.8	27.4	17.8
5	Cefn Croes	Operational	39	100	70	Outside SSAs	6.6	29.0	25.3	51.0	27.1	23.5	16.3	34.0
6	Cemmaes 2	Operational	18	66	52	SSA-B	20.2	32.2	15.2	38.9	36.0	21.9	36.8	6.4
7	Llandinam ⁹	Operational	103	45.5	29	SSA-C	23.4	7.8	13.0	30.4	8.5	5.6	10.8	34.9
8	Llangwryfon	Operational	11	70	79	Outside SSAs	23.4	51.2	46.3	72.9	48.8	45.4	35.7	49.4
9	Mynydd Clogau	Operational	17	66	52	SSA-B	26.1	16.3	2.5	23.7	21.7	7.8	28.2	23.7
10	Mynydd Gorddu	Operational	19	50	34	Outside SSAs	11.5	44.4	34.1	61.8	44.2	35.9	35.2	32.1
11	Rheidol	Operational	8	45.5	22.75	Outside SSAs	9.0	39.4	32.3	59.4	38.3	32.3	27.7	35.8
12	Tirgwynt	Consented	12	116	92	SSA-B	24.0	19.6	2.4	27.2	24.4	10.0	29.4	18.5
13	Cemmaes 3	Appeal/Public Inquiry	12	115	70	SSA-B	22.7	32.4	15.1	38.0	36.5	22.2	38.3	6.3
14	Garreg Lywd Hill	Appeal/Public Inquiry	23	126.5	93	SSA-C	33.9	4.4	21.0	28.0	2.1	13.7	16.7	43.7
15	Bodelith Isaf	Application Submitted	2	125	-	Outside SSAs	56.3	55.5	41.5	42.8	61.5	48.4	68.6	29.1
16	Bryngydfa	Application Submitted	12	126.5	93	SSA-C	34.5	4.4	21.4	27.5	2.6	14.1	17.1	44.0
17	Carno III	Application Submitted	18	126.5	93	SSA-B	13.1	20.0	7.7	35.1	22.6	9.8	23.2	20.2
18	Esgair Cwmowen	Application Submitted	18	125	50	SSA-B	24.3	18.6	2.0	25.6	23.7	9.4	29.1	20.5
19	Hirddywel	Application Submitted	9	125	90	SSA-C	24.1	9.7	17.4	34.2	7.8	10.3	9.4	38.3
20	Nant y Moch	Application Submitted	62	146.5	93	SSA-D	3.9	35.2	24.1	51.8	35.8	26.2	28.4	24.9

⁴ Wind Energy Development Code as shown on Figure 2.

⁵ Development status as of 1st December 2013.

⁶ Distance from CCVP to nearest turbine of Wind Energy Development.

⁷ Visibility in wireframes indicated by green cell colour within Table 2.

⁸ Llaihddu June 2013 SEI proposed two layout options of 29 and 27 turbines. The 29 turbine option was subsequently withdrawn as outlined in letter to DECC dated 19th June 2013 (FWLC-006)

⁹ All visible from each CCVP the existing operational Llandinam Wind Farm is not shown in the wireframes and photomontages which illustrate CCVP1-8 as a scenario does not exist where this wind energy development will be present in combination with the proposed Llandinam Repowering Wind Farm development.

Wind Energy Development Code ⁴	Wind Energy Development Name	Development Status ⁵	No. of Turbines	Height to Blade tip (m)	Rotor Diameter (m)	Strategic Search Area (SSA)	CCVP1 Distance ⁶ (km) from/visibility in wireframes ⁷	CCVP2 Distance (km) from/visibility in wireframes	CCVP3 Distance (km) from/visibility in wireframes	CCVP4 Distance (km) from/visibility in wireframes	CCVP5 Distance (km) from/visibility in wireframes	CCVP6 Distance (km) from/visibility in wireframes	CCVP7 Distance (km) from/visibility in wireframes	CCVP8 Distance (km) from/visibility in wireframes
21	Neuadd Goch Bank	Application Submitted	9	126	92	SSA-C	30.2	1.6	16.3	26.8	4.4	8.9	17.1	38.9
22	Pentre Tump	Application Submitted	3	103.5	77	Outside SSAs	49.8	28.4	44.5	48.5	22.7	37.0	24.4	66.6
23	Reeves Hill	Application Submitted	4	105	80	Outside SSAs	55.8	25.4	42.6	36.5	23.0	35.8	33.3	65.3
24	Bryn Titli Extension	Design/Scoping	12	-	-	Outside SSAs	16.3	19.6	20.7	43.0	17.3	16.1	8.1	37.3
25	Bwlch y Sarnau ¹⁰	Design/Scoping	27	-	-	SSA-C	29.1	11.7	23.3	37.0	6.4	16.0	8.4	44.6
26	Dyfnant Forest ¹¹	Design/Scoping	32	145	90	SSA-B	34.0	30.2	15.8	26.3	36.0	22.6	42.9	11.3
27	Mynydd Mynyllod	Design/Scoping	24	145	90	Outside SSAs	56.0	54.5	40.8	41.0	60.6	47.6	67.9	29.1
28	Mynydd y Gwynt	Design/Scoping	27	125	106	Outside SSAs	3.9	26.8	19.5	46.4	26.4	19.2	18.7	27.9
29	Pen Coed ¹²	Design/Scoping	10	110	-	SSA-B	28.2	26.3	10.0	28.3	31.5	20.8	36.9	15.4
30	Rhyd Ddu and Mynydd Waun Fawr	Design/Scoping	34	126.5	90	SSA-B	23.2	22.3	5.6	24.3	27.5	13.1	31.8	15.5
Feed in Tariff (FiT) Wind Energy Developments														
A	Bailey Bog	Consented	1	20.4	10	SSA-C	27.3	13.0	23.0	38.3	8.3	15.9	6.6	43.7
B	Bryn Dadlau	Consented	1	19.5	10	SSA-C	27.0	6.1	15.0	30.0	7.3	7.5	15.1	37.2
C	Bryn David Fach	Consented	1	17.7	5.4	SSA-C	29.9	3.5	14.1	25.8	8.4	7.0	19.2	36.8
D	Brynddu	Consented	2	20.4	10.8	SSA-C	31.2	8.7	22.5	33.8	2.8	14.9	11.9	44.5
E	Brynmawr Cottage	Consented	1	17.7	5.4	SSA-C	34.0	3.7	20.6	28.0	3.2	13.3	17.7	43.3
F	Ddulley Bank	Consented	1	20	10	SSA-C	27.1	7.8	17.8	32.7	5.9	10.4	12.2	39.6
G	Esgairdraenllwyn	Consented	2	34.6	10.5	SSA-C	28.9	5.0	17.0	29.9	5.0	9.4	14.8	39.3
H	Garreg	Consented	1	26	12	SSA-C	30.5	3.3	14.1	25.0	8.8	7.2	20.0	36.8
I	Garth Fawr	Consented	1	20.9	11	SSA-C	22.1	13.7	18.8	37.9	11.3	12.5	8.4	38.5
J	Hafod Fraith	Consented	2	17.7	5.4	SSA-C	22.4	12.1	16.9	35.9	10.6	10.5	10.3	37.2
K	Hafodwen	Consented	1	20	10	SSA-B	17.9	25.6	9.2	35.8	29.2	15.2	30.5	15.7
L	Lower Ceulannau	Consented	1	17.7	5.4	SSA-C	33.1	1.3	16.7	24.1	7.7	10.0	20.7	39.4
M	New Chapel Farm	Consented	1	17.7	13.4	SSA-C	20.1	12.9	13.6	35.0	13.2	8.0	13.5	33.5
N	Pant yr Hendre	Consented	1	34.2	19.2	SSA-B	30.7	24.4	9.8	24.6	30.1	16.5	36.9	18.8
O	Sychtyn	Consented	1	21	11.1	SSA-B	29.2	25.1	9.4	26.5	30.5	16.5	36.6	17.1
P	Wern	Consented	1	35	20	SSA-B	31.3	31.7	15.5	30.8	37.0	22.9	42.2	12.2
Q	Bryn Cwmrhiewdre	Application Submitted	1	34.4	19.2	SSA-C	28.8	4.5	16.0	29.0	6.0	8.4	15.9	38.4
R	Dugwm Farm	Application Submitted	1	34.4	19.2	SSA-C	27.5	5.4	13.9	28.5	8.1	6.4	16.7	36.3
S	Dolfor 2	Design/Scoping	1	67	54	Outside SSAs	28.9	4.2	15.6	28.5	6.3	8.1	16.3	38.1

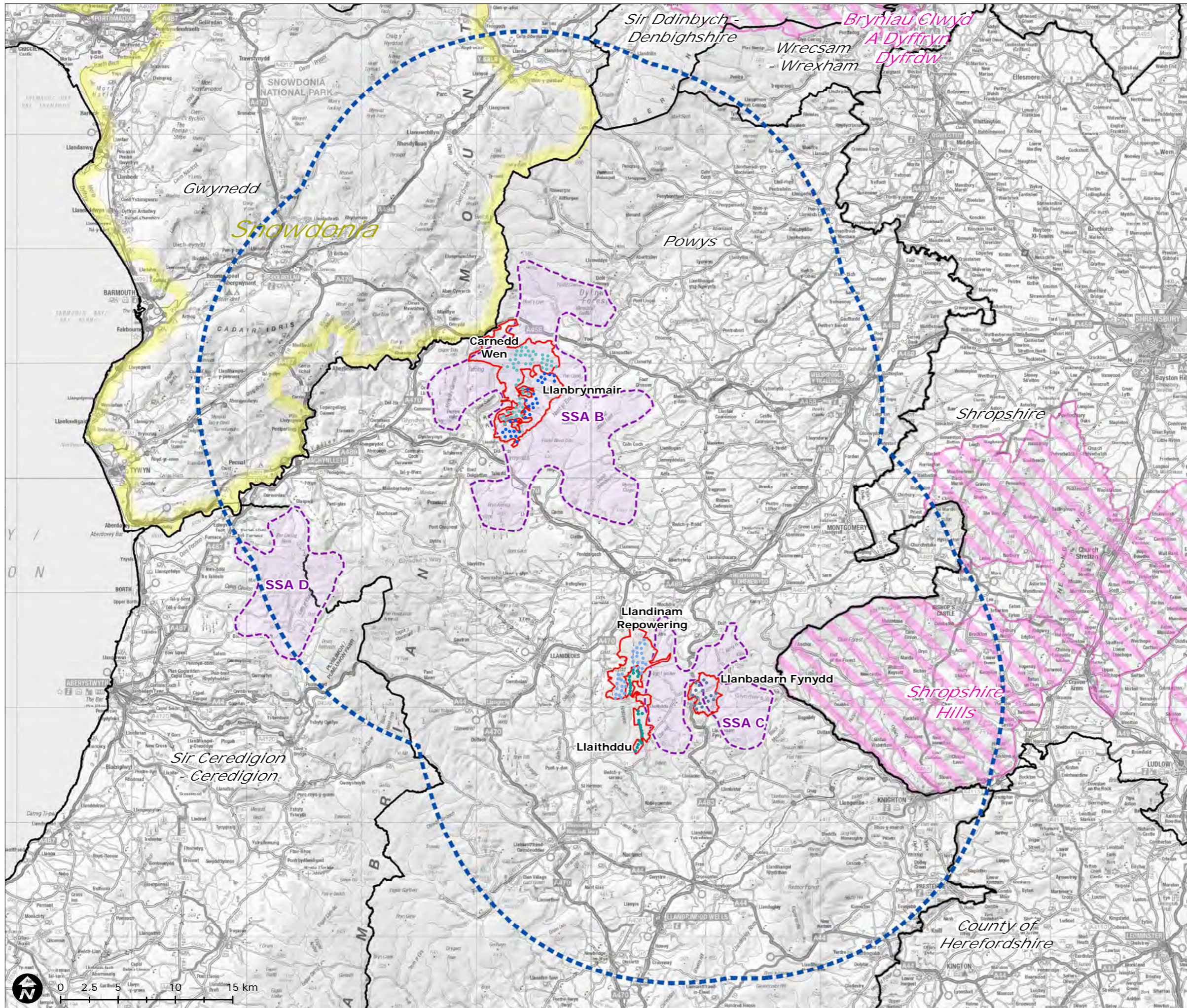
¹⁰ Distance from CCVP to centre point of proposed Wind Energy Development Site

¹¹ Included in cumulative visualisations at request of statutory consultees.

¹² Distance from CCVP to centre point of proposed Wind Energy Development Site

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Figures



The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry
 Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Conjoined Cumulative Study Area

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations**
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSAs)
- Snowdonia National Park
- Area of Outstanding Natural Beauty
- Planning Authority Boundary

Figure 1

Map Scale @ A3:1:325,000



Operational Wind Farms

1. Braich Ddu Farm, 3 turbines, 90m to tip
2. Bryn Titli, 22 turbines, 48.5m to tip
3. Carno I, 56 turbines, 54m to tip
4. Carno II, 12 turbines, 80m to tip
5. Cefn Croes, 39 turbines, 100m to tip
6. Cemmaes 2, 18 turbines, 66m to tip
7. Llandinam, 103 turbines, 45.5m to tip
8. Llangwryfon, 11 turbines, 70m to tip
9. Mynydd Clogau, 17 turbines, 66m to tip
10. Mynydd Gorddu, 19 turbines, 50m to tip
11. Rheidol, 8 turbines, 45.5m to tip

Consented Wind Farms

12. Tirgwynt, 12 turbines, 116m to tip

Wind Farms at Appeal/PLI

13. Cemmaes 3, 12 turbines, 115m to tip
14. Garreg Lywd Hill, 23 turbines, 126.5m to tip

Wind Farms with Application Submitted

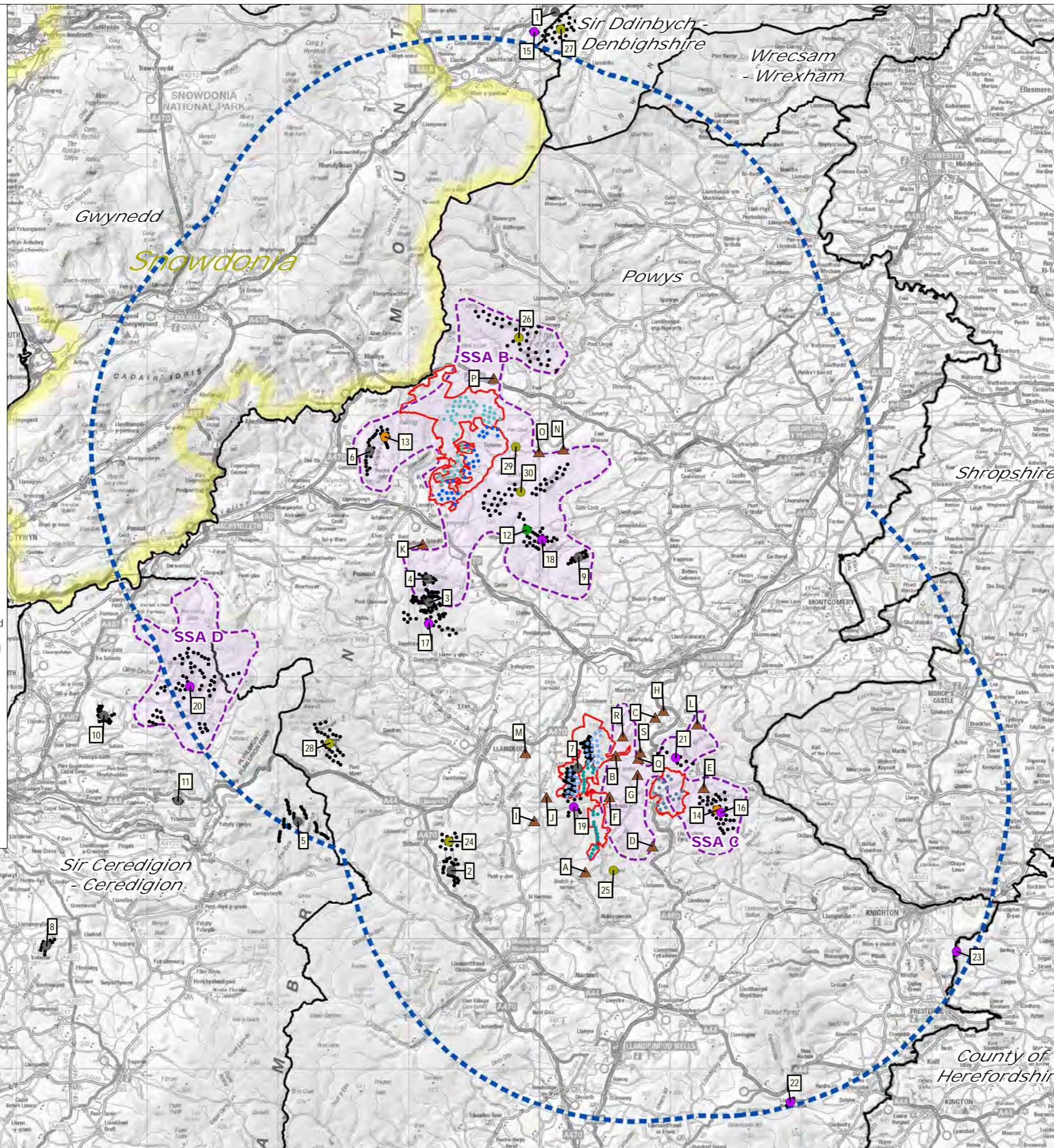
15. Bodelith Isaf, 2 turbines, 125m to tip
16. Bryngydfa, 12 turbines, 126.5m to tip
17. Carno III, 18 turbines, 126.5m to tip
18. Esgair Cwmowen, 18 turbines, 125m to tip
19. Hirddywell, 9 turbines, 125m to tip
20. Nant y Moch, 62 turbines, 146.5m to tip
21. Neuadd Goch Bank, 9 turbines, 126m to tip
22. Pentre Tump, 3 turbines, 103.5m to tip
23. Reeves Hill, 4 turbines, 105m to tip

Wind Farms at Design/Scoping Stage

24. Bryn Titli Extension, 12 turbines
25. Bwlch y Sarnau, 27 turbines
26. Dyfnant Forest, 32 turbines, 145m to tip
27. Mynydd Mynyllod, 24 turbines, 145m to tip
28. Mynydd y Gwynt, 27 turbines, 125m to tip
29. Pen Coed, 10 turbines, 110m to tip
30. Rhyd Ddu and Mynydd Waun Fawr, 34 turbines, 126.5m to tip

FIT Schemes within 5km of

- 5 PLI Wind Farms**
- A. Bailey Bog, 1 turbine, 20.4m to tip, Consented
 - B. Bryn Dadlau, 1 turbine, 19.5m to tip, Consented
 - C. Bryn David Fach, 1 turbine, 17.7m to tip, Consented
 - D. Brynddu, 2 turbines, 20.4m to tip, Consented
 - E. Brynmawr Cottage, 1 turbine, 17.7m to tip, Consented
 - F. Ddulley Bank, 1 turbine, 20m to tip, Consented
 - G. Esgairdraenllwyn, 2 turbines, 34.6m to tip, Consented
 - H. Garreg, 1 turbine, 26m to tip, Consented
 - I. Garth Fawr, 1 turbine, 20.9m to tip, Consented
 - J. Hafod Fraith, 2 turbines, 17.7m to tip, Consented
 - K. Hafodwen, 1 turbine, 20m to tip, Consented
 - L. Lower Ceulannau, 1 turbine, 17.7m to tip, Consented
 - M. New Chapel Farm, 1 turbine, 17.7m to tip, Consented
 - N. Pant yr Hendre, 1 turbine, 34.2m to tip, Consented
 - O. Sychtyn, 1 turbine, 21m to tip, Consented
 - P. Wern, 1 turbine, 35m to tip, Consented
 - Q. Bryn Cwmrhiewdre, 1 turbine, 34.4m to tip, Application Submitted
 - R. Dugwm Farm, 1 turbine, 34.4m to tip, Application Submitted
 - S. Dolfor 2, 1 turbine, 67m to tip, Design/Scoping



The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry

Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Conjoined Cumulative Baseline

Wind Farm Application Boundaries

5 PLI Schemes - Turbine Locations

- Llanbrynmair, 30 turbines, 126.5m to tip
- Carnedd Wen, 50 turbines, 137m to tip
- Llandinam Repowering, 34 turbines, up to 121.2m to tip
- Llanbadarn Fynydd, 17 turbines, 125m to tip
- Llaithddu, 27 turbines, up to 115.5m to tip

TAN 8 (SSA B, SSA C) 20km Study Area

TAN 8 Strategic Search Areas (SSAs)

Snowdonia National Park

Planning Authority Boundary

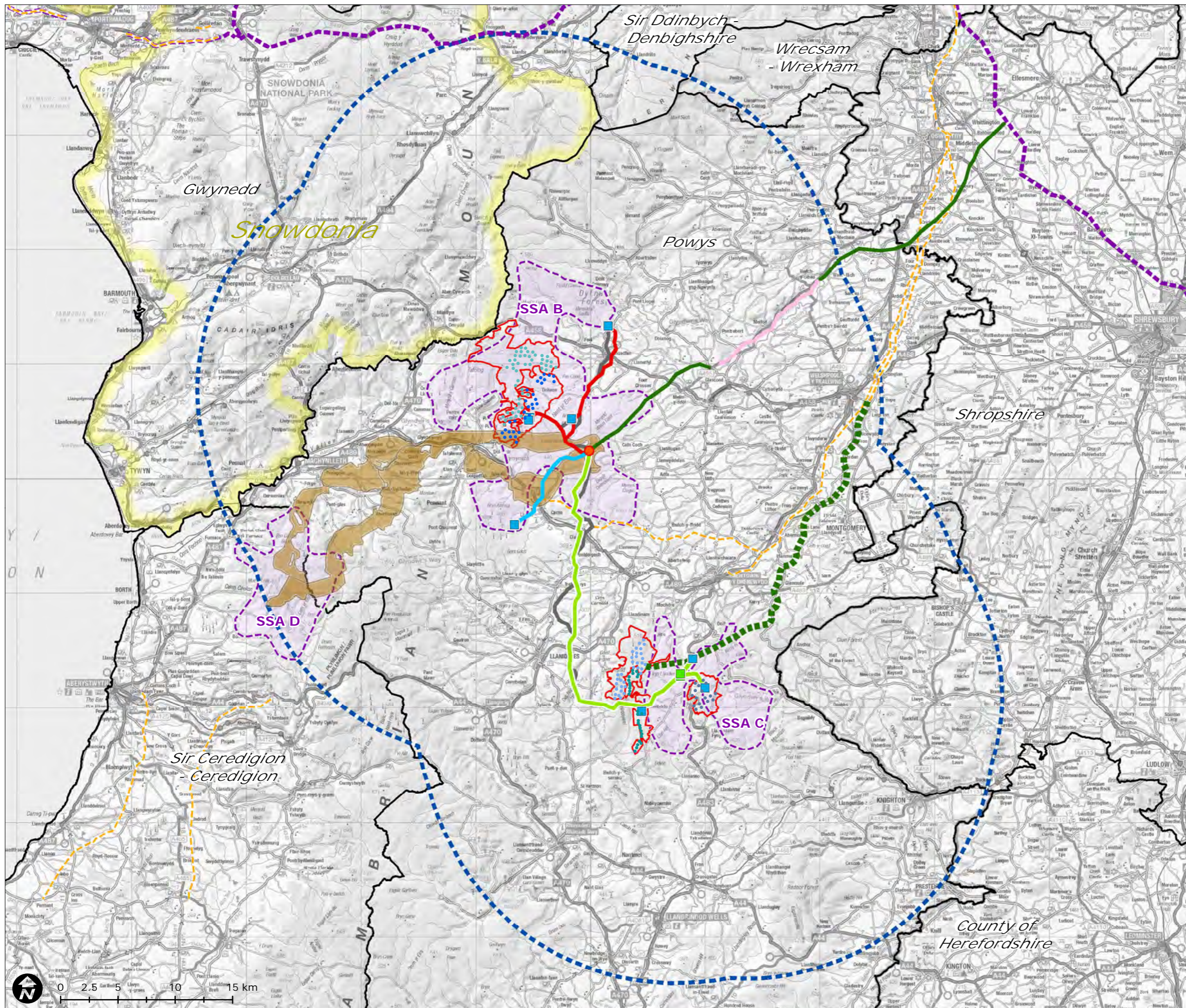
Wind Energy Development Status

- Operational
- Consented
- Appeal/Public Inquiry
- Application Submitted
- Design/Scoping
- ▲ FIT Scheme
- Turbine Location

Figure 2

Map Scale @ A3:1:325,000





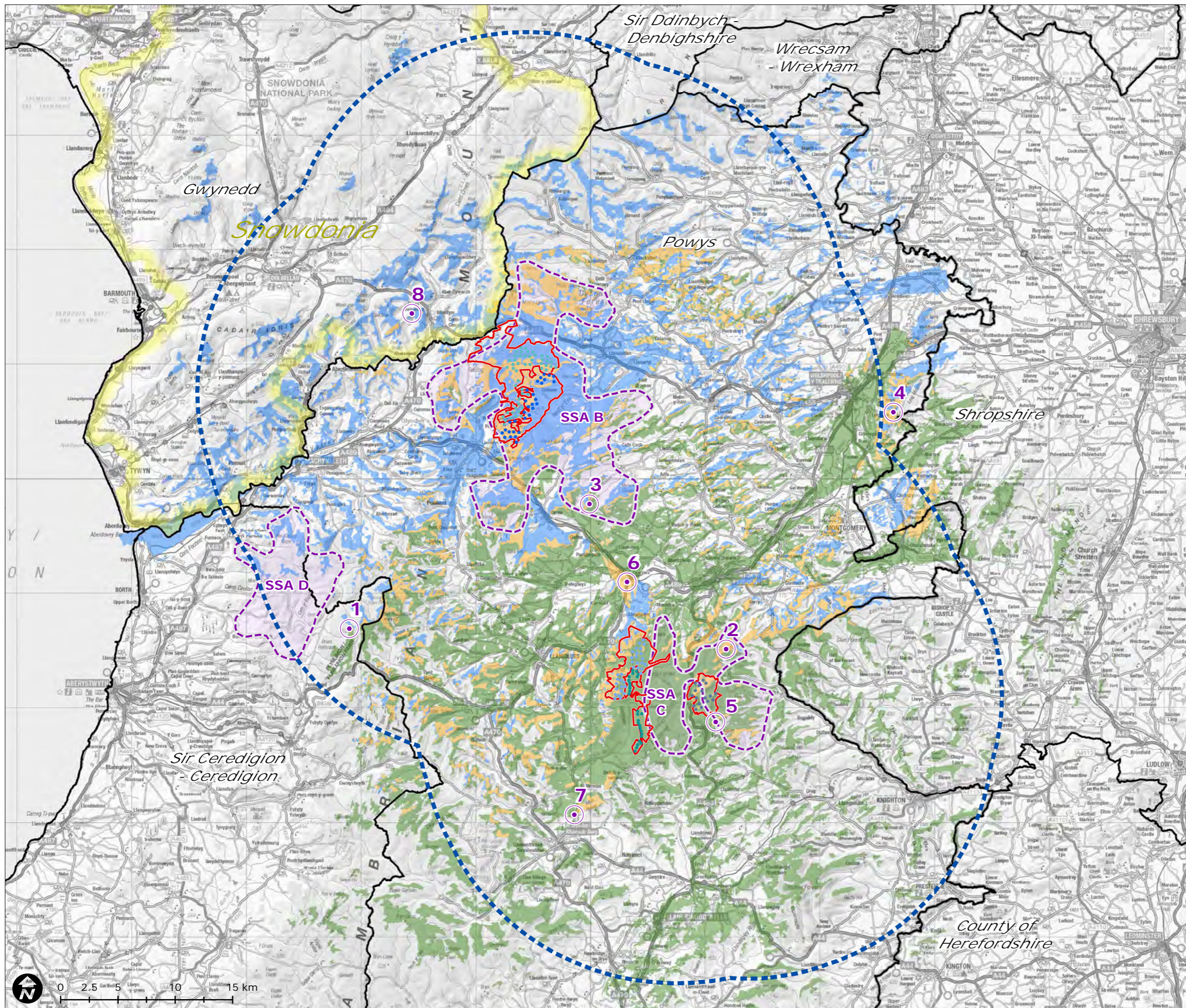
The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry
 Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Existing and Proposed Grid Connection Network

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations**
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSAs)
- Snowdonia National Park
- Planning Authority Boundary
- Proposed Substation Locations**
 - Contracted Substation Location
 - SP Manweb Collector Substation (Options A - B)
 - National Grid Potential Substation
- Existing Grid Connection Network**
 - 400kV Overhead Network
 - 132kV Overhead Network
- SPEN Proposed Grid Connection Network**
 - BNC 132kV Wood Pole Line
 - BSC 132kV Single Circuit Wood Pole Line
 - CC 1-4 - 132kV/33kV Single Circuit Wood Pole Line
 - Alternative Line Route Options
- National Grid Proposed Grid Connection Network**
 - 400kV Draft National Grid Route - Overhead
 - 400kV Draft National Grid Route - Underground
- Llandinam Proposed Grid Connection**
 - 132kV Proposed Llandinam Overhead Line Connection
- Other Proposed Grid Connections**
 - SSE Route Corridor - Nant Y Moch

Figure 3
 Map Scale @ A3:1:325,000





The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry

Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Cumulative Zone of Theoretical Visibility for Five Conjoined Inquiry Wind Farms and Conjoined Cumulative Viewpoints

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations**
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSAs)
- Snowdonia National Park
- Planning Authority Boundary
- Theoretical Visibility of Wind Farms**
 - SSA B - Llanbrynmair and Carnedd Wen
 - SSA C - Llandinam Repowering, Llaithddu and Llanbadarn Fynydd
 - SSA B and SSA C
- Conjoined Cumulative Viewpoint

1. Plynlimon
2. Kerry Ridgeway, Two Tumps
3. Garreg Hir
4. Beacon Ring Hillfort
5. Fron Top
6. A470, Caersws
7. B4518 South of St Harmon
8. Foel Dinas

Notes

The CZTV is calculated to turbine tip height from a height of 2m above ground level.

The ZTV extents for all windfarms are based on SNH guidance (Visual Representation of Windfarms: Good Practice Guidance, SNH, 2006).

The terrain model is bare ground and derived from OS Terrain 50 height data.

The earth curvature and atmospheric refraction have been taken into account.

Figure 4
Map Scale @ A3:1:325,000



The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry

Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Zone of Theoretical Visibility of Proposed Grid Connections

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations**
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSAs)
- Snowdonia National Park
- Planning Authority Boundary
- Proposed Substation Locations**
 - Contracted Substation Location
 - SP Manweb Collector Substation (Options A - B)
 - National Grid Potential Substation
- SPEN Proposed Grid Connection Network**
 - BNC 132kV Wood Pole Line
 - BSC 132kV Single Circuit Wood Pole Line
 - CC 1-4 - 132kV/33kV Single Circuit Wood Pole Line
 - Alternative Line Route Options
- National Grid Proposed Grid Connection Network**
 - 400kV Draft National Grid Route - Overhead
 - 400kV Draft National Grid Route - Underground
- Llandinam Proposed Grid Connection**
 - 132kV Proposed Llandinam Overhead Line Connection
- Other Proposed Grid Connections**
 - SSE Route Corridor - Nant Y Moch

Zone of Theoretical Visibility for Proposed Grid Connections

- National Grid Visibility - 47m Steel Tower
- Llandinam Visibility - 14m Wood Pole
- BNC Visibility - 14m Wood Pole/ 26m Steel Tower
- BSC Visibility - 14m Wood Pole/26m Steel Tower
- CC Visibility - 14m Wood Pole

Notes The ZTV is calculated to tip height of wood pole (14m) /steel tower (26m/47m) from a veiling height of 2m above ground level.

The extents are based on 1km visibility for 14m wood pole and 2.5km from 26m/47m steel tower.

The terrain model is bare ground and derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

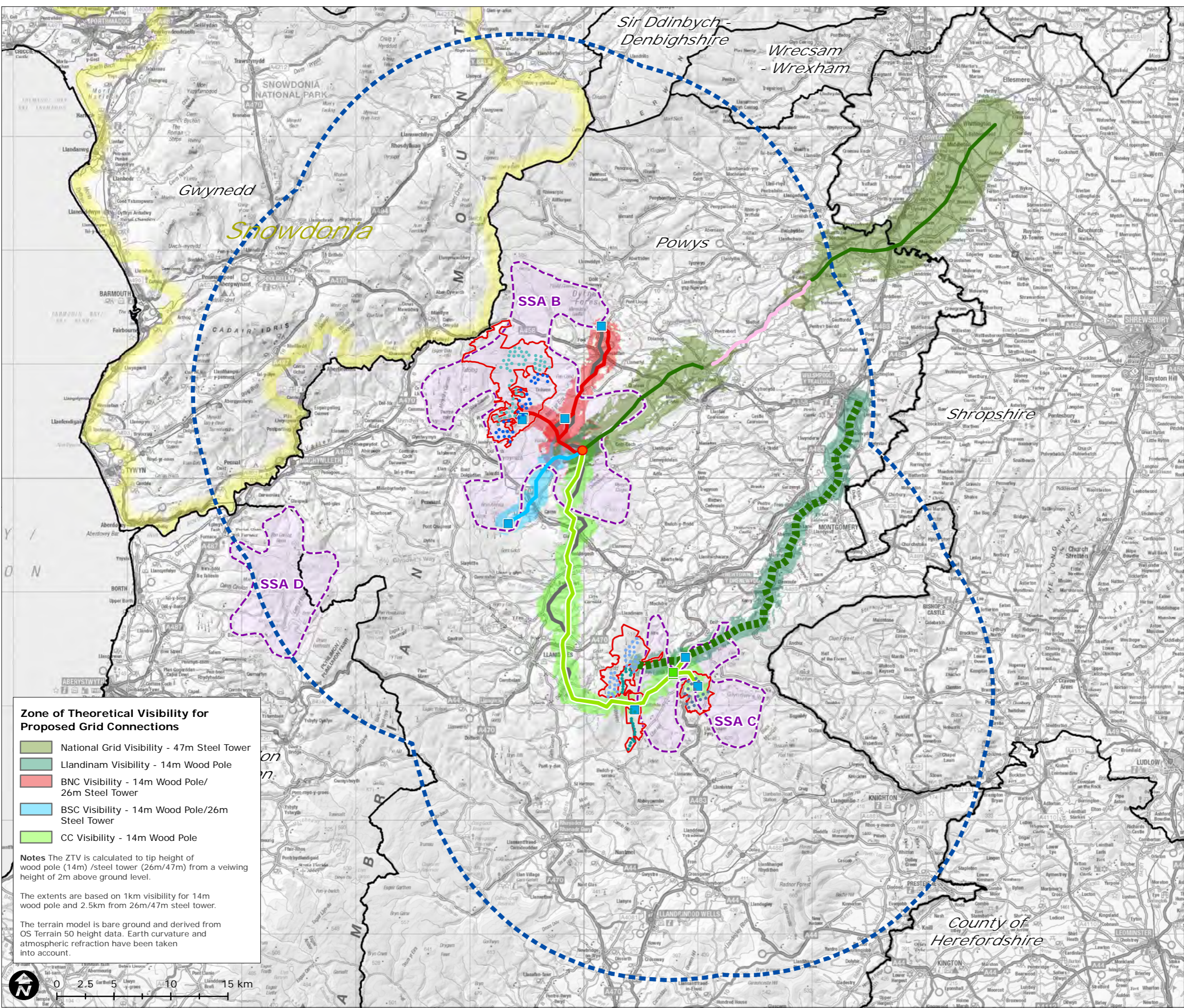


Figure 5

Map Scale @ A3:1:325,000

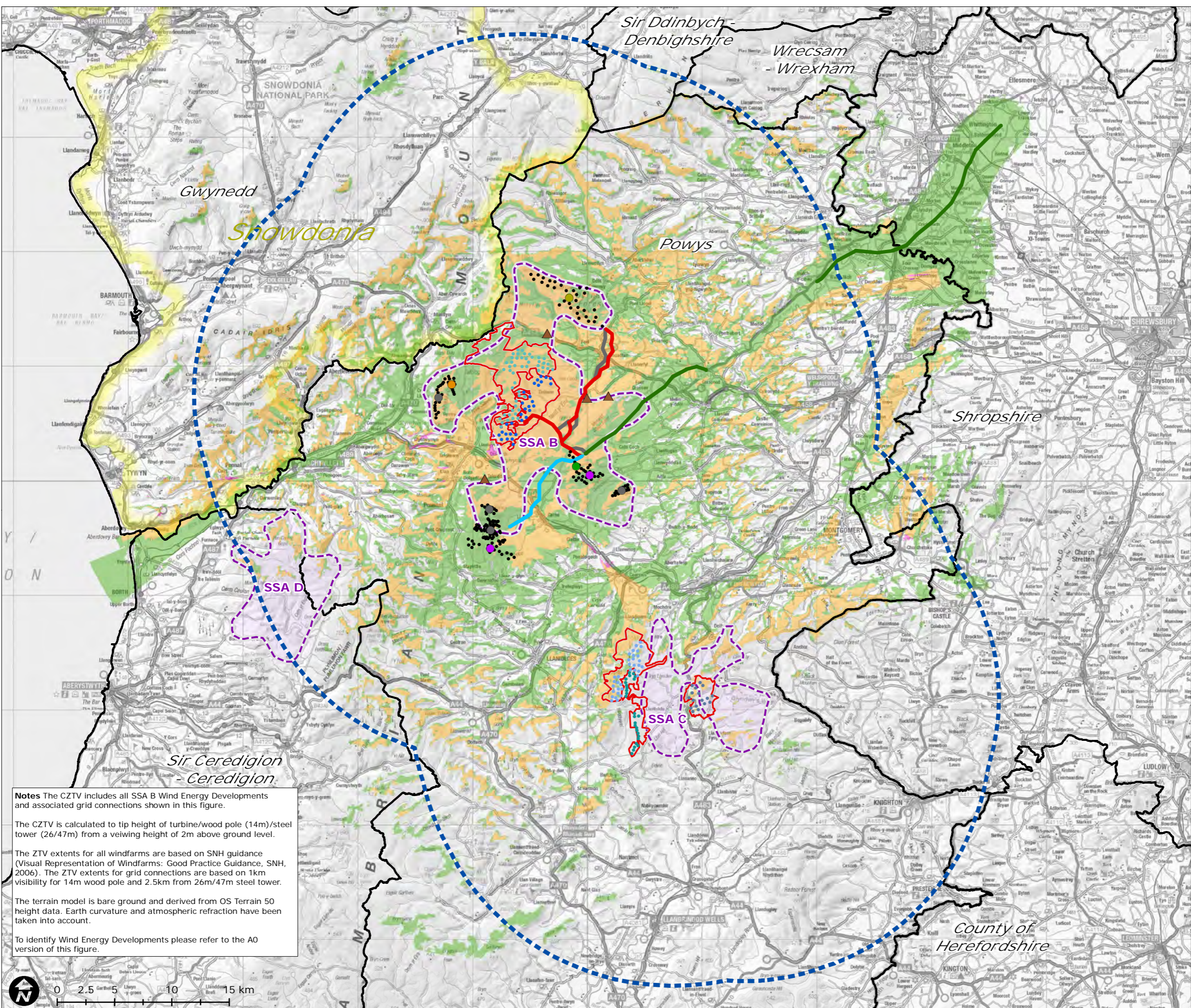


The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry

Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Cumulative Zone of Theoretical Visibility (CZTV): Llanbrynmair Wind Farm and all Operational, Consented and Proposed SSA-B Wind Energy Developments and Proposed Grid Connections

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations**
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSAs)
- Snowdonia National Park
- Planning Authority Boundary
- SPEN Proposed Grid Connection Network**
 - BNC 132kV Wood Pole Line
 - BSC 132kV Single Circuit Wood Pole Line
 - Alternative Line Route Options
- National Grid Proposed Grid Connection Network**
 - 400kV Draft National Grid Route - Overhead
- Wind Energy Development Status**
 - Operational
 - Consented
 - Appeal/Public Inquiry
 - Application Submitted
 - Design/Scoping
 - FIT Scheme
 - Turbine Location
- Theoretical Visibility**
 - SSA B Wind Energy Developments and Grid Connections
 - Llanbrynmair
 - Llanbrynmair, SSA B Wind Energy Developments and Grid Connections



Notes The CZTV includes all SSA B Wind Energy Developments and associated grid connections shown in this figure.

The CZTV is calculated to tip height of turbine/wood pole (14m)/steel tower (26/47m) from a viewing height of 2m above ground level.

The ZTV extents for all windfarms are based on SNH guidance (Visual Representation of Windfarms: Good Practice Guidance, SNH, 2006). The ZTV extents for grid connections are based on 1km visibility for 14m wood pole and 2.5km from 26m/47m steel tower.

The terrain model is bare ground and derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

To identify Wind Energy Developments please refer to the A0 version of this figure.

Figure 6
Map Scale @ A3:1:325,000



The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry
 Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Cumulative Zone of Theoretical Visibility (CZTV): Llanbrynmar Wind Farm and all Operational, Consented and Proposed SSA-B Wind Energy Developments and Proposed Grid Connections

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations**
 - Llanbrynmar, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSA) (July 2005)
- TAN 8 Strategic Search Areas (SSA) (PCC Redefined)
- Snowdonia National Park
- Planning Authority Boundary
- SPEN Proposed Grid Connection Network**
 - BNC - 132kV Wood Pole Line
 - BSC - 132kV Single Circuit Wood Pole Line
 - BSC/BNC
 - Alternative Line Route Options
- National Grid Proposed Grid Connection Network**
 - 400kV Draft National Grid Route - Overhead
- Wind Energy Development Status**
 - Operational
 - Consented
 - Appeal/Public Inquiry
 - Application Submitted
 - Design/Scoping
 - FIT Scheme
 - Turbine Location
- Operational Wind Farms**
 - 3. Carno I, 56 turbines, 54m to tip
 - 4. Carno II, 12 turbines, 80m to tip
 - 6. Cemmaes 2, 18 turbines, 66m to tip
 - 9. Mynydd Clogau, 17 turbines, 66m to tip
- Consented Wind Farms**
 - 12. Tirgwynnt, 12 turbines, 116m to tip
- Wind Farms at Appeal/PLI**
 - 13. Cemmaes 3, 12 turbines, 115m to tip
- Wind Farms with Application Submitted**
 - 17. Carno III, 18 turbines, 126.5m to tip
 - 18. Esgair Cwmowen, 18 turbines, 125m to tip
- Wind Farms at Design/Scoping Stage**
 - 26. Dyfnant Forest, 32 turbines, 145m to tip
- FIT Schemes within 5km of 5 PLI Wind Farms**
 - K. Harfodwen, 1 turbine, 20m to tip, Consented
 - N. Pant yr Hendre, 1 turbine, 34.2m to tip, Consented
 - O. Sychtyn, 1 turbine, 21m to tip, Consented
 - P. Wern, 1 turbine, 35m to tip, Consented
- Theoretical Visibility**
 - SSA B Wind Energy Developments and Grid Connections
 - Llanbrynmar
 - Llanbrynmar, SSA B Wind Energy Developments and Grid Connections

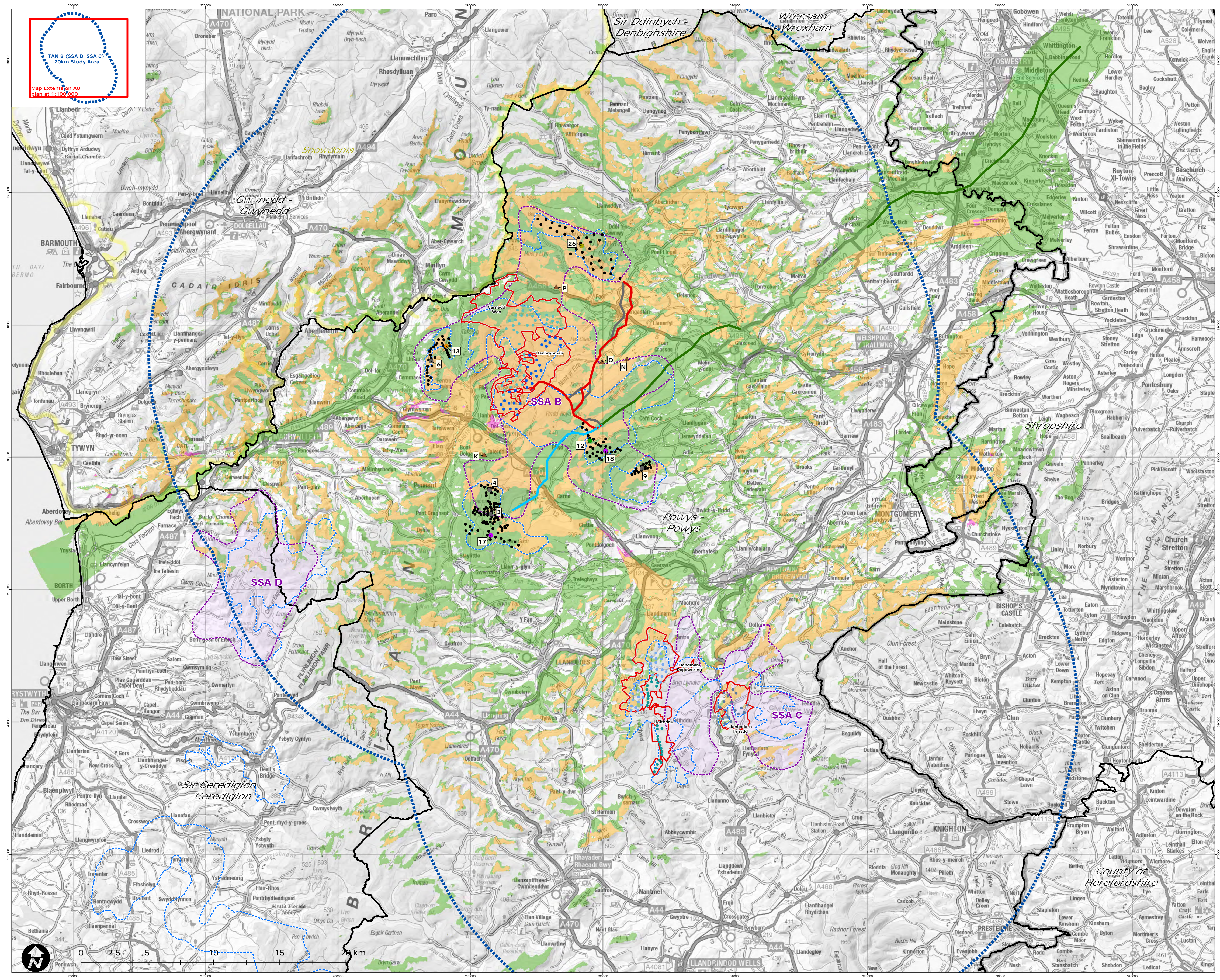
Notes The CZTV includes all SSA B Wind Energy Developments and associated grid connections shown in this figure.

The CZTV is calculated to tip height of turbine/wood pole (14m)/steel tower (26/47m) from a viewing height of 2m above ground level.

The ZTV extents for all windfarms are based on SNH guidance (Visual Representation of Windfarms: Good Practice Guidance, SNH, 2006). The ZTV extents for grid connections are based on 1km visibility for 14m wood pole and 2.5km from 26m/47m steel tower.

The terrain model is bare ground and derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

Figure 6a
 Map Scale @ A0: 1:100,000

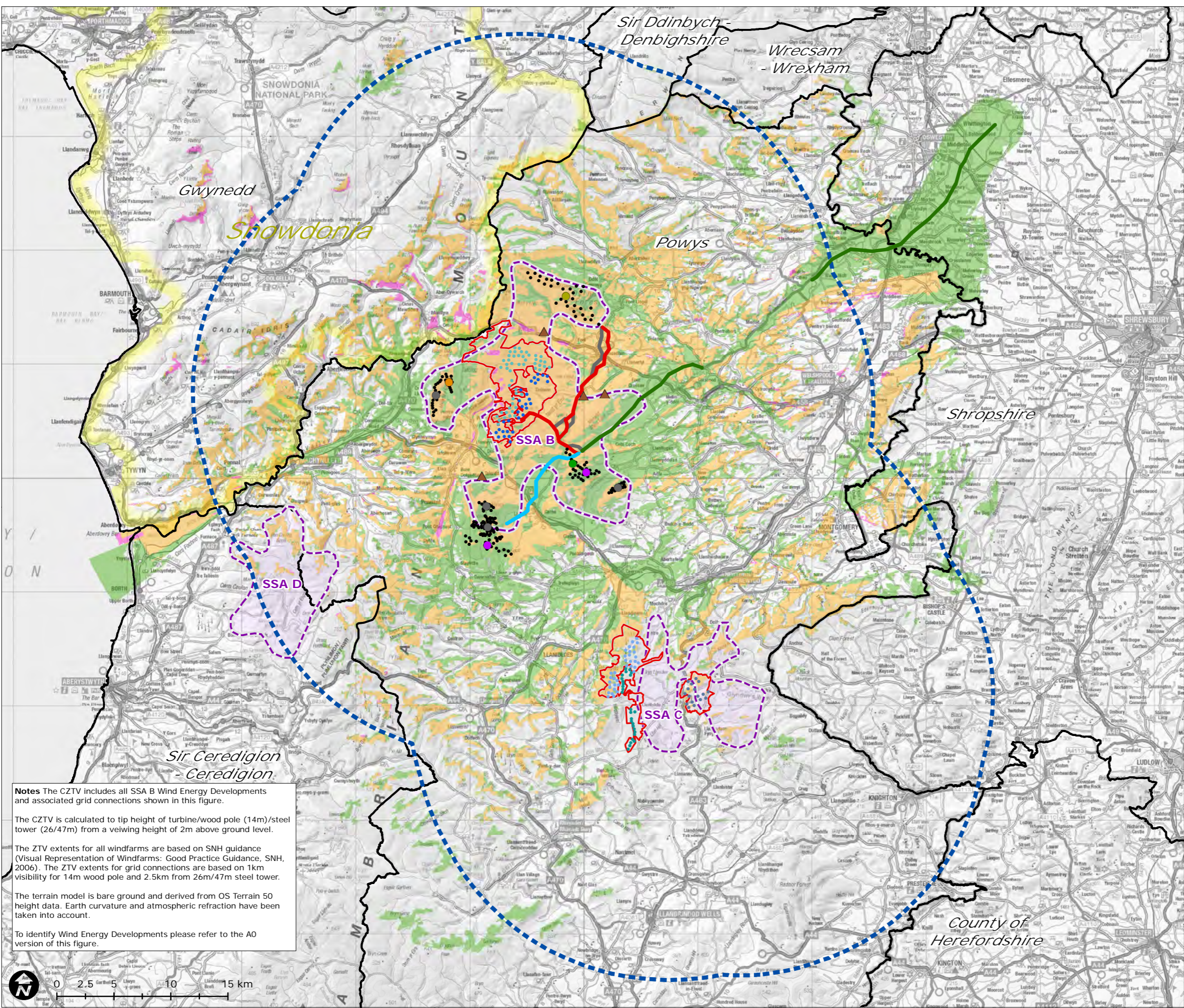


The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry

Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Cumulative Zone of Theoretical Visibility (CZTV): Carnedd Wen Wind Farm and all Operational, Consented and Proposed SSA-B Wind Energy Developments and Proposed Grid Connections

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations**
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSAs)
- Snowdonia National Park
- Planning Authority Boundary
- SPEN Proposed Grid Connection Network**
 - BNC 132kV Wood Pole Line
 - BSC 132kV Single Circuit Wood Pole Line
 - Alternative Line Route Options
- National Grid Proposed Grid Connection Network**
 - 400kV Draft National Grid Route - Overhead
- Wind Energy Development Status**
 - Operational
 - Consented
 - Appeal/Public Inquiry
 - Application Submitted
 - Design/Scoping
 - FIT Scheme
 - Turbine Location
- Theoretical Visibility**
 - SSA B Wind Energy Developments and Grid Connections
 - Carnedd Wen
 - Carnedd Wen, SSA B Wind Energy Developments and Grid Connections



Notes The CZTV includes all SSA B Wind Energy Developments and associated grid connections shown in this figure.

The CZTV is calculated to tip height of turbine/wood pole (14m)/steel tower (26/47m) from a viewing height of 2m above ground level.

The ZTV extents for all windfarms are based on SNH guidance (Visual Representation of Windfarms: Good Practice Guidance, SNH, 2006). The ZTV extents for grid connections are based on 1km visibility for 14m wood pole and 2.5km from 26m/47m steel tower.

The terrain model is bare ground and derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

To identify Wind Energy Developments please refer to the A0 version of this figure.

Figure 7
Map Scale @ A3:1:325,000



The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry
 Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Cumulative Zone of Theoretical Visibility (CZTV): Carnedd Wen Wind Farm and all Operational, Consented and Proposed SSA-B Wind Energy Developments and Proposed Grid Connections

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Boundaries**
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithdu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSAc) (July 2005)
- TAN 8 Strategic Search Areas (SSAc) (PCC Redefined)
- Snowdonia National Park
- Planning Authority Boundary
- SPEN Proposed Grid Connection Network**
 - BNC - 132kV Wood Pole Line
 - BSC - 132kV Single Circuit Wood Pole Line
 - BSC/BNC
 - Alternative Line Route Options
- National Grid Proposed Grid Connection Network**
 - 400kV Draft National Grid Route - Overhead
- Wind Energy Development Status**
 - Operational
 - Consented
 - Appeal/Public Inquiry
 - Application Submitted
 - Design/Scoping
 - ▲ FIT Scheme
 - Turbine Location

- Operational Wind Farms**
3. Carno I, 56 turbines, 54m to tip
 4. Carno II, 12 turbines, 80m to tip
 6. Cemmaes 2, 18 turbines, 66m to tip
 9. Mynydd Clogau, 17 turbines, 66m to tip

- Consented Wind Farms**
12. Tirgwynnt, 12 turbines, 116m to tip

- Wind Farms at Appeal/PLI**
13. Cemmaes 3, 12 turbines, 115m to tip

- Wind Farms with Application Submitted**
17. Carno III, 18 turbines, 126.5m to tip
 18. Esgair Cwmowen, 18 turbines, 125m to tip

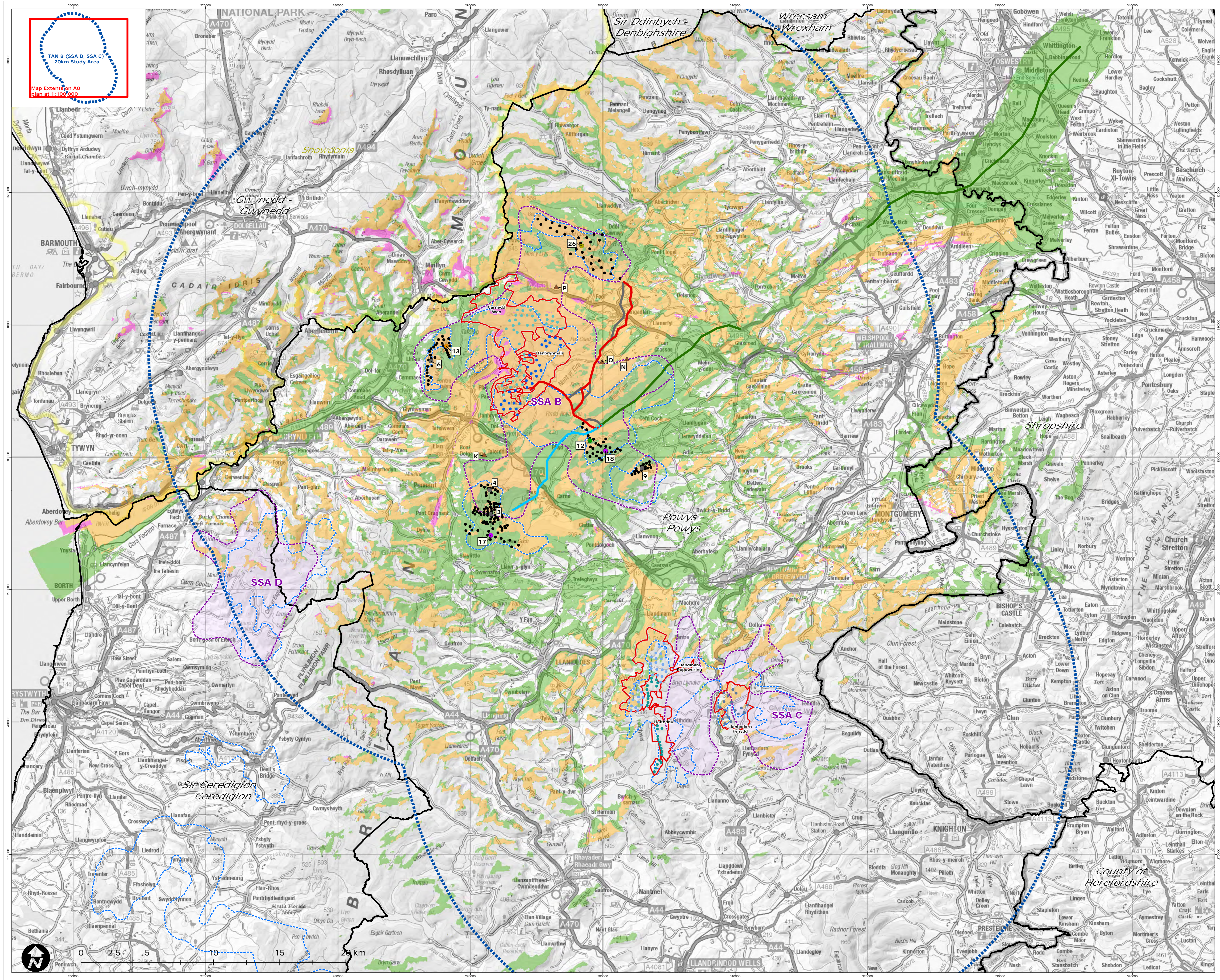
- Wind Farms at Design/Scoping Stage**
26. Dyfnant Forest, 32 turbines, 145m to tip

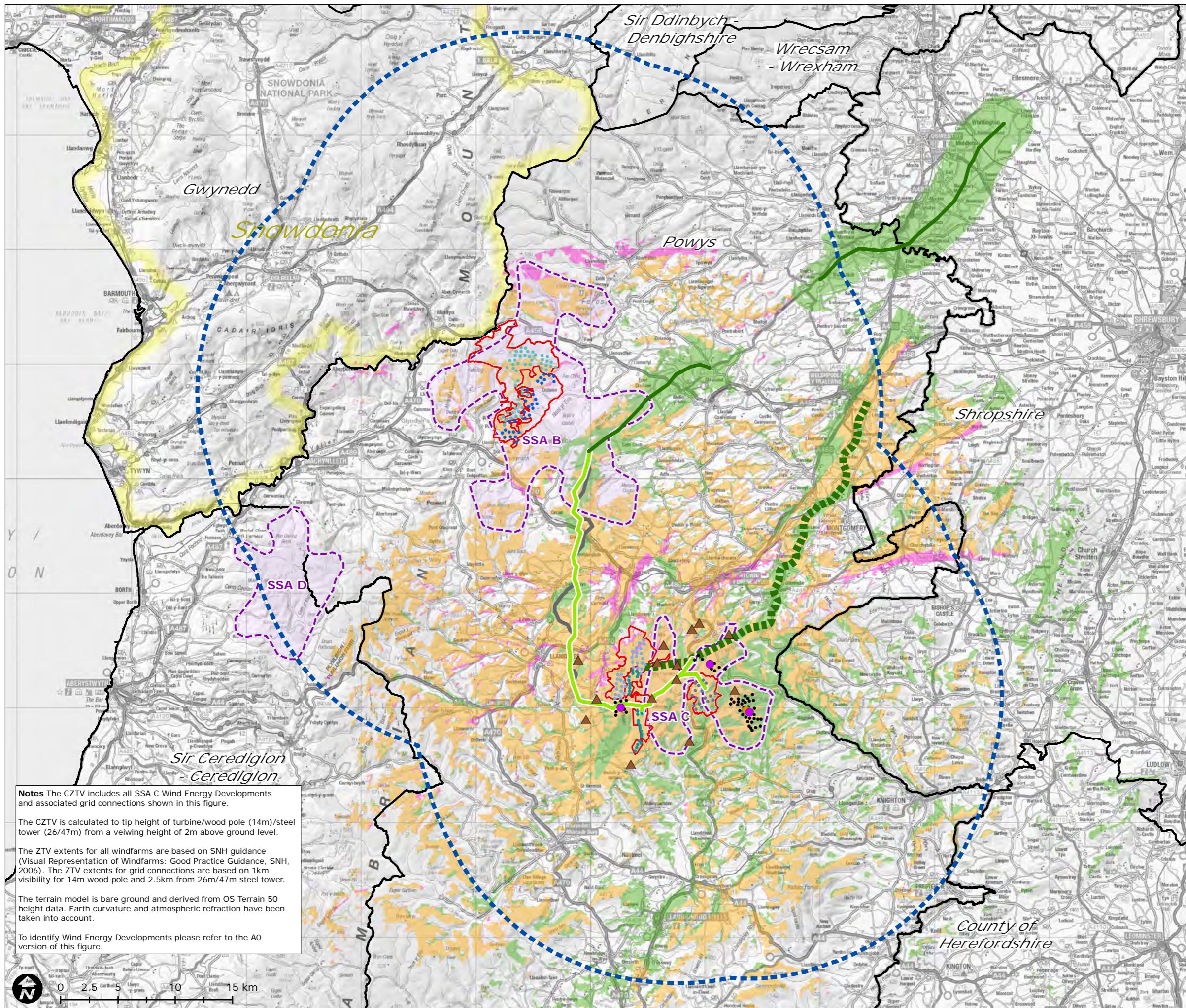
- FIT Schemes within 5km of 5 PLI Wind Farms**
- K. Hafodwen, 1 turbine, 20m to tip, Consented
 - N. Pant yr Hendre, 1 turbine, 34.2m to tip, Consented
 - O. Sychtyn, 1 turbine, 21m to tip, Consented
 - P. Wern, 1 turbine, 35m to tip, Consented

- Theoretical Visibility**
- SSA B Wind Energy Developments and Grid Connections
 - Carnedd Wen
 - Carnedd Wen, SSA B Wind Energy Developments and Grid Connections

Notes The CZTV includes all SSA B Wind Energy Developments and associated grid connections shown in this figure.
 The CZTV is calculated to tip height of turbine/wood pole (14m)/steel tower (26/47m) from a viewing height of 2m above ground level.
 The ZTV extents for all windfarms are based on SNH guidance (Visual Representation of Windfarms: Good Practice Guidance, SNH, 2006). The ZTV extents for grid connections are based on 1km visibility for 14m wood pole and 2.5km from 26m/47m steel tower.
 The terrain model is bare ground and derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

Figure 7a
 Map Scale @ A0: 1:100,000





Notes The CZTV includes all SSA C Wind Energy Developments and associated grid connections shown in this figure.

The CZTV is calculated to tip height of turbine/wood pole (14m)/steel tower (26/47m) from a viewing height of 2m above ground level.

The ZTV extents for all windfarms are based on SNH guidance (Visual Representation of Windfarms: Good Practice Guidance, SNH, 2006). The ZTV extents for grid connections are based on 1km visibility for 14m wood pole and 2.5km from 26m/47m steel tower.

The terrain data is bare ground and derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

To identify Wind Energy Developments please refer to the A0 version of this figure.

The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry
 Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Cumulative Zone of Theoretical Visibility (CZTV): Llandnam Repowering Wind Farm and all Operational, Consented and Proposed SSA-C Wind Energy Developments and Proposed Grid Connections

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations**
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandnam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSAs)
- Snowdonia National Park
- Planning Authority Boundary
- SPEN Proposed Grid Connection Network**
 - CC 1-4 - 132kV/33kV Single Circuit Wood Pole Line
 - Alternative Line Route Options
- National Grid Proposed Grid Connection Network**
 - 400kV Draft National Grid Route - Overhead
- Llandnam Proposed Grid Connection**
 - 132kV Proposed Llandnam Overhead Line Connection
- Wind Energy Development Status**
 - ● Appeal/Public Inquiry
 - ● Application Submitted
 - ▲ FIT Scheme
 - ● Turbine Location
- Theoretical Visibility**
 - SSA C Wind Energy Developments and Grid Connections
 - Llandnam Repowering
 - Llandnam Repowering, SSA C Wind Energy Developments and Grid Connections

Figure 8
 Map Scale @ A3:1:325,000



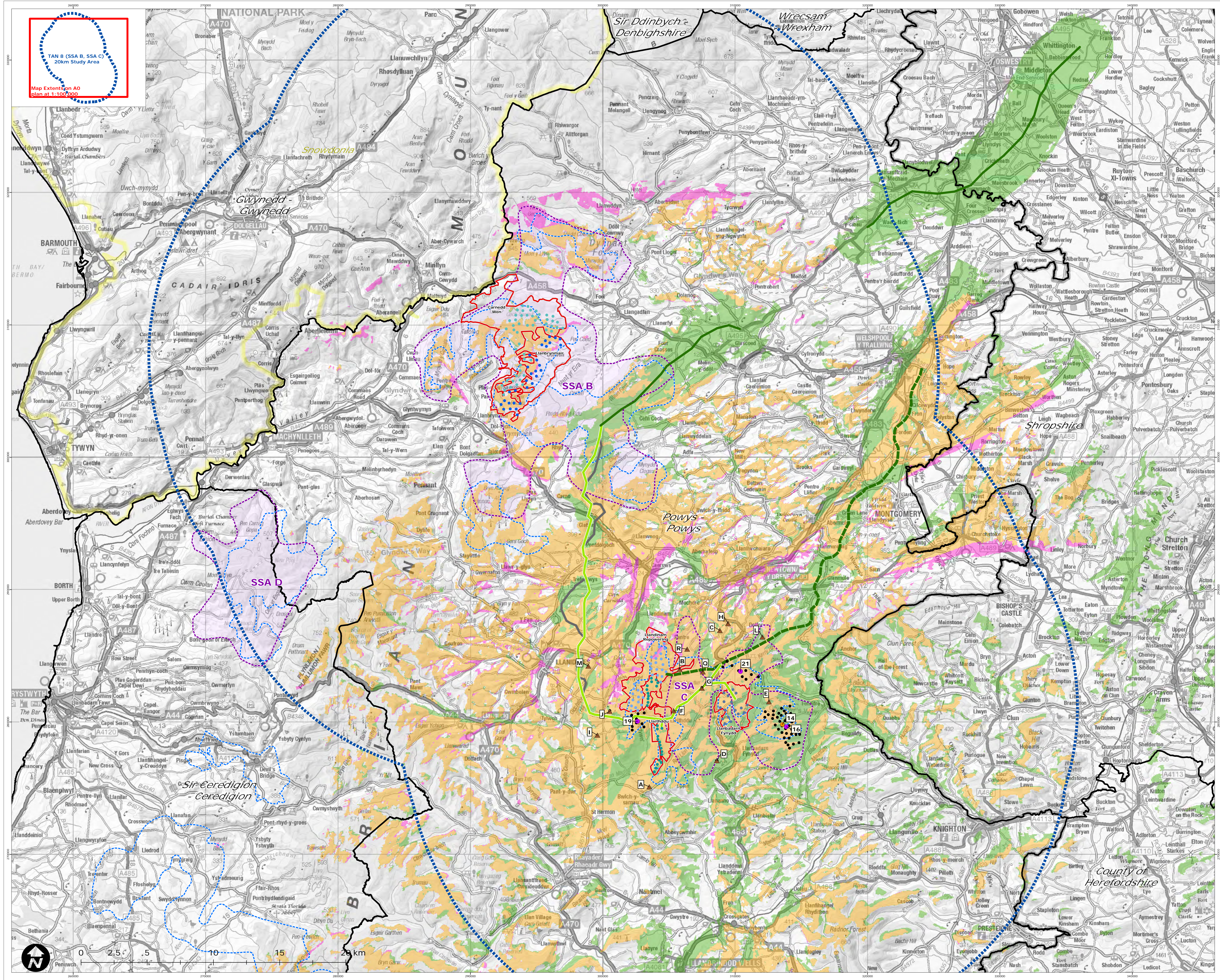
The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry
 Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Cumulative Zone of Theoretical Visibility (CZTV): Llandinam Repowering Wind Farm and all Operational, Consented and Proposed SSA-C Wind Energy Developments and Proposed Grid Connections

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaihddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSAc) (July 2005)
- TAN 8 Strategic Search Areas (SSAc) (PCC Redefined)
- Snowdonia National Park
- Planning Authority Boundary
- SPEN Proposed Grid Connection Network
 - CC 1-4 - 132kV/33kV Single Circuit Wood Pole Line
 - Alternative Line Route Options
- National Grid Proposed Grid Connection Network
 - 400kV Draft National Grid Route - Overhead
- Llandinam Proposed Grid Connection
 - 132kV Proposed Llandinam Overhead Line Connection
- Wind Energy Development Status
 - Appeal/Public Inquiry
 - Application Submitted
 - FIT Scheme
 - Turbine Location
- Wind Farms at Appeal/PLI
 - 14. Garreg Lywd Hill, 23 turbines, 126.5m to tip
- Wind Farms with Application Submitted
 - 16. Brynyddfa, 12 turbines, 126.5m to tip
 - 19. Hirdydwel, 9 turbines, 125m to tip
 - 21. Neuadd Goch Bank, 9 turbines, 126m to tip
- FIT Schemes within 5km of 5 PLI Wind Farms
 - A. Bailey Bog, 1 turbine, 20.4m to tip, Consented
 - B. Bryn Dadau, 1 turbine, 19.5m to tip, Consented
 - C. Bryn David Fach, 1 turbine, 17.7m to tip, Consented
 - D. Brynnddu, 2 turbines, 20.4m to tip, Consented
 - E. Brynmaur Cottage, 1 turbine, 17.7m to tip, Consented
 - F. Ddulley Bank, 1 turbine, 20m to tip, Consented
 - G. Esgrairdraenllyn, 2 turbines, 34.6m to tip, Consented
 - H. Garreg, 1 turbine, 26m to tip, Consented
 - I. Garth Fawr, 1 turbine, 20.9m to tip, Consented
 - J. Hafod Fraith, 2 turbines, 17.7m to tip, Consented
 - L. Lower Ceulannau, 1 turbine, 17.7m to tip, Consented
 - M. New Chapel Farm, 1 turbine, 17.7m to tip, Consented
 - O. Bryn Cwmhiewdre, 1 turbine, 34.4m to tip, Application Submitted
 - R. Dugwm Farm, 1 turbine, 34.4m to tip, Application Submitted
- SSA C Wind Energy Developments and Grid Connections
- Llandinam Repowering
- Llandinam Repowering, SSA C Wind Energy Developments and Grid Connections

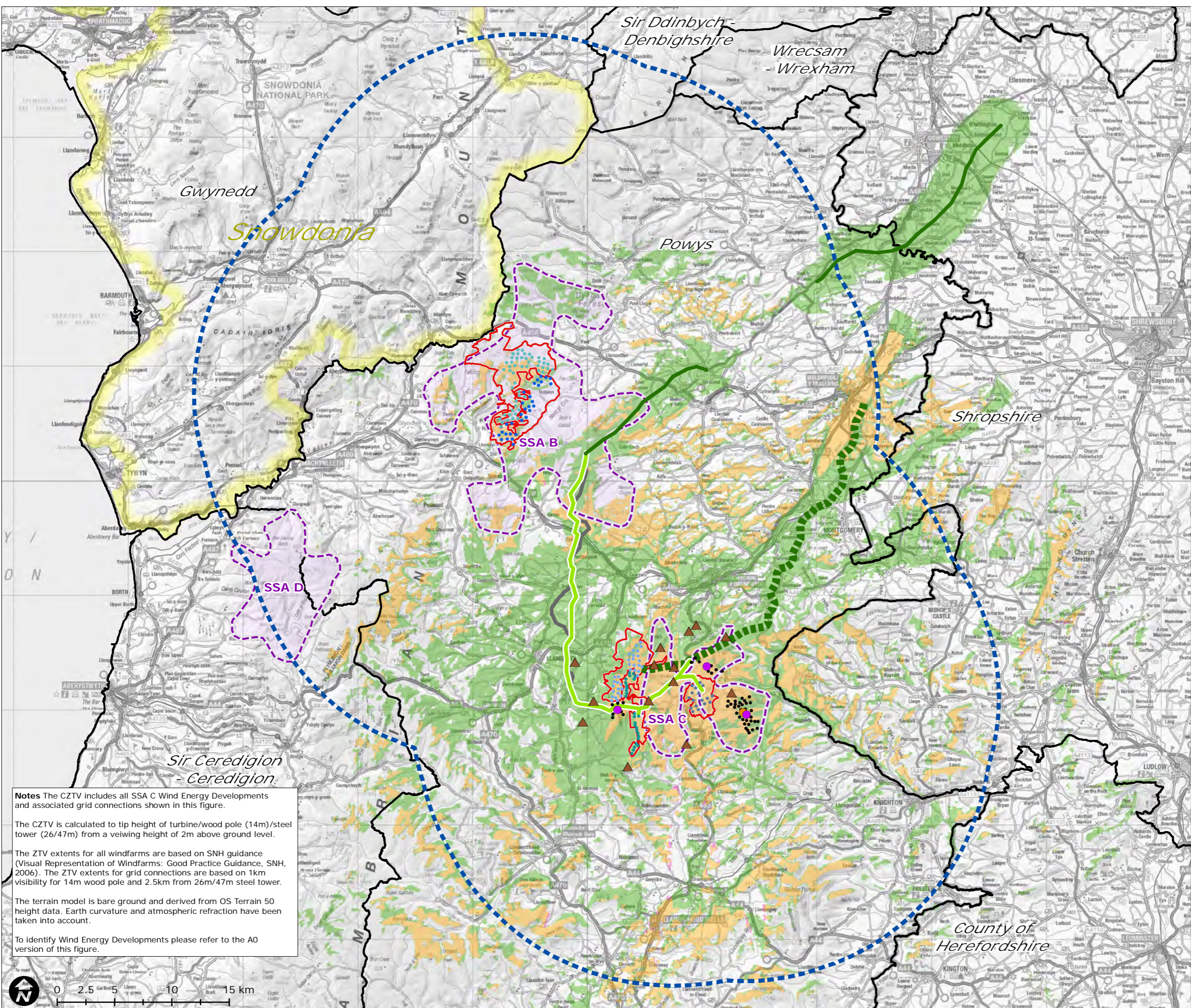
Notes The CZTV includes all SSA C Wind Energy Developments and associated grid connections shown in this figure.
 The CZTV is calculated to tip height of turbine/wood pole (14m)/steel tower (26/47m) from a viewing height of 2m above ground level.
 The ZTV extents for all windfarms are based on SNH guidance (Visual Representation of Windfarms: Good Practice Guidance, SNH, 2006). The ZTV extents for grid connections are based on 1km visibility for 14m wood pole and 2.5km from 26m/47m steel tower.
 The terrain model is bare ground and derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

Figure 8a
 Map Scale @ A0: 1:100,000



Cumulative Zone of Theoretical Visibility (CZTV): Llanbadarn Fynydd Wind Farm and all Operational, Consented and Proposed SSA-C Wind Energy Developments and Proposed Grid Connections

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations**
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Strategic Search Areas (SSAs)
- Snowdonia National Park
- Planning Authority Boundary
- SPEN Proposed Grid Connection Network**
 - CC 1-4 - 132kV/33kV Single Circuit Wood Pole Line
 - Alternative Line Route Options
- National Grid Proposed Grid Connection Network**
 - 400kV Draft National Grid Route - Overhead
- Llandinam Proposed Grid Connection**
 - 132kV Proposed Llandinam Overhead Line Connection
- Wind Energy Development Status**
 - ● Appeal/Public Inquiry
 - ● Application Submitted
 - ▲ FIT Scheme
 - ● Turbine Location
- Theoretical Visibility**
 - SSA C Wind Energy Developments and Grid Connections
 - Llanbadarn Fynydd
 - Llanbadarn Fynydd, SSA C Wind Energy Developments and Grid Connections



Notes The CZTV includes all SSA C Wind Energy Developments and associated grid connections shown in this figure.

The CZTV is calculated to tip height of turbine/wood pole (14m)/steel tower (26/47m) from a viewing height of 2m above ground level.

The ZTV extents for all windfarms are based on SNH guidance (Visual Representation of Windfarms: Good Practice Guidance, SNH, 2006). The ZTV extents for grid connections are based on 1km visibility for 14m wood pole and 2.5km from 26m/47m steel tower.

The terrain data is bare ground and derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

To identify Wind Energy Developments please refer to the A0 version of this figure.

Figure 9
 Map Scale @ A3:1:325,000



The Mid-Wales (Powys) Conjoined Wind Farms Public Inquiry
 Supplementary Environmental Information (SEI): Conjoined Cumulative Landscape and Visual - Graphics and Visualisations

Cumulative Zone of Theoretical Visibility (CZTV): Llanbadarn Fynydd Wind Farm and all Operational, Consented and Proposed SSA-C Wind Energy Developments and Proposed Grid Connections

- Wind Farm Application Boundaries
- 5 PLI Schemes - Turbine Locations**
 - Llanbrynmair, 30 turbines, 126.5m to tip
 - Carnedd Wen, 50 turbines, 137m to tip
 - Llandinam Repowering, 34 turbines, up to 121.2m to tip
 - Llanbadarn Fynydd, 17 turbines, 125m to tip
 - Llaithddu, 27 turbines, up to 115.5m to tip
- TAN 8 (SSA B, SSA C) 20km Study Area
- TAN 8 Statagic Search Areas (SSAc) (July 2005)
- TAN 8 Statagic Search Areas (SSAc) (PCC Redefined)
- Snowdonia National Park
- Planning Authority Boundary
- SPEN Proposed Grid Connection Network**
 - CC 1-4 - 132kV/33kV Single Circuit Wood Pole Line
 - Alternative Line Route Options
- National Grid Proposed Grid Connection Network**
 - 400kV Draft National Grid Route - Overhead
- Llandinam Proposed Grid Connection**
 - 132kV Proposed Llandinam Overhead Line Connection
- Wind Energy Development Status**
 - Appeal/Public Inquiry
 - Application Submitted
 - FIT Scheme
 - Turbine Location

- Wind Farms at Appeal/PLI**
14. Garreg Lywd Hill, 23 turbines, 126.5m to tip
- Wind Farms with Application Submitted**
16. Brynydyfa, 12 turbines, 126.5m to tip
 19. Hirdydwel, 9 turbines, 125m to tip
 21. Neuadd Goch Bank, 9 turbines, 126m to tip
- FIT Schemes within 5km of 5 PLI Wind Farms**
- A. Bailey Bog, 1 turbine, 20.4m to tip, Consented
 - B. Bryn Dadlau, 1 turbine, 19.5m to tip, Consented
 - C. Bryn David Fach, 1 turbine, 17.7m to tip, Consented
 - D. Brynddu, 2 turbines, 20.4m to tip, Consented
 - E. Brynnew Cottage, 1 turbine, 17.7m to tip, Consented
 - F. Ddudley Bank, 1 turbine, 20m to tip, Consented
 - G. Esgairdraenlwyn, 2 turbines, 34.6m to tip, Consented
 - H. Garreg, 1 turbine, 26m to tip, Consented
 - I. Garth Fawr, 1 turbine, 20.9m to tip, Consented
 - J. Hafod Fraith, 2 turbines, 17.7m to tip, Consented
 - L. Lower Ceulannau, 1 turbine, 17.7m to tip, Consented
 - M. New Chapel Farm, 1 turbine, 17.7m to tip, Consented
 - Q. Bryn Cwmrhiewdre, 1 turbine, 34.4m to tip, Application Submitted
 - R. Dugwm Farm, 1 turbine, 34.4m to tip, Application Submitted

- Theoretical Visibility**
- SSA C Wind Energy Developments and Grid Connections
 - Llanbadarn Fynydd
 - Llanbadarn Fynydd, SSA C Wind Energy Developments and Grid Connections

Notes The CZTV includes all SSA C Wind Energy Developments and associated grid connections shown in this figure.
 The CZTV is calculated to tip height of turbine/wood pole (14m)/steel tower (26/47m) from a veiling height of 2m above ground level.
 The ZTV extents for all windfarms are based on SNH guidance (Visual Representation of Windfarms: Good Practice Guidance, SNH, 2006). The ZTV extents for grid connections are based on 1km visibility for 14m wood pole and 2.5km from 26m/47m steel tower.
 The terrain model is bare ground and derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

Figure 9a
 Map Scale @ A0: 1:100,000

