

MYNYDD Y GWYNT WIND FARM

NON-TECHNICAL SUMMARY

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Introduction

1. Mynydd y Gwynt Ltd is applying for Development Consent (permission) to build the Mynydd y Gwynt Wind Farm (“the Wind Farm”) at the Sweet Lamb Rally Complex and farm, west of Llangurig. The Wind Farm will comprise 27 wind turbines, with the collective capacity to generate between 81 and 89.1 MW. Since the generating capacity is over 50 MW, this project is regarded as a Nationally Significant Infrastructure Project (“NSIP”). This Non-Technical Summary (“NTS”) is the first part of the Environmental Statement (“ES”) submitted by Mynydd y Gwynt Limited to the Planning Inspectorate (“PINS”) in support of its application to the Secretary of State for Energy and Climate Change for a Development Consent Order pursuant to the Planning Act 2008, to construct and operate the proposed Wind Farm.

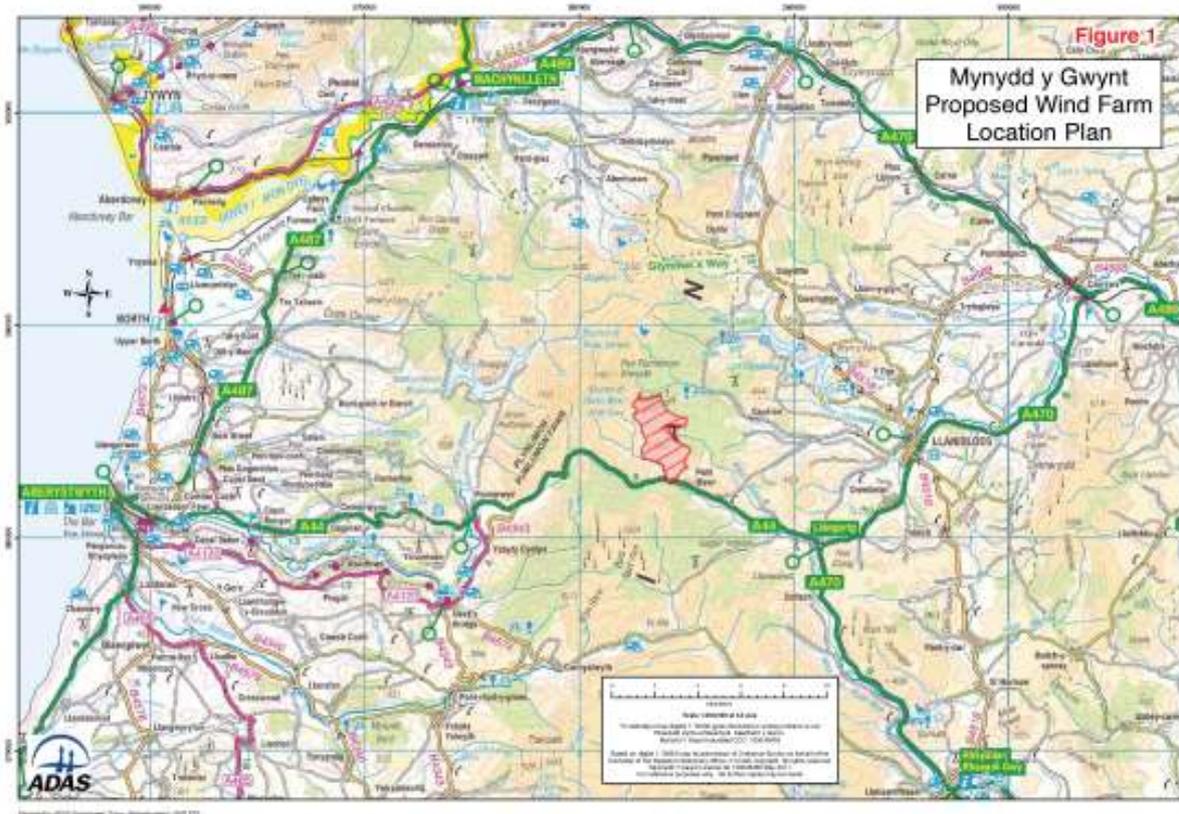
About Mynydd y Gwynt Ltd

2. Mynydd y Gwynt Ltd (“the Applicant”) is a company set up by the landowners and local businessmen specifically for the purpose of developing a wind farm at the Sweet Lamb Rally Complex. The landowners’ family has farmed the land for over 100 years. It now operates in collaboration with Renewable Energy Holdings plc, a renewable energy developer.



The Sweet Lamb Farm and Rally Complex entrance onto the A44

3. This document summarises the findings of the ES in non-technical language, and has been prepared to assist interested parties and the general public to participate in the decision making process from a properly informed position.



Site location

The Site

4. The site (“the Site”) is located at the Sweet Lamb Rally Complex and farm, an area of land to the north of the A44 trunk road between the villages of Llangurig 8km to the east and Ponterwyd 9.5km to the west. The land rises from the road to a plateau area approaching 550 metres above sea level. It is on farm land, principally used for sheep grazing, and although it has other non-agricultural uses it is best known as the Sweet Lamb Rally Complex.



Existing Rally Complex/farm tracks

5. The farm has a total area of around 2000ha. The red lined application area is approximately 584 ha. The Wind Farm needs approximately 9.4ha of new permanent land take to make new tracks, turbine bases and the substation. The Site already has an extensive network of tracks and a large surfaced parking area used for rally event parking and as a shooting range. The use of these in the proposed development greatly reduces the amount of new hard standing and the length of new tracks that would otherwise be required.

The Project

6. The proposed wind farm development would consist of the following:
- 27 turbines (each between 3 and 3.3MW generating capacity);
 - underground electrical and communication cables;
 - substation, control building and satellite link;
 - widening of 9.5km of existing tracks;
 - laying 6.9km of new tracks; and
 - installation of a meteorological mast.
7. In addition, and whilst subject to a separate permitting regime, the relevant transport authorities will be likely to require certain minor highway works to be carried out to facilitate the transport of abnormal load deliveries to the Site, specifically adaptations to street furniture, and the extension of three existing lay-bys and the construction of two new ones.

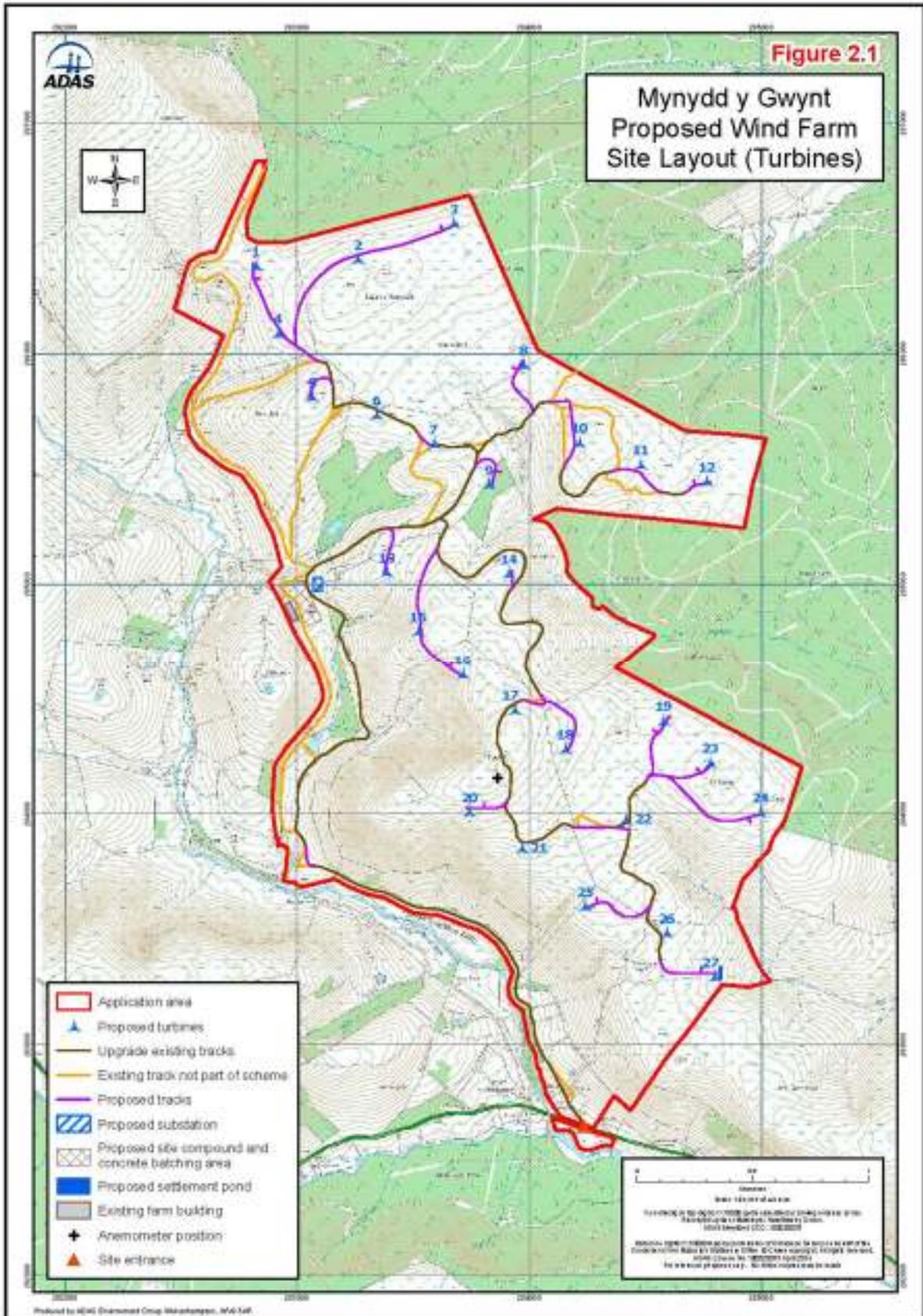


Figure 2.1 Site Layout

8. With each turbine capable of generating 3-3.3MW per hour the Wind Farm would have an installed capacity of 81-89.1MW. The maximum height to blade tip would be 125m. Dependant on the actual turbine installed the hub height would be between 70-80m and the blades would have a swept diameter of between 90-105m.
9. The current proposal considers a turbine envelope which combines a mixture of Vestas V105 3.3MW and V90 3MW turbine characteristics. The worst case impact for each environmental subject is considered. Generally, the higher capacity V105 has a greater potential impact, however when considering noise, the older design V90 is noisier than the new V105. An exception is transportation where the V90 3MW turbine is used as the candidate turbine. Turbine technology is continually improving and manufacturers are regularly releasing more efficient and productive models. The actual turbine model will be decided at a later date; however the tip height limit of 125m will remain, so if a larger rotor diameter is sought then the hub height will be reduced accordingly. Any necessary additional revised approvals (such as transport) would be sought as required.
10. Access to the Site will be directly from the A44 trunk road. Abnormal loads will be escorted by the Police along the route described in paragraph 16 below.



Site Entrance from A44

Grid Connection

11. This planning application does not include the electrical grid connection as it is the responsibility of the local electricity company (in this case SP Manweb as the 'Distribution Network Operator') to apply separately to provide the grid connection. However, it is best practice to consider the potential impact of the connection at this stage and so a desk top assessment of the likely grid corridor has been included. In fact, two possible grid corridor assessments are included as a result of discussions with SP Manweb. The first, Option 1, was the preferred route corridor advised by SP Manweb in 2011. However, as their plans for mid Wales grid connections have developed, SP Manweb advised (in 2012) of a more likely route corridor; this has been considered as Option 2 in the ES. From discussions with SP Manweb, this more likely corridor will be via Carno, using a wooden pole construction for most of the way to the new sub-station planned at Cefn Coch.
12. From the Site, this route runs on wooden poles through the Hafren Forest, following forest tracks to reduce the need for felling. Once out of the forest, it would run alongside minor roads, still on wooden poles, around the northern end of the Llyn Clywedog reservoir. Moving north from Llyn Clywedog, the route passes across enclosed farmland to Carno.

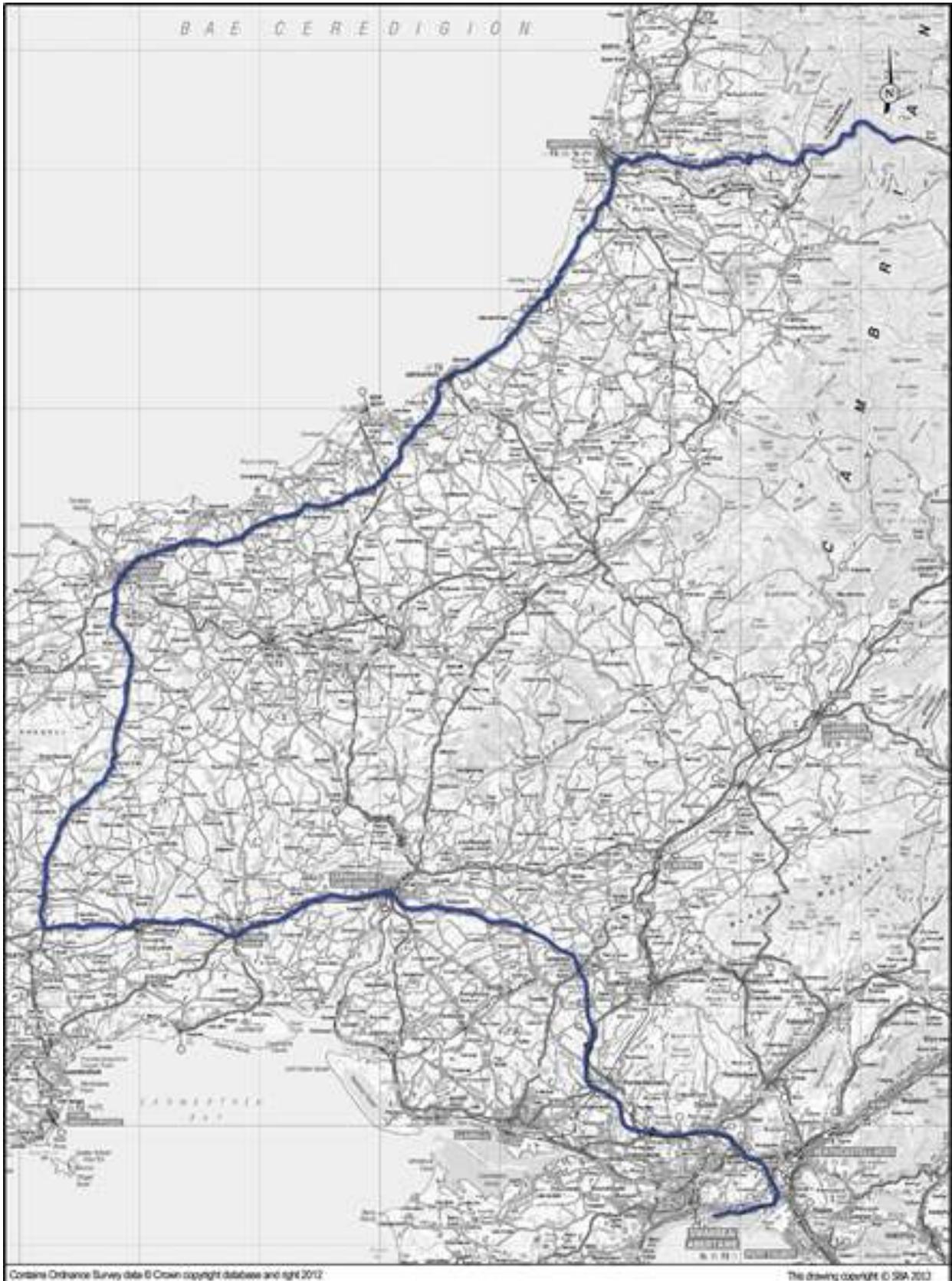


Substation and contractors compound area

13. From the Carno substation the line would be shared with the proposed Carno III grid connection and proceed to Cefn Coch using SP Manweb's BSC route corridor. From the north side of the A470 to Cefn Coch SP Manweb have existing consent for a 132kV wooden pole line to be constructed for part of the route, which SPM have suggested may be utilised.

Transport

14. Certain wind turbine components are, by reason of their length and/or weight, treated as abnormal loads and as a result special arrangements have to be made for their transport. It is proposed that all such abnormal loads for the Wind Farm will depart Swansea Port and approach the Site from the south, via Cardigan and Aberystwyth. The route that the abnormal loads will take is described briefly below.
15. The proposed route from Swansea to the M4 has been used previously for the transport of wind turbine components to Site, the exit from the port having been improved and largely constructed for the purpose of serving the Blaengwen wind farm. This junction has also served the now operational Mynydd-y-Betws wind farm.
16. The proposed access route would take the loads along Fabian Way (A483) out of Swansea Port where the loads will merge onto the M4 at Junction 42 heading west.
- At Pontabraham Roundabout the loads will leave the M4 and continue onto the A48 (Junction 49).
 - To the south of Carmarthen, the abnormal loads will continue onto the A40 westbound.
 - At Penblewin Roundabout all loads will turn right onto the A478, travelling northbound.
 - Approaching from the south of Cardigan, the loads will turn right onto the A487 eastbound.
 - At Penparcau Road Roundabout to the south of Aberystwyth the abnormal loads will turn right onto the A4120, continuing north and turning right at the Heol-y-Bont roundabout.
 - At the junction with the A44, the loads will turn right and continue east on the A44 to the proposed junction for Mynydd-y-Gwynt.
 - The total route from Swansea Port to the Site is approximately 130 miles.



Abnormal Loads Route to Site

Consultation

17. The Applicant is committed to full and thorough consultation throughout the development and planning process, and consultations have been ongoing since 2005. Initial consultations were with the aviation and telecommunications stakeholders, to facilitate the preparation of an initial layout. Following this, a scoping report was sent to Powys County Council and the then Countryside Council for Wales (now Natural Resources Wales – “NRW”). Further consultation was undertaken with the principal consultees for cultural heritage, specialist officers from the County Council Departments responsible for noise, shadow flicker and landscape, and meetings were held with the Mid Wales Trunk Road Agency. As the Site is close to the boundary with Ceredigion, Ceredigion County Council was also consulted.
18. By autumn 2006 plans were sufficiently advanced to consult the local communities using a variety of methods including mailshots, a newsletter, website and public meetings.
19. New procedures for granting consent for large-scale wind farms were introduced by the Planning Act 2008 and although consultation continued, work on the scheme slowed while the new procedures took effect. By June 2011 the Applicant began a new round of consultation, following the procedures under the Planning Act. It has involved holding public meetings, discussions with Council Officers and organisations who have a statutory duty to advise on planning applications. Consultation continues to this date. Full details of the consultation process are explained in the **Consultation Report (Document Reference: MYG-AD-5)** which was submitted with the application to the Planning Inspectorate and which can be downloaded from their website.

The Application Process

20. As the capacity of the proposed scheme is over 50MW, under the Planning Act 2008 it is classed as a ‘Nationally Significant Infrastructure Project’. Accordingly, the Applicant has to apply for a Development Consent Order (planning permission) to the Secretary of State for Energy and Climate Change, with the application being administered by PINS on the Secretary of State’s behalf.
21. PINS will examine the application in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 and related guidance, and the Secretary of State at the Department for Energy and Climate Change (“DECC”) will ultimately determine whether or not to grant Development Consent.

Policy and Scheme Rationale

22. The UK Government says the UK is too reliant on fossil fuels and needs to wean itself off such a high carbon energy mix. Government policy states accordingly that there is an “urgent” need “to bring forward new renewable electricity generating projects as soon as possible.”
23. The Government has made these commitments because it believes continuation of global emissions at current levels could lead to average global temperatures to rise by 6°C by the end of this century and that global emissions must start falling as a matter of urgency. As such, the Government has put in place a legally binding framework to cut carbon emissions by 80% by 2050.

24. The Government believes the transition to a low carbon economy is essential to face the challenge of declining oil and gas reserves and to improve security of supply as well as meeting emissions targets.
25. Welsh policy is similarly strongly supportive of low carbon energy generation. In its March 2010 Energy Policy Statement “A Low Carbon Revolution” the Welsh Government states “*Climate Change is the greatest environmental, economic and social challenge facing the planet ... Our future well-being, both material and social, will be dependent on achieving sufficient supplies of affordable low carbon energy*”. This imperative is supported by the other principal Welsh policy documents, Planning Policy Wales and Technical Advice Note 8 (“TAN 8”).
26. Planning policy recognises that major infrastructure projects of this sort cannot however be delivered without environmental impact. Against the background briefly outlined above the Secretary of State has to evaluate whether the impacts of the scheme outweigh the benefits it brings in generating renewable, low carbon energy.

Mynydd y Gwynt and Tan 8 Strategic Search Areas

27. TAN 8 is strongly supportive of appropriately sited wind farm developments in Wales, and whilst it identifies several areas, known as “Strategic Search Areas” or “SSAs”, as being suitable, on objective criteria, for large scale wind farm development, it does not seek to confine such development exclusively to these areas.
28. The Wind Farm project was initiated by the landowners well before the July 2005 version of TAN 8 advice note was issued. The Site scores well on the assessment criteria used to develop the SSAs, but was ruled out because the farm partially encroaches into the RAF low flying training corridor. After consultation the RAF confirmed that the proposed turbine locations would not be a problem. However, this confirmation came too late for the Site to be included as a designated SSA.
29. However as a ‘relatively unconstrained site’ current UK and Welsh policy supports the scheme as proposed.

Construction

30. Construction of the scheme is estimated to take 13 months. The start of construction will depend on the availability of the electrical grid connection to mid Wales. For the purposes of this assessment construction is assumed to start in 2018 with the grid connection being available in 2019. Advance delivery of stone to facilitate seasonal construction of the new access tracks as a separate activity to the principal construction programme may be scheduled to reduce environmental impacts. This will be factored into the overall construction programme if development consent is obtained.
31. The physical elements of the project are made up as follows:
 - the construction of a temporary site compound with associated services for the duration of the construction phase. This will be located on an existing car parking area;

- the construction of approximately 6.9km of on-site access tracks crossing the Site to facilitate the wind farm development and widening approximately 9.5km of the existing farm/rally tracks to a minimum of 5m;
 - trenching and cable installation for the supply and distribution of generated electricity and on-site communications and monitoring;
 - the construction within the Site of a 33kV/132kV electrical substation (approximate overall area 58m x 35m) and associated switchgear, to be located at the existing car parking area;
 - the possible installation of a temporary on-site concrete batching plant to facilitate turbine base construction;
 - the installation of the 27 wind turbines, including excavation for turbine bases;
 - the installation of a meteorological mast, with a height of 80m; and
 - the reinstatement of areas affected by the construction of the contractor's compound and concrete batching plant.
32. In addition, and as set out in the opening, the relevant transport authorities will be likely to require certain minor highway works to be carried out to facilitate the transport of abnormal load deliveries to the Site, specifically adaptations to street furniture, and the extension of three existing lay-bys, and the construction of two new ones. As is conventional the permits for this will be obtained, and the obligations secured, under Section 278 of the Highways Act 1980.
33. For the sake of the transport assessment it is assumed all stone required will be imported to Site and all concrete will be supplied ready mixed from local off-site production facilities. This gives a worst case scenario for considering the transport movements and therefore impact on the transport network. Prior to construction however it is probable that a permit will be sought for an on-site concrete batching plant, which would reduce the number of vehicle movements. On the worst case basis an approximate total of 14,800 heavy goods vehicle ("HGV") movements are expected to be required to the Site to cover the wind farm construction. Personnel movement to and from the Site would be effected using a combination of cars and mini-buses and would account for about 12,600 movements. During the construction period, the increase in traffic on the worst affected section of road would be less than 2%.

Decommissioning

34. The operational life of the wind farm is expected to be 25 years. At the end of this period a decision would be taken either to remove the turbines, or to seek permission to refurbish or replace them.
35. Assuming they are to be removed, a decommissioning plan will be prepared and submitted 12 months prior to the works commencing, for approval by the Local Planning Authority.
36. Decommissioning of the wind farm will include dismantling and removal of all visible components. The top of the concrete bases would be removed and covered with 500mm

of subsoil and topsoil, leaving no sign of the turbines and allowing future use of the affected area.

Assessing The Environmental Impact

Introduction

37. Due to the size and location of the project, an environmental impact assessment is required. This was carried out following the requirements of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009. To assess the impacts the Applicant undertook detailed studies and assessment of the proposal on the following topics:

- Landscape
- Noise
- Shadow Flicker
- Ecology and Ornithology
- Archaeology and Cultural Heritage
- Traffic and Transport
- Geological, Hydrological and Hydrogeological Impacts
- Electromagnetic Signals
- Socio-economics
- Grid Connection

38. The assessment for each topic was undertaken by technical specialists and the results of their studies are explained in the following paragraphs.

Landscape Impacts

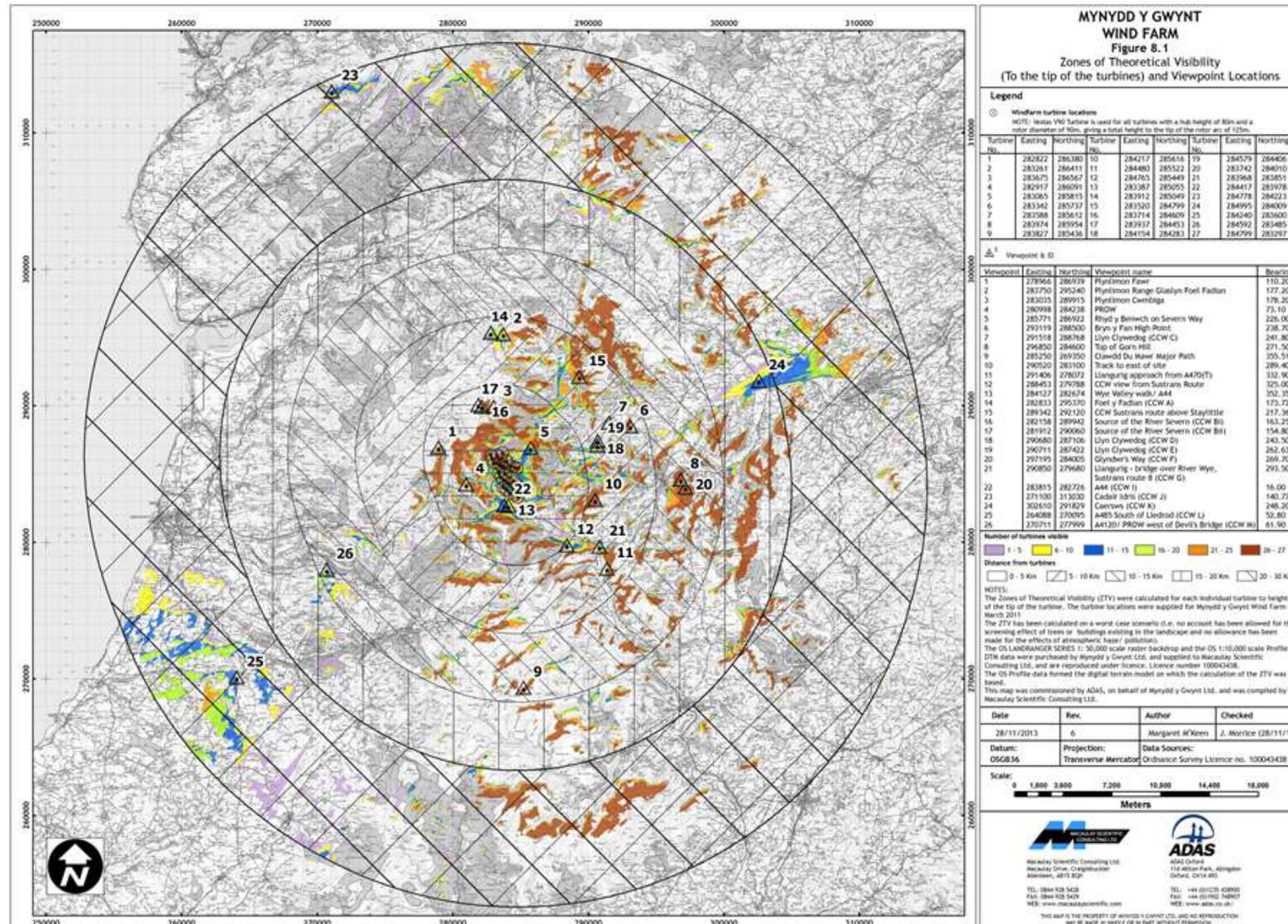
39. To consider the likely effects of the Wind Farm on the landscape and visual amenity, a detailed landscape and visual impact assessment ("LVIA") was carried on a 30km radius area centred on the Site.
40. The LVIA contains two elements:
- the landscape character assessment, concerned with identifying and assessing the importance to be placed on the landscape characteristics; and
 - the visual assessment, considering the extent of visibility of the Wind Farm, the perception of viewers and visually sensitive receptors.
41. The layout and location of the development has been sensitively considered in relation to the character of the surrounding landscape. To reduce landscape impacts the turbine height has been dropped from 133.5m to tip to 125m.
42. Inevitably, the introduction of the turbines and ancillary infrastructure would create a significant effect on the landscape fabric and character of the Site. This impact would last for the operational period of the wind farm (i.e. 25 years) and would be reversed on decommissioning.
43. The perception of the landscape character of the immediate surrounding landscape would also change. Obviously, as the distance from the Site increases, so the effect is reduced,

and significant effects would be experienced up to 6.5km from the Site. The assessment concluded that the development relates well to the receiving landscape character of the Site and the perception of the landscape, and that it will not detract from either the sub-regional landscape character, or the diversity of landscape character, beyond the local context.

44. The visual assessment has shown that, apart from some properties in Pant Mawr there would be no significant effects on towns or villages, landscape designations or rail users. Significant effects would be experienced by only six participating and no non-participating dwellings, although the effect on these dwellings would not be overbearing. From tourist and recreational facilities significant effects would be limited to the Hafren Forest picnic site upper level and access road, and a short, 300m section of the path link between the Wye Valley Walk and the Severn Way. Significant effects are also likely on sections of some routes e.g. roads, Sustrans cycle routes and long distance paths within 3.5km of the Site and public footpaths/bridleways within 1.8km.

Cumulative Landscape and Visual Impact Assessment (“CLVIA”)

45. This assesses the impact of the development in combination with other wind farms, either existing or in planning, within 60km of the Site.
46. The methodology for carrying out the cumulative assessment was based on the Scottish Natural Heritage guidance issued in April 2005 (used in the absence of a Welsh equivalent). The method involves considering the cumulative impact on the landscape character and considering the effect of combined or sequential views on people living, working, enjoying or travelling through the area.
47. Whilst thirty three wind farms (or extensions to existing schemes) were identified within 60km, the assessment determined that only nine of these wind farms have the potential to bring about cumulative effects with the Mynydd y Gwynt Wind Farm.
48. The assessment showed that whilst there would be some cumulative effects on aspect areas within 10km of the Site, around the source of the River Severn, the only significant effect would be on the Pumlumon aspect area. There would however be no cumulative impacts on any landscape designations such as the Snowdonia National Park.
49. There would also be cumulative visual effects on roads and long distance paths such as the B4518 and Glyndwr’s Way; but the only significant effects would be on sections of the Severn Way (450m), the Wye Valley Walk (5.8km) and Cambrian Way (6.7km). These paths are already affected by turbines.
50. Significant visual effects have been identified from some nearby public rights of way and from six dwellings in close proximity to the Site. They have also been recorded for traffic on short sections of the nearby A, B and unclassified local roads. Because of the large scale of the landscape, the effects on landscape character are not considered to be significant, except within the Site itself.



Viewpoint Locations

Noise Impacts

Noise During Operation

51. This assessment predicts what noise levels will be experienced at the nearest residential properties when the turbines are working. The appropriate assessment criteria and guidance for a wind farm are set out in the 1996 report by ETSU (ETSU-R-97). This says the daytime level of the wind farm noise should be limited to 5 decibels above background noise, or an absolute lower limit within the range of 35-40 decibels, whichever is the greater. For night-time the criteria should be limited to 5 decibels above background noise or 43 decibels, whichever is the greater. Where the occupier of the property has some financial involvement in the wind farm then the daytime and night-time limit is increased to 45 decibels. This approach is endorsed by the relevant policies. Further good practice guidance provided and issued by the Institute of Acoustics in May 2013 was taken into account when conducting the assessment.
52. Noise measurements were taken over the late summer of 2013.
53. Background noise at different wind speeds was measured. The results indicated that an average noise level range at the boundaries of the nearest properties between 29.7 to 38 decibels would be typical at low wind speeds during the day, and 36 to 44 decibels would be typical during higher operational wind speeds. The noise levels predicted for the operation of the wind turbines at the nearest property positions would be within ETSU-R-97 daytime noise criteria of 35 – 40 decibels or 5 decibels above background noise.
54. The predicted noise levels would be below the ETSU night-time noise criteria at all positions. Additionally, comparing the predicted noise levels with the measured residual noise levels shows that the Wind Farm's noise at all positions is generally lower than the existing residual noise at the most sensitive wind speeds and directions.
55. It is therefore considered that the noise during operation will be within acceptable limits at all relevant dwellings.

Noise During Construction

56. During the construction phase, there will be a number of different activities, all of which will be of relatively short duration at each turbine position. Again, calculations of noise generated at the closest approach to properties have been undertaken, using the methodology given in BS 5228: Part 1, 1997.
57. The results of the calculations indicated that the noise levels produced during the construction period would not be significant at the nearest property positions and even at their highest would be well within the level of noise normally found to be acceptable for an activity of this type and duration.

Shadow Flicker Impact

58. 'Shadow flicker' refers to the shadows made by rotor blades as they pass a window. This can result in a nuisance particularly when the sun is low in the sky and the shadow is cast over windows of residential properties. The assessment determined that one property could be affected by turbines 11 and 12 and shows a potential exceedance of accepted

threshold values. This could only arise, however, if trees between the property and the turbines are felled during the life of the Wind Farm.

Summary of Mitigation

59. Therefore, in the event of nuisance caused by shadow flicker, mitigation is proposed by installing shadow flicker control systems on turbines 11 and 12. This equipment would stop these turbines if it is sunny at the specific times when shadows could be cast over the property. These measures would eliminate the potential for shadow flicker at the potentially affected property.

Ecological Impacts

The Studies and Surveys

60. Ecological surveys were undertaken over a lengthy time period beginning in 2004 and continuing until 2014. Studies included vegetation and peat depth surveys, bird surveys (breeding birds, vantage point, Black Grouse, Ring Ouzel, Snipe and Curlew); mammal surveys (Bat, Otter, Water Vole and Badger) Bullhead (a fish) and reptile surveys. The surveys were undertaken following consultation with NRW and the Royal Society for the Protection of Birds (“RSPB”) using standard methodologies. The guidelines of the Institute of Ecology and Environmental Management (“IEEM”) on impact assessment were the principal guidance, followed to inform the assessment process.

Potential Impacts

61. Most of the ecological effects would be experienced during construction, although disturbance to birds and the risk of bird strike obviously would occur during operation. If left unmitigated the assessment concluded there could be the potentially significant effects outlined below:
- loss of valuable habitats from road, turbine base and crane pad construction;
 - indirect effects on drainage caused by new roads which could affect remaining habitats by affecting the existing hydrology and chemical composition of soils;
 - indirect effects on water quality in the River Wye caused by sedimentation and pollution from construction activities, which could affect fish and Otters;
 - indirect effects caused by disturbance to Otters and other wildlife;
 - loss of deep peat habitats;
 - collision risk to birds and disturbance of nesting birds; and
 - collision risk to bats.

Summary of Effects and Mitigation

Habitats

62. The layout has been refined to minimise the impact on unimproved and deep peat habitats. There will however be some habitat loss of unmodified blanket bog, acid dry dwarf shrub heath and of wet dwarf shrub heath. The construction of the Wind Farm would lead to the permanent loss of approximately 9.36ha of habitats and 9.85ha temporary loss during the construction period. By far the largest area of temporary loss lies adjacent to the existing and new tracks (7.75ha). Much of this area will probably not be developed, but has been included as during transport components may over-sail the land, but not physically alter it. However, it is not possible to be categorical about the precise area of loss at this stage, so it has all been included. The table below provides a summary of the approximate loss of the more valuable habitats on-site.

Direct Habitat Loss of Valuable Habitats		
(Total Site area = 584ha)		
Habitat Type	Permanent Loss (ha)	Temporary Loss during Construction (ha)
Acid dry dwarf shrub heath	0.03	0.13
Blanket bog mire	0.08	0.24
Wet dwarf shrub heath	0.99	1.11
Wet modified bog	2.92	2.52

63. As the permanent loss represents a small proportion (less than 2%) of the most sensitive habitats on-site this is considered to be a minor adverse impact. The impacts would be further mitigated by micro-siting turbines away from areas of deep peat and valuable habitat. Much of the mire and wet heath habitat on-site is in poor condition and it is planned through a Habitat Management Plan (“HMP”) to improve the habitat quality of some of these areas. This could comprise appropriate mitigation for any lost habitat. Agricultural intensification would also be prevented by incorporating specific measures in the HMP.
64. The development of the Wind Farm has the potential to lead to indirect effects on habitats through alteration of the hydrology and pH of the surrounding habitats, sedimentation, peat failure and pollution. The risk of these impacts occurring would be reduced through the measures in a Construction Environmental Management Plan (“CEMP”) and a Surface Water Management plan (“SWMP”) and as a result therefore the significance of the risk is minor.
65. The watercourses on-site also have the potential to be indirectly affected through sedimentation and pollution. This can be avoided by careful management of construction, and specific measures to achieve this will be contained in the CEMP and SWMP. With the proposed protection measures in place, the potential significance of effect would be minor adverse on the watercourses within the Study Area.

66. There are three Sites of Special Scientific Interest (“SSSIs”) within 3km of the Site, one of which, the Afon Gwy (River Wye) is also a Special Area of Conservation (“SAC”).
67. No direct impacts are predicted on the SSSIs and SAC. The development has the potential to indirectly affect the Afon Gwy (River Wye) SSSI/SAC through sedimentation and pollution. With the protection measures in place in the CEMP and SWMP the risk of such impacts will be minimised to the point where they should be avoided altogether.

Birds

68. Fifty species of birds were recorded during the non-breeding bird survey, 28 species of birds during the breeding bird survey and 10 species of birds during the migratory bird survey during the 2004-2005 bird surveys. During the 2010-2011 non-breeding bird survey a total of seven ‘Species of Conservation Concern’ were recorded. Breeding Bird Surveys carried out in 2010 found a total of seven ‘Species of Conservation Concern’. The Site supports at least one pair of breeding Snipe and one to two pairs of Red Grouse. The Site was found to support two to three pairs of breeding Curlew during the 2005 survey but no Curlew were recorded during the 2010 breeding bird surveys and the vantage point surveys. A total of seven Species of Conservation Concern were recorded from the targeted species during the November 2009 to November 2010 VP surveys.
69. Unmitigated, the development may have led to the displacement of breeding Snipe; consequently, turbines have been removed or moved to avoid their breeding areas, and further surveys are proposed to identify breeding areas prior to construction, so turbines can be micro-sited away from these areas. In such areas, if practicable, construction work would be started outside the breeding season of March to August. Therefore the significance of impact is reduced to moderate/minor.
70. Collision risk assessments were undertaken on the two ‘Species of Conservation Concern’ which were found to be using the Site regularly; Golden Plover and Red Kite. The analysis calculates a predicted risk of 1.79 Red Kites colliding with a rotor per year and a 1.84 Golden Plover every year. As the mortality rate for Kite would equate to less than one tenth of one percent of the Welsh population, which is still increasing, this effect was not considered significant. Similarly, as the scheme would affect just over one hundredth of one percent of the overwintering population of Golden Plover, the effect was not considered significant.

Mammals, Reptiles, Amphibians and Fish

71. Bats appear to be commuting across the Site, at low level by using the rivers and streams that run from the uplands down the Wye Valley, and foraging over water bodies and small woodland areas along the way. Bat distribution was centred largely around the central area of the Site and was associated with the Wye Valley tributaries and sheltered forest edge locations. Two mine adits support small numbers of Natterer’s Bat and possibly swarming Daubenton’s. Both of these adits are on the western edge of the Study Area, some 400m from the nearest proposed turbine.
72. There would be no loss of potential roost sites or trees and watercourses used by commuting bats. As the height that most bats generally fly across the Site is below the swept area of the turbine blades there is unlikely to be a collision risk. There may however be some disturbance to foraging bats. The turbines would be sited at least 50m from the

edge of the blade swept area to habitat features associated with foraging. The significance of impact on bats is likely to be minor adverse.

73. Badgers use the Site for foraging and one active sett was identified within the Site footprint and two setts just outside, one of which is probably active and the other inactive. Otter were found to use the Site for foraging; however, virtually all activity was off the plateau where most of the development will take place: sightings were recorded along the River Wye, outside the application area, and also at Nant Iago, Nant y Gwrdd, Afon Bidno and Nant Cwm y foel. During 2009 Water Vole was confirmed present and active on two tributaries of the River Wye and on the River Wye itself. Water Voles on-site probably form part of a meta-population (small, local groups that interact with each other), based around River Wye, occupying, not optimal but important habitat along tributaries. These populations spread along these small streams when populations increase. Three records of Brown Hare were made. Records were made of Common Lizards and three areas of ideal reptile habitat identified on the Site and one just off the Site. However, there was only a single record during the targeted 2010 reptile survey. Two Palmate Newts were recorded near streams. Despite intensive search of suitable habitat, no records were made of Bullhead.
74. The development may lead to relatively small areas of Water Vole habitat being lost. The potential for pollution to affect watercourses would be reduced through the measures contained in the CEMP and SWMP and the impact on water vole is considered to be minor. The impact on Otter, through disturbance, should be moderate / minor adverse.
75. Otters are thought only to use the Site for foraging and there is predicted to be little loss of Otter habitat as the development avoids watercourses where possible. Disturbance would be limited by controlling the construction working hours. Otter too have the potential to be affected indirectly through pollution of watercourses. The potential for this would be reduced through the measures contained in the CEMP and SWMP.

Designated Sites

76. The Site lies close to the Afon Gwy (River Wye) SAC and 7km from the Elenydd Mallaen SPA (Special Protection Area) and 4km from the SAC. While the River Wye has potential to be affected during construction, the screening assessment concluded that with the mitigation proposed to prevent sediment, pollutants and excess water reaching the river no significant effect should be caused to the River Wye.
77. In relation to the Elenydd Mallaen SPA and SAC there was not considered to be any significant effect either individually or in combination with other schemes.

Other Mitigation Measures

78. Targeted surveys are proposed prior to construction to identify protected species such as Badger, Otter, Water Vole and waders so that appropriate mitigation can be deployed. Based on these surveys mitigation measures would be incorporated to ensure there is no significant impact on the identified species. A draft Species Protection Plan has been produced which covers measures such as works timing and speed limits to reduce impacts on protected species. Monitoring proposals will be included in the HMP. In particular, monitoring and surveillance during and post construction would be carried out for Red Kite as suggested by NRW.

79. Walk-over of the proposed lay-bys on the construction transport route identified potential reptile habitat, although no actual reptiles were recorded. To safeguard reptiles the Site would be searched before works commenced by a suitably qualified ecologist, and a programme of careful vegetation clearance will be carried out to prevent harm to reptiles.

Archaeological and Cultural Heritage Impacts

80. This assessment comprised a literature search and review of the main sources of historical data, supplemented by a walk-over field survey of the proposed application area, as well as the proposed lay-by areas for the construction transport route. Computer generated maps and images simulating the wind farm were used to inform the assessment, which was in accordance with the ASIDOHL methodology (Assessment of the Significance of Development on Historic Landscape).
81. Within the 10km study area, the investigations identified:
- 18 Scheduled Ancient Monuments (“SAMs”) within 5km of the Site of which 8 may be affected indirectly with views of the development;
 - no listed buildings, registered parks or conservation area where visual impacts are considered likely;
 - a variety of lower value assets within the Site;
 - peat deposits that may contain palaeoenvironmental evidence; and
 - that the Site was adjacent to the Upland Ceredigion Landscape of Outstanding Historic Interest and in proximity to two Landscapes of Special Historic Interest, the Clywedog Valley and the Elan Valley.

Summary of Impacts and Mitigation

82. The layout has been sited to avoid archaeological features within the Site where possible.
83. Some existing tracks pass near to features of low to medium value. These will be fenced off during construction to avoid any accidental damage.
84. The peat deposits across the Site may contain palaeoenvironmental evidence (evidence that indicates environmental conditions in the past) as well as masking underlying archaeological deposits which, if present, would probably be prehistoric. Peat depth surveys have been carried out and the design optimised so that turbines and ancillary developments are located to avoid deep peat where possible. Nonetheless, work involving the removal of peat deposits will be mitigated by a programme of archaeological monitoring during construction. A programme of sampling in areas where construction works disturb peat deposits greater than 0.5m in depth will also be carried out. Although the aim is to use excavated peat to prevent further degradation to existing peat islands on the Site; some deposits may still be removed from the Site, the information contained within them will be preserved by record and will be studied, aiding the understanding of land-use evolution in this poorly understood area.

85. There are 18 SAMs within 5km of the Site. The Wind Farm will not be visible at all from 8 of these, and of the remaining 10 the most extensive impact will be at the Nant yr Eira Mines, but the impact is not considered significant. The development does not lie within a designated historic landscape, but lies adjacent to the Upland Ceredigion Landscape of Outstanding Historic Interest and in proximity to two Landscapes of Special Historic Interest, the Clywedog Valley and the Elan Valley, and will be visible to varying degrees from these landscapes. Based on the ASIDOHL process, the indirect impact on the Clywedog Valley and Elan Valley Historic Landscapes will be slight adverse, while on the Upland Ceredigion Landscape of Outstanding Historic Interest the effect will be slight / moderate adverse.
86. The visual impacts on setting are reversible and will cease when the turbines and ancillary structures are removed from the Site following decommissioning, and the area is re-integrated into the upland moorland landscape.

Transport Impact

87. Assessment was made of the potential impact of traffic associated with the development during the construction, operation and decommissioning stages.
88. Of these three operational phases, the operational phase is restricted to maintenance operations which generate much lower volumes of traffic, not considered to be in excess of daily traffic variation levels on the road network.
89. The decommissioning phase involves fewer trips on the network than the construction phase as elements of infrastructure such as access tracks are often left in place.
90. The most intensive is therefore the construction phase, and the assessment therefore concentrated on that element. It should be borne in mind however that the construction impacts are temporary in nature and very short lived. The maximum traffic impact associated with construction of the Wind Farm is predicted to occur in month 8 of the principal c.13 month construction programme. During this month, an average of 143 movements are predicted per day.
91. The additional traffic during the construction period was estimated to result in a worst case average increase of 1.91% of the existing 12 hour flows along the A44 west of Llangurig. This is not considered significant.
92. The assessment also considered the possible combined impact of the Mynydd y Gwynt Wind Farm being constructed at the same time as the formerly proposed (but unrelated) Nant y Moch wind farm.
93. If the impact was assessed in combination with the Nant y Moch wind farm, the worst case increase would be 5.0%. In either case no significant capacity issues are expected on any of the roads within the study area due to the additional construction traffic movements associated with the development. The impact of construction traffic on the surrounding road network is short lived and not predicted to be significant.

Geological, Hydrological and Hydrogeological Impacts

94. This section deals with the distribution, movement and quality of groundwater in the soil and rocks associated with the development of the Wind Farm. The assessment involved consultation with statutory and non-statutory bodies, desk-study and field surveys.
95. The key issues identified during the work were:
- impacts on sensitive water features e.g. rivers and streams;
 - impacts on nearby private water supplies;
 - impacts on fisheries and watercourses;
 - increased surface runoff,
 - impacts on groundwater; and
 - impacts on peat.
96. Potential permanent impacts (which can be mitigated) include sediment pollution of watercourses, chemical and metal pollution of watercourses and superficial groundwater and modifications to drainage conditions and flow, with the potential for secondary impacts from drying out of peat. As the Site lies in the catchment of two rivers, there is the potential for new tracks to divert drainage water from one catchment to another.

Summary of Mitigation

97. The approach to mitigation has been to avoid the risk of impact where possible. All infrastructure has, where possible, been kept 50m from watercourses. Areas of deep peat have, in the main, been avoided. Tracks on level areas will have blind interceptor ditches to allow sediment to settle out and water to infiltrate back into the groundwater system. Tracks across steeper slopes will have the upslope ditches piped under the tracks to the lower side to allow clean water to percolate back into the vegetation. Tracks on steep slopes will use a mixture of ditches with silt traps and run off to existing or new settlement ponds. A new settlement pond will be used near one turbine to reduce the risk of sediment entering a watercourse.
98. The development of the Wind Farm may result in changes to the hydrological regime by increasing the area of impermeable surfaces. There would be an increase of 1.6% and this is considered to be a low magnitude of effect. The laying of additional tracks and the culverting of watercourses has the potential to redirect water flow paths and block minor watercourses and drains. Without proper management the construction works could lead to the erosion of exposed ground and result in silt laden run-off eventually entering nearby watercourses. Silt traps will be used to capture suspended solids generated during construction, if necessary supplemented by settlement ponds and attenuation areas. A settlement pond is proposed in the area downstream of Turbine 27 to intercept suspended sediment. Construction plant will use fuel, oil and chemicals and therefore the risk exists for chemical and hydrocarbon pollution of watercourses and habitats. With the proposed protection measures in place the risk of this is not significant.

99. These protection measures represent good practice but are particularly important for this Site to prevent suspended sediments or accidental spillages entering the Rivers Wye and Severn and their tributaries. A site-specific CEMP which will incorporate a SWMP will be produced to minimise the potential for such occurrences.
100. Monitoring of watercourses will be undertaken before and during construction to ensure that no significant negative impacts are occurring. Work will be stopped if signs of sedimentation or other effects are detected, allowing for investigation and appropriate remedial action.
101. The mitigation measures proposed will ensure that the surface water and groundwater environments are sufficiently protected from the identified potential impacts, and that any residual impacts will be of only minor significance. In addition, there are not considered to be any significant cumulative effects when taking into account the other nearby developments.

Electro-magnetic Signals Impact

102. The construction of large structures can interfere with the line of sight communications and cause interference. Turbines can be detected by some radar equipment which can cause confusion for radar operators.
103. Telecommunications and aviation bodies were consulted and no significant problems were identified. Whilst no interference with aviation signals is anticipated, generic mitigation would be applied e.g. infra-red obstruction lighting installed on the cardinal turbines, details of the development provided for charting on aviation maps. In the unlikely event of the Wind Farm causing television reception problems various technical solutions are available including changing aerials and provision of satellite or cable services to affected householders.

Socio-economic Impact

Creation of jobs and training opportunities

104. Using a variety of respected sources, it is estimated that the project could generate a minimum of 8.1 full time equivalent jobs over its lifetime. The range varied depending on which study was used between 8.1 to 27 jobs.
105. To ensure this figure is maximised the Applicant will hold contractor days to encourage local contractors to supply the main contractor, and to encourage main contractors to recruit locally.

Local Economic Impact

106. Using data from a DECC/UK Renewables report: Onshore Wind: Direct & Wider Economic Impacts; the value of the economic benefits is shown in the table below.

Shares of Benefits of Wind Energy Retained Locally, in the Region/Nation, and the UK						
Stage	Weighted Spend per MW	Local	Region/ Nation	UK	Local Benefits*	Benefits to Wales*
Development	£108,759	8%	41%	98%	£0.7 m	£3.6 m
Construction	£1,182,612	7%	29%	45%	£6.7 m	£27.8 m
Total capital investment*	£1,291,371	-	-	-	£7.4 m	£31.4 m

Source: DECC and RenewableUK (May 2012). Onshore wind Direct and wider Economic Impacts.

*Own calculations based on DECC and RenewableUK study.

107. The Applicant will ensure that procurement methods maximise the potential benefits to local contractors.

Summary of Potential Impacts on Tourism

108. Within the Study Area there is a range of informal tourist attractions, many of which are focused around walking on long-distance routes over the hills, mountain bike activities and recreation along the river valleys. The Rally Complex at the Site itself is a significant attraction in the Study Area. Other than that, however, the only significant tourist attractions in the context of the Site are the Hafren Forest and Llyn Clywedog.
109. Overall, evidence reviewed for the study suggests that local tourism has seen no negative effect due to the wind farms operating in the UK. There is no clear evidence that wind farm developments positively or negatively affect levels of tourism.

Community Benefit

110. The Applicant initially pledged £2,000 per MW of installed capacity to be paid annually on commencement of generation to a local community fund. Although the form and structure of the fund will be finalised following local consultation, it will be constituted so as to be able to make best use of the available money. Importantly, it will be locally managed and controlled, by local people. Following summer 2013 consultations the Applicant has pledged to increase this figure to £3,500 per MW installed.
111. Therefore a minimum of £7m - £7.7m would be available for local projects over the life of the scheme, itself capable of very significant increase with judicious use of matched funding.

Grid Connection

112. Potential residual land use and land take impacts might arise from the development of the grid connection route including:
- temporary impacts on land take arising from construction activity;
 - permanent impacts arising from the occupation of land by the poles/towers; and
 - indirect impacts on land in the surrounding area.

Summary of Potential Impacts for Route Option 1

113. The results of the desk studies have indicated that the value of the ecological and archaeological resource from the on-site substation to the junction with CC1 is such that these interests should not be seen as a constraint to development provided the design is sensitive to local conditions.
114. The strategic report by LUC for the connection routes from SSA C to Cefn Coch indicated in para. 6.1 of the Strategic Ecology report that there were few ecological receptors to constrain the selection of the route corridor.
115. The route corridor CC1 is not located within a nationally designated landscape such as a National Park or Area of Outstanding Natural Beauty and does not pass through any areas of high landscape sensitivity.

Summary of Potential Impacts for Route Option 2 (SPM Preferred Route)

116. The assessment established that archaeology and cultural heritage should not, at this stage, be seen as an over-riding constraint, subject to additional assessments and mitigation measures being implemented which would involve protection of the undesignated assets of the Nantiago mine and the restriction of the traffic close to the mine.
117. The results of the ecological desk study indicate that the ecological resource along the section of route from the on-site substation to Carno substation is not likely to present an impediment to the development of the line.
118. As most of the route lies within forested areas, and there would be little or no need for tree felling, or along roads where poles are a common and accepted feature of the landscape, there would be minimal physical changes to the landscape, and minimal visual impact in the more sensitive locations in this landscape.
119. In the absence of any significant environmental constraint affecting either potential route, it is therefore considered that there is no overriding reason why a connection with the substation at Cefn Coch could not be constructed.

Conclusions and Residual Effects

120. The Environmental Impact Assessment has been carried out to the relevant guidance and standards. It concludes that some significant effects are predicted on landscape in the local area due to the nature of wind turbines and the exposed visually open land. These effects would be largely localised to within 6.5km. The turbines will only be visible from sections of a few roads, public rights of way and a few nearby properties.
121. Significant cumulative landscape and visual impact is predicted to be restricted to the Plimlimon aspect area and sections of the Severn Way and Wye Valley walk.
122. The landscape and visual impact assessment concluded that the development relates well to the Site's receiving landscape character and will not detract from the sub-regional landscape character or the diversity of the landscape character beyond the local context. The visual effects are reversible on the decommissioning of the Wind Farm.

123. The Environmental Impact Assessment found that with the proposed mitigation measures the effects for ecology, noise, shadow flicker, geology, hydrology and hydrogeology, archaeology and cultural heritage, socio-economic and electro-magnetic signals were not significant.
124. Taking into account the Site's existing use as a rally complex, its network of tracks, the location and wind climate of the Site all make it suitable for a wind farm. The Environmental Impact Assessment demonstrates the Site has an unusually low number of constraints.

Viewing the DCO Application

This NTS and the full Application documentation (including the ES) is available for viewing or downloading from the Planning Inspectorate website:

<http://infrastructure.planningportal.gov.uk/>

Public copies will also be available for viewing at the following locations:

- Powys County Council Planning Services, The Gwalia, Ithon Road, Llandrindod Wells, LD1 6AA
- Ceredigion County Council Planning Office, Neuadd Cyngor Ceredigion (Ceredigion County Hall), Penmorfa, Aberaeron, Ceredigion, SA46 0PA
- Llangurig Post Office, Llangurig Stores, Llangurig, Llanidloes, Powys, SY18 6SG
- Llanidloes Library, Mount Street, Llanidloes, Powys, SY18 6EY
- Aberystwyth Library, Canolfan Alun R. Edwards, Queen's Square, Aberystwyth, SY23 2EB

Hard copies of this NTS and the ES can be obtained from Francis Balsom Associates at 4 The Science Park, Aberystwyth, SY23 3AH.

A charge will be made for each copy of the Environmental Statement, based on the cost of reproducing and posting the documents. You will be advised of this charge when ordering copies. Copies of the NTS are provided free of charge.