

ELECTRICITY ACT 1989 (Sections 36, 37, 62(3) & Schedule 8)

TOWN AND COUNTRY PLANNING ACT 1990 (Section 90)

and

THE ELECTRICITY GENERATING STATIONS AND OVERHEAD LINES

(INQUIRIES PROCEDURE (ENGLAND AND WALES) RULES 2007

**APPLICATION BY RES UK & IRELAND LIMITED, DATED 27 MARCH
2009, FOR CONSENT UNDER SECTION 36 OF THE ELECTRICITY ACT**

1989

TO CONSTRUCT AND OPERATE A

100MW WIND TURBINE GENERATING STATION IN POWYS, MID WALES

(“LLANBRYNMAIR”)

DECC REFERENCE: LLANBRYNMAIR BERR/2009/004

Proof of evidence

on Bats

of

Jean Matthews BA(Hon), MPhil

Natural Resources Wales

November 2013

1. Introduction

1.1. I am Jean Elizabeth Matthews. I am the Mammal Ecologist (Bats and Riparian Mammals) in the Terrestrial Ecosystems Group of Natural Resources Wales (NRW), formerly the Countryside Council for Wales (CCW), based in Bangor.

1.2. As Mammal Ecologist (Bats and Riparian Mammals) I undertake and commission mammalian research and survey projects, provide scientific advice and guidance within NRW and to external partners, and represent NRW at relevant Wales, UK and European fora.

1.3. I have held this position since 2004. Prior to that I worked as Protected Species Advisor in north west Wales and Protected Species Advisor North Wales Region, starting in 1990. I have been a voluntary bat worker since 1986, a licensed bat worker since 1990 and a bat licence trainer since 1994.

1.4. I have a BA honours degree in Social Studies from Liverpool Polytechnic, a Certificate in Field Biology from the University of London (Birkbeck College) and MPhil for research into the red squirrel *Sciurus vulgaris* on Anglesey from the University of London (Queen Mary & Westfield College).

1.5. In my role as Mammal Ecologist I provide specialist advice to regional staff on bat conservation in Wales. This includes advice on developments where bats may be affected, commenting on and contributing to high profile casework that affect bats (including road schemes and wind farm developments), advising on licensing issues and on site designation and impacts on sites designated for bats. I provide NRW input to UK guidance on bats including interpretation of legislation as it affects bats. I am a member of the Editorial Board for the Bat Survey Guidelines and sit on a Committee setting a British Standard for Bat Surveys and Trees. I represent NRW on the UK Bats Biodiversity Action Plan (BAP) Steering Group. I am the UK focal point for the Eurobats Advisory Committee and the Convenor of the Intersessional Working Groups (IWGs) on the Impact on Bats of Roads and

Other Traffic Infrastructure and on Bats and Sustainable Forest Management.
I am a member of the IWG on Bats and Wind Farms.

2. Scope of this Evidence

2.1 This proof of evidence is submitted following the submission of the 2013 SEI on Bats by RES on the 15th of October 2013.

2.2. I will comment on the surveys and conclusions reached by the ecological consultants for the Llanbrynmair windfarm proposal, BSG Ecology, that there will be no significant impact on bat species, all of which are European Protected Species, as a result of the works on the proposed off-site access route to the windfarm development site or the operation of the wind farm. Their conclusions were based on an assessment of the suitability of the affected habitat for bats, followed by a bat survey of selected bridges and trees and bat activity surveys of the proposed wind farm site.

2.3 Additionally, I comment on the evidence in the SEI regarding the proximity of turbines to woodland and the likely risk to bats, particularly noctules.

2.4. I will set out the legislative and policy context for the protection of bats and will present evidence that in my view insufficient evidence has been gathered to support the conclusion that there will be no detrimental impact to bats from the proposed works to the off-site access road or from the operation of the wind farm.

3. Legislative and policy context

3.1. All bat species are European Protected Species, afforded protection by the EU Habitats Directive, which is translated into UK law by Regulation 40 and Schedule 2 of Annex IVa of the Conservation of Habitats and Species Regulations 2010 (The Habitat Regs). Regulation 41 of the Habitat Regs states that

(1) A person who—

(a) deliberately captures, injures or kills any wild animal of a European protected species,
(b) deliberately disturbs wild animals of any such species,
(c) deliberately takes or destroys the eggs of such an animal, or
(d) damages or destroys a breeding site or resting place of such an animal,
is guilty of an offence.

(2) For the purposes of paragraph (1)(b), disturbance of animals includes in particular any disturbance which is likely—
(a) to impair their ability—
(i) to survive, to breed or reproduce, or to rear or nurture their young, or
(ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate;
or
(b) to affect significantly the local distribution or abundance of the species to which they belong.

Subject to certain provisions set out in the legislation a derogation may be granted to disturb the species or damage its habitat (breeding site/resting place) subject to ensuring that the action will not be detrimental to the maintenance of the population of the species at a favourable conservation status (FCS) in its natural range

3.2. Schedule 9 of the Electricity Act 1989 concerns the preservation of amenity in relation to proposals falling within the Act. It requires regard to be had to the desirability of (*inter alia*) preserving fauna and it requires reasonable mitigation of any effect which such proposals would have on such fauna.

3.3. There is therefore a clear statutory requirement, underpinned by European legislation, to secure, maintain and re-establish suitable habitat, breeding and resting places for bats, and to ensure that, in consenting any

plans or projects, there is no likely detriment to the maintenance of the favourable conservation status of the species.

3.4. This duty is translated into planning policy through Overarching National Policy Statement (NPS) for Energy (EN-1) [CD/COM/001], National Policy Statement for Renewable Energy Infrastructure (EN-3) [CD/COM/002], Planning Policy Wales (PPW) [CD/COM/008] and Technical Advice Note (TAN) 5 Planning and Nature Conservation [CD/CON/003/PLA/011].

3.5. Although the National Policy Statements sets out the national policy for energy proposals to be considered by the Major Infrastructure Planning Unit of the Planning Inspectorate, they are also a material consideration when considering energy proposals that are to be considered by other consenting regimes.

3.6. NPS EN-1 sets out how the generic biodiversity impacts of energy proposals should be addressed. Paragraphs 5.3.3 and 5.3.4 state that the applicant *'should clearly set out any effects on protected species and show how the project has taken advantage of opportunities to conserve and enhance biodiversity interests'*.

3.7. Paragraphs 5.3.7 and 5.3.8 state that *'as a general principle, and subject to policies in the NPS, that development should aim to avoid significant harm to biodiversity interests, including through mitigation and reasonable alternatives, and that in taking decisions the decision maker should ensure appropriate weight is attached to protected species'*.

3.8. NPS EN-3 at paragraph 2.7.31 recognises that in addition to the generic impacts identified in NPS EN-1 onshore windfarms have the potential to *'adversely affect bats, resulting in injury or death'*. Paragraph 2.7.40 goes on to state that there is *'currently more limited knowledge about the effects (of onshore windfarms) on bats, the IPC should seek to validate the results of the EIA and any collision risk modelling by requiring, where reasonable, relevant*

monitoring during the construction and operational phases of onshore windfarms. Such monitoring should be made publicly available.'

3.9. PPW in section 5.5.12 highlights that developments are always subject to the legislation covering European Protected Species regardless of whether or not they are within a designated site, and goes on to outline the requirements for a derogation where development would contravene the protection afforded to European Protected Species. It states '*a derogation may only be authorised if there is no satisfactory alternative and if the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in its natural range. The development works to be authorised must be for the purposes of preserving 'public health or safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment'..... Local planning authorities are under a duty to have regard to the requirements of the Habitats Directive in exercising their functions. To avoid developments with planning permission subsequently not being granted derogations in relation to European Protected Species, planning authorities should take the above three requirements for derogation into account when considering development proposals where a European Protected Species is present.'*

3.10. TAN 5 at paragraph 6.2.2 further states that '*It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. Planning permission should not be granted subject to a condition that protected species surveys are carried out and, in the event that protected species are found to be present, mitigation measures are submitted for approval. However, bearing in mind the delay and cost that may be involved, developers should not be required to undertake surveys for protected species unless there is a reasonable likelihood of them being present. However, the level of likelihood that should trigger a*

requirement for developers to undertake surveys should be low where there is a possibility that European Protected Species might be present.'

4. Bat surveys and assessment of risk

4.1 Introduction

4.1.1 Firstly, I consider the level of bat survey effort in relation to the access road and the conclusions that can or cannot be reached with the information provided to date.

4.1.2 Secondly, I consider the data resulting from the bat surveys undertaken in relation to the operation of the wind farm and the consideration of possible impacts on bat populations in the area.

4.2 Impact of the road scheme on bat roost sites

4.2.1 The October 2013 Supplementary Environmental Information (SEI) submitted by the applicant notes at paragraph 5.8.5 that *“as part of the preliminary survey an inspection was carried out of any trees that will need to be removed or trimmed as a result of works to the access routes as well as two bridges (Gosen and Diosg) that will be widened to facilitate access.”*

4.2.2 It is not clear from the SEI how many trees were surveyed as part of the preliminary survey. There is a lack of clarity as to the detail of works that will be undertaken. I consider it likely that other trees will be affected by the scheme and that these should have been surveyed as part of the preliminary survey; that further consideration should have been given to their potential as bat roost sites and to the requirement to undertake full surveys to assess the impacts of the proposed works .

4.2.3 I consider that there should have been at least a preliminary inspection of all bridges along the route, not simply the two surveyed by the applicant,

unless these were demonstrably unsuitable either as bat roosts or foraging or commuting areas.

4.2.4 Bridges can provide important roost sites for bats, because of the roosting opportunities they provide and also because they are often set within good bat foraging habitat. *“Bats may use bridges at any time of year, and several bat species may use the same bridge; the preliminary roost assessment should be designed to take this into account.”* Bat Surveys Good Practice Guidelines, 2nd Edition 2012, 8.3.2 p61) [CD-CON-003-ECO-004].

4.2.5 Information about features that provide potential roost sites along the road is of use in determining the value of the area for bats and the likely impacts of a proposal. It is not clear why the surveyors chose to survey some bridges, but not others on the scheme. River corridors are frequently used as commuting routes by bats. The information would also be pertinent to the assessment of the wind farm proposal, both in relation to the value of the habitat for bats and the possible distribution of species at the site.

4.2.6 In addition to the two bridges selected by the surveyors, NRW staff member, John Messenger identified a further three bridges on, or close to the route that could be affected by the works and could provide roosting places for bats. RES's Local Traffic Management Plan (LTMP) plans No 602832248-D-001, 002, 007, 012 and 030 (SEI 2013) mention a total of six bridges along the route of the proposed scheme where works are to be carried out directly to them or within their vicinity.

4.2.7 Although the applicant has proposed a number of highway improvements, I understand that these are not all acceptable to Powys County Council who require further improvements/road widening. These have the potential to have further impacts on bats. We also note that PCC's transport witness considers that some 14 bridges and culverts will need to be extended or rebuilt as part of the proposals and that a further 13 bridges and

culverts will need to be assessed and may require strengthening or protection works¹.

4.2.8 The five bridges identified by John Messenger with the potential for impacts on bats are as follows:

4.2.8.1 **Glen Menial Bridge** (Chainage (CH) 460). (Local Traffic Management Plan (LTMP) Drawing Number 60283248-D-001). The applicant's proposal is that the existing stone parapets on the bridge are to be replaced to increase the width of the road. Such works have the potential to result in loss or damage to bat roosts and disturbance to bats when the stone parapets are removed. John Messenger noted the presence of crevices that provide suitable roosting conditions for bats. These appeared to be of a limited nature, but I would have expected the bridge to have been surveyed for bats and consideration given to specific recommendations regarding timing of works and mitigation should these be considered necessary.

4.2.8.2 **Diosg Bridge** (CH 950). (LTMP Drawing Number 60283248-D-002) The applicant's proposal is that the existing bridge will be widened with the northern bridge parapet and service ducts crossing the watercourse being removed and relocated. There will also be a construction compound adjacent to the bridge.

4.2.8.3 **Gosen Bridge** (CH 4500). (LTMP Drawing Number 60283248-D-007). The applicant's proposed works include "*new section of bridge to be provided adjacent to the existing bridge spanning the river. Proposed bridge has a span of up to 15m and is founded on new abutments. Bridge deck to be the same level as the existing Gosen Bridge and is to tie in the existing bridge deck and road levels. Construction details and further structural details to be detailed post planning.....New bridge and retaining works to utilise the stone removed from the existing bridge parapets.....The works will necessitate the removal of 30m of hedgerow... and approximately less than 20 trees on the*

¹ OBJ-002-TRANS-POE-SSA B- section 3.13

embankment". There will also be construction/working areas adjacent to the bridge.

4.2.8.4 **Dolwen Isaf Bridge** (CH 7330) (LTMP Drawing Number 60283248-D-012). The applicant's proposals at this location include the use of a removable bridge parapet, cutting back of existing trees to "*suit the required earthworks*" and the loss of a mature ash tree and small amount of scrub at the bridge.

From the different descriptions in the 2013 SEI and the proof submitted by PCC's transport witness, Matt Russell, the extent of the proposed works at this location are not clear.

4.2.8.5 **Dolwen Uchaf Bridge** (CH 7250) (LTMP Drawing Number 60283248-D-012). No proposed works are indicated to this bridge, but "*a new off road track is to be constructed with a new widened over-run area on the exit from the bridge*". Although it does not appear that works will directly affect possible roosts in Dolwen Uchaf bridge, nevertheless there is potential for the engineering works to cause disturbance to roosting bats. A brief inspection by John Messenger found crevices capable of supporting roosting bats in both Glen Menial and Dolwen Uchaf bridges. Both bridges should have been surveyed and assessed and recommendations made regarding working methods at the site should any of the planned ground works be considered likely to cause disturbance, or if there are changes to the planned works that could affect roost sites.

4.2.8.6 The one bridge not surveyed by the applicant or visited by John Messenger is located at CH 17450 near to the Talerddig junction. (LTMP Drawing Number 60283248-D-30).

4.2.9 The applicant's team undertook a preliminary survey of trees that would be affected by the scheme and also two bridges (Gosen and Diosg) (5.8.5 SEI October 2013, Vol II). They considered that three sites required additional survey effort - Gosen Bridge, Diosg Bridge and the single mature ash tree at Dolwen Isaf (5.8.7 SEI October 2013, Vol II). Emergence (dusk) re-entry

(dawn) surveys were undertaken at these features in June 2013 (5.8.11 SEI October 2013, Vol II).

4.2.10 Para 5.8.8 SEI October 2013, states that '*The inspection of the two bridges involved a search of all external elevations....*' and that '*an assessment of the buildings' potential to accommodate roosting bats was also made with the location of potential roosting features plotted on a plan of the bridge*' (para 5.8.9). Neither I nor other members of NRW have seen such a plan for either of the bridges inspected.

4.2.11 On the preliminary (daytime) inspection of Gosen Bridge on 18th April 2013 only the south side of the bridge could be accessed (para 5.8.6 SEI October 2013). During the evening emergence survey on 13th June, 2013, (6.5.16 and Table 6.6 SEI October 2013, Vol II) the bridge was confirmed as a bat roost as two common pipistrelle bats were observed exiting from a small crack in the underside of the eastern arch.

4.2.12 The applicant's teams conclusion is that the bridge is of moderate roosting potential and the comment is made that "*it does not appear to have significant cavities in the stonework that could support larger roosts of bats*" and that the crevices present "*do not appear to be deep enough to shelter bats throughout the winter*" (6.5.11 SEI October 2013, Vol II). Photographs of some features are given in the SEI Vol III, including of a crack beneath ivy on the northeast face of the bridge. It is not clear from the report whether on the second visit there were any restrictions to access and whether this crack was examined.

4.2.13 I have assumed from the information provided that both inspections used high powered torches and binoculars, but there is no mention of the use of an endoscope at this bridge. An endoscope is recommended as '*basic*' equipment for undertaking roost surveys '*for inspection behind boarding and in cavities*'. (Bat Surveys Good Practice Guidelines, 2nd Edition 2012, 6.2 p34) [CD-CON-003-ECO-004]. In relation specifically to bridges, "*where access can be arranged, it is recommended that potential or likely roost sites are*

inspected using an endoscope, torch or mirrors“(Bat Surveys Good Practice Guidelines, 2nd Edition 2012, 8.2.4 p58) [CD-CON-003-ECO-004]. The use of night vision scopes or cameras, with infra-red illumination is listed in the table of equipment commonly used for bat surveys for “*viewing and recording bat activity in low light conditions*” (Bat Survey Good Practice Guidelines, 2nd Edition 2012, Table 6.1 p35).

4.2.14 I consider that an endoscope is an essential piece of equipment for a survey of cavities in a bridge and that without its use in this context, the conclusions reached about the potential of the bridge to support larger roosts, or hibernation roosts must be open to question. Gosen Bridge is located in good bat habitat, adjacent to a chapel. Rural chapels commonly provide suitable conditions for bats to use as roosts throughout the year, including nursery roosts of common and soprano pipistrelles and brown long-eared bats.

4.2.15 Significant works are proposed to be undertaken to this bridge. For a thorough survey of the bridge, it would be necessary to erect scaffolding. Such inspection works and their findings should normally be undertaken and submitted as part of the application, so that the decision maker is able to take them into account when determining the application and deciding whether or not to grant permission.

4.2.16 Where there are genuine reasons for not undertaking surveys at the appropriate stage of the process, an alternative approach is to adopt a “worst case scenario”, i.e. in which an assumption would be made that the extent of use was greater than had been shown from the limited survey work undertaken and methods and mitigation adjusted accordingly. However current draft guidance (Bat Protocol Box 6, Biodiversity Planning Toolkit) [CD-CON-003-ECO-005] is that this should not be used as a substitute for adequate survey work at the appropriate time, it states;
“Worst-case scenario Bat Mitigation Proposals should only be used when a licensed bat consultant is satisfied that there is scope within the final development to accommodate any significant bat roosts or roosts of additional

bat species that may subsequently be found. They should not be used as a substitute for taking proper account of protected species at the start of the planning process.”

4.2.17 Should the worst case scenario approach be adopted, I would expect to see specific recommendations regarding timing of works and mitigation. The recommendations should be informed by further surveys in autumn, winter and spring. No such recommendations have been proposed by the applicant.

4.2.18 Diosg Bridge was inspected as part of the preliminary survey in July 2013 and it was considered that a further additional survey was required (5.8.7 SEI October 2013, Vol II). An endoscope was used. Few crevices were seen in the underside of the bridge and it was possible to ascertain their extent. There is no reference in the survey of other possible crevices between stonework or whether the parapets or spandrels were inspected.

4.2.19 The Dolwen Isaf, Dolwen Uchaf and Glen Menial Bridges were not surveyed. It is not clear why bat use of these structures was discounted without a preliminary inspection, whereas Diosg Bridge was not. I would have expected structures such as these along the route of a road scheme to be inspected as a matter of course to contribute to an understanding of bat usage of the area, irrespective of whether they would be directly affected by the scheme.

4.2.20 Section 9.5 of The Bat Survey Guidelines 9.5 p66 recommends that in assessing the need for a survey, a strip of at least 500m wide either side of a proposed linear route should be included and should include consideration of the *”presence of known roosts or suitable buildings and other structure for roosts”* and the *“types of roost and species present”*. Guidance on bats and road schemes in Wales, lists as features with high importance for bats *“buildings with high bat roosting potential; broadleaved woodland and scrub, river valleys; small field systems with low intensity pasture; tree lines & hedgerows; bridges and structures with high bat roost potential.”* (Table 5.1,

Interim Advice Note 116/08(W): Nature Conservation Advice in Relation to Bats) (CD-CON-003-ECO-009).

4.2.21 The survey of the ash tree was undertaken by one dawn and two dusk observations, though again as noted for the bridge surveys, without the benefit of night vision equipment. It is always difficult to assess usage of trees by bats as use tends to be intermittent and hence a negative survey cannot be used to infer a lack of use.

4.2.22 The inspection survey noted several potential roost features and the tree was assigned Category 1* status (the highest level), because of its potential to provide roosting opportunities for bats. These included two rot holes and a woodpecker hole – a favoured roosting location by bats. I would expect to see a climbing inspection, including endoscope surveys of tree holes of any trees that will be lost in order to understand the likely impacts of the proposals and to inform the decision maker in reaching their decision on the scheme. Confirmation of roosting would require felling to be undertaken under a Habitats Regulations licence should permission for the scheme be granted.

4.2.23 There is still a lack of clarity regarding the extent of tree removal that will be required by the scheme. It would also be prudent to reassess the need for tree surveys when further details of the proposed works are finalised to ensure compliance with legislation and avoid possible delays to works.

4.2. 24 The applicant undertook a driven transect which can be helpful particularly for recording the presence of bat species that echolocate loudly, but is more limited in use for the more quietly echolocating species. The former are more likely to fly out in the open (and are the species groups most at risk from mortality associated with wind turbines); the latter tend to use habitat features as commuting and would be more likely to be adversely affected by fragmentation or loss of habitat and mortality associated with a road scheme. I consider that the impact of loss or fragmentation of bat habitat has not been adequately considered, and consider that more targeted surveys

should have been undertaken at locations where impacts might occur because of changes to habitat. Loss and fragmentation of habitat can result in disturbance to bats and changes in behaviour.

4.2.25 I also consider that it is an omission that there was no assessment of potential roosts along the route of the road. One particular example is the chapel located next to Gosen Bridge. An emergence survey at this location could provide information on bat species that might also use the bridge for roosting, species that use the river corridor for commuting and foraging and that could be impacted by the road scheme. There are likely to be other such locations, for example the two additional bat roosts at Sychtyn and Ffridd Fawr identified in the Carnedd Wen ES 2009.

4.2.26 Conclusions about the impact of the road scheme

4.2.26.1 The surveys confirmed the presence of a bat roost at one of the locations surveyed, Gosen Bridge. However, I do not consider that the survey information provided so far rules out the possibility of other roosts being discovered that would be affected by the proposed works, and therefore consider that further survey work should have been undertaken to demonstrate that there will be no likely detriment to the favourable conservation status of the species.

4.2.26.2 I do not doubt that the information can be provided to address NRW's concerns, but advise the Inquiry that insufficient information has been provided to demonstrate that there will be no likely detriment to the Favourable Conservation Status of the species by the Llanbrynmair application at this stage.

4.2.26.3 With regard to whether a licence is required for the works affecting the known bat roost. Given the scale of the proposed works at Gosen Bridge and the possibility that other roosts may be affected by the scheme, I would expect works affecting any bat roost along the route of the scheme to be carried out under a Habitats Regulations Licence. In some cases when NRW

considers that the continued ecological functionality of the breeding site or resting place is expected to be maintained, they advise that a licence is not required. Such cases are normally small scale operations where there will be short term loss of a roost feature, when works will be carried out in the period when bats are expected to be absent and where like-for-like replacement of the features will occur, typically re-roofing of a house over winter.

4.2.26.4 In support of a licence application the applicant will be required to provide information regarding which alternatives have been considered (including the alternative of not upgrading the road) and why they were considered unsuitable, taking into account the expected scale of impact on bats from the proposed route and all of the alternatives considered.

4.3 Impact of wind turbines on bat populations

4.3.1 Assessment of risks of mortality

4.3.1.1 In CCW's 2012 letter to DECC [CD/RES/BAC/006], CCW noted that *"the information currently available on bat behaviour in the UK is not sufficient to assess the risks to bats and that research is currently underway"*. Since then, the National Bats and Wind Turbines Research Project (CD-CON-003-ECO-006) has been extended for a year and is due to report in 2014. The initial results of the project as reported (IEEM Autumn Conference, Renewable Energy and Biodiversity Impacts, 7-8 November 2012, Cardiff) [CD-CON-003-ECO-006] has found that the risks to different bat species are in line with the risk categories used in Natural England's technical note on bats and onshore wind turbines (TIN051) [CD-CON-003-ECO-007] and the Bat Survey Guidelines.

4.3.1.2 A further finding of the project is that risks to bats at wind farm sites cannot currently be predicted. Some wind farms and individual turbines pose a greater risk to bats than others.

4.3.1.3 The purpose of the additional research in 2013 is to identify the factors affecting the risk. In time it is hoped that risk can be predicted to such an extent that risks can be avoided or minimised by siting turbines on the lowest risk locations and by limiting the operating times to avoid the more risky periods.

4.3.1.4 The noctule bat is on the list of Biodiversity Action Plan species because of concerns about its conservation status. The National Bat Monitoring Programme has been reporting on trends in noctule bats based on activity surveys at a selection of sites since 1998. Since then the index of activity has fluctuated with an apparent rise to a peak in 2008 followed by a decrease in subsequent years. At present there is no overall significant trend (Bat Conservation Trust, 2013. CD-CON-003-ECO-008). They are included in the list of species at high risk of impacts at the individual level in TIN051 because their characteristics (preference for flying in open areas, aerial foraging and tree roosting) are factors that have been identified in studies on the Continent as factors increasing the risk of mortality. They are considered to be at high risk at the population level because of their relative rarity. The National Bats and Wind Turbines Research Project indicates that the risks to individual bat species and to populations of different bat species are in line with those published in TIN051.

4.3.1.5 The 2013 surveys recorded little activity by noctule bats. The species appeared to be recorded more frequently in the 2011 surveys using static detectors (6.3.7 SEI October 2013 Vol II), but the results of the 2011 and 2013 surveys are not summarised in the same fashion, so it is not possible to directly compare year on year activity. The species most frequently recorded in both years were common and soprano pipistrelles (6.3.4, 6.3.6, 6.4, 13 and Table 6.3 SEI October 2013 Vol II).

4.3.1.6 With regard to noctule bats, it is stated (6.4.14 SEI October 2013 Vol II) that activity levels were “*very low across the site*”, although the results of the analysis were “*skewed by prolonged foraging activity at location R27a*’, with 271 bat passes recorded over 4 nights. The majority of activity was

recorded on 2 evenings. As with pipistrelles, greater activity was recorded in locations next to habitat features.

4.3.1.7 The results suggest that bat activity is not constant at the site and is probably affected by changes in insect abundance and also by location in relation to sheltered habitats as might be expected. It is my opinion that the increased activity at one turbine location may be indicative of a higher level of risk at that location than over the site as a whole and that should have been given some weight in the assessment of the risk of the operation of the wind farm to noctule bats.

4.3.1.8 In the analysis of the results of the bat surveys (6.4.8 SEI October 2013 Vol II) peaks of activity are described, particularly in July which coincided with a prolonged heatwave and a very pronounced emergence of small flies that are favoured by foraging pipistrelles. It is also noted that most pipistrelles were recorded (during the walked transects) in sheltered areas, e.g. along the edge of the conifer plantations and in stream valleys as would be expected.

4.3.1.9. The applicant's ecologist concludes that if an effect on noctule bats occurred it would be significant at "*no more than the level of the site given that it is unlikely that the entire local population of noctules is killed by the turbines. There is a medium level of confidence in this assessment due to the difficulty in predicting whether individual bats are likely to be struck by wind turbine blades, and of predicting the level of fatalities that are likely to occur*" (8.6.7 SEI October 2013 Vol II)."

4.3.1.10 With regard to common and soprano pipistrelle bats, it is stated (8.6.11 SEI October 2013 Vol II) that risks are not likely to be significant "*at any geographic level due to their general abundance and the low likelihood of fatalities occurring on a regular enough basis to have any effect on the local population status of the species..... There is a medium level of confidence in the assessment*" (for the same reason as noctule).

4.3.1.11 I agree with the difficulty in predicting such effect, but note that activity levels have been shown to be variable at different locations and on different nights which suggests that there may be a greater level of risk at some turbines than others and at some times than others. I consider that this should have been discussed in the assessment and consideration given to the possible reasons for this (e.g. location or weather) to determine if the assessment of the level of risk is in fact correct.

4.3.1.12 The analysis does not take into account the irregular and (on current information) unpredictable nature of the risk and I therefore consider that there is only a low level of confidence in the applicant's risk assessment. I also consider that some of the data could be used to assess the risk posed by individual turbines and to inform decisions about monitoring and possibly mitigation. There is no information on the number of bats associated with the higher level of activity at one turbine and it is possible that one turbine could pose a significant risk to local populations of the species.

4.3.1.13 Similarly with pipistrelle bats, although they are widespread and relatively common, if there were a roost close to the site, the loss of a number of animals from one colony could have serious implications for the survival at a local population level. The SEI refers to evidence of roosting activity at Cannon Farm (6.2.5 SEI October 2013 Vol II). This farm is located by a stream providing a potential commuting route on to the site of the proposed wind farm. I consider that additional survey should have been undertaken to determine the species present, the size of the roost and the direction of commuting by bats leaving the roost.

4.3.1.14 Activity during 2013 may not be typical and may have been an underestimate. Because the site was assessed as "*low sensitivity*", surveys were planned for spring, summer and autumn, but the applicant's ecologists considered that there was "*no opportunity to collect data from the autumn update surveys in 2013 due to the timescales imposed by the Public Inquiry process*" (5.7.10 SEI October 2013 Vol II). Additional data was collected during May – August. Spring 2013 was cold and there were many reports of

bats breeding later than normal, so it is possible that the lack of survey data in autumn, coupled with the later than average season meant that behaviour typical of the period once the nursery roosts have dispersed could have been underestimated. Foraging activity is concentrated closer to the nursery roost whilst females are pregnant and lactating and the young are still dependent. Nursery roosts will be located in the more sheltered habitat. Activity and casualties at wind farm sites where data has been reported are more likely to occur in peaks in the spring and autumn.

4.3.1.15 In time it is hoped that risks can be predicted to such an extent that they can be avoided or minimised by siting turbines at the lowest risk locations and by limiting the operating times to avoid the periods of greater risk. In the meantime, I would suggest that a precautionary approach should be taken where there is seen to be a risk and that monitoring should be undertaken to confirm or otherwise the predicted impacts.

4.3.1.16 The impacts of turbines on bats is still the subject of uncertainty. Interim best practice guidance in TIN 051 is that turbines should be located so their blade tips are more than 50m from forestry edges in order to minimise impacts on bat species. The SEI concludes that three turbines will need to be micro sited to ensure this. However having reviewed the SEI, I consider that a greater number of turbines will need to be microsited away from forestry edges as parts of the Carnedd Wen forestry are proposed to be retained for landscape and visual reasons. If the Carnedd Wen windfarm is not consented and the associated forestry not removed, then additional turbines would need to be micro-sited.

4.3.1.17. In their 2012 letter CCW stated that the SEI 2011 made a number of recommendations that CCW supported. Firstly that all turbines should be microsited to ensure that the edge of the rotor swept area is more than 50m from woodland edges and water courses (in line with TIN 051). The second recommendation was in regard to monitoring of bat mortality. CCW additionally advised that if monitoring indicated impacts on bats, then remedial action would be required which should be agreed with the LPA and

implemented as agreed. The risk was noted in particular in relation to noctule bats.

4.3.1.18 However, in the 2013 SEI RES now consider that there is not justification for monitoring, as they do not consider a significant impact has been predicted for any population of bat. (SEI 2013 Bats Section 8.11.3).

4.3.1.19 For the reasons I have set out I do not consider that the applicant has satisfactorily demonstrated that the risk to bats is low. I therefore consider that post construction monitoring is required. Should monitoring identify risks to bats from individual turbines, remedial action, which could include the switching off of the relevant turbine at dawn and dusk during periods of bat activity, should be considered.

5. Conclusion

5.1 For the reasons set out, I consider that on the basis of an inadequate approach to survey in relation to possible impacts of the road improvement scheme that the applicant has failed to demonstrate that the proposals will have no likely detrimental impact on the maintenance of the Favourable Conservation Status of bats and is therefore contrary to EU and National legislation and planning policy. I also consider that insufficient survey evidence has been provided to satisfactorily support the conclusions relating to the level of risk posed to bat species by the operation of the wind farm, and that appropriate conditions requiring monitoring and if necessary remedial measures, should be attached to any consent the Secretary of State is minded to grant.