cunnane
town planning

67 Strathmore Road, Teddington TW11 8UH
[redacted]

Our Ref: SV/MCR/5387/PCC 240315

Gwilym Davies
Powys County Council
Planning Department
The Gwalia
Ithon Road
Llandrindod Wells
Powys
LD1 6AA

BY EMAIL AND BY POST

24 March 2015

Dear Mr Davies,

APPLICATION REF: P/2014/0672

PLANNING APPLICATION: CONSTRUCT AND OPERATE SEVEN WIND TURBINES WITH A MAXIMUM TIP HEIGHT OF 110m AND MAXIMUM HUB HEIGHT OF 69m TOGETHER WITH ANCILLARY DEVELOPMENT COMPRISING SUBSTATION, CONTROL BUILDING, NEW AND UPGRADED ACCESS POINTS AND TRACKS, HARDSTANDING AND TEMPORARY COMPOUND AND ASSOCIATED WORKS, AT LAND EAST OF LLANDRINDOD WELLS, SOUTH OF PENYBONT, LLANDEGLEY, POWYS.

We write on behalf the applicant Hendy Windfarm Limited in response to the submission by Mr Stuart Hulse dated 9th October 2014.

In his letter Mr Hulse made reference to a Royal Society paper on the subject of low frequency noise, suggesting that 'there is evidence that people who live near wind turbines are suffering from sleep disturbance, hearing problems, migraines, high blood pressure'.

The applicant's noise consultant, Mel Kenyon of Martec Environmental Consultants responds to Mr Hulse's submission as follows:

Mr Hulse appears to be referring to a study by The Royal Society entitled *"Low-frequency sound affects active micromechanics in the human inner ear"*[1].

[1] http://rsos.royalsocietypublishing.org/content/1/2/140166?utm_source=royalsociety-org&utm_medium=referral&utm_campaign=journal-news&utm_content=2014-10-01

The conclusion to the paper was:

> *"The results of this study clearly indicate that there is a pronounced discrepancy between the unobtrusive perception of LF sound, reflected in their low sensation levels and the physiological responses of the cochlea following the LF sound exposure. To the best of our knowledge, perception has been the only measure available in humans to assess inner ear responses to very LF sound, but, as the current data show, severely underestimates cochlear and, especially OHC, sensitivity. Direct quantifications of inner ear active amplification, as measured in this study, are much better suited to assess the risk potential of LF sound."*

As I understand the paper, The Royal Society is saying that because the human ear isn't very good at perceiving low frequency sounds, under some circumstances low frequency sound could cause hearing damage without the person exposed realising they had been exposed to harmful levels. There does not appear to be any mention of wind turbines noise in the study itself.

There is a news item on The Royal Society website[2] based on the paper, and right at the end of the news item it is stated that: *"The team say the results could have repercussions in assessments of risk potential of exposure to low frequency sounds, for example those produced by wind turbines, block-type thermal power stations, and air-conditioning systems."* However, it is not clear where this statement comes from because it doesn't appear in the study itself.

I believe that some of the claims referred to by Mr Hulse and in the news item were contained in an article on the Telegraph website[3] apparently based on an interview with one of the paper's authors, Dr Drexl who said the Royal Society study *"...might help to explain some of the symptoms that people who live near wind turbines report, such as sleep disturbance, hearing problems and high blood pressure"*. However, the update at the end of the Telegraph article is very important:

> *"UPDATE: Since this article was first published, we have been asked to make clear that the levels of sound used in the study were significantly higher than those permitted for wind farms under planning law."*

In fact the Telegraph article makes it clear that the levels of noise used in the Royal Society's study were *"...80dB(A), significantly higher than the 43dB(A) permitted by turbine planning law"*.

To summarise, I consider that the Royal Society study does not establish any link between the levels of wind turbine noise that residents could be exposed to in the UK, and any of the effects set out in Stuart Hulse's letter.

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[2] https://royalsociety.org/news/2014/sounds-we-dont-hear-could-still-affect-our-ears/

[3] http://www.telegraph.co.uk/news/earth/energy/windpower/11131544/Living-close-to-wind-farms-could-cause-hearing-damage.html

We trust that you will take this into consideration in your assessment of the planning application.

The applicant would welcome the opportunity to meet with you to discuss the merits of the application and would appreciate if you could contact us in order to arrange this.

Yours sincerely

[redacted]

Stuart Vendy
CUNNANE TOWN PLANNING LLP
[redacted]

Hendy Windfarm Ltd.

Nr Llandrindod Wells,
Powys

Redline Boundary and Site Layout (Rev A)

Ownership boundary

Application area

Revision A: Red Line amendment to include turbine radius of 71m (Sept '14)

Drawn by Paul Taylor 15/09/2014, Verified by Aidan McLernon 15/09/2014

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0 250 500 750

Metres

Scale 11,000 at A3 size

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Our Ref: SV/MCR/5387/PCC 230315

Gwilym Davies
Powys County Council
Planning Department
The Gwalia
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LD1 6AA

BY EMAIL AND BY POST

23 March 2015

Dear Mr Davies,

APPLICATION REF: P/2014/0672

PLANNING APPLICATION: CONSTRUCT AND OPERATE SEVEN WIND TURBINES WITH A MAXIMUM TIP HEIGHT OF 110m AND MAXIMUM HUB HEIGHT OF 69m TOGETHER WITH ANCILLARY DEVELOPMENT COMPRISING SUBSTATION, CONTROL BUILDING, NEW AND UPGRADED ACCESS POINTS AND TRACKS, HARDSTANDING AND TEMPORARY COMPOUND AND ASSOCIATED WORKS, AT LAND EAST OF LLANDRINDOD WELLS, SOUTH OF PENYBONT, LLANDEGLEY, POWYS.

We write on behalf the applicant Hendy Windfarm Limited in response to selected submissions received by Powys County Council and posted on the planning application page on the Powys planning website.

In this letter we respond to the following consultees. Our response is either included in the content of the letter, or where appropriate provided as an appendix to the letter.

(i) Powys County Council Senior Ecologist, Hannah Powell
(ii) Natural Resources Wales
(iii) Cadw
(iv) Welsh Government Department of Economy, Science and Transport, and Powys Highways

Appendices included with this letter are as follows:

- Appendix A: *Hendy VP Summary Revised 170315*, prepared by ADAS UK Ltd
- Appendix B: *Reptile Survey Area, Hendy Windfarm, Powys*, prepared by ADAS UK Ltd
- Appendix C: *Hendy Wind Farm Habitats Regulations Assessment Screening Report*, prepared by ADAS UK Ltd

- Appendix D: *WF1 - Wireframe Views between Graig Camp (RD112) and Llandegley Rocks Hillfort (RD264)*, prepared by ADAS UK Ltd
- Appendix E: *Letter from WYG to Stuart Vendy, Cunnane Town Planning, Ref. A078181/ L05 Hendy TMP, dated 12th January 2015*
- Appendix F: *Revised Njord Energy Hendy Ltd Wind Farm Traffic Management Plan, dated January 2015*, prepared by WYG

(i) Powys County Council Senior Ecologist, Hannah Powell

Powys County Council Senior Ecologist Hannah Powell made a submission on 20th August 2014. The applicant's consultant ecologist ADAS responds below. This response also covers issues raised in the submissions of Radnorshire Wildlife Trust, the Campaign Against Windfarms, Mr Peter Jennings and others.

Background data on which to base the scoping report and survey requirements

With regard to the search area for the desk study, we can find no specific radius detailed in the CIEEM guidance for a designated sites search. The CIEEM guidance is more general and not specifically directed at particular developments (e.g. wind farms). To this end, it uses the term 'zone of influence'. There is a plethora of SNH guidance and it is unclear in the PCC response, which guidance is referred to. We acknowledge that the BCT guidance (2nd edition) recommends a 10km data search for bat records for high risk species and 5km for other species. It also recommends 10km search for designated sites from wind farms.

Whilst we disagree that there are recognised standard 'limits' for a designated sites search, we have subsequently carried out a search for internationally designated sites within 10km and for nationally designated sites within 5km. In addition, we have looked at all sites where bats are mentioned as a designated feature within 10km. This has revealed that there are no additional internationally designated sites within 10km (aside from the River Wye SAC, which has already been addressed in the ES). There are an additional 8 SSSI's within 5km. These are all designated either for vegetation or geological features. Only two of these mention birds as a feature. The first is Glascwm and Gladestry Hills SSSI, 3.3km to the south-east. The citation for this SSSI mentions red grouse as a feature. This is irrelevant to the Hendy application, as it is a highly sedentary species tied to areas of dry upland heath. The second SSSI where birds are mentioned as a feature, is the Radnor Forest SSSI, 4.5km to the north-east. This lists upland breeding birds as a feature. We would argue that all these species have been thoroughly taken into account in relation to the proposal, both through breeding bird surveys, winter walkover surveys and Vantage Point surveys.

Birds

It is difficult to estimate the numbers of starling using the Llandegley roost. However, it is acknowledged that the numbers are significant. A Survey of this roost took place and it was found that birds were arriving from the east and north and are therefore not considered to be at risk of collision with turbine blades. Whilst birds were seen to spend a short time 'wheeling' over the area, this was confined to the area above the forestry, and was also at a height below turbine blade sweep. Although numbers are large, the roost is still only a relatively small percentage of overall numbers in Radnorshire and Powys as a whole. It is widely accepted by SNH and others that The Collision Risk Model is not good at estimating collision risk for flocking birds. However, first hand observation of the roost

strongly suggests that the risk of actual collision is very low, since birds were found to be flying at a low height. They were also found to arrive at the roost from directions other than through the proposed wind farm. For all these reasons, it is considered that additional collision risk assessment is unnecessary.

We were not aware that golden plover breed within the Radnor Forest SSSI. Despite this, this species has been comprehensively surveyed in relation to the site through winter walkover and Vantage Point surveys. These revealed that only very low numbers of the species are found on the site (and then very sporadically) during the autumn and early spring migratory periods. Numbers recorded were far lower than on most other sites we have surveyed in the Welsh uplands. The habitat on the site is largely unsuitable for feeding. It is also wholly unsuitable for breeding, with by far the majority of the site comprising improved, poor semi-improved and semi-improved grassland. It can be stated with certainty that no golden plover breed (or are likely to breed) at the site.

Bird data from the very recently published 'Birds of Radnorshire' is largely irrelevant to the proposal. This is because original survey was conducted to recognised standards (i.e. Vantage Point survey, breeding bird survey and winter walkover survey). Since a comprehensive bird survey to recognised standards has taken place, nothing of significance will have been missed.

Standard methodology was used for identifying breeding red kites. Survey followed guidance in Hardey et al (Raptors: A field guide to survey and monitoring), with at least five visits being made to suitable habitat in the surrounding 2km. No red kite were recorded as breeding within 1km of the proposal. Therefore there is no risk of disturbance to breeding red kite.

Target species for Vantage Point survey were chosen on the basis of three criteria. These were species on Annex 1 of the EC Bird's Directive, species on Schedule 1 of the Wildlife and Countryside Act and RSPB red-listed species.

The surveyed area in all cases extends to 500m from the outermost proposed turbine locations. This complies with the SNH guidance, which states (Appendix 1 Method Statement): 'Information is collected during timed watches from strategic Vantage Points (VPs) covering the defined survey area, which encompasses the turbine envelope and extends anything from 200m to 500m beyond the outermost proposed turbines. In the majority of cases, a 200m extension is sufficient to deal with inaccuracies of position for flight line observations.'

Start and finish times for each of the VP surveys is provided as Appendix A to this letter.

The reference to Goshawk as a non-target species is an error as it is listed on Schedule 1 of the Wildlife and Countryside Act. They were targeted during the VP surveys but not recorded. They were not recorded during VP surveys. Sparrowhawk are not a target species, as they are not on Schedule 1 of the WCA, Annex 1 of the Birds Directive or RSPB red-listed. They were however recorded as an incidental (secondary) species and are mentioned as such in the ES. Low numbers were recorded.

Two pairs of curlew were recorded, one either side of the proposed access track, at Pye Corner. These birds were at some distance from the existing track here (at least 150m distant). It is acknowledged that no mitigation has been proposed to prevent disturbance impacts on these birds. It is considered that such impacts are unlikely given the distance of the birds from the existing track and the relatively minor nature of widening operations. However, it is proposed that construction operations in relation to the

track in this area will not be carried out during the curlew breeding season (roughly April through to end June).

Cumulative impact assessment has already been assessed, in relation to birds, bats and habitat loss. This is addressed in the evaluation and impact sections of the ES chapter.

The information listed in the RSPB Collision Risk checklist would have been identified as a precursor to Vantage Point survey. We can confirm that this is the case. This information can be made more explicit should PCC desire. It is, by definition, difficult (impossible) to accurately predict impacts on bird and bat populations for the life of the wind farm. Future populations of these species are currently unknown and therefore impacts cannot be sensibly predicted.

Regarding the starling (ref. the submission of Mr Peter Jennings to Powys County Council, 11th September 2014), starling roosts are well known to be transitory and the birds easily adapt to alternative locations. It is suggested that the area of plantation in which the birds are roosting is felled and the roost will then relocate to one at a greater distance from the proposal. This would also reduce any likely impact of the scheme on birds of prey that are associated with the roost. In general, and apart form foraging Red Kite, the proposed site is poor for birds of prey, as it largley comprises improved grassland with limited hunting potential.

Peat

It should be stated from the outset that the site as a whole contains very few areas of peaty soil, if any. By far the majority of the site is improved, poor semi-improved and semi-improved grassland, with other areas classed as marshy grassland, wet heath and valley mire. The Phase I habitat plan of the site emphasises how little of the site was semi-natural habitat. Wetter habitats were peat probed, and depths recorded in various depth classes. It is considered that the majority of these areas did not contain peat soils and that they are more likely to be mineral soils or peaty gleys (this also accords with the vegetation they support). The methodology used was based on an 'initial sweep' methodology (taken from SNH). To a large extent, peat probing of the site is superfluous, as all infrastructure (turbines, tracks and sub-station) is proposed for drier areas.

Great Crested Newts

All relevant ponds were surveyed for great crested newts. Comprehensive sampling was undertaken, both in terms of HSI and subsequent survey. Standard methodologies were followed. Much of the intervening habitat (between ponds) was considered wholly unsuitable to support the terrestrial phase of the GCN life cycle and it is considered that the majority of newt movement at the site will be within a short distance of existing (and sampled) ponds. Where infrastructure approaches close to any ponds, this has been acknowledged and suitable mitigation suggested.

Reptiles

Only one area was considered of medium suitability for supporting reptiles (the felled forestry area, now heathy, in the centre of the site). Records of common lizard were made in this area. A plan showing this area has been produced and is included as Appendix B to this letter. Suitable mitigation with regard to low numbers of reptiles has been suggested within the ES chapter. The area supporting reptiles and suitable mitigation can be highlighted to contractors as part of the work of the EcOW.

Habitats of Biodiversity Value

We agree that the area of species-rich marshy grassland, supporting pillwort, could be considered as regionally important. This is a very long way from any infrastructure and therefore this does not change the overall assessment (not subject to any impacts).

Habitat Restoration and Potential Biodiversity Gain

The PCC Senior Ecologist prescribed that development of a wind farm at the site should include an extensive habitat restoration scheme. The applicant is amenable to this and we would welcome suggestions from and collaboration with PCC to achieve maximum habitat restoration and ecosystem services delivery from the site. The area within the red line boundary offers limited opportunity due to the level of agricultural improvement. However areas in the south could certainly be enhanced through reduction in grazing. Additionally, with consent from the relevant parties the unimproved area of Llandegley Rhos (the common area) could be significantly improved through a programme of habitat management. The applicant will, in the event of consent for the proposed development, prepare a habitat restoration scheme and implement the scheme for the red line area and for a wider area with the consent and cooperation of the relevant parties.

Habitats Regulations Assessment – River Wye SAC

An HRA screening report has been prepared and the report is enclosed with this letter – refer to Appendix C. It is agreed that there is a tenuous connection between some of the small watercourses on the site, the River Edw and consequently, the River Wye. However, it is considered that the potential impacts on these watercourses and the Edw, from the proposed infrastructure will be very minor in nature (particularly in comparison to the potential effects of runoff and pollution from intensive agriculture throughout the region). Furthermore, construction will be subject to standard controls and pollution prevention measures (including sediment traps). Resultant impacts on watercourses will not be significant and therefore this wind farm proposal will not have a significant effect on the River Wye SAC.

Bats

We disagree that high levels of bat activity were recorded at T5, T7, T8, T9, T10, T11 and T12. By far the greatest activity was recorded at T10H and T11H, both of which were detectors placed at the nearest habitat features to the equivalent turbines. The bat report in Appendix 7.5 of the ES comments that equivalent activity at the respective turbines was significantly lower. The bat survey was carried out in relation to an initial turbine layout, and numbers of turbines have now dropped from 12 to 7. The results from Turbines 10 and 11 are likely to be equivalent to new turbine locations 6 and 7. Both these are in the more sheltered area of Llandegley Rhos (south of the site). Numbers of bats recorded at former turbine locations 10 and 11 both indicate low to moderate levels of activity. The species recorded are largely low risk species, with only common and soprano pipistrelles (moderate risk) being present in low numbers and noctule (high risk) rarely. Based on this information, it is considered that collision risk impacts for bats are likely to be minimal and not significant.

Other protected Species and Habitats of Biodiversity Value

A Construction Ecological Mitigation Plan (CEMP) can be produced for the proposal with the aim of safeguarding all protected species and habitats of ecological value during the construction period.

(ii) Natural Resources Wales

Natural Resources Wales (NRW) wrote to PCC on 22nd December 2014. In its letter NRW advises that the proposed development would have significant adverse regional effects on landscape and visual resources but confirms that no nationally designated landscapes would be impacted, and NRW does not object to the proposal on landscape and visual grounds.

NRW does object to the proposal on the grounds of a 'lack of transparent Habitats Regulations Assessment for River Wye SAC', and NRW's detailed comments on this issue are set out in Annex 1 to the letter.

The applicant's consultant ecologist ADAS responds as follows to the NRW letter.

The applicant acknowledges the representations made by NRW. A HRA screening report with respect to the River Wye has been prepared and is submitted as Appendix C to this letter. Should the proposed development receive consent, the applicant will additionally produce a Protected Species Protection Plan incorporating stipulations with respect to Great Crested Newt, Bats, Badger and Water Vole. This will be prepared in accordance with standard procedures asnd working practices with respect to protected species.

It is agreed that post-consent/pre-construction surveys will take place with regard to bats, and should these reveal unacceptable collision risk, curtailment will be suggested on specific turbines. Curtailment will be applied to individual turbines where these are shown (through surveys) to have high levels of bat activity. Curtailment will apply during the active bat season (usually taken as being April to September/October) and only in conditions of wind speeds < 6m/s and in conditions without rain. Further details on specific curtailment will be discussed with NRW. Curtailment measures will be such that collision risk for bats will be reduced to a level acceptable to NRW.

Licensing procedures with respect to Great Crested Newt will be followed.

In addition, pre-construction surveys with respect to Curlew will take place, in line with that suggested by NRW.

(iii) Cadw

Cadw wrote to PCC on 5th September 2014. The applicant's consultant archaeologist ADAS responds as follows to the Cadw letter. (Cadw comments are in bold italics, followed by ADAS's response.)

SOURCES AND IDENTIFICATION OF MONUMENTS.

The EIA reports consultation of a broad range of cartographic and aerial photographic sources and also carried out field visits to several monuments in the study area, yet these investigations do not

appear to have identified many new archaeological sites not already recorded in the HER or NMR, with the exception of a field bank within the development boundary. For example the scheduled hillfort RD264 situated on an eastern summit of Llandegley Rocks forms part of a broader complex of possibly contemporary features, including a much larger defended enclosure of potential national importance extending across the adjacent summits to the W, which does not appear to have been identified in the walkover or aerial photo studies. Whilst a number of these sites are recorded in the HER and are included in the study, they form components of a small but archaeologically rich upland landscape which as a group is of arguably of greater collective significance than as assessed in the HEDBA as a series of individual sites.

- We (ADAS) consulted a broad range of cartographic and aerial photographic sources for the **development site only**, which did not identify any new archaeological sites. The example which Cadw cites, Llandegley Hillfort and the broader complex of contemporary features including a much larger defended enclosure of potential national importance etc., is outside the development site. The assessment of indirect impacts upon Llandegley Rocks Hillfort has been carried out, as it is a designated heritage asset. We did carry out field visits to several **designated** heritage assets / monuments in the area, with the express purpose of **assessing the indirect impacts of the proposed development on these individual monuments and their setting.** For clarity, the presence of these unrecorded, undesignated heritage assets has been taken into account when assessing the setting of scheduled hillfort RD264, although we accept that the setting assessment is not clear in acknowledging this.

Paragraph 4.1.3 of the HEDBA notes that site numbered 102 (the hillfort RD112) includes the pillow mounds 90 and 124-9 – 'but are not themselves recorded by Cadw as Scheduled Monuments'. To clarify, these features are located within a scheduled area, are noted in the scheduling description and are therefore designated monuments.

- As noted above, our assessment is based on data held by Cadw and the HER. Cadw is responsible for the scheduling / designation of monuments. The pillow mounds noted above are clearly stated in our desk-based assessment as within the Scheduled Area RD112. Individually they do not feature in the Cadw designated heritage asset dataset, i.e. they have not been individually scheduled or each given a Scheduled Monument number. This is why we have stated that "they are not themselves recorded by Cadw as Scheduled Monuments". If Cadw wishes each of these monuments to be considered individually as Scheduled Monuments / designated heritage assets, they should be individually scheduled and each assigned their own Scheduled Monument number. In our opinion Cadw's recording of these pillow mounds is ambiguous.

METHODOLOGY

Section 2.9 indicates that the system used to assess the magnitude of indirect impacts on historic assets is adopted from the Design Manual for Roads and Bridges (DMRB, 2007), a methodology that was designed specifically for linear schemes without a vertical element comparable to wind turbines. The predominant archaeological issues raised by the proposed development are indirect impacts on the settings of individual monuments and in this instance the use of a methodology designed specifically for this purpose such as 'The Setting of Heritage Assets' (English Heritage, 2011), which is referenced in Section 7 would have been more appropriate.

- We apply the DMRB methodology as it constitutes a repeatable and transparent methodology for the assessment of the value and significance of heritage assets, and the assessment of potential impacts upon those heritage assets. This methodology allows assessment in line with Planning

Policy Wales. Cadw have not produced a repeatable and transparent methodology for these purposes; nor have English Heritage or the Chartered Institute for Archaeologists (CIfA). In the absence of a repeatable and transparent methodology produced by one of these bodies, the use of DMRB is considered to be 'industry standard'. We are of the opinion that reference to a repeatable and transparent methodology is very important, as assessment of heritage asset value, significance and potential impacts can be very subjective. Clear definitions of each grade or level of value, significance and potential impact are required in order to present a consistent, transparent and relative assessment of each. Indeed, Paragraph 5.2 of Cadw's own Conservation Principles acknowledges this. We would therefore contend that in this case as Cadw's own response does not seem to adhere to a repeatable and transparent methodology (certainly they do not reference the methodology by which they have come to their conclusions), and therefore does not seem to adhere to their own Conservation Principles, the results of their assessment of impacts are on occasion disproportionate to the proposed development and the heritage asset's context. Until Cadw offers a repeatable methodology to follow, we therefore feel we are justified in our use of the DMRB methodology.

- Cadw's assertion that English Heritage's 'The Setting of Heritage Assets' is a suitable methodology to follow is incorrect. The document referred to constitutes guidance and advice, **not** a methodology. In any case, our assessment does adhere to the guidance set out in 'The Setting of Heritage Assets' guidance, and this is referenced in our bibliography. This document acts as our 'starting point' for assessment.

The DMRB methodology as set out in Tables 1-3 of Section 2 has direct implications for the assessment of the magnitude of impacts upon the monuments settings, most notably in its classification of the importance of monuments (Table 1). Using this system SAMs are determined to be of 'high' rather than 'very high' importance, which is reserved for World Heritage Sites, absent from the majority of development areas. This therefore results in the automatic downgrading of the assessment of the significance of impacts on nationally important SAMs the results of which are set out in Table 3. This may have some bearing on the assessment of several SAMs in the study, which in Cadw's view underestimate the magnitude of impact as set out below.

- The DMRB methodology provides a consistent **relative** scale of heritage asset value, as clearly laid out in our desk-based assessment. This does not 'downgrade' the importance of Scheduled Monuments, it simply places them within this relative scale. World Heritage Sites are universally considered to be of higher value than Scheduled Monuments, and this is reflected in the DMRB methodology. Whether or not World Heritage Sites are absent from most development sites is irrelevant; the methodology simply seeks to place each heritage asset within a **relative scale of value / importance**. This also provides consistency across all assessments using this methodology. For example, should a development site or Study Area contain both Scheduled Monuments and one or more World Heritage Sites, by using this approach we are able to assess both as required by their relative value, and retain consistency across all assessments. This does not in our opinion result in the underestimation of any magnitude of impact upon Scheduled Monuments, which are assessed appropriately as of **relative** high value, i.e. more important than undesignated heritage assets, but less important than World Heritage Sites. Furthermore, as noted, in the absence of an alternative repeatable and transparent methodology produced by either Cadw or CIfA, we feel we the use of the DMRB methodology is justified, as it is seen as being 'industry standard'.

POTENTIAL IMPACTS

There are to be no direct physical impacts on any of the above listed SAMs. The HEDBA however identifies that the turbines have multiple direct impacts on the settings of scheduled monuments. It is a concern that the visual impacts on the settings of scheduled monuments of the stone access tracks, hard standings, substation and other associated infrastructure included within the application are not addressed by the HEDBA, which can therefore be argued not to have comprehensively addressed the full impact of the development.

- **"The HEDBA however identifies that the turbines have multiple direct impacts on the settings of scheduled monuments"** – this is incorrect; impacts upon the **setting** of heritage assets are by definition **indirect** as there are no physical **('direct')** impacts, as clearly stated within the desk-based assessment.

- Our definition of 'the Site' and the 'proposed development' includes all associated infrastructure, as clearly stated in our desk-based assessment. The assessment of impacts here is therefore carried out with respect to the proposed turbines and any associated infrastructure. It is our opinion that the greatest impact will be inflicted by the turbines themselves, which is why we do not mention the associated infrastructure specifically for each setting assessment. Our view is that any impact caused by the proposed infrastructure will be much less than any impact caused the turbines themselves. We do however refer to impacts caused by the entire "proposed development" in each setting assessment section.

'INNER' STUDY AREA OF 0.5KM

RD147: Nant Brook Enclosure

This small rectangular earthwork is probably of medieval date and is a well-preserved example of a stock enclosure associated with a possible deserted rural settlement. The monument is almost enclosed within the development site, occupying low ground approximately 500m from the nearest turbine (T3) and 70m to the E of one of the proposed access tracks. Photomontage Fig 8.7 and the setting assessment in paragraphs 5.2.6-5.2.7 of the HEDBA indicate that the whole of Turbine 1 and the blade tips of T2-3 are likely to be visible from the monument, the remainder being screened by rising ground to the N as indicated by Photomontage Fig. 8.8. Paragraph 5.2.7 concludes that the impact of the development the setting of RD147 is likely to be 'moderate' and the significance of this effect as 'moderate / large', arguing that an existing small turbine visible 500m to the SE 'reduces the sensitivity of the monument to change'.

In Cadw's view this assessment underestimates the impact on the monument and it is not appropriate to consider the impact of the existing small turbine at a distance of 500m as being on the same scale as the impact of the much larger, and closer T1 as demonstrated in Fig. 8.7. Whilst this view indicates that T2-3 and the remaining turbines are likely to be only partially visible from the chosen viewpoints within the SAM, no consideration is made of the potential visibility of the turbines behind the monument when viewed from the approaches to the monument from lower ground to the S, E and W. Nor is the additional visual impact of the nearby access track considered in the HEDBA. The presence of the existing turbine should be seen as contributing to a cumulative impact on the monument. Cadw consider that the impact on the setting of this monument is a 'major' one and therefore should have a significance of 'large / very large'.

- ***'INNER' STUDY AREA OF 0.5KM***. This is incorrect; the Inner Study Area is 1.5km.

- ***In Cadw's view this assessment underestimates the impact on the monument and it is not appropriate to consider the impact of the existing small turbine at a distance of 500m as being on the same scale as the impact of the much larger, and closer T1 as demonstrated in Fig. 8.7***: We have not considered these to be on the same scale. We have not quantified the reduction of this monument's sensitivity to change. This reduction could at best be considered slight, but does exist and must be considered. As stated by paragraph 4.2.2 of the CIfA's *Standards and Guidance for Archaeological Desk-based Assessment*, "Assessment should include where appropriate evidence of the potential reduction of significance due to truncation or the erosion of deposits, or alterations to buildings, etc." This potential reduction of sensitivity to change includes modern intrusions to the settings of designated heritage assets, of which the existing single turbine is an example. As corporate members of the CIfA, we adhere strictly to CIfA Standards and Guidance.

- ***...no consideration is made of the potential visibility of the turbines behind the monument when viewed from the approaches to the monument from lower ground to the S, E and W***: Cadw is here referring to 'third-point views'. We have included an assessment of third-point views in the assessment of indirect impacts upon designated heritage assets, although this is not specifically detailed within the report. The impacts upon Nant Brook Enclosure's third-point views are negligible, as this Scheduled Monument is not prominent or highly visible due to its relatively low position within an undulating landscape.

- ***Nor is the additional visual impact of the nearby access track considered in the HEDBA***: The nearby access track is not an upstanding structure, and as such we do not consider it to cause a visual impact. Furthermore this access track is not a modern intrusion, as it has been in place since at least the Post-Medieval Period (i.e. AD 1540 – 1799), evidenced by the ford along the track which crosses Nant Brook. This ford is an undesignated heritage asset, referred to by the number **146** in our desk-based assessment. It is very possible that this access track in some form was in place prior to the Post-Medieval Period. It is therefore part of the Scheduled Monument's setting, rather than being an intrusion to its setting. This access track cannot therefore be considered as having a visual impact upon the Scheduled Monument Nant Brook Enclosure.

- ***The presence of the existing turbine should be seen as contributing to a cumulative impact on the monument***: The existing turbine does not share any views from the Scheduled Monument with the proposed turbines, as it is situated to the south of the monument and the proposed turbines are to the north of the monument. We do not therefore consider this existing turbine to contribute to a cumulative impact upon the Scheduled Monument.

- ***Cadw consider that the impact on the setting of this monument is a 'major' one and therefore should have a significance of 'large / very large'***: Cadw seems to lack a repeatable and transparent methodology for the assessment of impacts, and as such this particular assessment is highly subjective. As stated in our desk-based assessment, our methodology states that a 'major' impact causes "Change to most or all key archaeological materials, such that the resource is totally altered", or "Comprehensive changes to setting". The proposed development will not cause "comprehensive" changes to the setting of this Scheduled Monument, as the potentially visible turbines will only be visible in one direction from the monument. Views in other directions will not be affected. In addition Cadw's assessment of "major" fails to take into account the reversibility of the impacts with the decommissioning of the turbines. Taking these points into account we consider that the potential impact upon this Scheduled Monument is at worst 'moderate'.

RD264: Llandegley Rocks Hillfort
This partially quarried hillfort of probable Iron Age date occupies a prominent summit at the eastern end of the Llandegley Rocks escarpment. It directly overlooks the proposed development site, being located 300m to the N of the site boundary and 1.3km to the N of Turbine 5. As requested by Cadw, inter-visibility between RD264 and the broadly contemporary RD112 has been specifically examined within the assessment and is addressed separately below.

The scheduled hillfort forms an element of a broader series of probably contemporary features, currently undesignated but of potential national importance occupying the north-eastern summits of Llandegley Rocks, including a substantial larger enclosure encompassing two adjacent outcrops, at least one smaller ditched enclosure and a range of other features including, relict boundaries cairns and later house platforms. Whilst a number of these sites are recorded in the HER and have been included in the study, no consideration has been given to the group significance of the monuments or of the small but archaeologically rich upland landscape of which they form part. Paragraph 5.2.15 of the HEDBA and Photomontage Fig. 8.9 indicate that all seven turbines will, be 'highly visible' from the scheduled hillfort. 5.2.15 concludes that the turbines will have a 'moderate adverse' impact on both the setting of RD264 and its visual relationship with RD112; due to the relative distance of the turbines from the monument, the significance of these impacts has been rated as 'moderate /large'. This assessment underestimates the severity of the impact on the setting of this monument and the adjacent undesignated, but potentially nationally important, group of features.

- The presence of these unrecorded, undesignated heritage assets has been taken into account when assessing the setting of the scheduled hillfort RD264, although we accept that the setting assessment is not clear in acknowledging this. We have assessed the entire archaeological resource within our Inner Study Area in terms of the potential for unknown buried archaeological remains within the development site, as is required for a desk-based assessment and EIA chapter.

Paragraph 5.2.14 states that the key setting of the hillfort 'is its location in an elevated, prominent position, providing extensive views across the landscape and to other similar sites in the vicinity' such as RD112 Graig Camp i.e. across the basin to the S. Fig. 8.9 clearly demonstrates that the turbines will dominate these significant views and interrupt lines of visibility with RD112, as stated in paragraph 5.2.15. Key views of the hillfort and associated features on the escarpment across what is presently an open landscape to the S are also likely to be significantly affected by the proposed development. Further potential impacts from the extensive stone surfaced access tracks, hard standings and ancillary structures are not considered, although these are likely to appear in views S from this monument and adjacent undesignated features. In Cadw's view the impact on the setting of this monument should therefore be considered a 'major' one and therefore should have a significance of 'large / very large'.

- As above: Cadw seems to lack a repeatable and transparent methodology for the assessment of impacts, and as such this particular assessment is highly subjective. The methodology set out within our desk-based assessment states that a 'major' impact causes "Change to most or all key archaeological materials, such that the resource is totally altered", or "Comprehensive changes to setting". The proposed development will not cause "comprehensive" changes to the setting of this Scheduled Monument, as the turbines will only be visible in one direction from the monument. Views in all other directions will not be affected. Similarly the proposed turbines will be prominent in views from this Scheduled Monument towards RD112 Graig Camp, but the view will not be completely obscured, and as such will not constitute "Comprehensive changes to setting". In addition Cadw's assessment of "major" fails to take into account the reversibility of the impacts with

the decommissioning of the turbines, and therefore we would contend that it is therefore not in line with Paragraph 2.7.43 of National Policy Statement for Renewable Energy Infrastructure 2011 (EN-3). Taking these points into account we consider that the potential impact upon this Scheduled Monument is at worst 'moderate'.

- Our definition of 'the Site' and the 'proposed development' includes all associated infrastructure, as clearly stated in our desk-based assessment. Our assessment of impacts is therefore carried out with respect to the proposed turbines and any associated infrastructure. It is our opinion that the greatest impact will be inflicted by the turbines themselves, which is why we do not mention the associated infrastructure specifically for each setting assessment. Our view is that any impact caused by the proposed infrastructure will be much less than any impact caused by the turbines themselves. We do however refer to impacts caused by the entire "proposed development" in each setting assessment section.

RD112: Graig Camp
This well-preserved hillfort occupies a ridge summit overlooking the development site from the opposite (southern) side of the basin to RD264 and its associated enclosures, approximately 1.3km SE of Turbine 1. As requested by Cadw, inter-visibility between the two monuments has been considered. However, a requested photomontage from within RD112 has not been produced, the setting assessment in paragraphs 5.2.9-5.2.12 and accompanying Plate 8 having been provided from an undisclosed vantage point 'close' to the monument, seemingly on markedly lower ground on one of the nearby public roads. This failure to provide an assessment from within the SAM itself or to consider stone access tracks, hard standings and ancillary elements of the development inevitably places questions on the accuracy of its conclusions.

- A photomontage was not deemed necessary, as wireframes produced to inform the assessment indicated that neither monument would be completely obscured by the turbines in the view from the other monument, and as such the change would not constitute "comprehensive changes to the setting" of either monument. We include as Appendix D a pair of wireframes illustrating the intervisibility of monuments RD112 and RD264 and indicating the extent of visibility of the proposed turbines between the sites.

- Access to this Scheduled Monument was restricted as the monument is on private land under different ownership to the development site. There was no scope within the archaeological appointment to obtain landowner details to access the land, as this is a time-consuming process. As stated by paragraph 4.3.8 of the CIfA's *Standards and Guidance for Archaeological Desk-based Assessment*, "Unless access is restricted the archaeologist undertaking desk-based assessment should visit the study area in order to assess its character, identify visible historic features and assess possible factors which may affect the survival or condition of known or potential assets. All assessments should include an explicit statement as to whether or not a visit has taken place and, if so, a description of the procedures used and any constraints to observation encountered." It is clearly stated in our desk-based assessment that access was not possible, and a setting assessment made from the nearest publicly accessible point. This fulfils CIfA requirements. We ensure that the locations of all of our setting assessments provide representative views from the monument to the turbine, whilst complying with health and safety standards.

- As noted above, our definition of 'the Site' and the 'proposed development' includes all associated infrastructure, as clearly stated in our desk-based assessment. Our assessment of impacts is therefore carried out with respect to the proposed turbine and any associated infrastructure. It is our opinion

that the greatest impact will be inflicted by the turbines themselves, which is why we do not mention the associated infrastructure specifically for each setting assessment. Our view is that any impact caused by the proposed infrastructure will be much less than any impact caused by the turbines themselves. We do however refer to impacts caused by the entire "proposed development" in each setting assessment section.

Paragraph 5.2.9 of the HEDBA states that 'The key setting of Graig Fawr Hillfort is its location in an elevated, prominent position, providing extensive views across the landscape and to other similar sites in the vicinity', paragraph 5.2.12 concluding that the potential impact of the development on the setting of the monument is likely to be a 'moderate adverse' one and considered to be of 'moderate / large' significance. The central and dominant position of turbines of this scale within the 'key setting' defined in 5.2.9, potential cumulative effects with the smaller turbine 500m to the N noted in 5.2.11 and the unassessed additional impacts of access and ancillary works dictate that the 'moderate adverse'/ 'moderate / large' assessments of the HEDBA are likely to underestimate the significance of such impacts on the setting of RD112.

- We do not consider that the magnitude and significance of impacts upon this Scheduled Monument have been underestimated. The only greater magnitude and significance of impact which could potentially be applied would be 'major', and, as above: The methodology set out within our desk-based assessment states that a 'major' impact causes "Change to most or all key archaeological materials, such that the resource is totally altered", or " Comprehensive changes to setting". The proposed development will not cause "comprehensive" changes to the setting of this Scheduled Monument, as the turbines will only be visible in one direction from the monument. Views in all other directions will not be affected. This does not constitute "Comprehensive changes to setting". In addition Cadw's assessment of "major" fails to take into account the reversibility of the impacts with the decommissioning of the turbines and therefore we would contend that it is therefore not in line with Paragraph 2.7.43 of National Policy Statement for Renewable Energy Infrastructure 2011 (EN-3). Taking these points into account we consider that the potential impact upon this Scheduled Monument is at worst 'moderate'.

Inter visibility between RD112 and RD264
As requested at scoping, paragraphs 5.2.8-15 of the HEDBA, along with photomontage Fig 8.9 and to a lesser degree the incorrectly sited viewpoint Plate 8 address potential impacts on the visual relationship between these broadly contemporary hill forts, which face each other across the basin in which the wind farm is to be located. However, as RD112 was not visited during the study Cadw does not consider inter-visibility issues to have been properly addressed from this monument.

- The "incorrectly sited viewpoint Plate 8" has been addressed above, as has the reason for not visiting the monument. We include as Appendix D wireframes indicating the extent of visibility of the proposed turbines in the views between RD112 and RD264.

Paragraph 5.1.15 notes that all seven turbines will be 'highly visible' from RD264 'interrupting the views from this monument to Graig Fawr Hillfort (RD112)', paragraphs 5.2.12 and 5.2.15 assessing the impact on the inter-visibility of the two monuments as 'moderate adverse'. Whilst the exact cultural, chronological and political relationship between the two monuments is unknown, the views between these broadly contemporary monuments across what may have been shared or disputed lower ground are highly significant ones, and indeed paragraphs 5.2.9 and 5.2.14 identify this lower ground as the key setting for both monuments.

The 'moderate adverse' assessment of 5.2.15 underestimates the scale and significance of the impact. Photomontage Fig. 8.9 clearly demonstrates that whilst inter-visibility will not be entirely obscured, views between the two monuments across this open, undeveloped and predominantly pastoral landscape would be substantially interrupted by the introduction of the proposed turbines. The grouping, scale, contrasting colour and moving blades of the turbines will present vertical and moving interruptions to such views and will therefore instead be considered to have a 'major 'impact on both direct and peripheral sight lines between the monuments and therefore should have a significance of 'large/ very large'.

- Cadw are once again assessing this impact as 'major'. The key sentence in this final paragraph is "views between the two monuments…would be substantially interrupted". The views will be interrupted, but **not completely obscured**. As above: The methodology set out within our desk-based assessment states that a 'major' impact causes "Change to most or all key archaeological materials, such that the resource is totally altered", or " Comprehensive changes to setting". The proposed development will not cause "comprehensive" changes to the views between this monument and Llandegley Rocks Hillfort, as the view will not be completely obscured. In addition Cadw's assessment of "major" fails to take into account the reversibility of the impacts with the decommissioning of the turbines and therefore we would contend that it is therefore not in line with Paragraph 2.7.43 of National Policy Statement for Renewable Energy Infrastructure 2011 (EN-3). Taking these points into account we consider that the potential impact to the inter-visibility of these two Scheduled Monuments is at worst 'moderate'.

RD113: Cwm-Maerdy Standing Stone.
This Bronze Age standing stone occupies a hollow approximately 1.2km SE of and below T7. Whilst paragraphs 5.2.31 and 5.2.32 state that inter-visibility with the turbines is likely to be limited by its topographic location, this was assessed from a point 110m away from the monument, which may have some bearing on the conclusion of a negligible adverse impact. The conclusion is therefore questionable.

- As above: Access to this Scheduled Monument was restricted as the monument is on private land under different ownership to the development site. There was no scope within the archaeological appointment to obtain landowner details to access the land, as this is a time-consuming process. As stated by paragraph 4.3.8 of the CIfA's *Standards and Guidance for Archaeological Desk-based Assessment*, "Unless access is restricted the archaeologist undertaking desk-based assessment should visit the study area in order to assess its character, identify visible historic features and assess possible factors which may affect the survival or condition of known or potential assets. All assessments should include an explicit statement as to whether or not a visit has taken place and, if so, a description of the procedures used and any constraints to observation encountered." It is clearly stated in our desk-based assessment that access was not possible, and a setting assessment made from the nearest publicly accessible point. This fulfils CIfA requirements. We ensure that the locations of all of our setting assessments provide representative views from the monument to the turbine, whilst complying with health and safety standards, and in this instance it was ensured that the ground level of the setting assessment location was similar to the location of the Scheduled Monument. In addition Ordnance Survey maps were utilised in order to ascertain the topography and vegetation surrounding the Scheduled Monument, to gauge visibility of the development site from the monument. All of these factors informed the setting assessment, which we therefore believe is robust and accurate.

OUTER' STUDY AREA OF 10KM

The HEDBA assesses in detail potential indirect impacts on 11 SAMS within this radius. Of these, impacts on RD008, RD027, RD034, RD069, RD077 RD109, RD167, RD238, RD239 and RD240 are considered to range from 'no change' to 'no change –negligible' , predominantly due to the relative distances of the SAMs from the development site and the screening effects of intervening topography and vegetation. However, RD008, RD027 and RD238 were not visited during this study, which must call into question the methodology used to reach this conclusion for these monuments. In the case of RD088 (Cefnllys Castle), a requested photomontage was not produced as access was not gained to the site, the view Plate 16 being taken from undisclosed point 'close to' but clearly not from the isolated ridge summit on which the castle is sited to command extensive views.

- Access to Cefnllys Castle, and to the isolated ridge summit noted by Cadw, was restricted as both are located on private land. The same is true of the Scheduled Monuments RD027 and RD238.

- A setting assessment was made of RD238, Ffrwd standing Stone, from very close to the monument, as shown in Plate 15. The standing stone is clearly visible in the photograph, as is the potential visibility of the development site from this monument. If anything, visibility of the development would be reduced from the exact location of this monument than from where the setting assessment has been made. It is our opinion that this is clearly shown in Plate 15 of the desk-based assessment. It is our opinion that our assessment of impacts upon this particular Scheduled Monument is accurate.

- As above: There was no scope within the archaeological appointment to obtain landowner details to access the land, as this is a time-consuming process. As stated by paragraph 4.3.8 of the CIfA's *Standards and Guidance for Archaeological Desk-based Assessment*, "Unless access is restricted the archaeologist undertaking desk-based assessment should visit the study area in order to assess its character, identify visible historic features and assess possible factors which may affect the survival or condition of known or potential assets. All assessments should include an explicit statement as to whether or not a visit has taken place and, if so, a description of the procedures used and any constraints to observation encountered." It is clearly stated in our desk-based assessment that access was not possible, and a setting assessment was made from the nearest publicly accessible point, where it was also safe to stop and take photographs. This fulfils CIfA requirements. We try to ensure that the locations of all of our setting assessments provide representative views from the monument to the turbine and comply with health and safety standards. In addition Ordnance Survey maps were consulted in order to ascertain the topography and vegetation surrounding the Scheduled Monument, and to gauge visibility of the development site from the monument. All of these factors informed the setting assessment.

RD003: Castell Crug Eryr

This very prominent motte and bailey of probable Welsh origin and documented by Giraldus Cambrensis in the late 12th century is located approximately 2.1 km E of Turbine 7. Paragraph 5.2.20 states that the setting of the monument and its significance 'derives from its prominent and defensible position in the landscape and its inter-visibility with other major defended sites of the period, Key views from this motte and bailey are extensive, and are likely to have been to the north, west and south, over the downwards sloping landscape.' It is possible that the motte was deliberately positioned at the NW corner of the site to overlook and enhance its visibility from this landscape. Photomontage Fig. 8.11 demonstrates that all of the proposed turbines are to be visible from this monument as prominent features within such key views. However, paragraph 5.2.21 assesses the potential indirect impact of the development on the setting of RD003 as 'minor adverse' with a

significance of 'moderate minor', citing distance. This underestimates the magnitude of impact on the monument, the proposed turbines forming dominant features central to the lower ground to the N and W which the castle overlooks; again the potential visual impact of the associated access tracks and infrastructure of the development has not been considered by the HEDBA, nor has the impact of the development in the foreground of more distant views of the castle from the lower ground to the N and W. This impact should therefore be considered 'moderate adverse' and of 'moderate / large' significance.

- We do not consider that the magnitude of impact upon this Scheduled Monument has been underestimated. We have applied the definitions laid out in our methodology, which describes a 'minor adverse' impact as "Changes to key archaeological settings, such that the asset is slightly altered" or "Slight changes to setting". Relative magnitudes of impact must be considered if our impact assessments are to remain consistent and transparent. The photomontage which has been produced (Figure 8.11) shows that all of the turbines will be visible in the WNW facing view towards the development site, however they are sited some distance from this Scheduled Monument, and do not appear overly intrusive in the landscape. The visibility of the turbines is restricted to the very centre of this view. Views in all other directions will not be impacted upon. We do not consider Cadw's assessment of a 'moderate' impact to be accurate; a 'moderate' magnitude of impact, according to our methodology, would cause "Considerable changes to setting that affect the character of the asset". It is not considered that the character of this asset is affected; the motte will remain highly visible in the landscape from surrounding lower ground. The hinterland of the motte, which is likely to have included but not been exclusive to the depression containing the development site, is still highly visible from the motte. The remainder of the motte's hinterland will not be affected. In addition Cadw have failed to take into account the reversibility of any potential impacts and therefore we would contend that it is therefore not in line with Paragraph 2.7.43 of National Policy Statement for Renewable Energy Infrastructure 2011 (EN-3). It is our opinion therefore that the magnitude of any potential impacts upon this Scheduled Monument would be, at worst, 'minor'.

- As noted above, our definition of 'the Site' and the 'proposed development' includes all associated infrastructure, as clearly stated in our desk-based assessment. Our assessment of impacts is therefore carried out with respect to the proposed turbine and any associated infrastructure. It is our opinion that the greatest impact will be inflicted by the turbines themselves, which is why we do not mention the associated infrastructure specifically for each setting assessment. Our view is that any impact caused by the proposed infrastructure will be much less than any impact caused the turbines themselves. We do however refer to impacts caused by the entire "proposed development" in each setting assessment section.

NON-DESIGNATED ASSETS.
Whilst non-scheduled sites largely fall outside of Cadw's remit as a consultee the two-page assessment (paragraphs 5.2.45 -5.2.50) of potential indirect impacts on the settings of the many such sites identified within the study areas is cursory.

- In 5.2.45 to 5.2.50 of the desk-based assessment we aim to present a discussion of the undesignated heritage assets, if any, located within the development site, and identify any potential direct impacts which they may be subject to as a result of the proposed development. The chapter then looks at the entire archaeological resource within the Inner Study Area, and uses this to assess the likelihood of the development site to contain previously undiscovered archaeological remains which may suffer direct impacts during development. This section of the report assesses only the actual and potential archaeological remains **within the development site**, which we feel has been achieved here to a

very high standard. We have included assessment of the settings of undesignated heritage assets where they are part of the settings of designated heritage assets, although for brevity this has not been specifically detailed.

As noted above, the desktop study has not indicated any sites not in the HER or NMR.

- As clearly explained within the desk-based assessment, the only previously unrecorded feature of possible archaeological nature observed during this study was a field boundary located during the site inspection. Therefore this statement is incorrect.

The HEDBA therefore fails to fully address the potential impact of the development on the broader archaeological record and in some cases the significance of some of the monuments within it, most notably the hillfort RD264 and the array of physically related features of potential national importance on Llandegley Rocks.

- The present study considered in detail everything that is required for a desk-based assessment and EIA chapter, namely potential indirect and direct impacts upon designated heritage assets, potential direct impacts upon undesignated heritage assets, and potential direct impacts upon previously undiscovered buried archaeological remains. The EIA chapter and historic environment desk-based assessment, presented at Appendix 8.1 of the ES, considers fully the significance of any designated heritage assets which may be subject to potential development impacts.

SUMMARY
The information provided demonstrates that the proposed development will have a significant adverse impact on the settings of RD003, RD112, RD147 and RD264 and varying degrees of lesser adverse impact on numerous more distant and undesignated monuments within the ZTV. Cumulative impacts with existing turbines in the area illustrated in Vol. IV of the study should also be taken into consideration. These potential multiple impacts can be viewed collectively as a significant adverse impact on the broader historic environment within the study area.

- Essentially Cadw are asking for a cumulative impact assessment, which constitutes a substantial piece of additional work. The submitted documentation considers the cumulative impact of the development in terms of the existing single turbine close to the site. During the site inspection and over a further three days of setting assessments weather conditions were variable; mainly dry and bright with several heavy rain showers. Visibility was good for most of the periods of assessment. No other existing turbines were visible to the naked eye during the field visits, thus no further cumulative assessments have been carried out.

In conclusion, we disagree with Cadw that the indirect impacts, upon the setting and heritage significance of Llandegley Rocks Hillfort, Nant Brook Enclosure and Graig Camp Scheduled Monuments, would constitute major impacts, or that the impacts on other scheduled monuments in the wider vicinity would be any greater than minor.

All indirect impacts of the development on designated heritage assets are reversible with the decommissioning of the turbines.

(iv) Welsh Government Department For Economy, Science and Transport and Powys Highways

The Welsh Government Department for Economy, Science and Transport Department made a submission in a letter dated 13 August 2014, and Powys Highways made a submission dated 21st August 2014.

The applicant's traffic consultant WYG has prepared a combined response to these submissions. The response is in two parts:

- Letter to Stuart Vendy, Cunnane Town Planning, Ref. A078181/ L05 Hendy TMP, dated 12th January 2015. The letter addresses eight points raised by the Welsh Government and ten points raised by Powys Highways. The letter is enclosed as Appendix E.
- Revised Njord Energy Hendy Ltd Wind Farm Traffic Management Plan, dated January 2015. This is enclosed as Appendix F.

The applicant would welcome the opportunity to meet with you to discuss the merits of this application and would appreciate if you could contact us in order to arrange this.

Yours sincerely

[redacted]

Stuart Vendy
CUNNANE TOWN PLANNING LLP

[redacted]

APPENDIX A: HENDY VP SUMMARY

(Revised to include VP start and finish times)

September 2011

29/09/11

VP	Start	Finish	Observer	Species	Numbers	Observations
1	11:15	14:15	EJ	Buzzard	5	Multiple sightings of birds in 1s and 2s. One sighting over woodland to the east of the site boundary, another to the south of the boundary, east of VP1. The remaining sitings were over the north west corner of the site.
				Red Kite	5	Multiple sightings of individuals over the western half of the site.
				Linnet		Numbers unknown. Sighting in woodland in the north eastern tip of the site.
				Skylark		Numbers unknown. Sighting over the southern central part of the site.

02/10/11 (September Visit)

VP	Start	Finish	Observer	Species	Numbers	Observations
2	10:45	13:45	EJ	Red Kite	8	Multiple sightings of birds in 1s and 2s over the western part of Hendy Bank, south of the track.
				Buzzard	5	Multiple sightings of birds in 1s and 2s, over the woodland to the north east of the site, over Hendy Bank and south of the boundary near the

						house platforms.
				Reed Bunting		Number unknown. Sighting in woodland to the north east of the site.
				Linnet		Number and location unknown.

October 2011

17/10/11

VP	Start	Finish	Observer	Species	Numbers	Observations
1	08:30	11:30		Red Kite	11	Multiple sightings of individuals widespread across the site.
				Skylark	1	1 individual north west of VP1.
				Buzzard	6	Multiple sightings of birds in 1s and 2s, concentrated around the south western edge of the site, north of Hendy, with one sighting over the south eastern side of the site.
				Fieldfare	14	Two flocks of 2 and 12 birds sighted south of Nant Brook and north east of VP1.
				Starling	30	A single flock of birds sighted over the south eastern part of the site flying west into the centre.
2	12:00	15:00		Red Kite	3	Sighting of birds in 1s and 2s over the north eastern part of the site.
				Starling	4	Single flock sighted immediately south east of VP2.

28/10/11

VP	Start	Finish	Observer	Species	Numbers	Observations
1	12:00	15:00		Red Kite	11	Multiple sitings of birds in 1s and 2s over the north western corner of the site.
				Starling	676	Multiple sightings of flocks ranging in size from 11 to 350 over the south western corner of the site.
				Buzzard	5	Multiple sightings of birds in 1s and 2s over the western corner of the site.
				Fieldfare	23	Two flocks of 16 and 7 over the south western corner of the site.
				Sparrowhawk	1	Individual flying over the south western corner of the site north east of Hendy.
2	08:45	11:45		Redshank	3	Single flock, foraging throughout survey south of Hendy Bank.
				Skylark	3	Two sightings of 1 and 2 birds over the north eastern corner of the site.
				Fieldfare	27	Three sightings of 10, 4 and 13 over the south western corner of the site.
				Starling	33	Multiple sightings of flocks between 3 and 10 over the western part of the site, from the north to the west.
				Linnet	2	Single sighting over the north eastern part of the site.
				Red Kite	2	Two sightings over the western part of the site.

				Marsh Tit	1	Individual seen over the north western part of the site, north west of Llandegley Rhos.
				Buzzard	2	Two individuals seen over the north western part of the site.

November 2011

17/11/11

VP	Start	Finish	Observer	Species	Numbers	Observations
1	09:25	12:25	DA	Buzzard	3	Two sightings of 1 and 2 birds over the south western corner of the site, south west and west of Llandegley Rhos.
				Starling	270	Three flocks of 100, 100 and 70 over the south western corner of the site.
				Red Kite	7	Multiple sitings of birds in 1s and 2s over the southern and western half of the site.
2	13:10	16:10	DA	Red Kite	6	Multiple sightings of birds in 1s and 2s over the northern part of the site, north of Llandegley Rhos.
				Starling	65	Two flocks of 15 and 50 over the far north of the site.

24/11/11

VP	Start	Finish	Observer	Species	Numbers	Observations
1	09:30	12:30	SS	Starling	669	Multiple flocks ranging in number from 3 to 300 birds over the south

						western corner of the site, south of Hendy Bank.
				Sparrowhawk	1	Individual hunting over the south western corner of the site over turbine location 1.
				Red Kite	10	Multiple sightings over the north western border of the site from east of Nursery Cottage up to VP2.
				Buzzard	1	Individual hunting over the centre of the western boundary.
2	13:20	16:20	SS	Red Kite	7	Multiple sightings of individuals and one pair over the north western part of the site.
				Buzzard	2	Two sightings over the north west to central part of the site.
				Starling	100	Two flocks of 50 over the north western part of the site.

December 2011

12/12/11

VP	Start	Finish	Observer	Species	Numbers	Observations
1	09:30	12:30	HS	Buzzard	5	Separate sightings of individual birds engaged in hunting in and around the southern most part of the site south west and west-north-west of VP1.
				Starling	40	Two flocks of 20 birds, flying and feeding, across the southern most part of the site from west to east of VP1.

2	13:00	16:00	HS	Starling	2600+	One large flock of 2000+ in addition to smaller flocks of 500+, 100+ and 25. The larger flocks were preparing to roost in the northern most conifer block on site.
				Red Kite	9	Several sightings of birds in 2s or 3s, engaged in hunting to the west of the site, east of Bwfch-y-cefn.
				Buzzard	3	Sightings of individuals hunting west of the northern most part of the site boundary.

January 2012

12/01/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	10:05	13:05	SS	Starling	87	Four flocks varying in size: 5, 12, 30, 35. All feeding in the southern part of the site, south of Nant Brook around turbine 1.
				Buzzard	1	Individual hunting over across the site, from south of the woodland at Llandegley Rhos, north and west to turbine 5, east and north circling around turbine 4, then circling west around turbine 2, leaving the site west of Hendy Bank.
				Red Kite	3	Three individuals hunting, one flying south from Bwfch-y-cefn Bank leaving the site west of Hendy Bank, one circling east and south over the northern part of the site, one flying south from Bwfch-y-cefn Bank circling around turbine 4 before returning.
				Sparrowhawk	1	Female individual hunting over the western boundary west of Hendy

						Bank and Nant Brook.
2	13:45	16:45	SS	Red Kite	4	Multiple sightings of 1s and 2s hunting. Birds seen flying south from the outside the northern boundaries of the site near VP2 into the centre of the site between Nant Brook and Llandegley Rhos.
				Buzzard	1	Individual passing over the northern arm of the site from west to east in line with Bwfch-y-cefn.
				Starling	1700+	Multiple sightings of 12, 700 and 1000 birds. The smallest flock was feeding on the northern most border of the site. The larger flocks circled in the vicinity before roosting in the conifer plantation in the north corner of the site.

19/01/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	13:20	16:20	SS	Starling	48	Three flocks of 12, 16 and 20 feeding in different locations in the south western part of the site, over Hendy Bank and south towards Hendy, west of VP1.
				Red Kite	1	Individual hunting across the top of Hendy Bank from the western boundary, heading east over the woodland at Llandegley Rhos towards turbine 8.
				Buzzard	2	Two individuals hunting, one heading east to west over the centre of the site north of turbines 2 and 4, the other hunting from west to east and northwards over Hendy Bank towards Llandegley Rhos north of the woodland.

2	09:50	12:50	SS	Red Kite	3	Three individuals hunting over the northern part of the site. Two flew in circles from north near VP2 south leaving the site to the west near Sam Pool. The third flew west to east across the centre of the site at Llandegely Rhos.
				Golden Plover	17	Flock possibly feeding on site circling over Sam Pool in the northern part of the site.
				Buzzard	1	Individual hunting entering the site from the north, east of VP1 flying south towards Nant Brook in the centre of the site.

February 2012

13/02/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	10:05	13:05	SS	Starling	37	Two flocks of 10 and 27 feeding over the most S part of the site NE of Hendy.
				Red Kite	1	Individual hunting across the centre of the site from west to east in line with Nursery Cottage and Pye Corner.
2	13:35	16:35	SS	Buzzard	1	Individual passing through the northern part of the site adjacent to VP2.

23/02/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	10:58	13:58	DA	Mallard	2	Pair leaving pond at the eastern end of the southern most Nant Brook in the southern region of the site.
				Red Kite	5	3 individuals and a pair, hunting across the site. One circles the southern most part of the site around Hendy. One following the track from here NE and then west to follow the brook. Another flying west from turbine 3 to leave the site. The pair transect the southern part of the site from SE to NW.
				Canada Goose	4	Crossing the centre of the site from the south alongside the track from Hendy flying N leaving the site N of Sam's Pool.
				Kestrel	1	Hunting across the centre of the site from west to east over Hendy Bank.
				Buzzard	1	Hunting from over turbine 4 crossing turbine 2 and leaving the site south of Bwlch-y-cefn Bank.
2	14:02	18:30	KM	Buzzard	6	Two pairs and two individuals. One pair and one individual flew NW of the northern part of the site, SW of VP2. The other individual and pair were located inside the northern part of the boundary NE of Sam Pool.
				Red Kite	5	Seen in 1s and 2s in the same area as the buzzards.
				Raven	1	Individual passing from SW to NE along the NW boundary of the site towards VP2.
				Peregrine	1	Seen in the centre of the N part of the site leaving the site to the west, north of Sam Pool.

				Starling	c.2200	A number of flocks ranging in size: 100, 300, 600, 1200; flying in from all over the surrounding area to congregate east of Bwfch-y-cefn. See note below on activity on site.

NB: Starlings congregated initially at A. with many continuing to forage. On the arrival of 13 (2000+) they moved to B with many continuing to forage. Very soon flocks arrived from all directions to double this number (c5000). The flock now became airborne, as further flocks arrived. The size again approximately doubled to c10,000 or more birds. Initially many birds plunged into the small plantation at C, but when others began to fall into plantation D, these formed a river of birds flying low from C to D until the whole congregation were resting at D.

March 2012

06/03/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	13:40	16:40	DA	Red Kite	4	Four individuals hunting, three confined to the southern most part of the site, south of Hendy Bank; one flying westward across the centre of the site, west of Llandegley Rhos.
				Buzzard	6	Four individuals and a pair hunting over the site; half hunting over the central part of the site, west of Llandegley Rhos and south of Bwfch-y-cefn Bank, with the pair heading south over Hendy Bank. The remaining sightings over the southern most part of the site, just north of Hendy.
2	09:55	12:55	DA	Red Kite	8	A pair and several individuals hunting over the northern most part of the site down towards Sam Pool.
				Sparrowhawk	1	Flying north from a field east of Sam Pool leaving the site.
				Buzzard	3	An individual and a pair hunting over the northern part of the site, north

						east of Sam Pool with one landing in woodland.

20/03/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	10:30	13:30	SS	Red Kite	4	Multiple sightings of 1s and 2s hunting over the southern part of the site just north of Hendy, with one individual flying north over Llandegley Rhos.
				Buzzard	6	Multiple sightings of 1s and 2s passing over the southern part of the site, west and south of Hendy Bank.
2	14:15	17:15	SS	Red Kite	6	Individual sightings of brids hunting over the north western corner of the site, down to Sam Pool.
				Buzzard	2	Two individuals hunting over the site, one crossing the northern tip from east to west, the other flying west of the site boundary in a northerly direction.

April 2012

11/04/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	14:15	17:15	SS	Buzzard	3	Three individuals hunting, two of which circled south of the Llandegley Rhos woodland, one flew north west from Hendy adjacent to the south

						western border of the site, before heading west towards Bwlch-llwyn-Bank.
				Sparrowhawk	1	Hunting and soaring in a south westerly direction, following the track from Llandeegley Rhos towards Hendy.
				Kestrel	2	Same bird seen twice hunting; once from east to west across the track in the southern part of the site, then from south to north towards Hendy Bank.
				Red Kite	1	Individual hunting across the southern part of the site, entering from the west flying east over the woodland at Llandegley Rhos before wheeling southwards and leaving the site over Hendy.
2	10:30	13:30	SS	Buzzard	4	Two individuals and a pair; the pair seen flying west of Hendy off site, one individual swept over the northern corner of the site next to VP2, the other individual hunted in loops to the east of the site north of the quarry track towards Pye Corner.

26/04/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	10:50	13:50	KM	Buzzard	3	Three individuals sited separately, one flying east to west across the earthwork towards Hendy Bank, one flying south west over turbine location 1, the third flying onto the site from the west between turbines 3 and 5 over Hendy Bank.
2	14:11	17:12	KM	Red Kite	4	Two individuals and a pair, on individual flying westwards to leave the site from turbine 2 towards Nursery Cottage, the other individual flew on site from the west north of turbine 2. The pair flew westward (north of turbine

						2 and 4) leaving the site to the west and circling over Sunny Bank.

May 2012

28/05/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	10:30	13:30	HS	Red Kite	7	Several individuals and one pair hunting over the southern and western borders of the site, north and east of Hendy.
				Buzzard	1	3 individuals hunting across the southern part of the site along Nant Brook towards Llandegley Rhos.
2	14:15	17:15	HS	Buzzard	14	4 individuals hunting over the northern borders of the site, 10 birds flushed flying south from VP2 along the western border of the site.
				Red Kite	1	Individual hunting across the site from west to east, bisecting the site from Bwfch-y-cefn to Llandegley Rhos.

31/05/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	13:45	16:45	HS	Buzzard	3	3 individuals hunting over the southern most part of the site, south of Hendy Bank.
				Red Kite	1	Hunting over Llandegley Rhos in the centre of the site.

2	10:00	13:00	HS	Red Kite	4	One individual passing over the northern boundary of the site from west to east. Three other individuals hunting from a field south of Sam Pool, circling in northern and southerly directions in and around the site.
				Buzzard	1	Individual hunting just north of the site boundary to the north.
				Peregrine	1	Same as buzzard above.

June 2012

14/06/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	12:30	15:30	SS	Buzzard	9	Individuals and pairs, hunting along the southern boundaries of the site. Four individuals hunting in fields south of Llandegley Rhos, circling over the southern most part of the woodland. Three individuals looping into the site up the western border, briefly flying over two or three fields before exiting the site.
				Red Kite	3	Three individuals, one hunting south of the site boundary, the other two flying SE across the centre of the site either site of Nant Brook, into woodland at Llandegley Rhos.
				Kestrel	1	Passing over the southern part of the sute from the earthwork below Llandegley Rhos to fields west of the site.
2	08:35	11:35	HS	Red Kite	25	Individuals and groups up to 6 in number, some of the groups are the same birds – estimated number of individuals = 9. The groups circled over the

						same area on the north western border at the track running SW from Bwlch-y-cefn. Other individuals flew in loops over fields in the northern part of the site.
				Buzzard	5	A pair and a three matching the groups of Red Kites on the NW border.

05/07/12 (JUNE DATE)

VP	Start	Finish	Observer	Species	Numbers	Observations
1	13:28	16:28	DA	Buzzard	5	Individuals and pairs; pair circling over the centre of the southern part of the site, south of Hendy bank; individual bisecting this area from E to W; another pair circling on the NW boundary next to Sams Pool.
				Red Kite	3	Individuals circling over fields west of the woodland at Llandegely Rhos.
2	09:46	13:46	DA	Peregrine	2	Two individuals passing over the site, one follwoign the western broder, the other crossing the site to Stone and exiting over the eastern border.
				Red Kite	7	Individuals and pairs hunting; cluster of individuals in the NW corner of the site, with two mirroring the flight paths of the peregrines.

July 2012

20/07/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	09:50	12:50	DA	Buzzard	1	Flying SW from the woodland at Llandegely Rhos across the southern fields and leaving the site.
				Red Kite	1	Circling over the fields inside the ring of woodland at Llandegley Rhos.
2	13:30	16:30	DA	-	-	Nothing of note sited.

23/07/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	10:15	13:15	SS	Buzzard	4	Individuals hunting over the boundaries of the site, two south of Llandegley Rhos heading south; two more over the western boundaries north of Hendy and east of Nursery Cottage.
				Red Kite	5	Individuals hunting across the southern portion of the site: one looping east and then west around the southern fields below the southern most brook, two copying the buzzards south of Llandegely Rhos, two crossing over the centre of the site over Hendy Bank and Llandegely Rhos in opposite directions.
2	14:00	17:00	SS	Buzzard	4	A pair and individuals hunting over the north western boundary NE of Bwlch-y-cefn Bank.

				Red Kite	4	Two individuals copying the buzzards; two others crossing the northern part of the site from NW to SE towards the Quarry NE of Llandegely Rhos.

August 2012

01/08/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	09:30	12:30	SS	Buzzard	2	Two individuals hunting; one crossing three fields on the south western corner of the site leaving the site to the north west, the other entering the site from the west at Nant Brook then crossing the woodland at Llandegley Rhos before exiting the site to the east.
				Kestrel	1	Hunting south westerly from Hendy Bank crossing Nant Brook and leaving the site just north of Hendy.
				Red Kite	1	Circling to the south east of the site, briefly entering a couple of fields on the circuit.
2	13:30	16:30	SS	Red Kite	4	Four individuals hunting along the north western border of the site as far as Nant Brook from north to south, flying in and out of the site.
				Buzzard	2	Two individuals, one following the same pattern as the Red Kite, the other flying eastwards across Llandegley Rhos from the path to the west.

22/08/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	14:55	17:55	SS	Buzzard	3	Three individuals; one circling over Hendy, one circling to the south east of the site, briefly entering the field below the earthwork, the last one circling over the western arm of the woodland at Llandegley Rhos.
				Red Kite	1	Dissecting the southern part of the site from Llandegely Rhos leaving the site to the west at the ford north of Hendy.
2	11:05	14:05	SS	Linnet	7	Flock moving between feeding locations in parallel with the north western boundary, entering the site from the north and landing two fields in.
				Buzzard	2	Same bird seen twice, hunting in the trees north of Stone.
				Red Kite	1	Hunting across the two north western fields of the site, same as the Linnet.

September 2012

05/09/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	09:55	12:55	SS	Red Kite	7	Several pairs and individuals; two individuals circling over the field north west of the junction with Nant Brook and the track; one pair doing the same; the other pair circling over the western arm of Llandegley Rhos and the fields in the centre; the other individual flying east from the field SW of Nant Brook/the track, leaving the site.

				Buzzard	2	Two individuals, one circling over the centre of the fields below Nant Brook, the other flying south west parallel to the track next to VP1.
2	13:45	16:45	SS	Buzzard	3	Three individuals; hunting over the northern part of the site; one flying south from VP2 over the first two northern most fields exiting the site to the east; one circling north west of Stone; the other flying east across the site from the west and exiting over Stone.

26/09/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	14:10	17:10	SS	Buzzard	3	Three individuals seen soaring/hunting; one circling over four fields south of Bwlch-y-cefn Bank; one flying north along the western boundary from woodland to turbine 1; the other flying west from Llandegley Rhos across Nant Brook to woodland off the western boundary.
				Red Kite	3	Three individuals hunting; two south of Llandegley Rhos over the watercourses/ bodies, one across the northern arm of woodland at Llandegley Rhos.
2	10:15	13:15	SS	Red Kite	4	Individuals hunting over the northern part of the site; one flying south along the north western boundary towards Sam Pool; two flying east from Sams Pool to Stone; the other flying north from Stone then leaving the site.
				Buzzard	2	One flying east from Sams Pool to Stone, the other circling below Sams Pool before flying NW off the site.

October 2012

01/10/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	10:55	13:55	SS	Buzzard	2	Two individuals, one hunting south onto the site from Bwlch-y-cefn Bank and leaving to the west from the same field; one hunting adjacent to the NW corner of the trees at Llandegley Rhos.
				Red Kite	2	Two individuals, one flying from SE to NW across the Hendy Bank part of the site; the other flying from NW to SE from Bwlch-y-cefn Bank towards Llandegley Rhos.
				Golden Plover	70	Single flock flushed and re-settled in the fields either side of Nant Brook, east of Bwlch-llwyn.
2	14:25	17:25	SS	Red Kite	3	Three individuals, one flying outside of the site boundary, one crossing the two northernmost fields from west to east, the other bisecting the site from north to south crossing Llandegley Rhos.

26/10/12

VP	Start	Finish	Observer	Species	Numbers	Observations
1	13:19	16:19	SS	Buzzard	6	One pair and several individuals. The pair circling over trees NW of Llandegley Rhos, 3 individuals over Hendy Bank and the final individual circled over the small block of woodland E of Llandegley Rhos, N of the trees.
				Starling	200+	Multiple flocks: 50 over the northern trees at Llandegley Rhos; 35, 40, 50 and 100 moving over fields at Hendy Bank, N and S of the brook; the remaining 15 and 30 over the field in the centre of the trees at Llandegley Rhos.
				Golden Plover	40	Single flock entering the site over the northern most field and exiting the site to the W, one field to the S.
				Redwing	35	A small flock of five flying along the brook from E to W at Hendy Bank and a larger one of 30 flying S of the brook, W of VP1 exiting the site to the W and N.
				Red Kite	1	Flying W to E from Hendy Bank, circling over the field in the centre of the trees at Llandegley Rhos.
2	09:25	12:30	SS	Red Kite	11	Several individuals recorded along the northern boundaries and within the three northernmost fields.
				Peregrine	1	Flying from W to E across the two northernmost fields.
				Buzzard	4	Several individuals over the northern boundary of the site, particularly to the E of the two northernmost fields.
				Starling	5	Single flock flying from the eastern of the two northernmost fields, away from the site to the E.

Hendy Windfarm Ltd.

Hendy Windfarm,
Powys

Reptile Survey Area

- Area surveyed for reptiles
- Core study area
- Turbine positions
- Substation
- Crane pad
- Site compound
- Tracks

Habitat type

- Broad-leaved woodland
- Coniferous plantation
- Mixed woodland
- Unimproved acid grassland
- Semi-improved acid grassland
- Unimproved neutral grassland
- Semi-improved neutral grassland
- Improved grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Continuous bracken
- Acid dry dwarf shrub heath
- Dry heath/acid grassland mosaic
- Basic flush
- Valley mire
- Mesotrophic standing water
- Quarry
- Arable
- Building
- Bare ground

Habitat overlay 1

- Scattered scrub
- Unimproved acid grassland
- Semi-improved neutral grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Continuous bracken
- Scattered bracken
- Acid dry dwarf shrub heath
- Mesotrophic standing water

Habitat overlay 2

- Acid dry dwarf shrub heath

Habitat boundary type

- Species poor intact hedge
- Species poor intact hedge with trees
- Target note

Bet Betula sp(p)
Cv Calluna vulgaris
Cx Carex sp(p)
Dc Deschampsia cespitosa
Et Erica tetralix
Fe Fraxinus excelsior
Ja Juncus acutiflorus
Je Juncus effusus
Mc Molinia caerulea
Ug Ulex gallii

Drawn by Andy Frost 19/03/2015, Verified by Chris Forster-Brown 19/03/2015

N W E S

0 250 500 750

Metres

Scale 1:11,000 at A3 size

ADAS UK Ltd., Pendeford House,
Pendeford Business Park, Wobaston Road,
Pendeford, Wolverhampton, WV9 5AP.
[redacted]

ADAS

Produced by ADAS Environment Group, Wolverhampton, WV9 5AP.

Hendy Wind Farm

Habitats Regulations Assessment Screening Report

Reference No:

Date: February 2015

Submitted to:

Prepared by:

Chris Forster Brown
MCIEEM
QC: Nisha Rehm
AIEMA

Contents

1 Introduction

1.1 Background

The Conservation of Habitats and Species Regulations 2010 are the principal means by which the Habitats Directive is transposed into UK law in England and Wales. The 2010 Regulations consolidate all the many amendments which have been made since the original enabling legislation came into effect in 1994.

Under Regulation 61, a competent authority cannot grant consent for a project which is likely to have a significant effect on a Natura 2000 site unless the project is directly related to the management of the site. Natura 2000 sites consist of Special Areas of Conservation (SACs), Candidate Special Areas of Conservation (cSAC) and Special Protection Areas (SPAs). For the purposes of assessment, Ramsar sites (wetlands of international importance) and potential SPAs (pSPAs) are treated the same as SACs and SPAs.

In the event that the project does not meet this criterion then it is the responsibility of the competent authority to ensure that an assessment is made to consider the effect of the project, such that the requirement of the Regulations is met. This assessment is termed a Habitats Regulations Assessment (HRA).

The project can only be permitted in the event that an adverse effect on those species or habitats underpinning the European Designation can be ruled out. Projects may be permitted in cases where there are imperative reasons of overriding public interest and compensatory measures to ensure the overall coherence of Natura 2000 is protected.

It is the role of the competent authority to complete the HRA, although it is the responsibility of the applicant to supply information required to undertake the assessment. A HRA typically follows a two-stage process to identify if the project is likely to have a significant effect on the interest features of the site. A screening assessment is first completed and submitted to the competent authority. Only if significant effects are predicted need the assessment proceed to the 'Appropriate Assessment' phase.

1.2 The Project

Hendy Windfarm Ltd propose to construct and operate an onshore wind farm, known as Hendy Wind Farm, of up to 17.5 MW comprising the following:

- 7 (110m tip height) wind turbines and associated infrastructure including crane hard standing areas;
- A new site entrance to the east off the A44;
- Construction of c. 3.3 km of new access tracks;
- c. 1 km of track to be upgraded;
- Construction of temporary site compound (20m x 30m) close to turbine T5;
- Construction of a new on-site substation (circa. 40m x 20m) which includes a control building (25m x 10m) south of turbine T3.

Further details of what is entailed by the proposed works are provided in the following sections.

1.3 The Requirement for HRA

Natural Resources Wales (NRW) has requested that a HRA is completed as the scheme lies within 3km of the River Wye Special Area of Conservation (SAC). There are watercourses within the site that drain into the River Wye SAC, and could potentially provide a hydrological link to the SAC. The NRW response goes on to say that 'The HRA will need to rely on many of the mitigation measures in a Construction Environmental Management Plan (CEMP) and we advise that a draft CEMP is provided at the pre-application stage for comment and to support the HRA'.

The location of the site and the European protected site is provided in Appendix 1.

The purpose of this document is therefore to provide NRW with sufficient information to determine whether the development of the proposed wind farm is likely to have a significant effect on the conservation objectives of the SAC and therefore require an Appropriate Assessment.

1.4 Consultation

It is worth stating that HRA was not requested by NRW for this proposal at the outset. NRW were contacted with regard to the scope of the HRA. At the time of writing, no reply has been received. Therefore, the HRA screening (and the scope of the HRA) has been compiled in the light of previous experience and best practice.

2 Guidance

The following guidance has been used in preparation of the screening opinion:

- Managing Natura 2000 sites the provisions of Article 6 of the Habitats Directive 92/43/EEC.
- Guidance on Article 6(4) updated in 2007 at:

  http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance art6 4 en.pdf
- NRW guidance note 'Assessing Projects under the Habitats Directive: Guidance for Competent Authorities'

3 Organisation of the opinion

An Appropriate Assessment is only required if the anticipated effects are likely to be significant. The likely significance of an effect is determined during the screening stage. The DG Environment guidance breaks the screening process into four stages:

1. **Site management**; to ascertain whether the plan or project is directly connected with or necessary for the management of Natura 2000 sites.

2. **Project description and 'in combination effects'**; A description of the plan or project and explanation of any other plans or projects which, in combination, have the potential for having significant effects on Natura 2000 sites ('in-combination effects').

3. **Site characteristics**; A description of Natura 2000 sites characteristics.

4. **Assessment of significance**; An assessment of likely significance of any effects on Natura 2000 sites.

This document is organised to address each of these headings.

4 Site management

The HRA assessment applies to projects that are not directly connected with the management of the site. Therefore, the first stage in the screening process is to determine if the project is connected with the management of the site.

The River Wye SAC is managed by NRW and (in England) Natural England and the Environment Agency. The management of the SAC is mainly directed at the features of the protected European site. Examples of management practices include assessment of water quantity and quality through monitoring of abstraction levels, control of acidification (particularly from forestry), management of diffuse pollution and siltation. Other practices include management of substrates for fish spawning, tree coppicing and pollarding to control light levels, removal of weirs/construction of fish passes to allow fish passage and control of non-native plants (Japanese Knotweed, Himalayn Balsam, Giant Hogweed).

The purpose of the project is to provide wind energy. The project is therefore not connected directly to the management of the protected European site. This project could therefore potentially be subject to the requirement for an Appropriate Assessment if there is likely potential for significant adverse effects.

5 Project description

5.1 The Existing Site

The existing site is described in terms of its habitats in the Environmental Statement (ES) Chapter 7 Ecology. The site is approximately 250ha in total. The proposed Development is almost entirely in agricultural use of one form or another and comprises a typical upland/semi-upland mosaic of semi-natural and improved habitats. A number of small watercourses rise within the site, falling to the River Edw and its tributaries to the east.

The majority of the site (including the western, northern and southern parts) largely comprise improved or poor semi-improved grassland fields. The central section of the site is a mix of acid grassland and dry and wet heath. In the south of the development, there are areas of marshy grassland, a small basic flush area and a further section of acid grassland and dry heath. Several ponds are found, scattered throughout the site. Plantation forestry is found in the east and centre of the site.

The Phase I habitat plan of the site, including the proposed site layout, is reproduced as Appendix 2.

5.2 Location and Extent

The site/application area is located c. 6km east of the town of Llandrindod Wells, c. 2.8km south west of the Penybont village, and c. 2.5km north of the small rural settlement of Franksbridge in the County of Powys in central Wales.

5.3 General Project Description

5.3.1 Introduction

The Development consists of seven 110m to tip height wind turbines each rated at up to 2.5 megawatts. The layout of the turbines is shown on Figures 1.1 and 1.2.1 contained within Volume II of the ES (detailed plans are also included in Volume II). The layout is also shown in Appendix 2 in this HRA. Elevations of the turbines are illustrated in Figure 1.3, also contained within Volume II. The turbines will be connected together by underground electrical cables buried between 0.8m and 1.2m deep, together with communication and low voltage cables. The cables would be laid where possible adjacent to a hard core track used for construction of the turbines and to provide access for maintenance. The new tracks extend to approximately 3.3km in length with 1km of existing tracks also being upgraded.

The Ordnance Survey National Grid References of the turbines on which this HRA has been based are set out in Table 5.1:

Table 5.1: Location of Turbines

Turbine ID	Easting	Northing
1	312539	259737
2	312652	260124
3	312911	259867
4	313016	260258
5	313429	260509
6	313450	260005
7	313591	259753

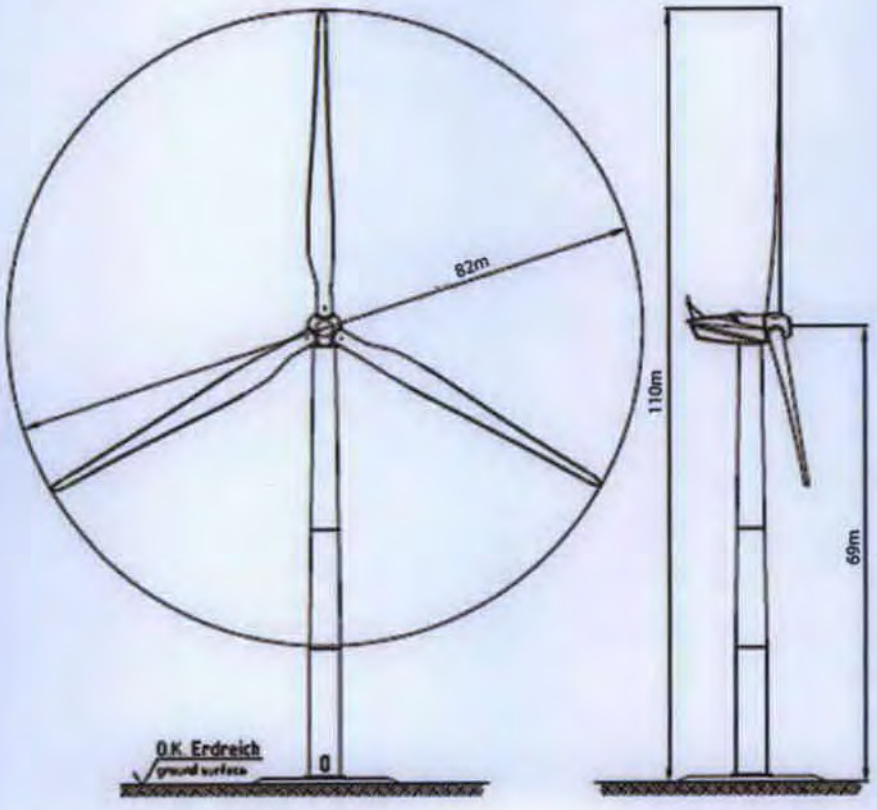
In addition to the turbines, there is a requirement for an Electrical Sub-station (40m x 20m) and Control Building (10m x 25m) which are proposed to be contained within a secure compound located south of turbine T3 (NGR: 312923, 259669). Details of these structures are illustrated in Figures 1.4 and 1.5 of the ES (Volume II). The Control Building will provide housing for the control equipment necessary to connect the array to the grid and to monitor the performance of the turbines. It would also contain welfare facilities for staff working on site during the operational period.

5.3.2 Proposed Turbines

The exact turbine model and specification would be agreed with the consenting authorities prior to construction. With the continual advances in turbine design, by the time of construction other model options may be available. It is also possible that some models will be discontinued.

The turbines would be up to 69m to hub height, the blades would have a swept diameter of approximately 82m giving a maximum tip height of 110m. The turbine base will be cast from concrete and would be circular with a diameter of approximately 16m. Figure 5.1 below provides a schematic drawing of a typical turbine and a scaled drawing is available in Figure 1.3 of Volume II (Figures) of the ES.

Figure 5.1: Schematic Drawing of a Typical Turbine



The finish and colour of the turbines will be off-grey with a semi-matt finish, to reduce their potential contrast with the background sky and reduce their reflectivity in conditions when the sunlight is at a low angle i.e. earlier and/or late in the day.

Turbines normally operate up to 18rpm. The turbines are designed to commence generation at a wind speed of 3.5m/s (about 9 miles per hour) and will shut down at speeds in excess of 25m/s (about 56mph - storm force 10). In the latter instance the turbines will restart once the wind speed drops below 20m/s. Table 5.2 provides data on expected annual variation in rotation, based on data assumed from other projects.

Table 5.2: Expected Annual Variations of Turbine Performance

Turbine status	Operating condition	Percentage of time (annually)
Turbine parked; zero rotation	Very low wind speed (<2.5ms^{-1}) Very high wind speed (>25ms^{-1}) General maintenance	10%
Turbine idling	Rotational speeds up to 8.6rpm; turbine not connected to the Grid	5%
Operational but under rated power	Rotational speeds 8.6rpm at 4ms^{-1}- 18.4rpm at 14ms^{-1}	70-75%
Operational at rated power	Rotational speed of 18.4rpm at wind speeds above 14ms^{-1}	10-15%

In assessing the impact and practicalities of transporting and erecting turbines on the site, a model turbine has been assumed with the physical characteristics as given in Table 5.3.

Table 5.3: Model Turbine Component Characteristics

Turbine Component		Weight (kg)	Dimensions (m) l/w
Tower	Bottom Section	32,500	16.1 (l), 4.1 max (w)
	Mid-Tower Section	28,500	22.7 (l), 3.8 max (w)
	Section 3	37,500	27.4 (l), 2.99 max (w)
Turbine Component		**Weight (kg)**	**Dimensions (m) l/w**
Blades x 3		7,000	41.0
Nacelle		68,000	10.3 (l), 2.8m (w)

5.4 Construction Elements

5.4.1 Temporary Works

On-site temporary works will be required and would include the formation of the site compound (20m x 30m), the location of which will be alongside the track to turbines T6 and T7 and close to turbine T5 (NGR: 313460, 260387). The area would be defined using Herras-type fencing (2.4m high) and would be stoned to allow traffic by service and personnel vehicles. Topsoil in the area would be stripped and stockpiled for reuse when the compound is reinstated at the end of the construction phase.

Office, storage and staff welfare facilities would be provided in modular-type accommodation placed in this area. Foul water drainage from the welfare facilities would be effected via a sealed cess pit and emptied on an as-required basis. Mains water is available to the site.

Power will be provided by a generator set and telecommunications will be sourced via the mobile telephone network.

Oil, fuel and machinery required on-site will be stored in a bunded area contained within the temporary compound. The bunded area will contain an impervious base to reduce the risk of contamination outside the area.

Temporary stock-proof fencing will be provided to the access tracks and turbine bases during the construction period. Temporary fencing will also be required to areas subject to reinstatement on completion of the construction phase.

5.4.2 Site Entrance & Track

Access to the site will be gained via a new entrance point off the A44. The new entrance point is located c. 150m south of the U1574 (Pye Corner) and is necessary in order to achieve appropriate sight lines and turning areas required for abnormal loads during construction. The new track off the A44 will then join the U1574 continue westwards past Pye Corner for an additional c. 800m where spurs begin to emanate to serve the turbines. From Pye Corner westwards, the existing Byway Open to All Traffic (BOAT) will be upgraded where necessary to accommodate traffic associated with the Development.

A secondary access point is proposed to the north at Larch Grove for construction purposes and will be upgraded in advance to accommodate construction related traffic. This will also use an existing Public Right of Way as illustrated below.

The primary internal access track dissects the site and connects the entrance point to the westernmost turbine (T1) with turbines T3, T4 and T5 located adjacent to it. Two separate spurs emanating from the main track serve turbines T6 and T7 and another to turbine T2.

The introduction of a wheel-wash facility will be required at the entrance to the site during the construction period in order to reduce the risk of soil being transported onto the main roads.

5.4.3 On-Site Access Tracks

Approximately 3.3km of new access tracks will be constructed across the site as indicated on the overall site layout plan, Figure 1.2 of the ES. The new tracks will be a minimum of 4.5m wide, the width varying locally for junctions, bends and passing places and at turbine base locations where wider working areas will be required. Topsoil arising from stripping the working areas will be stockpiled on site for later use. The subsoil will be excavated to a maximum overall depth of 400mm below existing ground level, or deeper where the tracks are cut into existing slopes, and stockpiled adjacent to the tracks for use in restoration.

Six culverts are required to cross existing watercourses along the tracks as illustrated in Figures 1.2.1 - 1.2.9 of Volume II of the ES. Design details in relation to proposed culverts is enclosed as Figure 1.6 of Volume II of the ES.

Stone from an existing disused quarry on the site (south of turbine T3) will be used to construct the new tracks. However, if additional aggregate is required, it will be sourced from nearby quarries. The Transport Assessment accompanying this application has assumed that all stone is sourced offsite to present a 'worst-case' scenario in terms of traffic impact. The stone material used to make up the tracks would be laid on a geotextile layer to prevent fine material migration and improve the track stability.

Existing gates will need to be widened to 6m. Where new gates are required they will also be 6m wide and will remain after the construction phase. The applicant acknowledges that there is a separate process for licensing additional limitations upon public rights of way (excluding byways) and agrees to obtain the necessary permission(s) should planning permission be forthcoming.

Detailed drawings of the proposed tracks and infrastructure are included in Volume II of the ES (Figures 1.2.1 - 1.2.9).

5.4.4 Turbine Bases

Where bedrock is encountered at the minimum founding depth a shallow foundation solution will be adopted consisting of a base that would typically be circular with a maximum radius of 16m. Each base will require approximately 213m^3 of concrete and contain approximately 23.5 tonnes of reinforcing steel. A steel base collar section would be cast into the base onto which the turbine's lower tower sections would connect.

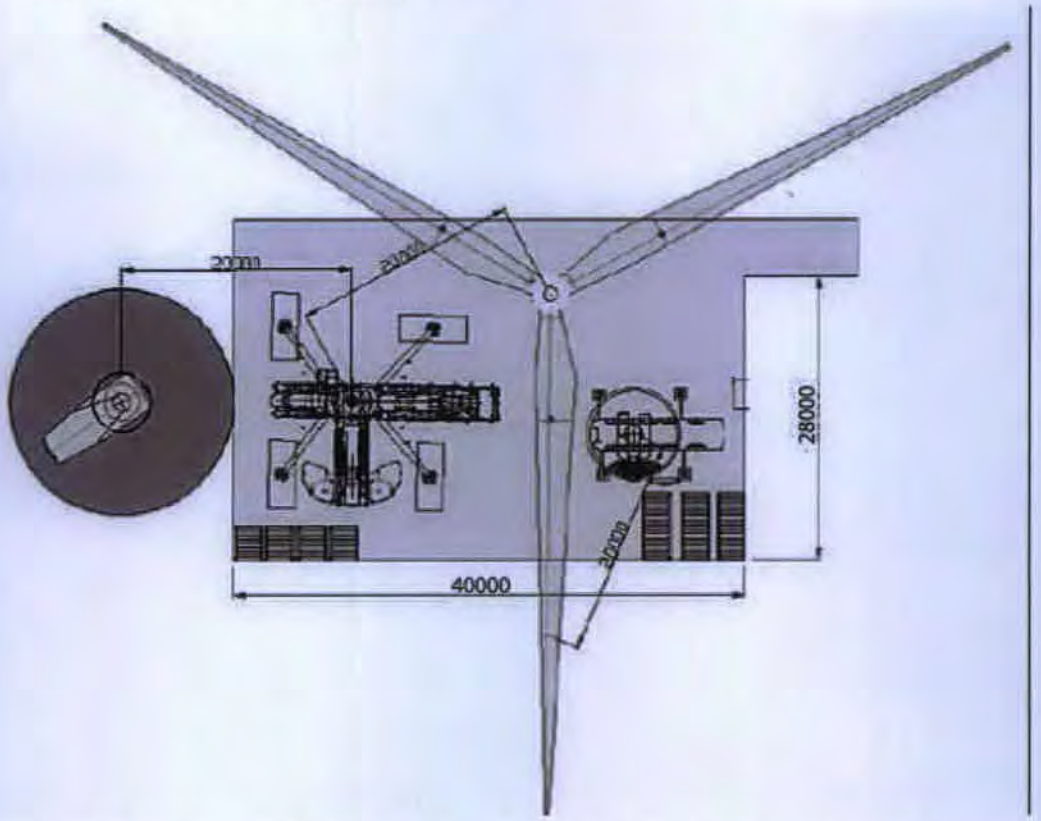
In exceptional circumstances, where the competent founding material is not exposed within 22.5m of the existing ground level, or where the adjacent terrain dips by more than 15 degrees, a bored pile solution may be adopted. On completion, the base will be backfilled and compacted to existing ground level using previously excavated material.

5.4.5 Working Areas

A working area will be defined at each turbine base location to facilitate the delivery and erection of each turbine. A typical arrangement for a working area is given in

Figure 5.2 below to reflect the erection of the turbine using two cranes. The typical area extends to circa 40m x 28m.

Figure 5.2 hard standing area for cranes



The working area will be formed using 400 to 600mm depth of clean crushed stone on a layer of geotextile to assist drainage and prevent soil migration.

Turning heads will be required at all turbines apart from T3 to allow the trailers to turn after being off-loaded.

On completion of the turbine installation the working areas will be removed and reduced in size to leave an area sufficient for crane-use required at a later date, with any remaining area made good by re-spreading the previously stripped topsoil and re-seeding as necessary.

5.4.6 Trenchworks

Underground 11kV and 33kV electricity cables are to be installed in trenches to both supply electricity to the turbines and deliver the generated electricity to the sub-station. The trenches will be between 0.8 and 1.2m deep and will generally follow the route of the tracks.

The cables will be surrounded by imported material but bulk backfilling of the trenches will be effected using suitable material arising from the excavation, supplemented where necessary by imported clean stone material.

5.4.7 Contamination Control

The oil and fuel storage area within the contractor's compound will be bunded to provide a minimum of 110% of stored volume in accordance with Pollution Prevention Guidelines (PPG). Any run-off arising from these areas will be stored and tankered off site.

A regime of water quality monitoring will be introduced to ensure that the contamination controls introduced to serve the compound area are effective.

Concrete for the turbine bases will be imported using concrete lorries.

If groundwater is encountered in the excavation for the turbine bases the excavation will be lined with an impermeable membrane to prevent seepage of cementitious material into the subsoil.

Where new culverts are required to carry the tracks over existing watercourses, the watercourse will be over-pumped to allow the culvert installation and track widening to take place. Details of the proposed culverts are illustrated in Figure 1.6 of Volume II of the ES.

5.4.8 Micrositing

In addition to the above, the continual refinement of the scheme will extend into the construction phase. Therefore it is established practice to seek agreement for the micro-siting of the turbines and associated infrastructure up to a maximum of 30m and up to 20m for the access tracks from the locations illustrated in the enclosed application drawings, other than for where planning constraints/provisions mitigate against this e.g. telecommunication safeguarding buffer zones and ecological mitigation setback provisions.

5.5 Monitoring Mast

Planning permission was approved for an anemometer mast on 29th October 2012 (LPA Ref: P/2012/0932) and erected on site thereafter at OS grid reference 312950, 260100 to measure wind speed and direction, ambient temperature, atmospheric pressure and humidity[1].

5.6 Electrical Substation and Control Building

The electrical substation (40m x 20m) which includes the control building (25m x 10m) is located south of turbine T3. This location is close to an existing building to the south which provides context and ensures that it will not have a significant visual impact on the area. The compound area will be surrounded by a 2.4m high palisade fence the colour of which will be subject to approval by the Local Planning Authority, and contain the following structures:

- An enclosed substation containing electrical equipment including a 66/33 MVA transformer which would be 40m by 20m (see Figure 1.4 of Volume II of the ES); and

[1] The met mast has now been removed.

- A pitch-roofed control building approximately 25m x 10m and 5m to eaves, containing switch gear and a meter room as well as welfare facilities for site staff and a control room for the turbines (see Figure 1.5 of Volume II of the ES).

The control building's exterior materials will be selected to reflect those commonly used in the area and subject to approval by the local planning authority.

External lighting will be provided for work carried out within the substation compound outside of daylight hours. Lighting will be provided by pole-mounted or building-mounted flood lights.

The access road to the substation compound uses an existing track and will provide sufficient parking space for at least two vehicles. The parking area and general surfacing within the compound will have a free-draining gravel surface.

Foul drainage from the WC, hand basin and canteen within the control building will discharge via an underground drain to a sealed cesspool located underground. A cesspool will be used given that the location of the site is remote from an urban sewerage system and unsuitable for septic tank/percolation system. The cesspool will be emptied at intervals by a licensed waste contractor using a vacuum tanker and will be sized to provide sufficient storage; depending on frequency of use of the facilities within the control building, emptying will only be required on a six month basis approximately. Access is required onto the site for construction and operation of the proposed development.

5.7 Grid Connection

Connection to the electricity distribution system is a major consideration when siting wind energy developments. Where possible, connections are made into the existing network, but there must be suitable capacity and stability on the network to accommodate the proposed generation capacity. The power generated from the Development will be transferred from the substation via a new 66Kv overhead power line which will connect with existing infrastructure to the south of Llandrindod Wells. A firm accepted grid offer is in place with Western Power Distribution (WPD). The application for this new grid connection line will be handled by the local electricity distribution company (WPD) and the proposed corridor for the connection is illustrated in Figure 1.7 of Volume II of the ES.

5.8 Construction Programme

The overall construction programme for the wind farm development is expected to take in the order of 12 months from start of work on-site. This will be preceded by the off-site highway works to reduce the impact on local traffic from the start of the on-site works. The longest leadin to the construction element is the procurement of the turbines which currently stands at approximately nine months from placing an order.

Works will commence on the site ahead of the delivery of turbine components to set-up the contractor's compound and facilities, concrete batching plant, on-site access tracks and cable trench-works.

Construction of the 66kV substation and control building can be carried out in parallel with the rest of the wind farm development.

Construction of the turbine bases can only commence once the reinforcing steel and turbine tower base sections have been delivered as these are cast in items. The bases will be left to cure for a minimum of 28 days before erection of the turbines can begin.

On arrival at the site, components will either be held temporarily in the compound area or delivered straight to the final turbine locations and laid down ready for lifting into place by crane.

5.9 Construction Materials

5.9.1 Stone

Approximately 23,530m^3 of stone will be required to construct the access tracks, turbine working areas and temporary compound. An existing disused quarry on the site (south of turbine T3) will be used as a source of aggregate of the majority of the new tracks. However, if additional is required, it will be sourced from nearby quarries.

Additional material will be required for the cable trenches as surround and backfill material; again this will be sourced from locally imported material.

5.9.2 Reinforced Concrete

Approximately 2,975m^3 of reinforced concrete will be required to construct the turbine bases. In addition, approximately 280 tonnes of reinforcing steel will be required to be fixed in the turbine bases and reinforced slabs at the substation.

5.10 Decommissioning

The expected productive lifetime of the turbines is estimated at about 25 years. At that time, it would be necessary to decide whether to refurbish, replace or remove the turbines. If refurbished or replaced an application would be made to extend the operational life of the wind farm.

If the site is decommissioned, the following steps would be taken to reinstate the areas affected during the construction period:

i. access track verges will be scraped and any surplus material removed before being topsoil covered and re-seeded;

ii. where appropriate subject to approval by a hydrologist/ecologist, drainage channels adjacent to the access tracks will be filled and reinstated as part of the track verge reinstatement; iii. fences demarcating the track and turbine working areas will be removed;

iii. crane pads will be retained for exceptional maintenance and/or decommissioning, these will be reseeded to allow limited surface vegetation growth;

iv. working areas in excess of the permanent crane pad hardstandings will be scraped, topsoil covered and reseeded;

v. the contractor's site accommodation buildings and associated facilities will be removed;

vi. the stone used in the contractor's compound will be removed; subsoil and topsoil originally stripped from this area will be replaced, with reseeding carried out as necessary; and,

vii. surplus subsoil material will be re-spread on site to a depth not exceeding 50mm over areas then recovered with topsoil stripped from those areas.

A decommissioning bond will be put in place to cover the decommissioning and restoration of the site. It is estimated that decommissioning a wind farm of this size would take approximately six to– eight months.

6 Site characteristics

6.1 Conservation Objectives and Qualifying Species

The EC Habitats Directive requires an Appropriate Assessment to be undertaken *'in view of the site's nature conservation objectives'* and the European Commission states that the purpose of the Natura 2000 network (which includes the River Wye SAC) is *"to preserve biodiversity by maintaining or restoring natural habitats of Community importance."* Therefore, the screening stage should consider whether the scheme is likely to have a **significant** effect on the sites' conservation objectives.

Conservation objectives are a statement of measures which are related to the maintenance or restoration of the individual site, and its contribution towards the favourable conservation status of the natural habitats and/or the populations of species of wild fauna and flora for which the site has been selected.

"conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2;

The conservation status will be taken as "favourable" when:

- *population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
- *the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and*
- *there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis;"*

Conservation objectives for SACs are defined with reference to the presence of Annex I habitats and Annex II species (qualifying species).

6.2 River Wye SAC

6.2.1 Introduction

The Wye, on the border of England and Wales, is a large river with a geologically mixed catchment, including shales and sandstones. There is a clear transition between the upland reaches, with characteristic bryophyte-dominated vegetation, and the lower reaches, with extensive *Ranunculus* beds. The River Wye was designated as a SAC (UK0012642) in 2005. Appendix 1 shows the location of the River Wye SAC in relation to the proposed development.

6.2.2 Conservation Objectives and Qualifying Species

The SAC is divided into a number of management units. The proposed development is adjacent to the River Wye (Tributaries) (Unit 3). Unit 3 extends from the River Edw 2km north of Franksbridge to where the River Edw joins the River Wye at Aberedw. Unit 3 also includes tributaries to the west of the River Wye at Erwood and Trericket Mill. These are not relevant however to this HRA as they are not connected to the site in any way.

The features for which the River Wye is designated are listed below in Table 5.4. Key species and habitats relevant to Management unit 3 are identified in the table.

Table 5.4: SAC Features of River Wye

SAC Features	Unit 3
Sea Lamprey *Petromyzon marinus*	X
Brook Lamprey *Lampetra planeri*	Sym
River Lamprey *Lampetra fluviatilis*	Sym
Twaite Shad *Alosa fallax*	X
Atlantic Salmon *Salmo salar*	KS
Bullhead *Cottus gobio*	Sym
Otter *Lutra lutra*	KS
White-clawed (or Atlantic stream) Crayfish *Austropotamobius pallipes*	KS
Watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	KH
Allis Shad *Alosa alosa*	X
Transition mires and quaking bogs	X

KH/KS Key Habitat/Species
Sym Features in unit that are important but not the main focus of management
X Feature not present in unit

The conservation objectives outlined in the Countryside Council for Wales (CCW) (now NRW) Core Management Plan (CCW, 2008) for the watercourse as a whole and for the

habitats and species in Unit 3 are provided in Table 5.5 below. Both key habitats/species and non-key habitats and species are included. In a number of cases, the conservation objectives for species are duplicates (e.g. the conservation objectives for Brook Lamprey, River Lamprey and Bullhead are the same as those for Atlantic Salmon).

Table 5.5: Conservation Objectives for Relevant SAC Features of River Wye

	Conservation Objective for the Watercourse
1	The capacity of the habitats in the SAC to support each feature at near-natural population levels, as determined by predominantly unmodified ecological and hydromorphological processes and characteristics, should be maintained as far as possible, or restored where necessary.
2	The ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature. This will include elements of water quantity and quality, physical habitat and community composition and structure. It is anticipated that these limits will concur with the relevant standards used by the Review of Consents process given in Annexes 1-3 of the Core Management Plan (CCW, 2008).
3	Flow regime, water quality and physical habitat should be maintained in, or restored as far as possible to, a near-natural state, in order to support the coherence of ecosystem structure and function across the whole area of the SAC.
4	All known breeding, spawning and nursery sites of species features should be maintained as suitable habitat as far as possible, except where natural processes cause them to change.
5	Flows, water quality, substrate quality and quantity at fish spawning sites and nursery areas will not be depleted by abstraction, discharges, engineering or gravel extraction activities or other impacts to the extent that these sites are damaged or destroyed.
6	The river platform and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC, including, but not limited to, revetments on active alluvial river banks using stone, concrete or waste materials, unsustainable extraction of gravel, addition or release of excessive quantities of fine sediment, will be avoided.
7	River habitat SSSI features should be in favourable condition. Where the SAC habitat is not underpinned by a river habitat SSSI feature, the target is to maintain the characteristic physical features of the river channel, banks and riparian zone.

	Conservation Objective for the Watercourse
8	Artificial factors impacting on the capability of each species feature to occupy the full extent of its natural range should be modified where necessary to allow passage, e.g. weirs, bridge sills, acoustic barriers.
9	Natural factors such as waterfalls, which may limit, wholly or partially, the natural range of a species feature or dispersal between naturally isolated populations, should not be modified.
10	Flows during the normal migration periods of each migratory fish species feature will not be depleted by abstraction to the extent that passage upstream to spawning sites is hindered.
11	Flow objectives for assessment points in the Wye Catchment Abstraction Management Strategy will be agreed between EA and CCW as necessary. It is anticipated that these limits will concur with the standards used by the Review of Consents process given in Annex 1 of the Core Management Plan (CCW, 2008).
12	Levels of nutrients, in particular phosphate, will be agreed between EA and CCW for each Water Framework Directive water body in the Wye SAC, and measures taken to maintain nutrients below these levels. It is anticipated that these limits will concur with the standards used by the Review of Consents process given in Annex 2 of the Core Management Plan (CCW, 2008).
13	Levels of water quality parameters that are known to affect the distribution and abundance of SAC features will be agreed between EA and CCW for each Water Framework Directive water body in the Wye SAC, and measures taken to maintain pollution below these levels. It is anticipated that these limits will concur with the Version 1.2 21 19 February 2008 standards used by the Review of Consents process given in Annex 3 of the Core Management Plan (CCW, 2008).
14	Potential sources of pollution not addressed in the Review of Consents, such as contaminated land, will be considered in assessing plans and projects.
15	Levels of suspended solids will be agreed between EA and CCW for each Water Framework Directive water body in the Wye SAC. Measures including, but not limited to, the control of suspended sediment generated by agriculture, forestry and engineering works, will be taken to maintain suspended solids below these levels.

	Conservation Objectives for Atlantic Salmon, Sea Lamprey, Brook Lamprey, River Lamprey, Twaite Shad, Allis Shad and Bullhead
1	To be in a favourable conservation status with the following conditions satisfied: 1. The conservation objective for the watercourse as defined above must be met. 2. The population of the feature in the SAC is stable or increasing over the long term. 3. The natural range of the feature in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms e.g. suitable flows to allow upstream migration, depth of water and substrate type at spawning sites, and ecosystem structure and functions e.g. Food supply. 4. Suitable habitat need not be present throughout the SAC but where present must be secured for the foreseeable future. Natural factors such as waterfalls may limit the natural range of individual species. 5. Existing artificial influences on natural range that cause an adverse effect on site integrity, such as physical barriers to migration, will be assessed in view of below. 6. There is, and will probably continue to be, a sufficiently large habitat to maintain the feature's population in the SAC on a long-term basis. Performance indicators are given for adult run size and Juvenile densities as well as biological, chemical and flow water quality.
	Conservation Objectives for European Otter
1	To be in a favourable conservation status with the following conditions satisfied: 1. The population of the feature in the SAC is stable or increasing over the long term. 2. The natural range of the feature in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms eg. substrate type, water hardness and temperature, and ecosystem structure and functions eg. food supply, absence of invasive nonnative competitors (as described in sections 2.2 and 5). Suitable habitat need not be present throughout the SAC but where present must be secured for the foreseeable future. Natural factors such as waterfalls may limit the natural range of individual species. Existing artificial influences on natural range that cause an adverse effect on site integrity will be assessed in view of the safe movement and dispersal of individuals around the SAC is facilitated by the provision, where necessary, of suitable riparian habitat, and underpasses, ledges, fencing etc at road bridges and other artificial barriers. Existing artificial influences on natural range that cause an adverse effect on site integrity will be assessed in view of 4.2.4.

	3. There is, and will probably continue to be, a sufficiently large habitat to maintain the feature's population in the SAC on a long-term basis. Performance indicators are given for adult/juvenile densities, distribution, invasive non-native crayfish and Porcelain disease in white-clawed crayfish.
	Conservation Objectives for Watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
1	To be in a favourable conservation status with the following conditions satisfied: 1. The conservation objective for the watercourse as defined above must be met. 2. The natural range of the plant communities represented within this feature should be stable or increasing in the SAC. The natural range is taken to mean those reaches where predominantly suitable habitat exists over the long term. Suitable habitat and associated plant communities may vary from reach to reach. Suitable habitat is defined in terms of near natural hydrological and geomorphological processes and forms e.g. depth and stability of flow, stability of bed substrate, and ecosystem structure and functions e.g. nutrient levels, shade. Suitable habitat for the feature need not be present throughout the SAC but where present must be secured for the foreseeable future, except where natural processes cause it to decline in extent. 3. The area covered by the feature within its natural range in the SAC should be stable or increasing. 4. The conservation status of the feature's typical species should be favourable. The typical species are defined with reference to the species composition of the appropriate JNCC river vegetation type for the particular river reach, unless differing from this type due to natural variability when other typical species may be defined as appropriate. Performance indicators are given for distribution within catchment, typical species, native species and alien and introduced species.

Sea Lamprey, Twaite Shad, Allis Shad and transition mires and quaking bogs are not present in the units selected for the assessment. They are therefore not considered in this assessment.

The following section describes the likely effects of the development on the SAC, and the significance of impacts following appropriate mitigation. This section is largely presented in tabular form (Table 5.6) and the relevant potential impact criteria analysed in turn. The assessment has been based on the probability that the hazard will affect the SAC conservation objective as advised in HRGN 3, Section 7.3. The table includes an outline and interpretation of baseline data where relevant.

It is stated in the ES (Section 10.7.1): "Construction Method Statements (CMSs) will be produced for all aspects of site work listed below in advance of any works taking

place on site. These will contain mitigation measures to prevent, as far as possible, any detrimental effects on the hydrological and hydrogeological environment from the construction of the wind farm and will require approval from Natural Resources Wales prior to commencement of site works." In Table 5.6, detailed mitigation measures for the avoidance of effects on the Conservation Objectives of the River Wye SAC are identified. These will be incorporated into the full suite of mitigation measures in the CMSs, which the applicant has committed to preparing for the approval of NRW in advance of any works on site. These measures are complementary to those proposed in Chapter 10 of the ES.

Table 5.6: Impacts and Significance Afon Gwy (River Wye) SAC				
Characteristic of Project that Could Give Rise to Adverse Effects	**Potential Impact on Conservation Objectives**	**Mitigation**	**Assessment of Confidence Level and Significance Pre-Mitigation**	**Assessment of Confidence Level and Residual Significance Following Mitigation**
Causing direct or indirect change to the physical quality of the environment: Sedimentation				
<u>Construction period</u> Sedimentation could be caused by a number of factors e.g. surface run-off from roads, disturbance caused during construction of culverts, surface run-off from dewatering foundation pits; run-off from construction of substation and contractor's compound. In reality, the majority of the infrastructure is proposed for areas of dry ground. All turbines, crane pads, the substation and site compound are positioned in improved or semi-improved grasslands. Similarly, all tracks are positioned in dry habitats apart from one short section in marshy grassland. Six culverts are proposed. One of these crosses a blind ditch and there can be no posssibiliity of impacts from this on the SAC. Three cross small ditches that feed into the	Potential effects of sedimentation could be the occlusion of Salmon spawning beds, increased turbidity (heavier sediment loads), blockage of minor watercourses and drains and detrimental impacts on BOD. Potential effects will be more pronounced during construction, more minor during operation (maintenance activities only) and more pronounced during decommissioning.	Mitigation installed during the construction period: blind ditches, cross drains, and checkdams will be installed where appropriate beside new and upgraded tracks. These will be constructed in discrete sections as blind ditches and not interconnected and water will infiltrate the substrate back into the ground water. This will prevent outfall to any existing watercourses. Drainage ditches will provide temporary storage of run-off from the tracks to allow the fallout of any suspended solids while the collected water soaks away naturally. The size of the channels will be designed according to the areas being drained and augmented as necessary to suit local conditions, but given the limited area they drain it will not be a problem to achieve the necessary residency periods. Only clean washed no fines stone will be used in the track construction to reduce the levels of fines produced.	Probable – Potential significant impacts anticipated	Extremely unlikely - No significant impacts anticipated.

Edw (at least 3km from the designated section), one crosses Nant Bach, a small watercourse that eventually feeds into the Edw and one crosses a small ditch at the point it feeds into the Edw (just west of Pye Corner).		Up slope of the roads, any exposed face of a slope that is created will be stabilized by creating shallow slopes and re-vegetated using an appropriate geotextile mat or grid. This will prevent erosion and incipient failure in the soils at the top of the slope. Additionally surface water cut off ditches will be installed to intercept water above the tracks and to transfer it under the track where it will be allowed to percolate back into the vegetation lower down the slope. Culverts will be installed during dry spells where possible. Existing channels will be dammed upstream of the working area and pumps provided to over-pump any water in them to the channel downstream of the affected area. Water quality will be monitored downstream of the affected area to ensure that there is no deleterious increase in silt or the ingress of contaminants arising from the working method. If sediment levels rise above a pre-determined threshold, work will cease, or the water will be treated, before being discharged back into the watercourse. Given the anticipated efficacy of the proposed mitigation objectives 1 to 6 for the watercourse would not be disadvantaged by sedimentation. Objectives 8 to 15 are not relevant to sedimentation. Objective 7 has not been included as the River Wye lies outside the limits of deviation and no direct effect would occur.		
Operation period				

Apart from maintenance, little activity will take place on the tracks.	As for construction period	Provided the mitigation is maintained the sediment loading should be lower than under existing conditions as mitigation would reduce existing sources of sediment as well as controlling new sources. Given the anticipated efficacy of the proposed mitigation objectives 1 to 6 would not be disadvantaged by sedimentation. Objectives 8 to 15 are not relevant to sedimentation.	Probable – Potential significant impacts anticipated	Extremely unlikely - No significant impacts anticipated.
<u>Decommissioning period</u> The effects will be similar to those during the construction period, however, vehicle numbers will be lower and vehicle weights will be lighter.	As for construction period	The existing mitigation should be acceptable. Given the anticipated efficacy of the proposed mitigation objectives 1 to 6 would not be disadvantaged by sedimentation. Objectives 8 to 15 are not relevant to sedimentation.	Probable – Potential significant impacts anticipated	Extremely unlikely - No significant impacts anticipated.
Causing direct or indirect change to the physical quality of the environment: Flash Flooding				
<u>Construction period</u> Run-off could occur from roads, contractors' compounds and other laydown areas. This effect will be exacerbated as vegetation is replaced by hard surface.	Potential effects include an increased risk of flash flooding. This could damage vegetation (e.g. *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation) and potentially have effects on Otter lie-up areas or holts. Increased area subject to run-off could also exacerbate sediment and pollutant loading in watercourse, with concomitant effects on BOD and water quality. During periods of lower water levels in	Mitigation: Tracks will be designed to run along the contour and ditches are blind, so that dirty surface run-off from the tracks collects in ditches and infiltrates into shale, which is fractured. This will replenish ground water supplies and allow water to enter surface water system.	Probable – Potential significant impacts anticipated	Extremely Unlikely - No significant impacts anticipated

	Afon Gwy (River Wye), there is a decreased ability of the river to dilute pollutants. There is a relatively high risk of this impact occurring prior to mitigation. The effect is reversible however, and avoidable with appropriate mitigation. The effect is likely to take the form of short-term but frequent episodes, coinciding with high rainfall events. Repeated events such as this could lead to cumulative impacts.	The installation of interceptor ditches to collect clean run-off from sub-catchments above the roads, and the ability to regulate the discharge rate and provide buffer storage will prevent excessive flows into the watercourses and slow the speed of water as it moves down slope. This will reduce the risk of flash flooding and the risk of erosion and sedimentation caused by scouring from fast flowing water. Suitable sustainable drainage measures will be incorporated into the design of the substation and compound as mentioned above. These works will ensure that objectives 1, 3 and 5 are not compromised. The remaining objectives are not relevant to river flows.		
<u>Operation period</u> Run-off could occur from roads and substation. Once the tracks are constructed, they will potentially create flow paths irrespective of the intensity of use.	As for construction period but with lesser intensity.	Mitigation installed during construction period will remain in place during the operational period. These works will ensure that objectives 1, 3 and 5 are not compromised. The remaining objectives are not relevant to river flows.	Unlikely – No-significant impacts anticipated	Extremely Unlikely - No significant impacts anticipated
<u>Decommissioning period</u> The effects will be similar, but less intense, to those during the construction period.	As for construction period but with lesser intensity.	Mitigation installed during construction period will remain in place during the operational and decommissioning period.	Probable – Potential significant impacts anticipated	Extremely Unlikely - No significant impacts anticipated

		These works will ensure that objectives 1, 3 and 5 are not compromised. The remaining objectives are not relevant to river flows.		
Causing direct or indirect change to the physical quality of the environment: Invasive species				
<u>Construction period</u> The accidental importation of invasive species on wheels of vehicles could affect habitats. Japanese knotweed and Himalayan balsam are present within the SAC.	Invasive species brought into site on wheels could be transported into the river and affect the habitat through importation of alien species.	Mitigation: Relevant guidance from Defra and NRW will be followed. In particular, all plant and equipment to be used on site will be washed and disinfected before arriving on site to remove all soil. On arrival there will be a visual inspection of the machine to verify it has been cleaned effectively. Any plant or equipment failing the inspection will be returned to the hirer for proper cleaning.	Probable – Potential significant impacts anticipated	Extremely Unlikely - No significant impacts anticipated
<u>Operational period</u> Limited activity, service vehicles using the site will have been used on roads and surfaced tracks, so unlikely to acquire alien species.	None	None necessary	Unlikely – No-significant impacts anticipated	Extremely Unlikely - No significant impacts anticipated
<u>Decommissioning period</u> Similar to construction period.	As for construction period	The same mitigation, if appropriate by that time, as for the construction period will be applied.	Probable – Potential significant	Extremely Unlikely - No significant impacts anticipated

			impacts anticipated	
Causing direct or indirect change to the physical quality of the environment: Run-off of potentially toxic elements				
Causing direct or indirect change to the physical quality of the environment: Concrete residues				
<u>Construction period</u> Contamination caused by spills from concrete batching plant and vehicle wash out areas. This could lead to chemical pollution of water, in particular raising pH levels due to the addition of calcium hydroxide. Potential effects of contamination by concrete are restricted to the construction phase.	This effect would only occur during the construction period. An increase in concrete residue in the water could have detrimental effects on aquatic species (including Otter and Salmon). Increase in pH levels could also have an effect on aquatic vegetation such as the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. There is a relatively high risk of this occurring prior to mitigation. The effect would not be reversible, though is only likely to be short-term. It is also likely to be a one-off incident.	If readymix is brought on to site, vehicles will wash out at their point of origin off-site. If batching carried out on-site, specialist wash out areas will be used and water treated off-site. As the mitigation would be entirely effective, no objectives would be compromised.	Probable – Potential significant impacts anticipated	Extremely unlikely - No significant impacts anticipated
Causing direct or indirect change to the physical quality of the environment: Hydrocarbon pollution.				
<u>Construction period</u>			Probable – Potential significant	Extremely unlikely - No significant impacts anticipated

Oil and diesel associated with machinery used during the construction phase could potentially leak into watercourses and cause chemical contamination. This potential impact is particularly associated with refuelling areas. The impact is confined to the construction and decommissioning phases, when a large volume of machinery will be used.	Contaminants in the watercourse could have serious detrimental impacts on Salmon, Otter and White-clawed Crayfish in particular. Impacts are likely to be one off, but medium term in duration. The effect is largely non-reversible.	Re-fuelling will only take place at a distance of more than 50m from watercourses and spill trays and kits will be used at all times. Appropriate bunding will also be used around fuel storage areas, preventing any fuel leakage from contaminating the capping layer stone or being washed into watercourses. This will reduce the risk of spillages occurring. The protocols to be adopted in the event of a fuel spillage or similar incident within the compound area are contained within the draft construction method statement. The techniques for preventing pollution are commonly applied, well understood and effective. As the mitigation would be entirely effective, no objectives would be compromised.	impacts anticipated	
<u>Operational period</u> Limited activity .	Vehicles will not normally refuel on-site	None necessary	No effect	No effect
<u>Decommissioning period</u> Similar to construction period	As construction period	As construction period	Probable – Potential significant impacts anticipated	Extremely unlikely - No significant impacts anticipated
Disturbance: to protected species				

Construction period Otter breeding or resting sites could be disturbed during construction of culverts. In addition, if these are situated too close to resting places or holts, movement of traffic across bridges or close to watercourses may have disturbance impacts.	Disturbance to Otter during the construction period could potentially have an impact on their conservation status as it could interfere with foraging and therefore affect breeding success. No holts or resting places were recorded during the surveys, although signs of Otter activity were recorded in several locations, with a concentration near the River Edw.	Carry out a pre-construction survey and provide adequate buffers around holts. , Advice will be sought from NRW. Potentially, this could entail an application for a European Protected Species (EPS) licence. Given that the surveys failed to find signs of Otters resting or breeding on site, it is highly unlikely that holts or resting places will be discovered in the pre-construction survey, as the habitat on the on-site watercourses is sub-optimal. However, if the pre-construction survey did discover Otter holts or resting places within 200m, infrastructure micro-siting would take place. Lighting may be deployed at the turbine bases and construction compound in the winter months between 07:30 and 08:30 and 15:30 to 19:00. However, all locations where lighting may be deployed are over 200m from a channel where Otters have been recorded. At this distance lighting can be designed to ensure light spill does not reach the part of the sites that Otter utilise. To control light spill near the compound specialist lighting design will be used, supplemented if necessary by fencing to control light spillage. Otters tend to forage at night or early morning, while site working hours would be 07:30 to 19:00 on weekdays and 08:00 to 13:00 on Saturdays. As the site is used for foraging, there would be little	Unlikely – No-significant impacts anticipated	Extremely unlikely - No significant impacts anticipated

		Otter presence during the working hours and therefore there would be little or no disturbance. The mitigation measures proposed will ensure that none of the objectives for Otter are compromised.		
Operational period	The absence of any significant human activity during this period (coupled with the absence of any breeding sites) means that there will be no disturbance during this period.	None necessary	Unlikely – No-significant impacts anticipated	Extremely unlikely - No significant impacts anticipated
Decommissioning period	Effects will be similar to the construction period effects, but for shorter duration. Traffic volumes will be lower and the activity will be dispersed around the site.	As per construction period	Unlikely – No-significant impacts anticipated	Extremely unlikely - No significant impacts anticipated
Causing damage to the coherence of the site: Barriers to movement.				
All periods	The installation of new culverts, settlement ponds and river crossings could impact on Objective 8.	All new culverts, crossings and settlement ponds will be constructed in line with the stipulations outlined above. In particular, culverts will be installed during dry spells where possible. Existing channels will be dammed upstream of the working area and pumps provided to over-pump any water in them to the channel downstream of	Unlikely – No-significant impacts anticipated as there is no evidence that any of the	Extremely unlikely - No significant impacts

		the affected area. Water quality will be monitored downstream of the affected area to ensure that there is no deleterious increase in silt or the ingress of contaminants arising from the working method. If sediment levels rise above a pre-determined threshold, work will cease, or the water will be treated, before being discharged back into the watercourse.	species (apart from Otter) occur on-site.	
Disturbance: Fish				
<u>Construction period</u> Fish, including Salmon and also White-clawed Crayfish could be disturbed during construction works through light and noise.	Disturbance could affect spawning/breeding. No night time working is planned and work sites which require lighting will be at a considerable distance (at least 2km) from the SAC. Therefore there would be little or no disturbance.		Extremely unlikely - No significant impacts anticipated	Extremely unlikely - No significant impacts anticipated
<u>Operational period</u> Limited activity.	No effect	None necessary	No effect	No effect
<u>Decommissioning period</u> Effects will be similar to the construction period effects, but for shorter duration and intensity.	As for construction phase but with a shorter duration and lower intensity.	No night time working and distance from water bodies	Extremely unlikely - No significant impacts anticipated	Extremely unlikely - No significant impacts anticipated

Note: Assessment of Confidence Level adheres to IEEM Guidelines (IEEM 2006), hence:

- Certain/near-Certain: probability estimated at 95% chance or higher.
- Probable: probability estimated above 50% but below 95%.
- Unlikely: probability estimated above 5% but less than 50%.
- Extremely Unlikely: probability estimated at less than 5%.

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7 Appraisal of Other Plans or Projects likely to have Significant Effect in Combination with the Proposed Development

There are no large proposed schemes within 15km of the proposed site at Hendy (Appendix 1). There are also no other existing large wind farms within 15km of the proposed site (Appendix 1).

The distance of the other existing and proposed wind sites from the proposed Hendy site means that there can be no possibility of cumulative impacts.

7.1 Proximity of River Wye to Development

The development, at its closest point, is 1.3km from the nearest point of the River Edw that is designated as part of the River Wye SAC. The nearest point of the development is taken to be an existing access track to an existing quarry, south of the main development. The nearest point from proposed infrastructure to the River Edw is 1.9km. This is from a proposed substation in the south of the development (see Figure 1).

8 Conclusion

Following the assessment of the effect of the Hendy Wind Farm project on the River Wye SAC, it is possible to conclude beyond reasonable scientific doubt that there would be No Likely Significant Effect on this European site, either alone or in combination with other projects and plans. The assessment has concluded that there would be no effect on the integrity of the River Wye SAC in view of its conservation objectives.

Furthermore, it can be determined from this conclusion that an Appropriate Assessment is not required.

9 References

CCW, (2008). Core Management Plan (Including Conservation Objectives) for Afon Gwy (River Wye) Special Area of Conservation.

CCW, (no date). River Wye (Upper Wye) Site of Special Scientific Interest: Your Special Site and its Future.

Chanin, P. (2003). Monitoring the Otter. English Nature.

IEEM, (2006). Guidelines for Ecological Impact Assessment in the United Kingdom.

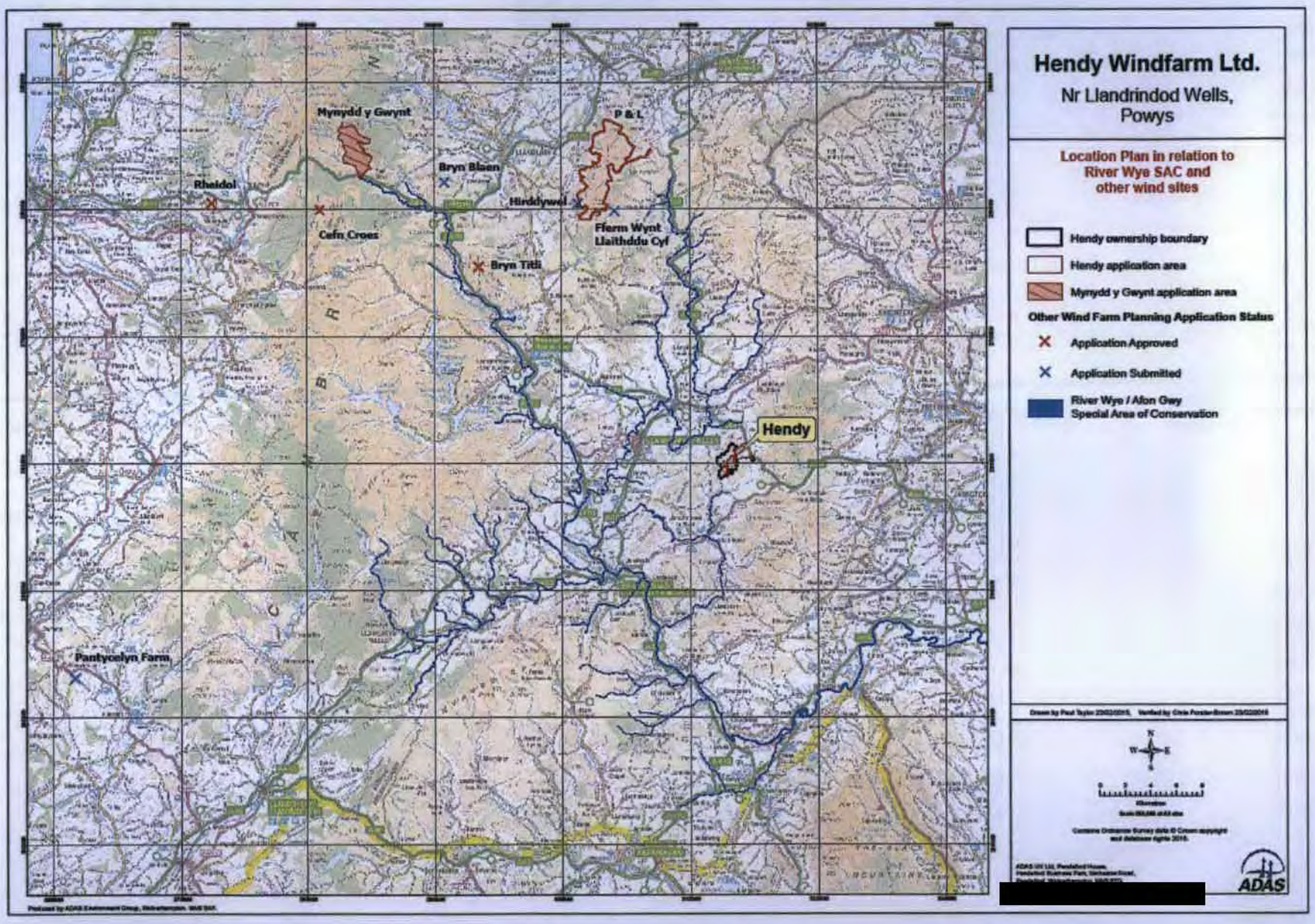
European Commission (2001) *Assessment of plans and projects significantly affecting Natura 2000 sites.*

http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf

Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom.*

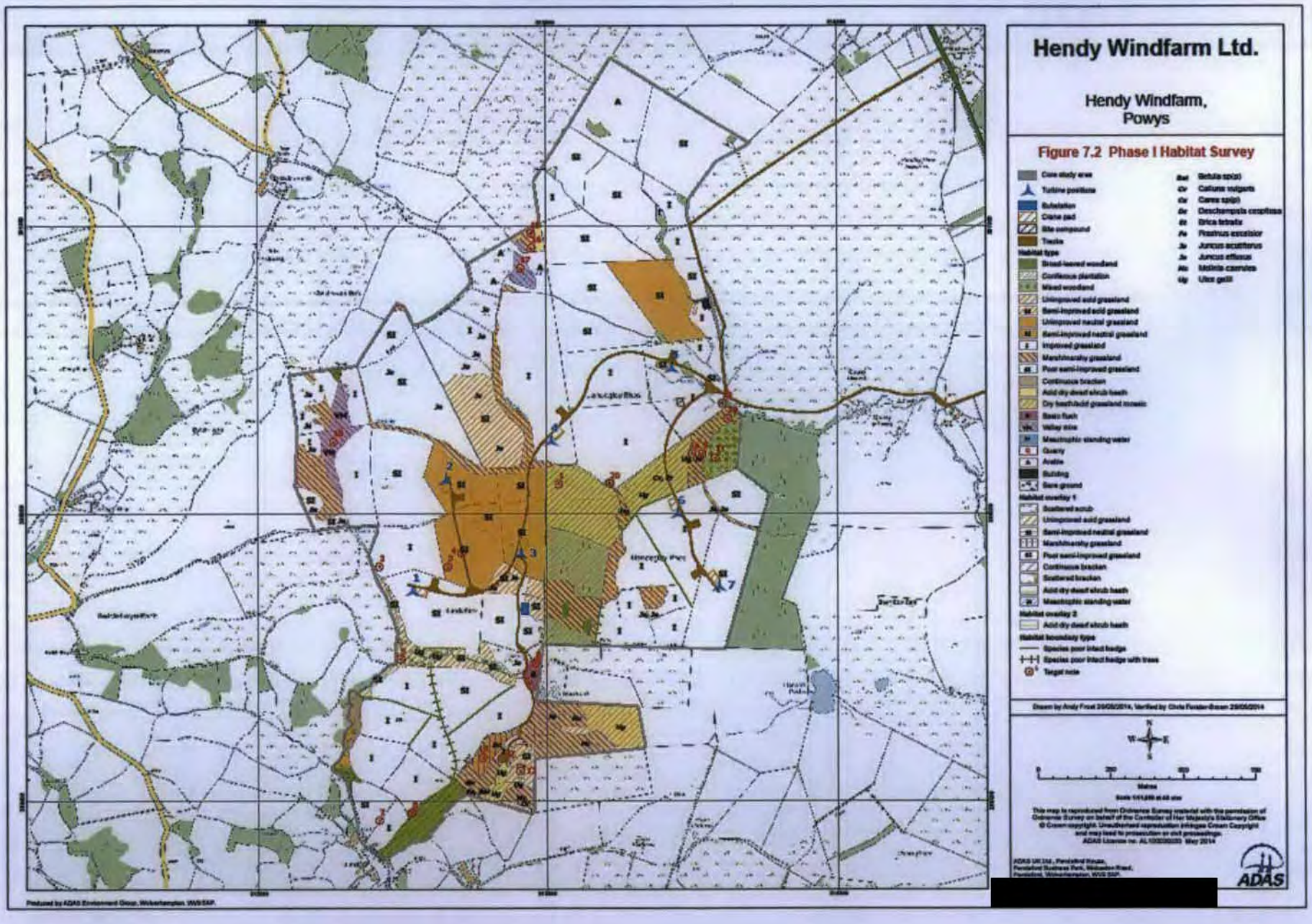
Appendix 1 – Plan showing the location of the proposed Hendy Wind Farm development area, the River Wye SAC and other proposed, consented and operational wind farms within 20km

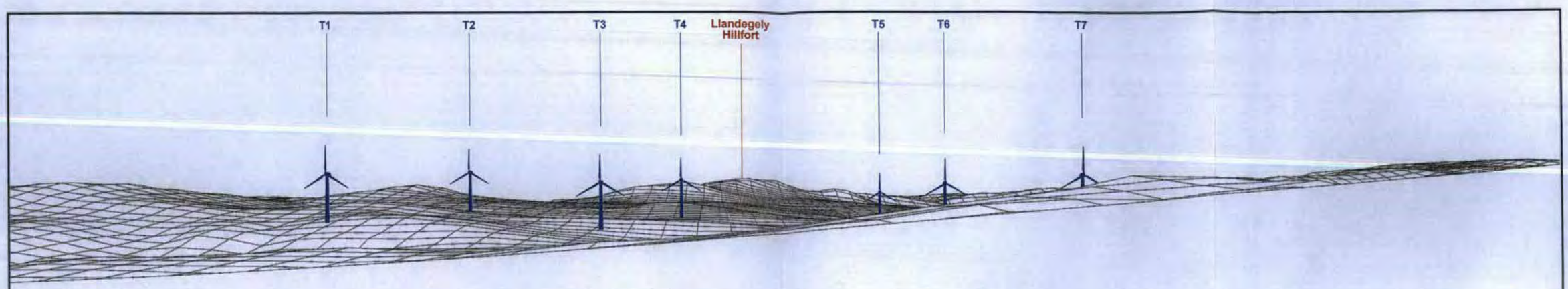
See following page.


Hendy Windfarm Ltd.
Nr Llandrindod Wells, Powys
Location Plan in relation to River Wye SAC and other wind sites
Hendy ownership boundary
Hendy application area
Mynydd y Gwynt application area
Other Wind Farm Planning Application Status
Application Approved
Application Submitted
River Wye / Afon Gwy Special Area of Conservation
Mynydd y Gwynt
P & L
Bryn Blaen
Rheidol
Hirddywel
Cefn Croes
Fferm Wynt Llaithddu Cyf
Bryn Titli
Hendy
Pantycelyn Farm
ADAS

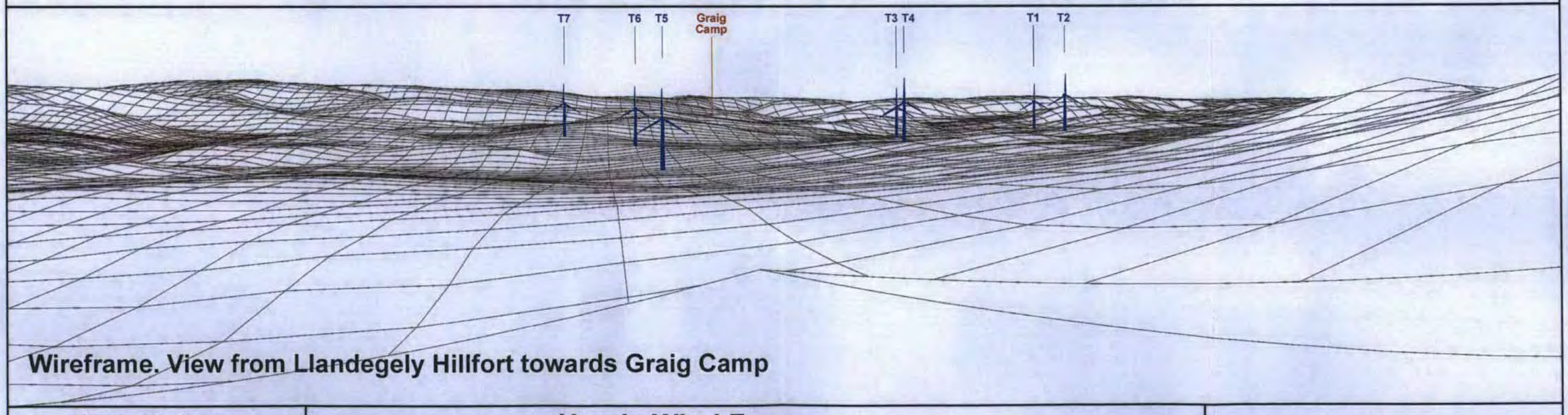
Appendix 2 – Plan showing the proposed Hendy Wind Farm development site layout

See following page.


Hendy Windfarm Ltd.
Hendy Windfarm,
Powys
Figure 7.2 Phase I Habitat Survey
Core study area
Turbine position
Substation
Crane pad
Site compound
Tracks
Habitat type
Broad-leaved woodland
Coniferous plantation
Mixed woodland
Unimproved acid grassland
Semi-improved acid grassland
Unimproved neutral grassland
Semi-improved neutral grassland
Improved grassland
Marshy/marshy grassland
Poor semi-improved grassland
Continuous bracken
Acid dry dwarf shrub heath
Dry heath/acid grassland mosaic
Basic flush
Valley mire
Mesotrophic standing water
Quarry
Arable
Building
Bare ground
Habitat overlay 1
Scattered scrub
Unimproved acid grassland
Semi-improved neutral grassland
Marshy/marshy grassland
Poor semi-improved grassland
Continuous bracken
Scattered bracken
Acid dry dwarf shrub heath
Mesotrophic standing water
Habitat overlay 2
Acid dry dwarf shrub heath
Habitat boundary type
Species poor intact hedge
Species poor intact hedge with trees
Target note
Betula spp.
Calluna vulgaris
Carex spp.
Deschampsia cespitosa
Erica tetralix
Fraxinus excelsior
Juncus acutiflorus
Juncus effusus
Molinia caerulea
Ulex gallii
Drawn by Andy Frost 29/05/2014, Verified by Chris Fowler-Brown 29/05/2014
Metres
ADAS



Wireframe. View from Graig Camp towards Llandegeley Hillfort



Wireframe. View from Llandegely Hillfort towards Graig Camp

Figure Wireframes

Viewpoint Top: Graig Camp
Viewpoint Bottom: Llandegely Hillfort

Hendy Wind Farm

Analysis Information Graig Camp

Viewpoint easting:	313071
Viewpoint northing:	258435
Viewpoint height:	346m AOD
Viewing Height:	2m
Included angle:	90.00°
Direction:	4.29°
Nearest tubine:	T1
Distance to turbine:	1406m

Analysis Information Llandegely Hillfort

Viewpoint easting:	313505
Viewpoint northing:	361832
Viewpoint height:	394m AOD
Viewing Height:	2m
Included angle:	90.00°
Direction:	190.3°
Nearest tubine:	T5
Distance to turbine:	1325m

The wireframes were calculated using a turbine with a hub height of 69m and a rotor diameter of 82m.
The calculation of visibility was performed using the OS Land Form Profile data.

The correct viewing distance for the 90° included angle is approximately:
76.07cm @ A0
50.65cm @ A1
34.91cm @ A2
23.78cm @ A3
Please note this layout should be viewed at a minimum of A3 size with the appropriate viewing distance listed to show a realistic representation.

Drawn by Andy Frost 19/03/2015, Verified by Steven Radford 19/03/2015

ADAS UK LTD.
Pendeford House
Pendeford Business Park,
Wobaston Road, Pendeford
Wolverhampton, WV9 5AP
[redacted]

ADAS

Our Ref: A078181/ L05 Hendy TMP

Your Ref: P/2015/0672

Date: 12th January 2015

Stuart Vendy
Cunnane Town Planning
PO Box 305
Manchester
M21 3BQ

Dear Stuart

Land off A44 SW of Llandegley Llandrindod Wells Powys

Construct and operate 7 wind turbines with a maximum tip height of 110m and maximum hub height of 69m together with ancilliary development comprising substation, control building, new and upgraded access points and tracks, hardstanding and temporary compound and associated works

We refer to the Welsh Government and Powys Highways consultation responses of 13 August 2014 and 21st August 2014 respectively regarding the above application and I trust that the information provided below and within the accompanying revised Traffic Management Plan addresses the points that have been raised. We have set out the consultation comments and provided a response (in italics) below. The points raised by the two statutory consultees match with other general comments as well.

Welsh Government

1. Within the ES, it has been indicated in 13.8.2 that the movement of Abnormal Indivisible Loads (AILs) would 'potentially' include a Police escort. In addition, the Traffic Management Plan (TMP) describes that the route and movement will also have a Police escort. The Welsh Government and the Police would require the proposed AILs to be escorted and the required TTRO(s) to be in place in advance of any proposed movements.
   This point is noted. It is accepted that the AILs will require a Police escort in addition to civilian escorts and that the required TTRO(s) would need to be in place prior to any proposed movements.

39 George Street, Edinburgh. EH2 2HN
[redacted]

2. Section 3 of the TMP focuses on the sTMP and the movements of AILs. Reference is made to the use of the proposed Newtown Bypass if completed by the time of their deliveries or alternatively use of the proposed Mochdre Link. The document refers to the developer consortium proposing to construct the link. Further information is required detailing if the applicant is part of the consortium. If not, what guarantees do they have that it will be put in place?
We can advise that Njord Wind have joined the RUK Cymru consortium and have had discussions with contributing to the project with Ruari Lean and RUK Cymru officers.

3. If the applicant is a partner they are assuming that all wind farm proposals south of Newtown will be given consent and that the link will be in place when they need it. What proposals does the applicant have if the proposed routes (i.e. sTMP and / or Newtown Bypass are not available or in place?
It is accepted by the applicant that this application is based on the sTMP and that access through Newtown is dependent upon either the Newtown Bypass or Mochdre Link being in place. Given recent discussions with the Welsh Government, it is clear that the bypass option is progressing well and is expected to be delivered by WG officers.

4. Section 4 of the TMP includes details for hold points. This information has been produced using an OS background and in order to accurately assess the viability of these proposals the applicant would need to submit detailed proposals based on a topographical survey at a scale not exceeding 1:500?
Hold point layouts have been provided on OS Base in line with many areas included within the approved sTMP. Drawings on topographical survey bases would be submitted as part of the detailed design process should the site receive planning consent.

5. Section 5 of the TMP identified a number of proposed signs that will advise the travelling public of wind farm deliveries. The design and proposed location will need to be agreed / approved by the Highway Authority.
This point is noted. It is accepted that the design and proposed location of the signs will need to be agreed / approved by the Highway Authorities. It is considered that this is a detailed issue that would be appropriately dealt with as part of the detailed design process should the site receive planning consent.

6. At the end of the TMP there are various swept path drawings. These identify turning movements on a number of junctions south of Crossgates. These drawings imply that the AILs journey is from

the south, whilst the text states that the route is from the north. Clarification is required about the actual route proposed for the AILs.

It is intended that AILs would approach the site from the north. The revised TMP which accompanies this letter includes swept path drawings that consider the constraint points between the end of the sTMP at Llanbadarn Fynydd. South of Llanbadarn Fyndd, no points of constraint that would require engineering mitigation works were identified on the A483 until its junction with the A44 at Crossgates.

7. If the proposed route is from the north, swept path drawing(s) will need to be provided for the bends along the A483 south of Newtown that will need to be negotiated by the proposed AIL convoys. Currently the application does not include, (within red line boundary), any additional land that may be required to manoeuvre these tight bends. Therefore the applicant must be able to demonstrate that the above manoeuvre is possible without any additional land being required under their control or ownership or it must be include within their application.

   The sTMP includes swept path assessments for all identified points of constraint on the A483 between Newtown and the end of the sTMP at Llanbadarn Fynydd and identifies any required mitigation works. No further constraint points at which mitigation is required have been identified from the southern end of the sTMP and the junction of the A483 with the A44.

8. All drawings including those already supplied (if relevant to the proposed route), will need to be submitted based on a topographical survey at a scale not exceeding 1:500.

   In line with many of the less critical details included within the approved sTMP, swept path assessment drawings for Crossgates Roundabout have been provided on an OS Base. Drawings relating to the more critical constraints at the A44 railway bridge in Crossgates and the site access are provided at 1:250 and 1:500 scale respectively on topographical survey base. Drawings on topographical survey base for Crossgates Roundabout would be submitted as part of the detailed design process should the site receive planning consent.

   Given the experience of the Mid Wales Conjoined Wind Farm Inquiry, it is considered that any remaining issues relating to the AIL movements on the trunk road network can be adequately covered by appropriate planning condition.

Powys Highways

1. The proposed access route to the site from the SSA C includes a section of the A44 just east of Crossgates where a railway bridge crosses the highway with just 4.4m height clearance. The

submission clearly indicates AILs of heights equal to or greater than this and we therefore do not consider this route to be feasible. Other companies have already dismissed this route as unworkable and sought alternatives.

As part of the route review for the site, a topographic survey of the A44 Crossgates railway bridge was undertaken. This indicated that while the bridge is designated as having a clearance of 4.4m, the minimum height clearance is in fact 4.64m.

Table 2.3 of the revised TMP indicates that all loaded vehicles carrying AIL components would be below this minimum clearance under normal running conditions and could be reduced further in height through lowering of suspension.

A vertical assessment of the clearances of the proposed Repower (Senvion) MM82 loads (assuming that for some loads, the vehicle suspension will be lowered) was completed using the 'worst-case' height components. This is included in Table 4.3 of the revised TMP and indicates that the minimum clearance between loaded vehicles and the lowest point of the bridge would be 248mm. Such clearances are considered adequate.

2. The TMP includes swept path diagrams identifying manoeuvres through junctions south of Crossgates which therefore do not tally with the access route detailed through the documentation.
   It is intended that AILs would approach the route from the north. The revised TMP which accompanies this letter includes swept path drawings that consider the constraint points between the end of the sTMP at Llanbadarn Fynydd. South of Llanbadarn Fyndd, no points of constraint that would require engineering mitigation works were identified on the A483 until its junction with the A44 at Crossgates.

3. The holding points detailed in Section 4 of the TMP have been produced based on Ordnance Survey background data and in order to accurately assess the viability of the proposals the details should be resubmitted based on topographical surveys at scales not exceeding 1 in 500.
   In line with many already agreed areas within the approved sTMP, holding point drawings have been provided on an OS Base. Drawings on topographical survey base would be submitted as part of the detailed design process should the site receive planning consent.

4. The access arrangements to the site seem to be unnecessarily complicated. It is far from clear why a second access is required when any vehicle travelling from the east would have already passed two alternative access points to the site.

An explanation of why a two point access was developed and how it is intended to operate was included within the Transport Assessment accompanying the application. Further details are set out below.

The existing access at U1574 Pye Corner was discounted for use due to leftwards visibility constraints for exiting vehicles caused by a crest in the road to the north of the junction and forward visibility constraints for vehicles turning right into the site.

The new southern access could provide for all construction vehicles approaching from the south [east] to turn left into the site and for all vehicles to turn left out of the site. Vehicles travelling from the south [east] could therefore enter the site at the first available opportunity. The link connecting the access to the U1574 would operate as two-way at either end but one way with a passing place in its central section.

Right turns into the site from the north [west] would not be permitted at the southern access due to forward visibility constraints. The junction would be engineered through central coloured surfacing, white lining and reflective bollards on the A44 to prevent right turns in (which would effectively also prevent right turns out). Abnormal Indivisible Loads, which would approach from the north [west] under civilian escort and police control, would be permitted to turn right at the junction; requiring the temporary removal of the central bollards.

The second (northern) access would use an existing lane off the A44 to the north of Pye Corner which would be modified to permit all inbound movements by general construction traffic. The access would be used by inbound vehicles only; the access track leading from the junction to the site will operate as one way only and no egress will be permitted onto the A44. It is anticipated that the majority of vehicles using the access would be those approaching the site from the north [west].

5. Full engineering drawings and the appropriate safety audit is required for the proposed new access point detailing access visibility, forward and tangential visibility and additional information regarding the specification of the central barrier.
   This information would be submitted as part of the detailed design process should the site receive planning consent.

6. Full engineering details are required of the proposed works to the A1574 between the new access link track and the property known as Pye Corner.
   This information would be submitted as part of the detailed design process should the site receive planning consent.

7. Copies of the traffic count print outs should be provided so that the Highways Authority can check the figures tabulated within the document.
   Printouts of the average weekday traffic counts for each site are appended to this letter.

8. Clarification of how speed limits and travel direction will be realistically enforced is requested. I consider the distance vehicles exiting left from the site will have to travel totally unrealistic and believe other road junctions will be utilised of this manoeuvre if such an arrangement is pursued.
   The left turn out of the site access for all vehicles would be enforced through the engineering measures proposed on the A44 (coloured surfacing, white lining and bollards). As is standard practice for construction sites, Speed limits and routing would be enforced through the Construction Traffic Management Plan which would be developed and agreed with the highways authorities and Police should the site receive planning consent.

   Control of contractor vehicles would also be set out in the Balance of Plant contracts to ensure absolute accordance to the agreed strategies as is the norm in such construction projects.

9. It should be assumed that the Highways Authority will require an appropriate agreement and bond relating to abnormal wear and tear to the highway network, specifically covering the entire costs in relation to the U1574.
   This is noted and accepted.

10. All drawings which relate to the access route to the site, including those already supplied will need to be submitted based on topographical surveys at a scale not exceeding 1 in 500.
    This information would be submitted as part of the detailed design process should the site receive planning consent.

I hope the above and enclosed provide sufficient clarification of the various points raised by the Welsh Government and Powys Highways. Please do not hesitate to contact me should you have any further queries.

Yours Sincerely

Gordon Buchan
Director

Sky High-Count On Us

Job Number	SC1569
Client:	SBA
Project:	A44, Handy Wind Farm, Wales
Location:	West of Crossgates, Wales
Site No.	2
Road	A44
Day	Weekday A\
Direction	Eastbound Westbound

Vehicle Class Summary

M'Cycle & P'Cycle	0%
Cars	86%
LGV	11%
OGV1 & PSV	1%
OGV2	2%

	Eastbound						Westbound						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
00:00	0	2	0	0	1	3	0	3	0	0	0	3	0	5	0	0	1	5
01:00	0	1	0	0	0	1	0	2	0	0	0	2	0	3	0	0	0	3
02:00	0	0	1	0	0	1	0	1	1	0	0	2	0	1	1	0	1	3
03:00	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1
04:00	0	3	0	0	0	3	0	1	0	0	1	2	0	3	0	0	1	5
05:00	0	5	0	0	1	7	0	2	1	0	2	5	0	7	1	0	3	11
06:00	0	21	2	0	1	24	0	10	3	1	1	15	0	31	5	1	2	39
07:00	0	56	7	1	2	66	0	41	13	1	1	57	0	97	21	2	3	122
08:00	0	106	10	1	1	119	0	71	18	1	1	91	1	177	27	2	3	210
09:00	0	83	6	1	2	92	0	58	11	1	2	72	1	142	17	2	3	164
10:00	0	82	9	0	2	94	1	69	15	2	2	88	1	151	24	2	4	182
11:00	0	69	12	1	1	83	0	67	12	0	2	82	0	135	25	2	3	165
12:00	1	72	10	1	2	85	1	76	13	1	2	94	2	148	24	1	3	178
13:00	0	76	9	1	2	87	1	74	8	2	1	87	1	150	17	3	3	173
14:00	1	76	8	3	1	89	0	76	9	1	3	88	1	151	17	4	4	177
15:00	0	79	14	2	1	97	1	102	10	2	2	116	1	181	24	4	3	213
16:00	0	80	9	1	1	92	1	102	10	0	2	116	1	182	19	2	4	207
17:00	0	81	4	0	1	87	0	99	10	0	2	111	0	180	14	0	3	197
18:00	0	50	4	0	0	55	0	64	4	0	1	69	0	114	8	1	1	124
19:00	0	32	1	0	0	33	0	36	3	0	0	39	0	68	4	0	0	72
20:00	0	18	0	0	0	18	0	28	1	0	0	29	0	46	1	0	0	47
21:00	0	19	0	0	0	19	0	21	2	0	0	24	0	40	2	0	0	43
22:00	0	11	0	0	0	11	0	17	1	0	0	18	0	28	1	0	0	29
23:00	0	6	0	0	1	7	0	9	0	0	0	9	0	15	0	0	1	16
Total	3	1028	107	14	21	1173	5	1028	146	12	25	1217	9	2056	253	26	47	2390

Sky High-Count On Us

Job Number	SC1569
Client:	SBA
Project:	A44, Hendy Wind Farm, Wales
Location:	East of Pennybont, Wales
Site No.	5
Road	A44
Day	Weekday A\
Direction	Eastbound Westbound

Vehicle Class Summary

M'Cycle & P'Cycle	0%
Cars	84%
LGV	11%
OGV1 & PSV	1%
OGV2	3%

	Eastbound						Westbound						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
00:00	0	1	0	0	2	3	0	2	0	0	0	2	0	3	0	0	2	5
01:00	0	1	0	0	0	1	0	2	1	0	0	3	0	3	1	0	1	5
02:00	0	0	0	0	1	1	0	2	0	0	1	3	0	2	0	0	2	4
03:00	0	2	0	0	1	3	0	1	1	0	1	2	0	3	1	0	2	5
04:00	0	4	1	0	1	6	0	1	0	0	2	3	0	5	1	0	3	9
05:00	0	7	1	0	4	12	0	1	1	1	2	4	0	8	2	1	5	16
06:00	0	22	6	0	2	30	0	9	2	1	2	13	0	31	8	1	4	44
07:00	0	52	8	1	4	65	0	25	6	1	1	33	0	78	14	2	5	98
08:00	0	60	11	1	2	74	0	90	11	1	2	105	0	150	22	2	4	179
09:00	0	72	8	1	2	83	0	56	7	2	1	66	0	129	15	3	4	150
10:00	0	71	9	1	4	85	0	56	10	2	2	70	0	128	19	3	5	155
11:00	0	65	9	3	1	78	0	50	9	1	2	63	0	115	18	4	3	141
12:00	0	64	10	2	3	80	0	53	10	1	1	65	0	117	20	3	4	145
13:00	0	66	8	2	2	77	0	61	9	2	2	74	0	127	17	4	4	152
14:00	0	65	12	1	3	81	0	67	9	1	3	81	0	132	22	2	6	162
15:00	0	62	9	2	3	76	0	71	5	1	3	81	1	134	14	3	6	157
16:00	0	78	7	1	1	87	0	82	7	0	1	91	0	160	15	2	2	178
17:00	0	66	5	0	0	72	0	88	10	1	1	99	0	153	15	1	2	171
18:00	0	41	3	0	0	44	0	57	4	0	1	62	0	97	7	0	1	105
19:00	0	25	3	0	1	29	0	34	1	0	0	35	0	59	4	0	1	63
20:00	0	11	1	0	0	12	0	21	1	0	0	23	0	32	2	0	0	35
21:00	0	15	0	0	0	15	0	16	2	0	0	17	0	30	2	0	0	32
22:00	0	8	0	0	0	8	0	14	1	0	0	15	0	22	1	0	0	23
23:00	0	4	1	0	1	6	0	7	0	0	0	7	0	11	1	0	2	13
Total	1	863	112	15	39	1030	2	864	108	15	28	1017	3	1726	220	30	67	2047

Sky High-Count On Us

Job Number	SC1569
Client:	SBA
Project:	A44, Hendy Wind Farm, Wales
Location:	North of A481 Near Llanllhangel, Wal
Site No.	6
Road	A44
Day	Weekday A\
Direction	Northbound Southbound

Vehicle Class Summary

M'Cycle & P'Cycle	0%
Cars	83%
LGV	10%
OGV1 & PSV	3%
OGV2	4%

	Northbound						Southbound						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
00:00	0	2	0	0	0	2	0	1	0	0	2	3	0	3	0	0	2	5
01:00	0	1	1	0	1	3	0	1	0	0	0	2	0	3	1	0	1	5
02:00	0	1	0	0	1	3	0	0	0	0	1	1	0	1	0	0	2	4
03:00	0	0	0	0	1	2	0	3	0	0	0	4	0	3	0	0	1	5
04:00	0	0	0	0	2	2	0	6	0	0	0	6	0	6	0	0	2	8
05:00	0	0	1	1	2	4	0	10	1	1	4	15	0	10	2	2	6	19
06:00	0	6	2	1	2	11	0	25	3	2	1	31	0	31	5	2	4	42
07:00	0	20	6	0	1	28	0	47	4	2	3	56	0	67	10	2	4	83
08:00	0	68	10	1	1	80	0	54	5	3	2	66	0	122	15	4	4	146
09:00	0	40	8	2	1	51	0	62	6	3	1	72	0	101	14	5	3	123
10:00	0	37	9	1	2	49	0	62	6	3	4	74	0	99	15	4	5	123
11:00	0	35	9	1	2	48	0	56	5	4	1	66	0	91	14	5	3	113
12:00	0	37	9	2	2	49	0	53	6	4	2	65	0	90	15	6	4	115
13:00	0	45	8	2	3	57	0	54	5	2	1	63	0	99	13	3	5	120
14:00	0	48	9	1	3	61	0	48	8	3	2	62	0	97	17	4	6	123
15:00	0	56	5	1	2	65	0	52	7	3	2	64	1	108	12	4	4	129
16:00	0	72	9	0	1	83	0	60	4	4	1	69	1	132	13	5	2	152
17:00	0	77	10	0	1	88	0	53	4	4	0	62	0	131	14	4	1	150
18:00	0	42	4	0	1	47	0	35	3	1	0	38	0	77	7	1	1	86
19:00	0	27	2	0	0	29	0	19	1	0	0	21	0	46	3	0	0	50
20:00	0	17	1	0	0	19	0	9	0	0	0	10	0	26	1	0	1	29
21:00	0	15	1	0	0	17	0	10	0	0	0	11	0	25	2	0	0	27
22:00	0	13	1	0	0	14	0	4	0	0	0	4	0	17	1	0	0	18
23:00	0	6	0	0	0	6	0	5	0	0	1	6	0	11	0	0	1	13
Total	2	668	107	12	30	819	2	729	69	39	31	870	3	1398	176	51	61	1689

Sky High-Count On Us

Job Number	SC1569
Client:	SBA
Project:	A44, Hendy Wind Farm, Wales
Location:	South of A44 Near Llanfihangel, Wale
Site No.	7
Road	A841
Day	Weekday A\
Direction	Northbound Southbound

Vehicle Class Summary

M'Cycle & P'Cycle	0%
Cars	82%
LGV	11%
OGV1 & PSV	2%
OGV2	4%

	Northbound						Southbound						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
00:00	0	1	0	0	0	1	0	1	0	0	0	1	0	2	0	0	0	2
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
05:00	0	3	0	0	0	3	0	1	1	0	1	3	0	4	1	0	1	7
06:00	0	8	1	0	0	9	0	2	2	0	1	5	0	10	3	0	1	15
07:00	0	14	3	0	1	19	0	8	1	0	1	10	0	23	4	1	2	29
08:00	0	23	2	0	1	27	0	19	2	1	1	22	0	42	4	1	2	49
09:00	0	17	2	1	1	21	0	12	2	1	1	17	0	29	5	2	2	38
10:00	0	21	4	1	1	26	0	12	3	1	1	17	0	33	6	2	2	43
11:00	0	16	3	1	1	21	0	17	2	1	1	21	0	32	5	2	3	42
12:00	0	16	3	1	1	21	0	16	2	0	0	18	0	32	5	1	1	39
13:00	0	15	1	1	0	17	0	17	3	0	1	22	0	32	5	1	1	39
14:00	0	15	4	0	1	20	0	21	2	1	1	24	0	35	5	1	2	44
15:00	0	19	4	0	2	25	0	22	3	1	0	26	0	41	7	1	2	51
16:00	1	18	2	0	0	21	0	23	2	0	1	27	1	41	4	1	1	47
17:00	0	17	3	0	0	20	0	28	2	0	1	31	0	45	5	0	1	51
18:00	0	7	2	0	2	10	0	17	0	0	0	18	0	24	2	0	2	28
19:00	0	7	0	0	1	8	0	11	1	0	0	11	0	18	1	0	1	19
20:00	0	3	1	0	0	4	0	7	0	0	0	7	0	10	1	0	0	11
21:00	0	5	0	0	0	5	0	8	0	0	0	9	0	13	0	0	0	14
22:00	0	4	0	0	0	4	0	3	0	0	0	3	0	7	0	0	0	7
23:00	0	1	0	0	0	2	0	1	0	0	0	1	0	2	1	0	0	3
Total	2	229	35	6	14	285	0	247	29	7	12	295	2	476	64	13	26	580

Sky High-Count On Us

Job Number	SC1569
Client:	SSA
Project:	A44, Hendy Wind Farm, Wales
Location:	North of Pennybont, Wales
Site No.	4
Road	A488
Day	Weekday Av
Direction	Northbound Southbound

Vehicle Class Summary

M'Cycle & P'Cycle	1%
Cars	89%
LGV	8%
OGV1 & PSV	2%
OGV2	1%

	Northbound						Southbound						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
00:00	0	2	0	0	0	2	0	1	0	0	0	1	0	3	0	0	0	3
01:00	0	0	0	0	0	1	0	2	0	0	0	2	0	2	1	0	0	3
02:00	0	1	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2
03:00	0	0	0	0	0	1	0	2	0	0	0	3	0	3	1	0	0	4
04:00	0	3	0	0	0	3	0	1	0	0	0	2	0	4	0	0	0	5
05:00	0	4	1	0	0	5	0	2	2	0	0	4	0	6	3	0	0	9
06:00	0	14	4	0	1	18	0	13	2	0	1	16	0	27	6	0	1	34
07:00	0	36	7	1	0	44	0	35	7	1	0	43	0	71	14	2	1	87
08:00	0	49	7	1	1	58	1	91	8	2	1	104	1	140	15	3	2	162
09:00	0	43	6	0	1	50	0	67	4	1	0	72	0	110	9	1	1	122
10:00	0	47	6	0	0	53	0	57	5	2	0	63	0	104	11	2	1	117
11:00	0	54	5	1	0	60	0	55	5	2	0	62	0	108	10	3	1	122
12:00	1	47	6	1	1	55	0	45	5	2	0	53	1	92	11	3	1	108
13:00	0	48	6	1	1	56	0	55	4	1	1	61	1	103	10	2	1	118
14:00	1	47	6	1	1	55	0	50	6	1	0	58	1	97	13	2	1	113
15:00	1	62	10	0	0	73	0	64	2	2	1	69	1	126	12	2	1	142
16:00	1	87	2	1	1	92	1	64	3	2	1	71	2	151	5	3	1	163
17:00	0	84	4	1	0	89	0	61	5	1	1	67	0	145	8	2	1	156
18:00	0	40	3	1	0	43	1	45	1	1	0	49	1	85	4	2	0	92
19:00	0	19	0	0	1	20	0	25	0	0	0	26	0	44	1	0	1	46
20:00	0	16	0	0	0	16	0	16	1	0	0	17	0	32	1	0	0	34
21:00	0	11	0	0	0	12	0	12	0	0	0	12	0	23	0	0	0	23
22:00	0	9	0	0	0	9	0	9	0	0	0	9	0	18	0	0	0	18
23:00	0	6	0	0	0	6	0	3	0	0	0	3	0	8	0	0	0	9
Total	4	729	74	8	9	824	5	773	61	20	6	866	9	1503	135	28	15	1690

Sky High-Count On Us

Job Number	SC1569
Client:	SBA
Project:	A44, Hendy Wind Farm, Wales
Location:	North of Crossgates, Wales
Site No.	1
Road	A483
Day	Weekday Av
Direction	Northbound Southbound

Vehicle Class Summary

M'Cycle & P'Cycle	0%
Cars	87%
LGV	9%
OGV1 & PSV	2%
OGV2	1%

	Northbound						Southbound						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
00:00	0	4	0	0	0	4	0	3	0	0	0	3	0	7	1	0	0	8
01:00	0	2	0	0	0	2	0	1	0	0	0	1	0	3	0	0	0	4
02:00	0	2	0	0	0	3	0	2	0	0	0	2	0	4	0	0	1	5
03:00	0	2	1	0	0	3	0	0	1	0	0	1	0	3	2	0	0	4
04:00	0	1	1	0	0	2	0	4	2	0	1	6	0	4	2	0	1	8
05:00	0	9	1	0	0	10	0	8	4	0	1	13	0	17	4	0	1	23
06:00	0	23	2	1	1	26	0	35	8	1	2	46	0	57	10	2	2	72
07:00	0	72	8	2	1	84	0	87	16	1	3	107	0	159	24	3	4	191
08:00	0	102	12	4	1	120	0	162	18	2	2	184	0	263	31	6	4	304
09:00	0	100	9	3	2	114	0	147	15	1	3	166	1	247	24	4	5	280
10:00	0	96	8	3	2	109	0	87	15	1	2	106	1	184	24	4	3	215
11:00	0	91	8	4	1	105	0	81	15	1	1	97	1	172	23	5	2	202
12:00	1	101	10	4	1	116	0	92	12	1	2	107	1	192	21	5	3	222
13:00	0	104	10	5	3	122	0	98	12	1	2	114	0	202	22	7	5	236
14:00	1	110	11	5	2	129	1	110	18	1	2	131	2	220	29	5	4	260
15:00	0	155	9	7	2	174	0	126	17	1	0	145	1	281	26	8	3	319
16:00	0	158	10	8	1	176	0	125	15	1	1	142	1	282	25	8	2	319
17:00	0	143	5	3	1	152	0	124	13	1	2	139	0	267	18	4	3	292
18:00	0	79	4	3	1	87	0	82	6	0	0	88	0	161	10	3	1	176
19:00	0	53	2	1	1	56	1	50	3	1	1	55	1	103	5	2	1	111
20:00	0	34	2	1	0	36	0	35	2	0	0	38	0	69	4	1	0	74
21:00	0	22	1	1	0	23	0	19	2	0	0	22	0	41	3	1	0	45
22:00	0	16	0	0	0	17	0	17	2	0	0	19	0	33	2	0	0	36
23:00	0	11	0	0	0	12	0	6	2	0	0	8	0	18	2	0	0	20
Total	4	1490	114	55	22	1685	4	1499	199	15	24	1741	8	2989	312	71	46	3426