

REEVES HILL COMMUNITY WIND ENERGY SCHEME

PLANNING APPLICATION NW08/1289/F

SUPPLEMENTARY ENVIRONMENTAL REPORT

FOR THE CLARIFICATION AND CORRECTION OF MATTERS RAISED IN THE POST SUBMISSION REVIEW OF THE ENVIRONMENTAL STATEMENT

SUBMITTED TO

HEREFORDSHIRE COUNCIL

BY

DULAS LTD

ON BEHALF OF

BOLSTERSTONE INNOVATIVE ENERGY (REEVES HILL) LTD

October 2008

PREFACE

This Supplementary Environmental Report (SER) has been prepared at the request of Herefordshire Council to provide further information to clarify, correct and supplement the findings of the environmental assessments submitted in support of planning application NW2008/1289/F for the proposed Reeves Hill Community Wind Energy Scheme submitted in May 2008.

The supplementary environmental information has been prepared as a Supplementary Environmental Report (SER) compiled by renewable energy consultancy, Dulas Ltd, following the undertaking of further environmental assessment work commissioned by the developer, Bolsterstone Innovative Energy (Reeves Hill) Ltd.

The specialist advice and support was delivered by the following external, independent consultancies, each of which also has extensive experience in renewable energy planning and environmental assessments:

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A copy of this SER and the full ES are on display at Herefordshire Council offices (Garrick House), Leominster (Corn Square) and Kington Library. In addition, it is possible to download copies of this document and figures, along with a separately bound traffic management plan, from both Herefordshire Council's website and the project website: www.reeveshillwindfarm.co.uk

Forty-five (45) copies of this document have been produced for submission to Herefordshire Council. Fourteen (14) copies of the traffic management plan have been submitted for circulation to the highways consultees only. There are a large number of copies required for the cross border consultation and stakeholders responsible for the assessment of impacts within Powys, Wales. In addition multiple copies of the SER and ES on CD have been produced for distribution to other stakeholders and the local communities, which are available from Herefordshire Council offices or Dulas Ltd.

For further paper copies of this document (at a cost of £50) or CD copies (at a cost of £5) please contact:

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1 INTRODUCTION

1.1 Context

1.1.1 A planning application for the proposed Reeves Hill Community Wind Energy Scheme, located between Presteigne and Knighton on the border of Herefordshire and Powys, was submitted to Herefordshire Council in May 2008 by Bolsterstone Ltd (the Developer). The planning application is for four (4) wind turbines, each typically up to 2.3 Megawatts (MW) in capacity, ancillary equipment and on site infrastructure for a period of twenty-five years (25) for the purposes of generating renewable energy through wind power.

1.1.2 The wind turbine design detailed in the ES comprises a three bladed rotor that is up to ninety (80) metres in diameter supported on an (up to) sixty five (65) metre high cylindrical tower to give a maximum tip height of up to 105m. The planning application also comprises an (up to) seventy (70) metre fixed lattice anemometry mast to monitor and optimise the performance of the Reeves Hill Community Wind Energy Scheme wind turbines.

1.1.3 A planning application, NW08/1598/F, to erect a 60m temporary anemometry mast to measure wind speed and direction was submitted in June 2008. Planning permission was granted on 27th August 2008. The mast will operate for 12 months before decommissioning.

1.1.4 Typically, Statutory Instrument 293 1999 specifies a consultation and determination period of 16 weeks, and therefore a decision would have been due in September 2008. However, due to the complexity of issues relating to wind farm schemes and delays in the responses of statutory authorities and interest groups, there has been a delay in the determination period. An agreement to an extension for determination of the application at the November 2008 committee was agreed with Herefordshire Council on 23rd July 2008. Following delays during the consultation process, the date of determination is to be either the November or December committee meeting.

1.1.5 Following submission of the planning application and ES on 19th May 2008, Herefordshire Council has exercised their statutory duty for consulting with and seeking

the views of a wide variety of consultees on the application. The principal statutory and non statutory consultees that have responded to the application are as follows:

- Herefordshire Council conservation, landscape, ecology, archaeology, and public rights of way sections.
- Environment Agency
- Natural England
- Shropshire County Council
- Shropshire Hills AONB Partnership
- Powys County Council Highways department
- Countryside Council for Wales
- National Air Traffic Services
- Civil Aviation Authority
- Defence Estates
- English Heritage

1.1.6 In addition, a multitude of responses from interest groups, Parish Councils and individuals has been received by Herefordshire Council in relation to the Reeves Hill Community Wind Energy Scheme application. Whilst it is not possible for the Developer to respond to such responses individually, a review of the individual responses indicates many comments are expressions of opinions or deal with issues that are not material to the planning application and therefore the Developer is not in a position to respond to them. Of the remaining issues in the individual letters that are considered to be material to the application, a review of such responses by the Developer has determined that they coincide with the same issues raised by the consultees stated above; the Developer consequently responds to such issues in its address to the consultees listed above.

1.1.7 Of the statutory consultee responses received by Herefordshire Council, Natural England has submitted a holding objection pending further information on impacts to the wider landscape and Shropshire Hills AONB. Dyfed-Powys Police have objected to any abnormal load reversing manoeuvre on the A4113 for abnormal load vehicle access to the

site via the Llanshay Lane. Several consultation responses have still not been received, such as from the RSPB. Objections have been lodged against the application principally by individuals and Parish Councils.

1.1.8 As a result of the review and public consultation on the planning application and ES, a number of material issues and concerns were raised, primarily by Herefordshire and Powys Councils and statutory consultees. The Developer has reviewed all the responses and determined, alongside negotiation with the Council, those matters considered material to the planning application and which should be addressed in order to clarify matters and therefore allow the Council to undertake an informed determination of the planning application.

1.1.9 This Supplementary Environmental Report (SER) presents the response of the environmental consultants to the review comments of the statutory and non-statutory consultees. It is structured so as to respond to the following:

1. **Highways and Access Implications:** including detailed designs for the Llanshay Lane access and physical impacts from a new access route leading from the former Llanshay Quarry to meet the Llanshay Lane to the south east of Llanshay Farm. This is in response to the Dyfed-Powys Police objection to proposed reversing manoeuvres on the A4113 to access the Llanshay Lane. A topographical survey of the route and a detailed traffic management plan has been circulated direct to highways consultees who attended the scope of assessment meeting for further highways information on 17th July 2008. A detailed survey of the route is included within this document and accompanying figures. Circulation of a draft version of this documents was issued ahead of the meeting. There have been as yet no responses received to either circulation.
2. **Landscape and Visual matters:** further material is submitted in a

response to the statutory consultees and stakeholder responses based on concerns raised over proximities to designated sites. An analysis of impacts on the wider landscape, Shropshire Hills AONB and Offas Dyke is accompanied by further visualisation material.

3. **Archaeology:** the investigations for potential on site archaeology are addressed in the reporting of more detailed field evaluations. Potential offsite issues to the known archaeological resource are addressed through the landscape and visual submission.
4. **Ecology:** the response to matters raised by Natural England and the local council is framed within the information comprising the Habitat Compensation and Enhancement Programme. Full draft details of the programme for consultation are provided.
5. **Hydrology and Private Water Supplies:** to address the points raised by the Environment Agency on the identification of private water supplies and hydrological features.

1.1.10 It is belief of the Developer that in addressing all the issues raised by the post submission review of the planning application and ES, and presenting new findings where necessary, clarifications of elements of the ES, and corrections to errors presented in the ES, sufficient information has been formulated to permit Herefordshire Council to undertake its determination of the planning application. Whilst the provision of this information has not been subject to a formal arrangement under Regulation 19 of Statutory Instrument 1999 No. 293, the Council and the Developer have negotiated closely on the information required to facilitate a decision on the application by the Council through the renewable energy consultancy, Dulas Ltd. Such additional information has therefore been submitted to the Council in good faith by the Developer and with a view to ensuring that the Council has all the information necessary to permit a balanced and informed decision on the application.

2 HIGHWAYS AND ACCESS CONSTRUCTION ISSUES

2.1 Introduction

2.1.1 In the post submission review of the planning application and Environmental Statement for the Reeves Hill Community Wind Energy Scheme, both highways departments of Powys County Council and Herefordshire Council raised issues over the potential transport difficulties and engineering of transport requirements on the Llanshay Lane minor road access to the site.

2.1.2 An alternative access track is proposed to overcome the issues that were raised, the alternative emerged as the post submission consultation unfolded and potential access options using the existing public highway presented difficulties that could not be overcome.

2.1.3 The stakeholders consulted for the alternative access track included the local authority highways department, neighbouring local authorities, the highways authority and their own strategic managers. The stakeholders also included the abnormal load officers of the regional police forces. A meeting to determine the scope of assessment for further work on highways issues was held with relevant parties. A report presenting the assessment work resulting from this consultation process including a traffic management plan for road transport from point of source has been issued direct to highways consultees as attendees to the meeting. The report is also available alongside public deposit copies of this document at locations detailed within the Preface and is downloadable from Herefordshire Council's website.

2.1.4 The traffic management report describes the expected standard and abnormal construction traffic, the traffic impact and the management of that impact. The report presents the improvements and modifications required to the public highway and description of an alternative access track to avoid the hairpin junction at the foot of the Llanshay Lane.

2.1.5 Access Route Assessment of alternative Access Track

2.1.5.1 A topographic survey of the proposed route to the site was undertaken in order to inform a more detailed schematic proposal of the access route. These are contained within the traffic management plan issued to highways consultees, whilst the description of this route is detailed within this section. Figures 1-6 bound within this document present the location of this route and environmental effects.

2.1.5.2 The proposal requires the transport of wind turbine components from the public highway on Ludlow Road, A4113, to the site of the proposed wind farm 3.5kms south of Knighton, Powys. To avoid a tight hairpin bend at the junction of Llanshay Lane and the A4113, an alternative cross country route is proposed to cut off the hair pin corner at the foot of the Llanshay Lane. An approximate alignment has been developed to demonstrate that such an access track is practically feasible. This section discusses the basis of this design and describes the route of the access.

2.1.5.3 More detailed designs and specifications will be made available in the event that the proposal is granted planning permission, at which time full method statements relating to construction activities would be drawn up based on the designs and mitigation measures presented in the ES and this report.

Basis of design undertaken

Background

2.1.5.4 Access to wind farms on hills needs careful consideration. Experience shows that generic details given in turbine manufacturers' guidelines regarding geometry are conservative and not viable for the majority of upland sites in the UK. Recent experience on upland wind farms in Wales and Scotland demonstrates that gradients significantly in excess of the typical values of 8 to 12% quoted by manufacturers can be achieved given careful planning and the

correct specification of the haulage plant at an early stage in turbine supply negotiations.

Geometric limits

2.1.5.5 Detailed discussions with the following industry specialists have been undertaken:

- A civil engineering contractor experienced in wind farm construction (Carillion);
- Turbine haulage companies (MDF Transport, Give Svaergods (Glasgow)); and
- Turbine component trailer suppliers (Broshuis Trailers)

2.1.5.6 In response to these discussions the following parameters are considered reasonable in developing a suitable alignment for access tracks:

- Gradient limit 16%
- Horizontal Curve 28m minimum
- Vertical Curve 375m minimum (to avoid grounding).

2.1.5.7 It should be noted that steeper gradients could be achieved if necessary. In these circumstances, special arrangements could be made, e.g. hard surfacing (tarmac) of the track, reconfiguration of the track alignment to make steep elements relatively straight, etc. However, such measures have not been included in the proposed alignment, as a suitable alignment is achievable within the parameters described in sub-Section 2.1.5.6.

2.1.5.8 At this preliminary stage of the project, the existing topography of the ground has been established from commercially available 5m Digital Terrain Model (DTM). The routing of the track has also taken into account other features from observations during site walkover surveys.

2.1.5.9 In general the track alignment has been kept as close to existing ground levels as possible to minimise cut and fill, commensurate with achieving the geometric limits stated above.

Track description

Route/alignment

2.1.5.10 The access route is shown in plan on Figure 1 and Figure 4, bound within this document with more details including long and cross sections shown on Figures 5 and 6.

2.1.5.11 The alignment of the track makes use of the existing tarmac road and highways access to the haulage depot south of the A4113. It keeps to the existing alignment to give sufficient clearance to the Elan Valley Aqueducts, large diameter water mains serving Birmingham, which are crossed approximately 70m south of the A4113. Detailed discussions have been undertaken with Severn Trent Water Limited (STWL) regarding protection of this aqueduct with details given in sub-Section 2.1.5.23 below.

2.1.5.12 The track then crosses an existing stream approximately 200m south of the A4113, and is kept on shallow fill here to enable a conventional piped crossing (see Figure 3). The hydrological impacts of this crossing are discussed in the following sub-Section 2.1.6.

2.1.5.13 The track crosses an existing lane feature (Caleck's Lane) in about 2m of cut. The existing lane feature is somewhat depressed into the surrounding fields. The alignment here takes advantage of a natural break in the vegetation along the lane.

2.1.5.14 The track then runs east of various farm buildings and paddocks forming Llanshay Farm before joining Llanshay Lane.

2.1.5.15 The track layout has been designed in order to minimize the visual impacts of the construction from the town of Knighton, and also reduce the amount of land-take and materials required, as well as reducing the amount of habitat that would be lost or disturbed.

Cut, fill and track construction

2.1.5.16 The construction of the site track itself will comprise up to 600mm thickness of compacted crushed stone on a geotextile membrane.

2.1.5.17 The actual thickness of crushed stone required will depend on the ground conditions

(to be determined through intrusive ground investigation). It is envisaged that in the cut zones, the ground conditions will allow a thinner track construction, thus economizing on materials and transport requirements.

2.1.5.18 The steepest elements of the track will require import of a higher quality of crushed stone for the top 200mm thickness (i.e. Highways Agency Specification Type 1 Sub-base) to ensure adequate performance in use.

2.1.5.19 It is expected that approximately 75% of the 2700m³ of stone required for the track can be obtained from the cut material and thus only approximately 675m³ of high quality stone would need to be imported, equivalent to about 68 HGV loads. These loads and quantities are extra to those presented within the ES for construction requirements within the wind farm site area.

2.1.5.20 The high quality stone will be obtained from local quarries. Three potential quarries which would be able to provide high quality stone have been identified as follows:

- Strinds and Dolyhir Quarries, Old Radnor, 9 miles;
- Shobdon Quarry, Shobdon, 10 miles; and
- Leinthall Quarries, Leinthall Earls, 10 miles.

2.1.5.21 It is envisaged that any surplus material from the cut and filling for the road could be used on site for landscaping purposes to mitigate the visual impacts. Such filling would be topsoiled and reseeded.

2.1.5.22 Further detailed design work will be required, post-planning, based on more detailed ground investigation and topographical surveys.

Aqueduct crossing

2.1.5.23 As described above, the start of the access route follows an existing alignment which passes over the Elan Valley Aqueducts. There are two 1.5m and two 1.0m diameter steel pipe water mains. Detailed discussions have taken place with STWL, which is responsible for this array of pipelines. This has given rise to the need for substantial reinforced concrete slab protection to avoid any possible damage during

construction works. The proposed protection measures are detailed on Figure 2 and STWL has, in principle, confirmed suitability of these proposals.

2.1.5.24 Should the proposal be granted planning permission, STWL has advised that its engineers would undertake a survey of the area to enable agreement of the protection proposals.

2.1.5.25 Drainage would be provided to the tracks to ensure stability of the track construction and avoid ponding. This will be detailed to discharge to the existing fields where the track is at grade or on fill. Where the track is in cut, the drainage would discharge into the stream.

Stream crossing

2.1.5.26 A hydrological assessment was undertaken to inform the design of the stream crossing (see sub-Section 2.1.6).

2.1.5.27 Based on the hydrology and the requirement to provide a suitable structure for the transport of wind turbine components across the stream, it is proposed to use two 450 mm diameter concrete pipes set with the widest part 100 mm above the existing stream invert (see Figure 3).

2.1.5.28 The pipes will be contained within a 150 mm concrete encasement to provide structural protection below the track base. In addition, the pipes will extend beyond the batter of the track (minimum of 1 m).

2.1.5.29 It is understood that these works will require Flood Defence Consent from the Environment Agency.

Conclusion

2.1.5.30 Geometric and practical constraints govern the alignment and construction of the access track. Given these, the layout and design proposed demonstrates the feasibility of the proposal whilst seeking to minimize the environmental impact.

2.1.5.31 Further detailed design work will be required, post-planning, including ground investigation and topographic survey.

2.1.6 Hydrological Assessment

2.1.6.1 This further hydrological assessment has been undertaken to inform the proposed stream crossing required for the alternative cross country route at Llanshay, as described in the Access Statement accompanying this SER.

Methodology

2.1.6.2 A flow estimate for the 1 in 100 year flood event was derived using techniques described within the Flood Estimation Handbook (FEH) Supplementary Report No.1. (Kjeldsen, 2007) for the proposed stream crossing (approximate NGR: 329580 271950).

2.1.6.3 Specifically, the flow estimate was derived using the Revitalised Flood Hydrology (ReFH) methodology. In addition, an allowance of 20% was taken into account in the design of the proposed stream crossing.

2.1.6.4 The 1 in 100 year flow was estimated from the catchment descriptors exported from the FEH CD-ROM v2 (see Table 2.1 FEH CD ROM v2 Catchment descriptor Values Imported into REFH) for the catchment located upstream of the proposed stream crossing. These were entered into ReFH spreadsheet to provide flow estimates (see Appendix 1E).

2.1.6.5 A winter storm profile has been used due to the rural nature of the catchment (see Plate 1 and Plate 2) and the calculations are provided in the accompanying audit sheet.

Table 2.1 FEH CD ROM v2 Catchment descriptor Values Imported into REFH

Catchment Descriptor	Value
AREA	0.51
FARL	1.00
PROPWET	0.49
ALTBAR	257
ASPBAR	313
ASPVAR	0.70
BFIHOST	0.726
DPLBAR	0.62
DPSBAR	114.7
LDP	1.41
RMED-1H	9.9
RMED-1D	35.6
RMED-2D	48.3
SAAR	942
SAAR4170	993
SPRHOST	13.46

Catchment Descriptor	Value
URBCONC	0.00
URBEXT	0.0025
URBLOC	0.00
C	-0.025
D1	0.38272
D2	0.42199
D3	0.33805
E	0.28646
F	2.37234
C(1km)	-0.025
D1(1km)	0.389
D2(1km)	0.427
D3(1km)	0.338
E(1km)	0.287
F(1km)	2.364



Plate 1 Looking upstream from location of proposed stream crossing



Plate 2 Looking downstream from location of proposed stream crossing

Results

2.1.6.6 A peak flow of 0.6 m³ s⁻¹ for the 1 in 100 year flood event was derived using the ReFH methodology for the catchment upstream of the proposed stream crossing.

2.1.6.7 A peak flow of 0.72 m³ s⁻¹ has been used incorporating an allowance of 20% for the potential increase in peak flows accounting for climate change.

Discussion

2.1.6.8 Due to the requirement for a suitable structure to transport wind turbine components across the stream, it is proposed that the stream crossing will consist of two 450 mm concrete pipes set with the widest part 100 mm above the existing stream invert. Plan and section details are provided in Figure 3.

2.1.6.9 The pipes will be contained within a 150 mm concrete encasement to provide structural protection below the track base. In addition, the pipes will extend beyond the batter of the track (minimum of 1 m).

2.1.6.10 Due to the limited catchment area upstream (0.51 km²) of the proposed stream crossing and the land use being predominantly pasture, there is a low likelihood of blockage from debris. The use of two pipes will reduce the potential for blockage and if one pipe were to block, the second pipe provides sufficient capacity to route flows.

2.1.6.11 Based on the flow and duration of the 1 in 100 year event (including climate change allowance), the capacity of the pipes is considered appropriate and will not cause flooding to third parties.

2.1.6.12 In addition, a pond located upstream of the stream crossing will act to attenuate flows during periods of precipitation.

Conclusion

2.1.6.13 Practical constraints govern the proposed stream crossing and construction of the access track. Given these, the layout and design proposed, informed by this hydrological assessment, demonstrates the feasibility of the proposal whilst seeking to minimize the environmental impact.

2.1.6.14 The likelihood of structure blockage is low. Accompanied with the attenuation of flows by a pond feature upstream, the culvert will ensure that flood risk within and from the proposed stream crossing will not be increased.

2.1.7 Ecological Assessment of the Proposed Alternative Access

Desk based and walkover survey

2.1.7.1 The farmland crossed by the proposed alternative access to Llanshay Lane comprises a livestock farm typical of the region with relatively intensive management of grassland primarily for sheep.

2.1.7.2 The proposal to construct a temporary access roadway traversing the holding follows the route of least ecological impact avoiding any significant vegetation removal.

2.1.7.3 No UK or Powys Biodiversity Action Plan habitats exist on the site (priority habitats) and, as far as is known, construction of the access will not affect any schemes for environmental stewardship.

2.1.7.4 No nature conservation designations apply to the site and no European or UK protected species have been recorded within its boundaries. However, there is a block of Ancient semi-natural woodland to the north-east of the site a significant percentage of which has been replanted. Badger (*Meles meles*) and some species of butterfly (small copper (*Lycaena phlaeas*), wall brown (*Lasiommata megera*) and peacock (*Inachis io*) are present within the 5 kilometre biological records search of Reeves Hill.

2.1.7.5 No major impact upon watercourses is expected; the only water channel crossed by the proposed access is a small rivulet with no major technical issues or environmental problems foreseen in bridging it.

Survey and mapping

2.1.7.6 Site survey took place on 2nd May 2008 with mapping of the landscape features and habitats to JNCC Phase 1 level. These included vegetation types, boundary types and habitat features such as ponds and trees.

2.1.7.7 Target notes were made of flora and fauna of note with an assessment of any impacts on species potentially present.

2.1.7.8 The line of the proposed route was scrutinised and the degree of impacts on the ecology considered.

Findings

2.1.7.9 Grasslands on the site were improved or semi-improved but poor in species diversity. The semi-improved fields were located on the steeper slopes of the terrain where cultivations are not possible. Target notes were made of the flora and are presented in Table 2.1 their location presented in Appendix 1B. Significantly wetter conditions in the semi-improved grassland in the valley bottom at the northern part of the site leading to somewhat greater diversity.

2.1.7.10 Many of the fields have intact, well-maintained hedgerows which are species poor consisting primarily of *Crataegus monogyna* but with some admixtures of *Corylus avellana* and some tree species. The group of hawthorn trees are a remnant of original hedgerows whilst the coppice stools present along the holloway represent some continuity with the original woodland cover.

2.1.7.11 Trees present on site are documented in target notes but a few are notable. The former orchard contains a single pear of some age but unknown variety. The holloway maintains several *Ulmus procera* whilst a single old pollard of lime (*Tilia cordata* – possibly *T. platyphyllos*), which is almost certainly a remnant tree of the original woodland covering the site, is also present.

2.1.7.12 An alder carr (*Alnus glutinosa*) exists upslope of the proposed route on the stream banks. Further up the valley lies a large pond around which is clustered a mix of broadleaved tree species. This area was not surveyed as it is well beyond any influence of road construction effort but may hold great crested newt, a species which is capable of dispersing from this potential breeding pond to hibernation sites provided by areas such as the holloway.

2.1.7.13 New planting of standard trees have taken place along the hedge-line flanking the Presteigne – Knighton road.

Assessment of impact

2.1.7.14 Very little ecological impact will result within grassland areas from road construction. Grassland flora are not diverse nor compromised of rare or notable species. The species present are easily re-established on site when grassland is reinstated.

2.1.7.15 No fully mature trees are likely to be removed in establishing the access road but some removal of woody vegetation or small shrubby trees would be required.

2.1.7.16 The road route will breach some hedgerows and the fringing vegetation of Holloway. However, gaps within hedges and the holloway, in gateways and via fence lines are to be used minimising loss of this habitat. Where loss is inevitable, replacement or translocation of the hedging plants will be undertaken. The exit point of the proposed road will breach the Presteigne – Knighton roadside hedge which also has a rich bank-side flora. Reinstatement of this flora is possible through direct planting or through translocation and storage of the ‘turf’ if lifted properly prior to road construction.

Table 2.1 Target notes mapped in Figure 1A of Appendix 1

Number	Feature	Target notes
1	Roadside bank herbs	<i>Ranunculus ficaria</i> , <i>Alliaria petiolata</i> , <i>Silene dioca</i> , <i>Achillea millefolium</i> , <i>Stellaria holostea</i> , <i>Primula vulgaris</i> , <i>Veronica persica</i> , <i>Mercurialis perenne</i> , <i>Digitalis purpurea</i> .
2	Semi-improved grassland	<i>Festuca ovina</i> , <i>Luzula campestre</i> , <i>Ranunculus ficaria</i> , <i>Achillea millefolium</i> , <i>Rhytidiadelphus squarosus</i> (dominant), <i>Cirsium palustre</i> , <i>Ranunculus ficaria</i>
3	Improved grassland	Possible old orchard site
4	Semi-improved grassland	<i>Festuca ovina</i> , <i>Luzula campestre</i> , <i>Ranunculus ficaria</i> , <i>Achillea millefolium</i> , <i>Rhytidiadelphus squarosus</i> (dominant), <i>Cirsium palustre</i> , <i>Ranunculus ficaria</i> , <i>Cerastium fontanum</i> ; <i>Cirsium vulgare</i>
5	Old holloway/stream bed	Lined either side with substantial coppiced stools of <i>Corylus avellana</i> , <i>Crataegus monogyna</i> , <i>Sambucus nigra</i> alongside <i>Betula pendula</i> ,and <i>Ulmus procera</i> , Redstart heard singing within the vegetation cover.
6	Semi-improved grassland	<i>Festuca ovina</i> , <i>Luzula campestre</i> , <i>Ranunculus ficaria</i> , <i>Achillea millefolium</i> , <i>Rhytidiadelphus squarosus</i> (dominant), <i>Cirsium palustre</i> , <i>Ranunculus ficaria</i> , <i>Cerastium fontanum</i> , <i>Cirsium vulgare</i> , <i>Urtica dioca</i> .
7	Tila cordata (platyphyllos?) stump	Probable pollard remnant of ancient woodland.

2.1.7.17 Potential impacts on nesting birds may result from breaching hedgerows and so timing of hedgerow removal should ideally take place before the beginning of March or from September onwards. Alternatively, hedgerows should be checked for nesting birds prior to removal but work should not progress should nests be located.

2.1.7.18 Similarly, prior to work on hedgerows or the holloway, inspection of the areas should be made for great crested newt or other amphibians.

Photographs

2.1.7.19 Photographic locations and direction are located in Appendix 1A followed by the images.

Conclusion

2.1.7.20 No priority habitat or features critical to the nature conservation value of the site will be directly impacted upon by construction of the track.

2.1.7.21 No European or UK protected species or habitat harbouring them are likely to be directly affected should construction proceed within the advised period.

2.1.7.22 In principal, there are no ecological issues preventing establishment of the track. However, should construction proceed further inspection prior to commencement of works for species of interest will be required to ensure that none are present.

2.1.8 Landscape and Visual Assessment

2.1.8.1 The detailed drawings presenting the route of the access track are contained within Figures 1-6. The direct effects upon landscape fabric of the proposed access track are described below.

Changes to the access arrangements from the north

2.1.8.2 The junction of the Llanshay Lane would be by-passed through use of an alternative access track connecting disused Llanshay Quarry to rejoin Llanshay Lane south east of Llanshay Farm. The effects of this change would potentially be direct to the fabric and to the character of the north-facing slope of the Wooded Hills and Farmland landscape type, and to views south from the southern edge of the Shropshire Hills AONB in landscape type Wooded Hills and Farmland. These effects are assessed below.

2.1.8.3 The original access arrangements followed existing roads, with highways improvements to the route, including the felling or heavy tree surgery to four trees.

2.1.8.4 The direct effect on the landscape of the Wooded Hills and Farmland would be through the creation of the trackway, incorporating some existing track along the length. The track would have two bends that during the construction period would theoretically be visible from the opposite side of the valley; however, in reality, the only viewing locations would be from within the densely wooded Kinsley Wood, and accordingly there would be no views and no indirect effects on landscape character. The change to the fabric of the land would bring about a low magnitude of change, with only short sections of hedge removed that could be reinstated post wind farm construction. Tracks and unclassified roads area characteristic of the Wooded Hills and Farmland, a necessary aspect of agrarian land management. In this instance the track would be constructed to a higher specification than a farm track, but would be perceived as one. The track would not be discordant with the landscape character. The landscape would be of medium sensitivity to this type of change. The low magnitude of change, with the medium sensitivity would bring about a slight to moderate and not significant effect.

2.1.9 Archaeological Assessment

2.1.9.1 The detail of the recorded archaeological resource associated with the proposed access track route is presented on Figure 9. The results of desk based review and walkover survey are reported in this section.

2.1.9.2 In early May 2008 the Field Services Section of the Clwyd-Powys Archaeological Trust (hereafter CPAT) was commissioned by Dulas Ltd to undertake a preliminary cultural heritage assessment of the line of a possible alternative access track to the proposed Reeves Hill Community Wind Energy Scheme around Llanshay Farm. The farm is centred SJ 29707181, and the proposed access track runs southwards off the Ludlow Road to meet Llanshay Lane, south-east of Llanshay Farm.

Methodology

2.1.9.3 A desk-based assessment of the area was conducted at the National Library of Wales in Aberystwyth during early May 2008 and this was followed by a walkover survey a short while later.

The Cultural Heritage

2.1.9.4 Currently eleven cultural heritage sites (or assets as they are now termed in official literature) have been recorded in the vicinity of Llanshay Farm. Criteria of assessment is listed below and followed by the listing of sites identified. It should be noted here that those with five-figure PRNs are derived from the existing Historic Environment Record while those prefixed by the term 'Site' have been identified for the first time as a result of the assessment.

Table 2.2 Criteria for assessing the value of cultural heritage assets

<i>Factors for assessing the value of cultural heritage assets</i>	
Very High	<ul style="list-style-type: none"> • World Heritage Sites (including those nominated) • Assets of acknowledged international importance • Assets that can contribute significantly to acknowledged international research objectives
High	<ul style="list-style-type: none"> • Scheduled Monuments (including those proposed) • Undesignated monuments of schedulable quality and importance • Grade I and Grade II* Listed Buildings • Assets that can contribute significantly to acknowledged national research objectives
Medium	<ul style="list-style-type: none"> • Grade II Listed Buildings • Conservation Areas • Designated or undesignated assets that contribute to regional research objectives
Low	<ul style="list-style-type: none"> • Designated and undesignated assets of local importance • Assets compromised by poor preservation and/or poor survival of contextual associations • Assets of limited value, but with the potential to contribute to local research objectives
Negligible	<ul style="list-style-type: none"> • Assets with very little or no surviving cultural heritage interest
Unknown	<ul style="list-style-type: none"> • The importance of the resource has not been ascertained

2.1.9.5 All cultural heritage assets can now be classified according to a system provided for the cultural heritage in the Design Manual for Roads and Bridges Volume II Section 3 Part 2 (2007), which is described in Table 2.2. This provides a standard for assessments of this type. The classification of each asset (with the exception of nationally important scheduled sites and listed buildings) is based on the collective professional judgement and expertise of the field staff of CPAT, and is shown in Table 2.3. However, it should be stressed that the significance of a site and hence its classification could be enhanced by more detailed work.

2.1.9.6 Some of these cultural heritage assets - Sites 2, 3, 5, 6, 7 and PRN 22556, will be or could be damaged by the provision of the new access track. None of these sites is currently classed in the higher value categories, and only the farm complex itself is considered to be of medium (or regionally important) value, with the possible exception of Calecks Lane. At this stage in the assessment we have determined the potential significance of a direct, physical impact on any of them.

2.1.9.7 The expected significance of the impacts arising from the construction of the new access track is presented as the value judgement within Table 2.3.

Table 2.3 Cultural Heritage Assets and their value

PRN	Name	NGR	Value
30100	Llanshay Farm, house	SO2969871834	Medium
22556	Llanshay Quarry (dis)	SO2979472045	Low
30101	Llanshay Farm, barn	SO2970071798	Medium
Site 1	Llanshay farmstead	SO2970271816	Medium
Site 2	Llanshay platform	SO2976271790	Unknown
Site 3	Caleck's Lane	SO2981171915	Low/Medium
Site 4	Llanshay Lane	SO2980471684	Low
Site 5	Llanshay farm quarry	SO2976171773	Low
Site 6	Llanshay trackway	SO2974371865	Low
Site 7	Llanshay boundaries	SO2982371950	Low
Site 8	Llanshay ancillary building	SO2977671857	Unknown
Site 9	Knighton open fields	SO29697204	Low

3 LANDSCAPE AND VISUAL ASSESSMENT

3.1 Introduction

3.1.1 Section 4 of the ES presented the findings of a landscape and visual assessment (LVA) that has considered the likely effects of the proposed Reeves Hill scheme on the landscape and visual amenity of a 20km radius study area centred on the site (with a 30km Zone of Theoretical Visibility (ZTV)). This approach was agreed with Herefordshire Council in its Scoping Opinion and through a meeting held with Chris Mayes, as confirmed in writing 28th September 2007. At the time of the scoping consultation the Shropshire Hills AONB were asked if they would like to have an input into the scoping consultation process. The list of viewpoints selected with Chris Mayes was discussed, and no further consultation or input was requested by the AONB Partnership officers.

3.1.2 Now that the post-application consultee responses have been received from Natural England, the Shropshire Hills AONB Partnership, Shropshire County Council, CCW, Chris Mayes and Julian Cotton, we have a full picture of the issues that are outstanding to the consultees. The form and content of the additional LVA issues in this SER was discussed at a meeting with Chris Mayes, Julian Cotton and Philip Mullineux on 5th August 2008.

3.1.3 A number of third parties have also produced responses and reports that consider the LVA findings and make comments on wind farms in general, and the proposals for this site in particular. These include two reviews of the LVA. Where concerns raised by the statutory consultees mirror those made by third parties they have been considered in this SER.

3.1.4 Matt Wilson, the EIA project manager together with the landscape and visual assessor, have further discussed how it would be most appropriate to provide the Council with information to cover with these outstanding items. This has been assisted by the letters from Phillip Mullineux dated 4th August 2008, and Julian Cotton dated 7th August 2008 (Appendix 2).

3.1.5 There are six issues outstanding that are

covered in this supplementary LVA submission. These are the:

- Clarification of the assessment of the impact on the character and views out from the southern edge of the AONB.
- Clarification of the assessment of the impact on the character of the landscape – particularly JCA 98 Clun and North West Herefordshire.
- Clarification of the assessment of the impact on Offa's Dyke, and clearer presentation of effects on Offa's Dyke as a cultural heritage feature, and as a National Trail, from Hergest Ridge to Llanfair Hill.
- Reporting of the impact assessment of the proposed development on views from the Glyndwr's Way National Trail.
- Consideration of an appropriate method for assessing the impact on the cultural heritage aspect of the border landscape, as a distinct historic landscape of cultural heritage value, rather than as a collection of features.

3.1.6 Julian Cotton requested a stand-alone assessment of Offa's Dyke in a separate report; however, for practical reasons and ease of circulation this has been included in the LVA section of this SER.

3.1.7 In the following sections the sources of the issues identified in the consultee responses are set out, and the proposed actions to remedy information gaps are introduced, topic by topic.

3.1.8 Impact on the character and views out from the southern edge of the AONB

3.1.8.1 The potential impact on the character and views out from the southern edge of the AONB has been raised by the AONB Partnership, and Natural England.

3.1.8.2 To assist in the interpretation of the additional information a wireframe from the churchyard at Stowe village has been included at Figure 8J. Additional information has been provided confirming in more detail the areas that

would be afforded views in the 3.5-4.5km distant area of significant effects, including the lengths of paths, roads, point features and open access land that would be afforded views of the proposed turbines.

3.1.9 Impact on the character of the landscape of the Clun and North West Herefordshire

3.1.9.1 The potential impact on the character of the landscape, particularly on JCA 98 Clun and North West Herefordshire has been raised by Natural England.

3.1.9.2 Additional information has been provided to explain precisely why the ES does not indicate what proportion or percentage of the three landscape types and the Landscape Character Area would be significantly impacted by the proposal, in the conclusions. What has been provided is additional information identifying where significant effects would be experienced from linear and point features, including lengths of paths, roads, point features and open access land. More detailed information is also provided on the characteristics in the landscape that influence views out towards the site and lead to significant changes in view from a development of this nature.

3.1.10 Impact on Offa's Dyke

3.1.10.1 The impact on the Offa's Dyke National Trail and Offa's Dyke as a cultural heritage feature has been raised by the AONB Partnership, and the Conservation department of Herefordshire Council.

3.1.10.2 The archaeological advisor to Herefordshire Council recommends further assessment on Offa's Dyke particularly from Rushock Hill to Llanfair Hill. This is confirmed in his letter dated 7th August 2008, Appendix 2.

3.1.10.3 Accordingly, additional information has been provided to give the Council more information over the areas and durations of views that would be afforded, and their level of magnitude and significance (significant or not significant), relative to the overall length of the path and dyke, from the National Trail and from Offa's Dyke as a cultural heritage feature.

Wireframes have also been included from Panponton Hill, Rushock Hill and Llanfair Hill, to assist the statutory consultees and local planning authority in the review of the SER. The assessment runs from Hergest Ridge in the south to Llanfair Hill in the north in accordance with the request from Julian Cotton in his letter dated 7th August 2008.

3.1.11 Impact on Glyndwr's Way

3.1.11.1 CCW has raised the lack of reporting of the impact on the Glyndwr's Way National Trail in the LVA.

3.1.11.2 This was a factual omission and additional information has been provided to give the Council the necessary information over the areas and durations of views that would be afforded from this National Trail, and their level of magnitude and significance (significant or not significant), relative to the overall length of the National Trail. Wireframes have also been included at Figure 8C, including from Bailey Hill, to assist the statutory consultees and local planning authority in the review of the SER.

3.1.12 Impact on the cultural heritage aspect of the landscape of the border

3.1.12.1 The absence of reporting of the assessment of the impact on the cultural heritage aspect of the landscape of the border has been raised by the Landscape officer of Herefordshire Council. .

3.1.12.2 Following considerable discussions and research neither the Landscape officer nor Anne Priscott, the LVA author, have found a satisfactory methodology to report the information that is being requested. Full reporting has been undertaken on landscape receptors and individual cultural heritage feature receptors. However, as the extent of the border landscape has not been able to be defined, there is no clear parameter to the "border landscape". It has been agreed that no further reporting on this topic will be undertaken.

3.1.12.3 It has been agreed that the following additional information will be provided: summarise the assessment process; record the value and history of Offa's Dyke, and the changes in the borders as baseline, historical

information relevant to the cultural heritage assets in the area thereby linking the individual features assessed to their landscape context more strongly; supplement information with specific reference to the English Heritage advice on climate change within their guidance: Wind Energy and the Historic Environment, and the Simon Collcott paper issued in March 2008 on settings.

3.1.13 Mitigation/Environmental Enhancement

3.1.13.1 The mitigation of significant effects and or the provision of environmental enhancement measures as a topic has been raised by the AONB Partnership, Natural England and by Shropshire County Council.

3.1.13.2 The landscape officer of Herefordshire Council and the LVA author have agreed that it would not be possible to apply off-site enhancement to mitigate visual effects. However, the potential for on-site landscape restoration over the broader holding of the land in terms of environmental enhancement specific to the cultural heritage of the area has been considered. It is agreed between the Council and the Developer and landscape advisor that the development proposal should stand on its own merits, and not all significant effects need to be mitigated for a development proposal to be acceptable.

3.2 Method of Assessment

3.2.1 The LVA presented the assessment of effects through a series of individual studies from the perception of landscape and visual receptors. The SER follows the same order of assessment. The assessment process is summarised in the main body of the LVA text (Section 4 of the ES) and is set out in full in Appendix 4.1 to the ES.

3.2.2 A full cumulative landscape and visual impact assessment was not required under the terms of the EIA regulations as there is only one other wind farm planned within the landscape study area context of the site, Pentre Trump, some 20km to the south, and it was agreed in scoping that this would not bring about any significant cumulative effects. A ZTV of this wind farm with Reeves Hill Wind Farm was

included in the ES at Figure 24c, Volume 3. A Cumulative Assessment has not needed to be updated to take account of any new planning applications for proposed turbines. None of the wind farms in planning in the study area have changed in status, and the Pentre Trump Wind Farm was undetermined at the time of the issue of the SER.

3.2.3 The approaches used for this SER are based on the current methodologies and guidelines available at the time of writing. Best practice has been followed at all times. Where relevant guidelines are not available for England, those that do exist for adjacent planning jurisdictions in Scotland or Wales have been followed. The primary sources are set out in the LVA in sub-Section 4.2 and in full in Appendix 4.1. None of the statutory reviewers of the Reeves Hill Wind Farm questioned the threshold of significance of effects being set at moderate to substantial in the LVA in Section 4 of the ES.

3.2.4 The 12 agreed viewpoints were presented in the ES for analysis through photomontages, photowires or wireframes according to distance from site. Through the consultation process consultees have requested a number of additional viewpoints to be generated. It was agreed at the meeting with the Council on 5th August 2008 that these would be presented as wireframes. These viewpoints are bound within this document as Figures 8A to 8L. The viewing distance of these wireframes is the same as the viewing distance for the original viewpoints. These should be viewed in conjunction with the original ES viewpoints, and not be treated as stand-alone images. A request was made by the archaeological advisor for the developer to consider putting a tethered blimp on the site. However, it was felt that because the developer has offered to provide a number of wireframes, including on acetate for easy use in the field this would not be necessary. The 10km of the ZTV has also been re-issued with a focus on the route of the Offa's Dyke monument and National Trail.

3.3 The Proposed Development

3.3.1 The main elements considered to have potential significant indirect effects on the landscape and visual amenity of the study area over the life of the development are the

proposed four wind turbines. The main direct effects would be the turbine bases, the tracks, access to the site and possibly borrow pits.

- • Four wind turbines, with the following characteristics:
 - height to nacelle of between 65m to 69m, and a rotor diameter of in the range of 70m to 41m, giving a maximum height to tip of 105m;
 - tapered tubular towers, three blades and a nacelle; all rotors will rotate clockwise (when viewed from upwind), and with rotational speeds of up to 21.5rpm;
 - transformers will be housed within the nacelles or base of the wind turbine towers; and
 - towers, nacelles and blades are likely to be finished in a semi-matt grey colour, such as RAL7035 (to be specified/agreed with the local planning authority).
- Maintenance tracks (on-site).
- A single 70m high lattice monitoring mast as shown in Figure 2, Volume 3. This is detailed in Section 3 of the ES, and recorded on Figures 18. Construction of the single storey Substation building, as presented in Figures 2, 16 and 17, Volume 3.

3.3.2 The main elements considered to have potential significant indirect effects on the landscape and visual amenity of the study area over the life of the development are the proposed four wind turbines. The main direct effects would be the turbine bases, the tracks, access to the site and possibly borrow pits. A reference to the anemometry mast was omitted from this corresponding Section of the LVA; this was a presentation error, and the presence of the anemometry mast was taken into account in the LVA reporting of effects.

3.4 Landscape and Visual Context

3.4.1 The landscape character of the site and the surrounding area is described in sub-Section

4.8 of the ES. Since the LVA was undertaken for the purposes of the application, Powys Unitary Authority have published a landscape character assessment undertaken by John Campion on their behalf (March 2008). This had a limited circulation, and has now been received by the LVA author from CCW. This covers the western part of the study area. This assessment identifies character areas that are comparable to the areas defined in Herefordshire and Shropshire. They are slightly different from the areas defined by the LVA author to provide a consistent baseline against which the effects of the wind farm on the landscape character was assessed. This new landscape character assessment is considered below.

3.5 Policy Framework and Landscape Designations

3.5.1 The national and local planning area-wide designations and site-specific policy framework are introduced in sub-Section 4.5 of the ES. The potential effect of the proposed Reeves Hill Wind Farm is also assessed in relation to these areas and policies in the Conclusions of the LVA.

3.5.2 Listed Buildings, Register of Parks and Gardens, and Conservation Areas

3.5.2.1 Sub-Section 4.5 of the LVA also sets out the cultural heritage features present in the context of the site.

3.5.2.2 Through the scoping process it was agreed that all Listed Buildings (including listed structures and monuments) within 5km and all SAMs within 10km of the proposed Wind Farm, would be assessed. Offa's Dyke is covered by 13 separate SAM entries, but is a linear feature that has been assessed as one feature in its entirety. The summary of the full assessment process set out in the LVA is presented in detail below.

3.6 Powys Landscape Character Assessment

3.6.1 In the Powys landscape character assessment the majority of the western part of

the study area within a 10km radius of the site is defined as the Teme Hillsides, joining together 5 Landmap units (121, 128, 131, 132 and 134). In this assessment the defining characteristics are drawn out, including those of Stannage Park that are of note as a Grade I listed parkland. The Teme Hillsides correspond to the Principal Wooded Hills, the High Enclosed Plateau / the Enclosed Moors and Commons, the Wooded Hills and Farmlands landscape types. The Riverside Meadows are defined as the Teme Valley and the Lugg Valley character areas. The assessment is very logical and does not raise any issues or introduce any concepts that require any change to the assessment undertaken in the LVA.

3.6.2 Assessment of effects on the study area landscape

3.6.2.1 The Teme Hillsides landscape character area covers land to the north and west of the site, from adjacent to the site to over 10km in the west. The assessment of effects on landscape character in the LVA identifies that there would be significant effects on the landscape character out to a radius of 4km in the west based on the landscape being of high sensitivity to change. To the north the threshold would lie at 1km, within the character area because the land falls away into the adjacent Teme Valley outside of the ZTV. Accordingly, the assessment of effects on the landscape types and the broader scale assessment of effects on the overarching landscape character areas accords

3.7 Visual Analysis

3.7.1 Visibility analysis introduction

3.7.1.1 Simply described, the visual analysis is an assessment of how prominent the site is, who can see it and whether the views are important.

3.7.2 Bare Ground Visibility

3.7.2.1 The ZTV for the proposed four 105m to tip turbines of the Reeves Hill Wind Farm identifies the area of bare-ground visibility in the receiving landscape. The visibility identified by the ZTV analysis is reported and analysed in

the LVA. In the SER bare-ground visibility is reported in detail in relation to both Offa's Dyke and the Offa's Dyke National Trail and the Glyndwr's Way National Trail, in the following paragraphs.

3.7.2.2 The 105m tip ZTV shows that there would theoretically be views from almost all of the site-facing upper slopes of the route of the two National Trails and Offa's Dyke SAM, and from the peaks of the hills. The 105m to tip turbine ZTV shows the following pattern of bare ground visibility, from the following locations:

Offa's Dyke

3.7.2.3 Offa's Dyke runs in a north-south direction to the west of the site. Most of the Dyke lies outside of the ZTV. However, there are three main sections from which there would be a view of the proposed development, and 8 individual potential areas of view over the 25.5km length of path that lies within a 10km radius of the proposed turbines. Running from north to south, there would be a potential view, as represented by ES Viewpoint 12 from Llanfair Hill at a distance of over 11km from the nearest turbine, for a duration of about 1km. There would then be no view afforded until 8km from the turbines on Cwm-sanaham Hill. This view would be for a 500m length of path. Views would then be concealed by the landform in front of the viewer when facing south-east until the path rises up onto Panpunton Hill, where a view would be potentially afforded for a 1.3km stretch of the path and Dyke.

3.7.2.4 The next potential views from the path would be from the River Teme crossing for a duration of 150m. Viewpoint I, taken from the centre of Knighton in the Square shows that potentially a bare ground view of a single hub would be afforded from this location.

3.7.2.5 To the south of Knighton the Dyke rises up over Ffridd Hill. Theoretically a view would be afforded for a 1.5km length of the Dyke. Viewpoint A shows that the bare-ground view would be of 3 tips at a distance of 3.7km from the nearest turbine. There would then be no view afforded until the path rises onto Hawthorn Hill, from which theoretically a view would be afforded for a 250m length of the Dyke. There would be no bare-ground views from Hawthorn Hill itself.

3.7.2.6 Views would theoretically be afforded from the southern side of the Lugg Floodplain and as the Dyke rises up onto Pen Offa just to the south of Discoed. Viewpoint 11 represents the view that would be afforded from the Dyke in this location. There would theoretically be bare-ground views from Viewpoint 11 and from the Dyke west of Discoed extending to 2km.

3.7.2.7 A view would not then be afforded south of Viewpoint 11 until the Dyke has crossed the Hindwell Brook and risen up onto Rushock Hill, between 9.5km to 10km to the south of the nearest turbine, for an intermittent 1.2km length of Dyke. To the south of Rushock Hill a view would theoretically be afforded from the top of Hergest Ridge, as shown on Viewpoint F, at a distance of over 12km to the south of the proposed turbines, for a length of 1.5km of the Dyke.

Offa's Dyke National Trail

3.7.2.8 The Offa's Dyke National Trail broadly follows the route of the actual Dyke in this part of the border landscape. Therefore the bare-ground views described of the turbines from the Dyke would also be the same as the ZTV of the National Trail.

Glyndwr's Way National Trail

3.7.2.9 Glyndwr's Way crosses Wales from east to west and ends at Knighton. A potential view of the proposed turbines from this National Trail would be afforded from three sections of path, as described in the following text. A view would theoretically be afforded as the path runs along the northern side of Garth Hill for a duration of 800m. There would be no views further west until on Ebrandy Hill where a view would theoretically be afforded for 1.4km of the Trail between Ebrandy House and Down's Duingle. A view would also theoretically be afforded from Bailey Hill for about 1.3km. There would be no views afforded from over 8km west of the site. In total there would theoretically be a view afforded in bare-ground conditions for 3.5km of the 9.3km length of Trail within 10km of the proposed turbines.

3.7.2.10 The actual nature of these views are fully evaluated and the effects identified reported in the main body of the SER below.

3.7.3 Viewpoint analysis

3.7.3.1 Viewpoint locations were chosen in consultation with the Herefordshire County landscape architect, Chris Mayes and were considered representative of the main landscape character areas and types and range of visual receptors where a view would be afforded. They are also representative of varying distances and directions from the site.

3.7.3.2 The full viewpoint selection process is presented at Appendix 4.2 to the ES, and summarised in sub-Section 4.10.17. Following the submission of the application some criticism has been made of the viewpoints selected. However, both Chris Mayes and the LVA author still have the opinion that the viewpoint selection process was undertaken in a rigorous way and the resultant viewpoints are both appropriate and representative.

3.7.3.3 It has been agreed that some additional wireframes will be submitted to supplement the 12 viewpoints, to provide specific information about the change in view from three receptors:

- Glyndwr's Way
- Offa's Dyke
- Stowe Village

3.7.3.4 The locations of these additional 12 viewpoints are shown on Figure A to L, bound in this SER document.

3.7.3.5 Each wireframe image is a curvilinear projection and should be viewed at a distance of 353mm when printed at A3, with the page curved through 65 degrees.

3.7.3.6 The magnitude of change in the view from each of the 12 additional viewpoints has been assessed, as presented in Table 3.1.

3.7.3.7 On the basis of the fieldwork observations and the analysis of these wireframes, the magnitude of change in the view from each of the 12 viewpoints has been assessed. The sensitivity of the visual receptors to the proposed changes has also been assessed, using recognised criterion as presented in Table 3.1.

3.7.4 Summary of Effects on visual amenity

3.7.4.1 The analysis of viewpoints in Table

3.1 below demonstrates that the magnitude of change is heavily dependant on the levels of woodland and tree cover in the near distance between the viewpoint, or visual receptor, and the development, that is not shown on the wireframes. From all of these views the wind farm would be seen as a coherent group of wind turbines with very few disrupting elements to detract from their simple and sculptural form. The effects of the undulating landform and the trees and woodlands on the horizon in the views will heavily influence visual amenity changes. From very few locations would the view be more extensive in winter because the tree cover is dense and cover is not limited to narrow shelterbelts that would filter views, but would continue to provide dense wooded skylines. Where reference is made in Table 3.1 to the hubs being visible, this would be the case for any turbine model with an overall tip height of 105m to tip.

3.7.4.2 Whilst some significant effects have been identified from the additional viewpoints, these effects are not necessarily assessed as being negative. The viewpoint analysis is used in the following sections of this SER as one of the sets of data to inform the likely impacts on the linear (National Trail) visual receptors, landscape receptors (AONB) and cultural heritage feature (Offa's Dyke).

Table 3.1 Viewpoint Analysis of additional wireframe locations

No	Viewpoint	NGR Easting	Receptors	Landscape character	Direction of view to site	Number/ extent of view	Nearest wind turbine (km)	Horizontal angle (°)	Magnitude of change in the view	Sensitivity of viewer	Effect on viewer
Northing											
A	Ffridd Hill Golf Course	328500E 270960N	Golf Course adjacent to Offa's Dyke National Trail	Wooded Hills and Farmland	Looking South-East 130- degrees	3 tips	3.7km	§	Negligible	High	Negligible
B	Ffridd Hill Offa's Dyke	328465E 271400N	National Trail	Wooded Hills and Farmland	Looking South-East 121- degrees	1 hub 3 tips	3.9km	§	Negligible	High	Negligible
C	Glyndwr's Way	325570E 272245N	National Trail	Wooded Hills and Farmland	Looking South-East 124- degrees	4 towers 4 hubs	36.9km	§	Low	High	Moderate
D	Rushock Hill	328920E 259590N	National Trail, Open Access Land	Principal Wooded Hills	Looking North - East 21- degrees	4 towers 4 tips	9.2km	§	Very Low	High	Slight to Moderate / Moderate
E	Bradner Hill	328220E 258410N	National Trail, Open Access Land	High Open Moorland	Looking North - East 25- degrees	4 towers 4 hubs 4 tips	10.5km	§	Very Low/ Negligible	High	Slight to Moderate / Moderate / Negligible
F	Hergest ridge	326100E 256740N	National Trail, Open Access Land	High Open Moorland	Looking North -	3 towers	12.9km	§	Negligible	High	Negligible

					East	4 hubs					
G	Panpunton Hill I	327800E 274360N	National Trail	High Enclosed Plateau	41-degrees Looking South-East 146-degrees	4 tips 3 towers 4 hubs 4 tips	6.2km	§	Low	High	Moderate
H	Panpunton Hill II	328160E 273640N	National Trail	High Enclosed Plateau	Looking South-East 146-degrees	3 towers 4 hubs 4 tips	5.5km	§	Low	High	Moderate
I	Knighton Square	328400E 272300N	Town Centre	Wooded Hills and Farmland	Looking South-East 146-degrees	1 towers 1 hubs 4 tips	4.4km	§	No View	High	No Effect
J	Stowe Churchyard	331000E 273680N	Churchyard	Principal Wooded Hills	Looking South-East 146-degrees	3 towers 4 hubs 4 tips	4.1km	§	Medium	High	Moderate to Substantial
K	Offa's Green, Norton	330365E 266733N	Village	Principal Wooded Hills / Principal Settled Farmland	Looking East 44-degrees	4 tips 3 hubs 4 tips	1.8km	§	Medium	High	Moderate to Substantial
L	Warden Close, Presteigne	330840E 264683N	Residential Street	Principal Wooded Hills Landmap: Presteigne Urban	Looking North 14-degrees	4 tips 4 hubs	3.8km		Low	High	Moderate

3.8 Assessment of Effects on Landscape

3.8.1 This section draws on the findings of the review of the development, the key characteristics of the landscape character areas, the visibility analysis, the viewpoint analysis and all other fieldwork observations, and discusses the significance of the predicted effects from the proposed turbines on:

- The landscape character of the southern edge of the Shropshire Hills AOBN between 3.5km to 4.5km to the north of the site.

3.8.2 Effects on landscape fabric

3.8.2.1 A number of direct effects on the site identified in the ES are being considered in terms of the need for the effect to take place due to potential options relating directly to the operational need, and are listed in the following text:

Wall Reinstatement

3.8.2.2 The site would be accessed from the west of the site, from the adjacent unclassified road. To facilitate site access some sections of the relic stone wall bounding the site would need to be dismantled. Discussions are underway with Herefordshire Council over the potential reinstatement of sections of the stone wall bordering the site on the western boundary. Whilst discussion will continue, balancing the requirements from a landscape, ecological and archaeological perspective.

Borrow Pits

3.8.2.3 Two potential locations of borrow pits are identified in the ES. The finalisation of the borrow pit location would be subject to a ground condition survey. The effects of these borrow pits were considered in the ES.

3.8.3 Effects on landscape character of the site

3.8.3.1 The potential impact on the character of the landscape, of JCA 98 Clun and North West Herefordshire has been raised by Natural England. The assessment of effect was set out in section 4.8 of the ES. The following section of the SER provides more specific information

over the nature and extent of actual significant effects on:

- The Enclosed Moors and Commons landscape type within 2km, extending out to 3km in the east and 4km in the west, crossing the Powys border into an area with similar characteristics to this type (4.11.4.6).
- The Wooded Hills and Farmlands landscape type within 1km to 2.5km from the site (4.11.4.11).
- The High Enclosed Plateau landscape type between 3.5km to 4.5km from the site (4.11.4.23).

3.8.3.2 There is no disagreement over the identification of effect. However, Hayley Pankhurst sets out in her consultation response that: *“It is unfortunate that the ES does not put its conclusions into context by indicating what proportion or percentage of the three landscape types and the Landscape Character Area would be significantly impacted by the proposal. In order to aid our own understanding of the footprint of these impacts we have carried out our own calculation using GIS. This indicates that in the order of 18.66km² or 2.98% of the Clun and North West Herefordshire Hills LCA would experience these significant impacts. See map attached.”*

3.8.3.3 In response, additional information is provided covering:

- The factors influencing visibility in the landscape
- The reason why tools such as ZTVs, wireframes coupled with field observations are essential to the identification of effects.
- The reason why percentages of types or areas is not recorded
- The reason why the GIS based approach substantially over-calculates the area of potential change in view

The factors influencing visibility in the landscape

3.8.3.4 As set out in the LVA, as well as influencing the perception of the landscape, the levels of visibility are hugely variable in this

landscape, in the main due to the effects of the landform, woodland cover and the sunken and hedgerow tree-lined nature of the lanes and tracks in the landscape. Whilst theoretically long views are afforded of the site, and would be afforded of the proposed four turbines, as indicated by the ZTV, Figure 24, Volume 3. In practice the study area covers a far more visually enclosed landscape with few long distance views. This is analysed in detail in sub-Section 4.9 of the LVA.

The reason why tools such as ZTVs, wireframes coupled with field observations are essential to the identification of effects.

3.8.3.5 Visibility is a function of the combination landform and the presence of vegetation, trees and woodland, with the potential to have a screening effect. In the Herefordshire and Powys landscape context of the site the undulating hilly landform on which the presence of hedges with hedgerow trees, dry stone walls, earth banks with woody vegetation on top, copses and woodlands, including large-scale forestry plantations, strongly influences the visibility from roads, tracks and public rights of way. ZTVs and wireframes identify where bare-ground views would theoretically be afforded. It should be noted that the view of a single tip is not differentiated by ZTVs from a view of a full turbine. Wireframes are useful tools in identifying the magnitude of bare-ground visibility that would be experienced from any given location in the landscape; the extent of view of each turbine and the scale of the turbine relative to the other features due to distance from the turbines. By using wireframes in the field the actual visibility can be calculated for any given point; provided viewed at the correct viewing distance.

3.8.3.6 In this instance the wireframes at Figures 8A to L represent a 65-degree angle of view and when printed on A3 paper should be viewed in monocular perspective at a distance of 340; and at A4 from a distance of 230mm. When the combination of local vegetation and built form are viewed in combination with wireframes the actual nature of the change in view can be calculated, and the magnitude of change in view judged. A ZTV has been generated for a 10km radius of the site, Figure 7, showing greater detail over the sections of Offa's Dyke in particular where a view would or

would not be potentially afforded in bare-ground conditions; supported by wireframes presented in Figures 8A to L, bound within this volume.

3.8.3.7 Visibility is a function of magnitude of change of view and not sensitivity of receptor to change. The magnitude of effect can only be calculated by combining the magnitude of change of view with the sensitivity of receptor to the change. Accordingly, the change in view from a particular location may be significant for some receptors due to their high sensitivity and at the same time not be significant for lower sensitivity receptors.

3.8.3.8 By not identifying the actual change in view that would be experienced, the true magnitude of change of view is not able to be combined with the sensitivity of receptor to change.

3.8.3.9 In this case, there would be a medium magnitude of change of view from the churchyard and from 2.9km of sections of seven individual public rights of way. There is no open access land. These medium magnitude of change of view would bring about moderate to substantial effects on these highly sensitive receptors, between 3.5km to 4.5km from the site. A view would be afforded from the unclassified road, for a short duration, that would bring about a moderate and not significant effect on this medium sensitivity receptor.

The reason why percentages of types or areas is not recorded

3.8.3.10 The ES identifies that there would be some significant effects in the range of 3.5km to 4.5km from the southern edge of the Shropshire Hills AONB on the character of the landscape. The characteristics present in the landscape that influence visibility and views out are briefly summarised in sub-Section 4.8 of the LVA: 4.8.49 *"These are extensive areas of enclosed upland landscapes with exposed rolling topography. The designated pastoral farmland is of high value. This is in part due to the medium to high quality of the land, reflecting the strength of the enclosed former common land and hedged landscape features and ongoing lack of intensity of land use overall, and the value of features passing through the Clun including Offa's Dyke. Settlement is very sparse; consequently there are few dwellings in these*

relatively remote areas.”

3.8.3.11 Sub-Section 4.8.50 “The site lies to the south of this landscape type. The ZTV indicates that most of the south-facing slopes and closest hilltops within this type fall within the ZTV including Stow Hill. Field visits have confirmed that due to the low levels of tree cover within the open parts of this pastoral land, and the tight trimming of the majority of the hedges, the actual visibility on the High Enclosed Plateau correlates well with the theoretical visibility indicated by the ZTV.”

3.8.3.12 Sub-Section 4.8.51 “Because the viewer is looking from one part of the elevated undulating exposed rolling land to another, the land on which the Reeves Hill Wind Farm is proposed would be visible along the southern most hill tops of the type, including from parts of Offa’s Dyke where it crosses the type. Viewpoint 12 is taken from the land to the north-west of the site and shows a very clear impression of the landscape type, of Offa’s Dyke, and clearly shows the four proposed turbines in the distance from the type. Viewpoint 6 falls within this landscape type on Hopton Titter. Viewpoint 9 from the A488 to the south-west of Knighton, Viewpoint 11 from Offa’s Dyke to the west of the site and Viewpoint 1 from the Spaceguard Centre Car Park are also taken from landscape displaying similar characteristics within Wales. The viewpoints are presented in Figure 25, the landscape types are presented in Figure 20, and the Landmap units on Figure 21, Volume 3.”

3.8.3.13 Under Sensitivity to change sub-Section 4.8.53 records that “There are very few dwellings, and few roads and a low number of highly sensitive receptors overall present in the type. However, the type lies within the Shropshire Hills AONB national landscape designation. In addition, the highly sensitive long-distance Offa’s Dyke SAM and footpath crosses the type. The sensitivity of the landscape type is high to perceived changes outside of the type.”

3.8.3.14 The LVA records in sub-Section 4.11.53 that: “Between 3.5km to 4.5km from the site there would be some medium magnitude of change of views that would bring about moderate to substantial effects. Over 4.5km from the site there would be very few views because of the well-wooded site facing slope and hilltop

woodlands, such as on Stow Hill. Where afforded, such as from Viewpoint 6, the magnitude of change of view would be very low, that would create a slight to moderate magnitude of effect. No effects over 4.5km, including from the AONB, would be significant.”

3.8.3.15 Sub-Section 4.11.54 “With increasing distance from the site the magnitude of change of view to the four proposed turbines decreases from high to no change, and the levels of significance therefore correspondingly drop to negligible. Within 3km of the site the presence of the turbines would create some significant effects on the undesignated local landscape of the site. Between 3.5km to 4.5km in the Shropshire Hills AONB there would be some significant effects on the plateau landscape. Field visits, wireframes and the viewpoint analysis have been used to inform the distance at which the likely effects drop below the threshold of significance, below moderate to substantial. This has been demonstrated to be variable, depending greatly upon the screening effects of the large-scale woodlands on the hillsides and the linear carr woodland and hedgerow trees in the valleys and the nature of the landform.”

3.8.3.16 Sub-Section 4.11.55 “At about 2.5km to 3km outside of the AONB, and between 3.5km to 4.5km in the AONB, from the site the levels of significance for the proposed four turbines would drop to moderate from moderate to substantial in the most open locations. At greater distances than this the significance drops to slight or negligible. There are transitions between these assessed effects; as has been demonstrated, the effects on the near distance very well-wooded and enclosed places within the areas are only slight or negligible and not significant.”

3.8.3.17 The character of landscape strongly influences visibility. From the pastoral and open areas, that tend not to be accessible, there are open views that correspond with the ZTV; however, around the farms at the lower end of Stowe the levels of tree cover are such that there would be no views. From the churchyard some moderate magnitude of changes in view have been identified using the wireframe shown at Figure 8J, that show, based on the high sensitivity of receptor to change a moderate to substantial and significant effect would be

experienced.

3.8.3.18 The reason why the GIS based approach substantially over-calculates the area of potential change in view

3.8.3.19 By using a GIS based approach the computer based analysis substantially over-calculates the area of potential change in view by not taking into account the areas where there would actually be a view afforded by virtue of the land lying within or out with the ZTV. In addition by the nature of the change in view not being calculated through the use of wireframes and field visits to identify what change would be experienced from different parts of the landscape. In this instance, most of the accessible parts of the landscape are within well-wooded locations, including Cwm Wood and Jutland Plantation, or outside of the ZTV. Many of the footpaths follow hedge lines and views south are limited. The reality is that a far smaller area than the 2.98% calculated by the GIS system would be afforded a view; and a smaller area again would be afforded a medium magnitude of change in view or higher, that would bring about significant effects on viewers.

Effects on Cultural Heritage Features

Effects on the Offa's Dyke SAMs,

3.8.3.20 Offa's Dyke lies on the Welsh side of the modern, administrative England / Wales border to the south of Knighton, and in England to the north of Knighton where it crosses the Clun in the Shropshire Hills AONB. To the south of Presteigne the Dyke crosses back into England.

3.8.3.21 In total there are nine SAM entries in the Welsh part of the study area covering individual sections of earthwork and upstanding remains of the Dyke, in a radius of 10km from the proposed Reeves Hill Wind Farm, and a single SAM entry in England, covering in combination over 25km in total length.

3.8.3.22 A ZTV has been generated for a 10km radius of the site, Figure 7, showing greater detail over the whole route of Offa's Dyke within this radius, including the sections of Offa's Dyke that are evident as earthworks that lie within 10km of the proposed turbines where a view would or would not be potentially afforded in bare-ground conditions. The

assessment considered the Dyke as a whole and not as individual SAM entries.

3.8.3.23 The assessment set out in sub-Section 4.11 of the ES identified that there would be views of the proposed turbines from Offa's Dyke, as illustrated through Viewpoints 7, 11 and 12. The effects on the setting, as well as views from, to and of Offa's Dyke as a feature of cultural heritage value were considered in the LVA; and are reported in greater detail in this part of the SER.

3.8.3.24 The definition of setting is not clearly set out by English Heritage or CADW. However, there is guidance available. Appendix 4.4 of the LVA set out the sources of the guidance used to identify the effect of changes in view on setting.

Settings

3.8.3.25 The English Heritage guidance on wind energy and the historic environment is primarily concerned with protecting settings. The ES summarised the assessment process undertaken in the written statement, with the approach taken to defining settings and unaltered settings included at Appendix 10. In the following text the full approach is set out to provide clarification to the conclusions set out in the LVA. The concept of settings in general is considered prior to the consideration of the level of intactness of the setting of Offa's Dyke, followed by the assessment of effect on the setting. The difference between setting and landscape context and views is reported.

3.8.3.26 The building or monument needs to be considered in terms of the original setting and current day setting. It is important to consider what the original function of the building or feature was and whether it was designed to be appreciated from within a particular setting. The modern setting of the building or feature may be very different from the original setting. It is unusual for settings not to have changed in some ways. However, in the case of buildings or features within parklands or on private estates the ownership of the land around them may have remained unaltered. The same applies to narrow or tightly contained streets where in a few exceptional cases no infilling has taken place and the setting remains broadly similar to the original setting.

3.8.3.27 When considering the potential for a wind farm to have indirect effects on the setting of a listed building or monument, the context of the view needs to be taken into account. Just because a view may be afforded does not constitute an impact on setting. There are a number of planning appeal decisions that reflect this principle.

3.8.3.28 An example of how this may be addressed in the case of a wind turbine can be found in the wind farm planning appeal decision at Shipdham in Norfolk (APP/ ref F2605/A/05/1174295), where a Grade 1 Church tower was only about 1.5km away from the proposed wind turbines, but the Inspector noted that while the tower of the village church was a very distinctive feature, it did not have a significant presence outside the village, even though from part of the churchyard there were some views of the 2 turbines.

3.8.3.29 In the absence of the Government providing a formal statutory definition of the term “setting”, through the assessment process undertaken for the LVA a professional judgement as to what setting means on a feature-by-feature basis was made. It has been judged that if the land on which the proposed turbines are planned does not, and never has formed part of the setting of the monument, then the tests in the legislation will have been met. If it does fall within what I have determined to be the proper definition of “setting”, then an assessment of what the effects on the setting of that monument, might be has been undertaken. In other words, if the assessment undertaken demonstrates that there is an impact, the nature of that impact is described.

3.8.3.30 It must also be noted that the assessment of effects of the walkers visual amenity when using the National Trail is not the same as the effects on the setting. These are two separate tests. What is important is to address the setting of the monument to see whether that setting is being adversely affected to an extent that warrants a finding of harm under the Act.

3.8.3.31 The assessment of potential landscape and visual impacts undertaken as part of the viewpoint analysis in the preceding section of this study has shown that within this landscape the main views, and the views of the higher magnitude of change, are likely to occur within

a radius of about 4.5km of the proposed turbines.

3.8.3.32 The settings of features are variable in extent and form. For example, the setting may be contained within the curtilage of the building, as in the case of a listed building in a tight-knit settlement. Assumptions, informed by the professional opinion of the author, have been made for the purposes of this assessment.

3.8.3.33 The settings of features in the open countryside, such as Offa’s Dyke, have been assessed as extending over a broader area into the agrarian landscape in which they sit, unless the setting has been altered by modern development and change to contain the setting in some way. Woodland and dense hedge lines are also strongly containing features that can limit the extent of the setting of a feature. For a visual impact to be brought about on the setting of a SAM, the change in view should be afforded from a publicly available view of the SAM in its setting. Historic features are protected in the public interest and not in their own right. Based on these broad assumptions of the extent of the Dyke’s settings, the following analysis assesses the potential impacts that might be brought about through the proposed turbines on the setting of Offa’s Dyke.

3.8.3.34 As landscape features, the sensitivity of a monument to changes in structure is very high, and to physical changes within its curtilage and setting is high. None of the changes being considered in this assessment fall within either the curtilages or settings of any listed building. All of the effects considered in the following analysis are indirect and from beyond the setting of the Dyke.

3.8.3.35 Since the submission of the application a number of guidance or research documents considering this particular issue have been published. The most relevant publications are considered below:

Recent Guidance

3.8.3.36 Since the submission of the application some guidance has been updated or issued by the government relating to the cultural heritage value of historic features and wind energy. These have been reviewed and the assessment of effects updated from the ES to reflect current and emerging guidance.

EH Seeing the History in the View

3.8.3.37 English Heritage commissioned Land Use Consultants to produce guidance to assist with consistently assessing the impact of changes in views that have the potential to impact on the landscape views and settings of features of cultural heritage value. This guidance, *Seeing the History in the View: A Method for Assessing Heritage Significance Within Views* (Appendix 2), published in April 2008, is currently a draft for consultation. The use of this guidance in determining impacts on the cultural heritage value of the landscape was discussed in consultation with Herefordshire Council, but it was agreed that the guidance is aimed at protecting views of specific features in a landscape and would not be usefully applicable in this instance.

Settings

3.8.3.38 Currently, the English Heritage working definition of setting, described in their advice within: *Conservation Principles of Sustainable Management of the Historic Environment: First Stage Consultation 2006*, is: *“The visual surroundings in which a place is now experienced”*, refined in the second round of consultation in 2007 as: *“The surroundings in which a place is experienced, embracing an understanding of perceptible evidence of the past in the present landscape.”* Therefore, whilst setting is still regarded as being primarily a visual issue, the concept has been broadened out to include other senses than just views; to include an element of non-visual perception. In the final, published version in April 2008 English Heritage define setting in paragraph 76: *“Setting is an established concept that relates to the surroundings in which a place is experienced, its local context, embracing present and past relationships to the adjacent landscape. Definition of the setting of a significant place will normally be guided by the extent to which material change within it could affect (enhance or diminish) the place’s significance.”*

3.8.3.39 A paper was issued in July 2008 by Dr Simon Collcutt of Oxford Archaeological Associates. In this paper, *The Settings of Cultural Heritage Features Assessment Principles*, Dr Collcutt sets out the background to the issue of the paper being related to the draft Heritage Protection Bill that was released by the

Secretary of State for Culture, Media and Sport in April 2008. Of note, Collcutt sets out in paragraphs 4.6-7 that: *“In connection with wind farms, a visually permeable type of development which does not commonly block off broad views entirely, the contribution of the visual setting to special interest may still be apparent were the development to take place.”* And that: *“Again in connection with wind farms, turbines may be visible over very long distances because they are tall structures and they must be sited to capture the wind. This will often lead to exaggerated concern at the Planning stage with respect to the range over which significant setting impact will occur.”*

3.8.3.40 In paragraph 3.6 Collcutt considers the application of the concept of setting in the landscape and sets out that: *“A crucial example of unsound use of the concept of setting in historic environment terms would be to suggest that the landscape (any and all landscape) around a cultural heritage feature should be taken as the ‘tablecloth on which the feature stands’²⁴, without there being any clear, and clearly explained, relationship between the characteristics of that landscape and the special interest of the cultural heritage feature. Masser (2006) has rightly noted that “some of the landscape elements surrounding a site will be highly relevant to the setting of a site, others much less so”. Landscape and setting are not synonymous in this context. (²⁴ *Guestwick Wind Farm, Broadland District, appeal heard by D Lavender, 2006*)”*

3.8.3.41 In relation to settings; Collcutt attempted in 1999 to define the settings of cultural heritage features in the *Journal of Environmental and Planning Law*. This has been used extensively in the consideration of settings with regard to wind farms:

- (a) Intrinsic visual interest – the visual qualities of the archaeological features themselves as seen from other points;
- (b) Topographic setting – the visual relationship of the archaeological features to the surrounding topography (including local slope angles) and to such major elements as hills, river valleys etc.;
- (c) Landuse setting - the visual relationship of the archaeological

features to the landuse and particularly to those elements of the current landuse which had remained unchanged or were similar to those which existed at the time the features were occupied; and

- (d) – Group setting - the visual relationship of the archaeological features to other visible archaeological sites in the vicinity, in terms of both contemporary and diachronic (“palimpsest”) groupings or patterning.

3.8.3.42 This definition of setting relates well to the most specific guidance in relation to wind turbines issued. The English Heritage guidance: Wind Turbines and the Historic Environment, 2005, has been tested at a number of wind farm Public Inquiries, including by the LVA author. The resultant inspector’s reports identify that this is a sound document providing valuable advice to practitioners.

3.8.3.43 When assessing the acceptability of a change in view, English Heritage guide practitioners to consider a number of factors when considering indirect impacts. “Wind energy projects may impair the setting of historic sites and can compromise the visual amenity of the wider landscape, detracting from historic character, sense of place, tranquillity and remoteness.

3.8.3.44 *When considering setting and visual amenity: In accordance with the guidance provided by PPS22 and its companion guide, consideration should be given to the impact of wind energy developments on the wider landscape setting and visual amenity of historic sites. This consideration should extend to the effects of any necessary infrastructure and to the individual as well as the cumulative impact of developments. Seasonal variations in visual impact should also be considered.*

3.8.3.45 *While change within the setting of historic sites may often be acceptable, in certain instances development will be considered inappropriate. Among particular factors that should be borne in mind when assessing the acceptability of developments within the setting of historic sites are:*

3.8.3.46 *Visual Dominance: Wind turbines are far greater in vertical scale than most historic features. Where an historic feature (such as a*

hilltop monument or fortification, a church spire or a plantation belonging to a designed landscape) is the most visually dominant feature in the surrounding landscape, adjacent construction of turbines may be inappropriate.

3.8.3.47 *Scale - The extent of a wind farm and the number, density and disposition of its turbines will also contribute to its visual impact.*

3.8.3.48 *Intervisibility – Certain archaeological or historic landscape features were intended to be seen from other historic sites. Construction of wind turbines should respect this intervisibility.*

3.8.3.49 *Vistas and sight-lines – Designed landscapes invariably involve key vistas, prospects, panoramas and sight-lines, or the use of topography to add drama. Location of turbines within key views, which often may extend beyond any designated area, should be avoided.*

3.8.3.50 *Movement, sound or light - The movement associated with wind turbines as well as their scale may be a significant issue in certain historic settings. Adequate distance should always be provided between important historic sites and wind turbines developments to avoid the site being overshadowed or affected by noise or shadow flicker effects.*

3.8.3.51 *Unaltered settings – The setting of some historic sites may be little changed from the period when the site was first constructed, used or abandoned. Largely unaltered settings for certain types of sites, particularly more ancient sites, may be rare survivals and especially vulnerable to modern intrusions such as wind turbines. This may be a particular issue in certain upland areas.*

3.8.3.52 The conclusions from the assessment of effects on Offa’s Dyke were taken in turn in relation to these specific tests. The ZTV defines where views would be experienced but in many cases these are just landscape views. What is important in this case is to define where landscape views become an aspect of setting.

3.8.3.53 In the following additional reporting, the effects on views and the setting of the Dyke are explored further, in light of the recent publications and guidance, and in the light of the

need to define those that constitute setting and those relating to landscape views.

The history of the Dyke

3.8.3.54 A comprehensive summary of the history of Offa's Dyke has been extracted from the Offa's Dyke Association website (www.offasdyke.demon.co.uk).

3.8.3.55 Offa was the King of Mercia between 757 to 796 AD. His kingdom covered the area between the Trent/Mersey Rivers in the North to the Thames Valley in the South, and from the Welsh border in the West to the Fens in the East. At the height of his power towards the end of the 8th century, however, he also controlled Kent, East Anglia and Lindsay (Lincoln), and had alliances with Northumbria and Wessex, sealed by the marriage of two of his daughters to their Kings, Aethelred and Beorhtic respectively. He was, therefore, effectively an early King of England.

3.8.3.56 Offa's Dyke is a linear earthwork, which roughly follows the Welsh/English boundary. It consists of a ditch and rampart constructed with the ditch on the Welsh-facing side, and appears to have been carefully aligned to present an open view into Wales from along its length. As originally constructed, it must have been about 27 metres wide and 8 metres from the ditch bottom to the bank top. The origins of the Dyke are shrouded in mystery so that many of its aspects are speculated upon rather than being fully understood. Asser, the biographer of King Alfred, gave the first known reference to it when he wrote, about 100 years later that a certain vigorous king called Offa had a great dyke built between Wales and Mercia from sea to sea.

3.8.3.57 The Dyke appears to have been constructed in response to events in the border region involving the Princes of Powys, but whether it was intended as an agreed boundary, as a defensive structure with long lost additional fortifications, or for some other use, is not known. It is thought to have been started in about 785 AD and to have taken several years to build. The 9th Century history of the region suggests that the earthwork had only a short period of importance and was then abandoned.

3.8.3.58 Much of the Dyke is still traceable along the 80 miles from the Wye Valley to

Wrexham. In places it still retains most of its original impressive dimensions while in other parts it has disappeared due to 1200 years of farming activity and its presence can only be detected by archaeological work. Two stretches of earthwork at each end of this length are not now considered to be the work of Offa's time, but the King filling much of the central section gave Asser the licence to describe the Dyke as going from sea to sea.

3.8.3.59 The CPAT web site offers further insight into the Dyke and it's history setting out that: Offa's Dyke is the best evidence we have of the power and achievement of Offa. One can see the building of the Dyke as an attempt to rationalise a western boundary between Mercia and the independent British (Welsh) Kingdoms then present in modern Wales, who Offa had fought against with only partial success in a number of military campaigns. Sir Cyril Fox, an archaeologist who made a pioneering study of the earthwork in the 1920s and 1930s, interpreted the Dyke as the product of a negotiated agreement between Mercia and the Welsh Kingdoms. More recent researchers such as Frank Noble and David Hill explain the Dyke more as a directly defensive earthwork built explicitly in the Mercian interest at a time of continuing instability along the presumed frontier.

3.8.3.60 Offa's great earthwork has historical significance beyond the immediate context of ancient Mercia. The Dyke exemplifies processes of increasingly political centralisation across Anglo-Saxon Britain and contemporary Europe which were eventually to lead to the emergence of the geographical and cultural domains - such as England and Wales - we live with today. It could indeed be that the Dyke itself directly influenced such developments, particularly with respect to the genesis of a politically coherent Welsh identity in the early medieval period. Though short lived as an active Mercian/Anglo-Saxon frontier, its continuing existence as an evident dividing line in the landscape may still have been a powerful ideological statement of the apparent separation of all to the west from 'English' Britain, so helping to create a common sense of unity among Welsh peoples which had not previously existed.

Views from Offa's Dyke

3.8.3.61 Whether originally intended to be

defensive or administrative, Offa's Dyke occupies some commanding positions in the landscape where it crosses high land; particularly along Panpunton Hill.

3.8.3.62 When observing the location of the Dyke in relation to the landform on the high ground, the Dyke tends to face towards the Welsh side of the border. The Offa's Dyke Association records this observation on their website where they state that the Dyke: "*appears to have been carefully aligned to present an open view into Wales from along its length*". Views west and south-west from Panpunton Hill across the Teme Valley are of particular note by the LVA author for providing panoramic views into Wales.

3.8.3.63 The fact that the Dyke occupies the western side of the hilltops influences views from the Dyke; meaning that those into Wales seem to be most prominent and common helps to explain why there would be very limited areas of the Dyke afforded views of the proposed wind farm in the east. The views seen of the proposed turbines are explored below.

3.8.3.64 Identifying views from Offa's Dyke and consideration of effects on the setting of the Dyke

3.8.3.65 Whilst the Dyke in its present form is not continuous, and only sections remain; the Dyke was intended to be a linear and continuous feature, and in terms of defining the setting of the feature and views from, to or of the Dyke in the context of the proposed turbines, the Dyke is assumed to be a continuous feature. This is in part at variance with EH guidance that makes it clear to practitioners that only upstanding or visible remains have a setting.

3.8.3.66 In the following text the Dyke is considered as a continuous route in sections based on visibility of the proposed turbines, and then as a single feature. Views of the proposed turbines from the Dyke are identified in relation to views out and what one experiences of the landscape and setting of the Dyke. Our understanding is that views were intended to be into Wales from the Dyke in terms of the historical purpose of the Dyke as an administrative or defensive boundary, and not views along the Dyke. However, as a National Trail views along the Dyke have a greater

importance, as well as views into Wales. The experience a follower of the National Trail when walking the Dyke is recorded below in the assessment of visual effects on travellers along linear features, and is a separate visual, rather than cultural heritage, assessment.

3.8.3.67 Most of the Dyke lies outside of the ZTV, as shown on the 10km ZTV at Figure 7. However, there are three main sections of upstanding remains from which there would be a view of the proposed development: Panpunton Hill, north of Hawthorn Hill and south of Discoed. There would also be tips visible from Ffridd Hill, as identified in Wireframe A. There would be more distant views from Llanfair Hill in the north, as shown in Viewpoint 12, and from Hergest Ridge in the south as shown on Wireframe F. In total there would be 8 individual potential areas of view identified on the ZTV over the 25.5km length of path that lies within a 10km radius of the proposed turbines.

3.8.3.68 Views of the proposed turbines from and of the monument are now considered from north to south.

3.8.3.69 There would be a view, as represented by ES Viewpoint 12 from Llanfair Hill at a distance of over 11km from the nearest turbine, for a duration of about 1km. Along this part of the route of the monument the turbines would lie in the distance in the line of sight along the Dyke from a number of locations when looking south-east. Viewpoint 12 clearly demonstrates this effect. The turbines would appear on the distant landform; and would not appear to be connected to the Dyke. The turbines would not appear to be in the setting of the Dyke, but in the broader landscape views experienced from the Dyke.

3.8.3.70 There would then be no view afforded over 2.4km length of the Dyke when heading south until 8km from the turbines on Cwm-sanaham Hill. From Cwm-sanaham Hill there would be intermittent views for a 500m length of the Dyke. From this part of the monument the turbines would lie in the distance in the line of sight along the Dyke when looking south-east. The main direction of view when standing on the Dyke is out towards Wales in the west. The turbines would appear on the distant landform; and would not appear to be connected to the Dyke. The turbines would not appear to be in

the setting of the Dyke, but in the broader landscape views experienced from the Dyke.

3.8.3.71 Views of the proposed turbines would then be concealed by the landform in front of the viewer when facing south-east for 800m until the path rises up onto Panponton Hill, where a view would be potentially afforded for a 1.3km stretch of the Dyke. From Panponton Hill views into the Teme Valley are the key view afforded, and the views with the most interest to attract the eye. Wireframes A and B, show the bare-ground change in view that would be experienced from this closer location. The earthwork is easily read as a continuous feature in this part of the landscape and the elevated position in relation to the Teme Valley creates a strong boundary to the Panponton Hill ridgeline. The turbines would lie in the distance, in places in the line of sight along the Dyke, from a number of locations when looking south-east. The wireframes clearly demonstrates this effect. The turbines would appear on the middle-distant landform; and would not appear to be connected to the Dyke due to the valley in the foreground. Again the turbines would not appear to be in the setting of the Dyke, but in the broader landscape views experienced from the Dyke.

3.8.3.72 The next potential views from the path representing the route of the Dyke would be from the River Teme crossing for a duration of 150m. However, field observations have shown that in reality there would be no change in view due to intervening built form and vegetation.

3.8.3.73 To the south of Knighton the Dyke rises up over Ffridd Hill. Theoretically a view would be afforded for a 1.5km length of the Dyke from Ffridd Hill. Wireframes A and B from Ffridd Hill show that the bare-ground view would be of 3 tips and one hub at a distance of 4km from the nearest turbine, as a side view looking into the east from the Dyke. The Dyke as an earthwork only becomes more prominent on the southern side of Ffridd Hill. Along this part of the monument the turbines would lie in the 4km distance to the east of the Dyke from a number of locations when looking east. The turbines would only be intermittently seen as tips on the horizon and would not appear to be in the setting of the Dyke, but in the broader landscape views experienced from the Dyke. There would then be no view afforded until the Dyke rises onto Hawthorn Hill, from which a

view would be afforded for a 250m length of the Dyke to the side and the east. Viewpoint 7 shows the change in view that would be experienced from this part of the Dyke. There would be no bare-ground views from Hawthorn Hill itself where the Dyke runs to the west of the hill, affording views into Wales. From Viewpoint 7 and from the environs of the Dyke in this part of the landscape views of the turbines would be to the east, at between 3km to 3.5km. The Dyke is evident as an earthwork. There would be no views of the turbines along the line of the Dyke or of the Dyke in the context of the proposed turbines. The turbines would appear in the landscape context and not the setting of the Dyke. As landscape views from the National Trail the effect of the views of the turbines would be significant, but there would be no impact on the Dyke as a cultural heritage feature.

3.8.3.74 From Hawthorn Hill south to the Lugg Valley the Dyke follows Furrow Hill on the western side, and no views are afforded into the east towards the proposed turbines.

3.8.3.75 To the south of Discoed the Dyke rises out of the Lugg valley towards Pen Offa. Viewpoint 11 is taken from this part of the Dyke, and shows a view of the proposed turbines to the north-east. The upstanding parts of the Dyke west of Discoed would also experience a change in view; from the parts that are not enclosed by scrub and woody vegetation and high tree lines. In this part of the landscape the Dyke has been incorporated into the agrarian landscape more strongly than on the open hilltops, with the Dyke forming part of the field boundary pattern.

3.8.3.76 There would then be no views afforded from the Dyke until the monument rises from the Hindwell Brook over Herrock Hill. The National Trail and the monument take different routes for this section of the feature. From Herrock Hill views would be afforded along the line of the Dyke across the Hindwell Brook valley towards the site from the upper slopes. Therefore, along this part of the route of the monument the turbines would lie in the distance in the line of sight along the Dyke from a number of locations when looking north-east. The turbines would appear on the distant landform; and would not appear to be connected to the Dyke. The turbines would not appear to

be in the setting of the Dyke, but in the broader landscape views experienced from the Dyke. There is then a 5km section of Dyke route that would not be afforded a change in view.

3.8.3.77 To the south of Rushock Hill Offa's Dyke heads south over undulating land and into areas where there would be no views afforded of the turbines from the Dyke. The Dyke becomes less continuous as an earthwork, and separates from the National Trail route. Commanding views are afforded from Bradnor Hill and Hergest Ridge, neither of which lie on the Dyke route, but into both England and Wales. There would be landscape views of the turbines from both of these high locations, but none of the turbines and the Dyke or the turbines in the context of the Dyke, and there would be no associations drawn between the turbines and the cultural heritage aspects of the landscape.

3.8.3.78 In the ES the proposed development was analysed in terms of impact on cultural heritage features using the criterion set out by English Heritage in their Guidance: Wind Turbines and the Historic Environment. This is expanded on in the following text.

Visual Dominance

3.8.3.79 Wind turbines are usually far greater in vertical scale than most historic features, and in vertical scale the turbines proposed for the Reeves Hill Wind Farm would be taller than the earthwork and linear feature remains of Offa's Dyke itself, and in some locations, due to the variable height of the landform AOD of the route of the Dyke, higher than the ground on which the Dyke was built. However, there is no direct comparison that would be drawn in this instance, and the turbines would in no views be compared in height to Offa's Dyke. In addition, Offa's Dyke is not the most visually dominant feature in the surrounding landscape and the turbines would not constitute "adjacent construction" and there the construction of the turbines would not be inappropriate in the context of Offa's Dyke which lies about 3km to the west at the nearest point. The analysis of views that would be afforded of the proposed turbines from parts of the Dyke has identified that whilst there would be some sections, such as from Panponton Hill, where the turbines would be seen in the line of the Dyke (on distant landform), there would be no views of the proposed turbines in the same direction of view

to the direction of view the Dyke was intended to protect, towards Wales in the west. Views would be to the south-east, east or north-east only. The assessment conclusions would be different if the assessment was considering a wind farm to the west of the Dyke.

Scale

3.8.3.80 English Heritage state that the extent of a wind farm and the number, density and disposition of its turbines will also contribute to its visual impact. The scheme is for a four-turbine development. The turbines would not constitute "adjacent construction" and there the construction of the turbines would not be inappropriate in the context of Offa's Dyke which lies about 3km to the west at the nearest point.

Intervisibility, vistas and sight-lines

3.8.3.81 English Heritage identify in their guidance that certain archaeological, cultural heritage or historic landscape features were intended to be seen from other historic sites and designed landscapes invariably involve key vistas, prospects, panoramas and sight-lines, or the use of topography to add drama. There are views to the east from the Dyke and to England and the site on Reeves Hill from the Dyke, but the view of the hill is to the side of the vista, as described in Appendix 4.4 of the ES, and the proposed turbines would sit in the eastern quadrant of the vista, not in the direct line of the view, except from the far north, as shown in Viewpoint 12. Collcutt clearly identifies in his paper that turbines do not block views, but are potentially an interruption to open views.

3.8.3.82 The Dyke was built with the intention of viewing the landscape from the east to the west. The turbines would be visible from the Dyke in the east and accordingly, the turbines would not block any historic views. The four turbines afford permeated views through the site. The construction of the proposed Reeves Hill Wind Farm turbines would therefore respect this intervisibility.

Movement, sound or light effects

3.8.3.83 The movement associated with proposed wind turbines as well as their scale may be a significant issue in certain historic

settings, but would not bring about an unacceptable effect in this instance. The minimum 3km distance from the Dyke is an adequate distance that would avoid this linear site being overshadowed or affected by noise and shadow flicker effects.

Settings

3.8.3.84 There are two settings to historic features, the near and immediate setting, and the wider setting. This is distinct from landscape views. The setting of some historic sites may be little changed from the period when the site was first constructed, used or abandoned. The setting of the Dyke is very heavily modified through the arable cultivation of parts of the route and the re-use of some of the Dyke stones, the 20th century development of forestry along parts of the route, pylons and powerlines and the modern development of Presteigne and Knighton that are visible from the Dyke, and that post-date the Dyke. The proposed turbines would become part of this overall scene in views towards the east. Therefore the concept of protecting of unaltered settings is not an issue in the case of the Dyke and the proposed Reeves Hill Wind Farm.

Conclusions

3.8.3.85 Whilst there would be an indirect effect, and a number of locations where new views would be afforded of the Dyke in the context of its upland setting and the turbines, the turbines would not be in the setting. They would be located in the broader landscape views visible from some parts of the Dyke, as shown on the ZTV, confirmed by field visits and described in the text. There would be no impact on the integrity of the feature, the historic or cultural heritage value of the feature and there would be no effect on the setting. Accordingly, there would be no unacceptable effect using the tests set out by English Heritage.

3.8.4 Assessment of Effects on Visual Amenity

3.8.4.1 This section of the SER discusses the potential effects of the proposed wind turbines on the visual amenity of:

- **Fixed viewpoint receptors** – residents of Norton.

- **Linear route receptors** –walkers on the two National Trails.

Fixed point receptors

Settlements

3.8.4.2 Paragraph 4.11.115 stated that: “Norton village lies 1.8km to 2.4km to the south-west of Reeves Hill. The village is situated on the gently sloping south-western banks of the Norton Brook, whilst the wooded site-side valley sides are steep and covered with deciduous woodland and steep grazes pastures. Most of the village lies outside of the ZTV, including the church and the houses along the B4355. The modern development on the western side of the village lies within the ZTV. From this part of the village there would be some medium magnitude of change of view, that due to the high sensitivity of the dwelling receptors, would create moderate to substantial and significant effects on this part of the village. However, there would be no effect on the majority of the village, including the older parts and the church.”

3.8.4.3 A wireframe was run from Offa’s Green on the north-western side of Norton village, as shown in Figure 8K, and shows that there would be a medium magnitude of change in view as identified in the ES, that would be about a moderate to substantial, and significant effect on this part of Norton only. This wireframe represents the location that would experience the highest magnitude of change in Norton.

3.8.4.4 A request was made by a member of the public for a viewpoint to be taken from Warden Close in Presteigne. Warden Close lies about 120m from Viewpoint 2. A wireframe has been run from Warden Close and shows a very similar view to Viewpoint 2, only varying slightly due to the marginally southern location of Warden Close in relation to the site and Viewpoint 2. The wireframe shows that there would be a low magnitude of change that due to the residential receptors in the Close would bring about a moderate and not significant effect.

Linear route receptors- Walkers

Offa’s Dyke

3.8.4.5 Offa’s Dyke runs in a north-south

direction to the west of the site. Most of the Dyke lies outside of the ZTV. However, there are three main sections from which there would be a view of the proposed development, and 8 individual potential areas of view over the 25.5km length of path that lies within a 10km radius of the proposed turbines. Running from north to south, there would be a potential view, as represented by ES Viewpoint 12 from Llanfair Hill at a distance of over 11km from the nearest turbine, for a duration of about 1km, creating low magnitude of change in view that due to the high sensitivity of the receptor would create a moderate effect.

3.8.4.6 The Offas Dyke long distance footpath runs for 177 miles from Sedbury Cliffs on the Severn Estuary near Chepstow to the North Wales resort of Prestatyn on Liverpool Bay. For about 70 miles it follows the course of the Eighth Century Offa's Dyke earthwork

3.8.4.7 There would then be no view afforded over 2.4km length of the Trail until 8km from the turbines on Cwm-sanaham Hill. This view would be for a 500m length of path creating low magnitude of change in view that due to the high sensitivity of the receptor would create a moderate effect. Views would then be concealed by the landform in front of the viewer when facing south-east for 800m until the path rises up onto Panponton Hill, where a view would be potentially afforded for a 1.3km stretch of the path and Dyke. The change in view would create a low magnitude of change in view that due to the high sensitivity of the receptor would bring about a moderate effect.

3.8.4.8 The next potential views from the path would be from the River Teme crossing for a duration of 150m. However, field observations have shown that in reality there would be no change in view due to intervening built form and vegetation.

3.8.4.9 Viewpoint I taken from the centre of Knighton in the Square shows that potentially a bare ground view of a single hub would be afforded from this location, however, field observations have shown that in reality there would be no change in view due to intervening built form.

3.8.4.10 To the south of Knighton the Dyke rises up over Ffridd Hill. Theoretically a view

would be afforded for a 1.5km length of the Dyke. Viewpoint A shows that the bare-ground view would be of 3 tips and one hub at a distance of 4km from the nearest turbine, that would be about a negligible effect. There would then be no view afforded until the path rises onto Hawthorn Hill, from which theoretically a view would be afforded for a 250m length of the Dyke to the side and the east. There would be no bare-ground views from Hawthorn Hill itself.

3.8.4.11 From the south heading north. To the south of Rushock Hill a view would be afforded from the top of Hergest Ridge, as shown on Viewpoint FF, at a distance of over 12km to the south of the proposed turbines, for a length of 1.5km of the Dyke. The magnitude of change of view would be negligible, that combined with the high sensitivity of the receptor would create a negligible effect on users of the Trail. There is then a 5km section of Trail that would not be afforded a change in view.

3.8.4.12 A view would not then be afforded south of Viewpoint 11 until the Dyke has crossed the Hindwell Brook and risen up onto Rushock Hill, between 9.5km to 10km to the south of the nearest turbine, for an intermittent 1.2km length of Dyke. The magnitude of change of view would be negligible, that combined with the high sensitivity of the receptor would create a negligible effect on users of the Trail. There is then a 5km section of Trail that would not be afforded a change in view.

3.8.4.13 There would theoretically be bare-ground views from Viewpoint 11 and from the Dyke west of Discoed extending to 2km. The magnitude of change of view would be negligible for most of this section; that combined with the high sensitivity of the receptor would create a negligible effect on users of the Trail. There would be a short section with a medium to Low magnitude of change of view in the location of Viewpoint ES 11 that would bring about some moderate / moderate to substantial and not significant effects.

Glyndwr's Way

3.8.4.14 Glyndwr's Way crosses Wales from east to west and ends at Knighton. A potential view of from this National Trail would be afforded from three sections of path, as

described in the following text. A view would theoretically be afforded as the path runs along the northern side of Garth Hill for a duration of 800m. There would be no views further west until on Ebrandy Hill where a view would theoretically be afforded for 1.4km of the Trail between Ebrandy House and Down's Duingle. A view would also theoretically be afforded from Bailey Hill for about 1.3km. There would be no views afforded from over 8km west of the site. In total there would theoretically be a view afforded in bare-ground conditions for 3.5km of the 9.3km length of Trail within 10km of the proposed turbines. There would be no significant effects on the users of this National Trail.

assessment is based on the judgement that the sensitivity of these receptors is high. User data has not been collected, however, it has been assumed that the National Trails would experience the highest use. There would be no significant effects on the users of the Glyndwr's Way

3.8.5 Summary

3.8.5.1 This assessment shows that the anticipated magnitude of view likely to be brought about through the development of four wind turbines on the site is on average moderate to substantial within 3.5km for the Offa's Dyke National Trail. There are variations with some receptors within these distances, in well-wooded and enclosed locations being very low or lower. This assessment takes into account the extent of change of view, the direction of view in relation to direction of travel and the length of path from which the view will be afforded. The

Table 3.2 Impact on Walkers following the Offa's Dyke National Trail

Viewpoint Number	Section Distance from nearest turbine	Section Duration along linear route	Magnitude of Change Relative to Distance	Sensitivity of Road to Change	Significance of Effect
Walking South					
Viewpoint 12	Over 10km	1km	L	High	Moderate
	10km to 8km	2.4km	No View	High	No Effect
	8km to 7.5km	0.5km	Low	High	Moderate
	7.5km to 7km	0.8km	No View	High	No Effect
Viewpoint G	7km to 6km	1.3km	Low	High	Moderate
	6km to 5.7km	0.5km	No View	High	No Effect
Viewpoint H	5.7km to 5.5km	0.2km	Low	High	Moderate
	5.5km to 4km	3.15km	No View	High	No Effect
Viewpoint A/B	4km to 4km	1.5km	Negligible	High	Negligible
	4km to 3.5km	1.1km	No View	High	No Effect
Walking North					
Viewpoint F	12km +	1.5km	Negligible	High	Negligible
	12km to 9.7km	5km	No View	High	No Effect
	9.7km to 9.3km	1.2km	Negligible	High	Negligible
	9.3km to 6.8km	2.5km	No view	High	No effect

Viewpoint Number	Section Distance from nearest turbine	Section Duration along linear route	Magnitude of Change Relative to Distance	Sensitivity of Road to Change	Significance of Effect
Walking South					
Viewpoint 11	6.8km to 5.4km 5.4km to 3.5km	1.5km 4km	Negligible No view except 2 glimpses Medium to Low for 50m-100m	High High	Negligible No Effect Glimpses: Moderate/ Moderate to substantial

Table 3.3 Impact on Walkers following the Glyndwr's Way National Trail

Viewpoint Number	Section Distance from nearest turbine	Section Duration along linear route	Magnitude of Change Relative to Distance	Sensitivity of Road to Change	Significance of Effect
Walking West towards Knighton					
Viewpoint C	10km to 8km	2.4km	No View	High	No Effect
	8km to 7.8km	1.3km	Low	High	Moderate
	7.8km to 7.2km	0.6km	No View	High	No Effect
	6km to 7.2km	1.4km	Low	High	Moderate
	6km to 5.2km	1.6km	No View	High	No View
	4.8km to 5.2km	0.8km	Negligible	High	Negligible

4 ARCHAEOLOGICAL ON SITE EVALUATION

4.1 Introduction

4.1.1 Location and Scope of work

4.1.1.1 In August 2008 Cambrian Archaeological Projects (CAP) carried out an archaeological excavation of four evaluation trenches, two located on Reeves Hill and two located on The Warren, Herefordshire, on behalf of Dulas Ltd. The site is centred around NGR SO 31912 68963 (See Fig 1).

4.1.1.2 The evaluation was undertaken in order to assess the nature, extent and date of any sub-surface archaeological deposits and to ensure that impact upon the archaeological resource by the proposed development was kept to a minimum.

4.1.1.3 Previous work undertaken includes a desk based study of the site carried out by the Clwyd Powys Archaeological Trust.

Geology and Topography

4.1.1.4 The underlying solid geology of the area is sandstone of the Devonian era (British Geological Survey, 2001). This sandstone natural is overlain by Bromyard, a well drained reddish silty soil with slowly permeable subsoil and some seasonal waterlogging (Soil Survey of England & Wales, 1983).

4.1.1.5 The topography of the area of proposed development is typical of this area of the border region. Hills rising to between 300 – 400 metres dominate the landscape with settlements being distinctly scattered and sparse. Areas of woodland do exist to the north and east.

Archaeology and Historical Background

4.1.1.6 The archaeological and historical background to the area has been covered in detail in the desk based study undertaken by the Clwyd Powys Archaeological Trust.

4.2 Aims and Objectives

4.2.1 Field Evaluation

4.2.1.1 The aim and objectives of the field evaluation were to:

- establish the presence/absence of archaeological remains within the proposal area.
- To determine the extent, condition, nature, character, quality and date of any archaeological remains present.
- To establish the factual and environmental potential of archaeological deposits and features.
- To appraise the likely impact of the proposal on any surviving archaeological deposits and if appropriate to make suggestions for a mitigation strategy or, where areas contain archaeology of national importance, for preservation in situ.

4.3 Evaluation Methodology

4.3.1 Scope of Fieldwork

4.3.1.1 The evaluation consisted of four machine-excavated trenches Appendix 3 that were each 20m in length and 2m in width. A mechanical excavator fitted with a toothless bucket removed the overburden deposits under close archaeological supervision.

4.3.1.2 Project Manager Chris Smith and Site Assistant Keiran Phillips undertook the field evaluation. The trenches were cleaned by hand. All trenches were photographed using colour slide, black and white print film and digital photography.

4.3.1.3 All works were undertaken in accordance with both the IFA's *Standards and Guidance: for an archaeological evaluation* and current Health and Safety legislation.

4.3.2 Finds

4.3.2.1 No finds were located during the evaluation.

4.3.3 Palaeo-environmental evidence

4.3.3.1 No deposits suited to environmental sampling were located during the evaluation.

4.4 Evaluation Results

4.4.1 Soils and ground conditions

4.4.1.1 Generally the site and weather conditions were mixed with persistent rain prior to the machining of the trenches. During excavation the weather was primarily dry and windy with the exception of the last day on site during cleaning of Trench 1. The topsoil was comprised of dark brownish silt and the ground remained relatively damp throughout the evaluation.

4.4.2 Distribution of deposits

4.4.2.1 The topsoils, subsoils and natural deposits were consistently present in all four trenches although their thickness did vary slightly. The underlying solid geology was exposed in all four trenches and was composed of frost shattered sandstone bedrock.

4.4.3 Descriptions

Trench 1 (Appendix 3 Plate 1)

4.4.3.1 The topsoil (101) was removed revealing a thin subsoil horizon (102) at a depth of around 0.2m below the current ground surface. Removal of the subsoil horizon located the top of the natural clay (103) at a depth of around 0.4m. In some places solid natural bedrock (104) was observed lying below the natural clay. No finds or features were noted in this trench although small fragments of sea shell were noted within the topsoil (101).

Trench 2 (Appendix 3 Plate 2)

4.3.2 The topsoil (201) was removed revealing a thin subsoil horizon (202) at a depth of around 0.2m below the current ground

surface. Removal of the subsoil horizon located the top of the natural clay (203) at a depth of around 0.4m. In some places solid natural bedrock (204) was observed lying below the natural clay. In two places within this trench it did appear as though linear features were evident. Further excavation however proved these to be only variations within the natural geology. No finds or features were noted in this trench.

Trench 3 (Appendix 3 Plate 3)

4.4.3.2 The topsoil (301) was removed revealing a thin subsoil horizon (302) at a depth of around 0.2m below the current ground surface. Removal of the subsoil horizon located the top of the natural clay (303) at a depth of around 0.4m. In some places solid natural bedrock (304) was observed lying below the natural clay. In two places within this trench it did initially appear as though linear structures, possibly damaged walls, were evident. Further excavation however proved these to be only variations within the natural geology. No finds or features were noted in this trench.

Trench 4 (Appendix 3 Plate 4)

4.4.3.3 The topsoil (401) was removed revealing a thin subsoil horizon (402) at a depth of around 0.2m below the current ground surface. Removal of the subsoil horizon located the top of the natural clay (403) at a depth of around 0.4m. In some places solid natural bedrock (404) was observed lying below the natural clay. No finds or features were noted in this trench.

4.5 Discussion and Interpretation

4.5.1 Reliability of field investigation

4.5.1.1 The evaluation was unhampered by any modern building or agricultural activity. The removal of sheep stocks from the fields by the farmers was most helpful.

4.5.1.2 The overall findings of the evaluation were, to a degree, consistent with a lack of human occupation and activity. Whilst possible artificial rabbit warrens are in existence on the aptly named hill, 'The Warren' these appear to be restricted to where they are visible as earthworks. The thin soils combined with

natural bedrock so close to the surface would suggest that the area has been used as grazing for rabbits and sheep for a long period of time. Indeed no evidence of any earlier developmental or agricultural activity could be identified.

4.5.2 Overall Interpretation

4.5.2.1 The evaluation revealed no archaeological remains or activity of any kind.

4.5.2.2 Activity within the field named 'The Warren' is obvious given the large amount of extant earthworks. The activity may, however, be limited to the construction of these rabbit warrens.

4.5.3 Significance

4.5.3.1 The evaluation revealed the areas of trenching to be archaeologically sterile. Areas outside that covered by the trenching remain however an unknown quantity.

4.6 Bibliography

British Geological Survey 2001

Soil Survey of England & Wales, 1983

5 ECOLOGY

5.1 Introduction

5.1.1 The habitat enhancement measures proposed below follow consultations with the County ecologist and a site visit on 20th August. The proposed measures are a fuller description of those presented in the ES and it is expected that the Council, RPSB and Natural England will be consulted on these compensatory and enhancement proposals from whom agreement will be required. For the proposed locations of habitat management and enhancement measures please see Figure 12.

5.2 Alternative Access track for turbine 3

5.2.1 Whilst there are landscape effects and some loss of patches of semi-improved grassland communities, there are greater benefits in laying a track to turbine 3 with roadside access from the road to Willey Chapel. Avoidance of disruption to the stone wall is justified as it avoids the partial removal of a feature which has potential as a great crested newt hibernaculum.

5.3 Fencing of 3 hectares of the Warren

5.3.1 Fencing of the southern section of The Warren will accomplish a number of ecological enhancement objectives.

- Mosaics of vascular plant richness are particularly prevalent in this section upon the poorer shallower soil patches of the old workings whilst The Warren grassland, for the most part, has been improved (probably corresponding to semi-improved species rich MG6 *Lolium perenne-Cynosurus cristati* grassland). Rabbit grazing in the proximity of the overlying gorse scrub will continue to maintain the sward's richness.

- Regenerating grassland and scrub habitat will give vegetation structure which will benefit ground nesting birds and scrub-land species. Exclusion of sheep will lead to the expansion of denser scrub directly benefiting the scrub nesting species observed on the site such as linnet (*Carduelis cannabina*) and redstart (*Phoenicurus phoenicurus*).
- Improved grassland structure from fencing will particularly benefit skylark (*Alauda arvensis*) and a 20 metre strip of grassland is proposed alongside the fence-line running south to north on the eastern boundary of the Warren pasture. This should have the effect of providing more attractive nesting habitat away from the line of turbines.
- The ground hole nesting habitat of wheatear (*Oenanthe oenanthe*) is spread across the site but a fenced area will ensure inclusive nest sites have less disturbance.
- An enhanced passerine rich habitat away from the line of turbines should prove more attractive foraging for some raptor species, merlin in particular.

5.4 Hedge Planting

5.4.1 Hedgerow planting will be carried out along the field boundary to the south of Turbine 2 to the south of the access track (see Figure 12). Appropriate native hedgerow shrub species with trees will be included to the east of the plantation and adjacent to the second borrow pit.

5.4.2 Planting of this hedgerow will give significantly more nesting habitat for the range of farmland bird species observed across the site. Species such as yellowhammer (*Emberiza citronella*) and dunnock (*Prunella modularis*) observed in the vicinity will find a greatly improved foraging and breeding environment. The volume of habitat established here will provide for many breeding pairs of these and other species.

5.4.3 This hedgerow will also act as a flight line for some bat species from the line of turbines down to the more extensive network of hedges and woodland for foraging. Bat movement may also occur up to the turbine area but the foraging potential of the hedgerow(s) and plantations should be sufficient to focus activity here and away from turbines.

5.5 Hedgerow restorations

5.5.1 Hedgerow restorations proposed to the east of the line of turbines will enhance existing hedgerow habitat for farmland bird species as discussed for hedgerow plantings. Current hedgerow condition is neither stock-proof nor of major ecological value. Planting up gaps with appropriate native species, protecting and management will be undertaken to develop hedgerow structure for enhancement as foraging, protective and breeding habitat.

5.6 Field edge habitat creation

5.6.1 To the east of the northern half of the site the creation of a substantial area of ground nesting habitat is proposed to the south of Folly Farm at Maryvale. This will establish substantial field edge habitat along an existing fence-line, connecting to existing hedge lines, an area of plantation flanking a spring line together with planting of a corner copse.

5.6.2 Extending westward, two grassland habitats extending westward for at least 20 metre width are proposed. This should be particularly conducive for nesting skylark within the northern section of the site and will both compensate for loss of any habitat by the turbine footprint and act as a draw away from the line of turbines. These areas will significantly increase the area available to ground nesting birds amounting to 3 hectares.

5.6.3 It is not proposed to develop any enhanced habitats within the vicinity of the turbines for skylark for clear reasons of avoidance of operational conflicts

5.7 Plantation management

5.7.1 The two substantial areas of plantation

located to the north and to the east of turbine 2 will be managed as small acreage broadleaved copse. Maintenance of these is relatively long term but vegetation structure and size of trees are important factors in developing management plans for ecological and landscape enhancement. In particular maintaining, these as good nesting habitat for migrant warblers is essential as well as cover and winter foraging for resident birds.

5.7.2 The current survey results do not suggest that any species of bat are utilising the young trees in these areas for roosts but there is clear evidence of foraging activity by the low flying smaller species. There current evidence does not suggest that higher flying bats such as or Leisler or Noctules are repeatedly using the plantations for foraging but monitoring of this will be done to establish any occurrence especially in the plantation adjacent to turbine 1.

5.8 Roadside verge management

5.8.1 The flowering herb species rich expanse of roadside verge on the Herefordshire side of the road will be enhanced through a regime of judicious clearance of scrub and differential mowing of verge vegetation. Management of this will accommodate potential scrub nesting birds such as willow warbler (*Phyloscopus trochilus*) also seen within this habitat. The management prescription for this will necessitate liaison with Herefordshire's ecologist and the Herefordshire Council in order to ensure the plan is commensurate with roadside verge management priorities.

5.9 Stone wall protection and preservation

5.9.1 The defunct dry stone wall which lends the local landscape name Stone Wall Hill gives the genius loci of this local landscape. As such preservation of this feature is of importance. Whilst an effort will be made to retain and preserve this feature, rebuilding would be both inappropriate and ecologically disruptive particularly to great crested newt populations. Its present structure is conducive to great crested newt hibernation and it is proposed that aside from preservation of the material on site, renovation work will not be undertaken.

5.10 Stone wall implications, site track movement

5.10.1 Following consultation with Herefordshire County Ecologist, it is proposed that turbine 3 be accessed from the north off the minor road which leads to Lingen rather than off the minor road which runs along the ridge from Reeves Hill to the Warren. This is considered technically in terms of civil engineering / construction and consultation with Herefordshire Council has confirmed that this is acceptable from a highways perspective. Further survey would be required to confirm the suitability of this access and it is suggested that this is the subject of a formal planning condition.

5.11 Further Bat survey work

5.11.1 Following consultation with Herefordshire County Ecologist, transect survey of the site through the autumn period together with remote monitoring using Anabat SD1 static detectors was agreed to be conducted. Reporting of findings is due at the planning committee meeting for determination. The methodology is the same as that detailed within section 6.4.3 of Volume 2, Reeves Hill Community Wind Energy Scheme ES, for the work to date in survey of the site.

