*Illustration only

Phase 1 Pre-Feasibility: Cefnyfed Farm Community Energy Scheme

On behalf of Cadwyn Clwyd

Final

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CADWYN Clwyd
Asiantaeth Datblygu Gwledig
Rural Development Agency

Cronfa Amaethyddol Ewrop ar gyfer Datblygu Gwledig: Ewrop yn Buddsoddi mewn Ardaloedd Gwledig
European Agricultural Fund for Rural Development: Europe Investing in Rural Areas
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Welsh Government

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Document Control

File Name:	E05305-DOC-Cefnyfed Wind Energy Phase 1 Report-Cadwyn Clwyd-V2-20181022-MP.docx		
Version:	V1	V2	V3
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Reviewed By:	Rachel Kennedy		
Approved By:	Ruth Chapman		
Date:	22 October 2018		
Status:	Final		

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1. SCOPE OF PHASE 1 SERVICES

1.1 Introduction and Scope of Work

1.1.1 Cadwyn Clwyd Ltd commissioned Dulas Ltd in early August 2018 to investigate the potential for a wind energy scheme at Cefnyfed Farm, near Cyffylliog, in the local authority administrative area of Denbighshire County Council.

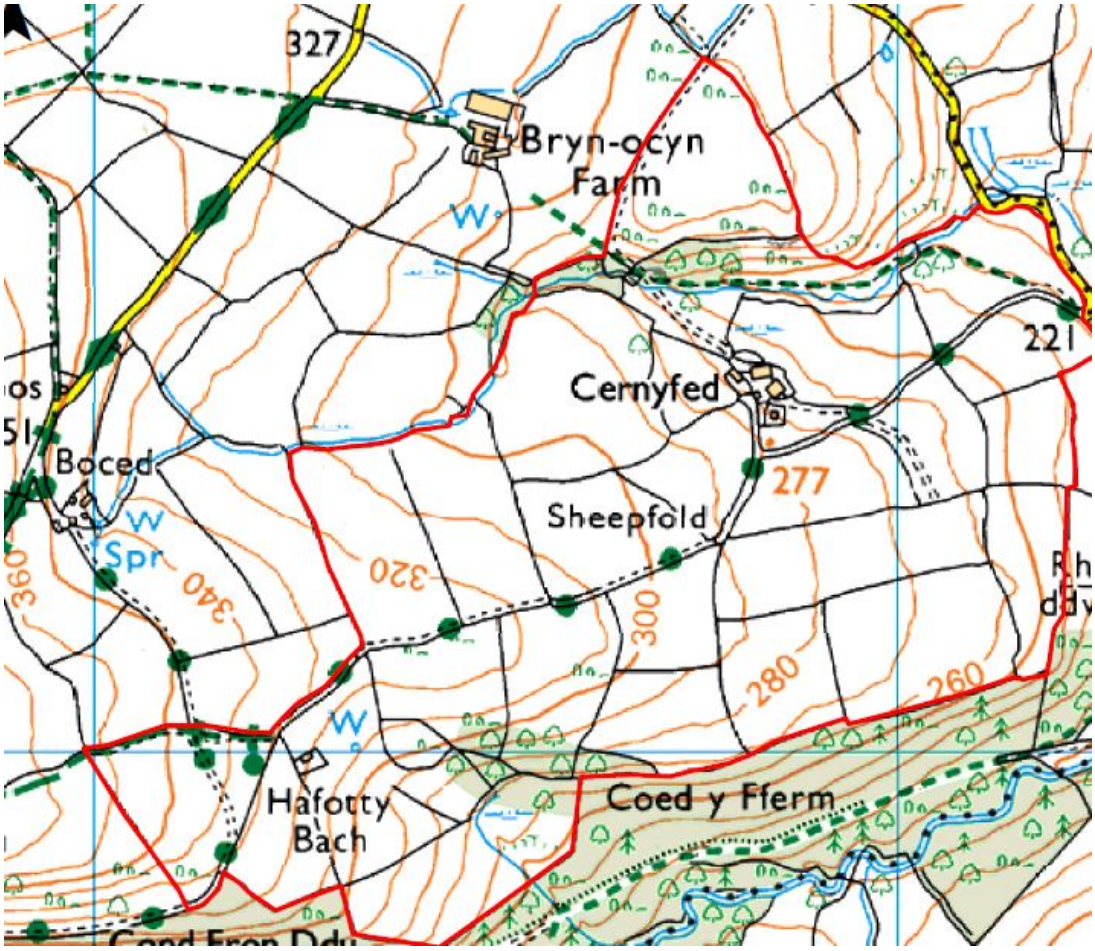


Figure 1: Cefnyfed Farm Site Location

1.1.2 The contracted work is to undertake a Phase 1 pre-feasibility investigation of the local authority position following the previous 2015 decision on the Site, an EIA Screening Exercise, and analysis of on-site constraints to inform preliminary design of a potential wind energy scheme.

1.1.3 In the event that the Phase 1 conclusions determine that a scheme would meet the client's commercial requirements and no 'showstoppers' to development have been identified, Dulas is then contracted to move on to a Phase 2 Feasibility Assessment, and thereafter to prepare a planning application under the provisions of the Town and Country Planning Act 1990.

1.1.4 The scope of Phase 1 services commissioned by the client include, in brief:

- *Client Meeting and Site visit*
- *Confirmation of site design criteria*
- *Site constraints mapping exercise to refine the development boundary, apply standard buffers to features identified, and identify preferred locations for wind turbine generators*
- *Presentation of optional designs for a wind energy scheme*
- *Description of details of all regulatory requirements (permissions, authorisations, permits etc) and any relevant regulatory authorities*
- *Conduct a formal EIA Screening Exercise to determine whether EIA is a requirement of this potential scheme*

1.2 Introductory Meeting and Site Visit Details

1.2.1 A meeting combined with a site visit was conducted on 12th September, 2018 with Paul Burrell of Remarc and the landowner. Following discussion on the history of the site with the previous application and confirmation that the proposed scale of generator would be supported by the landowner, reconnaissance of the site was undertaken with drive-around and collation of photos and site notes. The following photographs demonstrate the site area under investigation:

Plate 1: view south over the field subject to the previous planning application

Plate 2: view of field, preferred wind turbine location

Plate 3: illustrative photo of likely access track from Clocaenog Forest

1.2.2 A full presentation of the Site Visit Notes and Associated Annotated Plans is included in Annex 1.

1.3 Site Design Criteria

1.3.1 The principal component of the site requiring confirmation for site design purposes is the type of wind turbine generator preferred for the site. All other requirements during civils construction works, such as the site tracks and hardstanding, would be influenced by the selection of the preferred wind turbine and any on-site conditions or characteristics that would influence the design of civils requirements.

1.3.2 The client has confirmed that the Enercon 48 wind turbine generator is preferred for this site. The generator has the following characteristics:

- Tower height: 50m
- Rotor diameter: 48m
- Blade length: 24m
- Nameplate capacity: 800kW
- Swept area: 1,810 m²
- Number of blades: 3
- Concept: gearless, variable speed machine

1.3.3 Illustrations of this generator are provided below:

Plate 4: photographic illustrations of the E48

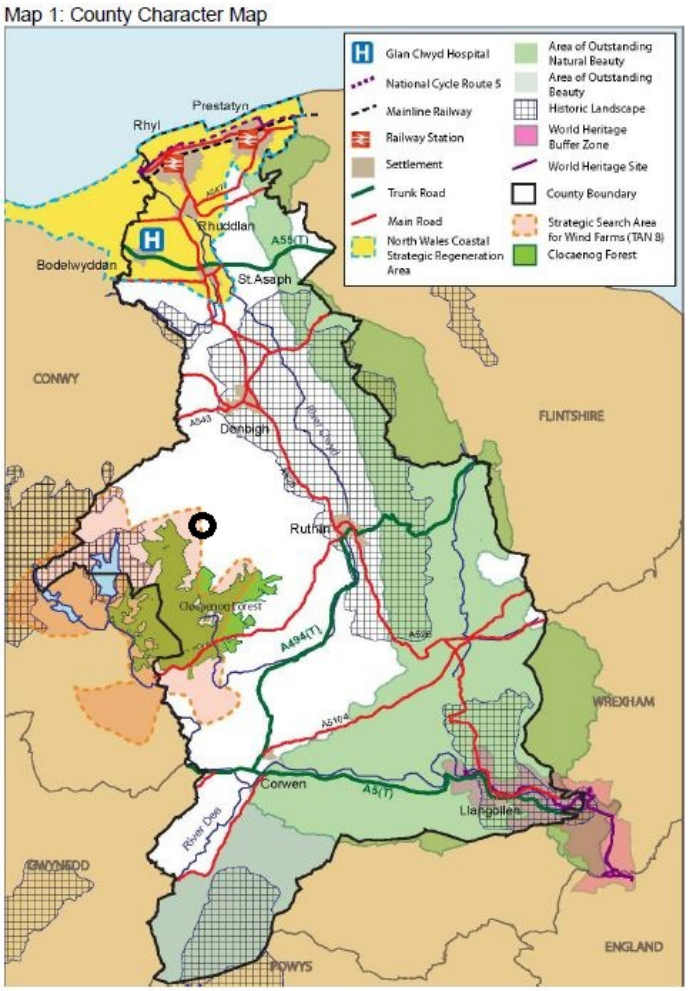
1.3.4 Confirmation of the preferred turbine make and model has enabled Dulas to conduct the site design, energy yield assessment and transport evaluations incorporated into this Phase 1 report.

2. SITE CONSTRAINTS AND SITING OPTIONS

2.1 Environmental Constraints and Advisory Buffers

2.1.1 There are no national or local environmental designations of relevance to this development site. The LDP County Character Map from the LDP is presented below, inclusive of a **marked circle** showing the proposed location relative to features in the County:

Map 1: County Character Map



2.1.2 Whilst the turbine site is located within the marked boundaries of the SSA above, we are aware that there are no wind farm proposals outside of the Clocaenog Forest that would be affected by a scheme at Cefnyfed Farm. As such a single wind turbine would not sterilise the SSA from achieving its required TAN8 capacity.

2.1.3 Following the site visit, we were able to confirm all on-site features that would have a bearing on wind turbine placement. Such features, including hedgerows, power lines and residential properties are required under guidance to have buffers applied in order to avoid potential damaging effects to such receptor groups. These buffers are industry standard, and through applying them we have endeavoured to de-sensitise turbine

placement and avoid possible additional work, such as bat surveys where the sweep of the blades is greater than 50m from a hedgerow or habitat feature.

2.1.4 A visual representation of the constraints and buffers is presented in the figure overleaf entitled *Onsite Constraints*. Those areas not covered by the coloured buffer areas are unconstrained and potentially suitable for wind turbine placement.

2.2 Siting Options

2.2.1 It is evident from the Onsite Constraints that there are only two locations available for turbine placement outside of the constraint/ buffer areas. Potential turbine locations are presented in the figure below *Potential Turbine Location Options*.

2.2.2 A discussion has taken place between Dulas and REMARC on the preferred location. Several pertinent issues required consideration in selecting a preferred site:

- Proximity to third party properties
- Ground conditions and topography
- Wind resource capture
- Minimising environmental damage i.e. hedgerow removal

2.2.3 On the basis of these factors, and given that the lapse in subsidy support in 2019 will necessitate optimising turbine locations for as much wind capture as possible in order to maximise generated power and income, we recommended turbine location 1, the position of which is north of the original planning application on higher ground. This location would also reduce any need for cut / fill as the ground is less sloping than the south east alternative, reduce losses of hedgerow removal and reduce the length of access track. However, the location would push the turbine closer to some residences, including Boced, Penrhos and Bryn-ocyn Farm, potentially increasing the visual and amenity impacts to such properties. Through a balancing exercise of potential benefits and costs, it has been agreed that turbine location 1 would present the preferred option in securing the economic justification of the scheme whilst not entailing degrees of harm to local residents that may be considered unacceptable.

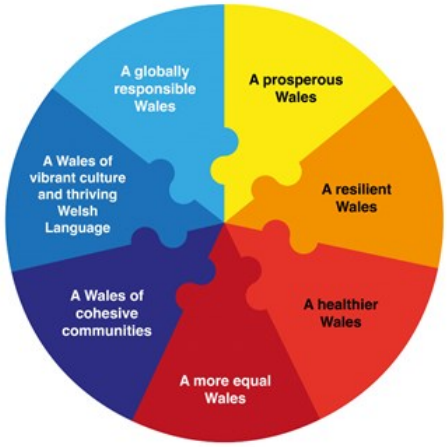
2.2.4 The client has accepted our recommendation, stating (email exchange 19 September) : "*I agree that option one is the best. I think it's important to locate the turbine to capture the best wind resource within the site area so as long we can still comply with planning regs then please proceed on that basis.*"

2.2.5 If, following review of this Phase 1 report and approval to move to Phase 2, this turbine location is preferred, this will inform the business case economic modelling and ultimately the environmental assessments to be presented as part of a planning application.

3. RELEVANT PLANNING CONSIDERATIONS AND EIA SCREENING

3.1 Primary Enabling Legislation for Wales

3.1.1 In April 2015 the Welsh Government passed into law The Wellbeing of Future Generations (Wales) Act, which is primary legislation requiring all Wales' based public bodies - such as local authorities, health boards etc - to put long-term sustainability at the forefront of their thinking, and to work with other organisations and the public to prevent and tackle ongoing social, environmental and economic problems. The Act was decided upon following an extensive consultation period known as the National Conversation. It passed into law in April 2015.



3.1.2 In order to create a more sustainable Wales, public bodies must work towards seven Well-being Goals and enact the five Ways of Working, shown in the attached image. One fundamental challenge in Wales which is a focus of the Act is dealing with climate change and the potential impact upon the prosperity and quality and life in Wales.

3.1.3 Further relevant recent legislative introductions for Wales include *The Environment (Wales) Act 2016* – which sets in place an obligation on Welsh Government to reduce greenhouse gas emissions by 80% against 1990 levels by 2050.

3.2 National Devolved Planning Policy

3.2.1 Welsh Government does not have devolved powers on energy policy and is therefore unable to take an independent approach to supporting a local carbon economy. In essence energy policy and regulation, including financial support mechanisms, are determined in Westminster. Planning policy, a matter under devolved powers to the Welsh Ministers, is therefore a fundamental mechanism by which Welsh Government can steer the nation to a low carbon future.

3.2.2 It is anticipated therefore that Lesley Griffiths, Cabinet Secretary for Energy, Planning and Rural Affairs, sees planning policy as central to the realisation of new Welsh targets, announced in September 2017, for the generation of 70% of electricity consumption from renewable energy by 2030. Currently, renewables generates 32% of consumed electricity. Her statement outlined the following ambitions for Wales: The ability to meet our needs from clean energy is the foundation for a prosperous low carbon economy. "*This is why I am today announcing targets to focus action across the country and to capture the benefits for Wales. Firstly, I am setting a target of Wales generating 70 per cent of its electricity consumption from renewable energy by 2030.* ***Secondly, I am setting a target for one Gigawatt of renewable electricity capacity in Wales to be locally owned by 2030.*** *Finally, by 2020 I expect new renewable energy projects to have at least an element of local*

ownership. I believe these are stretching but realistic targets which will help us to decarbonise our energy system, reduce long-term costs and deliver greater benefits to Wales." These ambitious targets will require the delivery of significant volumes of new renewables capacity which would require processing through the Welsh planning regime.

Planning Policy Wales

3.2.3 Planning Policy Wales (PPW) was originally brought out in 2002 and has been through several reissues. The currently PPW was published in November 2016 (Edition 6). The PPW is supported in Wales by topic based Technical Advice Notes, which are addressed further below.

3.2.4 PPW sets out current land use policy for Wales and it provides the strategic policy framework for the effective preparation of local planning authorities' development plans. PPW is considered instrumental in achieving those ambitions set out within the Low Carbon Revolution Statement. In essence PPW is a mechanism whereby "*The Welsh Government's aim is to secure an appropriate mix of energy provision for Wales which maximises benefits to our economy and communities, whilst minimising potential environmental and social impacts. This forms part of the Welsh Government's aim to secure the strongest economic development policies to underpin growth and prosperity in Wales recognising the importance of clean energy and the efficient use of natural resources, both as an economic driver and a commitment to sustainable development*."

3.2.5 PPW must be taken into account in the preparation of local authority development plans and is material to decisions on individual planning applications; it is also to be taken into account by the Welsh Ministers and Planning Inspectors in the determination of called-in planning applications and appeals.

3.2.6 Local planning authorities should, where relevant, consider the likely impact of proposed renewable and low carbon energy development on existing or other proposed renewable and low carbon energy developments and sources. In such cases they should consider amendments so as to render them acceptable.

3.2.7 Local authorities should use planning conditions or obligations "… to *mitigate impacts, and secure the benefits and opportunities arising from a renewable or low carbon energy development proposal. This may include securing the decommissioning of developments and associated infrastructure and remediation of the site as soon as their use ceases, controlling of transport movements and highway works*."

Energy Wales: A Low Carbon Transition (2012)

3.2.8 Policy document, A Low Carbon Transition, issued in March 2012, sets out the Welsh Government's vision for a sustainable low-carbon economy. Principally the policy statement makes policy commitments in several areas, including:

- Improving the planning and consenting system for energy developments by simplifying the process by April 2013, ensuring statutory agencies improve their services to applicants and pressing for greater devolution of energy consenting powers.
- Putting in place an improved energy infrastructure and an energy programme to deliver on the Welsh Government's energy agenda.

- Ensuring that Wales benefits economically from energy developments through intervention in supply-chain development, business support, skills and training, procurement, innovation, research and development.
- Ensuring that the communities of Wales benefit from energy developments.
- Focusing on energy projects of greatest potential benefit: examples cited include the Anglesey Energy Island and the ARBED programmes.
- Developing the Welsh workforce to meet the industry's needs and placing Wales at the forefront of innovation, research and development.

Technical Advice Note 8: Renewable Energy

3.2.9 Technical Advice Note 8 (2005): Renewable Energy provides technical advice to supplement the policy set out in PPW and the MIPPS on Renewable Energy. TAN8 concluded that, for efficiency and environmental reasons amongst others, large scale (over 25MW) onshore wind developments should be concentrated into particular areas defined as Strategic Search Areas (SSAs). Outside of the SSAs, guidance on onshore wind is given in paragraphs 2.12 to 2.13. These paragraphs state the following:

Onshore Wind in Other Areas

2.12 ***The Assembly Government expects local planning authorities to encourage, via their development plan policies and when considering individual planning applications, smaller community based wind farm schemes (generally less than 5 MW).*** *This could be done through a set of local criteria that would determine the acceptability of such schemes and define in more detail what is meant by "smaller" and "community based". Local planning authorities should give careful consideration to these issues and provide criteria that are appropriate to local circumstances.*

2.13 Most areas outside SSAs should remain free of large wind power schemes. Local planning authorities may wish to consider the cumulative impact of small schemes in areas outside of the SSAs and establish suitable criteria for separation distances from each other and from the perimeter of existing wind power schemes or the SSAs. In these areas, there is a balance to be struck between the desirability of renewable energy and landscape protection. Whilst that balance should not result in severe restriction on the development of wind power capacity, there is a case for avoiding a situation where wind turbines are spread across the whole of a county. As a result, the Assembly Government would support local planning authorities in introducing local policies in their development plans that restrict almost all wind energy developments, larger than 5MW, to within SSAs and urban/industrial brownfield sites. It is acceptable in such circumstances that planning permission for developments over 5MW outside SSAs and urban/industrial brownfield sites may be refused.

3.2.10 The Cefnyfed scheme would be a community energy scheme that falls within the auspices of the guidance of in paragraph 2.12 above and as such one would expect the planning authority, all other material considerations having been satisfied, to support a community wind turbine at the proposed location.

3.3 Denbighshire County Council Local Development Plan 2006-21

3.3.1 The Denbighshire County Council Local Development Plan (LDP) was adopted in June 2013, Chapter 3 sets out the Vision for the County, as follows:

Denbighshire by 2021: That Denbighshire, through sustainable development, will have a vibrant urban coast, with thriving market towns and rural areas. The housing and employment needs of the County will be met, the high quality environment protected and enhanced and a high quality of life maintained for all communities with full recognition that we have a strong Welsh language and culture that should be maintained and protected throughout the County.

3.3.2 Objective 11 of the LDP relates to Energy, stating: *The Local Development Plan will ensure that Denbighshire makes a significant contribution to reducing greenhouse gases through both supporting the principle of large wind farm development within identified zones and other suitable renewable energy technologies, and ensuring that all new developments are built to minimise their carbon footprint.*

3.3.3 Objective 16 relates to areas of protection, stating: *The Local Development Plan will seek to protect and enhance the natural and built heritage of the County including aspects such as landscape, biodiversity, geo-diversity, designated sites and buildings and protected species. Environmental services and goods will additionally be enhanced and developed.*

3.3.4 Policies that are likely to be relevant in the determination of whether to award consent for the scheme are:

RD1: Sustainable Development and Good Standard Design

3.3.5 This policy pertains to proposals within development boundaries, but the principles of good design will need to be heeded.

VOE5: Conservation of Natural Resources

Development proposals that may have an impact on protected species or designated sites of nature conservation will be required to be supported by a biodiversity statement which must have regard to the County biodiversity aspiration for conservation, enhancement and restoration of habitats and species.

Where the overall benefits of a development outweigh the conservation interest of a locally protected nature site, mitigation and enhancement measures in or adjacent to these sites should be an integral part of the scheme.

If necessary, measures required to mitigate likely adverse effects on the qualifying features of statutory designated sites should be put in place prior to the commencement of development. Measures required to offset any likely adverse effects will be secured by planning conditions and/ or planning obligations.

Planning permission will not be granted for development proposals that are likely to cause significant harm to the qualifying features of internationally and nationally designated sites of nature conservation, priority habitats, priority species, regionally important geodiversity sites, or to species that are under threat.

VOE9: On-shore Wind Energy

On shore wind turbine developments will be supported subject to an assessment of their environmental and sustainability impacts:

STRATEGIC / LARGE SCALE developments (generating capacity over 25MW) will be supported within the Clocaenog Strategic Search Area (SSA-A).

LOCAL AUTHORITY WIDE SCALE developments (generating capacity between 5MW and 25MW) will only be permitted within the Clocaenog Strategic Search Area where they do not prejudice the development of strategic/large scale schemes.

SUB LOCAL AUTHORITY SCALE developments (generating capacity between 50kW and 5MW) in the form of ***individual turbines or clusters of turbines will only be permitted within the Clocaenog Strategic Search Area where they do not prejudice the development of strategic/large scale schemes; and in all the above cases, outside the Area of Outstanding Natural Beauty, Conservation Areas, World Heritage Site and Buffer Zone, and other sites designated for ecological, historic, landscape, or other value, and where they do not adversely affect the setting of these areas****.*

MICRO / SMALL SCALE turbine developments (generating capacity below 50kW) will be permitted subject to an assessment of localised impacts.

All applications will be subject to normal environmental impact tests and include specific assessment / explanation of all the following criteria:

i) how the proposals are consistent with the Clocaenog Statement of Environmental Master Planning Principles (applicable to strategic/large, local authority wide, and sub local authority scale, where in or on the periphery of the SSA-A); and

ii) impacts, including cumulative impact on the surrounding area and community (e.g. landscape/visual, noise, biodiversity, transport, health impact); and

iii) information on wind resource and the justification for the choice of turbine; and

iv) community engagement; and

v) mitigation proposals; and

vi) the colours to be used on the turbine tower and blades.

3.3.6 The explanatory text goes on to further explain: "*Outside the SSA-A, sub-local authority scale developments will be considered where they fall outside designated areas or the setting of the designated areas. Turbine height will be limited to protect landscape impact. At the micro/small scale turbine height will be limited further to reflect the greater flexibility of location.*

3.3.7 *"In all the above cases there are localised issues that all application will need to address. The impact of wind turbine(s) on local communities, particularly cumulative impacts, needs full consideration when justifying development proposals. In order to determine whether or not there is an unacceptable impact on a community, consultation with the affected community is expected and measures taken to address any negative impacts, including cumulative impacts if applicable.*

3.3.8 *"Proposals will also be considered in terms of whether there are more suitable alternatives that could be reasonably be implemented. The County has a high quality landscape which the Local Development Plan will seek to preserve. Alternative forms of renewable energy may be more appropriate or efficient."*

VOE10: Renewable Energy Technologies

Development proposals which promote the provision of renewable energy technologies may be supported providing they are located so as to minimise visual, noise and amenity impacts and demonstrate no unacceptable impact upon the interests of nature conservation, wildlife, natural and cultural heritage, landscape, public health and residential amenity. In areas that are visually sensitive, including the AONB, Conservation Areas, World Heritage Site and Buffer Zone and in close proximity to historic buildings, visually intrusive technologies will not be permitted unless it can be demonstrated that there is no negative impact on the designation or there is an overriding public need for the development.

3.4 Previous Planning History at Site

3.4.1 A previous planning application on behalf of the landowner, submitted by the engineering consultancy Grontmij, was refused permission by Denbighshire County Council (Ref 23/2015/0463/PFT) in 2015. The reasons for refusal were as follows:

1. It is the opinion of the Local Planning Authority that the erection of a 71 metre high 500kW turbine would have unacceptable adverse landscape and visual impacts affecting the sensitivity of the Aled Hiraethog Hills (East) landscape unit, and could set an undesirable precedent for similar medium to large size turbine development outside the Clocaenog Forest Strategic Search Area, with adverse consequences on the aforementioned landscape unit and the AONB further afield, which have high sensitivity to wind energy development. The scale of the turbine is not considered appropriate to the scale of the landscape and the dwellings in close proximity, where it is considered there would be significant adverse impact on visual amenity. The proposal is in conflict with national and local policy objectives which seek to protect the local landscape and visual impact, and would further contribute to the spread of wind turbine development in this part of the County's attractive open countryside, giving rise to additional cumulative landscape impacts. The farm diversification merits of the proposal and the potential benefits of increased renewable energy generation are not considered to outweigh these concerns, and the proposal is therefore considered contrary to tests in Denbighshire Local Development Plan policies VOE 9, VOE 10, and the principles set out in TAN 8 (para. 2.11 - 2.13) and PPW Edition 7, Section 12 (2014).

2. It is the opinion of the Local Planning Authority that the noise assessment information shows the noise level from the turbine is too loud not only from the individual assessment, but also cumulatively. It is unclear how the tables in the cumulative assessment spreadsheet have been populated with levels from the existing schemes, as there is no breakdown of them, and the noise levels that have been used make no allowance for uncertainty and are not derived from consented levels, as recommended in the Institute of Acoustics Good Practice Guide, hence the levels stated will be an underestimation. It is considered therefore that the application does not demonstrate the noise impacts arising from the development in combination with that from other turbines in the area would be acceptable to occupiers of property in the locality, and it would be difficult to set a reasonable noise condition that would be enforceable, whilst still having confidence that it could actually be achieved. The proposals are considered to be contrary to tests in Denbighshire Local Development Plan policies VOE 9, VOE 10, and the principles set out in TAN 8 (para. 2.11 - 2.13) and PPW Edition 7, Section 12 (2014).

3.4.2 A re-application for this development site faces the difficulty of overcoming the reasons for refusal on the original planning submission; there is the distinct likelihood that the Council will sustain their objection to the scheme unless other material considerations can be demonstrated and proven to cause them to alter their judgement. The material considerations that have changed in recent years include the Ministerial Statement of Lesley Griffiths increasing the capacity of new renewable energy required to meet climate change objectives (70% of electricity by 2030), alongside the ambition to deliver up to one gigawatt of community energy by 2030. These considerations may not be sufficient to cause the Council to alter its position, but they would be valid arguments in the event that the scheme is taken to planning Appeal. We would also recommend that the community group, Cadwyn Clwyd, and the landowners, prior to and at the time of the planning application, seek to make representations to the local councillors and councillors on the planning committee to attempt to influence them in support of this scheme. Firstly, if it is apparent that there is Councillor in-principle support for the community energy scheme, Councillors should be encouraged to influence officers to have the application determined by committee and not under delegated powers thereby allowing the opportunity for the planning committee to consider the evidence, including the community ownership and benefits aspects of this scheme, and hopefully come out in support of a locally generated project; secondly, it would be very beneficial if any representatives of Cadwyn Clwyd and the local community would express their support for the scheme detailing the material benefits that it would deliver, and the fact that the benefits would outweigh the costs.

3.4.3 With respect to point 2 of the refusal, it will be necessary to present more accurate, robust evidence that the scheme would cause harmful effects to residential amenity both in isolation and cumulatively. Accordingly, included with the costs proposal is a fee for engaging Gavin Irvine of Ion Acoustics. His proposal for a desk-based noise assessment is as follows:

There was extensive noise monitoring done for the Clocaenog Forest scheme and a notional upper noise limit is set for the nearest properties to the south-west. Furthermore, the area is already affected by wind turbine noise which makes it difficult to determine the baseline. Dick Bowdler, a noise consultant who has advised Denbighshire on the larger schemes has also advocated a typical background noise level for the area which might be acceptable for locations without a limit. When we advised on the Brenig tip height extension scheme, we agreed not to do any further monitoring, again because of the availability of background noise data from the original project and from other schemes, even though the original noise data was determined with wind speed measurements from a 10m mast.

The Clocaenog noise limits were set below the notional upper ETSU-R-97 noise limit because of cumulative issues. This might allow some scope for additional noise if the LA can agree the adoption of a higher limit based on 40 dB LA90. It might also be useful to demonstrate compliance with a 35 dB LA90 limit for this turbine in isolation.

Therefore in the first instance, we propose … for a desktop assessment against previously derived noise limits including an assessment of cumulative effects using the directivity considerations (if necessary). We have included for liaison with the local authority (by email and telephone) to agree assessment principles and noise limits. We have allowed for consideration of three turbine types and an investigation of mitigation. Extensive cumulative noise modelling will be required and it can sometimes be difficult to demonstrate compliance if the other schemes are already designed to meet the limit without any headroom.

3.4.4 Ultimately we do warn that, given the previous decision on this site, it will be extremely challenging to cause the Council to alter its position. Taking a further application on the same site with roughly the same turbine characteristics will be highly risky. Only through direct lobbying of Councillors and through substantial public and community support is a change in the Council position likely to be possible.

3.5 EIA Screening Exercise

3.5.1 An EIA Screening Exercise under the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017: Part 2, Regulation 6 (2) was conducted with Denbighshire County Council in October 2018. The purpose of the exercise was to determine whether the proposed scheme would be deemed EIA development or not in order to confirm the likely submission status of the scheme and to prepare appropriate planning documents. The EIA Screening request letter is presented in Annex 2.

3.5.2 The response of the local authority was received on 22 October 2018 and the determination of the Council is that the scheme would not be EIA development. The EIA Screening response of the Council is presented in Annex 3. The Council response highlights several matters of potential concern, including landscape character (the D17 Aled Hiraethog Hills (East)), cumulative impacts, effects to the Ancient Semi Natural Woodland along the southern boundary of the site, and residential amenity. These matters, among others, will need to be addressed in the planning application, if prepared and submitted.

4. PRELIMINARY ENERGY YIELD ASSESSMENT

4.1 Summary

4.1.1 Dulas has commissioned The Wind Consultancy Service (TWCS) to assess the potential wind regime at the Cefnyfed Farm site and subsequently provide an indication of potential energy yield based upon the candidate wind turbine, an Enercon E48. The full findings of the assessment are presented in Annex 4.

4.1.2 Using off-site wind data only, drawn from nearby wind farms, predictions of the wind regime have been made. The assessment has utilities Tir Mostyn Wind Farm production data to calibrate mesoscale data - the production at Tir Mostyn is the equivalent of 7.3m/s at 50m, and this site is 100m higher elevation than Cefnyfed. TWCS is therefore of the opinion that the original Digital Engineering (2015) prediction of 7.6m/s at 55m is optimistic. Furthermore, TWCS also had access to the original windspeed data from some of the Clocaenog Forest masts, and using the one closest to the Cefnyfed site (with a five year observed and long-term mean of 7.3m/s at 70m), they again produced the same result at Cefnyfed, so they are happy with the consistency in predictions.

4.1.3 The windspeed is predicted to be in the range of 6.6m/s at the hub height of 49m. However, please note that these values should be treated with caution due to the lack of on-site wind data, but they do appear to be consistent with other operational wind farms in the area.

4.1.4 When applied to the power curve of the selected E48 turbine type, the predicted output of the proposed single turbine project is 1,700MWh/yr (P50, capacity factor 24.2%), for 0.8MW of installed capacity.

5. PHASE 1 OUTCOMES

5.1.1 Following, in summary, are the outcomes of this Phase 1 preliminary planning and siting appraisal:

- the development site at Cefnyfed Farm is not subject to any statutory or advisory designations for environment or heritage protection;
- the application of standard constraints and buffers across the site has narrowed down the available development area to two potential locations;
- the site appears to have suitable characteristics for wind energy generation, including sufficient elevation and wind availability for energy generation, reasonable ground conditions and sufficient distance from local residences. However, access to the site for the transport of turbine components will be a challenge given the nature of the local road network, and it will be necessary to confirm, in principle, that abnormal loads are able to access the turbine location via Clocaenog Forest and the permissive track on which the landowner has access permission;
- the predicted preliminary energy yield analysis is less than predicted with the original scheme but still appears to be viable in establishing an economic case for the development;
- the scheme has been confirmed by the Council as non-EIA development, and planning documentation can be prepared on this basis.

5.1.2 There are several matters that require client consideration if the scheme is to be progressed further:

- Securing an indicative grid connection offer from SPEN to inform Phase 2 business case modelling;
- Confirmation that the landowner has access permissions to take turbines from the edge of Clocaenog Forest to his landholding, and that the track does not impinge of any further third party land for which permissions would be required;
- Discussions and legal confirmation of the acceptability of the transport option from the B4501 through Clocaenog Forest (NRW) and the Innogy wind energy scheme;

5.1.3 One further matter for deliberation by the client is whether, on the basis of the constraints mapping, a scheme comprising x2 wind turbines would be preferred. Whilst this would raise the prospect of additional planning complexity, there is an option to increase the capacity of the site, or to pursue two lesser capacity generators with reduced dimensions that may then reduce planning concerns.

ANNEXES

Annex 1: Site Visit Notes and Annotated Plans

Annex 2: EIA Screening Request Letter

Annex 3: EIA Screening Response Letter

Annex 4: Preliminary Energy Yield Evaluation Report

ANNEX 1: SITE VISIT NOTES AND PLANS

ANNEX 2: PRELIMINARY ENERGY YIELD ASSESSMENT

ANNEX 3: EIA SCREENING REQUEST LETTER

ANNEX 4: EIA SCREENING RESPONSE