APPENDIX CH

SUPPLEMENTARY PLANNING GUIDANCE (SPG)

ONSHORE WIND ENERGY

(FINAL VERSION)

June 2014

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1.0 Introduction

1.1 A development plan should contain sufficient policies and proposals to provide the basis for deciding planning applications. Supplementary Planning Guidance (SPG) is a means of setting out more detailed thematic or site specific guidance on the way in which the policies of a plan will be applied in particular circumstances or areas.

1.1A Applications for planning permission should be determined in accordance with the approved or adopted development plan for the areas unless material considerations indicate otherwise. Material considerations could include policies in an emerging development plan and planning policies of the Welsh Government.

1.2 The Gwynedd Unitary Development Plan (UDP) (2009) is the current development plan for the Gwynedd Planning Authority. Therefore, this SPG mainly expands on Strategic Policy 9 and Policy C26 in the UDP, which read:

Strategic Policy 9 – Energy

Development proposals to provide energy from renewable sources will be approved provided they do not significantly harm the environment or amenities of nearby residents.

Policy C26 – Wind turbine developments - Proposals for wind turbine developments on sites within the Llŷn AONB will be refused. In other locations, only proposals for small scale or community or domestic based wind turbine developments will be approved, provided that all of the following criteria are met:

i. that the development would not have a significantly harmful impact on the setting of the Llŷn or Anglesey AONBs or the Snowdonia National Park;
ii. that any associated ancillary developments (e.g. buildings/structures, car parking areas, fences, roads etc.) are designed and where possible sited so as to alleviate their potential visual impact ;
iii. the development (either individually or combined with other wind turbine developments) will not have a significant detrimental impact upon the landscape or nature conservation features;
iv. that there are no unacceptable potential environmental impacts or effects on amenity arising from the wind turbines including noise, light reflection and shadow flicker;
v. that the development will not create significant electromagnetic interference to existing transmitting or receiving systems that cannot be adequately mitigated;
vi. that adequate provision has been included in the scheme regarding the decommissioning (including the removal of all ancillary developments), restoration and after-care of the land on cessation of use;
vii. that the development will not cause significant harm to areas of archaeological importance, particularly within or near designated areas.

1.3 A period of public consultation was held on a draft document of the SPG between 13 December 2012 and 31 January 2013. This led to 80 responses with approximately 680 individual observations.

1.4 Following an analysis of these responses, new information and change in circumstances, a number of proposed changes were recommended to the SPG. Due to the number of changes and the public interest delegated rights were obtained to hold a further period of public consultation on these proposed changes. A consultation on these proposed changes was held between 12 December 2013 and 6 February 2014.

1.5 This SPG was adopted following Gwynedd Council's Cabinet Meeting on the 10 June 2014.

1.6 Due to the nature of this subject matter, a number of technical terms are used. To assist the reader, a List of Terms has been included in section 14 of the SPG.

1.8 The aim of the SPG therefore is to:

- assist and guide applicants and agents regarding the information required at the pre-application, screening, scoping and planning application stages.

- assist case officers and the planning committee in making informed decisions on wind turbine applications. This will be a means of promoting a consistent approach when dealing with planning applications.

- help ensure that the wider benefits resulting from renewable energy generation are balanced with local issues such as landscape, biodiversity, economic, social and amenity impacts on local communities.

- Help the wider public and other stakeholders with an interest in the development of their area understand the implications of proposals.

2.0 Background

2.1 It is now widely accepted that the burning of fossil fuels, which generates greenhouse gas emissions, is a major contributor to climate change.

2.2 Wind energy has an important role to play in contributing to reducing or adapting to the harmful impacts of climate change. It can also bring about social, and economic benefits through job creation in the manufacturing, construction and maintenance industries.

2.2A The effects of climate change have had an important impact on national and international policies towards energy supply. The UK Government has committed itself to achieving significant reductions in greenhouse gas emissions and an increase in the proportion of our energy that comes from renewable sources. This commitment, coupled with UK and Welsh Government support for renewable technologies, has led to an increasing number of applications for wind turbine developments across the country.

2.3 There is not a Strategic Search Area for a wind farm in the Gwynedd Planning Authority area. The Local Planning Authority deals mainly with applications for individual turbines or a small group of them across the area.

2.4 In the period June 2010 to June 2012 the authority has been dealing with:

Type of Application	**Number of Applications Registered**
Screening Applications	26
Scoping Applications	0
Full Applications	27 (11 granted conditionally, 3 withdrawn, 4 refused and 9 not yet decided)

2.5 In addition to the criteria set out within the development plan policies highlighted in section 1.0 above regard must be given towards other detailed policies within these plans. These include detailed policies over protection for the landscape, nature conservation, coastal development, archaeology, protection for high quality agricultural land, built heritage as well as a general policy which refers to effect on residential amenities. National planning policies and guidance about these topics are also significant material planning considerations.

2.6 The number of environmental designations within the area reflects its natural beauty, which is the area's main attraction as a tourist destination. The tourism industry is an important aspect of the area's local economy

2.7 In dealing with wind turbine applications a balance needs to be made between this technology's contribution towards national targets for renewable energy against any adverse impact the proposal may have on the factors listed in paragraphs 2.5 & 2.6 above.

3.0 Policy Context

3.1 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes.

3.2 Section 12.8 of PPW and TAN 8 provide specific policy and guidance in relation to Renewable and Low Carbon Energy production.

3.3 The consenting process for renewable energy projects in Wales depends on the size and location of the proposed renewable development. Onshore wind energy schemes up to 50MW will be dealt with by the Local Authority and Welsh Ministers. Schemes above 50MW will be dealt with by the Secretary of State for Energy & Climate Change/ Infrastructure Planning Commission/Appropriate Secretary of State.

Planning Policy Wales (Edition 5 – Nov 2012)

3.4 Paragraph 12.8.1 of PPW states that the UK is subject to the requirements of the EU Renewable Energy Directive and these include a UK target of 15% of energy from renewables by 2020. The Welsh Government is committed to playing its part by delivering an energy programme which contributes to reducing carbon emissions as part of their approach to tackling climate change.

3.5 The Welsh Government's Energy Policy Statement (2010) identifies the sustainable renewable energy potential for a variety of different technologies. In relation to onshore wind the aim is:

To have 4.5 kWh/d/p of installed onshore wind generation capacity by 2015/17.

(kWh/d/p – Kilowatt hours per day per person based on population of 3 million).

To do this the Welsh Government will optimise the use of existing strategic search areas set out in TAN 8 and through promoting further use of brownfield or local sites for smaller-scale projects appropriate to their locations.

3.6 Annex 1 in the Welsh Government's Energy Policy Statement (2010) gives the electricity generating capacity on all proposed renewable energy proposals equal or greater than 10 MW (together with a figure for onshore wind under 10 MW). In 2010 for onshore wind the current capacity stood at 0.73 kWh/d/p.

3.7 In Energy Wales: A Low Carbon Transition (2012) the Welsh Government sets out its Programme for Government which seeks to "*create a sustainable, low carbon economy for Wales".* It focuses upon job opportunities within this sector. It identifies the challenges and opportunities involved with nuclear decommissioning and new build, offshore wind development, biomass development, energy efficiency activity and infrastructure enhancements associated with the energy development.

3.8 Below are extracts from PPW which gives support for renewable energy projects including onshore wind development:

Part of PPW	Summary of Issue Raised
Paragraph 12.8.9	States that Local Planning Authorities (LPA) should facilitate the development of all forms of renewable and low carbon energy to move towards a low carbon economy. The relevant factors for onshore wind turbines that should be considered are: • the contribution the area can make; • ensuring development control decisions are consistent with climate change obligations including contributions to renewable energy targets and aspirations; and • recognising the environmental, economic and social opportunities they make to planning for sustainability.
Paragraph 12.8.12	Strategic scale wind energy continues to offer the greatest potential and is a key part of meeting the Welsh Government's vision for future renewable electricity production.
Paragraph 12.8.19	Specific support for community driven renewable energy projects.
Paragraph 12.9.7	The potential from urban / industrial brownfield sites is identified.
Paragraph 12.9.9	Developments at a scale of between 50kW and 5MW are identified as Sub Local Authority. Projects within this threshold are applicable in all parts of Wales and development plans should encourage such development and clearly set out the local criteria against which such proposals would be evaluated.

3.9 Other parts of PPW highlight issues that need to be considered when dealing with such applications:

Part of PPW	Summary of Issue Raised
Paragraph 12.8.13	States the most appropriate locations for large scale wind farm development are identified as Strategic Search Areas (SSAs). Developments in these locations are expected to contribute significantly to the WGs onshore wind energy aspirations.
Paragraph 12.8.12	Highlights that: • designated areas, species and habitats and historic environment are protected; • mitigation measures are required for potential detrimental effects on local

Part of PPW	Summary of Issue Raised
	communities whilst ensuring the potential impact on economic viability is given full consideration; and • renewable and low carbon energy in new developments should be optimised.
Paragraph 12.8.12	The Welsh Government accepts that the introduction of new, often very large structures for onshore wind needs careful consideration to avoid, and where possible minimise their impact.
Paragraph 12.8.14	The development of large wind farms or other large scale renewable and low carbon energy schemes will not generally be appropriate in internationally or nationally designated areas and sites.

TAN 8 – Planning for Renewable Energy (2005)

3.10 The TAN sets out the major land use planning aspects of renewable energy technologies in Wales. This section focuses upon the issues relevant for onshore wind power.

3.11 Below are extracts from TAN 8 which give support for renewable energy projects including onshore wind development:

Part of TAN 8	Summary of Issue Raised
Paragraph 2.2	Stated that onshore wind power has the greatest potential for an increase in generation of electricity from renewable energy in the short to medium term.
Paragraph 2.11	Potential from urban / industrial brownfield sites is so far largely untapped, sites of up to 25MW on such sites should be encouraged.
Paragraph 2.12	Provides encouragement for smaller community based wind farm schemes (generally less than 5MW).
Paragraph 2.14	There will be opportunities to re-power and / or extend existing wind farms which may be located outside SSAs and these should be encouraged provided that the environmental and landscape impacts are acceptable.
Paragraph 6.2	Encourages developers and local planning authorities to enter into discussions with local communities at the earliest possible opportunity when formulating proposals.

3.12 Other parts of TAN 8 highlight issues that need to be considered when dealing with such applications:

Part of TAN 8	Summary of Issue Raised
Paragraph 2.4	The TAN identifies 7 strategic search areas (SSAs) which can accommodate large scale onshore wind power schemes. None of these areas are located in Gwynedd.
Paragraph 2.7	Large parts of Wales excluded from consideration as SSAs in particular large wind proposals within the Area of Outstanding Natural Beauty would be contrary to well established planning policy and therefore not considered in these areas. Similarly the highest level of nature conservation and heritage designations have also been excluded.
Paragraph 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. There needs to be a balance between 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. Developments over 5MW outside SSAs and urban / industrial brownfield sites may be refused.
Paragraph 2.15	Encourages developers to take an active role in engaging with the local community on renewable energy proposals.

<u>TAN 6 – Planning for Sustainable Rural Communities (2012)</u>

3.13 The TAN provides practical guidance about the role of the planning system to support achievement of sustainable rural communities. This section focusses on the matters that relate to onshore wind energy.

3.14 The following provides extracts from TAN6 that support wind energy projects, which includes onshore wind energy.

Paragraph 2.1.1	The planning system must respond to the challenges that arise from climate change, e.g. by including the need to produce renewable energy……..Local Planning authorities should try to strengthen rural communities, by helping to ensure that their existing residents can work and use services locally, using low carbon travel modes and obtaining a higher proportion of their energy from renewable energy

	sources.
Paragraph 3.7.2	It is possible to locate a number of economic activities sustainably on farms. Small activities on the farm, such as food and wood processing, food packaging. As well as services (e.g. offices, workshops, hiring and maintaining equipment) sport and leisure services, crop production other than food, and producing renewable energy, are all likely to be suitable uses.

3.15 Paragraph 12.10.1 of PPW summarises the issues that should be taken into account in determining an application for renewable and low carbon energy development and associated infrastructure. These issues are summarised below:

- the contribution a proposal will play in meeting identified national, UK and European targets;
- the wider environmental, social and economic benefits and opportunities from renewable and low carbon energy development;
- the impact on the natural heritage, the Coast and the Historic Environment;
- the need to minimise impacts on local communities, to safeguard quality of life for existing and future generations;
- ways to avoid, mitigate or compensate identified adverse impacts;
- the impacts of climate change on the location, design, build and operation of renewable and low carbon energy development. In doing so consider whether measures to adapt to climate change impacts give rise to additional impacts;
- grid connection issues where renewable (electricity) energy developments are proposed; and
- the capacity of, and effects on, the transportation network relating to the construction and operation of the proposal.

<u>Green Gwynedd and the Low Carbon Sector Project</u>

3.16 The Green Gwynedd and the Low Carbon Sector Project is one of the projects that Gwynedd Council and partners will be working on in order to ensure that residents gain from an economy that benefits more from core resources and to support community and rural economic enterprises to establish renewable energy generation and micro-generation schemes. Green Gwynedd has studied the potential for producing renewable energy by making the most of the natural resources throughout the county. The Gwynedd Werdd Scoping Study has highlighted the potential to deploy over 110 Megawatts by 2020. This could create up to 160 operational jobs and inject £16m into the local economy. In relation to onshore wind energy it has the potential to contribute up to 33MW (29.7%) of the additional renewable energy deployed but only 12.8% new manufacturing and installation jobs across the UK and three operational and maintenance jobs locally.

Further information regarding this project can be found in the Gwynedd Council Business Plan 2011-2014.

Llŷn Area Of Outstanding Natural Beauty Management Plan (2010-2015)

3.17 The Management Plan, which is an adopted statutory plan, includes a report on the current condition of the AONB. It provides its Vision (up to 2030) along with the Strategy and Implementation for the sustainable management of the AONB for the next five years.

3.18 The main strategic aim of the Management Plan for the AONB is to maintain, protect and enhance the unique special character and beauty of the landscape, coastline and seascape of Llŷn.

3.18A The primary objective for designating AONBs is the conservation and enhancement of their natural beauty. Development plan policies and development management decisions affecting AONBs should favour conservation of natural beauty, although it will also be appropriate to have regard to the economic and social well-being of the areas. Local authorities, other public bodies and other relevant authorities have a statutory duty to have regard to AONB purposes.

3.19 Support is provided towards generating renewable energy at an appropriate rate within the AONB in policy PP5 and in objective PA5, as shown below:

"PP5: Support renewable energy initiatives that are appropriate given the sensitive environment of the AONB and internationally designated species of birds and mammals.

"PA5: Increase levels of domestic renewable energy generation that are appropriate in terms of the effect on the AONB's sensitive landscape and species of birds and mammals by 2012."

Destination Management Plan (DMP) in progress (2012-2016)

3.20 Approximately 7.1m visitors come to Gwynedd every year, spending a total of 21.5m tourism days within the County. Revenue statistics show that the serviced accommodation sector has a much smaller role in Gwynedd by comparison with north Wales. Spending on hospitality is now essential to the economy in Gwynedd, to the degree that the County has appeared among a new list of the top ten 'hot spots' in the UK's visitor economy. The Gwynedd economy is much more dependent on the tourist industry than Wales and Britain, with 16.3% of the total jobs in the County based in this industry in 2010 compared with an equivalent figure of 9.6% for Wales and 9.4% for Great Britain.

3.21 According to recent visitor data, the main reasons for visiting the area of Gwynedd are the scenery, beaches, mountains and the Snowdonia National Park.

4.0 Characteristics of the Gwynedd Planning Authority Area

4.1 The population is dispersed between a small number of main towns and their rural communities. Nearly 45% of the County's population is dispersed, either in open countryside or in villages with population clusters of fewer than 1,250. The general pattern in Gwynedd (the County) is an average of 46 people for each square mile, compared with the Welsh average of 141. It has some of the most magnificent scenery in the United Kingdom. It is an unique environment and it varies greatly throughout the area – from the dramatic coast of the Llŷn Peninsula to the open uplands and glacial valleys of Snowdonia.

4.2 The quality of this unique and valuable landscape is reflected by the number of landscape designations attributed to the area. These include a number of Sites of Special Scientific Interest, Special Conservation Areas, National Nature Reserves, Landscapes of Special and Outstanding Historic Interest, and the Llŷn Area of Outstanding Natural Beauty. In addition, 67.5% of the Gwynedd (the County) land area is located within the Snowdonia National Park. The National Park is mainly centred along the coast between Barmouth and Harlech.

4.3 The beautiful coast of Pen Llŷn, with its soft cliffs, sandy beaches, narrow roads and indigenous '*cloddiau'* is unique in character. In stark contrast, the conspicuous Snowdonia uplands, which lead us down to green valleys and the remains of ancient coppices are just as valuable. Gwynedd has a strong tradition of tourism and leisure which in turn makes a substantial contribution to the economy by generating income and work across the entire county.

4.4 Large parts of the Llŷn Peninsula was designated an Area of Outstanding Natural Beauty in 1956. The main purpose of the AONB designation is to protect and enhance the area's natural beauty, which includes safeguarding flora, fauna and geographical features along with landscape. Man has also formed the landscape, and it is of great importance that archaeological and historic remains and architectural features are also safeguarded. The AONB mainly extends along the coast and inland to include the peaks of Garn Fadryn and the Rivals. The total land area of the AONB is 15,500 hectares. Some of the main features of the Llŷn AONB include:

- Landscape, Coast and Sea
- Purity and tranquillity
- A wealth of wildlife
- Historical environment
- The Welsh Language and Culture
- Close-knit communities
- Skills and economy with its roots in the locality
- An opportunity to roam and enjoy

4.5 88.3 kilometres of the coast in Llŷn Peninsula is designated as a Heritage Coastline, which is a non-statutory national designation. The Wales Coastal Path leads through the Gwynedd Planning Authority Area.

4.6 As already noted, 7.1m visitors come to Gwynedd each year. The most popular means of leisure include sailing, fishing, cycling, walking, wind surfing and jet skiing.

5.0 Areas of Constraints

5.1 This section draws attention to the sensitive receptors (protected areas or species, including human beings) that need to be considered with any application. The boundary of a designated area does not imply there should be a sharp barrier between conservation values within, and disregard of such values outside. Therefore, consideration also needs to be given towards its setting or in the case of biodiversity interests the potential impact of development outside the site e.g. flight paths, changes to the hydrology of wetland sites etc.

5.1.1 The section then uses the Best Practice Guidance published by the Welsh Government to map all of these constraints to produce a strategic, high level assessment of the accessible wind power potential for an area.

5.2 Areas of Outstanding Natural Beauty (AONB)

5.2.1 National Parks and Access to the Countryside Act provides the statutory basis for the designation of AONBs. The CRoW Act 2000 affords them the same protection as National Parks in terms of landscape and scenic beauty and gave a statutory duty to produce and publish an AONB Management Plan. There is a duty on any public body, under section 85 of the CRoW Act, to have regard to the purpose of conserving and enhancing the natural beauty of the AONB. This is the primary objective although it will also be appropriate to have regard to the economic and social well-being of the area. Paragraph 5.3.5 of Planning Policy Wales also sets out the primary objective for AONBs.

5.2.2 The protection for AONBs and National Parks is highlighted within paragraph 8.4 of Annex D in TAN8 which states:

"There is an implicit objective in TAN 8 to maintain the integrity and quality of the landscape within the National Parks/ AONBs of Wales i.e. no change in landscape character from wind turbine development."

5.2.3 Proposals for wind turbines within the AONB will be assessed against national planning policy, Policy B8 and Policy C26 of the Gwynedd Unitary Development Plan.

5.2.4 Outside of the Llyn and Anglesey AONBs, no turbine application within the Gwynedd Local Planning Authority area should cause significant harm to the location of an AONB. This approach accords with national planning policy (see paragraph 5.3.7 of Planning Policy Wales).A LVIA will need to be carried out to show any potential impact of a scheme to ensure no significant harm will occur as a result of the proposal. The information will be used to assess the impact on national planning policy, Policy B8 and Policy C26 in the Gwynedd Unitary Development Plan.

5.2.5 Gwynedd Council, in partnership, has decided to produce a statutory and adopted AONB Management Plan which includes useful information about the designation. A copy of the AONB management plan is available on the Council website: http://www.ahne-llyn-aonb.org/management_plan_2010_-_2015-58.aspx

5.3 Snowdonia National Park

5.3.1 The National Park is an area of landscapes of international importance, and it is protected by statute which recognises its importance to the nation. The Park has two statutory purposes, which is (i) protect and enhance its natural beauty, wildlife and cultural heritage, and (ii) promote opportunities for the public to understand and enjoy the area's unique characteristics.

5.3.2 The duty to consider the National Park's objectives is as pertinent to activities that affect these areas, whether they are within it or outside it. In accordance with national planing policy (paragraph 5.3.7) and Policy B14 of the UDP wind turbines that harm the National Park's special features and character will not be approved.

5.4 Historic Landscapes & Historic Parks and Gardens of Special Interest in Wales

5.4.1 Information on the boundaries of these non-statutory designations can be found in Cadw's 'Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales, Part 1: Register of Parks and Gardens of Special Historic Interest – Conwy, Gwynedd and the Isle of Anglesey; ~~and~~ Part 2.1: Register of Landscapes of Outstanding Historic Interest, for descriptions of the landscapes within Gwynedd; and Part 2:2 Register of Landscapes of Special Historic Interest in Wales.

5.4.2 Information on the boundaries of these non-statutory designations can be found in Cadw's 'Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales, Part 1: Register of Parks and Gardens of Special Historic Interest – Conwy, Gwynedd and the Isle of Anglesey; and Part 2.1: Register of Landscapes of Outstanding Historic Interest.

5.4.3 In accordance with Policy B12 of the UDP, proposals that cause significant harm to the character, appearance or the setting of the historic landscapes or the historic parks and gardens will be refused.

5.5 International Ecological Designations

5.5.1 Paragraph 5.3.9 of PPW states that the Government will ensure that internationally statutorily designated nature conservation sites will be protected from damage and deterioration, with their important features conserved by appropriate management. Detailed guidance in relation to development proposals that may affect an International Designated site is contained in Annex 3 of TAN 5. This should be referred to with any proposal that may affect such a site.

Designation	**Description**
Ramsar Sites	Wetland areas of international importance
Special Areas of Conservation (SAC)	Areas that contribute to the maintenance or restoration of favourable conservation status of habitats or species listed in

Designation	Description
	Annexes I and II of the Habitats Directive.
Special Protection Areas (SPA)	Designated areas that help conserve habitats for rare and vulnerable species and migratory species of birds.

5.5.2 In accordance with Policy B15 of the UDP, proposals should not cause significant harm to the integrity of important international sites, whether situated within or outside the designation and should off-set for losses where damage is unavoidable. If a proposal cannot rule out adverse effects on a European site or if insufficient information is provided to carry out the assessment, then it will not be granted consent.

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5.5.3 Habitats Regulations Assessment will be required where there is a probability or risk that a proposal (either alone or in combination with other plans or projects) will have a significant effect on a European site as noted in paragraph 5.5.1. Developers must provide sufficient information about the proposed development so that an informed judgement can be made as to its likely effects. Those failing to do both of the above will be refused under regulation 61 of the Habitat and Species Regulation 2010. Failure to provide this information would result in the refusal of the planning application.

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5.6 National Ecological Designations

5.6.1 With regard to SSSIs, which are of national importance, the Wildlife and Countryside Act, as amended by the Countryside and Rights of Way Act 2000, places a duty on all public bodies (including local planning authorities) to take reasonable steps, consistent with the proper exercise of their functions, to further the conservation and enhancement of the features by reason of which a SSSI is of special interest. SSSIs can be damaged by developments within or adjacent to their boundaries, and in some cases, by development some distance away. Paragraph 5.5.8 of PPW states that there is a presumption against development likely to damage a SSSI.

Designation	Description
Sites of Special Scientific Interest (SSSI)	SSSIs are areas of land designated as being of national nature conservation interest.
National Nature Reserves (NNR)	Areas of national nature conservation importance are designated as NNRs.

5.6.2 In accordance with Policy B16 of the UDP, proposals should not significantly harm the conservation objectives of a site designated as being of national wildlife importance, whether situated within or outside the designation and should compensate for losses where damage is unavoidable.

5.7 Local Ecological Designations

Designation	Description
Local Nature Reserves (LNR)	Designated for local interest by the Council.
Candidate Wildlife Sites (CWS) / Wildlife Sites (WS)	Non-statutory sites deemed to be of special ecological value.

5.7.1 Where a proposal is likely to have an significant harm on an LNR or CWS/WS, it should only be permitted if it can be demonstrated that there are reasons for the proposal that outweigh the need to safeguard the nature conservation value of the site and that impacts can be mitigated and compensated. The relevant local planning policy is Policy B17 of the UDP.

5.8 Surveys for Designated Ecological Sites

5.7.1 Concerning designated ecological sites, ecological surveys are most likely to be required for applications situated in close proximity to such sites.

5.9 Heritage Designations

5.9.1 Proposals should not cause significant harm to the character and appearance of Conservation Areas, Listed Buildings, Scheduled Ancient Monuments, World Heritage Sites, Registered Historic Landscapes, Heritage Coasts or historic parks and gardens and historic landscapes or their setting. The Regional Historic Environment Record (HER) contains archaeological information and encompasses the vast majority of archaeological sites in the County. A suitable assessment will need to be carried out to clearly demonstrate no significant harm will occur as a result of the proposal. The relevant local planning policy is Policy B7 of the UDP.

5.9.2 All screening opinion requests, scoping opinion requests and full applications for wind turbine schemes within one of these environmental designations or impacting upon its setting, views to/from or between should be referred to the Council's Building Conservation Officer and Cadw/Gwynedd Archaeological Planning Service (GAPS)..

5.10 Aviation Interests

5.10.1 The movement of a wind turbine can interfere with radar as it may be interpreted as a moving object. This could cause it to be mistaken for an aircraft or reduce the ability to track aircraft by radar in the vicinity of a wind energy development.

5.10.2 Developers will need to consult with radar operators if a proposal falls within a 15km consultation zone, or the 30-32km advisory zone around both civil and military air traffic radar, respectively. The MoD should also be consulted. Guidance is available to assist developers on the Civil Aviation Authority's web-site (http://www.caa.co.uk/default.aspx?catid=1959).

5.10.3 National Air Traffic Services (NATS) has advised that it wishes to be consulted on all planning applications or 'Notice of Intent to Develop' proposals for wind turbine developments irrespective of scale.

5.11 Broadcasting Installations

5.11.1 Wind turbines can interfere with electromagnetic transmissions by emitting an electromagnetic signal itself, interfering with electromagnetic signals.

5.11.2 Early consultation should be sought with the Office of Communications (OFCOM), who hold a central register of all civil radio communications operators in the UK and acts as a central point of contact for identifying specific consultees relevant to a site. In addition early consultation should also be sought with Arqiva who operate the television network in the UK and the majority of radio transmission network.

5.12 Residential and Tourism Receptors

5.12.1 Section 7.0 of the SPG refers to a number of Key Issues that need to be evaluated in terms of the potential impact of proposals on residential and tourism receptors.

5.12.2 For the purpose of the exercise in section 5.12 below different buffers have been applied to every residential address point in the County, which varies according to the height of the turbine.

5.13 Wind Power Potential in Gwynedd – Strategic Assessment

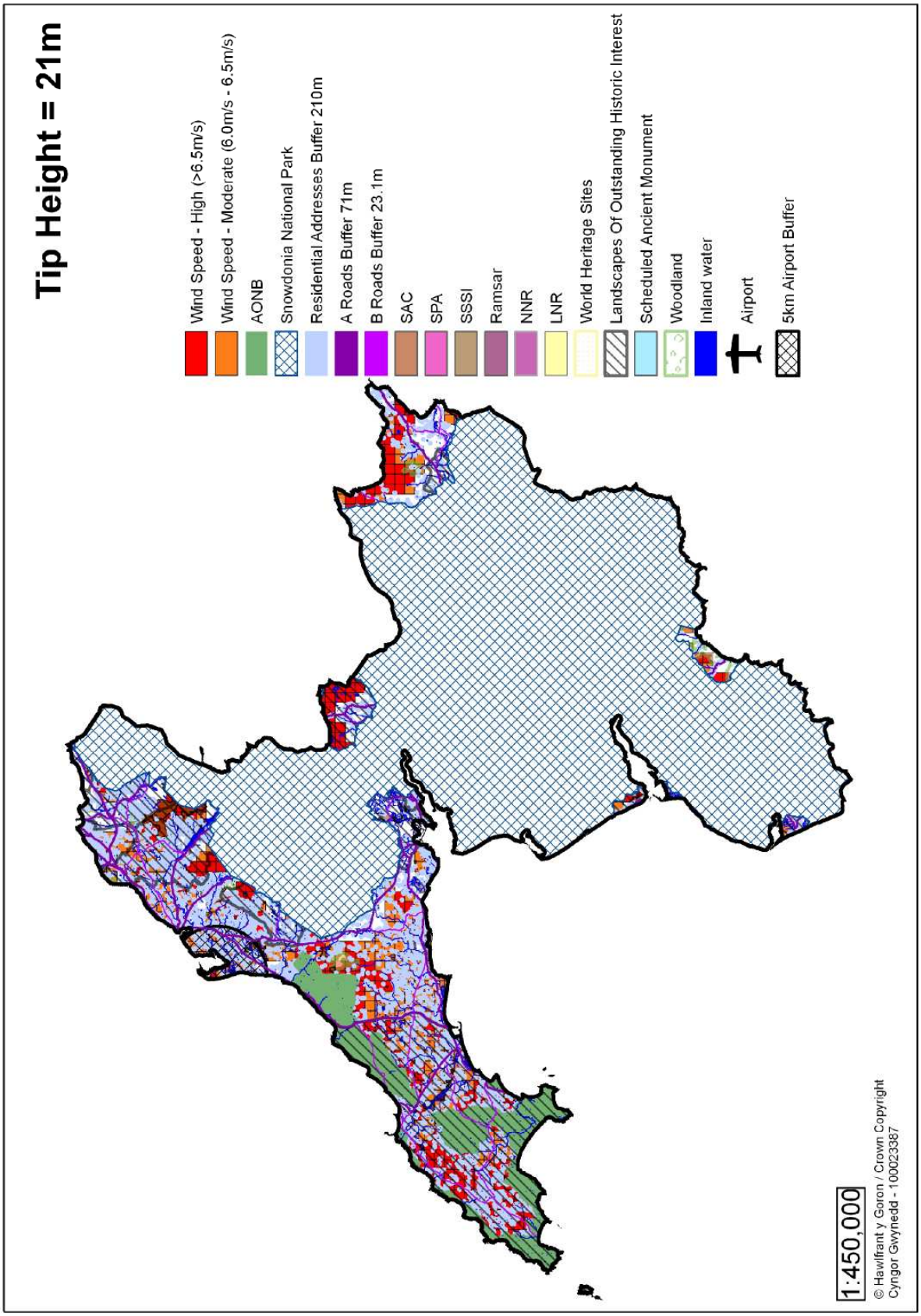
5.13.1 In line with the Welsh Government Best Practice Guidance – Planning for Renewable & Low Carbon Energy – A Toolkit for Planners (2010) a strategic high level assessment of the accessible wind power potential was undertaken. This involves using a Geographical Information System (GIS) to map numerous constraints to identify areas of land that are potentially suitable for wind development. The constraints include separation distances between housing units and wind turbine development, i.e. 10 x the height of the turbine to the hub (see more about this in section 7.9 of the SPG)

5.13.2 Regard must be given to the strategic nature of this exercise and that issues such as existing features in the landscape e.g. landform, existing wind turbines, telecommunication masts etc., other possible constraints such as wildlife sites buffer zones, flightlines, wildlife connectivity, and their cumulative impact have not been evaluated.

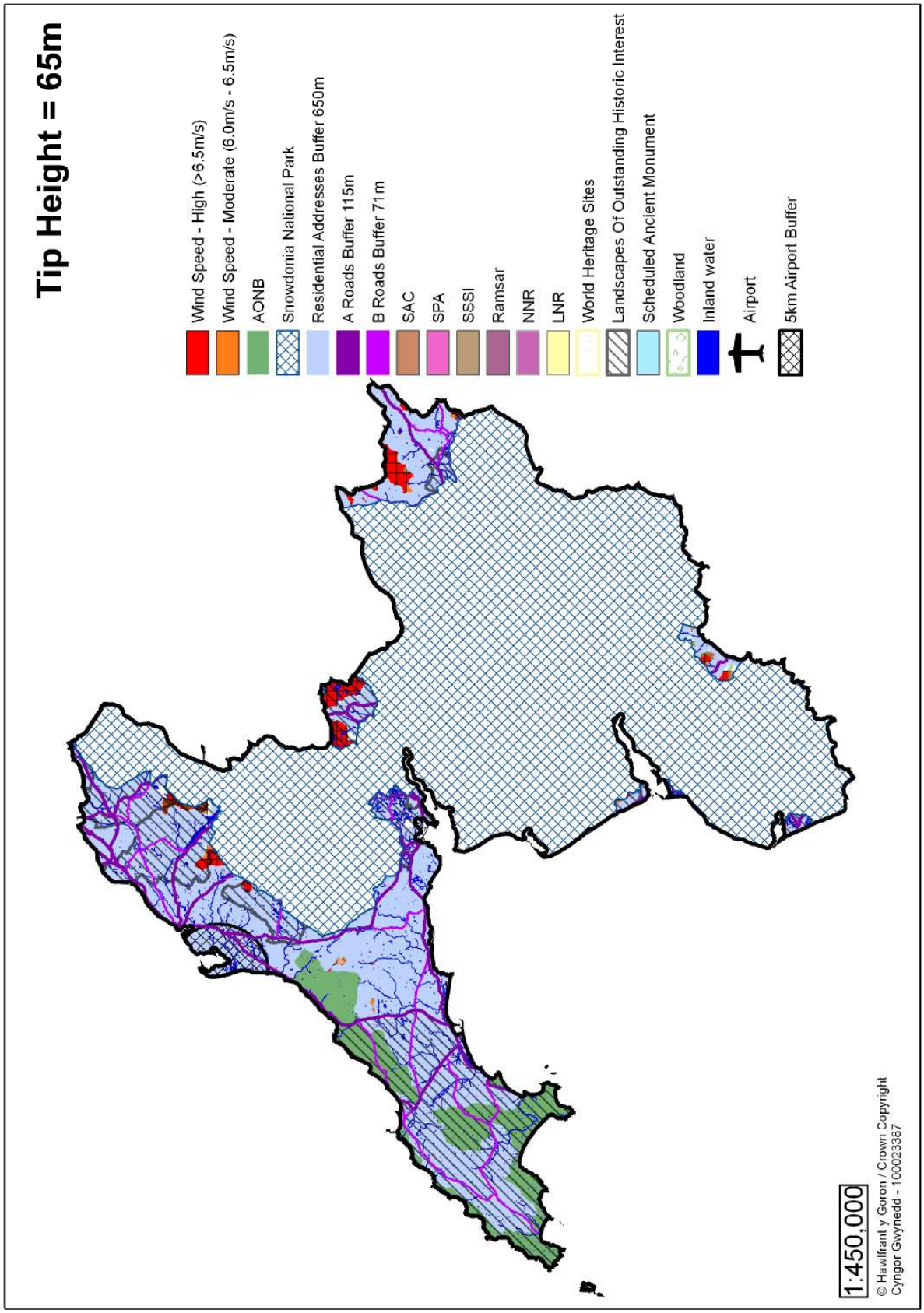
5.13.3 The maps below are based upon turbines of 21m, 65m and 135m to tip height and serve to provide examples of potential opportunity areas based on wind speeds for wind turbines of these specific tip heights. The categorisation of different sizes of turbines can be seen in section 6.0 of the SPG.

5.13.4 These areas in red and orange are potential areas in terms of wind speed within the Gwynedd Planning Authority area. Nonetheless these maps are not intended to indicate support or acceptance of proposals in these areas. All proposals for wind turbine developments within these areas would still require detailed assessment as set out in this guidance which interprets relevant national and local policies before they can be supported. Further information is provided in section 7.9 of this SPG.

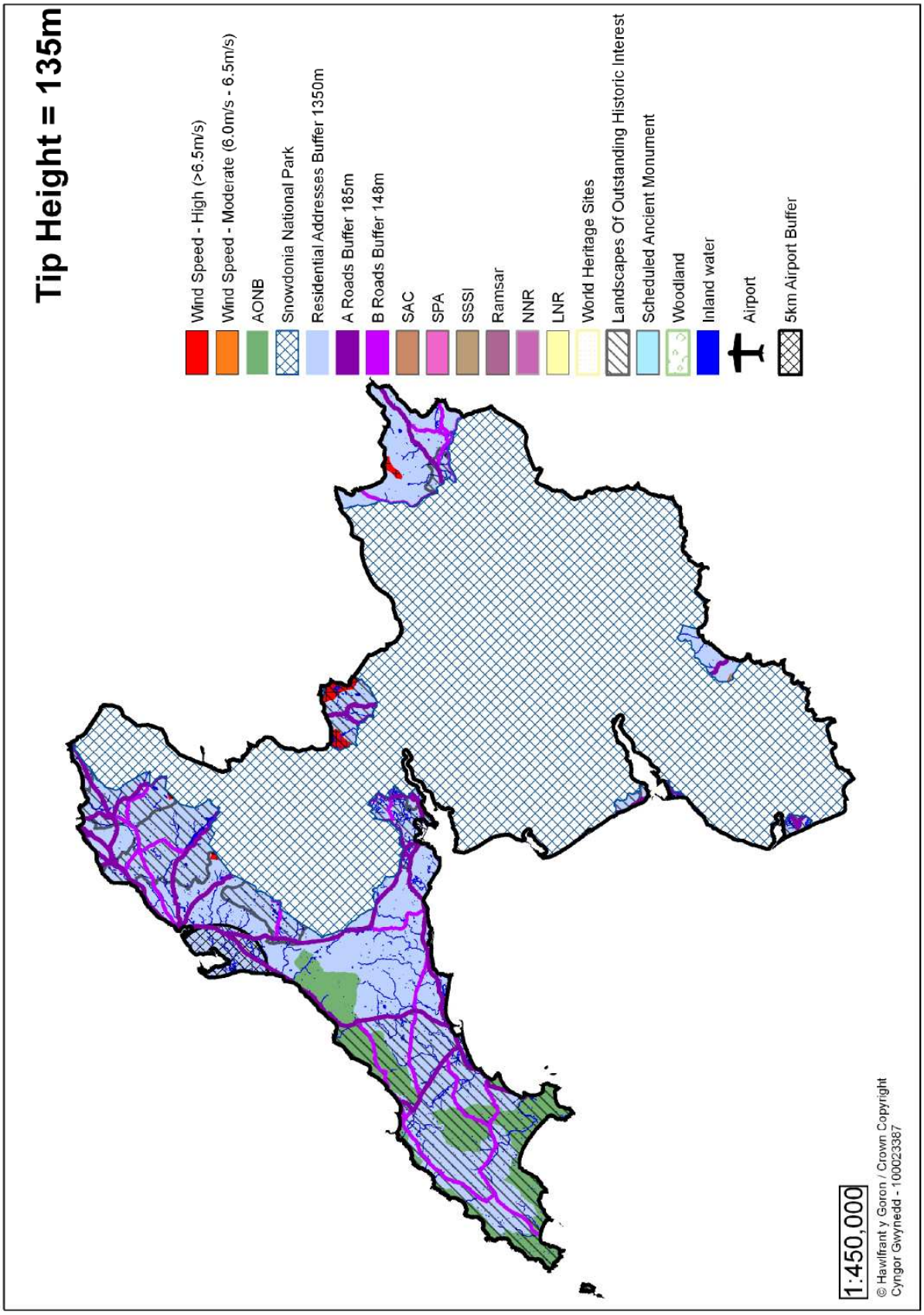
Map 1 – Strategic Assessment 21m to tip height



Map 2 – Strategic Assessment 65m to tip height



Map 3 – Strategic Assessment 135m to tip height

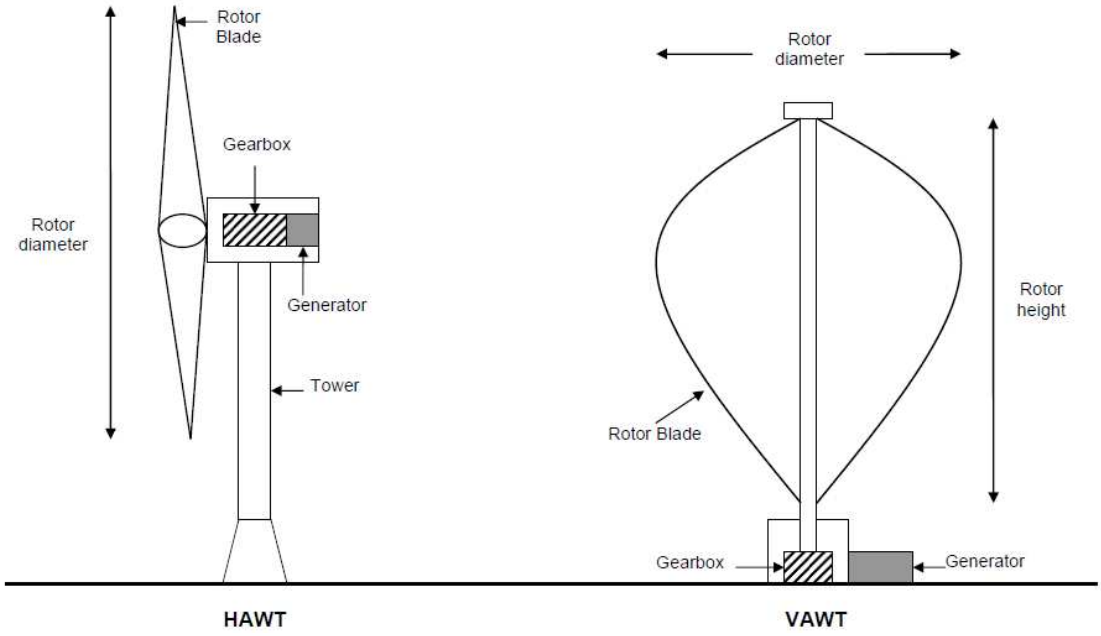


6.0 Types and Sizes of Wind Turbines

6.1 In this section the two main types of turbine technology is highlighted. It also provides a definition, for the purpose of this SPG, about what is a micro, small, medium and large development in terms of size of individual turbines, scale of windfarms and electrical output.

Types of Wind Turbines

6.2 There are two main types of wind turbines – vertical axis wind turbines (VAWT) and horizontal axis wind turbines (HAWT) as demonstrated in the figure below:



Vertical Axis Wind Turbines

6.3 Vertical axis wind turbines (VAWTs) have the main rotor shaft arranged vertically. With a vertical axis, the generator and other components can be placed near the ground so the tower does not need to support it, which also makes maintenance easier. The advantages of VAWTs include:

- Have less impact on landscape and may be built at locations where taller structures are prohibited
- They have a greater surface area for energy capture;
- Are more efficient in gusty winds;
- Can be located nearer the ground, making it easier to maintain the moving parts;
- Have lower start-up speeds than HAWTs;
- Situated close to the ground can take advantage of locations where rooftops, hilltops, ridgelines and passes funnel wind and increase wind velocity.

6.4 The disadvantages of VAWTs include:

- Most VAWTs have an average decreased efficiency from a common HAWT, mainly because of the additional drag that they have as their blades rotate into the wind. Versions that reduce drag produce more energy, especially those that funnel wind into the collector area;
- Having rotors located close to the ground where wind speeds are lower do not take advantage of higher wind speeds above.

Horizontal Axis Wind Turbines

6.5 Horizontal axis wind turbines (HAWT) are the most common style of wind turbines. They have a similar design to a windmill, and the blades look like a propeller that spin on the horizontal axis. HAWTs have the main rotor shaft and electrical generator at the top of the tower, and may be pointed into or out of the wind. The advantages of HAWTs include:

- Variable blade pitch which gives the turbine blades the optimum angle of attack;
- The tall tower base allows access to stronger wind in sites with wind shear. In some wind shear sites, every ten metres up, the wind speed can increase by 20% and the power output by 34%;
- High efficiency since the blades always move perpendicularly to the wind, receiving power through the whole rotation.

6.6 The disadvantages of HAWTs are:

- Their height makes them obtrusively visible across large areas, disrupting the appearance of the landscape and sometimes creating local opposition;
- The tall towers and blades up to 90 meters long are difficult to transport. Transportation can now cost 20% of equipment costs;
- Tall HAWTs are difficult to install, needing very tall and expensive cranes and skilled operators;
- Massive tower construction is required to support the heavy blades, gearbox, and generator;
- Reflections from tall HAWTs may affect side lobes of radar installations creating signal clutter, although filtering can suppress it;
- Downwind variants suffer from fatigue and structural failure caused by turbulence when a blade passes through the tower's wind shadow (for this reason, the majority of HAWTs use an upwind design, with the rotor facing the wind in front of the tower);
- Require an additional yaw control mechanism to turn the blades toward the wind.

Size of Turbines – Electrical Output

6.6a Policy C26 states that outside the AONB only proposals for small scale or community or domestic wind turbine development will be approved. The explanation in paragraph 4.5.5 states that small scale and community based wind

turbine developments are identified as developments with generating capacity of less than 5MW.

6.6b This reflects the guidance in paragraph 2.12 of TAN 8 in which the 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).

6.6c Figure 12.3 'Renewable and low carbon energy scales for planning purposes' of PPW identifies Sub Local Authority scale of development to be between 50kW and 5MW. Paragraph 12.9.9 of PPW states that at the sub-local authority scale renewable energy projects are applicable in all parts of Wales and development plans should encourage such development and clearly set out the local criteria against which such proposals will be evaluated.

6.6d In light of this, proposals up to a generating capacity of up to 5MW is supported by policy C26 outside of the Llyn AONB, subject to compliance with a set of criteria, as well as other relevant policies in the Plan and material planning considerations. However, in the majority of cases and in all cases involving single turbines the larger the size of the proposed scheme, be it in terms of turbine height and/or number of turbines, then the greater the justification will be required to satisfy the criteria within policy C26, as well as other relevant polices in the Plan, e.g. policy B8.

6.7 Wind turbines are usually defined by the "rated capacity" which is measured in kilowatts (kW) or megawatts (MW). The "rated capacity" equates to the maximum electrical output. It is worth noting that:

• an increase in the rotor diameter of a wind turbine will result in a greater than proportional change in rated power.
• power output is proportional to the cube of the wind speed, and hence a doubling of wind speed will result in a roughly eight-fold increase in power output. A wind turbine on a site which has an annual mean wind speed of 6 m/s (m/s = meter per second) will typically produce only half as much energy as the same machine on a site where the annual mean wind speed is 8 m/s (TAN8).

6.8 The following table provides a broad indication of the power and the potential number of homes supplied by the different types of turbines outlined above.

Table 3

Typical scales of individual wind turbine technologies			
Scale	**Power (kW)**	**Typical Turbine Rating**	**Potential No. of Homes Supplied**
Micro	Less than 2.5kW	2.5kW	0.7
Small	1.5 – 50kW	20kW	6
Medium	50kW – 750kW	500kW	205
Large	Above 750kW	2.5MW	1,536

Source: Practice Guidance: Planning implications of renewable and low carbon energy (February 2011) Welsh Assembly Government

6.8a The Practice guidance further clarifies that micro and small output proposals as stated in Table 3 above are most commonly deployed as single machines supplying specific buildings or developments (e.g. farm buildings, schools, small businesses, etc), providing power to an existing building or to meet emission reduction targets as part of a new development. Medium and large in terms of output as defined in Table 3 can also be deployed as single machines but are more often used in groups to form part of a larger planning application in the form of a large scale wind farm.

6.8b The higher the rated capacity of a proposal, then the Council would expect these to be either Community driven proposals and/or small scale schemes that provide acceptable community benefit as part of the proposal.

Size of Turbine – Height to blade tip

6.9 The relationship of wind turbines with their surroundings will be a key consideration in assessing a turbine's visual impact on the landscape and visual amenity of residents and visitors. The "Practice guidance: Planning implications of renewable and low carbon energy development" (February 2011), published by the Welsh Government, as well as guidance published by other national or local governments assist in providing a definition of different scales of turbines. These guidelines have enabled the categorisation of turbines as illustrated in the table below.

Table 1	***Micro/ domestic***	***Small***	***Medium***	***Large***
Typical height range of wind turbines	**Up to 11m to blade tip**	**Up to 20m to blade tip**	**Up to 65m to blade tip**	**Up to 135m to blade tip**

6.10 For the purpose of clarity in relation to different types of applications the Council will use this height range categorisation to define small, medium and large turbines as a basis for identifying the evidence required to support proposals for wind turbines as outlined in Chapter 7 'Key Issues' and the Checklist in Appendix 4. It is often difficult to judge the size of a turbine without something to scale it against. Table 2 shows the relative heights of elements found in the landscape which may be located near to proposed turbines.

Table 2 – Height of Landscape elements

Landscape element	Height in metres
Single storey house	5 metres
1.5 to 2 storey house	6 – 10 metres
Farmyard grain silo	10 metres
Telegraph pole	10.5 metres
Mature forest trees	20 metres
Pylon	Usually around 30 - 35 metres

Environmental Impact Assessment

6.10a Under the Environmental Impact Assessment Regulations (England and Wales) (1999) certain wind energy developments require a formal Environmental Impact Assessment (EIA) by virtue of their nature, size and location. Environmental Impact Assessment (EIA) is a systematic process of identifying, predicting and evaluating the likelihood of significant effects of a development on the environment. It should be noted that EIA is a tool to inform the decision –making process. The results of an EIA should not be used as the sole reason to refuse or permit a planning application. From a procedural point of view, Schedule 2 of the Regulations indicates that an (EIA) should generally be carried out provided a development meets one or more of the criteria set out below:

i) The development involves the installation of more than 2 turbines; or
ii) The hub height of any turbine or height of any structure exceeds 15 metres

6.10b The determination of whether or not EIA is required (screening) for a particular development proposal can take place at a number of different stages during the planning application process. Developers are advised to consult the planning authority at as early a stage as possible to confirm whether or not a proposed wind turbine would need to be subject to EIA. The Screening Opinion will be undertaken in accordance with the Regulations, to assess whether the project is likely to give rise to significant environmental effects. Whether EIA will be required will need to be evaluated on a case by case basis.

Scale of Wind farms

6.12 There is no clear definition of what constitutes a wind farm as opposed to multiple individual wind turbine applications in relative close proximity. However, the Table in Schedule 2 of the Environmental Impact Assessment Regulations (2008/2093) in relation to section 3 ‘Energy Industry in sub-section (i) refers to:

“Installations for the harnessing wind power for energy production (wind farms)”.

In the applicable threshold and criteria column reference is made to

“(i) The development involves the installation of more than 2 turbines…”

6.13 In order to ensure consistency when dealing with different types of applications the SPG will identify any proposal for more than 2 turbines to constitute a wind farm.

6.14 Large wind farm developments are expected to be located within SSAs identified in TAN 8. There is no SSA in the Gwynedd Planning Authority area. Prospective urban/industrial brown-field site applications of up to 25MW are encouraged under TAN 8. Due to limited industrial heritage in the area, opportunities to consider such sites are scarce.

6.15 Paragraph 2.13 of TAN 8 states that for areas outside of SSAs and urban/industrial brownfield sites the Welsh Government would support a restriction on almost all wind energy developments larger than 5MW.

6.16 In light of this new wind farm developments should be limited to a maximum output of 5MW.

6.17 Due to the significant variation in the size of turbines and electrical output the SPG does not include windfarm typologies. The detailed assessment work required with any scheme will determine whether the scale of a wind farm, within the above mentioned energy output thresholds, can be accommodated in the area.

Cumulative energy output assessment

6.18 Over the past couple of years the vast majority of applications received in the area have been for either individual or up to two turbines. Whilst other parts of this SPG ensures that the cumulative visual and noise impacts of adjacent proposals are taken into account, consideration needs to be given to the overall energy output of multiple individual applications. This is to ensure that a large wind farm i.e. wind energy developments larger than 5MW, is not created through individual applications.

6.19 There are no established wind farms within the Gwynedd Local Planning Authority area to serve as guidance in terms of density levels. There are 3 wind farms in Anglesey that can act as guides in terms of density levels. An assessment of the current density of wind farms on Anglesey provides the following density levels:

Wind Farm	Total site Area (ha) (site planning area)	Number of Turbines	Density Level (Turbine per ha)
Rhyd y Groes	280	24	11.7ha
Trysglwyn	120	19	6.3ha
Llyn Alaw	500	34	14.7ha
Overall	900	77	11.6ha

6.20 The average density level will be applied to determine whether a cluster of adjacent planning applications (operational, permitted but not erected and live applications) can be described as ‘large wind farms’. Should adjacent turbines be categorised as a ‘large wind farm’ due to development density level, then their total electrical output will be calculated. If this calculation reveals that the total energy output exceeds 5MW the relevant proposals will be considered against the national planning guidance set out in TAN 8, which is referred to in 6.15 above.

Micro-generation – Permitted Development

6.21 From Monday the 18th June 2012 the Statutory Instrument ‘Town & Country Planning (General Permitted Development) (Amendment) (Wales) Order 2012 – Part 40 (Micro-generation)’ came into force. In relation to wind turbines it introduces new permitted development rights for householders wishing to install stand alone wind turbines (class H) (up to 11.1 metres in height) and temporary anemometer

masts (class I) subject to certain conditions e.g. not in an AONB, Curtilage of a Listed Building, on a site designated as a Scheduled Monument etc. Recent additional changes to permitted development rights that came into force in October 2012 about microgeneration and non-domestic buildings do not apply to wind turbines.

7.0 Key Issues

7.1 This section highlight specific issues that should be considered with an application:

7.2 Infrastructure

7.2.1 Paragraph 2.9 and 2.10 of Annex C in TAN 8 refers to infrastructure serving wind turbines. These could include adequate road access, on-site tracks, turbine foundations, crane hard-standings, anemometer masts, construction compound, electrical cabling, electrical sub-station and control building.

7.2.2 The main issues to consider are:

i) Access Tracks – developers and their contractors, in consultation with the Council, will be required to produce a Traffic Management Plan where wind turbine developments will involve a significant increased load on public roads. These potential impacts will be less significant for individual wind turbines and micro turbines. Due to the size of the components being transported, there can also be issues in relation to the capacity of rural roads to cope with these loads. Developers should therefore, consult with Highway Department in respect of abnormal load deliveries to the development site.

ii) Electricity Connection Cables – Cable routes should be carefully chosen to avoid sensitive areas. Cables should be located underground wherever it is feasible to do so. Where power lines from the turbines cannot be located underground, careful consideration should be given to the visual impact of transmission lines and other associated infrastructure.

iii) Excavation including drainage works – consideration needs to be given to the impacts associated with the construction phase as well as the implications of any drainage works. The potential impact upon groundwater, archaeology, ecology, topsoil removal, rate and quantity of rock to be excavated should all be considered.

iv) Control buildings, substations and external works – any proposed buildings and external works needed as part of the turbine development should be carefully sited to reduce their visual impact.

v) Traditional Landscape Features – Development should avoid the loss of important / historic hedgerows, stone walls / cloddiau, protected and amenity trees and other traditional landscape features within the site boundary and for any off-site improvements to access or to serve the site.

7.2.3 Further guidance over access infrastructure matters are included in the checklist in Appendix 4, see sections 6 and 14.

7.2.4 Details over these matters will be required with any application and consideration will be given towards the potential impact of these in addition to the proposed turbine(s).

7.3 Noise

7.3.1 Technical Advice Note (TAN) 8: Renewable Energy (2005) states:

"…'The Assessment and Rating of Noise from Wind Farms' (ETSU-R-97) describes a framework for the measurement of wind farm noise and gives indicative noise levels calculated to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on wind farm development or adding unduly to the costs and administrative burdens on wind farm developers or planning authorities. The report presents the findings of a cross-interest Noise Working Group and makes a series of recommendations that can be regarded as relevant guidance on good practice."

Medium or Large Wind Turbines (above 20m) and Wind Farm Developments

7.3.2 For larger turbines and wind farm developments which fall within the requirement for an Environmental Impact Assessment, a full noise assessment will be required and ETSU-R-97 is generally accepted as the criteria to apply noise conditions (both overall and tonal) to such wind turbine development. However, before any assessment can be made the developer would be required to commission a series of background noise surveys at the most sensitive receptors around the site. Usually based upon $L_{A90,\ 10m}$ the background noise measurements should be correlated against derived (not measured) 10 metre height wind speeds at the proposed wind farm site, taking account of site specific wind shear. This approach will ensure that site specific ground conditions will be taken into account.

7.3.3 In order to do this, wind speed would need to be measured at two heights on site for the duration of the baseline noise survey. We are advised that one height must be no less than 60% of the proposed hub height and the remaining height between 40-50%. The standard roughness length 0.05 metres must be used to derive the 10 metre height wind speeds.

7.3.4 The Octave Band Prediction method of International Standard ISO9613-2 should be used in order to predict wind turbine noise emission levels, using warranted turbine sound power levels supported by test data, and making allowances for uncertainty. Atmospheric conditions of 10°C and 70% RH together with a ground factor of G=0.5 (with a 4 metre receptor height) should be assumed (the assumption of 'soft' ground (G=1) should not be made). The barrier attenuation calculation using the method within ISO9613-2 should not be included within the predictions and generally no account should be taken of barrier attenuation by the landform unless there is no line-of-sight between the receptor and the highest point on the rotor.

7.3.5 Following the standard outlined in ETSU-R-97 and the additional supplementary details outlined above, the noise from the wind turbines shall not exceed an overall level of 35dB(A) or 5dB(A) (measured as $L_{A90,\ 10\ min}$) above the background, whichever the greater, up to wind speeds of 12m/s at 10m height. For the purpose

of this document LA90=L_{Aeq} – 2dB. An example of a planning condition based upon this assessment criteria is included in Appendix 1.

Small or Single Turbine Developments (up to 20m)

7.3.6 ETSU-R-97 offers a simplified method which could be considered appropriate for small or single turbine developments. The simplified method suggests that where noise can be limited to below 35dB $L_{A90, 10m}$ up to wind speeds of 10m/s at 10m height, then this condition alone would offer sufficient protection of amenity.

7.3.7 However, in reality, unless larger single turbines are located further than 400-500 metres from residential properties (not including those associated with the development), it is unlikely they would be able to comply with this simplified method and the full ETSU-R-97 methodology would need to be used instead.

7.3.8 The Local Authority will require the applicant to undertake noise tests, at his own expense, to demonstrate compliance with any noise condition, should a justifiable complaint of noise nuisance regarding the wind Turbine be received. The methodology used to determine compliance shall be agreed with the Environmental Health Section of the Local Authority."

Micro - Domestic Wind Turbines

7.3.9 Domestic wind turbines are turbines erected to supplement the electricity consumption of an individual house. The lower power output allows these turbines to have smaller blade diameters and shorter masts than larger models. In many instances this brings about significant noise reductions which can allow these turbines to be located closer to neighbouring properties than suggested above. It is recommended that the following guidance should be followed when considering installing such an appliance:-

- The site of the wind turbine should only be determined after the property has been professionally surveyed by the turbine manufacturer/installer.
- Applications will not normally be considered unless the specific turbine make and model is specified and is accompanied by the manufacturer's information on predicted noise levels, supported by test data.
- In order to reduce the possibility of noise nuisance, turbines should be located away from boundaries and windows of other noise sensitive premises. It is worth remembering that a neighbour's property could change hands and despite an agreement with the previous resident, the new occupants are not prevented from making a complaint of noise nuisance to the Council.
- The turbine should be installed by a suitably qualified person, in accordance with the manufacturer's instructions and the site survey.
- The wind turbines shall be serviced in accordance with the manufacturer's recommendations.

7.3.10 In addition to the above, the following noise condition would also be applied to the development:-

"The noise from the turbine shall not exceed the greater of 40bB $L_{aeq\ (5\ min)}$ or 5dB(A) above the L_{90} background noise 3.5m from the façade of any occupied neighbouring property not in the ownership of the applicant. Where the nearest part of any adjacent premises is above ground level, the monitoring location shall be 1m from the façade and a façade correction of -3dB(A) applied."

Blade swish or Amplitude Modulation

7.3.11 The technical term for blade swish is Amplitude Modulation [AM] and the Document "Wind Farm Noise Statutory Nuisance Complaint Methodology" – produced by DEFRA in 2011 states:-

"Whilst all the causes are not known, it appears that AM tends to occur under certain meteorological conditions and the limited evidence available suggests this effect is likely to be manifest at a minority of wind farms. Moreover, it is a highly technical area, which despite research by numerous investigators over the last 20 years; there is to date no universally accepted explanation as to the causes of AM or means to predict its occurrence."

7.3.12 The Planning Inspector in the Denbrook Inquiry (APP/Q1153/A/06/2017162) in 2009, adopted the following methodology for measuring Amplitude Modulation:-

"Amplitude modulation is the modulation of the level of broadband noise emitted by a turbine at blade passing frequency. These will be deemed greater than expected if the following characteristics apply:

a) A change in the measured LAeq,125 milliseconds turbine noise level of
b) more than 3 dB (represented as a rise and fall in sound energy levels each of more than 3 dB) occurring within a 2 second period.
c) The change identified in (a) above shall not occur less than 5 times in any
d) one minute period provided the LAeq,1 minute turbine sound energy level for that minute is not below 28 dB.
e) The changes identified in (a) and (b) above shall not occur for fewer than 6 minutes in any hour. Noise emissions at the complainant's dwelling shall be measured not further than 35m from the relevant building, and not closer than within 3.5m of any reflective building or surface, or within 1.2m of the ground."

7.3.13 However, the DEFRA report has the following to say about this condition:-

"It is suggested that the above method, whilst not simple or easy to implement, may provide a starting point in trying to quantify AM by direct measurement, although it does not represent a validated method of assessing the significance of any impact or effect on amenity, and does not constitute a threshold for Statutory Nuisance."

At the time of writing this Supplementary Planning Guidance, a Noise Working Group (formed under the direction of the Institute of Acoustics) was preparing to issues its final consultation document on a review of technical matters associated with wind turbine noise assessment. It is anticipated that this document will include discussion on amplitude modulation. Once published, developers are advised to contact the Environmental Health Section, for the Local Authority's interpretation of this guidance.

Tonality

7.3.14 Gwynedd Council discourages the use of turbines which have been identified as tonal. The Local Authority will consider noise reports conducted using either the "BWEA Small Wind Turbine performance and Safety Standard (Feb 2008)" or BS EN 61400-11:2003 "Wind turbine generator systems – Part 11: Acoustic noise measurement techniques" as appropriate assessments of turbine tonality. However, the planning condition example contained in Appendix 2 is based upon the method outlined in ETSU-R-97.

Cumulative Noise Impact

7.3.15 It is possible that the siting of additional wind turbines near to existing sites could an increase in noise levels to nearby properties. ETSU-R-97 refers to the issue of cumulative impact as follows:-

"The Noise working group is of the opinion that absolute noise limits and margins above background should relate to the cumulative effect of all wind turbines in the area which contribute to the noise received at the properties in question. It is clearly unreasonable to suggest that, because a wind farm was constructed in the vicinity in the past which resulted in increased noise levels at some properties, the residents of those properties are now able to tolerate still higher noise levels. The existing wind farm should not be considered as part of the prevailing background noise."

7.3.16 Where it is proposed to erect a wind turbine within or close to the zone of predicted noise influence of another turbine, wind farm or a group of wind farms, a cumulative noise assessment should be undertaken. The boundary of the "Zone of Predicted Noise Influence" shall equate to the 35dB LA90 contour based upon a wind speed of 10m/s at 10m height. The Applicant shall consult with the Local Authority on the precise interpretation and location of this contour.

7.3.17 The cumulative noise assessment will need to demonstrate that the combined noise level from all wind turbine/s will not exceed an overall level of 35dB(A) or 5dB(A) above background up to wind speeds of 12m/s at 10m height. The background noise levels and noise assessment shall adopt the same methodology as outlined in that for "Larger turbines and wind farm developments" mentioned above and the applicant shall make every endeavour to ensure that the quiet day-time and night-time periods, used for the background noise assessment, are not influenced by any nearby wind turbines.

7.4 Safety

7.4.1 Paragraph 2.20 of TAN 8 states that the minimum desirable distance from a turbine and occupied buildings will usually be greater than that required to meet safety requirements.

7.4.2 Information will be required with an application that shows regard has been given over the position of any proposed turbine in relation to the proximity of any

surrounding development and the risk of injury to humans through catastrophic equipment failure or ice throw and possible effects of visual distraction to road safety. Section 6 of the checklist in Appendix 4 deals with this matter.

7.5 Landscape & Visual Impact

7.5.1 This is a key consideration for wind turbine applications in the area due to the high value of the environment which is reflected in the number of designations here, which include the AONB, Snowdonia National Park, Conservation Areas, Scheduled Ancient Monuments, Listed Buildings, Heritage Coast, Historic Landscapes/Gardens and World Heritage Site.

7.5.2 The level of LVIA required will depend on the proposal, its location, and proximity to sensitive receptors. Guidance is provided within section 11 of the checklist contained in Appendix 4 over the level of detail required with different types of applications.

7.5.3 Tools such as LANDMAP, developed by the Countryside Council for Wales, or ASIDOHL 2, promoted by CCW and Cadw, should be used to assist in assessing the visual impacts of wind turbines and their associated infrastructure such as access roads and grid connections. LANDMAP, the Welsh approach to landscape assessment, is a GIS (Geographical Information System) based landscape resource where landscape characteristics, qualities and influences on the landscapes are recorded and evaluated into a nationally consistent data set. The following link takes you to the LANDMAP page on CCW's web-site: http://www.ccw.gov.uk/landmap

7.5.4 Gwynedd Council's Landscape Strategy (2010) has been produced using LANDMAP. Reference should be made to the relevant character areas in the strategy when assessing new proposals. A copy is available in: http://www.gwynedd.gov.uk/upload/public/attachments/1140/CanllawiauDylunioMeh2012.pdf

7.5.5 'Guidelines for Landscape and Visual Impact Assessment' by the Landscape Institute and the Institute of Environmental Assessment 2nd edition and the Countryside Council for Wales document 'LANDMAP Information Guidance Note 3: Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Turbines' also provide useful information. These must be used in the preparation of LVIAs for medium to large turbines. The methodology can be adapted as appropriate for micro and small turbine proposals.

7.5.6 Please see Appendix 3 - 'LANDMAP 2011 Overall Landscape Evaluation for maps on the following themes: Visual and Sensory, Cultural Landscapes, Historic Landscapes, Geological Landscapes and Landscape Habitats. ASIDOHL2 is non-statutory and advisory only. It is intended to assist local planning authorities to decide how much weight to give to information in the Register when determining planning applications. It is also intended to assist others involved in the planning and development process in Wales, particularly developers preparing Environmental Impact Assessment statements, to bring forward plans and

proposals that are likely to have the least possible adverse impact on historic landscape areas on the Register of Landscapes of Historic Interest.

7.5.7 In accordance with Policy C26 UDP, wind turbines will not be supported within the AONB.

7.5.8 Outside the AONB no turbine proposal should cause significant harm to the setting of the AONB or National Park. A LVIA will need to be carried out to show any potential impact of a scheme to ensure no significant harm will occur as a result of the proposal.

7.5.8A The Council has commissioned work to assess the Sensitivity and Capacity of the Landscape which will identify and protect sensitive and special areas from inappropriate developments. It will form part of the evidence base that will inform the development of relevant policies in the emerging Local Development Plan. In the meantime, when the study is published (anticipated summer 2014) it should be considered when dealing with on-shore wind turbine applications.

7.5.9 In the majority of cases, an LVIA will be essential; applicants should contact the Council's Planning Service to establish and agree the extent of the assessment including choice of viewpoints. The ZTV is to be agreed at the outset and follow the recommended distances within section 11 of the checklist in Appendix 4.

7.6 Cumulative Landscape and Visual Impacts

7.6.1 The inter-relationship between individual turbines can have a key impact on the landscape. It can lead to massing and the visual impression of a concentration of wind farms / turbines even when they are in fact distant from each other. This is known as cumulative impact, which is a material consideration in decision-making.

7.6.2 Cumulative impact is becoming increasingly relevant to the assessment of wind turbine developments as more applications come forward. This phenomenon can arise where there is existing wind energy development and an extension is proposed to that development or where there are proposals for other wind energy developments within the same area. Cumulative impacts may or may not be adverse, depending on the proposals and the landscape setting in question. The capacity of the landscape to accept each turbine and the cumulative effect of a group of turbines must therefore be evaluated.

7.6.3 The degree of cumulative impact is a product of the number of and distance between individual windfarms / turbines, the inter-relationship between their Zones of Visual Influence (ZVI), the overall character of the landscape and its sensitivity to windfarms / turbines, the relationship with other built structures and the siting and design of the windfarms / turbines themselves. The overall impact of transmission lines and associated infrastructure are also important considerations when assessing cumulative impact of wind turbine developments. It is important to recognise that cumulative impact effects upon visual amenity as well as the landscape.

7.6.4 Cumulative effects on visual amenity consist of combined visibility and sequential effects.

- Combined visibility occurs where the observer is able to see two or more developments from one viewpoint. When considering the cumulative effects arising from combined visibility, it is necessary to consider, for each of the viewpoints within the ZVI of the windfarm / turbines concerned, the combined effect of all windfarms / turbines which are (or would be) visible from these viewpoints. Combined visibility may either be in combination (where several windfarms / turbines are within the observer's arc of vision at the same time) or in succession (where the observer has to turn to see the various windfarms /turbines).
- Sequential effects occur when the observer has to move to another viewpoint to see different developments. Sequential effects should be assessed for travel along regularly-used routes like major roads or popular paths.

7.6.5 The occurrence of sequential effects may range from *frequently sequential* (the features appear regularly and with short time lapses between, depending on speed of travel and distance between the viewpoints) to *occasionally sequential* (long time lapses between appearances, because the observer is moving very slowly and / or the there are large distances between the viewpoints.)

7.6.6 Cumulative visual effects will vary in degree with

- the number and sensitivity of visual receptors;
- the duration, frequency and nature of combined and sequential views (glimpses or more prolonged views; oblique, filtered or more direct views; time separation between sequential views);
- the relative impact of each individual windfarm / turbine, with regard to visual amenity; and
- the presence of other built structures.

7.6.7 Cumulative landscape impacts affect the physical fabric or character of the landscape, or any special values attached to the landscape.

- Cumulative effects on the *physical fabric* of the landscape arise when two or more developments affect landscape components such as woodlands and hedgerows. Although this may not significantly affect the landscape character, the cumulative effect on these components may be significant.
- Cumulative effects on *landscape character can* arise from two or more wind turbine or windfarm developments as well as existing infrastructure such as electric pylons or masts. Wind turbine or windfarm developments introduce new features into the landscape. In this way, a change in the landscape character can create a different landscape character type, in a similar way to large scale afforestation. That change may be adverse to the character of a specific landscape; in some instances the change may not be adverse; some derelict or industrialised landscapes may be enhanced as a result of such a change in landscape character. The cumulative effects on landscape character may include other changes, for example trends or pressures for change over long time periods, which should form part of any consideration of a particular project.

7.6.8 There are general points that should be considered when assessing the significance of cumulative landscape effects. These are the effects on landscape designations, designed landscapes, landscape character, sense of scale, sense of distance, existing focal points in the landscape, sky lining, sense of remoteness or wilderness and other special landscape interests.

7.6.9 The landscape and visual effects of wind turbines will vary on a case by case basis according to the type of wind turbine (model and height), its location, the landscape setting of the proposed development and impacts on sensitive areas and /or receptors. Cumulative impact should take into account existing windfarms / turbines, those which have permission but have not been erected and those that are the subject of valid but undetermined applications.

7.6.10 The potential cumulative effects upon sensitive receptors of adjacent local authorities should also be considered.

7.6.11 In an area where the cumulative impacts of wind turbines are considered to be significant a Landscape and Visual Impact Assessment is likely to be required. Section 11 of the checklist in Appendix 4 gives further information of what is required as part of a Landscape and Visual Impact Assessment. The Council maintains an up to date list of all submitted wind energy applications.

7.6.12 As part of the LVIA procedure for wind turbine applications, developers will need to obtain a list of existing, permitted, live and imminent applications. For guidance purposes it is recommended that for small turbines the cumulative LVIA should consider applications up to 5km maximum whilst for medium to large between 15 to 30Km.

7.7 Ecological Features and Species

7.7.1 The main ecological impacts resulting from wind turbines are associated with the site infrastructure. Effects on ecological features can take place during the construction, operation or decommissioning phases of a wind energy scheme, e.g. habitat loss, noise disturbance and direct and indirect impacts of wind turbine operation on ecological receptors e.g. bat and bird strikes.

7.7.2 The impact on bats and especially birds is particularly relevant to wind energy development. All bats and most birds are protected species that need to be considered when developing a wind energy scheme. The “Bats and Wind Turbines” (Scottish Natural Heritage, English Nature and Countryside Council for Wales, June 2012) paper provides further details with regards the impact that wind turbines, particularly medium and large turbines and wind farms can have upon bat populations. Wind turbines can impact upon bird populations in a number of ways including, direct loss of habitats, displacement of birds due to disturbance to feeding and breeding grounds and the potential mortality due to collisions with turbine blades.

7.7.3 All proposals will be assessed for their impact on biodiversity, including protected species and habitats. Although adverse effects on species, habitats or protected

sites arising from a single wind energy development may be acceptable, cumulative impacts arising from further developments may be unacceptable and will require assessment. Existing wind turbines which have permission and those that are the subject of valid but undetermined applications will be taken into account when assessing the cumulative impact of a proposal. The potential cumulative impacts on biodiversity should also be considered. The potential cumulative impacts on biodiversity should also be considered where appropriate. Site-specific assessments will be required to identify the biodiversity risks together with any on-site mitigations or off-site off-setting measures.

7.7.4 Some wind energy schemes will need to be subject to an EIA to look in detail at nature conservation interests both on and off site. The EIA should identify the nature conservation interests likely to be affected by a development at an early stage In the event that an EIA is required, then the environmental statement should provide sufficient information, including information on ancillary development, such as grid connections, substations, access routes, etc. ~~for~~ Information may be required by the Local Planning Authority (as the competent authority) to carry out any HRA. With respect to birds, the EIA should include information relating to roosts, flight lines, feeding areas, and breeding areas. In the event that an EIA is required, then the environmental statement should provide sufficient information, including information on any ancillary development, such as grid connections, substations, access routes etc., for the Authority (as the competent authority) to carry out any HRA.

7.7.5 Where a proposal is not EIA development, applicants should prepare and submit one or more of the following as appropriate:

Geological/Geomorphological/Hydrological/Hydrogeological Report: addressing relevant issues on the site or features directly or indirectly affected by the proposed development including survey, analysis, avoidance, mitigation and any proposals for enhancement;

Geological Survey: techniques including traditional walk-over survey, studying outcrops and landforms, to intrusive methods, such as machine driven boreholes, to the use of geophysical techniques and remote sensing methods, such as aerial photography.

Soils Report: demonstrating how and when the soils that may be affected by the development proposals will be moved, stored, used and conserved;

Protected Species Report: including survey method, timing, results, any limitations in the survey, analysis of potential harm to the species and any avoidance or mitigation measures proposed[22];

An Ecological Appraisal: An ecological survey and assessment will be required for proposals that are likely to have a significant effect on local, national or international wildlife and nature conservation. Although this will often be in close proximity to designated sites, because of the different features of sites, a number of which are notified for their species and bird interest, impacts on site features can be experienced some distance away from the designated site.

7.7.6 In particular, a survey is usually required if an application is near to a site of known importance for bats and birds, or if a site is proposed within 50 metres from relevant habitat features that offer foraging/ commuting/ roosting opportunities. In order to minimise the impact on wildlife, it is advisable that turbines should be a minimum of 50 metres away from these types of habitat features. Applicants may contact the Council's Ecological and Environmental Adviser for advice, at the pre-screening stage. Early consultations with the Countryside Council for Wales and RSPB should also be undertaken. The Gwynedd Biodiversity Action Plan can be referred to for the background biodiversity context of the area.

Nature Conservation Enhancement Proposals: showing how the development will conserve natural heritage features on the site and provide net benefits for nature conservation interests;

A Nature Conservation Management Plan: describing how the site will be managed to conserve and enhance nature conservation on and off-site including who will manage different parts or elements, how management will be funded, reviewed and adapted over time.

7.7.7 Where a scheme, alone or in combination with other plans or projects, could have an impact on an internationally designated site, Gwynedd Council must before deciding to give permission for a proposal carry out an assessment of the likely significant effect of that scheme in view of the site's conservation objectives. A habitat or species survey might be required to inform such an assessment. Equally a habitat or species survey might be required to inform impact assessments on SSSI , candidate Wildlife Sites and priority habitat and species listed by the Welsh Government under section 42 of the NERC Act 2006). The scope of the survey should be agreed with the local Planning Authority's Biodiversity Unit. In general the species/ habitat survey should cover: the site of the turbine, the access tracks, maintenance tracks and any habitat removal for road widening to allow for delivery to the site. The habitat survey should be a Phase 1 habitat survey.

7.7.8 Where possible, developers should mitigate for any potential ecological damage. Mitigation is best considered at an early stage and should be included in the scoping report as part of an EIA. The exact mitigation measures adopted will vary on a case by case basis. Mitigation measures could include:

- Redesign / micrositing to eliminate collision risks or displacement effects.
- Restoration of habitat edges adjacent to infrastructure and covering excavation works
- A potentially significant effect can be reduced by shutting down the operation of the turbines during peak periods of flight activity, again either for individual or clusters of turbines.

7.7.9 Once the assessment process is completed, consideration should also be given to the opportunities for enhancing nature conservation with a site and its surroundings such as providing new habitats or habitat features on adjacent land. In some cases, replacement habitats should be considered necessary. These are examples of avoidance and measures. Additional measures may need to be considered or

required depending on the outcome of the HRA process. Relevant guidance is provided in section 12 of the checklist in Appendix 4 over ecological issues.

7.8 Archaeology

7.8.1 Wind turbines can have a significant impact on archaeological features. This can include the loss or direct impact of identified features, or indirect impacts on the character or appearance and setting of features.

7.8.2 Sufficient distance needs to be given between turbines and archaeological features to ensure that the possibility of damage is minimised such as in the case of potential damage or destruction from collapse of the supporting tower or a sheared turbine blade. Where archaeological features are or may be present, an archaeological assessment and/or evaluation may need to be undertaken and the results submitted with the planning application. Where a proposal is granted consent, there may be a requirement for archaeological mitigation before and/or during the construction phase to ensure any archaeological features are appropriately recorded. Mitigation may include avoidance of archaeological features so that they are not damaged or destroyed. The Gwynedd Archaeological Advisor must be consulted on the requirement for archaeological work (whether pre-application or after consent). It should be noted that archaeological assessment (possibly including intrusive/non-intrusive evaluation) may be needed irrespective of whether EIA or landscape and visual impact assessment is required.

7.8.3 Where nationally important archaeological remains (whether scheduled or not) and their settings are likely to be affected by a wind turbine development, there should be a presumption in favour of their physical preservation in situ. In cases of lesser archaeological remains, the Local Planning Authority will need to determine the relative importance of the archaeological feature against the benefits and need of the proposed development. Information relating to non-designated archaeologcial features can be obtained from the Gwynedd Archaeological Advisor. Guidance is provided in section 13 of the checklist in Appendix 4 about heritage evaluation issues.

7.9 Proximity

7.9.1 This section deals with proximity of proposed turbines to highways and railways, power lines, aviation, housing, tourism sites and other sensitive receptors

7.9.2 The area is mainly rural with a dispersed pattern of development. Due to the fact that few areas are far from existing settlements or individual dwellings, the amenity impacts of wind development are likely to be significant in many parts of the area.

7.9.3 It is important to distinguish between impacts on residential amenity and other impacts arising from wind proposals such as landscape and wider visual and safety issues. Separation distances can be used to minimise impacts.

7.9.4 This section provides guidance regarding the living conditions of neighbouring residents with particular reference to visual amenity It should be noted that ‘visual

amenity' is just one aspect of 'residential amenity' – impacts on other aspects of residential amenity (noise, shadow flicker etc) are covered in separate parts of this SPG.

7.9.5 It is a long established planning principle that there is no right to retain an unchanged view from a private property. However it can be in the public interest to safeguard the 'outlook' from such a property in respect of unacceptably overbearing or dominating development. Outlook is the visual amenity afforded accommodation by a dwelling's immediate surroundings, which can be adversely affected by the close siting of another structure or the incompatible treatment of adjoining land. For the purpose of this guidance consideration is also given to the impact on properties occupied as tourist accommodation.

7.9.6 It is recognised that, due to the scale of turbines and movement of the blades there is the potential for these structures to have an unacceptable impact upon residential visual amenity/ outlook. Examination of a number of planning appeal decisions regarding wind turbine/ farm development reveals that inspectors have deemed resident's visual amenity to have been adversely affected in those instances where the visual effects of scheme proposals are oppressive, overwhelming and/ or overbearing. In such circumstances living at that property will become unpleasant or undesirable. Assessing this requires as far as possible an objective approach but is ultimately a matter of judgement based on land use planning matters. As previously mentioned living conditions are influenced by factors other than visual amenity/ outlook, such as noise. **This section only addresses the visual amenity aspect of living conditions.**

7.9.7 The likelihood of visual amenity/ outlook from residential properties or tourism properties being unacceptably adversely affected by wind turbine(s) depends on a number of factors. One of these factors is the proximity of the development to a residential property or a tourism property. There is limited guidance regarding separation distances between wind turbines and settlements or individual dwellings or tourism properties.

7.9.8 In the absence of guidance, this document presents the local approach to be taken towards wind turbine development in the area. It is known that as the distance between an object and a viewer increases, the contrast between the object and its background decreases (i.e. aerial perspective). Also as objects become more distant they appear smaller because their visual angle decreases (i.e. linear perspective). The visual angle of an object is the angle subtended at the eye by a triangle with the object at its base. The greater the distance of the object from the eye, the greater the height of this triangle, and the less is the visual angle. Applying this mathematical system (i.e. $h=1/d*a$)[1] provides a series of separation distances, which enables the Council to take a precautionary approach in order to try to avoid adversely affecting the visual amenity of residential or tourism properties. Table 4 and diagram 1 below set out the separation distances that trigger a requirement for a Residential Amenities Assessment (RAA) to be undertaken for small, medium or large wind turbines. Recent changes to General Permitted Development Rights (that are referred to in paragraph 6.21 above) mean that planning permission for

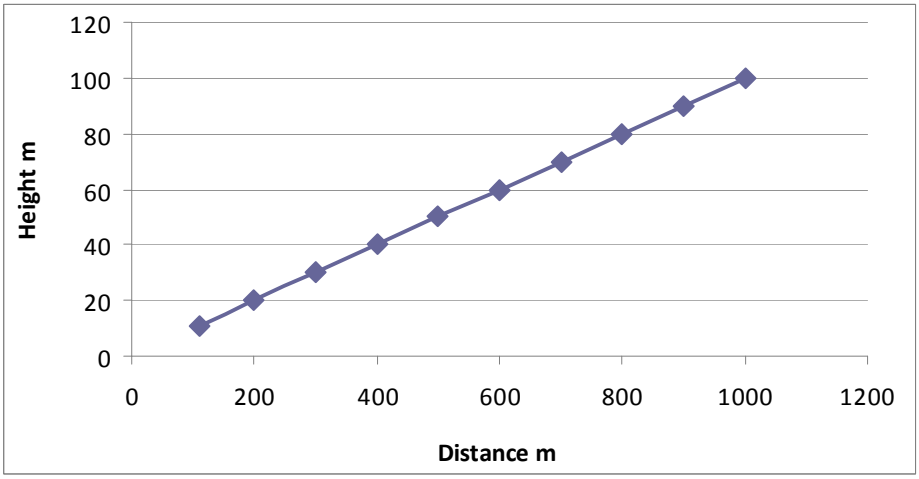
[1] Where h = perceived height, d = distance, and a = actual height)

micro/domestic turbines (i.e. up to 11.1m to the blade tip) will not be required. Taking this into consideration as well as the height and bulk of micro/domestic turbines and local and national planning policy requirements, a separation distance was not identified for this type of turbine:

Table 4

Typology of turbine	Separation distance that triggers a requirement for a Residential Amenities Assessment (RAA)
Small (i.e. between 11.1m – 20m tip height)	111m – 200m
Medium (i.e. between 20.1m – 65m tip height)	201m – 650m
Large (i.e. between 65.1m – 135m + tip height)	651m – 1,350+m

Diagram 1



7.9.9 The separation distances are not precise determinant of impacts. The exact distance will depend on scientific locational circumstances. Development within the separation distances set out in Table 4 above will need to be accompanied by Residential Amenity Assessment (RAA). A RAA goes beyond the assessment on views and wider visual amenity as carried out in the LVIA. It is required to determine the effects on living conditions. Analysis of appeal decisions indicate that the following factors will need to be considered:

- the tip height of turbine(s),
- bulk of the structure(s)
- proximity to the wind turbine(s)

- whether the full length of the turbine(s) would be visible
- orientation of dwellings/ tourist accommodation – the property is taken to include the house (main rooms) and those areas of a garden/ patio where residents would sit out
- whether the relationship of the property is oblique or directly facing
- extent to which intervening vegetation provides screening
- extent of intervening built form, including outbuildings or house extensions
- whether views from the building would be partially, substantially or wholly obscured by intervening landform
- whether existing principal views include some prominent visual detractors
- whether there are any notable and visually dominant detractors in close proximity to the property,
- the potential number and extent of turbines visible, their position within the overall context of the views from the property i.e. whether sited on the skyline, at the edge of the view or within a key focal point
- the proportion of the views from the property which will be occupied by the development and whether turbines would be visible on more than one side of the property
- the likely presence of other ancillary elements in the views from the property for example, access tracks or the construction compound
- the potential presence of lighting on the turbines

7.9.10 A judgement will have to be made as to whether the effect would be one of unacceptable dominance, oppressive, overwhelming or overbearing. As such each proposal will be considered on a case by case basis.

7.9.10A The Council has commissioned work to provide guidance on the Application of Separation Distances from Residential Properties. It will form part of the evidence base that will inform the development of relevant policies in the emerging Local Development Plan. In the meantime, when the study is published (anticipated summer 2014) it should be considered when dealing with on-shore wind turbine applications.

7.9.11 TAN8 advises that all turbines should be set back a minimum distance, equivalent to the height of the blade tip from the edge of any public highway or railway line.

7.9.12 National planning policy states that wind turbines should be separated from overhead power lines in accordance with the Electricity Council Standard 44-8 “Overhead Line Clearances”.

7.9.13 In terms of the proximity to aviation interests, developments within a specified radius of major airports and aerodromes are subject to consultation with the Civil Aviation Authority (CAA), the Ministry of Defence (MoD) and the National Air Traffic Services. Section 5.0 of the SPG refers to protected areas including Aircraft and Aerodromes.

7.9.14 In terms of tourism, all proposals will be assessed for their impact on tourism and recreation facilities. Tourism is an important element of the local economy and therefore any detrimental impacts on this economic sector resulting from wind

energy developments should be minimised. In assessing proposals the relative scale of existing recreation and tourism facilities in the area should be taken into account. Wind turbine developments should not have a significant negative effect on the local economy. Further guidance is provided in part of section 17 of the checklist in Appendix 4.

7.10 Electromagnetic Production and Interference

7.10.1 Wind turbines can interfere with electromagnetic transmissions by emitting an electromagnetic signal itself, interfering with electromagnetic signals. This includes television, radio and micro wave links and systems used by the police and emergency services. These interference effects can be reduced through changes to turbine siting and consultation with operators. Provided careful attention is paid to siting, wind turbines should not cause any significant adverse effects on communication systems which use electromagnetic waves as the transmission medium (e.g. television, radio and microwave links). Typically a 100m clearance either side of a line of sight link from the swept area of turbine blades is required, though individual consultations would be necessary to identify each organisation's safeguarding distance. Early consultation should be sought with the Office of Communications (OFCOM), who hold a central register of all civil radio communications operators in the UK and acts as a central point of contact for identifying specific consultees relevant to a site.

7.10.2 It is often possible to mitigate impacts by careful siting of individual turbines within a site so that turbine blades avoid a buffer zone, typically 100m either side of the signal path.

7.10.3 Further guidance regarding Electro magnetic assessment is provided in section 15 of the checklist in Appendix 4.

7.11 Shadow Flicker and Reflected Light

7.11.1 Shadow flicker is the strobe effect of light flashing through the moving blades casting a moving shadow over nearby properties within 130° either side of north. Shadow flicker can cause a disturbance for affected residents of nearby properties and can have potentially harmful impacts on sufferers of photo-sensitive epilepsy.

7.11.2 The likelihood of shadow flicker occurring and its severity depends on:

- The direction of the dwelling relative to the turbine(s);
- The distance from the turbine(s);
- The turbine height;
- The time of year (the effect is greater when the sun is lowest in the sky);
- The proportion of daylight hours in which the turbine(s) operate;
- The frequency of bright sunshine and cloudless skies (particularly at low elevations above the horizon);
- The prevailing wind speed and direction.

7.11.3 Based on an analysis of appeal decisions, to avoid shadow flicker a separation distance of 10 rotor diameters between the wind turbines and the nearest dwelling should be adequate in most cases, although the local topography and the position of the turbine in relation to the dwelling(s) should be taken into consideration during any assessment. It has also been proven that within this 10 rotor diameter, shadow flicker will only occur in some conditions for some of the time and will only affect nearby properties within 130° either side of north.

7.11.4 Within this 10 rotor diameter distance, investigations should be undertaken by the applicant to identify any properties likely to be affected by shadow flicker. The results of the assessment should be presented with the planning application. If unacceptable shadow flicker impacts are established, mitigation measures should be taken including moving the position of the turbine, using technology to stop turbines during episodes of shadow flicker, or, as a last resort, using tree planting and fitting window blinds to ameliorate the effect.

7.11.4A The proximity of wind turbines to road and rail networks should also be considered. Shadow flicker can affect the users of these networks by affecting visibility.

7.11.5 Turbines can also cause flashes of reflected light, which can be visible for some distance. It is possible to ameliorate the flashing but it is not possible to eliminate it. Careful choice of blade colour and surface finish can help reduce the effect.

7.11.6 Further guidance regarding the assessment of shadow flicker is provided in section 8 of the checklist in Appendix 4.

7.12 Groundwater and surface water

7.12.1 Wind energy developments tend to have little or no effect on water resources or the water environment once they are operational. However, the construction and decommissioning of wind turbines, either individually or as larger groups, can have potential impacts on local watercourses, water bodies, groundwater and water supplies due to pollution, erosion, sedimentation and impediments to flow resulting from construction activity. The effects of developments during the construction phase needs to be carefully considered and monitored, in order to avoid pollution of watercourses and avoid adverse impacts on groundwater and the ecological status of water bodies. In such cases, details of mitigation measures may need to be submitted with a full application.

7.12.2 An assessment of the risks to water quality will be required for each medium to large scale wind energy developments and the Environment Agency will be consulted where appropriate. In addition, any potential adverse impact to the hydrological regime or water quality on statutory designations should be assessed. The preparation of an Environmental Management Plan prior to construction / decommissioning can mitigate any potential risk to ground and surface water.

7.14 Minerals and Soils

7.14.1 Sites containing valuable mineral resources should not be sterilised by inappropriate development. Where a proposal is situated near to such a site details of mitigation measures, which should be discussed with the North Wales Shared Service for Minerals and Waste, may need to be submitted with an application.

7.14.2 The Proposals Maps in the Gwynedd UDP identifies mineral sites and the buffer zones around these sites.

7.14.3 The potential for soil resources to be contaminated due to wind turbine developments, especially during the construction phase, should be avoided and mitigated.

7.13 Community Engagement

7.13.1 Developers, in consultation with the local planning authority, should take an active role in engaging with the local community at the earliest possible opportunity when formulating on wind energy proposals. This should include pre-application discussion and provision of background information on the renewable energy technology that is proposed.

7.13.2 Early engagement with the local community at the pre-application stage can result in a better understanding of a scheme and its benefits. Applicants should engage with members of the public as well as Town and Community Councils.

7.13.3 Applications will need to be supported by a community engagement statement setting out how the applicant has carried out pre-application consultation. Applicants should provide evidence of the methods used e.g. public meetings, exhibitions, surveys, leaflets. Applications should demonstrate that they have notified those who would be affected by the proposal i.e. close neighbours. Applicants should also demonstrate that they have consulted local recreational groups such as orienteering clubs, ramblers and hand-gliding clubs, where possible. Section 10 of the checklist in Appendix 4 provides further information of what is required in the community engagement statement.

Community Driven Schemes

7.13.3A Planning Policy Wales states "*The Welsh Assembly Government's policy is to support community driven renewable energy projects where benefits from the projects are returned to the host community*" (par. 12.18.19). Planning Policy Wales does not define what is meant by a 'community driven energy project' but there may be some instances where weight can be apportioned to the genuine and direct local benefits associated with a 'community driven energy project', which will need to be considered against other material planning considerations when planning applications are assessed.

7.13.3B Gwynedd Council considers a 'community driven energy project' to be a project which is driven by the local community for the benefit of the local community. When planning applications are assessed, weight will only be attributed to the direct local benefits of the scheme if it can be demonstrated that the proposal is a genuine

'community driven energy project'. The benefits apportioned to the local community will be determined by the LPA in consultation with the developer and will be depenedent on the nature of the proposal.

7.13.3C To represent a community-based wind energy project, there would need to be clear evidence that it would be owned by a community group, or be a joint venture project where a local community organisation is a major shareholder, or have a contractual arrangement to provide for significant community benefit defined on the basis of a clear and open process of community involvement. Where a proposal is justified on the basis of being community-based, any grant of consent may seek to secure those benefits through legal agreement and planning conditions.

Wind Energy Developments on Farms

7.13.3D Technical Advice Note 6 (TAN6) supports national planning policy on sustainable rural communities and section 3.7 focuses on farm diversification. It states that "*When considering applications for farm diversification projects, planning authorities should consider the nature and scale of the activity"* and that *"Small on-farm operations such as….. renewable energy, are likely to be appropriate uses*". Therefore the principle of establishing a renewable energy project such as a wind turbine is a valid diversification activity on a farm subject to the criteria of policy C26.

7.13.3E However, not all forms of wind turbine development on agricultural land would constitute an acceptable farm diversification scheme. The Council considers an acceptable wind turbine farm diversification scheme to be a proposal where:

- The applicant's main occupation is farming and the turbine would be erected on agricultural land which forms part of the applicant's farm holding.
- The turbine would be sited so it appears to physically relate to the farm complex in terms of its size, scale and location.
- The wind turbine proposal would be clearly subsidiary to the main farming business and sufficient information is provided to demonstrate how the wind turbine proposal fits into the wider farming picture and how it will contribute to the long term viability of the farming enterprise.
- The generating capacity of the turbine is proportional to the energy demands of the farming enterprise. The Council will assess this by comparing the size of the turbine in terms of its generating capacity against the annual electricity demand of the farm complex. Accurate annual electricity consumption data for the farm complex should be provided together with the predicted annual electricity output of the proposed turbine(s) in kWh or MWh.
- The turbine would be connected to the electricity grid via the farm's electricity meter so the electricity generated can be preferentially used onsite, rather than 100% of the electricity being exported directly to the grid.

7.15 <u>Limited Planning Consent</u>

7.15.1 Section 91 of the Town and Country Planning Act 1990 provides local planning authorities with a means of limiting the life of a planning consent in specific circumstances. It is considered that the need to consider the cumulative impact, in terms of noise, visual and energy output, of wind turbine / wind farm proposals in a location justify the use of a condition to restrict the duration of the permission. The

assessment of cumulative impact would take into account existing erected schemes, those permitted but not implemented and all full applications submitted prior to a specific scheme being evaluated. If there is a genuine need for the development, i.e. the scheme isn't a speculative one, it is argued that the turbine(s) will be built soon after it is approved. The early development of sites will also assist towards achieving national targets for energy from renewable sources.

7.15.2 The limited planning consent period should still allow sufficient time for the developer to discharge any conditions and sort out matters to progress the development e.g. finance.

7.15.3 In light of this permissions granted for wind turbine / wind farm proposals will normally only be granted planning permission for a period of 2 years to ensure that the development is implemented within a suitable timeframe. Consideration will be given to longer period subject to the Local Planning Authority being satisfied that there are justifiable reasons for this.

8.0 Siting and Design

8.1 The siting and design of wind turbines are important considerations and will be based on a number of factors including access, wind speed, and grid connection. A number of factors associated with turbines such as the size, colour and their distribution will all play their part in determining whether the development appears to recede into or stand out from the landscape.

8.2 All wind turbine proposals will be assessed for their impact on the landscape and visual amenity in relation to their design in terms of siting, impact on landscape character, turbine type, colour, spacing and ancillary infrastructure. Guidance from Scottish Natural Heritage on siting and design of wind turbines in relation to landscapes provides extensive technical advice, which the applicant may wish to refer to (see section 14 of this SPG).

8.3 Location and Siting

8.3.1 Wind turbines should be carefully sited and consideration should be given to the following landscape issues:

- How turbines relate to the visual horizon;
- The sensitivity of the locations from which they are visible;
- The impact on the amenity of the surrounding area taking the area's historic, cultural and recreational significance into consideration;
- The existing features in the landscape.

8.3.2 Section 6 of the checklist in Appendix 4 identifies the information required with all applications with respect to the location of proposals for wind turbines.

8.4 Layout and landscape character

8.4.1 Proposals for wind turbines should take account of the overall landscape context and character of the area in terms of its general appearance, pattern of land cover, openness / closure, character of vertical elements and existing landscape features. Alternative layouts should be explored in relation to the most sensitive viewpoints.

8.5 Turbine form and design

8.5.1 Technological advances have led to a wide range of wind turbines. These different models provide different options in terms of size, proportions of turbine tower to blade length and rotation speeds. The height and design of turbines should be in scale with the locality and the suitability of a particular design will depend on the landscape sensitivity of the area.

8.6 Turbine Colour

8.6.1 The colour of wind turbines is also an important consideration when assessing the potential impact of such developments. It is important to choose a colour that relates positively to the immediate landscape backdrop against which the turbines will be viewed. A matt finish is considered to be essential.

8.7 Turbine Spacing

8.7.1 Wind turbines need to be positioned so that the distance between them is around 3-10 rotor diameters (this would equate to 180-600 metres for a development using 60m diameter rotors, 1.3MW turbines) (example taken from TAN8).

8.8 Ancillary infrastructure

8.8.1 In addition to wind turbines, the required infrastructure of a wind farm may include adequate road access, on-site tracks, turbine foundations, crane hard-standings, anemometer masts, a construction compound, electrical cabling and an electricity sub-station and control building. Consideration should be given to the following issues when considering the location and siting of ancillary development. See section 7.2 of this SPG over detailed consideration required for ancillary infrastructure.

8.8.2 With any ancillary buildings required on site, given the rural nature of the majority of locations for turbines, such buildings should be agricultural in appearance either modern or traditional dependent upon the character of a specific location.

8.8.3 Further guidance on the siting and design of wind turbines in relation to landscapes is available in: "Siting and Designing windfarms in the landscape", Version 1, December 2009, SNH
http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=1434

9. Decommissioning and Reinstating Land

9.1 Paragraph 6.4 of TAN 8 states that Local Planning Authorities should consider appropriate conditions for the decommissioning of wind turbines and the restoration of affected land. In addition, operators may be required to ensure that sufficient finance is set aside to enable them to meet full restoration obligations.

The estimated lifespan of a wind farm is generally 25 years and during that period the operators will review the viability of the plant. As a consequence of the need to secure the removal of unused structures and achieve site restoration, where planning permission is granted for a wind turbine development conditions will be applied based on the following principles:

- If any wind turbine ceases to operate for a continuous period of 12 months, it shall be deemed to have been abandoned and should be removed from site within 3 months thereafter.

- When a wind farm reaches the end of its operational life, all structures, buildings, plant and access roads will be removed within six months and the area fully restored to a use and condition which are appropriate to its surroundings.

- Following the removal of the turbines and structures, the land shall be re-instated in accordance with a Decommissioning Statement

9.2 If the option is taken to decommission then a mechanism should be in place (a planning condition or legal agreement) to ensure the turbines and associated structures are removed. Turbine bases may be left ‘insitu’ to avoid damage taking place through removal. A Decommissioning Statement and a reinstatement plan should be submitted giving detailed proposals of how they would intend to restore the ground to its former condition unless otherwise agreed by the planning authority.

9.3 Full restoration requires the removal of turbines, ancillary structures and tracks and the restoration of appropriate vegetation. In certain cases the removal of tracks could lead to more damage than leaving them in situ due to damage to adjacent land during works associated with the process. Subject to the satisfaction of the Local Planning Authority over visual impact of such tracks and the impact over their removal there may be instances where their removal of tracks will not be required. It should be ensured that the nature of the restoration integrates positively with the existing landscape. Opportunities to enhance the special qualities of the landscape are also to be encouraged.

9.4 Operators are encouraged to re-use or recycle turbine components and other materials associated with wind turbines following decommissioning.

Where appropriate to do so the Council needs to ensure, as far as it can, that there will be robust financial guarantees in place over sufficiently long periods to enable this to be undertaken if required. A suitable mechanism will be required, e.g. a bond, in order to ensure that sufficient resources would be available for dismantling and remediation. This is to ensure adequate measures are in place to ensure the

site is restored in an appropriate manner. The size of the bond will depend on the following factors:

- size of the turbine, including its base and associated structures;
- the length of time it will take to remove all the turbines and associated tracks, cables, and buildings;
- remedial works
- the impacts on the wider environment e.g. natural habitats

10.0 Requirements with an Application

10.1 In the first instance we would recommend that all potential wind turbine applicants should be subject to pre application discussions with the Planning Service to establish whether the site in question is situated within or in close proximity to residential units, any environmental or landscape designations, any protected buildings or structures, any relevant features of ecological interest, or any statutory consultation zones.

10.2 The Council's Planning Service maintains an up to date and extensive geographic catalogue of all important designations, protected buildings and structures, and statutory consultation zones. In the first instance, the Planning Service should be contacted to establish whether any such issues are relevant to the site.

10.3 Early engagement with the Council's Planning Service and other relevant internal departments and external organisations is strongly recommended for all wind turbine proposals, regardless of location or scale.

10.4 Such discussions enable the scope of information which should be supplied to be agreed with the planning authority and enables the developer to commission necessary studies in a timely manner. This is particularly true of applications which will require an Environmental Impact Assessment where the relevant regulations allow for the authority to provide a 'scoping opinion' to inform the content of that study. Pre-application discussions should, where appropriate, include neighbouring authorities where there will be cross-boundary viewing and potential long distance cumulative effects.

10.5 Early engagement with local communities should be undertaken to ensure that local residents have a full understanding of a scheme, including its potential community benefits.

10.6 The contacts included in the next section can also provide advice and guidance on wind turbine development.

10.7 The publications included in the 'Further Reading' section provide useful advice and guidance which should be given reference to in new applications.

10.8 The planning service has produced a 'Wind Turbine Application – Checklist' to provide clarity over the information required to support an application.

10.9 A copy of the checklist is provided in Appendix 4 and should be referred to in addition to the issues highlighted within this SPG.

11.0 Community Benefit and Developer Contributions

11.1 Developers or landowners are encouraged to engage directly with local communities regarding possible associated community benefits rather than with the Council. In line with TAN8, the absence or presence of any contribution to local communities is not an issue which will be considered by the Council in its determination of whether planning permission should be given.

11.2 Examples of benefits that could be offered to local communities include the construction of a community facility, a financial payment that benefits the community, annual payments to the community, improving education, skills and training to the local population or a commitment from the developer to use local labour wherever possible.

11.2A Some community benefit payments are based on a figure per MW installed. In June 2013, the UK Government announced new planning guidance for onshore wind turbine developments in England which included an increase in benefits paid by developers to communities from £1000/MW of installed capacity per year to £5,000/MW per year. There is no legal requirement for developers to provide payments. These are voluntary and entirely at the developer's discretion.

11,2B Whilst there is no definitive guidance in Wales, regarding the amount developers should contribute, it is suggested as a guide, that onshore wind turbine energy projects should have regard to the above mentioned figures as a community benefit contribution.

11.2C The geographical distribution of benefits will vary depending on circumstances local to the wind farm including proximity to the development, visual impact of development, the number of residents in the area, and the level of disruption and nuisance caused by construction activity and traffic.

11.3 If developers offer community benefits that are not directly related to the planning process, then, this cannot be used as a consideration in the determination of any planning application. Annex B of TAN 8 provides further details of this.

11.4 Details should be provided on the form of developer contributions required as a result of the proposed wind energy development. The need for developer contributions will be assessed in relation to the impact of the proposed development in the locality, such as visual and road infrastructure impacts (e.g. the need for new footpaths or road widening), or socio-economic impacts.

11.5 Applicants and developers will be expected to discuss the means of alleviating such impacts with the relevant case office, preferably at the pre-application stage.

11.6 Monetary benefits, such as the establishment of a community trust fund, will not be treated as a material consideration.

11.7 Wind energy developments can potentially offer opportunities to provide community benefits through the planning process e.g. highway infrastructure improvements or wildlife habitat management.

11.8 As good practice the Council will expect all Medium and Large (over 20m tip height) wind energy developments with a power capacity of 50kW or over per turbine to make a contribution (financial or otherwise) to affected local communities. The value of the contribution should relate to the size and scale of the development.

12.0 Contacts

12.1 The contacts provided, with the exception of those for Gwynedd Council, are independent organisations and are not affiliated with the publication of this document in any way.

Gwynedd Council Planning Service Development Management Unit Council Offices Pwllheli LL77 7TW cynllunio@gwynedd.gov.uk	Anglesey and Gwynedd Joint Planning Policy Unit, Town Hall Bangor Gwynedd LL57 1DT polisicynllunio@gwynedd.gov.uk
Renewable UK Greencoat House Francis Street London SW1P 1DH www.britishwindenergy.co.uk	RSPB Southerland House Castlebridge Cowbridge Road East Cardiff CF11 9AB www.rspb.org.uk
Cadw Plas Carew Unit 5/7, Cefn Coed Parc Nantgarw Cardiff CF15 7QQ www.cadw.wales.gov.uk	Carbon Trust Wales Albion House Oxford Street Nantgarw Cardiff CF15 7TR www.carbontrust.co.uk
Civil Aviation Authority CAA House 45-49, Kingsway London WC2B 6TE www.caa.co.uk	Countryside Council for Wales Plas Penrhos Ffordd Penrhos Bangor LL57 2BX www.ccw.gov.uk
Energy Saving Trust Wales 1, Caspian Point Caspian Way Cardiff CF10 4DQ www.energysavingtrust.org.uk	Environment Agency Wales Ffordd Penlan Parc Menai Bangor LL57 4DE www.environment-agency.gov.uk
Gwynedd Archaeological Planning Service Craig Beuno Garth Road Bangor LL57 2RT www.heneb.co.uk	OFCOM Riverside House 2a, Southwark Bridge Road London SE1 9HA www.ofcom.org.uk
Ministry of Defence Kingston Road Sutton Coldfield West Midlands B75 7RL www.mod.uk	Welsh Government Crown Buildings Cathays Park Cardiff CF10 3NQ www.wales.gov.uk

13.0 Further Reading

- Bat Conservation Trust – Bat Surveys: Best Practice Guidance – Surveying for Onshore Wind Farms (Various dates)
- Bat Conservation Trust – Bat Surveys: Good Practice Guidance (2012)
- Cadw – Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales – Conwy, Gwynedd and the Isle of Anglesey (1998)
- Cadw – Guide to good practice to using the Register of landscapes of historic interest in Wales in the planning and development process (2007)
- Cadw – Renewable Energy and Your Historic Building: Installing Microgeneration Systems: A Guide to Best Practice (2010)
- Countryside Council for Wales, Cadw and Welsh Assembly Government – Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process (2007)
- Countryside Council for Wales – LANDMAP Information Guidance Note 1: LANDMAP and Special Landscape Areas (2008)
- Countryside Council for Wales – LANDMAP Information Guidance Note 3: Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Turbines (2010)
- Countryside Council for Wales (2009) Seascape Assessment of Wales
- Countryside Council for Wales (2010). Guidance Note. Assessing the impact of Windfarm Developments on Peatlands in Wales
- Countryside Council for Wales (June 2010) LANDMAP Guidance Notes
- Civil Aviation Authority: CAP 764 'CAA Policy and Guidelines on Wind Turbines (2012)
- DECC National Policy Statement (NPS) EN1 Overarching Energy (2011)
- DECC NPS EN3 Renewable Energy Infrastructure (2011)
- Department for Business, Enterprise and Regulatory Reform – Review of Guidance on the assessment of Cumulative Impacts of Onshore windfarms (2008). https://www.og.decc.gov.uk/EIP/pages/windfarm-cumulative-impacts-report.pdf
- Department of Energy and Climate Change – Update of UK Shadow Flicker Evidence Base (2011)
- Department of Trade and Industry – ETSU W/14/00533/00/00: The Influence of Colour on the Aesthetics of Wind Turbine Generators
- Department of Trade and Industry – ETSU-R-97: The Assessment and Rating of Noise from Wind Farms – Final Report (1996)

- Department of Trade and Industry – Wind Energy and Aviation Interests: Interim Guidelines (2002)
- Department for Business, Enterprise and Regulatory Reform – Review of guidance on the assessment of cumulative impacts of onshore windfarms (2008)
- Electricity Council – Standard 44-8: Overhead Line Clearances
- Gwynedd Council – Gwynedd Unitary Development Plan (2009)
- Gwynedd Council – Gwynedd Werdd Scoping Renewable Energy Opportunities in Gwynedd Report (2012)
- Gwynedd Council – AONB Management Plan
- Gwynedd Council – World Heritage Site Management Plan
- Landscape Institute and the Institute of Environmental Management and Assessment – Guidelines for Landscape and Visual Impact Assessment (3rd edition 2013)
- Natural England – Technical Information Note TIN051 (First Edition, 11th February 2009): Bats and Onshore Wind Turbines – Interim Guidance
- Natural England – Technical Information Note 059: Bats and Single Large Wind Turbines: Joint Agencies Interim guidance (2011)
- Natural England, Scottish Natural Heritage & CCW – Bats and Wind Turbines (Jan 2012)
- Ofcom - Tall structures and their impact on broadcast and other wireless services (2009)
- Renewables Advisory Board & Department of Trade and Industry – Delivering Community Benefits from Wind Energy Development – A Toolkit (2007)
- Rhos Garn Whilgarn, Talgarreg (Appeal Ref: APP/D6820/A/07/1200875)
- Scottish Natural Heritage – Guidance: Cumulative Effect of Wind Farms (Version 2 – Revised 13.04.05)
- Scottish Natural Heritage – Siting and Designing Wind Farms in the Landscape (Version 1 – December 2009)
- Scottish Natural Heritage – Siting and design of small scale wind turbines of between 15 and 50 metres in height, (March 2012) www.snh.gov.uk/docs/A719295.pdf
- Scottish Natural Heritage – Visual representation of wind farms: Good Practice Guidance (2007) http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=846

- Scottish Natural Heritage – Assessing the cumulative impact of onshore wind energy developments (March 2012) www.snh.gov.uk/docs/A675503.pdf

- Scottish Natural Heritage: "Natural Heritage Assessment of wind energy projects which do not require formal EIA (2008)

- Welsh Government (published by the 'Welsh Assembly Government') – Generating Your Own Energy: The Current Planning Regulations (2011)

- Welsh Government (published as the 'Welsh Assembly Government') – Generating Your Own Energy: Wind – A Planning Guide for Householders, Communities and Businesses (2011)

- Welsh Government (published as the 'Welsh Assembly Government') – One Wales: One Planet – The Sustainable Development Scheme of the Welsh Assembly Government (2009)

- Welsh Government (published as the 'Welsh Assembly Government') – Planning Policy Wales (4th Ed, 2011)

- Welsh Government (published as the 'Welsh Assembly Government') – Technical Advice Note 5: Nature Conservation and Planning (2009)

- Welsh Government (published as the 'Welsh Assembly Government') – Technical Advice Note 8: Planning for Renewable Energy (2005)

- Welsh Government – Practice Guidance: Planning Implications of renewable and low Carbon Energy Development (2011)

- Welsh Government's *Policy Statement on National Parks and National Park Authorities in Wales (2007)*

- Welsh Office – Circular 60/96: Archaeology and Planning

- Welsh Office – Circular 1/98: Planning and the Historic Environment: Directions by the Secretary of State for Wales

- Welsh Office – Circular 61/96: Planning and the Historic Environment: Historic Buildings and Conservation Areas

- Welsh Office – Circular 13/97: Planning Obligations

14. Glossary

Term	Explanation
Abnormal Indivisible Load (AIL)	Any load that cannot be broken down into smaller loads without undue expense or risk of damage e.g. wind turbines.
Amplitude Modulation (AM)	A technique used in electronic communication via a radio carrier wave.
Archaeological Assessment	Desk-based assessment, a study of the recorded history and archaeology of a site, is undertaken to assess its archaeological potential, and in order to determine the need for and nature of any archaeological work that may be required in response to development proposals.
Archaeological Evaluation	An evaluation most commonly involves non-intrusive survey such as geophysics and/or excavation of one or more trenches in order to establish the presence, extent, character and importance of archaeology on a site. Depending on the results of an evaluation, the planning authorities may decide that further archaeological work is necessary, usually as a condition attached to the granting of planning permission.
Area of Outstanding Natural Beauty (AONB)	Statutory designation designed to protect nationally important natural landscapes.
Blade Swish	The rhythmic modulation of aerodynamic noise caused by the rotation of a wind turbine.
Candidate Wildlife Sites (CWS)	Non-statutory sites deemed to be of special ecological value.
Carbon Footprint	The amount of carbon dioxide or other carbon compounds emitted into the atmosphere by the activities of an individual, company, country, etc.
Civil Aviation Authority (CAA)	The Civil Aviation Authority (CAA) is the public corporation which oversees and regulates all aspects of aviation in the United Kingdom.
Climate Change	A process of changes to weather patterns and temperatures largely caused by the emission of certain ‘greenhouse gases’ from the earth, principally associated with the burning of fossil fuels.
Conservation Area	Conservation Areas are designated for their special architectural and historic interest.
Cumulative Impacts	This is the result of more than one scheme being constructed and is the combined effects of all developments, taken together. This may be in terms of their effect on the landscape and visual amenity, bird populations, other wildlife, the local economy, tourism etc.
Design And Access Statement	A design and access (DAS) statement is a short report accompanying and supporting a planning application. A DAS should explain the design principles and concepts that have been applied to particular aspects of the

Term	Explanation
	proposal – these are the amount, layout, scale, landscaping and appearance of the development.
Environmental Impact Assessment (EIA)	The process used for describing, analysing and evaluating the range of environmental effects that are caused by a wind energy proposal.
Environmental Statement (ES)	The document supporting a planning application that sets out the findings of the EIA.
ETSU-R-97	A methodology in the assessment and rating of noise from wind turbines.
Greenhouse Gases	The six main gases contributing to climate change found in the upper atmosphere. They prevent some energy being re-transmitted into space. The gases include carbon dioxide , methane, nitrous oxide, hydroflourocarbons, perfluorocarbons and sulphur hexafluoride.
Heritage Coast	A Heritage Coast is a strip of coastline designated by the Countryside Council for Wales as having notable natural beauty or scientific significance.
LA90 10m	ESTU-R-97 in accordance with common practice BS4142 uses LA90 to define background noise. This is the level exceeded for 90% of the time, so in a ten minute period the noise level is more than the LA90 for an aggregate of 9 minutes.
Land Cover	The observed (bio) physical cover on the earth's surface which includes vegetation and man-made structures.
LANDMAP	A GIS (Geographical Information System) based landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated into a nationally consistent data set.
Landscape	An area, as perceived by people, whose character results from the actions and ineractions of natural and/ or human factors
Landscape Character	The distinct pattern or combination of elements that occurs consistently in a particular landscape and how this is perceived by people.
Landscape and Visual Impact Assessment (LVIA)	It is a process that provides baseline information on landscape and visual resources, and makes judgments upon it in relation to the nature of resources and nature of impacts, to inform decision-making, but it is not a way of "ensuring" decision-makers "take account" of this topic.
Listed Building	The National Assembly for Wales is required by law to compile lists of buildings of special architectural or historic interest. As well as providing a ready reference of buildings of importance to the nation's heritage, listing provides an added level of legal protection.
Local Planning Authority (LPA)	A local planning authority is the local authority or council that is empowered by law to exercise statutory town

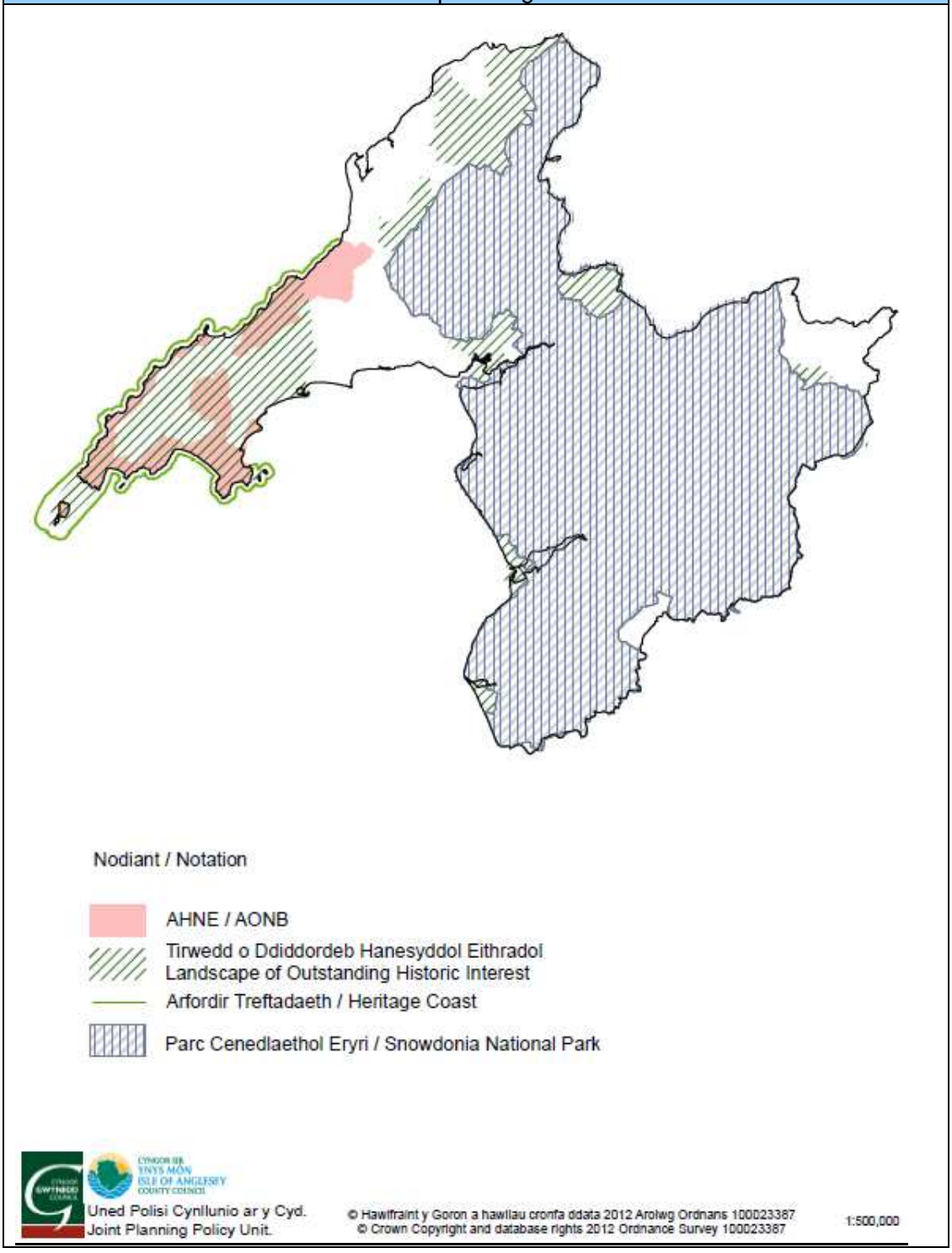
Term	Explanation
	planning functions for a particular area
Local Nature Reserves (LNR)	Designated for local interest by the Council.
Megawatt (MW)	A watt is an electrical unit of power. A megawatt is a million watt.
Microgeneration	Very small scale power generation schemes, typically providing energy to a single household/office.
Mitigation	Measures, including any process, activity or design to avoid, reduce or remedy adverse effects of a development proposal.
National Nature Reserves (NNR)	Areas of national nature conservation importance are designated as NNRs.
National Air Traffic Services (NATS)	The United Kingdom's National Air Traffic Services (NATS) is a company set up in 2001 to run air traffic control services. This means that NATS makes sure aircraft can fly safely across Britain, and that aircraft can take-off and land safely at British airports.
Octave Band Prediction	This is the most accurate prediction method, but requires the most detailed noise measurement and involves the most complicated method of calculating the LAeq at the ear.
Office of Communications (OFCOM)	The Office of Communications is the government-approved regulatory and competition authority for the broadcasting, telecommunications and postal industries of the United Kingdom.
Phase I Habitat Survey	The Phase 1 Habitat Classification and associated field survey technique provide a standardised system to record semi-natural vegetation and other wildlife habitats.
Ramsar Sites	Wetland areas of international importance.
Registered Historic Landscape	An area of landscape identified as being either 'outstanding' or 'special' historic interest in Wales on the Cadw "Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales"
Renewable Energy	Collective term for energy flows that occur naturally and repeatedly in the environment. It includes energy derived from wind, by the sun, hydropower, wave, tidal, biomass, biofuels and from geothermal sources.
Scheduled Ancient Monument (SAM)	A legally protected archaeological site or monument of national importance. The designated area may have upstanding remains or may be wholly below ground.
Scoping	The process of deciding the scope and level of detail of an EIA, including the environmental effects which need to be considered, the assessment methods to be used, and the structure and contents of the Environmental Report.
Screening	The process of deciding whether a plan or programme requires EIA.

Term	Explanation
Section 106	A legal condition that allows a local planning authority (LPA) to enter into a legally-binding agreement or planning obligation with a landowner in association with the granting of planning permission.
Separation Distance	The distance between wind turbines and settlements or individual dwellings.
Site of Special Scientific Interest (SSSI)	SSSIs are areas of land designated as being of national nature conservation interest.
Special Area of Conservation (SAC)	Areas that contribute to the maintenance or restoration of favourable conservation status of habitats or species listed in Annexes I and II of the Habitats Directive.
Special Protection Area (SPA)	Designated areas that help conserve habitats for rare and vulnerable species and migratory species of birds.
Strategic Search Areas (SSA)	An area that has been identified at a strategic level as having the general characteristics that lend themselves to the accommodation of large wind farms.
Sustainable Development	Development which maintains or improves the quality of life of the present generation while conserving the environment and resources to meet the needs of future generations.
Technical Advice Note (TAN)	Provide technical advice and guidance on certain planning policy areas.
Tonality	Tonal sound is defined as sound at discrete frequencies. It is caused by components such as meshing gears, non-aerodynamic instabilities interacting with a rotor blade surface, or unstable flows over holes or slits or a blunt trailing edge.
Wind Shear	Wind shear is a difference in wind speed and direction over a relatively short distance in the atmosphere. Wind shear can be broken down into vertical and horizontal components, with horizontal wind shear seen across fronts and near the coast, and vertical shear typically near the surface, though also at higher levels in the atmosphere near upper level jets and frontal zones aloft.
World Heritage Site	A United Nations designation relating to land of particular historical or cultural importance on an international level.
Zone of Theoretical Visibility (ZTV)	An area from which development is theoretically visible. Computer software is commonly used to increase detail and consistency in studies .

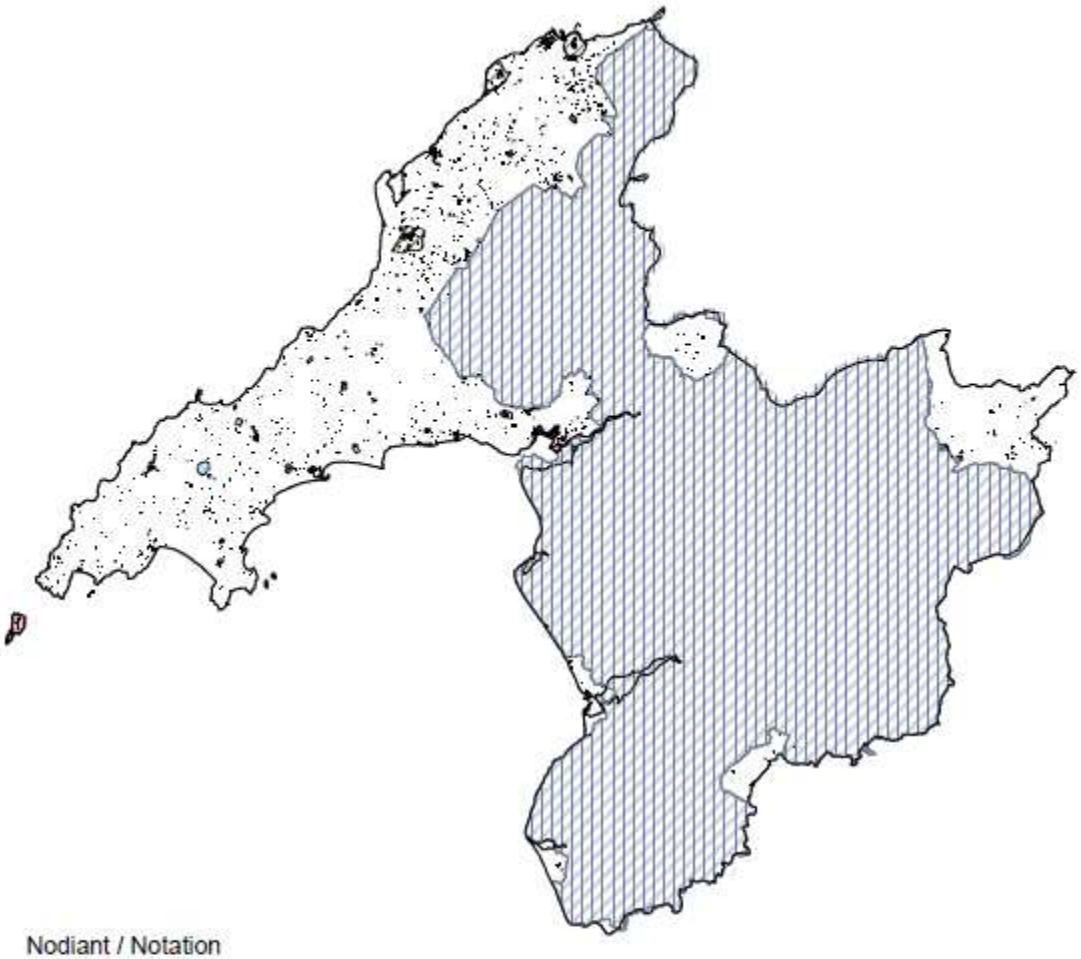
Appendix 1 – Designations & Consultation Zones in the Gwynedd Planning Authority Area

These maps should only be used for indicative purposes as the designations may be subject to boundary changes in the future. See the Glossary in Section 15.0 regarding full titles of the designations.

Landscape Designations



Gwynedd Heritage Designations



Nodiant / Notation

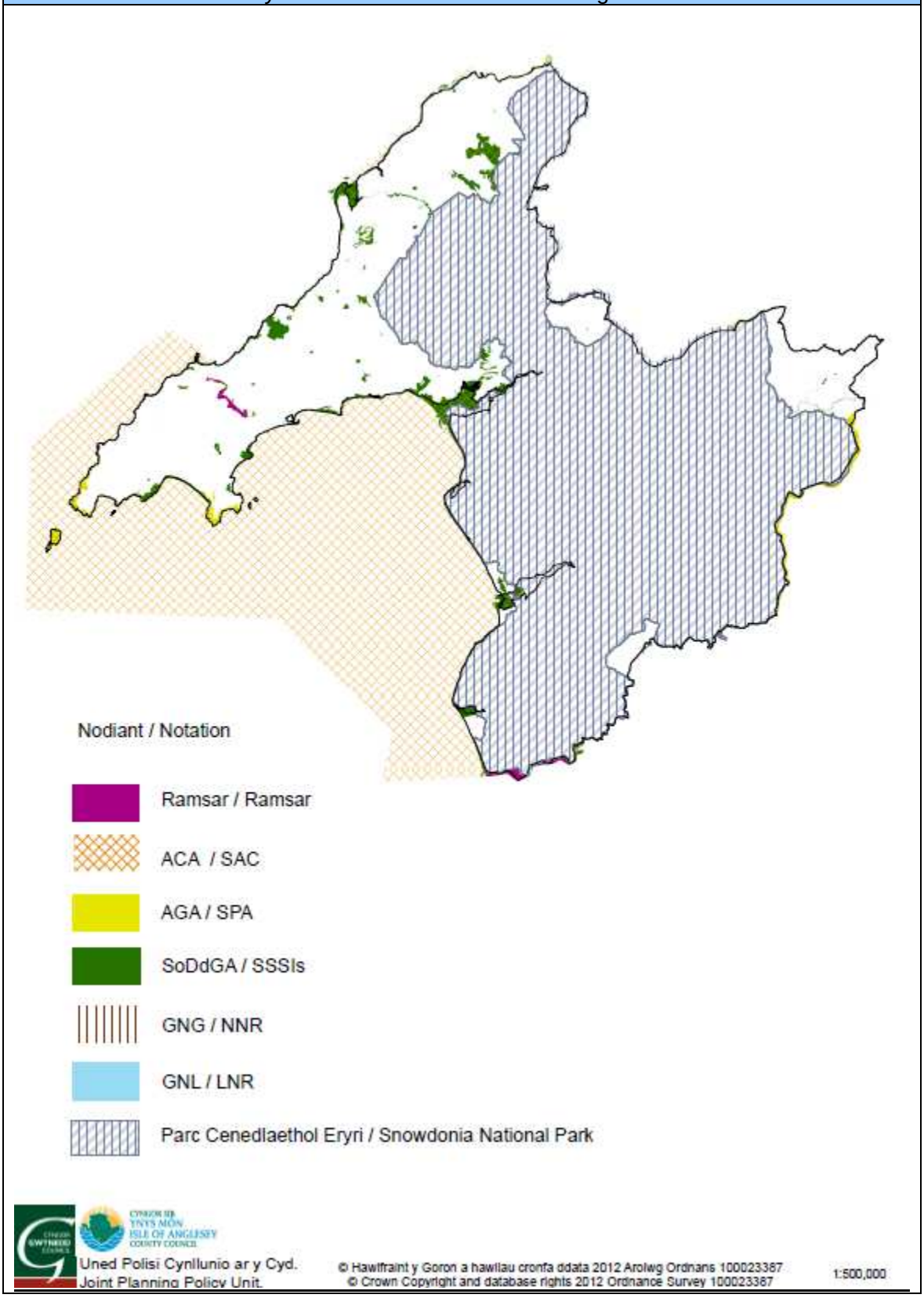
- Ardaloedd Cadwraeth / Conservation Areas
- Adeiladau Rhestredig / Listed Buildings
- Henebion Rhestredig / Schedule Ancient Monuments
- Safle Treftadaeth y Byd / World Heritage Site
- Parciau a Gerddi o Ddiddordeb Arbennig yng Nghymru / Parks & Gardens of Special Interest in Wales
- Parc Cenedlaethol Eryri / Snowdonia National Park

Uned Polisi Cynllunio ar y Cyd.
Joint Planning Policy Unit.

1:500,000

The Planning Service should be contacted regarding detailed maps for the location of these designations. There will be a charge for this service under Planning Fees Research Inquiry

Gwynedd Nature Conservation Designations*



* Maps showing the Candidate Wildlife Sites / Wildlife Sites are not currently available. This map will be updated when this information is available. Detailed maps for

International and National designations can be viewed on the Countryside Council for Wales' (CCW) web site http://www.ccw.gov.uk/interactive-maps.aspx

Appendix 2 – Possible Planning Conditions - Noise

1. The level of noise emissions from the development hereby approved shall be measured in accordance and shall not exceed the levels set out in the noise emission scheme as set out in paragraphs 2 to 10 below:-

2. The level of noise emissions resulting from the wind farm shall be assessed using the procedures described in 'The Assessment and Rating of Noise from Wind Farms' (ETSU-R-97), published by ETSU for the Department of Trade and Industry, specifically the section entitled 'Supplementary Guidance Notes to the Planning Obligation'.

3. The level of noise emissions from the combined effects of the wind turbine generators at XXX Wind Farm shall not exceed:-

    a. As to the dwellings listed in Table 1 of Schedule 1 the levels set for those properties in that table (at the wind speeds indicated within the table).
    b. As to the dwellings listed in Table 2 of Schedule 1 the levels set for those properties in that table (at the wind speeds indicated within the table).
    c. As to all other dwellings lawfully existing at the time of the planning consent, the noise level shall be a maximum of 43dBL_{A90} at a 10 metre wind speed of 8m/s.

4. The level of noise emissions referred to in paragraph 3 above shall be measured using an LA90 index over a minimum of 20 periods each of 10 minutes duration, using a sound level meter of at least Class 1 quality (incorporating best current practice) incorporating a ½ inch diameter microphone in free field conditions 1.2 metres above ground level and at least 3.5 metres from any wall, hedge or reflective surface (using a fast time weighted response).

5. If the level of noise emissions measured in accordance with paragraph 4 exceeds the relevant levels referred to or specified in paragraph 3 above or Schedule 1 attached, then the contribution of background noise to the level of noise emission shall be measured.

    a. Such background noise levels shall be measured using an LA90 index over a minimum of 6 periods each of 10 minutes durations in accordance with the requirements of paragraph 4.
    b. Such measurements shall be made during a period of measurements of noise from the combined effects of the wind turbine generators at XXX Wind Farm (made in accordance with the requirements of paragraph 4).
    c. A correction using best current practice shall be applied to the measured noise level to determine the contribution of background noise to the overall levels measured when the wind turbines are operating.

6. The measurements made in accordance with paragraphs 4 and 5 shall be correlated with wind speeds measured at 10 metres over the periods referred to in paragraphs 4 and 5. The LA90 noise level shall be derived using a best fit curve of the measured noise levels for data points corresponding to 10 metre wind speeds between 0 and 12 metres per second.

7. Compliance with paragraph 3(a) and 3(b) using the methods defined in paragraph 4 to 6 shall be demonstrated to the satisfaction of the local planning authority and at the expense of the developer within 3 months following the first generation of electricity or at any time at the written request of the local planning authority and, thereafter, at least once every 20 calendar months. Compliance with the noise emissions scheme shall be demonstrated to and approved in writing by the local planning authority by the submission of a written report. The local planning authority may require that any breaches of the noise emissions scheme are addressed within a set timetable which shall be submitted to and agreed in writing by the local planning authority before the development commences and written confirmation of having

implemented such proposals to address any breaches shall be sent to the local planning authority before the development commences. The requirements of the noise emissions scheme shall apply throughout the life of the development.

8. Tonal noise shall be measured by the operator of the wind farm at its expense at the reasonable request of the local planning authority in accordance with the procedures described in 'The Assessment and Rating of Noise from Wind Farms, ETSU-R-97' published by ETSU for the Department of Trade and Industry.

9. If, at any dwelling lawfully existing at the time of the planning consent, tonal noise from the combined effect of the wind turbines at XXX Wind Farm exceeds the threshold of audibility:-

   a). by more than 2.0dB but less than 6.5dB a penalty of ((5/6.5) x Audibility)dB shall be added to the noise level derived for the property in accordance with the ETSU-R-97 tonal assessment procedure;

   b). by more than 6.5dB a penalty of 5dB shall be added to the noise level derived for that property in accordance with the ETSU-R-97 tonal assessment procedure.

10. The developer shall supply wind speed and direction data to the local planning authority on its request to enable the Council to check compliance by the developer with the provisions of paragraphs 1 to 9 above.

11. Interpretation of some of the terms used within this condition are outlined in Schedule 2 attached.

Schedule 1

Table 1: Dwellings Associated with Development

Property A (Enter Grid Reference)																
Wind Speed at 10m height (m/s)																
4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12
Noise Limit L_{A90} dB																

Table 2: Dwellings not Associated with Development.

Property 1 (Enter Grid Reference)																
Wind Speed at 10m height (m/s)																
4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12
Noise Limit L_{A90} dB																

Property 2 (Enter Grid Reference)																
Wind Speed at 10m height (m/s)																
4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12
Noise Limit L_{A90} dB																

Schedule 2

Interpretation

'Audibility' means the audibility of the Tonal Noise as defined in (and to be measured in accordance with) the recommended method in 'The Assessment and Rating of Noise from Wind Farm' (ETSU-R-97) published by ETSU for the Department of Trade and Industry, specifically paragraph 2.1 of the section titled 'Supplementary Guidance Notes to the Planning Obligation'.

'Background Noise Level' means the ambient noise level present within the environment in the absence of noise generated by the development.

'Best fit curve' means a best fit linear regression curve expressing the noise level as a function of wind speed derived from measured noise levels for data extracted in accordance with the recommendations of section 1.2 of the section titled 'Supplementary Guidance Notes to the Planning Obligation' in ETSU-R-97.

'dB(A) $L_{A90\ 10min}$' means the dB(A) level exceeded 90% of the time and measured over a period of 10 minutes.

'ETSU-R-97' means 'The Assessment and Rating of Noise from Wind Farms' (ETSU-R-97) published by the ETSU for the Department of Trade and Industry (Final Report September 1996).

'Free-field Conditions' means an environment in which there are no reflective surfaces (except the ground) affecting the measurements within the frequency range being measured.
'Reasonable Request' means following a complaint to the Council relating to noise emission form the wind farm.

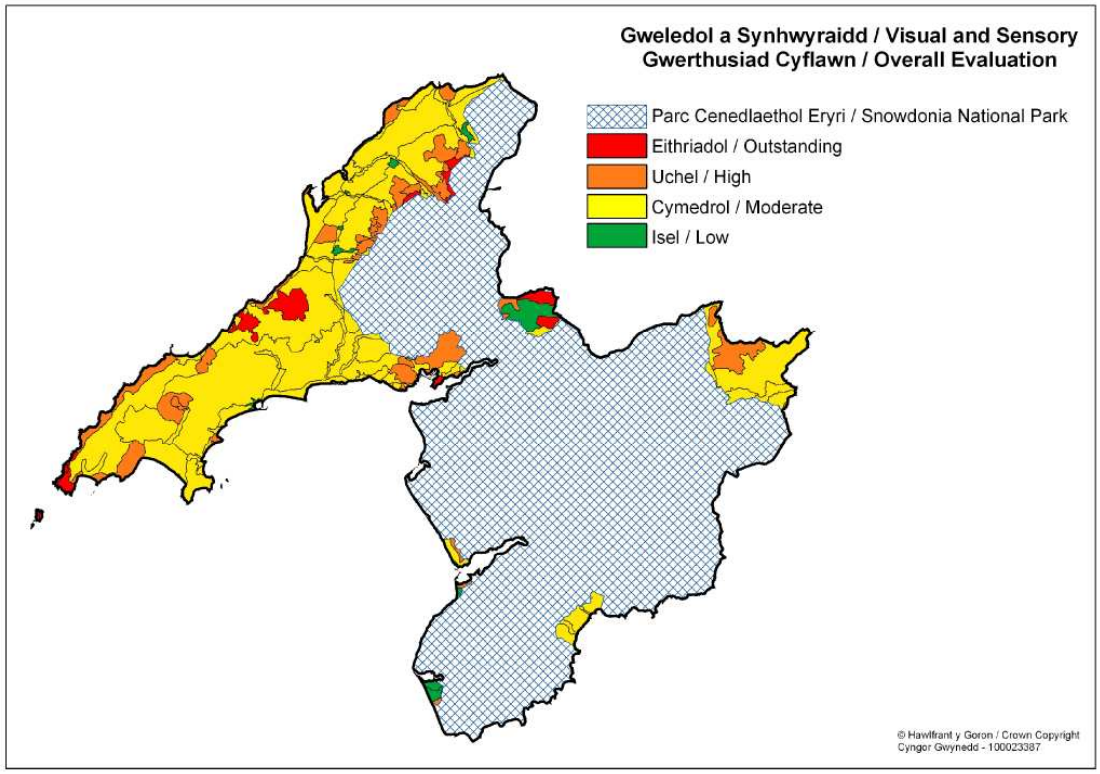
‘Tonal Noise’ means noise containing a discrete frequency component.

‘10 metre wind speed’ means (unless the context otherwise demands) wind speeds measured at a height of 10 metres above the ground level.

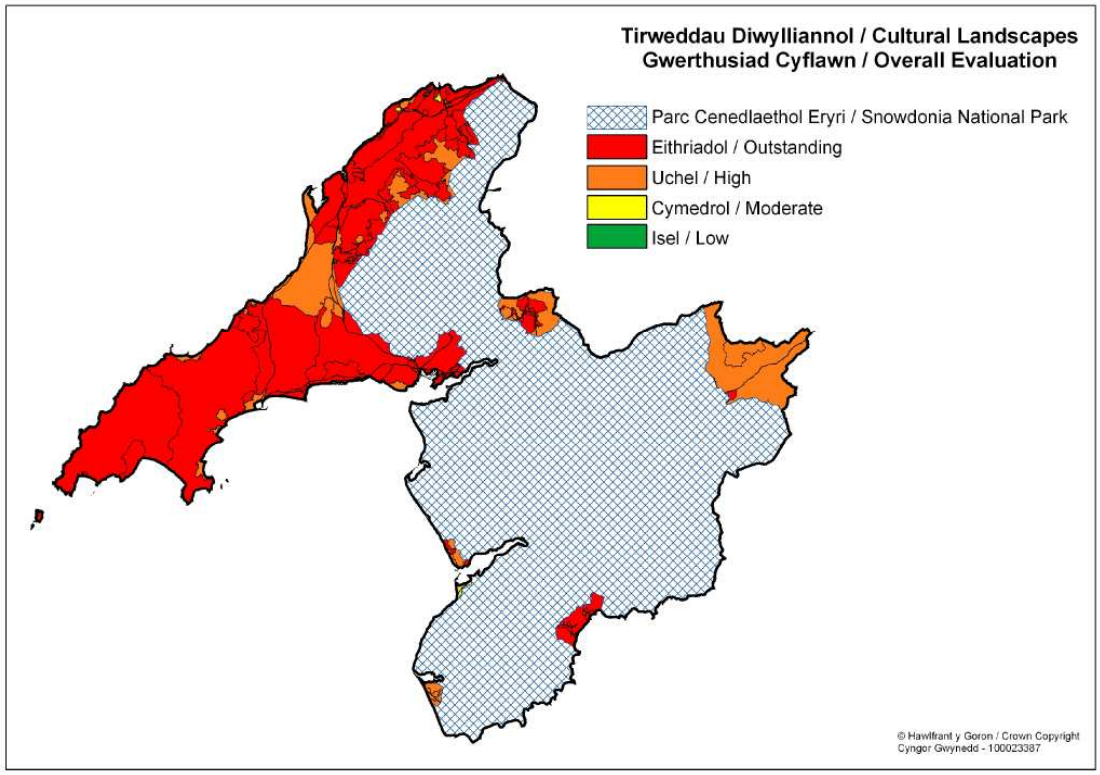
‘Wind Turbines’ means the wind turbine generators proposed to be erected as part of the development.

Appendix 3 – LANDMAP 2011 (Quality Assured Update) Survey Results

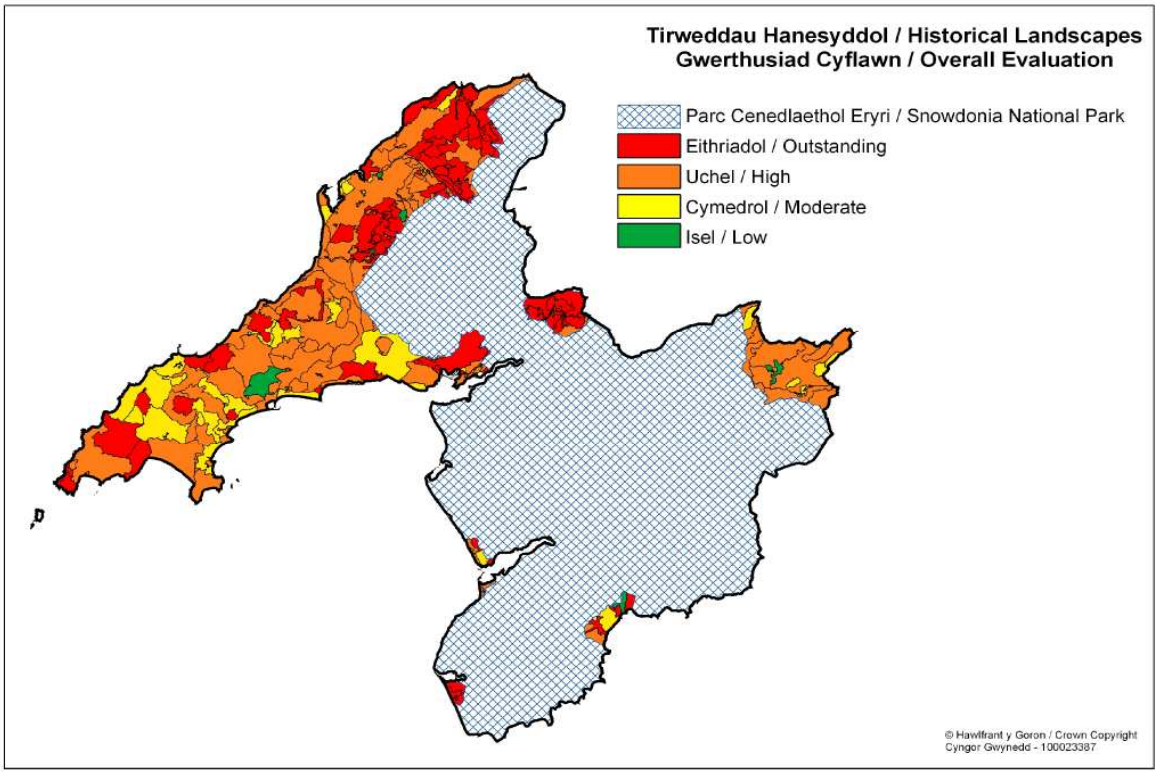
Visual and Sensory Evaluation



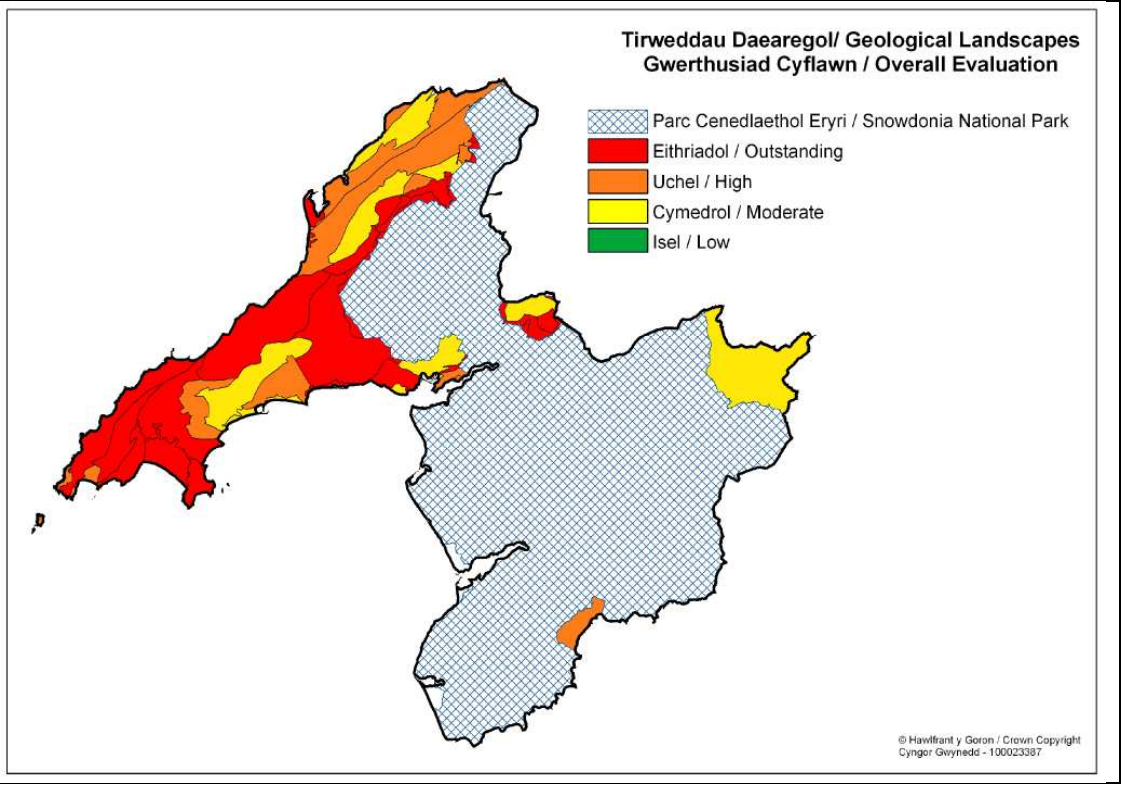
Cultural Landscapes Evaluation



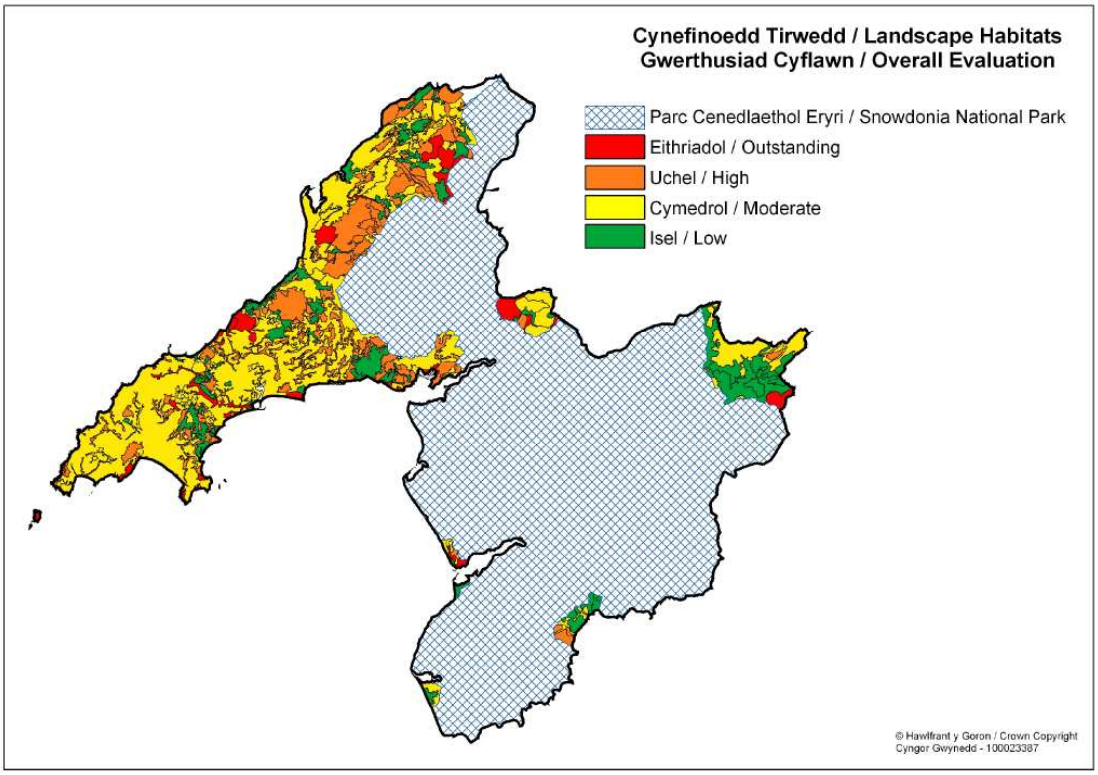
Historic Landscapes



Geological Landscapes



Landscape Habitats



Appendix 4 – Checklist

WIND TURBINE APPLICATIONS – CHECKLIST

WIND TURBINE APPLICATIONS – CHECKLIST

Introduction

Stages for Determining Wind Turbine Applications (Stages 4 to 6 Not Applicable if an Environmental Impact Assessment is not Required)	
1	**Request to Council for Screening Opinion**
	• **Request from applicant to the Council -** The broad intention of requesting a screening opinion is that the applicant can obtain a clear view from the Council on the need for Environmental Statement (ES) well before they reach the stage of lodging a formal planning application (step 7 below). This should minimise the possibility of delay or uncertainty. If an ES is deemed to be required, no action will be taken on the planning application until the developer has prepared an ES and submitted it to the planning authority.
2	**Request for Screening Opinion registered with Development Management**
	• **Council has 3 weeks to provide a Screening Opinion**
3	**Council provides Screening Opinion**
	• **Establish if ES is required**
4	**Request to Council for Scoping Opinion**
	• If the Council determines that an ES is required the applicants can seek advice on the contents of the ES by requesting a 'Scoping Opinion'.
5	**Request for Scoping Opinion registered with Development Management**
	• **Council has 5 weeks to provide a Scoping Opinion**
6	**Council provides Scoping Opinion**
	• **Issues to be covered in ES**
7	**Full application submitted to local planning authority**
	• **All supporting evidence, including an ES (if required), submitted with full application**
8	**Application processed and consultee comments provided**
	• **Committee or delegated officer considers application** • **Welsh Minister considers 'called-in' application**
9	**Decision on full application**
	• **Decision made by committee or delegated officer** • **Welsh Minister decides 'called-in' application**

1 Different types of planning applications require different kinds of background information in order for the Local Planning Authority (LPA) to be able to validate them as well as make an informed decision about them.

2 Applying for permission requires the applicant to supply a variety of plans, statements and other documentation before the LPA can begin to process it as a valid application. Some of the required information will depend on the nature and type of application or the nature of the character of the area within which the application site is situated.

3 **If this information is not provided then the LPA may not be able to register and validate the application and may be unable to process it and issue a decision on the proposals.**

4 This 'tick box' approach to validation offers clarity for applicants in setting out which documents and information items are required. The documents and information required to make a valid planning application consists of mandatory national information requirements as well as local information requirements

5 Applications for schemes that are likely to have significant impacts on the surrounding area (or further away) should involve engagement in pre-application discussions so that applicants are clear about the level of detail that the LPA will need in order to understand the anticipated impacts of the application.

6 Applications and related statements should be prepared by competent bodies or individuals, with regard to the particular issue being addressed. The level of detail required will vary according to each scheme and early consultation with the Council's Development Management Service is necessary to ensure that all relevant assessments/ statements are fit for purpose.

7 These notes are to help assist you when submitting your application for on shore wind turbines.

For any further information:

Please write to us at:
Planning Service
Council Offices
Ffordd y Cob
Pwllheli
Gwynedd
Gwynedd
LL53 5AA

Contact us on:
01766 771000

Email us at:
planning@.gwynedd.gov.uk

The checklist can be viewed and downloaded from the Council's website www.gwynedd.gov.uk

Checklist

8 The following table provides a schedule of documents and information that are required (as noted, the information that will be required will

vary on a case by case basis and will depend on the nature of the proposal. Discussions with the LPA will establish the exact detail required to accompany an application).:

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
1.	Application Form/Certificates (Statutory national requirement)	Complete the 'Application for Planning Permission' form. The proposal should be described as follows: "Erection of (number of turbines) wind turbines with a maximum hub height of up to (hub height metres), rotor diameter of up to (diameter metres) and a maximum upright vertical tip height of up to (height metres) together with the erection of (include associated structures) and provision of new access and access road on land at (address)." • Check all questions have been completed, even if not applicable put N/A for the avoidance of doubt so we know you haven't missed the question by mistake. • Check the declaration has been signed and dated. • Check the correct certificates are completed signed and dated, including the agricultural certificate. • Check anything referred to on the form corresponds with any plans and further documents submitted, such as plan numbers quoted.	
2.	Location Plan (Statutory national requirement)	The location plan needs to be to a scale of 1:2500 or 1:1250 and have a north point. It is also recommended that a 1:25000 or 1:50000 scale plan is submitted for contextual purposes. The wind turbine/s and all development relating to a wind turbine(s) must be within a red edge shown on the site location plan. No development can be permitted outside the red edge, and this includes, but is not limited to:	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		• Any area that could potentially be covered by the rotating blades of a turbine • Access tracks, roads or paths • Cable trenches • Control rooms, substations, transformers • Meteorological masts • Any other engineering works, buildings, or structure ancillary to the turbine(s) • Any gates or fencing proposed The red edge need not be contiguous as it is not necessary to include land between turbines or ancillary development where no development is proposed Any other land owned/controlled by the applicant needs to be outlined in blue. Show the position of highways, public footpaths and railway lines within the turbine's topple distance (tip height + 50 metres) in the case of trunk roads and railway network, or the turbine's topple distance + 10% in the case of other local authority transport network. Bridleways within 200m of proposed turbines should be shown. Transmission lines within 3 times the wind turbine's rotor diameter should be shown or within the turbine's topple distance + 10% should be shown.	
3.	Site plan/ block plan (Statutory national requirement)	The site plan needs to be to a scale of 1:500 or 1:200. The site plan needs to show to scale the position of the wind turbine/s and the position of the	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		ancillary equipment such as cabinets and transformers, access roads, hard standings and fencing, lighting for compounds – basically anything that is proposed to go on site. A six figure easting and six figure northing grid reference should be provided for each turbine. Show the position of any trees or hedges on site or within 50 metres of the site, highlighting those that are proposed to be removed (usually by a dashed line). Show any proposed demolitions on the site plan (usually by a dashed line).	
4.	Elevation plans (Statutory national requirement)	The elevation plans need to be to a scale of 1:100 or 1:50. Elevation drawings are required for the turbines and any ancillary equipment such as cabinetry and fencing if applicable. Details are also required of any new/ altered access and access roads.	
5.	The correct fee (Statutory national requirement)	The correct fee should accompany the application when submitted by post or if handed in, or be paid over the phone ((01248)752015 or (01248)752669) on weekdays during normal office hours. Cheques should be made payable to Gwynedd Council. The Circular that deals with planning fees states that Wind Turbines are to be treated as Category 5 – Plant and Machinery, except small scale domestic turbines installed within the curtilage of an existing completed dwellinghouse which should be treated as Category 6 or 7(a). Category 5 application fees are based on site area. The site area must be accurately stated on the application form and the area given here must match the site area covered by	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		the red edge shown on the site location plan (see 2 above). The minimum fee currently chargeable under Category 5 is £335 for a site area up to 0.1 hectares (1000 square meters). As fencing (see 2 above) is a Category 2 structure that creates no floorspace, the rules for mixed category applications are applied and no fee is due for the area covered by the fencing.	
6.	Design and Access Statement (Statutory national requirement) Policy B22 – Building Design and B23 – Amenities, Gwynedd UDP	A 'Design and Access Statement' is required. The Statement is required to show the 'thinking' behind the application. Developers are encouraged to demonstrate how siting and design in relation to landscape setting has influenced the proposal. There are 8 things to consider -'use', 'amount', 'layout', 'scale', 'landscaping', 'appearance', 'access' and 'inclusive access' in relation to relevant national and local planning policy and guidance. <u>Use</u> - explain why you have chosen this particular site for the proposed wind turbines/s. <u>Amount</u> – explain why you have chosen the quantity of turbines you have applied for. <u>Layout</u> – explain why you have chosen to position the wind turbine/s and ancillary buildings as shown in the application. The proposal should demonstrate how the landscape setting has influenced the siting and design of the wind turbine. Applicants should assess the potential for a proposal to have an impact on the outlook from inhabited buildings. Provide details of measures taken, if required, to avoid or minimise significant detrimental impact on the outlook from inhabited properties. A Residential Amenity Assessment should accompany or be incorporated within the Design and Access Statement for wind turbines of 11.1 metres (tip height) or higher located within the minimum separation distances that equates to 10 times the turbine's tip height.	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		Provide details of the distance between the proposed wind turbine/s and the closest existing or proposed wind turbine/s. The Planning Service will be able to provide details of the position and known status of other turbines. Demonstrate that the position of the wind turbine/s has taken account of the proximity of any surrounding development and risk of injury to humans through catastrophic equipment failure or ice throw and possible effects of visual distraction to road safety. Scale – detail the wind turbine/s hub height, blade length (in metres) and number of blades and explain the reason for this. Provide details of the generation capacity of each turbine in either kW or MW. Provide details of the proposed connection to the transmission network. Include details of the proposed foundations. On the basis that there are no Strategic Search Areas in Gwynedd it is expected that wind turbines/ wind farm schemes should not exceed 5 MW, or 25MW for repowering proposals on existing wind farms, and that consideration is given to the cumulative impact of small schemes and repowering proposals in areas outside the SSAs. Landscaping – explain what landscaping has been provided and why. Appearance – explain why you have chosen a particular appearance such as colour of the wind turbine/s. Provide details of any on-site or secondary/ off-site mitigation measures proposed. Access – provide details on the chosen access route in order to construct, service or dismantle turbines. Provide details of the nature and degree of permanency of modifications to accesses and/ or roads.	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		Inclusive access – if public access to the site is to be encouraged, provide details on how the application site is inclusive to all, regardless of any disability they may have. Proximity to Railway – provide confirmation that consultation with Network Rail has taken place where there may be concern as to proximity to a railway.	
7.	Environmental Impact Statement (Statutory national requirement)	The Town and Country Planning (Environmental Impact Assessment) Regulations 1999 set out the circumstances in which an Environmental Impact Assessment (EIA) is required. This is particularly applicable in defined 'sensitive areas' such as the Llyn AONB. An applicant may request a 'screening opinion' from the LPA before submitting a planning application to determine whether an EIA is required. Subject to the likelihood of significant effects, projects which fall below the Schedule 2 thresholds (of the EIA Regulations) may also require EIA. Where an EIA is required, an Environmental Statement must be provided (see steps 1 to 6 in table 1 above) including a statement of reasonable alternatives. Where an EIA is not required the LPA may still require environmental information to be provided. Section 9 and Sections 11 to 16 of this checklist outlines the scope of information required. Applicants are encouraged to discuss the requirements with the Council's Development Management Services at the pre-application stage. Where an application for planning consent for a development that requires to be screened under Schedule 2 of the Regulations is received without a prior request for a screening opinion (step 1 in Table 1 above), a request for a screening opinion will be registered	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		concurrently with the planning application. The Council's decision at this late stage that a EIA is required will inevitably impact on the application and the timescale for reaching a decision. Applicants are encouraged to make their applications for screening opinion before submitting an application for planning consent.	
8.	Shadow flicker/ throw assessment (PPW Sections 3.17 & 12.10; Policy B23 – Amenities, Gwynedd UDP)	Account has to be taken of the impact on occupiers of dwellings in nearby settlements and properties around the proposed development. An assessment of potential shadow flicker and shadow throw throughout the year, should be provided for all dwellings within a 10 rotor diameter distance of the proposed location of each wind turbine. Details of each dwelling affected together with photographs, orientation, position of principal windows, etc. need to be included together with monitoring proposals and details of mitigation measures.	
9.	Noise Impact Assessment (PPW Sections 3.17, 12.10 & 13.15; Policies B23 – Amenities; A1 – Environmental or Other Impact Assessments, Gwynedd UDP.	On the basis that a wind turbine is potentially a noise sensitive development, proposals must be supported by a Noise Impact Assessment prepared by a suitably qualified acoustician. When considering a proposal, developers should identify any noise sensitive receptors, such as residences, quiet leisure based businesses, quiet places and other areas that are particularly valued for their acoustic environment or landscape quality or designated sites where noise may have an adverse impact on protected species or other wildlife. Applications for large turbines and wind farms will normally require an EIA and will be accompanied by a full noise impact assessment conducted and assessed in accordance with ETSU-R-97. There should be evidence that the location and duration of background monitoring has been agreed with the Council's Environmental Health Section and information is presented in the manner and standard expected of such reports. This will	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		include photographs of sound measurement equipment at their field-monitoring locations, specific details of equipment including calibration and details relating to the competency/training of the individual setting-up the equipment. For smaller developments not requiring an EIA, the Council will expect all applications to be accompanied by a test report prepared either using International Standard IEC61400 "Wind turbine generator systems – Part 11" or alternatively, the British Wind Energy Association's "Small Wind Turbine Performance and Safety Standard". The test report shall include 1/3 Octave frequency analysis in order to enable the local authority to validate claims regarding turbine tonality. The Applicant shall demonstrate that the information contained in the noise report has been applied to determine the precise location of the turbine (identified using a six figure easting and six figure northing grid reference) and separation distance from nearby residential properties. Where the predicted noise level is greater than 35dB(A) at 10m/s at 10m height at any nearby property not in the ownership of the applicant and no background noise measurements have been included, the applicant shall include justification as to the non inclusion of such data. One of the most complex scenarios in respect of noise impact from wind turbines occurs when there are multiple turbines in a location. In respect of cumulative impact ETSU-R-97 states that:- *'Noise limits and margins above background should relate to the cumulative effect of all wind turbines in the area contributing to the noise received at the properties in question.'*	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		In situations where it is proposed to erect a turbine within or close to a zone of predicted noise influence of another turbine or a group of turbines a cumulative noise impact assessment will be required. The boundary of the "Zone of Predicted Noise Influence" shall equate to the 35dB LA90 contour based upon a wind speed of 10m/s at 10m height. The applicant should consult with the Local Authority on the precise interpretation and location of this contour. The cumulative noise assessment will need to demonstrate that the combined noise level from all wind turbine/s will not exceed an overall level of 35dB(A) or 5dB(A) above background up to wind speeds of 12m/s at 10m height. The background noise levels and noise assessment shall adopt a methodology that makes every endeavour to ensure that the quiet day-time and night-time periods used for the background noise assessment, are not influenced by any nearby wind turbines. Pre-application discussion between applicants and the Council's Environmental Health Section is very important in ensuring that the correct data, baseline noise assessment and an appropriate assessment is submitted with any application.	
10.	Community Engagement Statement (PPW Sections 3.1.7 & 2.2; Protocol for public engagement with proposed wind energy developments in Wales (2007))	Applications will need to be supported by a statement (a) setting out how the applicant has carried out pre-application consultation, e.g. public meeting, exhibition, surveys, leaflets/ mailshots, and (b) demonstrating that the views of neighbours/ local community have been sought and taken into account in the formulation of the development proposal. The coverage and detail of the Statement should reflect the scale of the development and the extent of the development's implications. As a minimum, the Community Engagement Statement should set out how the local community has been involved, what their views are, and how these views	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		have been taken into account.	
11.	Landscape and Visual Impact Assessment (PPW Section 5 & 12.10; TAN 12; Policies Polisïau B8, B10, B12, B13, B14, B15, B16, B17, B18, B20, B21 B23 (Gwynedd UDP)	A key consideration of proposals for wind turbines will be impacts on landscape character and visual amenity. The landscape and visual effects of wind turbines will vary on a case by case basis according to the type of wind turbine (model and height), its location, the landscape setting of the proposed development and impacts on sensitive areas and or receptors. Cumulative impact assessments may also be required. In this context, references to landscape should be taken as covering seascape and townscape where appropriate. Sensitive areas include (although not limited to) National Parks, AONB's, Conservation Areas, Heritage Coast, Historic Landscapes /Gardens, World Heritage sites, areas classed as high or outstanding in the Visual and Sensory category in LANDMAP etc. Sensitive receptors include public footpaths, dwellings, protected species etc. In all cases Impacts on Residential Amenity should be assessed separately to the landscape and public visual impact assessment. Assessments should be carried out by a Chartered Landscape Architect or suitably qualified professional with appropriate experience. Relevant Guidance / Documents include the following : Gwynedd Landscape Strategy 2007 AONB Management Plan 2009 - 2014 Guidelines for Landscape and Visual Impact Assessments 3rd Edition 2013 LANDMAP CCW LANDMAP Guidance Note 3 Register of Landscapes of Historic Interest in Wales in the Planning and Development Process (CADW 2nd (revised ed. 2007)	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		(see Section 14 Further Reading for additional sources of information) The following requirements will apply: (i) <u>Turbines of up to 20m in height</u>. For small turbines of less than 20m (blade tip), a formal visual impact assessment is less likely to be required dependant on location, context and presence of sensitive areas and or receptors. The requirements will be proportionate to the anticipated levels of impact. Zone of Theoretical Visibility studies, Photomontages and/or wireframe / line drawings may be helpful in certain more sensitive locations. A cumulative impact assessment maybe required. For guidance purposes it is recommended that the cumulative LVIA should consider planning applications and development within 5km However, a detailed site plan containing information on, topographical features, visual impact upon dwellings within a range of (500m to 1 km), designated sites (e.g. SAC, SPA, SSSI, the SNP Local Wildlife Site), and sensitive areas, receptors (e.g. listed buildings, conservation areas, SAMs, Public footpaths etc), likely protected habitats, protected species potential and possibly background data search results depending on scale of potential impacts as well as detailed drawings showing the design of the proposal should be provided to the Local Planning Authority. It is a matter for the Local Planning Authority to determine whether any additional supporting information for the planning application is necessary. Within the 15m – 20m height range, the local authority will be required to screen for EIA. (ii) <u>Turbines of between 20m and 65m height</u>	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		The application should include a detailed site plan containing information on, topographical features, likely visual impacts upon dwellings, designated sites (e.g. SAC, SPA, SSSI, the SNP, Local Wildlife Site), and sensitive areas, receptors and (e.g. listed buildings, conservation areas, SAMs), likely protected habitats, protected species potential and possibly background data search results depending on scale of potential impacts, as well as detailed drawings showing the design of the proposal. A Landscape and Visual Impact Assessment is likely to be required. This should include, as a minimum, a Zone of Theoretical Visibility map covering an area up to 15km (radius) from the turbine and wireframe /line drawings and/ or photomontages from a limited number of key viewpoints. Where the turbine(s) are located in a Registered Historic Landscape Area, or landscapes classified as either 'Outstanding', 'High' or 'Medium' quality on Landmap, the applicant should consult the Local Planning Authority on the level of assessment required for a specific proposal. A cumulative impact assessment may also be required. For guidance purposes it is recommended that the cumulative LVIA should consider planning applications and development up to 30km. (iii) <u>Turbines over 65m in height</u> As above, the application should include a detailed site plan containing information on, topographical features, likely visual impacts upon dwellings within 2 km, designated sites (e.g. SAC, SPA, SSSI, Local Wildlife Site) and visually sensitive receptors (e.g. listed buildings, conservation areas, SAMs, Registered Historic Landscapes), likely protected habitats, protected species potential and possibly background data search results depending on scale of potential impacts, as well as detailed drawings showing the design of the proposal. A more detailed Landscape and Visual Impact Assessment will be required, depending on location.	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		At this scale of development, the LVIA would be likely to, as a minimum, require: i. A ZTV map up to 30km; ii. Visualisations and photomontages, focusing on key viewpoints. iii. An assessment of the sensitivity of the landscape (Outstanding', 'High' or 'Medium' quality on Landmap), magnitude of change and residual impacts; iv. A baseplan map of all wind turbine proposals in the public domain to 60km; v. A focussed assessment of all applied, consented or constructed proposals within 30km radius of the application proposal. The individual or cumulative effect of turbines in the countryside shall be assessed so as not to create unacceptable visual or landscape impacts. Cumulative effects may present an eventual limit to the extent of wind energy development in particular areas. For guidance purposes it is recommended that the cumulative LVIA should consider planning applications and development within 15km to 30km. The number and location of viewpoints should be proportional to the scale of the development and the sensitivity of the location and should be agreed with the Council's Built Environment and Landscape Section. As a guide, view point locations should be informed with reference to: a) the zone of theoretical visibility (i.e. where the turbines would appear in views), b) the height of the turbine(s) and distance from the view point location (i.e. how large the turbines would appear in the views)	

<table>
<tr><th colspan="4">Checklist</th></tr>
<tr><th></th><th>Document or information required
(basis for requirement included in brackets)</th><th>Description</th><th>✓ or ✗ or n/a</th></tr>
<tr><td></td><td></td><td>c) the character and sensitivity of the landscape (i.e. the setting context of those views) and
d) the importance of those views (i.e. what value society places on those views from the those landscapes)

The landscape and visual assessment should include reference to the Council's landscape character assessment as a means of assessing landscape impacts relevant to the proposed project. It should include the effects during construction of the project and the effects of the completed development and its operation on landscape components and landscape character.

<u>Summary of Process and Components</u>

<table>
<tr><td>Size of Turbine</td><td>Key Process / Information Requirements</td></tr>
<tr><td>Up to 20m in height</td><td>• Detailed Site Plan containing information on topographical features, visual impact on dwellings, designated sites, protected habitats and species etc.
• LVIA to consider dwellings within 5km
• Zone of Theoretical Visibility Studies
• Photomontages
• Cumulative Impact Assessment
•</td></tr>
<tr><td>Between 20m and 65m</td><td>• Detailed Site Plan containing information on topographical features, visual impact on dwellings, designated sites, protected habitats and species etc.</td></tr>
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<table>
<tr><th colspan="4">Checklist</th></tr>
<tr><th></th><th>Document or information required
(basis for requirement included in brackets)</th><th colspan="2">Description</th><th>✓ or ✗ or n/a</th></tr>
<tr><td></td><td></td><td colspan="2"><table>
<tr><td></td><td>• LVIA to consider dwellings within 15km
• Zone of Theoretical Visibility Studies (up to 15km)
• LANDMAP Assessment
• Photomontages
• Cumulative Impact Assessment</td></tr>
<tr><td>Over 65m in height</td><td>• Detailed Site Plan containing information on topographical features, visual impact on dwellings, designated sites, protected habitats and species etc.
• Zone of Theoretical Visibility Studies (up to 30km)
• LANDMAP Assessment
• Reference to Landscape Character Assessment
• Photomontages
• Cumulative Impact Assessment</td></tr>
</table>

National Parks and AONBs have been confirmed by the Government (Section 85 (AONB) CRoW Act) as having the highest status of protection in relation to landscape and scenic beauty. The duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them.

Applicants should consult with Anglesey County Council, Conwy County Borough Council or the Snowdonia National Park Authority where a proposed wind turbine development will be visible from one or more of these Authority areas.</td><td></td></tr>
</table>

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
		Applicants should contact the Council's Planning Service for further advice	
12.	Ecological Survey (PPW Section 5 & 12.10; TANs 5 & 12; Policies B15, B16, B17, B18, B19, B20, B21 (Gwynedd UDP)	Applicants should consider the potential for a proposal to have an impact on any designated site within 20km of the site location, including an SPA, SAC or SSSI. Issues relating to connectivity of birds between designated sites and the wider countryside as well as the potential impact upon bats will need to be examined and addressed. Where appropriate, the planning application should demonstrate how these factors have been addressed. Direct impacts on the turbine site need to be considered, including protected species and habitats. An ecological survey may be required if an application is near to a site of known importance for bats or birds, or if a site is proposed within 50 metres from relevant habitat features that offer foraging/ commuting/ roosting opportunities, e.g. buildings, hedgerows, woodland edges, streams. In order to minimize the impact on wildlife, it is advisable that turbines should be a minimum of 50 metres away from these types of habitat features. The survey would involve classification and evaluation of the natural habitat and species, agricultural context, hydrological impact, determination of the zone of influence of the proposal, evaluation of impacts, and the scope of mitigation of those impacts. Applicants should contact the Council's Biodiversity Unit for advice.	
13.	Heritage Evaluation (desk or field based)	Gwynedd has significant areas of historic interest, above and below ground. It may be necessary for applicants to commission an archaeological assessment and/or archaeological evaluation of the implications of development on features of historic interest either through	

Checklist			
	Document or information required (basis for requirement included in brackets)	**Description**	**✓ or ✗ or n/a**
	(PPW Section 6.5 & 12.10; TAN 12; Policies B1, B2, B3, B4, B5, B6, B7 of the Gwynedd UDP	direct loss of a feature or visual impact on the setting of features of historic interest. Applicants may be required to apply the ASIDOHL process (Assessment of direct and indirect physical effects on an area's historical features) in order to assess the impact on areas included in the Register of Historic Landscapes. Applicants should contact the Gwynedd Archaeological Service and the Planning Service for further advice.	
14.	Traffic and Transport Assessments (PPW Section 8; Policies A1, CH25, CH28, CH33, CH34 of the gwynedd UDP	A Construction Traffic Management Plan is required with all applications, which should demonstrate that consideration has been given to as many of the following factors as possible: • the proposed transport route from the factory and for larger parts for any abnormal indivisible load vehicles (AIL); • the proposed dimensions of the individual turbine sections, and the corresponding dimensions of the AIL vehicles and cranes; • the number, frequency, type and maximum gross weight of all other construction vehicles which will be generated by the development; and their proposed routes to and from the site; • details of the proposed improvements to the local highways network to facilitate the movements of the AIL traffic and construction traffic; • details of the proposed site access arrangements off the local highway network; • details of means of connection to the transmission network which may be required as part of the proposed development; • details of any stone borrow pits which are proposed as part of the proposed development.	

Checklist			
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		• details of any construction traffic management proposals to mitigate conflict and disruption to existing highway users. • details of proposals involving railway crossings should also be considered so as to avoid rail crossing accidents It is appreciated that some of this information may not be available at the early stage of project management. The highways implications of a project, must, however, have early consideration to enable appropriate input to be made from both the local and trunk road highways perspective. Long term planning is also essential for AIL movements and the notification requirements.	
15.	Electro magnetic assessment	Developers will need to consult with radar operators if a proposal falls within a 15km consultation zone, or the 30-32km advisory zone around both civil and military air traffic radar, respectively. Guidance is available to assist developers on the Civil Aviation Authority's web-site (http://www.caa.co.uk/default.aspx?catid=1959). Developers should use this. Developers will also need to consult with OFCOM at the pre-application stage in addition early consultation should also be sought with Arqiva who operate the television network in the UK and the majority of radio transmission network. National Air Traffic Services (NATS) has advised that it wishes to be consulted on all planning applications or 'Notice of Intent to Develop' proposals for wind turbine developments irrespective of scale. Details of possible adverse effects and appropriate measures to alleviate effects should be submitted.	
16.	Groundwater and surface water Policies B32, B33 of the Gwynedd	An assessment of the risks to water resources and the water environment, i.e. local watercourses, water bodies, groundwater and water supplies, during the construction phase	

Checklist			
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	UDP	will be required, particularly development that could have a direct or indirect adverse impact on the hydrological regime that underpin statutory sites. The Environment Agency will be consulted where appropriate.	
17.	Tourism and leisure activities (Policies B7, B8, B9, B10, B12, B13, B14, B23, Ch26, CH42, CH46 of the Gwynedd UDP.	Impacts on tourism and leisure activities will depend on the nature of the activity and the type of visual and other impacts on significant receptors (e.g. visitors, local residents or communities). Particular attention should be paid to impacts on the users of roads, paths, country parks and open-access countryside which are important for everyday life, leisure and visitors, and have a significant effect on the image or quality of life of a location or area. For local residents, the presence of turbines could have a significant effect on the enjoyment of the local and wider landscape when viewed from footpaths, parks and areas of open access land. Visitors and tourists visiting an area or location as a result of its scenic or townscape quality or character could also be significantly affected. This could result in a loss of visitors and consequential socio-economic impacts. Sections 11 and 13 of this checklist set out the issues relating to impacts on landscape character and visual amenity and historic/ cultural assets. The judgment of acceptability of a development based on landscape and public visual amenity protection should provide adequate protection for tourism interests.	
18.	Legal Agreements (PPW Sections 3.6 & 3.7)	The need for developer contributions required as a result of the proposed wind turbine/s, e.g. visual and road infrastructure impacts (i.e. need for new footpaths, road widening). Planning or other legal agreements may be needed to deal with any such issues. It will be useful to discuss such matters and prepare draft head of terms at an early stage in the process,	

Checklist			
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		preferably at the pre-application stage. A suitable mechanism may be required, e.g. a bond, in order to ensure that sufficient resources would be available for dismantling and remediation. This is to ensure adequate measures are in place to ensure the site is restored in an appropriate manner.	
19.	Other issues (TAN 8)	Associated community benefits – the developer/land owner may wish to play an active role in the community. Developers or landowners are encouraged to engage directly with communities rather than with the Council on this issue. The absence or presence of any contribution to local communities is not an issue which will be considered by the LPA in its determination of whether planning permission should be given.	