

CARLISLE CITY COUNCIL

Report to:- **Council**

Date of Meeting:- **12 September 2006**

Agenda Item No:-

Public	Policy	Delegated Yes/No	
Accompanying Comments and Statements		Required	Included
Environmental Impact Statement:		No	No
Corporate Management Team Comments:		No	No
Financial Comments:		No	No
Legal Comments:		No	No
Personnel Comments:		No	No
Impact on Customers:		No	No
Title:-		Cumbria Wind Energy Supplementary Planning Document and Sustainability Appraisal	
Report of:-		Director of Development Services	
Report reference:-		DS. 77/06	

Summary:-

The attached Report was considered by the Executive at their meeting on the 29th August 2006 and recommended that the documents be approved by Council for consultation.

Recommendation:-

It is recommended that the Cumbria Wind Energy Supplementary Planning Document and Sustainability Appraisal be approved for public consultation.

C Elliot

Director of Development Services

Contact Officer: Chris Hardman

Ext: 7190

Note: in compliance with section 100d of the Local Government (Access to Information) Act 1985 the report has been prepared in part from the following papers: None



REPORT TO EXECUTIVE

PORTFOLIO AREA: INFRASTRUCTURE, TRANSPORT & HOUSING

Date of Meeting: 29/08/06

Public

Key Decision: Yes

Recorded in Forward Plan:

Yes

Inside/Outside Policy Framework

Title: CUMBRIA WIND ENERGY SPD AND SUSTAINABILITY APPRAISAL

Report of: Director of Development Services

Report reference: DS 59/06

Summary:

This document sets out the background to the Cumbria Wind Energy Supplementary Planning Document (SPD) which has been prepared through a joint officer working group involving officers from the County Council and other relevant Cumbrian Authorities. A Sustainability Appraisal incorporating a Strategic Environmental Assessment has also been prepared in accordance with current regulations.

Recommendations:

- a. The attached Draft Cumbria Wind Energy Supplementary Planning Document and Sustainability Appraisal be forwarded to Council to be released for Joint Public Consultation during October-December 2006 with Cumbria County Council and relevant Cumbrian Local Planning Authorities.
- b. Agree that any area specific or other changes to the text that are sought by Carlisle City Council or the County Council or relevant Cumbrian Local Planning Authorities are recorded and considered alongside other representations following public consultation. The revised document will then be considered again by each Authority prior to adoption.

Catherine Elliot

Director of Development Services

Contact Officer: Chris Hardman

Ext: 7190

Note: in compliance with section 100d of the Local Government (Access to Information) Act 1985 the report has been prepared in part from the following papers: Cumbria Wind Energy Supplementary Planning Document Consultation Draft July 2006

1.0 BACKGROUND INFORMATION AND OPTIONS

- 1.1 This document seeks to update the existing guidance on wind energy development in Cumbria 'Wind Energy in Cumbria, A Statement of Supplementary Planning Guidance' (SPG) which was produced in 1997 by Cumbria County in partnership with the six district Authorities and the Lake District National Park. The guidance was prepared to provide local planning authorities and developers with detailed guidance on wind energy development in Cumbria focusing on the landscape and visual impacts of such developments as experience has shown that this is the area where the most significant issues arise.
- 1.2 The requirement to update the existing wind energy SPG has arisen as a result of the following:
- New Provisions in the Planning and Compulsory Purchase Act
 - Changes in National and Regional Energy Policy and Guidance
 - Increases in the capacity and size of wind turbines
 - Increases in the scale of wind energy development
 - The Panel's report to the Examination in Public of the Deposit Cumbria and Lake District Joint Structure Plan 2001-2016
 - Adoption of the Cumbria and Lake District Joint Structure Plan 2001-2016
- 1.3 The requirement to provide energy from renewable sources is high on the political agenda with the Government setting a national target for 15% of the UK's renewable electricity to be from renewables. This requirement has been translated into policy with Planning Policy Statement 22 Renewable Energy stating that Local Authorities should encourage the development of well designed renewable energy schemes through their Development Plans/Local development Frameworks.
- 1.4 The Draft Regional Spatial Strategy (January 2006) includes a framework for the production of sustainable energy and sets renewable energy targets for Cumbria, in relation to wind energy generation Cumbria has been set a target generating capacity of 219.4MW by 2010 and 257.7MW by 2015. Policies within the Cumbria and Lake District Joint Structure plan 2001-2016 support renewable energy and set criteria against which schemes will be assessed. As required under the regulations the SPD will be linked to the local plan through Policy CP7 (Renewable Energy) of the Redeposit Draft Carlisle District Local Plan 2001-2016.

- 1.5 The Panel's report to the Examination in Public of the Deposit Cumbria and Lake District Joint Structure Plan 2001-2016 recommended that a Supplementary Planning Document on wind energy development be prepared in consultation with district councils, local interest groups the industry and other interested local bodies.
- 1.6 It has been agreed in line with the EIP Panel's report that the SPD be produced under joint working arrangements. The option to form a Joint Planning Committee to agree and adopt Joint Supplementary Planning documents has been explored by the County and District Councils. As a result reports have been taken to O&S Committee and Executive relating to the formation of a Joint Committee for the consultation and adoption of the Wind Energy SPD. It was however resolved that a Joint Committee should not be established and that joint working between the County Council and Districts at officer level should be the means of producing the SPD.
- 1.7 As part of the joint working arrangement it is a statutory requirement that the draft SPD and Sustainability Appraisal be endorsed by the relevant Committee from each local authority for public consultation purposes. In order to ensure consistency in the consultation process it is necessary for the document to be endorsed by Council for consultation without alteration. This will ensure that countywide consultation on the document can be achieved. All comments and amendments received on the document will be considered following the consultation process.

2.0 Content of the Document

- 2.1 The supplementary Planning document provides detailed guidance on the landscape's capacity to accommodate wind energy development. The Cumbria Wind Energy SPD consists of three parts:

Part 1 – Guidance on preparing wind energy proposals (See Appendix 1)

Part 2 – Landscape Capacity Assessment (See Appendix 2)

Part 3- Guidance on Landscape and Visual Impact Assessment (See Appendix 3)

Maps – (See Appendix 4)

- 2.2 Part 1 sets the context for the SPD and provides comprehensive guidance on amongst other things, siting and design of schemes, cumulative impacts, environmental issues and considerations, Landscape character and capacity and guidelines for engaging with the community. Part 2 - sets out the methodology behind the landscape capacity assessment and Part 3 sets out the requirements of the landscape and visual impact assessments required as part of a proposal for wind energy development.
- 2.3 The intention of the document is to assist in the interpretation and application of development plan policies by providing Local Authorities and developers with broad locational guidance for wind energy developments in Cumbria. This would be applied through a Landscape Capacity Assessment (section 2 of the SPD). The intended outcome of using this approach would be to help guide the right type and size of development to the right location based upon landscape and visual impacts. It is not intended that the document will replace the need for applications to be supported by an Environmental Impact Assessment where they are currently required¹.
- 2.4 The Landscape Capacity Assessment is based upon the 13 landscape character types (excluding the Lake District National Park) as classified in the Cumbria Landscape Classification 1996. Work is being undertaken this year to classify the landscape character types for the Lake District National Park and the Wind Energy SPD will take this work into account when it is available.
- 2.5 Based on the landscape capacity map (map 4 , appendix 4) the majority of Carlisle District shows a Low /Moderate and Moderate Capacity with the Bewcastle Fells having a Moderate/High Landscape Capacity, the AONB's are considered to have a Low Capacity reflecting the sensitive nature of these landscapes. The maps do not show constraints on development of wind energy schemes e.g. Spadeadam (due to potential interference with radar), therefore whilst the landscape character assessment may show areas to have capacity, other constraints may prohibit schemes from being developed. The Local Plan policy CP7 along with other policies will ensure that other constraints are taken into account when planning applications are being considered.

¹ Schemes of two or more turbines with a hub height of over 15m require an EIA

3.0 Sustainability Appraisal

- 3.1 The Sustainability Appraisal has been produced to accord with current planning regulations and incorporates a Strategic Environmental Assessment. The document demonstrates how environmental, social and economic considerations are being addressed through the SPD. (See Appendix 5).

4.0 CONSULTATION

- 4.1 Targeted public consultation on the scope and objectives of the supplementary planning document was carried out in February/ March 2006 with over 100 stakeholders being consulted. Comments were received from 23 organisations; these have been taken into account in the formation of this SPD. Limited public consultation was also undertaken in February/March 2006 on the scope of the Sustainability Appraisal, again over 100 stakeholders were consulted and comments were received from a range of organisations. These comments have been taken into account in the preparation of the attached Sustainability Appraisal.
- 4.2 It is intended that public consultation on the Wind Energy SPD and Sustainability Appraisal will take place in autumn 2006.

5.0 RECOMMENDATIONS

- a. The attached Draft Cumbria Wind Energy Supplementary Planning Document and Sustainability Appraisal be forwarded to Council to be released for Joint Public Consultation during October-December 2006 with Cumbria County Council and relevant Cumbrian Local Authorities.
- b. Agree that any area specific or other changes to the text that are sought by Carlisle City Council or the County Council or relevant Cumbrian Local Authorities are recorded and considered alongside other representations following public consultation. The revised document will then be considered again by each Authority prior to adoption.

6.0 REASONS FOR RECOMMENDATIONS

- 6.1 To fulfil the requirements of the Structure Plan EIP Panel's report the Supplementary Planning Documents require approval of Council Prior to consultation and adoption.

7.0 IMPLICATIONS

- Staffing/Resources – This work is produced jointly by the County Council and Cumbrian Districts. The City Council's contribution is resourced from within the Local Plans and Conservation Section
- Financial – Due to the joint work, there may be some financial implications however these can be covered by existing Local Plans and Conservation budgets.
- Legal – The Supplementary Planning Document is being produced following The Town and Country Planning (Local Development) (England) Regulations 2004. This is part of the new Local Development Framework introduced by the Planning and Compulsory Purchase Act 2004
- Corporate – The SPD will assist in providing guidance on wind energy in accordance with the Council's "cleaner, greener and safer" priority.
- Risk Management – Joint officer working has attempted to minimise risk of non-production and different working is being promoted following the inability to establish a Joint Committee. A timetable for consultation has been prepared in order to follow all the participatory Council's own committee cycles.
- Equality Issues – None
- Environmental – This SPD will provide clearer guidance for applicants interested in developing wind energy schemes.
- Crime and Disorder – None

- Impact on Customers – Customers across Cumbria will be consulted at the same time with consistent information to ensure that all customers are treated equally.

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**Cumbria Wind Energy Supplementary Planning Document
Consultation Draft July 2006
Part 1
Guidance on Preparing Wind Energy Proposals**

CUMBRIA WIND ENERGY SUPPLEMENTARY PLANNING DOCUMENT

CONSULTATION DRAFT



August 2006

This Supplementary Planning Document has been prepared by jointly by

Cumbria County Council
Allerdale Borough Council
Carlisle City Council
Copeland Borough Council
Eden District Council
Lake District National Park Authority
South Lakeland District Council

It supports 'saved' Local Plan Policies produced by each local authority and the Joint Structure Plan 2006 and the emerging Local Development Frameworks being developed by each of the above local authorities.

Barrow Borough Council will consider adopting the Supplementary Planning Document following the development of the Core Strategy of the Local Development Framework.

The County Council acknowledges inputs on landscape capacity assessment, landscape and visual impact assessment, cumulative effects and design guidance from Coates Associates, Chartered Town Planners and Landscape Architects, Kendal

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EIGHT STEPS TO DEVELOPING A WIND ENERGY PROPOSAL

This guidance has been developed jointly by 7 of the 8 Cumbrian local planning authorities to support the implementation of policies in the Local Development Frameworks and provide consistent guidance for wind energy development across the County.

1 Understanding Cumbria

Past experience in Cumbria has shown landscape and visual impacts as the key issues for any scheme to address. This is set to continue as turbine sizes increase and renewable energy targets are developed for Cumbria.

Find out more in Part 1.

Applies to your scheme? See Part 3.

2 Understanding the Local Community and Stakeholders

Engaging with the local community and other stakeholders at the pre and post application stages can bring many benefits. Positive engagement and good quality information can result in the community understanding a scheme better, and potentially taking ownership of it. This could reduce the time spent considering a planning application and assist in identifying constraints and opportunities for a scheme.

Find out more in Part 1 Chapter 2.

Applies to your scheme? See Part 1 Chapter 2.

3 Understanding the Local Planning Authority

It is important to engage with local planning officers at an early stage. They can provide signposting to relevant policies and background information, contact with other officers and assist in interpreting guidance when developing a scheme. Pre application scoping meetings with officers, held very early on in the process, can help ensure that all relevant issues are considered by the EIA and can help with the iterative design process.

4 Understanding Landscape Capacity

It is important that future decisions are made against a robust assessment of the landscape capacity of Cumbria to accommodate wind energy development. A detailed landscape capacity assessment that specifically relates to wind energy development provides the foundation for future development and decisions. This is based on landscape character, sensitivity and value.

Find out more in Part 2.

Applies this to your scheme? See Part 2.

5 Understanding Cumulative Effects

As wind energy continues to be the most common renewable energy technology put forward in Cumbria by developers, and Regional Spatial Strategy seeks to determine how much wind energy development should be accommodated in Cumbria, the issue of how many schemes and how close together they might be sited becomes more important. Any scheme will need to consider cumulative effects and demonstrate the potential impacts on landscape character, visual amenity, biodiversity, cultural heritage, aircraft and telecommunications and the local economy. Key guidance advice is highlighted in bold in Chapter 4.

Find out more in Part 1 Chapter 4.

Applies to your scheme? See Part 3.

6 Understanding Site Characteristics and Good Design

The landscape capacity assessment provides a broad indication of the scale and appropriateness of wind energy development. This needs to be applied to individual sites following a thorough assessment of the characteristics on and surrounding the site. If an appropriate site is selected, careful design can ensure a scheme relates well to its environs and can assist in mitigating adverse effects on all the issues highlighted in step 7. Key guidance advice is highlighted in bold in Chapter 5.

Find out more in Part 1 Chapter 5.

Applies to your scheme? See Part 1 Chapter 5.

7 Understanding other Effects

Landscape and visual effects are just one set of effects that a wind energy scheme can have. Although they are often the key consideration in Cumbria, decisions will only be made after careful consideration of a range of issues. These include biodiversity, cultural heritage, local amenity, local economy, aircraft and telecommunications and engaging with local communities.

Find out more in Part 1, Chapter 2 and 6.

Applies to your scheme? See Part 1 Chapter 6.

8 Understanding Environmental Impacts

A crucial tool to inform communities, councillors and professionals about potential effects of a wind energy development is the Environmental Statement. This should set out the findings and approach of the Environmental Impact Assessment. It is important to include stakeholders when scoping this report and to provide a clear and thorough analysis of any surveys/mitigation undertaken. It should cover the relevant impacts of those highlighted in Step 7. A landscape and visual impact assessment will form part of this and specific guidance on what is expected from a developer has been produced.

Find out more in Part 1, Chapter 6 and Part 3.

Applies to your scheme? See Part 1, 2 and 3.

PART 1

GUIDANCE ON PREPARING WIND ENERGY PROPOSALS

**CUMBRIA WIND ENERGY SUPPLEMENTARY PLANNING
DOCUMENT**

CONSULTATION DRAFT

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PART 1 GUIDANCE ON PREPARING WIND ENERGY PROPOSALS

1 Why the guidance is needed

- 1.1 The need to tackle climate change is firmly on Cumbria's and the Government's agenda. Key to this is the reduction of carbon dioxide (CO₂) and other green house gas emissions. If steps are not taken to do this, changes to the climate could affect rainfall patterns, raise temperatures, result in more frequent extreme weather events and cause sea level to rise. Action to tackle climate change includes:
- minimising the demand for energy
 - increasing energy efficiency
 - developing cleaner energy sources
- 1.2 Cleaner energy sources can be secured through renewable energy technology and through cleaner fossil and other fuels. Targets are being set to help reduce CO₂ emissions and the need to support renewable energy sources in Cumbria is set out in national and regional planning guidance and reflected in County policy. As wind energy continues to be the most common renewable energy option for developers it is important to have clear up to date policies and advice to guide such development in the future and support the need to tackle climate change.
- 1.3 This Guidance aims to provide advice to support policies in the Local Development Frameworks, and replaces previous supplementary planning guidance for wind energy issued in 1997.
- 1.4 The guidance is divided into three parts.
- Part 1 – guidance on addressing landscape, visual and other environmental and social effects when preparing wind energy proposals.
 - Part 2 – contains the landscape capacity assessment.
 - Part 3 – guidance on landscape and visual impact assessments.
- 1.5 The Guidance focuses mainly on landscape and visual impact issues because these continue to be important in all parts of the County, are often the most controversial aspects of any wind energy proposal, and can be difficult to mitigate. The Guidance covers landscapes in rural and urban areas. Key guidance is highlighted in bold in Chapter 4 and 5 for design and cumulative effects.
- 1.6 When preparing wind energy proposals a range of other environmental, social and economic impacts need to be taken into account, such as noise and damage to wildlife. This is reflected in current policy. Any developer is expected to address such impacts when preparing a scheme. This guidance does not seek to provide detailed advice on all of these issues, but provides some guidance along with signposting to other more detailed guidance in chapter 2 and 6.
- 1.7 This Guidance supports the implementation of a range of policies. It sets out a consistent approach to be applied across the County to assist developers in preparing wind energy developments. It also provides broad locational guidance. It does this primarily by reference to the assessment of the character of Cumbria's landscape (outside the National Parks) contained in the Cumbria Landscape Classification.¹ The landscape character classification of the Lake District National

¹ Cumbria County Council 1995

Park will be carried out during 2007. The landscape capacity assessment in Part 2 may need to be amended as a result of this.

- 1.8 The Guidance applies to schemes of less than 50MW which are normally determined by Local Planning Authorities and schemes above 50MW which are determined by the DTI. This Guidance does not extend to offshore schemes which lie outside the areas of local authority planning control.
- 1.9 Micro-generation wind turbines, which are sited on buildings or within their proximity and provide energy to be used by that building, are likely to become more popular in the coming years. Cumbrian local planning authorities support the principle of micro-generation, and such proposals will be dealt with on their individual merits against relevant policies. The local planning authorities may provide further guidance on this in due course. This guidance does not apply to micro generation turbines but to turbines above 15m in height that provide energy either directly to an individual or a group of buildings or for the sole purpose of producing electricity to support the national grid.

Policy Guidance

National Policy Guidance

- 1.10 The primary source of national guidance is set out in Planning Policy Statement 22: Renewable Energy (PPS22), 2004. The guidance advises that policies in regional spatial strategies and local development documents should only focus on key criteria that will be used to judge applications. More detailed issues may be appropriate to include in supplementary planning documents. This Guidance reflects this and should be read in conjunction with PPS22.

Regional Spatial Strategy

- 1.11 The Regional Spatial Strategy (RSS) for the North West of England contains guidance and targets for renewable energy. Although at a draft stage the RSS is suggesting that by 2015 on shore wind energy developments in Cumbria should provide around 256MW of electricity. Operational and consented schemes currently provide 71 MW of installed capacity.² The RSS target will be subject to public examination in winter 2006/07 and may change. However, the Government's recent Energy Review has confirmed the importance of wind energy in achieving renewable energy targets.

Cumbria and Lake District Joint Structure Plan

- 1.12 The Joint Structure Plan (JSP) is broadly supportive of the increasing use of renewable energy and the need to encourage greater energy efficiency and conservation. Renewable energy projects ranging from large scale commercial developments through to domestic or community projects each have their own locational characteristics and requirements. The Plan recognises that the development of wind energy within the County has been the most emotive given the visual impact and the influence it has on the character of important landscapes and their settings. Renewable energy developments in general are addressed by Policies R44, for developments outside the Lake District National Park and AONBs, and R45 for developments within the National Park and AONBs.
- 1.13 Under Policy R44, renewable energy developments will be favourably considered if a number of requirements are met. These relate to the effect on landscape character, biodiversity and the natural and built heritage; the effect on local

² April 2006.

amenity, economy and highways, aircraft operations and telecommunications; and that the proposals take all practical steps to reduce any adverse impacts. It also requires for the environmental, economic, social and energy benefits to be given significant weight and for measures to show how a proposal will be dealt with once operation ceases.

- 1.14 Under Policy R45, developments within the LDNP or AONBs have to show that their scale, form, design, materials and cumulative impacts can be satisfactorily assimilated into the landscape or built environment and wouldn't harm their appearance. They must also be shown not to impact on the local community, economy, nature conservation or historic interests. In these areas wind schemes requiring more than one turbine or a turbine with a ground to hub height of 25 metres or more is unlikely to be acceptable.
- 1.15 A technical study³ was undertaken in 2003 to identify the potential for further grid connected renewable energy development in Cumbria. This took into account economic, social and environmental factors as well as technical and viability considerations. The study identified broad Areas of Search for renewable energy developments in the County (including wind) and assessed broad capacities for the development of this technology. This Guidance takes into account its findings but moves away from broad Areas of Search, and is instead based on the findings of a detailed landscape capacity assessment. This is contained in Part 2.

Local Plans and Local Development Frameworks.

- 1.16 This Guidance should be read in conjunction with adopted policies of the appropriate local authority and emerging policies supporting the Local Development Frameworks.

Cumbria's Context

Wind Resource

- 1.17 The wind resource in Cumbria is greatest on west facing upland sites and along the coast. Map 1 shows estimated mean wind speeds in metres per second for values over 6.5m/s.⁴ This provides a generalised indication of Cumbria's wind resource. It does not take into account that wind energy developments are now being built in areas of lower wind speeds or the technical, environmental or cultural constraints that may affect land. Neither does it provide a basis for individual development decisions.

Map 1 Cumbria's Wind Energy Resource

The Nature of Schemes and Experience in Cumbria

- 1.18 In recent years a significant increase in the size and proportion of individual wind turbines has prompted a re-evaluation of the criteria under which the landscape and visual impact of schemes is assessed. Trends in turbine design are summarised in Table 1 below. This shows the ranges of heights to the hub/nacelle level, the overall diameter of blades, the overall height to blade tip and the spacing between turbines for typical schemes proposed between 1991 and 2004. Clearly the larger the turbines, the more electricity they can produce. While earlier turbines had an installed capacity of 400-600 kW, a single turbine today has a capacity in the range of 1.3 – 2.5 MW. Based on past trends these figures are expected to continue to increase. For a given output, fewer turbines are needed than in past schemes.

³ Technical paper No 6: Planning and Renewable Energy Development in Cumbria by AXIS, CCC and LDNPA, 2003.

⁴ ETSU Energy Technology Support Unit

However, as the size of turbines and electricity output increase, so does the amount of space needed between each turbine. Although fewer turbines may be needed to produce a given amount of electricity, the amount of land they take up and their visual dominance may not reduce proportionately.

Table 1 Trends in Turbine Design

Dimensions (m)	1991-93	1994-99	2000-04
Height to Hub	25	40-45	60-70
Diameter of Blades	24-33	37-47	62-94
Overall height	37-41.5	58.5-68.5	91-117
Spacing ⁵	72 – 132	111 – 470	186 - 940

- 1.19 Some 32 applications for non-domestic wind turbine developments have been considered by Cumbrian planning authorities since 1991 and a further 3 are under consideration (June 2006). There have also been smaller numbers of applications for domestic scale turbines, usually based on individual properties. The main distribution of non-domestic wind energy developments is shown in Map 2. This shows developments that have planning permission and are operational as well as others that either have not yet been through the planning process or have been refused/dismissed at appeal. Unsurprisingly the map shows a marked clustering of schemes in areas where there is the highest wind resource i.e. along the coast of West Cumbria, along the northern fringes of the Lake District National Park, in the Furness area and in the uplands to the north and east of Kendal.

Map 2 Distribution of Wind Energy Developments in Cumbria - June 2006

- 1.20 Developments can be found in exposed upland and coastal locations, but more recently development opportunities are being found in less exposed inland locations and, for single or twin turbine developments, within the grounds of existing industrial sites. Cumbria has also seen a trend towards the extension of existing schemes and development either directly adjacent to existing sites or in very close proximity.

Landscape Designation Boundary Review

- 1.21 The Countryside Agency is currently working towards designating extensions to the Lake District and Yorkshire Dales National Parks. This work follows agreement in 2005 by the Agency on broad areas adjacent to the Lake District and Yorkshire Dales National Parks, Arnsdale & Silverdale and the North Pennine Areas of Outstanding Natural Beauty that meet the statutory criteria for designation. This decision was informed by a report by Alison Farmer Associates⁶. It will be some years before the designation process is complete and any such extensions designated. It is not considered appropriate for this guidance to pre-empt this process, and the landscape capacity assessment has been carried out to reflect existing designation boundaries only.
- 1.22 It is acknowledged that designation of new land areas as National Park or Area of Outstanding Natural Beauty would impact on the guidance and the landscape capacity assessment. If any further areas are so designated the impact of any

⁵ Taken from PPS 22 companion guide – spacing 3-10 times the blade diameter.

⁶ Recommended areas of search for land worthy of national landscape designation in the North West Region, Alison Farmer Associates 2005.

proposals coming forward in these areas would have a greater significance due to the national recognition of their value for natural beauty and also in the case of National Parks open air recreation opportunities, especially if the designated qualities are sensitive to wind energy development. The relevant planning policies will apply to any new or extensions to the nationally recognised landscape designations. In accordance with current Structure Plan policy R45, it is unlikely that development above a single turbine with a hub height of up to 25m will be acceptable in such areas.

- 1.23 Developers' attention is drawn to the fact that until the current boundary review being undertaken by the Countryside Agency (Natural England with effect from 2 October 2006) is completed, careful attention should be paid to the impact of any wind energy proposals coming forward in the areas agreed by the Countryside Agency as worthy of designation in terms of natural beauty and also for those areas worthy of inclusion in a national park in terms of enjoyment of open air recreation opportunities.
- 1.24 Developers should also bear in mind the decision in the Whinash windfarm enquiry which confirmed that the impact of the proposed development on the landscape and its amenity is a major consideration, irrespective of whether a particular area of land is eventually included in a designation.

2 Guidelines for Community Support

Engaging with communities

- 2.1 The benefits of renewable energy through the provision of wind turbines and the associated reduction in CO₂ emissions are shared by everyone in England. However, it is local communities that are directly affected by them.
- 2.2 Wind energy developments can have a range of effects on nearby communities, both actual and perceived. Landscape and visual effects, although often subjective, are the main issues that have become universal across England when considering community impacts. However, other issues including noise, shadow flicker, reduction in house value, loss of amenity and impacts on tourism all cause concern to local communities.
- 2.3 It is important that developers engage with local communities early on, and throughout, the development process. Gaining an insight into local concerns early on in the process can help with planning the overall scheme and mitigating against any negative impacts.
- 2.4 Developers are expected to carry out positive engagement with community stakeholders early on in the process, both before a planning application is prepared and after it has been submitted to the local council for consideration. However, it is also helpful to continue liaison with the local community during the construction and operational stages too.
- 2.5 Consideration should be given to the ways in which engagement is carried out. Often communities feel they have no ownership of the development of a scheme if they are presented with the scheme at an exhibition or meeting. Recent studies have also suggested that lack of information or awareness on renewable energy can result in people feeling unable to give positive support⁷.
- 2.6 Community stakeholders could be involved in identifying constraints and opportunities such as landscape character, biodiversity enhancement, links to local

⁷ Community Benefits from Wind Power, Centre for Sustainable Development et al, 2005.

schools and colleges, and possibly even community benefits that could result from a scheme. Information and examples showing how community concerns have been successfully dealt with elsewhere should be used. A package of exhibitions, newsletters, briefing packs and public meetings could be adopted. Community Liaison Groups could be set up with a representative sample of local stakeholders to discuss issues at the pre and post application stages. A dedicated person could be identified to carry out community liaison.

2.7 Organisations/people to include in pre and post application engagement could include:

- landowners
- local residents, businesses, schools, residents groups
- local and Parish councils
- other organisations that may be affected, eg MoD
- local media (as they are often the mechanism that the local community receive information from)
- local action group (particularly in areas subject to previous wind energy interest/applications)
- the local Friends of the Earth groups could also assist in disseminating information to the local community.

2.8 More detailed advice can be found in the following resources:

- Summary of recent research on public attitudes to wind development, Section 9, Wind Power in the UK, SDC 2005.
- Guidance on running consultation events can be found at the Environment Council <http://www.the-environment-council.org.uk/> or other similar organisations.
- Guidance on running Planning for Real or other community events can be found at the Community Development Foundation <http://www.cdf.org.uk/>

Benefits for communities

2.9 When developing a wind energy scheme, developers when engaging with the community should explore the potential for community benefits. Although this is not a material planning consideration, developers in Cumbria are encouraged to work more closely with local communities to ensure wind energy schemes enhance, and don't harm community interests. Work has recently been carried out by the Centre for Sustainable Development on this issue on behalf of the DTI.

2.10 Elsewhere in Europe, particularly Germany, Denmark and Spain, the provision of significant local benefits is built into the heart of wind energy developments. This may include community compensation, local taxes, creation of jobs and opportunities for local ownership. In the UK several developers have worked with the local community to provide them with voluntary contributions, often in the form of a community fund. Such contributions have been in the region of £700 - 1000 per MW installed per year of operation. The exact model followed and how the fund could be used for has varied across the UK. Developers could consider supporting the local community when engaging with community stakeholders and developing a proposal, including opportunities for local cooperatives to purchase turbines as part of the development. This concept was pioneered in Cumbria and experience should be taken from the Baywind scheme and its investment model. In addition financial contributions could support a range of other benefits, such as:

- site conservation and habitat creation
 - improved footpath access
 - job creation for site management/consideration initiatives
 - educational visits to local schools/colleges
 - grant funding for energy efficiency schemes
- 2.11 Although the current planning system does not support such community benefits as material planning considerations and the provision of community benefits is still voluntary it may help obtain community acceptance of a scheme, and reduce delays in the planning process due to community objections. In England community funds can be secured through a non planning legal agreement with a community group/trust. However, land management for biodiversity is a material planning consideration and could be agreed through a S106 agreement.
- 2.12 More detailed advice can be found in the following resources:
- Community benefits from wind power. A study of UK practice and comparison with leading European Countries, DTI 2005.
 - Baywind Energy Cooperative www.baywind.org.uk.

3 Cumbria's Landscape Character and Capacity

Aims of the Landscape Capacity Assessment

- 3.1 A landscape capacity assessment has been carried out for each of the main landscape types in Cumbria. This considered the specific landscape characteristics that are sensitive to wind energy development along with their value. This enabled the potential capacity for each character type to be determined. The landscape capacity assessment is set out in Part 2, and it:
- indicates the relative capacity of the County's landscapes to accommodate wind energy development, and
 - defines the landscape criteria used to judge capacity.
- 3.2 This guidance aims to help developers when carrying out initial investigations to determine the possible capacity of a site to accommodate wind energy development. It intends to take a proactive approach to development, guiding it to the most appropriate locations and ensuring that the key characteristics and quality of Cumbria's landscapes are safeguarded.
- 3.3 However, it only provides an indication of the relative capacity of different landscapes. It should not be used in a definitive sense, ie to mean that a particular proposal is acceptable on any given site. Every site is unique, and any proposal involving wind turbines must be accompanied by an Environmental Impact Assessment that includes a detailed landscape and visual impact assessment following to the guidance set out in Part 3. Proposals will also need to address cumulative and other environmental effects which are dealt with in chapter 4 and 6.

Landscape Character

- 3.4 The capacity guidance builds upon earlier landscape character assessment work undertaken by the County Council. The Cumbria Landscape Classification⁸ (CLC) identified 13 main landscape types ranging from Estuary and Marsh to Fells and

⁸ Cumbria Landscape Classification, Cumbria County Council 1995

Scarps. Whilst townscape character was not specifically assessed urban fringe sub-types were included and the main urban areas differentiated. For the purposes of this guidance it is necessary to consider Urban Areas and Fringes as a separate landscape type because of their unique urban characteristics and key sensitivities in relation to wind energy development. Consequently the landscape capacity assessment considered 14 landscape types. These are set out in Map 3.

- 3.5 To date landscape character assessment and classification has not been undertaken in the Lake District National Park. This will take place during 2007 and the landscape capacity assessment in Part 2 may need to be amended as a result of this. As the Structure Plan does not cover the Yorkshire Dales National Park, the area of Cumbria within the Yorkshire Dales National Park is not covered by this guidance.

Map 3 Cumbria's Landscape Character Classification

Summary of methodology

- 3.6 The methodology for the Landscape Capacity Assessment is set out in detail in Part 2. It adopts a 'character approach' to managing the potential change brought about by wind energy development in a way that respects or enhances landscape character. It builds on descriptions established in the CLC and has been informed by the nature of schemes coming forward in Cumbria, current best practice and guidance on landscape sensitivity and capacity. It highlights the characteristics of each landscape type that are sensitive to turbine development, considers any special values that might be affected and determines the landscape capacity.

Sensitivity and Value

- 3.7 Criteria for gauging the sensitivity of each landscape type and the relevant values attached to it were established. These are contained in Part 2 and should provide a tool for assessing specific proposals for wind energy development. The appropriate scale of wind turbine development has also been considered, primarily in relation to landscape scale and enclosure but also in relation to the size of settlements wherever these form a key characteristic of the landscape.
- 3.8 When considering sensitivity the following key characteristics were used:
- Scale and Enclosure
 - Complexity and Order
 - Manmade Influence
 - Remoteness and Tranquillity
 - Settlement and Key Views
 - Visual Interruption
 - Skyline
 - Connections with Adjacent Landscapes
- 3.9 Appendix 1 of Part 2 provides further detail on these key characteristics and how they relate to landscape and visual sensitivity.
- 3.10 Once the relative sensitivity has been assessed, the value of the landscape types was considered. The key indicators of value are:
- Landscape designation
 - Rarity
 - Cultural Associations
 - Designated elements or features
 - Conservation Interests
- 3.11 It must be clearly recognised that a highly valued landscape, whether nationally designated or not, does not automatically, and by definition, have high sensitivity. It is entirely possible for a valued landscape to be relatively insensitive to wind

energy development because of both the characteristics of the landscape itself and the nature of the development. The vital consideration is whether the objectives of the designation and the qualities for which the area has been designated are likely to be compromised by the change brought about by wind energy development⁹.

Scale of development

3.12 The potential capacity has been assessed in relation to six scales of development¹⁰. These are:


- Single or twin turbines
- Small group (linear or cluster arrangement of 3-5 turbines)
- Large group (linear or cluster arrangement of 6-9 turbines)
- Small wind farm (10-15 turbines)
- Medium wind farm (16-25 turbines)
- Large wind farm (25+ turbines)

3.13 This range reflects both the nature of schemes currently coming forward and an appreciation of the scale of the receiving landscape in Cumbria. Although small and large groups are referred to above they are considered to be wind farms for the purpose of interpreting PPS22 and its Companion Guide, and regional and local policy documents.

3.14 Turbine heights of 95 – 120m (to blade tip) have been assumed which are typical of the current generation of turbines. However this assumption should not preclude the possibility of using smaller turbines in order to ensure that they are in scale and proportion with the effected landscape. Turbines in the larger range might not be appropriate due to their scale.

Summary of Potential Capacity for Cumbria

3.15 The overall capacity, determined by considering the sensitivity and value attached to each landscape type, is expressed on a five point scale on the following basis:

High	Low landscape sensitivity and landscape or key characteristics of low value. Indicates opportunity to accommodate wind energy development at an appropriate scale without significant landscape impact.
Moderate/High	
Moderate	
Moderate/Low	
Low	High landscape sensitivity and landscape or key characteristics of high value likely to be compromised. Indicates that any type of wind energy development would be likely to have a significant landscape impact and would not generally be appropriate.

3.16 A summary of the capacity of each of the County's landscape types to accommodate wind energy development is provided in Table 2 and illustrated in Map 4. An indication of the appropriate scale of development is also provided in

⁹ Planning Policy Statement 7: Sustainable Development in Rural Areas, OPDM 2004
PPS22: Renewable Energy

¹⁰ It should be noted that the guidance does not address small domestic installations ie less than 15m in height

the table.

- 3.17 The summary information in Table 2 and Map 4 should not be used in isolation. They must be read in conjunction with the sensitivity and value assessment sheets and capacity statements in Part 2.

Map 4 Cumbria's Landscape Capacity

Table 2 Summary of Cumbria's Landscape Capacity Findings

Landscape Type		Landscape Capacity	Appropriate Scale of Development
1:	Estuary and Marsh	Low	All scales generally inappropriate
2:	Coastal Margins	Low/moderate	Up to a small group, exceptionally a large group in most extensive parts and where unconstrained by settlement
3:	Coastal Limestone	Low	All scales generally inappropriate
4:	Coastal Sandstone	Low/moderate	Up to a small group beyond St Bees Head Heritage Coast
5:	Lowland	Moderate	Up to a small group, exceptionally a large group
6:	Intermediate Land	Moderate	Up to a small group, exceptionally a large group
7:	Drumlins	Low/moderate	Single turbines or a small group
8:	Main valleys	Low/moderate	Up to a small group, exceptionally a large group, in broader valleys
9:	Intermediate Moorland and Plateau	Moderate/high	Up to a large group, exceptionally up to a medium wind farm on a broad moorland plateau
10:	Sandstone Ridge	Moderate	Up to a small group, exceptionally a large group
11:	Upland fringes	Low/moderate	Up to a small group, exceptionally a large group on broader topographic sweeps
12:	Higher Limestone	Low/moderate	Up to a small group, exceptionally a large group, in blander parts
13:	Fells and Scarps	Low	All scales generally inappropriate
14:	Urban Areas and Fringes	Moderate	Up to a small group, exceptionally a large group in coastal contexts

- 3.18 Table 2 refers only to the potential of the landscape to accommodate a single wind energy development of a certain scale. It is particularly important to read the advice on cumulative development in Chapter 4. Developers need to consider whether there are any cumulative effects and if so, to assess these in accordance with the guidance set out in Part 3 and determine if the proposal is acceptable. The scale of development suggests that in exceptional circumstances the landscape characteristics of an area might support a larger development. Any proposal would need to demonstrate this through its Landscape and Visual Impact Assessment.
- 3.19 Due to the height of current turbines and their wide ranging visual influence any proposal will normally affect the landscape type where it is located and also neighbouring types. Due to the interwoven nature of Cumbria's landscape, the capacity of neighbouring landscape types (within 12 km of a site) should also be

considered by developers, and will be taken into account by the Local Planning Authorities in assessing specific proposals.

- 3.20 In Cumbria the Lake District National Park, the Arnside and Silverdale, North Pennines and Solway Coast Areas of Outstanding Natural Beauty account for the County's national landscape designations. The Yorkshire Dales National Park and Forest of Bowland AONB, situated in North Yorkshire and Lancashire, are national landscape designations that might also be affected by proposals in Cumbria.
- 3.21 In Cumbria, within the boundary of the National Park and AONBs, as set out in Policy R45 of the Cumbria and Lake District Joint Structure Plan 2001 – 2016, it is likely that wind energy development will be restricted to single turbines of less than 25m to hub height. Anything larger is likely to be unacceptable in landscape character terms. However, proposals of a larger size may be considered, where appropriate, against other Structure Plan policies (for example Policy ST4) and must demonstrate that there would be no harm to the intrinsic character of the designation. This is defined in detail in the Landscape Character Assessments published for each of the designations. Although the assessment indicates that there may be some low/moderate and moderate capacity in areas that form part of the national landscape designations, when detailed landscape and visual impact assessments are carried out for such areas their landscape characteristics, relationship and proximity to neighbouring low capacity areas needs to be taken into account. It is unlikely that wind energy development of a scale above that set out in Policy R45 will be acceptable in such areas.
- 3.22 The visual settings of the national landscape designations also need to be taken into account. The potential harm from any proposal coming forward is likely to have a greater significance to both designated areas and their settings. Any proposal must pay particular attention to the reason the landscape was designated and the qualities that they are now valued for – the settings to such areas are often highly valued by local communities and visitors alike. The scale, form, design and cumulative impacts need to be assimilated into the landscape to accord with Policy R45 of the Structure Plan. If it is considered that harm would be caused to the settings it is unlikely that a scheme will be acceptable in accordance with Policy E34 of the Structure Plan. This must be demonstrated through the landscape and visual impact assessment on a site by site basis.
- 3.23 As a landscape capacity assessment has not yet been carried out for the LDNP, the information contained in Table 3 provides an indicative capacity where the same landscape type is identified.

4 Guidelines for Cumulative Effects

The importance of cumulative effects

- 4.1 Cumulative effect is a complex issue which will be increasingly relevant to the assessment of wind energy schemes. As there are already a number of wind energy developments across Cumbria, it is likely that increasing significance will be attached to cumulative effects in the future.
- 4.2 Although the geographic distribution of schemes in Cumbria is becoming more widespread (see Map 2), the focus of more and larger developments towards areas that have the best wind resource and the fewest technical constraints continues particularly across the Solway Basin/ West Cumbria and in Furness. Recent trends suggest that pressure will increase in the Lune and Eden Valleys and around the Lake District National Park boundary. Since the previous guidance the combined effects of coastal onshore schemes with offshore schemes has also become a consideration in coastal areas.

- 4.3 Cumulative impacts may present an eventual limit to the extent of wind energy development in particular areas. PPS 22 firmly states the need to take account of cumulative impacts and it notes that: “*Such impacts should be assessed at the planning application stage and authorities should not set arbitrary limits in local development documents on the number of turbines that will be acceptable in particular locations*”. However, unacceptable cumulative effect may on its own provide sufficient justification to oppose a scheme which was otherwise acceptable.
- 4.4 The consideration of cumulative effects can only be undertaken on a case by case basis in the light of existing baseline conditions, accurate descriptions and visualisations of effects on key receptors, and relationships with other developments. These are impossible to predict at a broader level. This Guidance does not stipulate separation distances or the number of schemes that might be accommodated in the County. However, when considering cumulative capacity the Countryside Agency suggests an indicative separation distance in the order of 12km and advises that related infrastructure, such as grid connection, on countryside character must also be considered¹¹. Experience in Cumbria suggests that where small group schemes are considered appropriate this distance might be reduced to a minimum of 6km. At this distance schemes could remain as separate, single cohesive entities with a buffer of open space around them and problems of over dominance and compatibility might generally be avoided. However, the appropriate separation distance is likely to increase with both the size of development and scale of the landscape.

What are Cumulative Effects?

- 4.5 Cumulative effect may occur as a result of more than one scheme being constructed and is the combined effect of all the developments, taken together. This may be in terms of their effect on landscape and visual amenity but also on bird populations and other wildlife, the local economy, tourism or any other matter. This chapter provides specific advice on landscape and visual impact only. Other issues are dealt with in Chapter 6.
- 4.6 Scottish Natural Heritage has developed considerable experience in dealing with the cumulative effects of wind energy development and has published guidance dealing with this issue¹². An earlier version of this informed the Companion Guide to PPS22¹³ and it is considered appropriate to draw on definitions from both of these sources. The following summary should influence any cumulative impact assessment carried out by developers.
- 4.7 Cumulative landscape effects concern the degree to which wind energy development change the:
- Physical Fabric of the landscape when two or more schemes affect the extent, condition or integrity of existing landscape components such as woodland, heather moorland or hedgerows (where gains secured through enhancement measures or losses incurred by removal or physical damage).
 - Landscape Character through the introduction of schemes as a new recurring element or feature in the landscape.
- 4.8 The degree of landscape change will depend on the net loss or gain to the physical fabric of the landscape and whether the wind energy development read as an isolated feature, a key characteristic in the landscape or a dominant characteristic by which the landscape may be defined ie they create a different character type in a similar way to large scale afforestation.

¹¹ Annex 3. Renewable Energy Developments: The Role of the Countryside Agency. AP 99/50

¹² Scottish Natural Heritage Guidance: Cumulative Effect of Windfarms, Version 2 revised 13.04.05

¹³ Planning for Renewable Energy: A Companion Guide to PPS22, ODPM 2004

- 4.9 Cumulative effects on visual amenity are concerned with the degree to which wind energy developments become a feature in particular views and the effect this has on the people experiencing those views. They can occur as:
- Combined visibility where the observer is able to see two or more developments from the same viewpoint either in combination (simultaneous visibility) where several schemes are within the observer's arc of vision at the same time or in succession (repetitive visibility) where the observer has to turn to see the various schemes.
 - Sequential visibility where the observer has to move to another viewpoint to see different developments say on a journey along a major road, long distance trail or cycle route. This type of cumulative effect may impact across a broad tract of landscape and not just within a particular locale.
- 4.10 The degree of visual change will depend on changes to the composition of the view brought about by the introduction of multiple wind energy developments. This will not only reflect the density, proximity and proportion of view occupied by developments but also their apparent prominence as determined by a number of modifying factors. These include the relative contrast or integration of each development reflecting the sensitivity of the affected landscape character and the siting and design of each scheme. Other factors relate to compositional structure for example skylining, relative elevation, framing and partial visibility. The dynamics of the view are also relevant, that is the physical nature, duration and frequency of combined and sequential views eg oblique, filtered or direct; glimpses or more prolonged views; frequent with short time lapses between views or occasionally with long time lapses between views depending on either the speed of travel or the distance between viewpoints.
- 4.11 Multiple wind energy developments can appear as separate individual entities in the landscape or where a new proposal either extends or is adjacent to an operational or approved scheme, the cumulative effect will principally be that of enlargement of the original scheme (ie where the distance between developments is less than the length of either scheme). Even if physically separated developments may be close enough (within approx. 6km) to appear as a single entity from some viewpoints. In both instances the combined visual effect is likely to be greater than the original scheme or for each development alone. Where developments appear together and overlap differences in design such as size, turbine height, layout and blade rotation speeds may also create a jarring effect and cumulative effects may be judged unacceptable on the basis of incompatibility in design (for further design guidance see Chapter 5).
- 4.12 Cumulative issues may also arise from the combined effects of turbines and other vertical structures such as pylons, telecom masts and transmitters in terms of the degree to which they dominate the landscape. Conflicts of form and function between verticals may also give rise to a compatibility issue. (see Table 3 Cumulative Sensitivity Criteria: Skyline)
- 4.13 As with any other type of environmental effect the significance of cumulative effects will be influenced by the sensitivity of the receptor. Significance is likely to be heightened if the landscape or visual receptor is sensitive by virtue of scarcity, special importance (eg designated landscapes, recognised viewpoints, popular trails, settings and 'gateways'), underlying trends (eg recovery from another type of development like opencast mining), geographical extent and the number of people affected. The nature of change will not necessarily be adverse and will depend on siting and design, whether developments complement and consistently relate to key characteristics, and varying landscape perceptions or expectations of viewers.

Cumbria's experience

- 4.14 Since the previous guidance in 1997 the number of sites with permission has increased from 8 to 21 outside the Lake District National Park, with 2 single small scale turbines located within the Lake District National Park. The prospect of cumulative effects with offshore schemes emerged with the Robin Rigg proposal in the Solway Firth in 2002 and continues with current licences being given to several locations around the Morecambe Bay, Walney and Duddon Estuary areas. The last three years has seen a marked increase in the number of applications and expressions of interest for onshore sites for wind energy development. Map 2 illustrates the geographical distribution of sites. In the past there has been a marked clustering of schemes in areas with the highest wind resource, however this may change in the future as technology enables schemes to be built in areas with lower wind speeds.

Solway Basin and West Cumbria

- 4.15 Across the Solway Basin and West Cumbria coastal belt considerable interest has focused on a sequence of landscape types from coastal margins and urban fringe through low rolling farmland to moorland and upland fringes. Cumulative issues impact on landscape and seascape character across a substantial area between Carlisle and Whitehaven, some 50km long. A total of nine onshore schemes (54 turbines), from twin turbine to small wind farm size, have already been built or have planning approval. In addition there are seascape character impacts arising from these and the approval for 60 turbines, 12km offshore, at Robin Rigg. Several more onshore schemes are currently under consideration with scoping opinions being sought from prospective developers. There is a real prospect that developments could extend further south as far as the Duddon Estuary. In a recent appeal decision the inspector recognised the perception that the Solway, on and off shore, is playing host to a significant number of wind turbines and “approaching the stage where the character across a number of types is shifting towards a distinct change”¹⁴. Some argue for a broader policy look at the environmental capacity of this area bounded by highly sensitive landscapes of international and national value, such as Hadrian's Wall, the Solway Coast AONB and Lake District National Park.
- 4.16 Multiple developments across this area also raise serious issues of cumulative effects on visual amenity in respect of residents and tourists. Lower lying parts are heavily populated with a dense pattern of settlements and there is a need to ensure that Schemes do not become too dominating or overbearing. The setting of Workington, already substantially surrounded by turbines, is an obvious example of this. However the sense of scale and character of smaller settlements and amenity of residents within them are also vulnerable. The experience of tourists in terms of both sequential views from routes such as Cumbria Coastal Way as well as static viewpoints from resorts, holiday parks and viewpoints need consideration. Prospects from popular open or elevated routes and viewpoints are particularly sensitive such as Hadrian's Wall Trail and outer fell tops within the Lake District National Park.
- 4.17 Some existing developments date back 10 years to first generation schemes such as Siddick. There is an increasing tendency for new and adjacent schemes to concentrate along the narrow coastal strip or in proximity to the 33kv power lines found in this area. This raises the issue of compatibility between smaller, older turbines and newer, higher, wider spaced turbines with slower rotation speeds and/or pylons.
- 4.18 Issues that will need careful consideration by developers include:

¹⁴ Appeal Decision APP/G0908/A/05/1172183: Land at High Pow Farm, Bolton New Houses, Wigton

- capacity for character change
- whether developments are overbearing/dominant
- impacts on tourist experience
- impacts on residents
- compatibility of small and larger newer turbines
- seascape character impacts
- settings of designated landscapes

Furness

- 4.19 In Furness the existing onshore pattern is a more clustered one focused on the open coastal urban fringe and moorland landscape types of this exposed peninsula, covering an area approximately 25km across. A total of five onshore schemes (32 turbines), of up to small wind farm size, have been built. In addition a 30 turbine scheme is operational 7km offshore from Barrow. Four more offshore schemes are under consideration 7km and 14.5km offshore, and interest in onshore schemes is set to continue. In terms of cumulative landscape effects one of the main issues is skyline clutter and for seascape effects there are concerns regarding the scale of the developments proposed and the capacity of the seascape to accommodate this. The coastal horizon naturally draws the eye in any peninsula landscape, onshore schemes on the coast together with large offshore schemes could result in a substantial portion of the horizon being developed. Any further schemes on the open moorland are likely to compromise the positive functional and sculptural image of the existing developments which are sufficiently spaced to form distinctive focal points in this open landscape. Picturesque estuarine compositions with fells in the Lake District National Park are vulnerable as well as the sense of remoteness and wildness of dune belts and moorland.
- 4.20 Multiple developments here also raise the issue of cumulative effects on the visual amenity of residents and tourists. In an area striving to develop its tourism potential cumulative effects on views from popular coastal routes and attractions as well as the southern gateway into the Lake District National Park demand serious consideration.
- 4.21 Issues that need careful consideration include:
- impacts on tourist experience
 - skyline clutter
 - maintaining sense of remoteness
 - maintaining spacing between existing on/offshore schemes
 - seascape character impacts
 - settings of designated landscapes

Lune Valley

- 4.22 Interest has also focused on the South Cumbria Low Fells with a string of applications west of the Lune Valley, and increasingly west of the Eden Valley. Whilst there have been four applications for schemes on the fringes of the Lune Valley only one has been successful, that being a scheme of 5 turbines at Lambrigg Fell. Interest in some of these sites has recently been revived and new sites are also coming forward. This area of potential cumulative effects extends across the county border into Lancashire, stretching approximately 40km in total between Whinash and the existing development on Caton Moor, near Lancaster. Again skyline clutter is a key cumulative issue in the open receiving fells and moorland landscapes. Valley rims are especially sensitive in relation to scenic and relatively tight valley landscapes of the Lune and the setting of villages and towns within it such as Tebay, Sedbergh, Kirkby

Lonsdale. Consideration of cumulative effects on the sense of remoteness and unspoilt qualities of the receiving uplands and the setting of adjacent national parks and prospects from them is also essential.

4.23 Issues to be considered include:

- skyline clutter
- sensitivity of valley rim
- sense of remoteness
- settings of designated landscapes

Greystoke and Inglewood

4.24 There has been growing interest recently in the area of limestone foothills and intermediate farmland fringing the north-eastern fells of the Lake District National Park. Two schemes at Lamonby and Skelton are awaiting decisions. Apart from the busy M6 and A66 corridors, along the western and southern boundaries, this area is relatively unspoilt with a peaceful backwater quality. Multiple developments are likely to compromise these rural qualities. In the Inglewood area there may be some opportunity to complement repetitive patterns of geometric fields and shelterbelts and correspond to existing occasional verticals, such as the Skelton masts, provided an adequate spatial buffer is maintained. However multiple developments across the more open and elevated foothills around Greystoke raise issues of visual clutter. There are also cumulative issues in respect of tourism and recreation. Sequential views from the A66 north eastern 'gateway' into the northern Lake District National Park and the coast to coast national cycle route (NCR 71) demand consideration.

4.25 Issues to be considered include:

- relationship to repetitive patterns
- visual clutter
- impacts on recreation and tourism
- settings of designated landscapes

Other areas within Cumbria

4.26 Although the above areas reflect the current experience of wind energy development in Cumbria it does not refer to all land within Cumbria. However, if in the future development extends beyond the above areas cumulative effects will need to be addressed in relation to both landscape and visual effects and other environmental, social and economic effects. The issues highlighted above may be relevant to these other areas, and other issues may become important.

Carrying out a cumulative effects assessment

4.27 The assessment of the cumulative effects of wind energy developments should be an integral part of the design process. Part 3 contains advice on the scope and content of such an assessment. Appendix 1 therein provides guidance on the relationship between distance and the likely appearance of third generation wind energy developments (turbine blade tip height of 95-120m). This can be summarised as follows:

- Dominant as a key focus in close range views up to 2.4 km
- Prominent as a key element in close to mid range views of the landscape, between 2.4-6km.

- Conspicuous as a noticeable feature in mid to long range views of the wider landscape with blade movement perceptible, between 6-12km
 - Apparent as a visible feature in long range views of a wide landscape, turbines being perceived as a group rather than individual entities and blade movement only perceptible in clear weather conditions, between 12-18km
 - Inconspicuous as a minor feature in distant views of a broad landscape only seen in very clear visibility, between 18-30km
- 4.28 This assumes an open landscape, in practice visual interruption by a variety of screening features can limit visibility and apparent prominence can be affected by a variety of modifying factors, as discussed above.
- 4.29 These distance bands help to envisage how effects of multiple schemes might accumulate in areas where their individual Zones of Visual Influence (ZVI) overlap and to determine the radius of cumulative study areas. In theory a 60km radius would enable the consideration of a receptor midway between proposal A and proposal B at 30km from each. However at this distance both schemes are likely to appear inconspicuous and cumulative effects are likely to be insignificant unless the receptor is exceptionally important or there are also effects from several other schemes.
- 4.30 Cumulative assessment will normally be required where there is another development, proposed, approved or operational, within 30km. Proposed developments should be taken to mean those live within the planning system for which an application has been formally registered or an appeal has been lodged. Developers should also take account of prospective schemes at the scoping stage of a project and which may have become live by the time an application is submitted. The local planning authority or BWEA should be able to provide advice on this. Prospective schemes include: those schemes refused but where an appeal may be expected; schemes where a formal scoping opinion has been provided; schemes in the public domain as a result of developer publicity or a formal request for a scoping opinion; and sites with an existing or consented anemometer.
- 4.31 The 30km minimum radius follows SNH guidance¹⁵. In some circumstances the Planning Authority may request an extension of the assessment area or inclusion of additional developments in order to address specific issues. For instance where an exceptionally important landscape or visual receptor is located midway between proposals but 18km from each (requiring an extension to 36km) or issue extend beyond a particular locale and is one of where wind energy developments are sequentially seen from key routes across a broader geographical area. Developers are advised to produce a 60km base plan showing the footprint of any constructed, consented, proposed or prospective development the Planning Authority deems relevant. This base plan should be produced at the scoping stage and taken to early meetings with the Planning Authority so that relevant issues can be identified.

[possible illustration view from Lakes eg Burnbank Fell, Lowes Water or Binsey re Solway/West Cumbria area]

G1 Submission of a cumulative landscape and visual impact assessment will normally be necessary where new development is being proposed:

¹⁵ Scottish Natural Heritage Guidance: Cumulative Effect of Windfarms, April 2005

- Within an area already containing one or more operational or approved developments
- As an extension to an operational or approved development
- At the same time as one or more other developments are being proposed within an area

The assessment area should be a minimum radius of 30km from the centre point of the new proposal and accompanied by a Cumulative ZVI(s) covering all developments within that radius.

- 4.32 In the case of enlargements, extensions and siting new development adjacent an existing scheme, the landscape consequences are essentially those for a single site. In assessing the new proposal therefore the overall landscape and visual impact of the original site and the new proposal need to be considered as a whole against a baseline of the pre-development landscape¹⁶. The ability of the landscape to accommodate a larger composite feature and any extended visual influence need to be taken into account. It will usually be necessary to provide comparative ZVIs as part of this assessment which should enable the comparison of both the original and the enlarged development.

G2 Where proposals are extensions or adjacent, the assessment of cumulative impact should include a consideration of both developments as a single entity

Judging the acceptability of cumulative effects

- 4.33 As set out above this guidance does not seek to set thresholds that determine when cumulative impacts are unacceptable. A judgement needs to be made for each individual scheme. When judging acceptability of a new proposal it is crucial to determine the “threshold” beyond which wind energy developments in a particular area become unacceptable in landscape and visual terms. In other words, although the effect of a single scheme is limited, when added to the effect of other schemes in the area, operational, approved or proposed, it creates unacceptable cumulative impacts¹⁷.
- 4.34 In order to meet government targets for renewable energy multiple schemes may have to be accepted as a defining characteristic in some of Cumbria’s landscapes. Such change may be acceptable in landscape types with a moderate or above landscape capacity as defined in Part 2 and summarised in Chapter 2: Table 2. However a consistent and coherent approach to the siting, design, spacing and scale of schemes in relation to the receiving landscape type will be required to ensure that they make a positive contribution to the overall image. A succession of schemes with different designs and relationships to the landscape can appear confusing as well as raise questions about the visual rationale and suitability of each development.
- 4.35 In assessing the cumulative effect on the landscape, it is important to bear in mind that landscape character does not generally occur in single homogeneous blocks. The characteristics of neighbouring landscape types must also be taken into account. Effects on the characteristics of neighbouring landscape types must also be taken into account. The Landscape Capacity Assessment in Part 2 identifies limited capacity for cumulative development within the visual setting of international and national landscape designations. Contribution of the setting to qualities recognised under the designations, wider landscape compositions and key views are particular sensitivities in the relevant capacity statements. These demand

¹⁶ Landscape Institute and Institute for Environmental Management and Assessment ‘Guidelines for Landscape and Visual Impact Assessment 2nd Edition 2002

¹⁷ Scottish Natural Heritage Guidance: Cumulative Effect of Windfarms, April 2005

rigorous consideration in the context of cumulative assessments.

G3 The limiting threshold for wind energy developments should be based on a well-considered judgement informed by analysis of:

- Degree or magnitude of change (see definitions above)
- Nature of the potential change reflecting the inherent sensitivity of the effected landscape(s) character and visual context (see Table 3 Cumulative Sensitivity Criteria)
- Value attached to the effected landscape(s) or specific elements in it and key views (see Chapter 3 and Part 2 Capacity Statements)
- Landscape change objectives for the effected landscape(s) (see Landscape Strategy¹⁸ visions and relevant management plans for designated landscapes)

¹⁸ Cumbria County Council 'Cumbria Landscape Strategy' 1998

Table 3: Cumulative Sensitivity Criteria

Key Characteristic	Attributes indicating lower sensitivity to cumulative wind energy development	↔	Attributes indicating higher sensitivity to cumulative wind energy development
Scale and Enclosure	Frequent broad scale elements to which multiple schemes might relate or complement eg ridges, woodland, settlements Wide views with room to accommodate multiple schemes	↔	Widespread presence of human scale indicators and older developments with smaller turbines where multiple large modern schemes are likely to exacerbate dominance and distort sense of distance Narrow views vulnerable to over crowding by multiple schemes
Complexity and Order	Structured landscapes with simple and repetitive patterns (eg geometric field pattern defined by strong framework of hedges or interlocking ridges in consistent alignment) which offer scope for multiple schemes to appear as just another recurring element in an ordered landscape	↔	Unstructured landscapes with complex and irregular patterns (eg fragmented mixed land uses on the urban fringe with weak run down boundaries or random undulating landform strewn with spoil heaps) where multiple schemes likely to compound visual confusion Simple featureless landscapes eg moorland where a solitary WED may illuminate vastness and emptiness whilst multiple schemes likely to dilute character
Manmade Influence	Frequent occurrence of large modern built or engineered elements and managed land use to which multiple schemes can relate and share a working or industrial image	↔	Wild, traditional or designed landscapes in which modern manmade aspects are absent or rare where multiple schemes likely to appear unrelated and incongruous
Remoteness and Tranquillity	Widespread movement and noise (eg network of transport routes or industrial activity)	↔	Strong sense of peace, space remoteness and solitude likely to be compromised by multiple schemes
Settlement and Key Views	Inaccessible lowly populated areas Nucleated or introspective settlements Large industrialised edges unlikely to be intimidated by multiple schemes Unremarkable views	↔	Dense pattern of small historic settlements with vulnerable sense of scale and character Settlements with a distinctive orientation or context (eg linear looking to or set down below a resource area) likely to exacerbate dominance or sense of being surrounded by multiple schemes Attractive settings, 'gateways', vistas, or panoramas
Visual Interruption	Frequent interruption by landform, vegetation or buildings whereby multiple schemes likely to appear individually and intermittently	↔	Exposed open landscapes where multiple schemes likely to be visible in same views and for prolonged periods
Skyline	Low density pattern of isolated existing vertical focal points (eg existing schemes, shelterbelts and silos) which multiple schemes could complement without impinging on space surrounding them Indistinctive skylines	↔	High density pattern of existing vertical focal points of varied size and form where schemes could exacerbate sense of clutter and confusion Bare undeveloped skylines vulnerable to clutter Skylines that draw the eye (eg coastal horizons, landmark fells valley rims) where multiple schemes likely to appear disproportionately dominant
Connections with Adjacent Landscapes	Broad tracts of the same or similar character types to which multiple schemes can consistently relate	↔	Tight sequences of contrasting landscape types which multiple schemes are seen against likely to appear incoherent and confusing

5 Guidelines for Siting and Good Design

Why is this important?

- 5.1 This section examines the issues arising from the unique visual characteristics of wind energy developments and provides generic design guidance. Following this advice should help design a development that fits into its chosen landscape or townscape and minimise negative impacts on visual amenity. It is considered important to focus on the landscape and visual impacts of wind energy developments due to their unique characteristics:

- prominently vertical,
- significant movement
- relative unfamiliarity in parts of Cumbria.

They are frequently located in open areas where they are highly visible and it is normally unrealistic to seek to conceal them. Individually or in groups, they will create distinctive features in the landscape.

- 5.2 The process of site selection and design should be an iterative process informed by and responding to an ongoing environmental assessment. Landscape and visual aspects should be set alongside economic and technical requirements as well as other environmental considerations from the outset of a project and throughout all stages of its development. More guidance on landscape and visual impact assessment is set out in Part 3.

Site Selection and Initial Sizing

- 5.3 At the project feasibility stage site selection and the initial sizing of development should be determined by reference to:

- the capacity guidance in Part 2
- assessments for each landscape character type
- a preliminary survey and
- analysis of the landscape character sensitivity and values

- 5.4 Every site is unique and local variations in character that heighten overall sensitivity or value may be so significant that, in some cases, they become determining factors to the principle of whether or not a wind energy proposal is acceptable. Careful consideration of the potential effects on local landscape value and associated contributions to recreation, tourism and image in relation to economic development should be made.

- 5.5 The capacity guidance contained in Part 2 considers visual amenity in general terms by reference to settlement patterns and key views. It does not specifically address potential visual dominance and intrusion. At the site selection stage this must be analysed by use of a preliminary ZVI, identification of key views and preliminary survey. More information is provided in paragraphs 4.16 – 4.23. Cumulative impacts also need to be considered at this stage. Having made these considerations initial decisions on sizing of the development may need to be revisited or, alternatively a different site sought.

G4 Confirm landscape acceptability of a specific site and appropriate sizing of development by weighing preliminary analysis of landscape and visual aspects against the landscape sensitivity and value criteria (Tables 1 and 2 of Part 2) and by considering potential cumulative effects.

- 5.6 Locations within a tight sequence of contrasting landscape types or sub-types may make it difficult to ensure that a development appears logical and clearly related to a consistent set of key characteristics. Care should be taken when determining locations for new schemes in such areas. This is endorsed by Scottish Natural Heritage¹⁹

“The potential for visual confusion, where it is unclear how a windfarm development directly relates to the landscape characteristics of an area, is increased where a windfarm is sited within, or experienced from, different landscape character types.”

G5 Seek to centre developments within discrete landscape types with broad separation from types of contrasting character in order to achieve a simple image.

Composition: General

- 5.7 After a site has been chosen it is essential that landscape and visual considerations are primary in conceiving the overall form and composition of the development (much like designing and placing a piece of sculpture). The basic visual composition should be guided by common design principles such as balance, proportion, stability and image. These principles are summarised in Appendix 3 of the SNH guidelines. A composition that responds to key characteristics is more likely to harmonise with the landscape and portray a positive rational image. Generally this will entail finding the most comfortable fit with the scale or pattern of the receiving landscape. However, it may include compositions where turbines contrast with key characteristics, for example where a single isolated development creates a vertical point of focus on a simple horizontal skyline or plain, and in doing so reinforces the compositional qualities of that landscape. When considering how a development will relate to key characteristics, it will be important to consider how these will be experienced and observed in the key views of the development.
- 5.8 The detailed design of the layout of turbines is likely to be influenced by the engineering constraints of yield, and other environmental constraints such as ecology, hydrology, noise and archaeology. This process of micro-siting may change any initial layout.²⁰ Any layout changes should be informed by an understanding of the consequences on three-dimensional composition including the landscape and visual effects.

G6 Consider wind turbine developments as three-dimensional objects within the landscape and investigate alternative compositions to find the optimum response to key landscape characteristics as appreciated from key views.

Composition: Scale and Proportion

- 5.9 The increased size of third generation wind turbines raises major issues in terms of the scale and proportion of developments in relation to settlements and other landscape elements. The size of developments is increasingly driven by available technology and maximising output. There could be a temptation to fill any particular site with turbines with little or no regard to landscape fit. Consequently schemes have come forward which overwhelm the scale of existing landscape elements and create an image of sprawl. The increased height of turbines, the consequent increase in separation distance between turbines and the trend towards extensions of developments next to existing ones are likely to exacerbate problems of sprawl. The scale of turbines can be indiscernible in an open featureless landscape such as a moorland plateau or estuary mouth. However, generally, there

¹⁹ Guidelines on the Environmental Impacts of Windfarms and Small Scale Hydroelectric Schemes, Scottish Natural Heritage 2001

²⁰ Windfarms in Scotland, Marc van Grieken et al, Landscape Design Journal Oct 2003

will be elements or features against which the development can be directly scaled. The large scale of wind energy developments, in terms of both height and extent, tends to relate best to the broad shapes and main elements of the landscape, such as ridges, woodland or settlements, as appreciated in the middle distance (> approx. 2.4km) and beyond.

- 5.10 In some instances it may be necessary to consider the use of turbines smaller than current industry standards as well as fewer turbines to achieve a comfortable fit with landscape elements such as small hills or drumlins and built forms on the urban edge. Close range human scale indicators such as hedges, trees and houses are likely to be intimidated by the large industrial scale of today's turbines; this is largely a site selection issue as these awkward relationships will be difficult to overcome through design and composition.

G7 Ensure that the scale of developments, in terms of height and extent, relate to and are in proportion with key landscape elements such as valleys, ridges, hills, field systems, woodland or settlements and appear subservient to these elements. In urban or industrial contexts ensure that developments respond to the scale of the built form and sit comfortably alongside existing large buildings or structures.

(Possible illustrations: GlaxoSmithKline, Barnard Castle PPS22 Companion Guide p72 good fit between smaller turbines alongside industrial buildings; SNH p18 turbines relating to broad landform rather than local undulations; swamping of ridge or valley eg Whinfell v in proportion eg High Pow Fig 17 or Lambrigg; separation sprawl eg Winscales)

Composition: Order and Pattern

- 5.11 The rationale for the outline shape of the development needs to be clear. An arrangement of turbines that relates to some kind of order or hierarchy in the receiving landscape will be easier to comprehend and therefore more likely to portray a positive image. It may be more difficult to achieve in complex landscapes, comprised of a number of overlapping elements. Visual confusion needs to be avoided by careful placement within a hierarchy of visual dominance or visual separation of the developments from other elements in the landscape including other wind energy developments.

G8 Complement distinctive patterns and organising elements within the landscape, such as the broad grain of the topography, geometric field systems or dominant lines along coasts or infrastructure corridors. Create a simple image by respecting the hierarchy of elements in any landscape composition or separating developments from other surrounding elements or features that compete for attention.

(Possible illustrations: Hellrigg Siddick; Lambrigg, Kirkby Moor)

Composition: Stability and Balance

- 5.12 It is important for a wind turbine development to appear visually stable in relation to the visual dynamics of the landscape. A feeling of balance should be created with opposite visual forms and forces compensating each other. Consideration of the visual dynamics between individual turbines within a development is also important. For example twin turbine developments are like to result in unresolved duality where the eye jumps from one turbine to the other, however this might be avoided if balanced against a form or structure of comparable visual weight.

G9 Respect visual forces and weights to create a stable and restful composition between the wind turbines and the receiving landscape, and also between each other. In the context of built forms or structures seek to achieve a balanced composition that enhances any existing focal point.

Composition: Relationship between Turbines

- 5.13 While spacing is normally determined by the need to avoid 'shadowing' (by wake and turbulence effects) if it is excessively wide, the visual coherence of a turbine group can be damaged; the turbines appear 'disconnected'. This problem is often exacerbated by increased heights and consequent separation distances, (which have as much as doubled since the previous guidance was issued in 1997). The arrangement of turbines can also adversely affect cohesion with gaps appearing in the composition. For instance, from some aspects turbines in a triangular arrangement can appear offset and disconnected from the rest of the group; linear or grid arrangements can often result in turbine overlaps where the movement of blades seem to clash. Clearly the orientation of such groups could be critical in relation to key views.

G10 Through careful spacing and arrangement of turbines and overall orientation of the group ensure that turbines read collectively to form a single cohesive element in the landscape particularly with regard to key views, whilst avoiding the disturbing effects of blade overlaps.

(Possible Illustrations: High Pow, Haverigg extension)

Composition: Image and Association

- 5.14 Association with manmade influences and the functional rationale of exposed sites are recognised as a favourable characteristic in terms of sensitivity or site selection criteria (see Part 2: Table 1). The design of a turbine composition can further assist in creating a positive image by reinforcing associations and symbolism and appearing rational.
- 5.15 However, it is important to avoid adding to local visual clutter and confusion. Other vertical features common in the rural landscape, such as telecommunications masts are usually individual items or have linear links such as pylons and power lines. As well as being generally much larger in scale, wind turbines introduce movement and are therefore more akin to urban or industrial installations. It is important that they don't compromise landmark skylines.

G11 Compositions should complement the form and function of settings which already exhibit engineered aspects, structures or land cover patterns and have a logical and sculptural quality in relation to exposed settings. Avoid diluting the value of existing symbolic landmarks and conflicts of form and function with other vertical structures.

(Possible illustrations: Glaxo Barnard Castle, Lambrigg, High Pow)

Composition: Dominance and Visual Intrusion

- 5.16 The design should take account of dominance, intrusion and physical visibility. The degree of dominance is the proportion of the view occupied by the development. This depends on the overall size of a scheme (height and width), distance from the viewpoint and breadth of existing view. Further information on this can be found in Appendix 1, Part 3.
- 5.17 Turbine height and bulk has most influence on the degree of dominance within close range views. For the purposes of this guidance, it is considered that where the angle to the top of the rotor is more than 10° above the horizontal from the observer, the turbine can be expected to be dominant. (4° for "main views" from a

dwelling or frequently used part of the curtilage). The perceived sense of dominance will be influenced by skylining, positioning turbines on a hilltop above the viewer and from turbine movement. Careful consideration should be given to appearance of blades, or the nacelle and blades, above the horizon.

- 5.18 Potential dominance and intrusion are also influenced by the nature/attractiveness of an existing view and the apparent size as modified by the setting. Sensitivity to this is dependent on the proximity and relationship of a scheme and key views (those enjoyed from the home, popular view points or local visual amenity received by the most sensitive important settings or 'gateways').
- 5.19 Due to the UK's prevailing south west winds viewpoints in the south to west and north to east quadrants are most likely to experience the greatest visual effects with regard to visibility and movement. Sites with key views in these quadrants could be problematic but with larger sites it may be possible to mitigate effects by distancing turbines or avoiding these fields of view.
- 5.20 Turbines framed by other features such as built development or trees can give a greater apparent size. On the other hand elements such as ridges or woodland within the development setting may offer screening potential.

G12 Investigate alternative designs in order to find compositions of turbine groups to present best aspects and reduce dominance and visual intrusion relative to key views. In particular seek to:

- **site turbines with an adequate separation from smaller settlements and key views to avoid dominance and ensure visual separation**
- **reduce the apparent size of developments**
- **avoid turbine heights or locations that make developments feel overbearing**
- **avoid partial views of blades or the nacelle and blades above the horizon**
- **avoid effects on key views in south to west and north to east quadrants**
- **avoid framing effects**
- **maximise the benefits of existing screening elements by careful placement and height adjustments**

(Possible illustrations: Askam, High Pow; Winscales extension; Lambrigg)

Turbine Design: Towers and Blades

- 5.21 Turbine design has now largely matured and some of latest designs are not unattractive as individual design elements. The commonest types of 'standard' turbine used in Britain are three bladed and attached to a solid tower via nacelle housing. The towers may be polygonal or circular in section, and may be tapered or cylindrical. These are the preferred design for Cumbria.
- 5.22 The proportional relationship between the tower and the blade diameter is significant. If blade diameter is slightly less than the hub-height of the tower the turbine looks reasonably well proportioned. In lower wind speed areas, tower height may need to be increased without necessarily an equivalent increase in blade size. If blade diameter is increased without a similar increase in hub height, then the turbines may appear squat.

G13 The choice of tower structure, blade configuration, and relative proportions of tower height and blade diameter should be carefully weighed so as to avoid a squat appearance.

Turbine Design: Colour

- 5.23 Experience and studies in Europe have shown that a range of colours can be used to minimise the visual impacts of wind energy developments, depending on the background of land viewed from the majority of viewpoints.
- 5.24 It is important that the choice of colour for wind turbines takes account of the backgrounds against which the machines will be seen from key views. It may be appropriate to use a palette of pale colours to suit the majority of sites in elevated locations or on the coast where they are mostly seen against sky or sea, and a palette of darker grey colours for developments that will be mainly seen against a muted landscape background or against buildings.
- 5.25 There is some Scandinavian experience of grading the colour of turbine towers from a darker shade near the base, to a lighter one near the top. This might be appropriate say where the bases of turbines are seen against land and the tops against sky or sea.

G14 Investigate a range of colour options for turbines taking into account the predominant background relative to key views of the development.

Turbine design: Movement

- 5.26 Blade movement is rotary and very regular. This is not a common type of 'natural' movement in the landscape, and especially not at the scale of a wind turbine. This kind of movement is highly noticeable, and enhances the visibility of wind energy development in the landscape up to distances of about 10km. The actual blades of turbines are rarely visible beyond this distance, though a slight 'pulse' in the intensity of the light can sometimes be seen as the blade passes across the tower. The slower rotation speeds of current turbines (approx. 13-19 rpm) compared to older turbines for example at Great Orton and Winscales (approx 28 rpm) can be more comfortably followed with the human eye and are less disturbing.
- 5.27 All turbines on a site should rotate in the same direction. (e.g. all clockwise, or all anti-clockwise). Sometimes slight variations in wind conditions and hence turbine orientation may nevertheless give the impression of contrary rotations from some viewpoints.

G15 Take account of the visual effects of rotary blade movement as part of the overall design of the scheme. Ensure that the blades of all wind turbines in a single development rotate in the same direction and up to the same speed. Keep the maximum speed of blade rotation as slow as possible.

Infrastructure and Ancillary Development

- 5.28 Infrastructure and ancillary developments can have significant local landscape impacts in their own right particularly in open undeveloped landscapes, where a site's profile is raised on the side of a hill or where there are key views looking down on it. Sensitive vegetation and soil types such as heather, semi-natural grassland or peat do not readily recover from construction disturbance and will be particularly vulnerable in both landscape and ecological terms. On sensitive soils such as peat ongoing consequences may arise from erosion or disruption to the integrity of natural drainage patterns.

G16 The effects of infrastructure need to be assessed as part of the landscape and visual impact assessment.

Road access

- 5.29 Road access to a site needs to be able to accommodate trailers carrying the longest loads (blades are up to 45m long) as well as the heaviest and widest loads (generally cranes of 30 tonnes plus). In some rural locations these requirements can lead to significant 'indirect' visual impacts through the need to widen lanes (typically to 6m) or ease bends, necessitating in some cases the removal of boundary features such as stone walls or hedges. These alterations may have to be left in place for the life span of the development or temporarily remedied since there will inevitably be a requirement to reach the site, for decommissioning and possibly for repairs in the case of major component failure, with loads potentially as large as those initially used. This aspect should be considered at the start of the project.

G17 Take account of the needs for access throughout the lifetime of the development (construction, operation and decommissioning). Detail the nature and lifespan of any modifications to existing roads in the planning application and Environmental Statement.

- 5.30 On-site access tracks need to be constructed carefully, but need to meet the same weight and dimensional requirements as above. They are typically 5-6m wide. It may be possible to reduce some in width after construction (typically to 3-4m) sufficient to facilitate light maintenance vehicles however full width will inevitably be required as described above. Impacts will be heightened where they have to negotiate steep slopes requiring zig zag routes, cut and fill and drainage channels above the track; on cross wet marshy ground where more extensive foundations will be required. They are also likely to be more visible in open featureless landscapes such as moorland. Access points to sites require large bell mouth entrances and appropriate visibility splays which will often involve the realignment of hedges or walls. Hence access provisions can potentially scar the landscape, draw the eye towards the development and increase visual confusion.
- 5.31 Consideration of hydrology, ecology and archaeology impacts must also be taken into account as part of the design, during construction and the decommissioning phases of any development. Issues such as surface water run-off, negative impacts on sensitive soils and vegetation all have an intrinsic effect on landscape character.

(Possible illustrations: High Pow tracks; Hellrigg)

Bases

- 5.32 All wind turbines need to be mounted on reinforced concrete bases. These are likely to be left in situ once the development is decommissioned. As turbines become larger, these bases have increased in size and are now typically around 16-17m in diameter by 2-3m deep. Temporary features include a construction compound and hard standings next to each turbine which act as bases during turbine erection and component lay down areas (typically 50 x 50m). Although temporary they still have implications on sensitive soils and vegetation.

(Possible illustrations of square bases from Cefn Croes, Wales)

Transformers/Substations

- 5.33 A profusion and confusion of ancillary elements may compromise the sculptural image of a development. Transformers required to change the generating voltage to the common site voltage can increase visual clutter unless housed within the turbines. It is generally preferable for on-site cables to be buried underground as pole-mounted links are visually unsatisfactory. Sometimes the appearance of an electrical sub-station and control building can appear irrational or incongruous

particularly in high or exposed areas or increase visual complexity and emphasise the large scale of the wind turbines if sited amongst them. Care needs to be taken when siting these.

Fencing

- 5.34 Fencing, lights and hard surfacing around sub-stations can exacerbate these problems. New fences over a wider area of the development say to enhance habitats or where a landowner desires greater control over grazing can create lines that conflict with the form and layout of the development and differences in vegetation that highlight its presence.

(Possible illustrations Lambrigg.)

Electrical connection

- 5.35 Responsibility for the routing and design of the electrical connection from the site sub-station to the local electricity distribution network lies with the electricity Distribution Network Operator (DNO). This will be achieved by overhead power lines mounted on single or double poles or by lines laid underground. Since the latter are 6-20 times more expensive²¹ they may only be used for limited lengths or in special circumstances. Power lines may have considerable impact by creating visual confusion or appearing incongruous in exposed upland settings. If taken right up to the site they may create an industrial image for the development and compromise the designed composition. The implications of connections should therefore be regarded as material to the overall scheme design and undergrounding such power lines is preferable in landscape and visual impact terms. However, other environmental impacts must also be considered. Exceptionally, overhead power lines may have such a negative impact that the scheme would be unacceptable on these grounds alone.

G18 Infrastructure and ancillary developments should be carefully considered as part of the overall design of a scheme, adopting the following principles:

- avoid sensitive soils and vegetation, eg peat bogs, heathers, grassland
- avoid changes with a negative impact on local hydrology
- provide construction and reinstatement method statements on sensitive sites
- integrate the layout with the grain of the topography/land patterns
- utilise existing tracks and access points
- minimise the length of tracks
- protect features such as trees or archaeological remains
- reinstate track verges with appropriate vegetation
- finish surface tracks to blend in with surroundings
- reduce extent and width of tracks after the construction phase
- remove tracks on decommissioning and reinstate appropriate vegetation
- locate and design ancillary elements in a way that minimises visual clutter
- utilise existing landform and vegetative cover to screen ancillary structures
- site and design the substation to appear as a simple element separated from the main development and characteristic of the receiving landscape
- enter into planning obligations to minimise the impact of consequential off-site electricity connections which could otherwise be severe

²¹ Planning for Renewable Energy: A Companion Guide to PPS22, OPDM 2004

Mitigation

- 5.36 Mitigation will primarily be achieved through careful siting and an iterative design process following the guidance above. Traditional landscape measures such as screen planting to ancillary elements, protecting trees or hedge planting and management may make a useful contribution to reducing on site impacts, although this will be relatively minor given the scale of wind energy developments. Aspects such as the composition of the turbine group as a whole will be more crucial.
- 5.37 Secondary mitigations measures may be employed to address residual impacts, for example off-site planting to screen specific receptors or provide compensation. Experience has shown that wind energy developments present opportunities for enhancing both the development site and the wider landscape, for example through restoration of hedgerows and stone walls or restoration of heather moorland. This may also provide improvements to the ecology of the site. This aspect is discussed in further detail in Part 3.

G19 Consider landscape enhancement and compensation measures with reference to land management guidance set out in the Cumbria Landscape Strategy.²²

Compatibility

- 5.38 Chapter 4 identified enlargement as a particular form of cumulative effect. In addition when two or more Schemes are visible simultaneously, differences in design may create a jarring effect. The closer the developments are, the greater the potential number of differences that may be evident. However compatibility issues may also arise when developments are distinctly separated. For instance, a single wind turbine within one or two kilometres of an extensive site may look as though it has become lost or detached from the group. Differences in design can still be important for separations of up to 6km.
- 5.39 Proposals for extensions, adjacent developments and developments in close proximity can raise specific issues of design compatibility with an existing scheme(s); issues to consider include:
- *Turbine Size and Density:* Are the turbines a larger size and more widely spaced, if so, will this produce obvious visual discontinuity?
 - *Turbine design:* Are there any awkward differences in turbine shape, blade/tower proportions, direction and speed of blade rotation, colour?
 - *Layout:* Is the arrangement of turbines (eg linear, formal grid, organic cluster) consistent with the existing scheme (s)?
 - *Cohesion:* Will the proposed development be seen as a disconnected part of the same visual entity?

G20 In addition to general considerations of cumulative effect, where proposals are within 6km of any other existing or consented wind turbine, particular attention should be given to the compatibility of turbine size, density, design, layout and overall cohesion.

Where proposals are extensions or adjacent they should be designed as a single entity with the existing development.

²² Cumbria Landscape Strategy, Cumbria County Council 1998

6 Guidelines for Environmental and Other Issues

6.1 Landscape and visual effects are not the only ones that need to be addressed when developing wind energy proposals. A range of other effects and their potential impacts must be considered. Some of these are required to be considered through Policy R44. These include:

- Nature Conservation
- Cultural Heritage
- Local Amenity
- Local Economy
- Aircraft and Telecommunications

6.2 In addition to this, PPS22 calls for consideration to be given to early community engagement and the potential for community benefits. Guidance on this is set out in Chapter 2.

6.3 Although the above issues are not the main focus of this Guidance, they are equally important and need to be fully addressed by any developer through the Environmental Impact Assessment. The following section highlights the key issues to consider and signposts to further advice.

Nature Conservation

6.4 Wind energy schemes have the potential to adversely affect biodiversity and nature conservation interests. Cumbria is noted for a wealth of nature conservation interests. Some of these may be particularly rare or form part of wider biodiversity networks important on more than a local scale. It is crucial for any development to take these interests into account.

6.5 In the case of wind energy development the effects to biodiversity could take place during the construction, operation or decommissioning phases and could arise from any element of the development including the foundations, access roads, moving turbines and ancillary buildings. Cumulative effects may also impact on biodiversity across a wide area arising from both wind energy and other development/activities. Such effects could cause negative impacts to habitats and species found within or outside a development site. Mitigation of such effects may be required but in some circumstances a scheme might be so damaging that neither mitigation nor compensation would be acceptable. In other circumstances new development may provide the opportunity to enhance and create habitats to support a range of species.

6.6 The experience of past wind energy development both in the UK and Europe has shown the main nature conservation effects to be:

- Direct habitat loss (eg for feeding, roosting, breeding etc)
- Habitat damage (eg on site and off site due to hydrology impacts)
- Interference with geological processes (eg slope profile)
- Interference with hydrological processes (eg increased runoff, erosion)
- Disturbance to, displacement of and collision with mobile species (eg for migration, feeding, nesting)

6.7 The full range of Cumbria's biodiversity should be taken into account when developing a wind energy scheme. There are many international and national statutory designations, and regional and local designations both for habitats and

species. Policies in the Cumbria and Lake District Joint Structure Plan 2001 – 2016 and the emerging Local Development Frameworks provide protection from development for areas and features of international and national importance. Additional policies provide protection for other areas and features of nature conservation interest and for enhancement. In addition policies for renewable energy should ensure there are no adverse effects on biodiversity or Cumbria's wider natural heritage.

6.8 The key international and national statutory site designations in Cumbria are:

- Special Areas of Conservation (SACs)
- Special Protection Areas (SPAs)
- Ramsar (wetlands) sites
- Sites of Special Scientific Interest (SSSIs)
- National Nature Reserves

New schemes should avoid these sites and should not cause any detriment to the characteristics of protected habitats or protected species. Scheme should not cause harm to habitats and species outside a designated site that may adversely affect the integrity of a site, or cause a significant decline in the size, distribution, structure or function of a population of a species for which a site was designated.

6.9 In addition there are Regionally Important Geological/Geomorphological sites, County Wildlife Sites, and Local Nature Reserves. Sites owned by the National Trust are afforded protection under the National Trusts Act. Development sited on or off such sites should not cause any harm to these nature conservation interests.

6.10 Government policy seeks to protect priority habitats and species identified in the UK Biodiversity Action plan and any additionally identified in the local Cumbria Biodiversity Action Plan. Many of these habitats and species extend outside protected sites, and consideration must be given to potential impacts when developing any scheme. Habitats which might most likely be affected are coastal habitats, upland habitats (acid grassland, heather moorland, blanket bog, flushes and mires), purple moor-grass and rush pastures, general open farmland, and connecting habitats such as hedgerows and small woods. A Key Species list is being developed for the county which will include protected, priority and Cumbria BAP species. It will be available from, and maintained by, the Cumbria Biological Records Centre (currently the Cumbria Biological Data Network).

6.11 Information on these interests should inform the early stages when selecting the location and designing a scheme. There is a need to collaborate and use information from English Nature, the Cumbria Biological Data Network through Tullie House Museum, Cumbria Wildlife Trust, RSPB, and local nature conservation groups.

Bats and Birds

6.12 The impact on bats and birds is of particular interest for wind energy development. Bats and some birds are protected species that need to be considered when developing a wind energy scheme. They are potentially at risk from wind turbines in the ways identified in paragraph 6.6 above.

6.13 For bats, work will need to be carried out to establish roosts, flight lines, feeding areas, hibernation or swarming sites in the vicinity of a proposal. An assessment for bat flight activity should be carried out as part of the EIA. The results of such surveys should assist in identifying the appropriateness of the scheme, its design and layout. If a foraging habitat is likely to be affected by a scheme, then mitigation measures would be expected to ensure additional habitat is provided for within the

locality and to remove the potential for harm, however it might take time to establish new habitat.

- 6.14 The issue of birds and windfarms has been debated for more than a decade. Scottish National Heritage produced detailed guidance in 2005 on survey methods for assessing the potential impacts on birds from onshore wind farms. This provides guidance on how to determine the potential loss of habitat as a result of infrastructure, displacement of birds due to disturbance to feeding and breeding grounds, and the potential mortality due to collision with turbine blades. Such risks need to be determined for any wind energy development. Developers are expected to consider this guidance when drawing up schemes in Cumbria.
- 6.15 For birds an assessment will need to be carried out to establish any protected, priority or rare species in or within the vicinity of a site and any migratory routes and any habitats related to such species. Careful consideration needs to be given to SPA, SAC, and RAMSAR sites which are often associated with coastal and moorland/upland areas. These areas have had the greatest pressure from wind energy development in the past and steps need to be taken to ensure there is no harm to these interests. In coastal locations attention also needs to be paid to issues of collision with migratory birds, as many fly along the coastal areas to reach feeding/breeding grounds in protected habitats around the Duddon Estuary, Walney and Morecambe Bay areas. An assessment of potential impacts will need to be carried out and any mitigation measures determined to remove the potential for harm. These may relate to micro siting and design or the creation of supporting habitat within the locality. This information should be part of the EIA.
- 6.16 The cumulative impacts on bats and birds must also be assessed in relation to other proposed, approved or operational wind energy schemes.

Design and Mitigation

- 6.17 Existing habitat features should be incorporated into site design and protected from adverse change. Opportunities should be explored to create new habitats to compensate losses and improve the landscape and ecological potential of the site. When considering decommissioning good practice would include the improvement of ecological value on the site. Any wind energy scheme could provide the opportunity to enhance nature conservation interests on a site. Discussions with the local planning officer on the opportunities should be discussed early on in the process²³.

The role of the EIA

- 6.18 The Environmental Impact Assessment is the main tool used to look in detail at nature conservation interests both on and off site. The methodology used, analysis of data and assessment of impacts should be clearly expressed in the Environmental Statement. Areas to address include:
- Identification of habitats and species on site and within locality.
 - Identification of protected and priority habitats and species.
 - A habitat survey that describes in detail the plant communities present on the site highlighting areas of habitats with potentially high nature conservation value²⁴.
 - Migratory routes of any protected or priority bird/bat species.

²³ (taken from EA guidance 2002).

²⁴ Use of a Phase 2 Habitat Survey methodology and National Vegetation Classification survey

- 6.19 When carrying out assessment and evaluation collaboration with local nature conservation bodies and Cumbria Biological Records Centre will help with data collection and interpretation.
- 6.20 More detailed advice can be found in the following resources:
- PPS9 Biodiversity and Geological Conservation and Companion Guide
 - PPS22 Renewable Energy and Companion Guide
 - Survey methods for use in assessing the impacts of onshore windfarms on bird communities, Scottish National Heritage Guidance November 2005.
 - Wind farm development and Nature Conservation, English Nature, RSPB, WWF and BWEA, 2001
 - Scoping the environmental impacts of windfarms (onshore and offshore), Environment Agency, 2002.

Developers are encouraged to follow such good practice advice when developing proposals in Cumbria.

Soils and Hydrology

- 6.21 Care is also needed in assessing the impact of a development on the soils and hydrology, water quality of a site and its surrounding watercourses. Soils such as peat can be easily harmed and take a long time to regenerate. Peat has high water content and disturbance can lead to a reduction in soil stability. In addition peat disturbance can release CO₂ into the atmosphere which may counter some of the CO₂ savings expected through wind energy development²⁵. Wind energy proposals should avoid areas with such soil. It is important not to harm the integrity of local watercourses as this may create harm to nature conservation interests in the vicinity of a proposal. Care needs to be taken when assessing such issues and should be included as part of the EIA.

Cultural Heritage

- 6.22 Wind energy developments like any development have the potential to cause harm to features of historic interest or underlying archaeological remains. However, experience suggests there is often greater flexibility in the design and siting of wind energy schemes which provides the opportunity to avoid damage. Other environmental and social considerations will also need to be taken into account. Any development should consider the effects it may have on the following as part of the design and environmental assessment processes:
- Archaeological remains
 - Historic structures and buildings
 - Designed landscapes
 - Historic character and associations with the wider landscape
 - Designated and undesignated sites and areas and their settings.
- 6.23 Designations of international and national importance currently include Hadrian's Wall World Heritage Site, St Bees Heritage Coast, North Pennines GeoPark, Grade I, II and II* listed buildings, registered historic parks or gardens, scheduled ancient monuments, and registered historic battlefields. The Lake District is currently under consideration for nomination as a World Heritage site.

²⁵ New Scientist Issue 2559 July 2006.

- 6.24 Due to the nature of wind energy developments they are often sited in open countryside, in high or exposed locations. Such areas may well be valued for their wildness, remoteness, tranquillity or for well preserved historic remains. These issues and others, including the setting of historic buildings, form part of the Landscape Capacity Assessment (LCA) set out in Part 2. This should be taken into account when designing a scheme.
- 6.25 Developers are encouraged to contact the County Council's Historic Environment Records Section at an early stage of design to determine the extent of archaeological value of a site, and any potential impacts on the settings of historic buildings/remains/gardens and the wider landscape. The design and siting of a scheme should avoid nationally important historic sites and where practical undesignated sites. If this is not possible mitigation measures will need to be explored. Conditions are likely to be attached to wind energy developments to ensure investigations are carried out during construction to record any archaeological value found on a site.
- 6.26 More detailed advice can be found in the following resources:
- PPG15 Planning and the Historic Environment
 - PPG16 Planning and Archaeology
 - Wind Energy and the Historic Environment, English Heritage 2005, www.helm.org.uk.

Local Amenity

- 6.27 Noise and visual impacts are widely agreed to be the main issues that affect local amenity. As visual impacts are dealt with at length earlier in this guidance this section will only consider the effects of noise. Noise is produced from wind turbines in two ways:
- mechanically from the internal gearbox and generator, and
 - aerodynamically from the passage of the blades through the air.
- 6.28 Wind energy developments may cause some noise when operating, however, improvements in technology have reduced the level of mechanical noise produced. The table below indicates the level of noise produced by turbines (both mechanically and aerodynamically) against a range of other noises. It is widely agreed that there will always be some background noise, even in rural areas, from farm machinery, local traffic, animals, the wind interacting with trees, and buildings etc.
- 6.29 The nature of noise from turbines is low level and has been likened to the noise of wind in trees²⁶. When considering a proposal developers should identify noise sensitive development, such as residences, and determine the potential impacts on them. Turbines should be sited at a suitable distance from such development so as not to cause undue harm.
- 6.30 A noise assessment should be carried out against any existing background noise, in accordance both PPS22 Technical Annex and ETSU's work on 'The Assessment and Rating of Noise from Wind Farm' 1997. This suggests that noise arising from a wind energy development should be restricted to 5dB(A) above background noise for both day and night time levels. This could be in the region of 25 - 45dB(A).
- 6.31 The table below suggests that a minimum distance of 350m might be acceptable

²⁶ PPS22 Technical Annex P168, ODPM 2004

during the day in a rural area, but distances may need to increase to take account of the blades turning at night.

Table * Noise generated by wind turbines compared with other everyday activities	
Source/Activity	Indicative Noise Level dB(A)
Threshold of pain	140
Jet aircraft at 250m	105
Pneumatic drill at 7m	95
Truck at 30 mph at 100m	65
Busy general office	60
Car at 40 mph at 100m	55
Wind farm at 350 m	35-45
Quiet bedroom	20
Rural night-time background	20-40
Threshold of hearing	0

PPS22 Technical Annex Section 8 Wind table 1

- 6.32 Developers should consider design alterations to mitigate any potential noise impacts. If this is a significant concern for a local community, developers could consider taking community members to visit one of the operational schemes in Cumbria. The local planning authority may attach conditions to the consent for a scheme to ensure noise limits are not exceeded.

More detailed advice can be found in the following resources:

- PPG24 Planning and Noise
- The assessment and rating of noise from windfarms, DTI: <http://www.dti.gov.uk/energy/page21743.html>
- Guidelines for Community Noise World Health Authority: www.who.int/docstore/peh/noise/guidelines2.html
- Health and Safety Executive Noise information: www.hse.gov.uk/noise

Local Economy

- 6.33 Consideration needs to be given to the local economy when developing a wind energy scheme and the positive and negative impacts that may arise. There is a diverse economy across Cumbria. Traditionally it has been characterised by manufacturing, agriculture, food processing, energy production, tourism, mining and quarrying. Some of these sectors, such as agriculture and manufacturing are in decline, but still make a significant contribution to the economy, whilst the service industries continue to grow.
- 6.34 Within Cumbria, there may be concerns that wind energy development could have

an adverse impact on the local economy, and in particular the tourist economy. This accounted for 18% of total employment in 2005 and reflects Cumbria's high quality environment, landscapes and natural beauty. Concerns are often cited that any adverse impact to landscape character and visual quality could result in less people visiting Cumbria. There is no evidence currently available to support or counter such claims. Due to the subjective nature of the perception of wind turbines it is often contended that they could equally discourage or encourage people to visit Cumbria.

- 6.35 Wind energy development could provide opportunities to support the local economy during the construction, manufacturing and decommissioning phases. There could also be an opportunity for a wind turbine manufacturing base to be developed in Cumbria. This has happened in at least one case in Scotland.
- 6.36 When drawing up a scheme developers should consider both potential negative and positive benefits for the local economy. Particular notice should be taken when considering the role an area has to play in the local tourist economy. An evaluation of the value of landscape character to residents and visitors should form part of a landscape character assessment.
- 6.37 Consideration should also be given to employing local labour and using local materials, particularly for the construction of bases, access roads and other ancillary features. Investment could also be made in training the local workforce to help maintain developments over time. It is accepted that the interpretation of EU rules when tendering a scheme prevent a local preference, but steps should be taken to ensure local businesses are invited to tender for relevant aspects of a scheme.

Telecommunications

- 6.38 Wind energy development can cause interference with radio signals and effect local TV reception and telecommunication systems. This includes those used by the police and emergency services.
- 6.39 Disturbance to TV reception may arise, particularly if wind turbines are sited between buildings and the local transmitter. Developers need to establish if this is likely to be the case and provide mitigation measures to reduce any negative impact. These might include the provision of satellite, cable or a more sensitive antenna to householders affected, repositioning of antennae to receive from a difference source emitter, or the installation of a community re-broadcast facility. As technology advances and transmissions switch to digital TV then this issue may reduce further.
- 6.40 Many telephone and other communications systems rely on microwave radio links. These can be affected by wind turbines. The Office of Communications (OfCom) has information on licensed telecommunication systems and protects radio systems against interference. At the start of a scheme, developers are expected to contact OfCom (windfarmenquiries@ofcom.org.uk) to establish what systems might be affected by their proposal. Developers are also expected to contact all operators including the emergency services, such as police, ambulance, coastguard, fire and mountain rescue services, in an area to determine potential impacts and provide evidence of this to the local planning authority. Operators may impose a clearance zone around their systems or require re-routing to prevent interference. Generally careful micro-siting can mitigate against such impacts. Often the repositioning of a turbine by a few hundred metres can remove the interference. If this is not feasible, developers may be able to pay for the re-routing of a signal around a development. Conditions are likely to be attached to any consent to ensure the above issues are addressed during the construction phase. However, if negative

impacts cannot be mitigated against it is unlikely approval will be given for a scheme.

- 6.41 There is often scope for the design and layout of a scheme to be amended to mitigate any adverse effects that might be identified from a technical evaluation of a site. However, care needs to be taken to ensure that other environmental impacts, and particularly landscape and visual impacts, are considered in tandem to this. Past experience has shown that technical constraints such as this often dictate the overall design and layout without equal regard being given to landscape and visual impacts, biodiversity and cultural heritage.

Aircraft and Radar

- 6.42 Wind energy developments may cause adverse impacts on aircraft flight safety and radar use for air traffic control and aircraft instruments. Early consultation between developers and statutory authorities can help with siting and mitigation measures.
- 6.43 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. 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 British Wind Energy Association (BWEA) website combines a proforma to aid consultation with stakeholders. Developers should use this (www.bwea.com/aviation). If, as a result of the above consultation, a negative impact is likely a developer will need to prove whether or not there will be an adverse effect on aviation interests. Currently such issues may prevent development from taking place around the north, east and some coastal locations within Cumbria due to MoD sites and Carlisle Airport.
- 6.44 In Cumbria consideration will need to be given to local airports, and Ministry of Defence (MoD) sites, such as Spadeadam in the north and Warcop in the east, to determine flight paths and mitigate against collision risks. Developers must consult with the Civil Aviation Authority and MoD to determine such issues and liaise with airfield management at civilian airfields.
- 6.45 More detailed advice can be found in the following resources:
- DTI AMS Feasibility Study, June 2005.
www.dti.gov.uk/renewables/publications/pdf/windenergyaviation.pdf.
 - Wind farm impact on aviation radar interests DTI
<http://www.dti.gov.uk/energy/page18050.html>
 - Wind energy and aviation interests:an interim guide, DTI
<http://www.dti.gov.uk/files/file17828.pdf?pubpdfload=02%2F1287>

Glossary

Climate Change

A process of changes to weather patterns and temperatures largely caused by the emission of certain 'greenhouse gases' from earth, principally associated with the burning of fossil fuels.

CO₂ Carbon Dioxide

The main, greenhouse gas, formed by the combustion of all fossil fuels.

Cumulative Effects

This is the result of more than one scheme being constructed and is the combined effect of all the developments, taken together. This may be in terms of their effect on landscape and visual amenity, bird populations, other wildlife, the local economy, tourism etc.

Energy Conservation

The reduction of energy consumed, usually achieved by changing habits or patterns of use, and not requiring significant investment.

Environmental Impact Assessment

The process used for describing, analysing and evaluating the range of environmental effects that are caused by a wind energy proposal.

Environmental Statement

The document supporting a planning application that sets out the findings of the Environmental Impact Assessment.

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 CO₂, methane CH₄, nitrous oxide N₂O, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride SF₆.

Micro-generation

Very small scale power generation schemes, typically providing energy to a single household/office.

Mitigation

The act of amending a wind energy development to reduce/remove harmful impacts.

Enhancement

To improve the quality of an area affected by a wind energy development.

Landscape Capacity

The extent to which a landscape is able to accommodate wind energy development without key characteristics being adversely affected and the values attached to it being compromised.

Landscape Capacity Assessment

The process of describing, analysing and evaluating the extent to which the landscape can accommodate wind energy development without compromising its landscape character.

Landscape Character

A distinct pattern or combination of elements that occurs consistently in a particular landscape.

Landscape Character Classification

An assessment that classifies the Cumbrian landscape character into 13 distinct types

reflecting the distinct pattern or combination of elements that occurs consistently in a particular landscape.

Landscape Sensitivity

The extent to which the character and visual amenity of a landscape is susceptible to change brought about by the introduction of wind energy development.

Landscape Value

The relative importance that stakeholders attach to a landscape for a variety of reasons including scenic quality, perceptual aspects such as wildness, remoteness or tranquillity that contribute to a sense of place, rarity, presence and influence of other conservation interests and special cultural associations.

Mega Watt

A watt is an electrical unit of power. A mega watt is a million watts.

Offshore

Location on the sea bed, below the mean low tide level, for a number of prospective renewable energy sources including wind, tidal and wave.

Ramsar Sites

Wetlands of international importance designated under the Ramsar convention 1971, which requires signatory countries to protect international important wetlands, especially those used by migratory water birds, and to use wetlands wisely.

Renewable Energy

Collective term for energy flows that occur naturally and repeatedly in the environment. It includes energy derived by the sun, such as wind, solar hot water, solar electric (photo-voltaics), hydro power, wave, tidal, biomass, biofuels, and from geothermal sources, such as ground source heat pumps. Energy from waste is not regarded as a renewable energy as it is not capable of being renewed by the natural ecological cycle.

Wind Energy Development

Development consisting of one or more wind turbines, access tracks, ancillary buildings, substation, anemometer masts and supporting infrastructure.

Zone of Visual Influence

The area for which a development is potentially visible as determined by topography and other intervening features on the ground.

Abbreviations

AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
EIA	Environmental Impact Assessment
CO ₂	Carbon Dioxide
LCA	Landscape Capacity Assessment
LDD	Local Development Documents
MW	Mega Watt
PPS	Planning Policy Statement
RSS	Regional Spatial Strategy
SA	Sustainability Appraisal
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SPG	Supplementary Planning Guidance
SPD	Supplementary Planning Document
ZVI	Zone of Visual Influence

**Cumbria Wind Energy Supplementary Planning Document
Consultation Draft July 2006
Part 2
Landscape Capacity Assessment**

PART 2

LANDSCAPE CAPACITY ASSESSMENT

CUMBRIA WIND ENERGY SUPPLEMENTARY PLANNING DOCUMENT

CONSULTATION DRAFT

July 2006

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INTRODUCTION

Background

- 1.1 Cumbria County Council commissioned Coates Associates to an evaluation of the capacity of different types of landscape to accommodate wind energy development. The primary purpose of this study is to inform a joint Cumbria Wind Energy Supplementary Planning Document (SPD) which is to be incorporated into the District Councils' and Lake District National Park Authority's Local Development Framework. The study has been steered by officers from the Council's Environment and Spatial Planning Units who in turn have reported to a working group of planning officers representing the SPD partners. The study area encompasses the whole of Cumbria outside the National Parks totalling 4,637 km². The work was carried out between October 2004 and August 2006.

The Brief

- 1.2 The SPD will replace previous supplementary planning guidance entitled 'Wind Energy Development in Cumbria – A Statement of Planning Guidance' (WESPG) published by the County Council in 1997. The new SPD is intended to assist in the interpretation and application of Development Plan policies by providing local planning authorities and developers with broad locational guidance for wind energy development in Cumbria.
- 1.3 The objectives of this study were to:
- i. Develop a new approach to judging landscape capacity to accommodate wind energy development as a crucial element in developing strategic locational guidance on wind energy development.
 - ii. Develop clearly defined landscape sensitivity and value criteria as a basis for judging landscape capacity.
 - iii. Through application of these criteria assess and evaluate the strategic landscape capacity of Cumbria's landscape types (as defined in the Cumbria Landscape Classification and Structure Plan Technical Paper 5) to accommodate wind energy development.

Application and Limitations of the Study

- 1.4 The study provides strategic guidance on the landscape factors influencing the location of wind turbines within Cumbria (outside the national parks) and is intended to set out a positive approach to guide development. It seeks to articulate the specific landscape characteristics that are sensitive to wind turbine development and from this together with an appreciation of how these are valued provide an overall understanding of capacity. The results should help guide the right type and size of development to the right location to ensure that the key characteristics of the landscape are not adversely affected. Additional work will be carried out as necessary following the landscape characterisation work of land within the Lake District National Park.
- 1.5 It is envisaged that it will have several applications:
- Inform planning policies and decision making in relation to wind energy development.
 - Assist developers at the site selection and project feasibility stage in determining the suitability of sites and identifying the initial size and composition of development in relation landscape character
 - Assist developers and development control officers in the scoping of landscape and visual impact issues raised by specific proposals by review of the strategic assessments and application of the landscape sensitivity and value criteria at a local level. It is envisaged that the criteria will serve as a form of checklist for site specific survey and assessment.
 - Facilitate stakeholder consultation and widen public understanding of the key landscape sensitivities to wind turbine development

1.6 It should be noted that:

- This study only considers landscape and visual aspects, clearly consideration of cumulative impact, grid connection and other environmental issues such as ecology, archaeology, noise and hydrology will require careful consideration when seeking to locate wind energy developments.
- The study does not negate the need to for assessment of individual applications where detailed site specific landscape and visual impact assessments will still be required.
- The study does not cover offshore development capacity or views from the sea.

The study has assumed turbines that have a blade tip height of approximately 95 - 120m and three blades which are typical of current proposals. However in order to find the best fit with the scale of the receiving landscape developers should not exclude the possibility of using turbines smaller than the current industry standard.

METHODOLOGY

Approach

- 2.1 A basic principle of good practice in landscape assessment is to adopt a methodology that is transparent, systematic and replicable. As the findings from this study will inform strategic planning guidance and subsequent planning policy and decisions likely to be tested at public inquiry it was recognised that the method had to be robust and defensible. The method was developed in close consultation with the Council's Landscape and Countryside Officer and was piloted on two landscape types. The results were reviewed by this officer and reported by him to the JSPD working group and in the light of this the methodology was refined and then rolled out across all the types within the study area. The exhaustive consultation procedure required for the JSPD will enable feedback from wider audience including developers with the opportunity for some further refinement.
- 2.2 The approach adopted for this strategic assessment draws on our considerable experience of wind energy capacity assessments dating back to 1994ⁱ and current development control advice on wind energy schemes in Cumbria, a review of the previous approach used in the existing WESPG, a review of similar studies prepared for other planning authorities^{ii iii} and published national guidance contained within:
- 'Landscape Character Assessment: Guidance for England and Scotland' The Countryside Agency and Scottish Natural Heritage (2002)
 - 'Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity' The Countryside Agency and Scottish Natural Heritage (2003)
 - 'Guidelines for Landscape and Visual Impact Assessment 2nd Edition' Landscape Institute and Institute for Environmental Management and Assessment (2002)
- 2.3 **Figure 2.1** provides an overview of the main stages in the capacity assessment process.

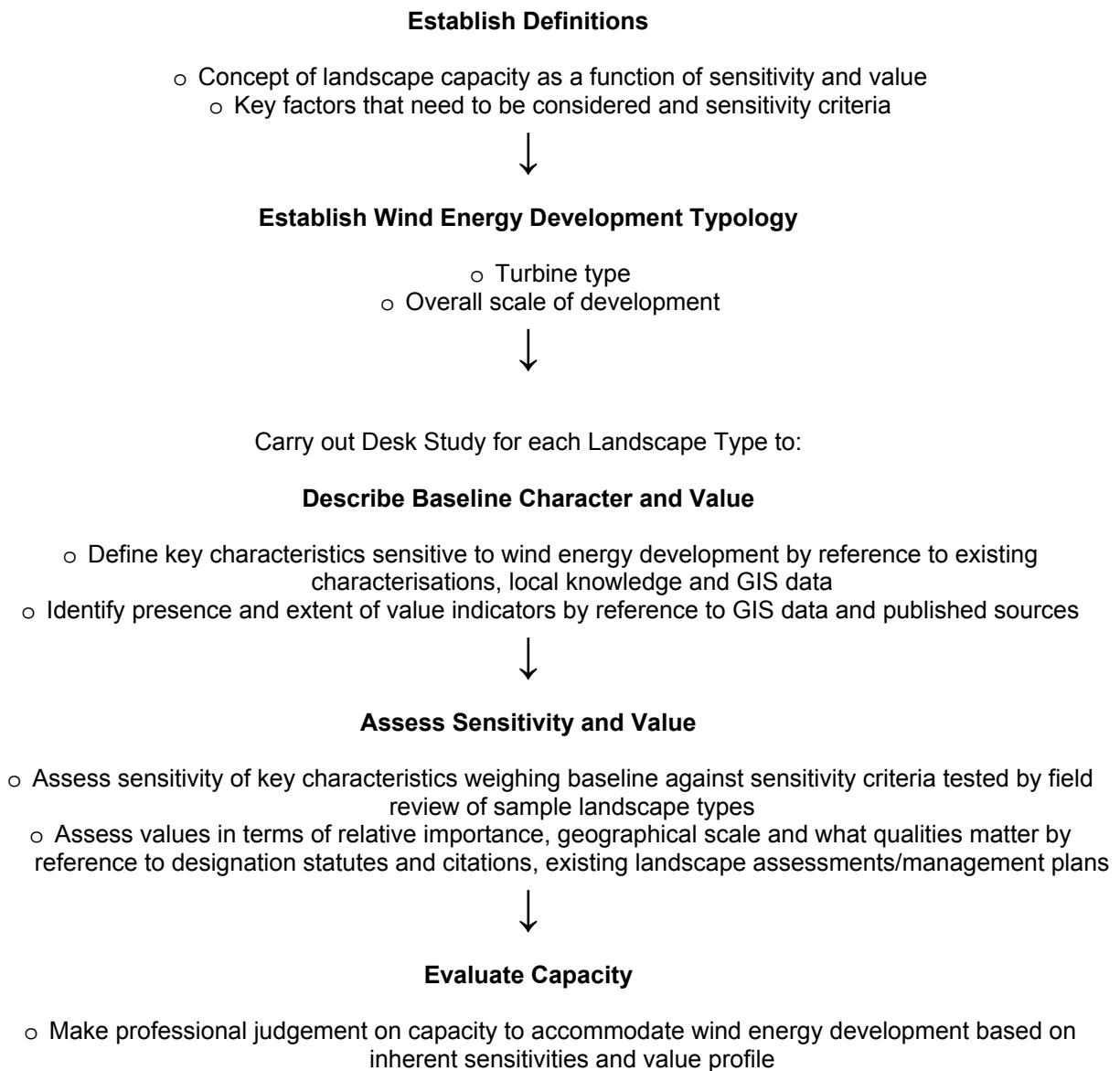


Figure 2.1: Methodology Overview

Definition of Landscape Capacity and Key Factors to Consider

- 2.4 The term landscape capacity is used to describe the ability of a landscape to accommodate different amounts of change or development of a specific type. For the purposes of this study the following definition of **capacity** has been adopted:

The extent to which a landscape is able to accommodate wind energy development without key characteristics being adversely affected and the values attached to it being compromised.

- 2.5 Judgements on the capacity of different landscapes to accommodate wind energy development have been made by consideration of the following factors:

- the inherent sensitivity of the landscape to wind energy development
- the value attached to the landscape or specific elements in it

- 2.6 For the purposes of this study the following definition of inherent **sensitivity** has been adopted:

The extent to which the character and visual amenity of a landscape is susceptible to change brought about by the introduction of wind energy development.

Key characteristics which most strongly define a landscape and which exhibit the impacts of a wind energy scheme have been identified as follows:

- Scale and Enclosure
- Complexity and Order
- Manmade Influence
- Remoteness and Tranquillity
- Settlement and Key views
- Visual Interruption
- Skyline
- Connections with Adjacent Landscapes

- 2.7 Appendix 1 provides further detail on these key characteristics and discussion of how they relate to landscape sensitivity. They embrace a combination of physical, natural and cultural characteristics, aesthetic qualities, perceptual aspects, condition, general visibility and presence of sensitive receptors likely to be affected. Some landscape types are able to accommodate wind energy development more easily than others. Often this can be governed by whether the intrinsic characteristics of wind energy development relate to the key characteristics and whether there is potential for a comfortable landscape fit; for example on a large scale, exposed or windswept hill. However there can also be potential for turbine development to contrast with key characteristics with scope for a well designed scheme to reinforce compositional qualities for example on a simple and uncluttered horizontal plane.^{iv} The key characteristics are often closely linked for example information on scale and enclosure will influence visual interruption.

- 2.8 A set of criteria was established for gauging sensitivity (Table 1). This is structured according to the key characteristics sensitive to wind energy development and describes the attributes that would suggest a lower or higher sensitivity to wind energy development.

Table 1: Landscape Sensitivity Assessment Criteria

Key Characteristic	Attributes indicating lower sensitivity to wind energy development	↔	Attributes indicating higher sensitivity to wind energy development
Scale and Enclosure	Large scale landform/land cover/development Featureless Coarse grained Open with broad views Exposed	↔	Small scale landform/land cover/development Human scale indicators Fine grained Enclosed with narrow views Sheltered
Complexity and Order	Simple Predictable Ordered and hierarchical Smooth and flowing Geometric with linear features Extensive/consistent land cover	↔	Complex Interest and unpredictable Confused and haphazard Rugged and intricate Organic with variable accents Irregular mosaics
Manmade Influence	Working, utilitarian or industrial image Contemporary structures eg masts pylons, cranes, silos, industrial sheds with vertical emphasis Functional manmade land use patterns and engineered aspects	↔	Wild image and sense of freedom Traditional or historic settlements, buildings and structures Natural or designed aesthetic patterns
Remoteness and Tranquillity	Busy and noisy Human activity and development Prominent movement	↔	Sense of peace and isolation Remote and empty No evident movement
Settlement and Key views	Unpopulated or sparsely populated Introspective settlement Inaccessible Ordinary or industrial settings	↔	Densely populated especially small scale dispersed settlement patterns Outward looking settlement Landscape focused recreation routes and/or tourist/ visitor facilities Valued attractive settings, 'gateways' or public views
Visual Interruption	Rolling topography Frequent vegetative or built features	↔	Flat or gently undulating topography Few if any vegetative or built features
Skyline	Reposeful skylines Simple predictable skylines Existing vertical focal points Discrete and well ordered verticals in coherent pattern with landscape Moderating features eg tiered horizons, low contrast with background	↔	Distinctive landmark skylines Complicated unpredictable skylines Bare uncluttered horizons Confusion of existing verticals of variable form and function Intensifying features eg framed vistas, valley rims, channelled views
Connections with Adjacent Landscapes	Gradual transitions in elevation Weak connections Neighbouring landscapes of low sensitivity Limited views into and out of landscape Simple large scale backdrops	↔	Sharp contrasts in elevation Part of a broader scenic composition and/ or contributes to valued settings Neighbouring landscapes of high sensitivity Prospects into and out from high ground or open edges Intricate of dramatic landmark backdrops

2.9 For the purposes of this study the following definition of landscape **value** has been adopted:

The relative importance that stakeholders attach to a landscape for a variety of reasons including scenic quality, perceptual aspects such as wildness, remoteness or tranquillity that contribute to a sense of place, rarity, presence and influence of other conservation interests and special cultural associations.

- 2.10 Indicators of **value** can be considered using sustainability terms as defined under the 'Quality of Life' environmental capital approach^v, which seeks to address 'what things (including landscapes / features / characteristics / areas) provide benefits, why they matter for sustainability and why they contribute to a sense of place'. Whilst this approach is best used in an integrated evaluation alongside other environmental aspects crucial tests are embodied in it that have relevance to this guidance:
- At what geographical scale does the benefit matter and why?
 - How important is it and to whom (residents/visitors/special interest groups/the wider public)?
 - Do we have enough of it (i.e. rarity)?
- 2.11 Statutory and non-statutory designations of landscapes and elements or features within them are an indicator of importance. As this capacity assessment is to be used for strategic locational guidance reference to designations has been restricted to those of sub-regional level and above eg Landscapes of County Importance, Areas of Outstanding Natural Beauty, Registered Historic Parks and Gardens, World Heritage Sites and National Parks etc.
- 2.12 The objectives behind those designations and the special qualities or attributes that justified designation need to be noted in order to judge whether they might be affected by changes brought about by wind energy development. It must be clearly recognised that a highly valued landscape, whether nationally designated or not, does not automatically, and by definition, have high sensitivity. It is entirely possible for a valued landscape to be relatively insensitive to wind energy development because of both the characteristics of the landscape itself and the nature of the development. The qualities for which a landscape is designated may not be compromised by change brought about by wind energy development. However a cautious approach needs to be taken in statutory protected areas since potential impacts within these areas will have heightened significance due to their widely recognised value at an international or national scale.
- 2.13 A set of criteria was established for gauging value (Table 2). This is structured according to the key indicators of value and describes the attributes that would suggest a lower or higher value. Threshold criteria for landscape importance and rarity were devised to assist in the value assessment process and are set out in Appendix 2.

Table 2: Landscape Value Assessment Criteria

Key Indicator	Attributes indicating lower value ↔ Attributes indicating higher value
Landscape designation	No specific designation ↔ National or regional designation eg AONB, Landscape of County Importance
Designated elements or features	Few if any designations ↔ Frequent designations of national or regional importance eg Registered Historic Parks and Gardens
Rarity	Common ↔ Unique
Conservation Interests	Weak interest ↔ Strong interests eg ecology geology/geomorphology, ecology, historic environment contributing to aesthetic qualities or perceptual aspects
Cultural Associations	No associations ↔ Strong associations with particular people, artists, writers, or other media or events in history

Wind Energy Development Typology

- 2.14 Sensitivity assessment considers how wind energy development will potentially interact with the landscape. To do this it is first necessary to understand the form of development proposed and nature of change likely to take place. This is like describing the development in an Environmental Impact Assessment except that it is generic rather than project specific. Hence generic typologies for individual turbines and different scales of development were identified to allow visualisation of the effect within the landscape and consideration of the most appropriate scale of development within each Landscape Type.
- 2.15 Turbines with a hub height of 60-75m and blade length of 35 – 45m giving a blade tip height of 95 to 120m and having an installed capacity of 1.3 – 3MW have been assumed. This reflects the type of turbines now most commonly available within the industry and coming forward in current applications and enquiries within Cumbria.
- 2.16 The following generic typology of six different scales of wind energy development is considered to represent the types of commercial or grid connected development likely to come forward as applications in Cumbria based on current interest and the scale of the receiving landscape in Cumbria:

Table 3: Development Typology

Category	No. Turbines	Installed Capacity
<i>Single or Twin</i>	1-2 turbines eg Voridian Factory, Siddick Pirelli Factory, Carlisle	1.3 - 6MW
<i>Small Group</i>	3-5 turbines eg Hoff Moor	2.6 – 15MW
<i>Large Group</i>	6-9 turbines eg Lowca	7.8 – 27MW
<i>Small Wind Farm</i>	10-15 turbines eg Kirkby Moor	13 – 45MW
<i>Medium Wind Farm</i>	16-25 turbines (no current examples)	20.8 – 75MW
<i>Larger Wind Farm</i>	25 or more turbines eg Whinash	62.5MW+

The study does not address small domestic installations or offshore developments.

Establish Baseline Character and Value


- 2.17 The existing generic landscape typology and character descriptions contained in the Cumbria Landscape Classification (CLC)^{vi} provide the primary basis for consideration of landscape sensitivity and subsequent evaluation of capacity for wind turbine development. This classification defines 13 landscape types and these are sub-divided into 37 landscape sub-types. It also identified the main urban areas but no character assessments were undertaken for these. Given that the current study is focused at a strategic level the main landscape types were considered to be an appropriate basis for the landscape capacity evaluation and subsequent locational guidance. An exception was made for urban areas and urban fringe types which were abstracted from the classification and grouped as a separate 14th landscape type because of their unique character and key sensitivities in relation to wind energy development.
- 2.18 Landscape character information was also drawn from other sources including the existing Wind Energy Supplementary Planning Guidance, Structure Plan Technical Paper No. 5^{vii}, Countryside Character Area descriptions^{viii} and AONB management plans. Reference to published information sources was also supplemented by accumulated knowledge from professional involvement in the preparation of the CLC and development control advice on current wind energy proposals.
- 2.19 The County Council's Geographical Information System (GIS) and hard copy 1:50,000 Ordnance Survey Maps were used to derive baseline information on settlement patterns, tourism facilities, strategic recreation trails and transport routes (see Appendix 3).

- 2.20 A systematic desk top review of the above information sources was undertaken. For each of the 14 landscape types worksheets were used to collate information on each of the 8 key characteristics identified above as being sensitive to wind energy. These were then analysed in order to derive a summary description to be recorded on Capacity Assessment sheets.
- 2.21 A number of information sources were used to build up a profile of strategic landscape values for each type. GIS was used to identify the presence and extent and of strategic landscape designations and other designated conservation interests (see Appendix 3). Information on the objectives behind landscape designations and the special qualities for which they were designated was obtained from the Countryside Agency web site (www.countryside.gov.uk), consultation with AONB managers, AONB management plans, relevant development plans and Structure Plan 1991-2006 Technical Paper No.4 – Assessment of County Landscapes.^{ix} The Cumbria Landscape Classification provides information on the area of each landscape type and sub-type within Cumbria. It was therefore be utilised as an indicator of rarity value of each landscape type within the county. Descriptions of associated geological, ecological, historic and cultural interests were primarily derived from descriptions in Structure Plan 2001-2016 Technical Pare No.5 – Landscape Character.^{vii} These values were again summarised and recorded on the Capacity Assessment sheets.

Assessment of Sensitivity and Value

- 2.22 The sensitivity of each key characteristic was judged by weighing the baseline information against the criteria summarised in Table 1. In effect these provide a measure of relative susceptibility. The level of sensitivity was expressed for each landscape type according to a five point scale as outlined below:

Level of Sensitivity

High	Key characteristic(s) of landscape very vulnerable and would be adversely affected by turbine development
Moderate/High	
Moderate	
Moderate/Low	
Low	Key characteristic(s) of landscape very robust and would not be adversely affected by turbine development

This level and a description of the particular sensitivity was recorded on the Capacity Assessment sheets together with the overall level of sensitivity for each landscape type determined by taking the average for all the key characteristics.

- 2.23 A field review was undertaken to test the findings on a sample of landscape types and the assessments were further informed and refined by this field exercise. The findings were also reviewed by the Council's Landscape and Countryside Officer experienced in landscape and visual impact assessment and they therefore represent a consensus of professional opinion.
- 2.24 A further consideration was undertaken to identify the appropriate scale of wind energy development according to the typology defined above. This was determined by reference to the key characteristics of landscape scale and settlement size.
- 2.25 No attempt was made to express the overall level of value for each landscape type as it was considered that any such mathematical approach would disguise the subtleties inherent in the assessment. However key indicators of value were analysed against the criteria summarised in Table 2 to build up a value profile for each landscape type.

Evaluation of Capacity

- 2.26 The capacity of each landscape to accommodate wind energy development was judged primarily on the basis of the assessment of sensitivities with an adjustment for any values that might be compromised thereby increasing the significance of potential impacts. Adjustments for value were based on professional judgement taking account the value profile of key indicators described above and relevance to the key characteristics sensitive to wind energy development ie those likely to be compromised by wind energy development. Capacity was expressed for each landscape type according to a five point scale as outlined below:

Level of Capacity

High

Low landscape sensitivity and landscape or key characteristics of low value. Indicates opportunity to accommodate wind energy development at an appropriate scale without significant landscape impact.

Moderate/High

Moderate

Moderate/Low

Low



High landscape sensitivity and landscape or key characteristics of high value likely to be compromised. Indicates that any type of wind energy development would be likely to have a significant landscape impact and would not generally be appropriate.

- 2.27 Capacity levels were recorded in a concluding statement on the Capacity Assessment sheets supported by a justification for this judgement, an indication of the most appropriate scale of wind energy development and a summary of the main factors favouring or limiting development.
- 2.28 It should be noted that the capacity statements refer to the capacity of the landscape to accommodate one turbine development of a certain scale. They are not intended to imply that the landscape has capacity to accept a large number of any type of development. Consideration of cumulative effects is to be dealt with separately in Part 1 of the Cumbria Wind Energy Supplementary Planning Document.

References

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- i ETSU, Cumbria County Council and South Lakeland District Council *'Planning and Renewable Energy in Cumbria'* 1994
 - ii Land Use Consultants for Breckland Council and King's Lynn and West Norfolk Borough Council *'Wind Turbine Development: Landscape Assessment, Evaluation and Guidance'* August 2003
 - iii Lovejoy for Lancashire County Council, Blackpool Borough Council and Blackburn with Darwen Borough Council *'Landscape Sensitivity to Wind Energy Development in Lancashire'* February 2005
 - iv Marc van Grieken et al *'Wind Farms in Scotland'* Landscape Design Journal Oct 2003
 - v Countryside Agency and Scottish Natural Heritage *'Landscape Character Assessment: Topic Paper 2: Links to other Sustainability Tools'* 2002
 - vi Cumbria County Council *'Cumbria Landscape Classification'* 1995
 - vii Cumbria County Council *'Cumbria and Lake District Joint Structure Plan 2001-2016: Technical Paper 5: Landscape Character'*
 - viii Countryside Agency *'Countryside Character Initiative: North West'* (www.countryside.gov.uk/ccj)
 - ix Cumbria County Council *'Cumbria and Lake District Joint Structure Plan 1991-2006: Technical Paper No. 4: Assessment of County Landscapes'*

LANDSCAPE TYPE 1: ESTUARY AND MARSH

Landscape Sub-Types	1a Intertidal Flats 1b Coastal Marsh
Key Characteristics	Sensitivity
Scale and Enclosure Large scale landscape of wide beaches and mudflats along exposed outer coastline and around estuaries mouths. Flat landform provides distant horizons, panoramic views and big skies. Enclosure behind beaches by low cliffs, sand dunes, raised beaches. Scale reducing in the sheltered inner estuaries and marshes (1b) with protecting enclosure of land and fells. Attractive estuarine vistas featuring Lakeland or Scottish peaks. Enclosure behind marshes (1b) by sea dykes, railway embankments, gorse scrub and hedges. Small details such as the winding creeks reduce the sense of scale overall.	Moderate (3) Within estuaries medium to large scale suggests scope for group sized development. However may appear incongruous against small scale intricacies and inner estuaries are highly sensitive due to their intimate scale and narrowed zones of visibility. Expansive scale and exposure of broader outer estuaries suggests scope for a larger development evoking a rational, functional image.
Complexity and Order Unique attraction of this landscape centres on its dynamic nature with shifting patterns of texture, colour and play of light. Shimmering water gives way to golden sands or shining silt. Wide beaches are strewn with patches of boulders (scaurs) and have upper foreshores of shingle. Estuarine mudflats are etched by a maze of minor channels. Salt marshes (1b) comprise closely grazed turf with an intricate pattern of creeks, gorse scrub and remnant hedges on higher marshes. Prolific birdlife is integral to character offering feeding and roosting ground for waders (1a) and wildfowl (1b).	High (5) Vertical turbine structures would provide a strong contrast with the simple flatness of this landscape. However its intrinsic beauty lies largely in the fascinating and dynamic patterns either reflected or etched across its surface. Turbine development likely to detract from this and relate poorly to irregular detail of natural patterns. Turbine development out in the broader estuary mouths may avoid such difficulties and create a simple focal point.
Manmade Influence Essentially natural landscapes spoilt only by minor or distant eyesores. Marine litter and old industrial waste can spread along the beaches. A few isolated large structures are visible around margins including power stations, terminals, sea rigs, and transmission masts. Fishing on the mudflats for cockles etc and grazing marshes by sheep and cattle. Historical drove routes of 'waths' across inner estuaries but very few modern road and rail crossings.	High (5) The semi-natural land cover and associated birdlife creates a strong sense of 'wildness', which may be perceived as being compromised by turbine development. There are few opportunities to relate to existing man-made features and forms. However a distant and isolated turbine grouping could form a point of focus comparable to other large structures around the margins of this landscape.
Remoteness and Tranquillity Essentially remote with disturbance limited to tourism and recreation pressures around the edges. Writers emphasise the stillness and tranquillity of the estuaries as an essential quality. Sense of remoteness attributable to absence of manmade features and open majestic scale makes viewer feel small and vulnerable and evokes a sense of freedom. Wild peaceful character of marshes reinforced by birdlife and grazing stock.	High (5) Noise and movement of turbines likely to compromise sense of peace, isolation and remoteness.
Settlement and Key Views Notably absent although development of coastal towns, villages and camp sites around the fringes has responded to fine vistas across the estuaries. Hadrian's Wall Trail, Cumbria Coastal Way and Cycle Way also offer extensive vantage over this landscape.	Moderate (3) Localised potential for over dominance and intrusion.
Visual Interruption Exposed landscape with no interrupting features. Landward edge of the marshes generally defined by dykes, beaches and estuary mouths by sand dunes, low cliffs or raised beaches.	High (5) Turbine development likely to be widely visible. Potential for visual confusion around low enclosure features due to partial visibility.
Skyline Coastal skyline uninterrupted and smooth –giving way to wide open skies with only a few distant isolated large structures around the margins. Inner southern estuaries dramatically enclosed by Lakeland fells and limestone escarpments.	Moderate/High (4) Isolated turbine grouping could form a point of focus and clear contrast with simple and subdued coastal skylines. However likely to mar or compete with skylines defined by picturesque fells or distinctive limestone escarpments.
Connections and Adjacent Landscapes Estuaries stretch well inland and strongly interact with other landscapes to form picturesque compositions. Southern estuaries have strong links with neighbouring high ground including coastal limestone (3), the Lakeland fells and their foothills (11a) and moorland extensions (9d). These create significant backdrops to Type 1 as well as prospects of it. Slight elevation of neighbouring dunes (2a) also provides extensive vantage over this landscape.	High (5) Picturesque compositions and fine vistas vulnerable to turbine development. Open prospects from neighbouring fells and dunes also sensitive.
Overall Sensitivity	Moderate/High

LANDSCAPE TYPE 1: ESTUARY AND MARSH

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Hadrian's Wall Military Zone World Heritage Site and Setting 1b and fringes of 1a in inner Solway Estuary (setting)	International: Protection of core archaeological features of the Roman wall and coastal defences as well as their landscape setting or buffer zone
Solway Coast AONB Majority of 1b in Solway Estuary	National: Conservation and enhancement of natural beauty attributable to: wild and remote qualities due to absence of large scale industrialisation, main roads and railways; rich presence of birdlife and expansive area of saltmarshes; distinctive contrasting sequence of coastal margins/ farmland and mossland; open and attractive views to Scottish coast and Lakeland fells; small distinctive villages.
Arnside and Silverdale AONB Part of 1a and 1b at head of Kent Estuary in Morecambe Bay	National: Conservation and enhancement of natural beauty attributable to its: scenic qualities including the distinctiveness of its Carboniferous limestone; mosaic of contrasting landscape types; dramatic views over Morecambe Bay; wildlife resources; cultural, archaeological and historic heritage; intimate scale and tranquillity.
Landscape of County Importance Remainder of 1a and 1b beyond AONBs apart from sections of 1a along outer West Cumbrian coast	County: Protection of distinctive character attributable to: dramatic unobstructed views; fascinating patterns across sands or water and channels etched in marshes; absence of detractors; unique and sublime compositions with adjacent fells and simplicity creating a strong positive response.
Rarity	Area of County
1a Intertidal Flats 1b Coastal Marsh	7.5%: common 1.0%: rare
Associations	Description
Geology and Geomorphology Dynamic processes of coastal erosion and deposition Small RIGGS near St Bees	Mudflats have greatly increased over centuries following progressive siltation. Sediments derive mainly from Irish Sea. River channels are constantly shifting and thereby affecting extent of salt marshes. Long shore drift operates on open coast. Features of marsh include dendritic creeks and erosion cliffs on seaward edge, terraces related to isostatic uplift and creek migrations and isolated water known as pans or floshes.
Ecology Extensive habitats and internationally important for bird life Extensive designation of 1a and 1b in main estuaries as SPA's, SACs and SSSIs No designations on beaches of outer coastline except SAC/SSSI at Drigg	Mudflats of Cumbria some of most important habitats in UK supporting huge numbers of invertebrates such as cockles and providing main feeding grounds for internationally important numbers of wintering and passage waders and wildfowl eg shelduck, dunlin and redshank. Boulder scaurs support mussel beds providing feeding grounds for eider duck, turnstone etc. Marshes also of international importance as feeding grounds for wildfowl and roosts for waders eg pink-footed geese, Bewick swans, curlew and golden plover. Peregrine falcon and merlin hunt over marshes in winter. Other birds breed there eg redshank. Marshes also support uncommon and rare invertebrates and natterjack toads and great-crested newts.
Historic Environment Some localised interest	Number of wrecks in Morecambe Bay. Throughout evidence of historical rights of way or waths, various cultural artefacts relating to shipping and trade. Good survival of organic artefacts eg prehistoric forests; fish traps due to waterlogged conditions. On marshes remains include settlements lost to sea, former quays and salt pans.
Cultural Scenic qualities and historic routes have inspired poets, painters and writers. Solway associated with historical characters and events.	Routes across estuaries described by numerous writers eg Elizabeth Gaskell in "Sextons Hero". Estuaries also well documented through work of artists and poets eg Wordsworth, JNW Turner, David Cox, Norman Nicholson and Thomas Sutherland. Invasion of Scotland via Solway anticipated by Edward 1 st in 1307 and Mary Queen of Scots fled rebellion in Scotland by boat down Solway Firth in 1568.

LANDSCAPE TYPE 1: ESTUARY AND MARSH

Capacity Statement

Overall the Estuary and Marsh landscape is judged to have **low** capacity to accommodate turbine development. Potential is limited by the high sensitivity of many of its inherent and unique characteristics, medium/high to high landscape value recognised by LoCI and AONB designations*, and strong ecological and cultural associations.

Any type of turbine development would have the potential to impinge on the natural character and strong sense of remoteness, tranquillity and wildness for which this landscape is valued. Its flat openness affords panoramic views which would be compromised, particularly where the estuaries combine with neighbouring dunes, mossland, farmed coastal plain and fells to create unique and picturesque estuarine compositions. Turbine development would also detract from the dynamic spectacle of shifting patterns of texture colour and play of light across sea, sand, marsh and sky.

There appears to be limited potential in the broad estuary mouths for isolated turbine development to create a focal point, comparable to other isolated structures around the margins of this landscape and in simple contrast with flat or subdued coastal skylines. The expansive scale and exposure here suggests that development up to wind farm size might be accommodated and benefit from a strong sense of purpose and rationality in such a location. However existing permissions for nearby off-shore developments suggests these areas are at or near capacity.

Particular sensitivities in relation to the setting of international and national designations include:

- *contribution of open sea, foreshore and salt-marshes to a sense of wildness and the sequence of contrasting landscapes in the Solway Coast AONB*
- *open sequential views from recreation and tourist routes along the coastal edge of the Solway AONB and Hadrian's Wall across the coastal plain towards the Lakeland fells most notably from Cumbria Coastal Way, the B5300, National Cycle Route 72, Hadrian's Wall Trail and from viewpoints at coastal forts associated with the Wall*
- *contribution to tranquil and picturesque compositions with fells in the Lake District NP and limestone hills of the Arnside and Silverdale AONB around the southern estuaries*

* For those areas that fall within the Solway Coast or Arnside and Silverdale Area of Outstanding Natural Beauty Policy R45 in the Cumbria and Lake District Joint Structure Plan 2001 – 2016 applies

LANDSCAPE TYPE 2: COASTAL MARGINS

Landscape Sub-Types	2a Dunes and Beaches 2b Coastal Mosses	2c Coastal Plain
Key Characteristics	Sensitivity	
Scale and Enclosure Variable largely flat open large scale landscapes with big skies, long views and large rectangular fields where vertical features stand out. Hummocky dunes (2a) offer shelter and small scale interest. On glacial till farmland/mosses (2b/2c) can be undulating, more enclosed and intimate with smaller irregular fields. Some localised enclosure and scale indicators include dunes, sea dykes, rail embankments, plantations, moss woodland, gorse and willow scrub, hedges and copses (increasingly scarce and wind shaped towards coast).	Moderate (3) Large group would not intimidate broader scale of flat open farmland, whilst in more contained undulating terrain a small group would be more appropriate. In close range large turbines may appear incongruous against small scale landforms and land cover features of dunes, mosses and more marginal undulating areas. Exposed coastal margins of Solway Plain and Walney fringes evoke a strong design rationale.	
Complexity and Order Soft organic forms and textured detail of dunes and beaches (2a) contrasts with simple flatness and rectilinear patterns of coastal plain (2c). Large square fields of improved pasture with some arable cropping are divided by hedges or fences and bordered by ditches and straight roads. Blocks of conifers common at head of estuaries. Varies to more irregular patterns and richer variety of textures and colours in undulating areas and mosses (2b) with mosaics of heath, willow/birch scrub and rough pasture with rushes/ gorse and into smaller narrow fields	Moderate (3) Opportunities for ordered grouping of turbines to mirror geometric regular field patterns and form a simple contrast with the horizontal plane. Sensitivity increases where landscape varies to more irregular forms and complex mosaics with natural vegetation.	
Manmade Influence Mix of farmland and semi-natural areas with isolated farmsteads and small villages. Strong local vernacular of cobblestone or clay built buildings, walls and banks. Heritage of Roman wall and forts and dismantled railways. Occasional modern structures include hard sea defences, drainage channels, pylons, masts, industrial buildings and hangars near urban fringe, farm sheds and silos. Tourism development on outer coast eg caravan parks, golf courses. Land management eg intensive farming, forestry and large scale peat cutting.	Moderate/High (4) Limited scope to relate to similar man-made structures. Some potential to relate to 'working' character of intensively farmed areas with engineered aspects and integration with larger scale geometric manmade land cover patterns. However likely to appear incongruous against heritage and vernacular features.	
Remoteness and Tranquillity Dunes and beaches (2a) enjoy a sense of peace and remoteness apart from fringes disturbed by tourism. The mosses and coastal plain (2b and 2c) are generally peaceful backwaters relatively untouched by modern development.	Moderate/High (4) Noise and movement of turbines could detract from peaceful backwater characteristics.	
Settlement and Key Views Dispersed pattern of small villages and isolated farmsteads connected by network of minor roads across 2c and outer Solway part of 2a. Tend to be nucleated in form although becoming more linear due to recent ribbon development especially along coast. Tightly knit with stone walls for shelter on outer coasts. Can occupy higher ground: tops of hills; raised beaches and sites along Hadrian's Wall or lower lying around fringes of the mosses. Caravan sites and tourist routes around outer coast. Hadrian's Wall Trail, Cumbria Coastal Way and Cycle Way, NCR 72 and B5300 also offer extensive vantage.	High (5) Limited scope to site development away from settled areas or tourism facilities. Size of development constrained by small scale nature of existing settlements with potential for over dominance.	
Visual Interruption Largely open, flat or undulating farmland or mosses. Some containment features increasing inland including tall windbreak hedges, engineered railway and flood defence embankments, buildings, scrub woodland and plantations.	Moderate/High (4) Turbine development on exposed outer margins with greatest wind resource likely to stand out. Some localised screening but also potential for visual confusion around low enclosure features due to partial visibility.	
Skyline Landform generally has horizontal emphasis producing open views, strong coastal horizons and big skies. Smooth towards coast rougher inland with woodland cover and backdrops of higher ground. Attractive backdrop of fells to inner margins of southern estuaries. Occasionally villages, farmsteads, copses or masts stand out as prominent features.	Moderate (3) Opportunity for isolated turbine grouping to form a predictable and simple contrast with horizontal plane. However there are issues related to maintenance of clear simple horizons and conflict with more complex skylines around southern estuaries.	
Connections and Adjacent Landscapes Quite complex due to configuration. Margins of southern estuaries benefit from picturesque backdrop of Lakeland fells, limestone escarpments, foothills and moorland (3, 11a, 9d). Contrast with Solway plain intertwined with low farmland ridges (5a) which interrupt views but also offer occasional prospects. Dunes (2a) offer prospects of estuaries (1) and coastal plain (2c). Elsewhere coastal plain tends to bleed into coastal urban fringe (2d).	Moderate/High (4) Contribution to picturesque compositions, fine vistas and setting of LDNP around southern estuaries and sequence of Solway AONB landscapes both vulnerable. Open prospects from neighbouring higher ground of ridges fells and dunes also sensitive. However visual interruption created by neighbouring ridges around Solway coastal plain may assist turbine development depending on height.	
Overall Sensitivity	Moderate/High	

LANDSCAPE TYPE 2: COASTAL MARGINS

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Hadrian's Wall Military Zone World Heritage Site and Setting Around inner Solway fringes of 2c (site and setting) and along outer Solway 2b and fringes of 2c (setting)	International: Protection of core archaeological features of the Roman wall and coastal defences as well as their landscape setting
Solway Coast AONB Dunes (2a) and seaward edges of Solway Plain (2c and 2b)	National: Conservation and enhancement of natural beauty attributable to: wild and remote qualities due to absence of large scale industrialisation, main roads and railways; rich presence of birdlife and expansive area of saltmarshes; distinctive contrasting sequence of coastal margins/ farmland and mossland; open and attractive views to Scottish coast and Lakeland fells; small distinctive villages.
Landscape of County Importance Most of 2a and b. 2c on Walney Island and around Duddon and Leven Estuaries (Solway and South Lakeland parts excluded)	County: Protection of distinctive character attributable to unusual landforms of dunes and plain with rocky outcrops; rich variety of natural textures and colours; absence of detractors; impressive views with backdrop of Lakeland fells; vernacular features eg cobble banks, early field enclosure patterns and quietness creating a strong positive response.
Registered Historic Parks and Gardens Holker Hall	National: Protection of special historic interest of parks and gardens and their settings
Ancient Woodland Generally absent some blocks around Leven Estuary	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity	Area of County
2a Dunes and Beaches 2b Coastal Mosses 2c Coastal Plain	0.2%: rare 0.9%: rare 3.8%: ordinary
Associations	Description
Historic Environment Diverse interest with concentration along internationally important Hadrian's Wall, on the mosses and in villages. Conservation Areas: Several villages across Solway coastal plain (2c) and Biggar on Walney Island	Volatile environment in dunes (2a) remodelled by wave and wind action, erodes have revealed evidence of prehistoric settlement. Mosses (2b) contain evidence of reclamation associated with abbeys, evidence of peat rooms in long narrow enclosures, traditional field patterns of small irregular enclosure and later larger more regular enclosure. Also important for 20 th century military sites. Highly nucleated settlement pattern on coastal plain (2c) with evidence of late enclosure outfields. 17 th and 18 th century vernacular buildings of local red sandstone in north and clay buildings on Solway Plain. Most significant archaeological feature is Hadrian's Wall and associated forts. Some villages occupy sites of former forts eg Burgh-by-Sands.
Ecology Dunes and mosses important habitats extensively designated for international or national importance, localised interest across coastal plain Most of 2a dunes designated as SSSIs sometimes as SACs and around Walney Island as SPAs. Extensive designation of 2b mosses around Solway as SACs, SSSIs and NNRs, but around Duddon only partial coverage. 2c mostly undesignated occasional small sites including outlying mosses, moss and saltmarsh fringes and LPOs on east side of Leven Estuary.	Dunes and slacks (2a) support natterjack toads, plus breeding colonies of great crested –newts eider duck, terns and gulls. Also important for rare plants eg coralroot orchid. Wetter areas of lowland raised bogs or mires that dominate mosses (2b) support sphagnum moss and cotton grass whilst drier areas support heather, birch and Scots Pine and drained margins can support large areas of rush and purple moor grass pasture. Wildlife interest on mosses includes rare butterflies, lizards, dragonflies, reed bunting, skylark and redshank. Most of coastal plain (2c) agriculturally improved with interest confined to wooded remnant mires important for red squirrel, wintering wildfowl and farmland birds eg corn bunting in fields and otter, Atlantic salmon and sand martins along rivers.

LANDSCAPE TYPE 2: COASTAL MARGINS

Capacity Statement

Overall the Coastal Margins landscape is judged to have **low/moderate** capacity to accommodate a small turbine group and exceptionally a large group. Potential is limited by the overall moderate/high sensitivity of its variable landscape character, medium/high to high landscape value of parts recognised by LoCI and Solway Coast AONB designation*, rarity of dunes and mosses and strong ecological and historical associations.

The Solway Coast is distinguished by a remarkable sense of wildness and remoteness, due to the presence of extensive wildlife habitats, lack of large scale industrialisation and absence of main roads and railways. Overall scenic quality is based on a diverse sequence of open sea, foreshore, salt-marshes, dunes and heath contrasting with inland landscapes of farmed coastal plain and mossland. These are both essential qualities of the AONB and are likely to be compromised by any scale of wind energy development.

Elsewhere much of the coastal plain landscape is large scale and open with simple rectilinear field patterns that would aid the integration of a group of turbines in a geometric layout. The 'engineered' character of the drained coastal plain and mosses would provide an appropriate context for turbine development. However there are some characteristics of the landscape that are more sensitive to turbine development and which substantially reduce capacity in the landscape as a whole.

A primary constraint is the limited extent of flat coastal plain and configuration into narrow strips. In the south around the Duddon and Leven it combines with neighbouring fells and intertidal flats to form picturesque estuarine landscapes vulnerable to the intrusion of turbine development. Around the Solway it is fragmented by patches of more contained undulating terrain and irregular mosaics of semi-natural vegetation found on undulating boulder clay and remnant mosses where turbines could be over dominant and less readily integrated.

The flat coastal horizons, big skies offer opportunities for simple contrast and the outer exposed coasts to evoke a strong sense of purpose and rationality. However the protection of the open and largely undeveloped skyline, peaceful backwater character, powerful contrasts with soft organic forms and rich textures of fringing dunes are major restrictions to turbine development. Further limiting factors are the heavy but dispersed patterns of visible vernacular and heritage features and small rural settlements which would make it difficult to site development sufficiently distant so as not to compromise their scale and character.

Particular sensitivities in relation to the setting of international and national designations include:

- *contribution to tranquil and picturesque compositions with fells in the Lake District NP and fine vistas to and from them around the southern estuaries*
- *contribution to a sense of remoteness and the sequence of contrasting landscapes in the Solway Coast AONB (as mentioned above)*
- *open sequential views from recreation and tourist routes along the coastal edge of the Solway Coast AONB and Hadrian's Wall across the coastal plain towards the Lakeland fells most notably from Cumbria Coastal Way, the B5300, National Cycle Route 72, Hadrian's Wall Trail and from viewpoints at coastal forts associated with the Wall*
- *open prospects across the coastal plain from the eastern side of the Arnside and Silverdale AONB, from Farleton Fell back to the AONB and the Limestone Link recreation route between them*

* For those areas that fall within the Solway Coast Area of Outstanding Natural Beauty Policy R45 in the Cumbria and Lake District Joint Structure Plan 2001 – 2016 applies

LANDSCAPE TYPE 3: COASTAL LIMESTONE

Landscape Sub-Types	3a Open Farmland and Pavements 3b Wooded Hills and Pavements	3c Disturbed Areas
Key Characteristics	Sensitivity	
Scale and Enclosure Medium to large scale rolling hills with limestone pavement and rocky outcrops. Sometimes rising abruptly as distinctive escarpments above the surrounding countryside (3a/b S. Lakeland) with cliffs and screes. In 3c superimposed with spoil heaps and pits of former iron ore mining creating a small scale hummocky landscape (3c). Land cover varies from open commons or fell tops with wide views and farmland divided into small-medium sized fields (3a Furness) to much more intimate enclosed well wooded hills interspersed with pasture and drained mossland (3b Arnside/Silverdale). Frequent scale indicators eg historic buildings, farms, stone walls, hedges.	Moderate/High (4) Single or small cluster development would not intimidate broader scale and wider horizons of open hills and small fells. Lower wooded hills and hummocky land disturbed by mining highly sensitive due to intimate scale and potential for over dominance in restricted zone of visibility. Turbines likely to appear out of scale in context of small scale field patterns and frequent natural and built scale indicators. Exposed coastal summits suggest a strong design rationale.	
Complexity and Order Complex with a rich variety of features and textures. Generally intricate but well balanced patterns of pasture fields divided by walls or hedges, limestone pavements and woodland - extensive in 3b but mostly restricted to steep scarp slopes in 3a. Harmony sometimes disrupted by major quarries and plantations. In contrast irregular manmade landforms and patchy naturalisation by scrub woodland in 3c creates a rich but visually confusing landscape. Features include tarns, historic buildings, parkland, and winding lanes.	High (5) In core limestone areas turbines likely to disrupt harmony of scenic compositions between open pastureland, pavements and woods. Likely to appear incongruous and sit uncomfortably against natural and manmade intricacies and accents. In areas disturbed by mining likely to compound visual confusion.	
Manmade Influence Strong sense of history derived from prehistoric sites, medieval buildings/remnant field patterns and old mine workings. Some parts largely managed agricultural land with distinctive field patterns. Others more mixed and naturalised with rougher textures of bare rock, rough pasture, scrub and ancient woodland. Some signs of increased blandness due to loss of boundary features; grazed woods etc. Largely unspoilt by large modern developments/roads. Localised detractors eg housing, quarries, small scale industry and farm sheds.	High (5) Little or no scope for association with large scale modern development or regular patterns of management. Turbines likely to appear incongruous in context of historic field patterns and visible remains. Also likely to stand out as alien structures and be perceived as compromising unspoilt character and natural qualities.	
Remoteness and Tranquillity Core agricultural areas remote from main roads generally perceived as quiet and calm, particularly in Furness (3a,c). Others affected by proximity of urban areas, M6 and railway generating noise disturbance and recreation pressures. Internal roads mostly lanes but often busy. Extensive network of popular paths to fell tops and through woods (3a,b).	Moderate (3) Noise and movement of turbines likely to reduce sense of calm and peace of rural backwaters and semi-natural parts valued for quiet recreation. Busier parts close to urban fringes and major through routes less sensitive.	
Settlement and Key Views Main settlements of Grange and Arnside developed rapidly as Victorian/Edwardian seaside resorts stimulated by Furness Railway. Late 20 th century expansion onto flanks of fells to meet holiday/retirement home demand. Elsewhere fairly dense pattern of nucleated villages, scattered farms and hamlets with a strong limestone built character developing around farms in valleys or on hillsides next to springs. Trails eg W2W Cycle Route, Cumbria Cycle Way, caravan sites and viewpoints present.	High (5) Limited scope to site development away from settled areas or tourism facilities. Size of development constrained by small scale nature of nucleated historic villages with potential for over dominance especially where arc of view is restricted between hills.	
Visual Interruption Rolling relief generally offers containment. Barer fell tops and farmland of 3a relatively open with limited containment by woodland and buildings. In 3b interruption by supplemented by hedges and blocks of woodland. Hummocky and wooded nature of 3c creates local enclosure	Moderate (3) Variable but absorption of turbine development generally assisted by rolling topography. Dense woodland cover in parts assists further but turbines likely to stand out more on barer farmland and summits.	
Skyline Distinctive craggy escarpments sometimes locally dominant eg Scout Scar, Farleton Knott, Arnside Knott. Elsewhere rolling hills create multiple horizons (3a, 3b) sometimes textured by trees. Hummocky terrain of 3c tends to produce multiple and less distinctive skylines with pylons/masts conspicuous.	High (5) Distinctive landmark skylines vulnerable. Potential for unpredictable relationship with complex skyline of hilly terrain, disturbing intermittent and partial turbine views, framing by hills and woods. Maintenance of uncluttered horizons is also an issue. Visual confusion with pylons/masts likely in 3c.	
Connections and Adjacent Landscapes Strong connectivity to simple foil of Morecambe Bay (1a,1b) and LDNP. Contributes to setting of coastal resorts, popular public viewpoints eg Hoard and routes into Lakes eg M6, A590. Abrupt elevational changes between scarps and open lowland (8b,2c,7a) create dramatic vistas.	Moderate/High (4) Turbines likely to detract from scenic estuarine compositions around Morecambe Bay and picturesque views from coastal resorts, public viewpoints, and strategic route ways. Striking contrasts/vistas from adjacent lowlands particularly vulnerable. Potential intrusion on townscape settings and valley rims.	
Overall Sensitivity	Moderate/High	

LANDSCAPE TYPE 3: COASTAL LIMESTONE

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Arnside Silverdale AONB All of sub type 3b	National: Conservation and enhancement of natural beauty derived from the special qualities of: distinctive Carboniferous limestone scenery; mosaic of contrasting landscape types; dramatic views over Morecambe Bay; wildlife resources; cultural, archaeological and historic heritage; intimate scale and tranquillity.
Landscape of County Importance All of 3a	County: Protection of distinctive character attributable to distinctive limestone landforms, scenic variety, abundance of natural/built/cultural features, views and strong historic interest creating a strong positive response.
Registered Historic Parks and Gardens Dallam Tower and Sizergh Castle	National: Protection of special historic interest of parks and gardens and their settings
Ancient Woodland Large parts of 3b most notably Arnside Park, Middlebarrow and Major Woods Elsewhere localised notably Brigsteer Park, Eggerslack Wood, Kirkhead Wood, Grange, Humphrey Head Wood, Dalton Crag, Hutton Roof, Clawthorpe and Curwen Woods (3a) Sea Wood and Bardsea Park (3a Furness) and Roanhead (3c)	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity	Area of County
3a Open farmland and Pavements 3b Wooded Hills and Pavements 3c Disturbed Areas	1.5% - Unusual 0.4% - Rare 0.1% - Unique
Associations	Description
Historic Environment Rich and diverse interest Conservation Areas: Kents Bank/Grange/The Slack (3a) and Beetham (3b)	Nucleated settlement pattern and mixed field patterns characterised by dry-stone walls with farm buildings mainly traditional and limestone built. Much evidence of quarrying and numerous limekilns. Archaeological remains include evidence of past iron working, Iron Age and Romano-British settlement sites with well preserved extant earthworks, caves containing evidence of prehistoric occupation (3a, 3b) and medieval fortified sites, pele towers and priories. Much of the woodland is ancient coppice wood and contains evidence of former woodland management and industries. 3c comprises an industrial landscape with evidence of former late 19 th /early 20 th century iron mining and limestone quarrying. Stately homes and parklands are also characteristic.
Ecology A richness of semi-natural habitats Designation extensive across 3b AONB and Farleton areas with SACs, SSSIs, and LPOs. Rest of 3a mostly undesignated but patches include SAC/SSSI at Helsington Barrows, LPOs around Grange and in pockets across Furness. Designations limited in 3c to small RIGGS and estuarine fringe.	Habitats largely determined by the underlying limestone geology. Open limestone pavements support a range of characteristic and rare species. Thin soils support limestone grassland, including nationally scarce blue moor-grass grassland type. In turn this supports a range of uncommon plants and rare butterflies. Woods often overlaying limestone pavement are upland mixed ashwood type and support a rich flora and fauna, including mezzereon, yew, red squirrel and dormouse (3a,b). Juniper scrub and species rich hedgerows are also characteristic. Rich diversity of semi-natural habitats in 3c and valuable wildlife refuge bounded by pasture or built up areas. Habitats include open water, woodland, carr, gorse and hawthorn scrub and patches of unimproved, herb rich limestone grassland. Ponds used by mallard, moorhen, and gulls.
Cultural Diverse and related to heritage	Areas within 3a are rich in Neolithic remains, many artefacts such as bracelets and axe heads have been found. Several sacred sites are present. A stone circle exists at Birkkrigg Common. Pele Tower on Arnside Knott is an old coastal beacon designed to resist sieges in the time of Edward I. Limekilns produced quick lime to improve soil fertility in 18 th /19 th centuries. 3c has a heavy industrial mining heritage celebrated through Norman Nicholson's poetry.

LANDSCAPE TYPE 3: COASTAL LIMESTONE

Capacity Statement

Overall the Coastal Limestone landscape is judged to have **low** capacity to accommodate turbine development. This reflects moderate/high sensitivity overall, medium/high to high landscape value recognised either by LoCI or AONB designation* of most parts, rarity and strong geological, ecological and historical associations.

Any type of turbine development would have potential to compromise the picturesque coastal limestone scenery around Morecambe Bay. This landscape is valued by both residents and visitors for its varied but generally harmonious and unspoilt character. This is attributable to intricate sometimes complex compositions between hills, pastureland, limestone pavements, woodland and winding lanes, a strong sense of history and naturalness derived from a wealth of wildlife habitats, visible archaeological remains, historic buildings and field patterns and absence of major roads or built developments. Any scale of turbine is liable to upset this sensitive balance and appear incongruous with little or no scope for visual linkage or association with comparable structures or regular land cover patterns.

Turbines would also detract from the landmark skylines of limestone escarpments featuring cliffs and screes that often add drama within this landscape. Whilst the scale of some larger hills appears favourable turbine development is likely to conflict with small to medium sized field patterns, small nucleated villages and frequent scale indicators such as dry stone walls and trees. Other issues include limited scope to site development away from residential and tourism receptors; potential to erode the sense of tranquillity in rural backwaters and semi-natural areas; over dominance in relation to restricted views from valleys and disturbing effects of partial turbine views over settlements, woods and valley rims.

Whilst internally interruption by hills and woodland would assist in visually containing turbine development the configuration of this landscape into relatively small pockets set within contrasting open estuarine, drained mossland or drumlin landscapes tends to heighten its sensitivity. Potential conflicts with inherent landscape characteristics and wider scenic compositions would be exposed in a variety of important vistas enjoyed from the coastal resorts, public viewpoints and strategic route ways around the Bay.

Particular sensitivities in relation to the setting of national designations include:

- *contribution of the open pavements and farmland to picturesque compositions between the Lake District NP and the Arnside and Silverdale AONB across the Kent estuary visible from popular public viewpoints such as Hampsfell, Scout Scar and Arnside Knott and coastal edge of the AONB*
- *open prospects across the coastal plain between the eastern side of the Arnside and Silverdale AONB and Farleton Fell and from the Limestone Link recreation route between them*
- *contribution of the open pavements and farmland to picturesque coastal limestone landscapes which extend south from within the Lake District NP and to dramatic contrasts between the imposing limestone escarpments and flat drained mosslands around the Kent and Lyth valleys as viewed from the major A590 and A591 'gateways'*

* For those areas that fall within the Arnside and Silverdale Area of Outstanding Natural Beauty Policy R45 in the Cumbria and Lake District Joint Structure Plan 2001 – 2016 applies

LANDSCAPE TYPE 4: COASTAL SANDSTONE

Landscape Sub-Types	4a Coastal Sandstone
Key Characteristics	Sensitivity
Scale and Enclosure Large scale rolling coastal hills culminating in exposed high cliffs of St Bees Head but progressively lower and undulating towards the south. Generally open character with wide views featuring focal points such as cliffs, lighthouse, caravan sites, Sellafeld complex. Occasionally intimate and enclosed along incised valleys. Large bare pasture fields predominate; limited features include low hedges (sparse and poor on exposed coastal tops, prominent hedge banks to south), buildings and occasional woods on valley sides.	Low/Moderate (2) Large group would not intimidate large scale of broader hilltops where exposure suggests a strong design rationale. On smaller hills and lower undulating terrain a single/twin or small group development would be more appropriate. Incised valleys highly sensitive due to more intimate scale and potential for over dominance in narrow zone of visibility.
Complexity and Order Strong grain of north-south ridges in higher northern part. Drama and natural beauty of natural sandstone cliff faces, cliff top heath and species rich grassland contrasts with settled pastoral farmland. Generally simple improved pastureland with occasional arable fields divided by low hedges provides a managed ordered landscape. Frayed around urban edges and coastal developments. Occasional natural accents of woodland and wetland habitats. Strong linearity along southern shoreline reinforced by railway and coast road.	Moderate/High (4) Opportunities for organic cluster to relate to strong ridgelines or simple line of turbines behind southern shoreline. Turbines likely to sit less comfortably on irregular undulating terrain. Scenic natural beauty of St Bees Head highly sensitive.
Manmade Influence Generally farmland with remnants of monastic landscape around St Bees created by the 12 th century priory there and medieval strip fields around other villages. Vertical and engineered elements include transmission masts, pylons, and railway. Northern fringe with Whitehaven affected by encroaching industry and southern shoreline by some tourism detractors eg camp sites and caravan parks, golf courses.	Moderate/High (4) Some potential to relate to 'working' character of improved farmland areas and engineered aspects such as the railway or industrial fringes. However likely to appear incongruous against vernacular and heritage features in and around villages and compromise largely unspoilt beauty of St Bees headland and rural coastline to south.
Remoteness and Tranquillity St Bees headland enjoys a sense of remoteness, freedom and wildness attributable to the absence of development, drama of the cliffs and sea, natural windswept habitats and seabird colony. Remaining area is a mix of peaceful backwaters and busier parts on the fringes of Whitehaven and around the coastal resort of St Bees.	Moderate/High (4) Noise and movement of wind turbines likely to compromise essential qualities of St Bees headland but could relate to busier parts.
Settlement and Key Views Beyond St Bees Head dispersed pattern of villages and hamlets connected by network of minor roads. In north these have tended to spread out along sheltered incised valleys and are now affected by urban expansion. Along undulating coastal strip tend to be more nucleated. Also scattered houses and farmsteads, some on hilltops. Many buildings are in local vernacular and built of sandstone. Views from caravan parks/camp sites along the coast and recreation routes eg Cumbria Coastal Way and C2C cycle route near Whitehaven.	High (5) Limited scope to site development away from settled areas or tourism facilities. Size of development constrained by small scale nature of existing settlements with potential for over dominance.
Visual Interruption Relief of rolling or undulating coastal hills offers some localised screening. However the land cover is predominantly open with only occasional vegetative or built visual containment features.	Moderate/High (4) Turbine development likely to stand out and be widely visible.
Skyline Open coastal hills create smooth sometimes layered horizons with intermediate ridges and incised valleys. Occasional vertical structures stand out such as hilltop transmission masts and lighthouse. Sheer cliffs of St Bees Head create a dramatic landmark.	Moderate/High (4) Isolated turbine grouping could form a focal point in contrast with a strong ridge top or coastal horizon. However there are major issues related to potential dilution of the St Bees Head landmark, maintenance of clear uncluttered horizons, vulnerability of valley rims to disturbing effects of partial views and blade flash and setting of historic town of St Bees.
Connections and Adjacent Landscapes Strong connections with the sea. Important backdrop to open beaches (1a). Sellafeld complex and industrial areas of Whitehaven (U- urban areas) are dominant features at ends of this type. Weaker connections inland tending to bleed into low farmland (5b) and urban fringes of Whitehaven (5d).	Low/Moderate (2) Near to coast large scale context of seascape likely to assist in absorption of turbine development. Potential for some assimilation against large scale industrial backdrops at northern and southern ends. There are issues related to intrusion on open prospects from popular beaches and extending visual clutter of urban fringe.
Overall Sensitivity	Moderate/High

LANDSCAPE TYPE 4: COASTAL SANDSTONE

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Heritage Coast St Bees Head	National: Protection of natural beauty of special coastlines and appropriate enhancement of public enjoyment. Special qualities: red sandstone headland, fissured cliffs, breeding seabirds and gem strewn beach, most conspicuous natural feature on entire west coast between N Wales and Scotland, cliff edge path part of Cumbria Coastal Way and Wainwright's Coast to Coast walk.
Landscape of County Importance Remaining area beyond St Bees Head	County: Protection of distinctive character attributable to dramatic sandstone cliffs, hills and Pow Beck valley and absence of detractors (north); natural /built features; cultural features (south); wide views and overall 'attractive' impression
Ancient Woodland Linethwaite Woods near Whitehaven Small valley woods around St Bees	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity	Area of County
4a Coastal Sandstone	0.7%: rare
Associations	Description
Historic Environment Varied interest Conservation Areas: St Bees village	Remnants of monastic landscape around St Bees created by 12 th century priory. Nucleated settlements surrounded by fossilised strips of former medieval field systems. Many buildings in local vernacular tradition and built of sandstone. St Bees Head lighthouse built in 1867.
Ecology Pockets of interest some outstanding Cliff edges of St Bees Head SSSI and small RIGGS. To south small site of Silver and Harney Moss SSSI and RIGGS.	Outstanding geological exposures and seabird colony of St Bees Head cliffs. Provide only breeding site on Cumbrian coast for a variety of seabirds including razorbill, guillemot, puffin and kittiwake. Cliffs here and to south also support coastal heath and species rich grassland. Inland landscape largely agricultural apart from wetland habitats associated with glacial deposits in south and valleys in north which also hold some small oak woodlands.
Cultural	Thomas Carlyle described the cliffs at St Bees Head as 'that sappyre promontary'.

LANDSCAPE TYPE 4: COASTAL SANDSTONE

Capacity Statement

The Coastal Sandstone landscape is judged to have **low/moderate** capacity to accommodate turbine development. Potential is limited by overall moderate/high sensitivity overall, the high value and nationally recognised landscape of St Bees Head and medium/high landscape value recognised by LoCI designation elsewhere and rarity value of this landscape type within Cumbria.

At St Bees Head sheer cliffs create a dramatic landmark punctuating the otherwise subdued Cumbrian coast and together with the cliff tops offering a rare sense of remoteness, wildness and unspoilt scenic beauty. These essential qualities, reflected in Heritage Coast and SSSI designations, are likely to be compromised by any scale of turbine development.

Beyond this headland there may be scope to accommodate a single turbine to small group sized development relating to the rounded coastal hills and undulations or straighter southern shoreline with engineered features. Such development should not over dominate the wide views available in this open landscape and could create a simple focal point in contrast to a strong ridge top or coastal horizon. Along the immediate coast absorption would be further assisted in the context of vast open sea backdrops and sense of exposure that would evoke a strong sense of purpose and rationality. Whilst broader ridge tops in north seem to offer potential for a larger group of turbines there are other overriding constraints on development of this size.

The dispersed pattern of small traditional settlements surrounded by remnant monastic or medieval landscapes would make it difficult to site developments sufficiently distant so as not to adversely affect their sense of scale and character. Villages in the incised valleys to the north of this type are particularly vulnerable to over dominance in a restricted zone visibility and disturbing effects of partial views over valley rims. Other issues include erosion of unspoilt rural coastline and uncluttered horizons, vulnerability of the open setting to St Bees Head and conflicts with the scale and character of natural and cultural accents such as wetland habitats, coastal heath and hedge banks.

LANDSCAPE TYPE 5: LOWLAND

Landscape Sub-Types	5a Ridge and Valley 5b Low Farmland	5c Rolling Lowland 5e Drained Mosses
Key Characteristics	Sensitivity	
Scale and Enclosure Medium to large scale landform varying from undulating to rolling to ridge and valley terrain. Enclosure and interruption increasing with degree of relief but long wide views from summits. Field units generally medium to large. Some vegetative enclosure and local scale indicators through presence of occasional valley woodlands, small plantations or shelterbelts, hedges and hedgerow trees but becoming sparser in higher areas and towards coast.	Low/Moderate (2) Small group would not intimidate this rolling landscape and exceptionally a large group might be absorbed on a broader ridge or open flatter area. Undulating fringes and occasional narrow valleys highly sensitive due to intimate scale and potential over dominance in narrow zones of visibility.	
Complexity and Order Fairly simple agricultural patterns dominated by improved pasture with limited features, variation related to grain of topography and exposure. Flatter areas and broad ridge tops - regular pattern of oblong or squarish fields often perpendicular to prevailing wind enclosed by hedges, straight roads, linear settlements along ridge tops, punctuated by farmsteads with associated tree clumps and shelterbelts. Rolling terrain and sheltered valleys – irregular fields, river/streamside woodland and trees, winding roads, more nucleated settlements and remnant mossland (5e, 5b).	Low/Moderate (2) Opportunities for turbine development to relate to strong ridgelines or mirror regular field patterns and create new focal points in sparser areas with strong siting rationale due to abundance of wind. More irregular patterns present fewer opportunities to link or connect turbine development.	
Manmade Influence Intensively managed and heavily settled 'working' countryside. Associated development and land cover patterns generally traditional and rural in character. Some larger modern development features including existing turbines, pylons, masts, major roads and railway, farm sheds and mineral workings and on urban edges industrial buildings, housing estates and golf courses. In West Cumbria legacy of degradation through open cast coal mining, with restoration to rather bland rectilinear landscapes (5a).	Moderate (3) Some potential for positive association with 'working' character and integration with regular manmade field patterns. However likely to appear incongruous against traditional rural development features. Could be less conspicuous near urban edges or where related to key manmade features sharing similar characteristics. May be perceived as further despoliation on restored areas that already have a negative image.	
Remoteness and Tranquillity Busy well populated working countryside especially around main settlements and transport corridors radiating out from Carlisle. However much quieter hinterland perceived as a rural backwater and pockets of remoteness/tranquillity around relic mosslands.	Moderate (3) Noise and movement of turbines could relate to busier areas but would be less suited to more peaceful parts.	
Settlement and Key Views Heavily settled lowland crossed by major transport corridors into West Cumbria notably the A66, A69 A595. Numerous small market towns, villages, hamlets and isolated properties in a dispersed pattern right across type 5, linked by minor roads and lanes. Also crossed by Hadrian's Wall Trail, NCR 72 and C2C cycle route.	High (5) Limited scope to site development away from settled areas. Size of development constrained by small scale nature of existing settlements, with potential for over dominance.	
Visual Interruption Generally interrupted by relief, woodlands, hedges and buildings.	Low/Moderate (2) Turbine development likely to be more easily absorbed in wider landscape due to presence of interruptions resulting in glimpsed or intermittent views.	
Skyline Landform generally has horizontal emphasis but relief creates multiple horizons and intermediate ridges frequently broken by trees and woodland. Dissected by numerous valleys. Relatively few vertical structures, pylons sometimes locally dominant but otherwise occasional silos, existing turbines, chimneys or industrial buildings on urban edges, and transmission masts on neighbouring coast or high ground.	Moderate/High (4) Variable and unpredictable relationship with skyline and partial visibility likely to result in confused image. Valleys rims vulnerable to disturbing effects of partial views and blade flash. Limited opportunity to correspond to other vertical structures. Scope for confusion of form and function in proximity to pylons.	
Connections and Adjacent Landscapes Strong relationships with neighbouring high ground especially where the transition is sudden eg North Pennines(13), Sandale, High Park escarpments(12). These create a large scale context and significant backdrop in terms of views out of type 5 as well as prospects of it. Neighbouring coastal landscapes have similar although more localised effects. Type 5 also contributes to the setting of important valleys eg Eden and Derwent, towns within them eg Workington, Solway Coast AONB (2) and LDNP.	Moderate/High (4) Whilst large scale contexts of adjacent landscapes may assist in absorption of turbine development potential for intrusion in open prospects from high ground and coast, often of national importance, are increased. Also potential for localised intrusion on townscape settings and valley rims.	
Overall Sensitivity	Moderate	

LANDSCAPE TYPE 5: LOWLAND

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Hadrian's Wall Military Zone World Heritage Site and Setting Carlisle to Newtown nr Brampton S part of 5b (site and setting) and seaward parts of 5a/b between Maryport and Silloth (setting)	International: Protection of core archaeological features of the Roman wall and coastal defences as well as their landscape setting
Solway Coast AONB Covers small parts of 5b	National: Conservation and enhancement of natural beauty attributable to: wild and remote qualities due to absence of large scale industrialisation, main roads and railways; rich presence of birdlife and expansive area of salt-marshes; distinctive contrasting sequence of coastal margins/ farmland and mossland; open and attractive views to Scottish coast and Lakeland fells; small distinctive villages.
Registered Historic Parks and Gardens Workington Hall (5a)	National: Protection of special historic interest of parks and gardens and their settings
Ancient Woodland Sparse concentrations alongside the Rivers Lyne (5b) and Petteril (5b) nr Carlisle, gill woodlands in Allerdale below Sandale escarpment and sides of Broughton Moor (5a) and Greenscoe Valley Barrow (5c)	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity	Area of County
5a Ridge and Valley 5b Low Farmland 5c Rolling Lowland 5e Drained Mosses	6.8%: common 9.3%: common 2.1%: unusual 0.4%: rare
Associations	Description
Historic Environment Varied interest Conservation Areas: Numerous small towns and villages across Solway Basin (5a/b), Settle Carlisle Railway and handful of small towns/villages E of Carlisle around Eden Valley (5b/c). Elsewhere only occasional villages including Geysouthern and Beckermest W Cumbria (5b/c), Longtown in Borders (5b) and Lindal-in-Furness (5c).	Evidence of Roman occupation prolific in places. Traditional field systems round settlements/fossilised strips of medieval origin (5a, 5c). Remains of former industries-iron/coal workings, quarrying (5a). Land improvement and mineral exploitation by Cistercian monks (5b). To north medieval fortified sites associated with Anglo-Scottish border (5b). Ancient hedgerows, red sandstone buildings, some stately homes and parks (5c). North of Carlisle regular field patterns characteristic of late enclosure (5b).
Ecology Largely an agricultural landscape with isolated areas of semi-natural vegetation Occasional small SSSIs, RIGGS and NNRs	Upland oak woodland (5a, 5b) Lowland raised bog (5b, 5e) Rush pasture /purple moor-grass (5a, 5b, 5e) Rivers and streams (5a, 5b, 5c) Species rich hedgerows and basin mire (5c)
Cultural Limited interest	Charles Dickens/Wilkie Collins 'The Lazy Tour of Idle Apprentices' (journey from Carrode Fell to Allonby) Wigton area settings for novels by Melvyn Bragg

LANDSCAPE TYPE 5: LOWLAND

Capacity Statement

Overall the Lowland landscape type is judged to have **moderate** capacity to accommodate turbine development. This reflects moderate sensitivity and low/medium value overall. A significant exception is the small area of lowland that falls within the Solway Coast AONB designation*. Here high value and sensitivity attributable to a sense of remoteness, lack of large scale development and contribution as a backdrop and contrast to wilder coastal edge landscapes indicate that any scale of wind energy development is likely to be inappropriate. Elsewhere some notable variations in the sense of enclosure created by the undulating and rolling topography and regularity of land cover patterns affect appropriateness.

Greatest potential occurs in the open flatter areas and broad ridge tops where small or, in exceptional circumstances, large turbine groups could relate to the medium to large scale landform without dominating wide views and integrate with regular field patterns. The sense of exposure in these areas would also evoke a sense of purpose and rationality. In the more sheltered and enclosed valleys or undulating fringes turbine development would feel over dominant and conflict with more irregular land cover patterns.

Whilst significant interruption by relief and vegetation would assist absorption in the wider landscape these same features are likely to result in unpredictable relationships between turbines and a variable skyline with intensifying or disturbing effects such as framing or blade flash over valley rims. A key characteristic limiting capacity is the dispersed pattern of numerous rural settlements making it difficult to site developments sufficiently distant so as not to adversely affect their sense of scale and character. Other more localised sensitivities include potential erosion of peaceful rural backwater qualities and impact on valued views from neighbouring high ground or coast, important valleys and towns such as Workington within them.

Particular sensitivities in relation to the setting of international and national designations include:

- *contribution of the quieter hinterlands to a sense of remoteness and the sequence of contrasting landscapes in the Solway Coast AONB*
- *open sequential views from recreation and tourist routes along the coastal edge of the AONB and along Hadrian's Wall across the lowland ridges towards Lakeland fells most notably from Cumbria Coastal Way, the B5300, National Cycle Route 72, Hadrian's Wall Trail and from viewpoints at forts and milecastles associated with the Wall*
- *fine vistas to and from the northern and western fells of the Lake District NP and open estuarine views from the Ravenglass and Eskdale 'gateway'*
- *vistas of the north-western tip of the North Pennines AONB*

* For those areas that fall within the Solway Coast Area of Outstanding Natural Beauty Policy R45 in the Cumbria and Lake District Joint Structure Plan 2001 – 2016 applies

LANDSCAPE TYPE 6: INTERMEDIATE LAND

Landscape Sub-Types	6a Intermediate Land
Key Characteristics	Sensitivity
Scale and Enclosure Mainly broad scale open landscape of gentle ridges and wide valleys. Terrain varies from rolling highland with wide views and few hedges to undulating land enclosed by hedges and walls. Borders area dissected by deeply incised well wooded valleys and Vale of Eden features narrow gill like valleys and some more enclosed landscapes associated with villages in protected locations. Fabric defined by walls and hedges, plantation blocks, valley woodlands with details of hedgerow trees, walls, stone buildings.	Low/Moderate (2) Small to large turbine groups would not intimidate broad ridges of more open higher ground provided they relate to scale of fields and woodland blocks. Undulating enclosed land and incised valleys more sensitive due to more intimate scale and potential for over dominance in narrow zones of visibility. Turbines likely to appear over dominant in context of minor valleys or gills, and in close range against features such as hedgerow trees, small gill woods and traditional stone buildings.
Complexity and Order Mostly fairly bland with a few strong features but generally balanced and pleasant. Predominantly improved pasture bounded by hedges often with trees or sometimes stonewalls. Field size variable medium to large breaking down into smaller strip fields close to settlements. Plantations and semi-natural valley woodlands often important elements. Inglewood Forest has distinct simple well regulated estate pattern of rectilinear fields, straight roads, and shelterbelts divided by M6 motorway/ mainline railway corridor. More variety and irregular patterns of woods and rush pasture around narrow valleys and gills	Moderate (3) Opportunities for ordered turbine groupings to mirror rectilinear patterns of larger fields, plantation blocks and straight roads particularly in Inglewood Forest area. Patterning in other areas indistinct offering less scope for visual linkage. In higher rolling areas simple lines of evenly spaced turbines along contour lines could complement grain of gentle ridges. Irregular patterns of narrow valleys and remnant strip fields round settlements highly sensitive.
Manmade Influence Managed 'working' countryside with a number of visible historical elements such as planned villages of medieval origin surrounded by remnant open common and strip fields, prehistoric and medieval earthworks and Roman remains, late enclosure patterns of Inglewood. Largely unaffected by modern development pressures apart from M6/rail corridor which attracts commercial developments and increasing numbers of large farm buildings.	Moderate/High (4) Some potential for positive association with 'working' farmland character and integration with regular late enclosure patterns. Likely to appear incongruous in context of more irregular heritage patterns, stone structures and earthwork features. May be perceived as compromising generally unspoilt rural character.
Remoteness and Tranquillity Rural mostly settled landscape which feels balanced and calm. Busier around M6/rail corridor, A and B roads. Borders area is more sparsely inhabited and has a feeling of remoteness.	Moderate (3) Noise and movement of turbine development maybe appropriate adjacent to through routes. Elsewhere turbines, especially larger groupings, likely to reduce sense of calmness and remoteness.
Settlement and Key Views Fairly heavy but dispersed pattern of small settlements crossed by major through routes. Planned villages with greens and sandstone buildings frequent around Penrith, within Vale of Eden and marking foot of North Pennines. Variable form responding to shape of river or beck side settings. String of linear villages along A6 (former Roman Road) through to Carlisle. Elsewhere pattern of small hamlets and isolated properties and farms across Inglewood Forest and Borders although sparser away from Lyne valleys. Hadrian's Wall Trail close to southern boundary of Borders area. Settle/Carlisle railway and Eden Valley Cycle Route offer extensive vantage over Vale of Eden to dramatic N Pennine scarp. C2C also crosses this area and Inglewood area.	Moderate/High (4) Limited scope to site development away from settled areas. Size of development constrained by small scale nature of historic and distinctive planned villages with potential for over dominance. Sparser parts with isolated properties present fewer problems.
Visual Interruption Rolling farmland significantly interrupted by woods, plantations, hedges and hedgerow trees, walls, villages and undulations.	Moderate (3) Although there are wide views across broad valleys variety of screening features likely to assist absorption and create glimpsed or intermittent views.
Skyline Wide views across valleys to broad horizons often textured and tiered by woodland bands and intermediate ridges. Occasional vertical manmade structures include pylons and Skelton radio mast complex. Some narrow and incised valleys with distinct rims.	Moderate (3) Opportunity for linear turbine groupings to integrate with broad banding of tiered horizons and predictable relationship in context of broad open valleys. Scope for confusion of form and function in proximity to pylons and radio masts. Some valley rims vulnerable to intrusion and disturbing partial views.
Connections and Adjacent Landscapes Relationship with neighbouring high ground especially where transition sudden as east side Vale of Eden with North Pennines AONB escarpment and to lesser extent Inglewood with Caldbeck Fells of LDNP and Lazonby sandstone ridge (10) and Borders with Bewcastle Fells (9). These create large scale backdrops to parts of Type 6 as well as prospects of it. Also contributes to setting of Eden Valley and in Borders Irthing Valley with Hadrian's Wall along its northern rim.	Moderate/High (4) Whilst large scale backdrops may assist in absorption of turbine development potential for intrusion in open prospects from high ground, often of national importance, are increased. Imposing views of dramatic North Pennine scarp from Vale of Eden vulnerable. Also potential for intrusion on neighbouring major valley rims and setting of internationally important Hadrian's Wall.
Overall Sensitivity	Moderate

LANDSCAPE TYPE 6: INTERMEDIATE LAND

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Hadrian's Wall Military Zone World Heritage Site and Setting Southern fringe of Borders area (setting)	International: Protection of core archaeological features of the Roman wall and coastal defences as well as their landscape setting
North Pennines AONB Small areas on fringes	National: Conservation and enhancement of natural beauty derived from the special qualities of: a unique landscape unit with a distinctive geology and unusually large extent of high, exposed semi-natural moorland which has outstanding wilderness qualities; scenic contrasts and unfolding sequence of simple moorland, sheltered dales and dramatic scarp as well as spectacular individual features; moorland landscapes valued for their long views and western scarp affords panoramic views; special interests of historic mining landscape, unique flora and fauna, unusual range of geological and geomorphological features and wealth of archaeological and historical remains which contribute to landscape character.
Registered Historic Parks and Gardens Hutton-in-the-Forest	National: Protection of special historic interest of parks and gardens and their settings
Ancient Woodland Numerous along R Lyne and its tributaries in Borders and concentration in NW corner of Inglewood Forest area	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity 6a Intermediate Land	Area of County 9.4%: common
Associations Historic Environment Rich and diverse Conservation Areas: Settle/Carlisle Railway Several villages at foot of N Pennines and Vale of Eden	Description Characterised by planned villages probably originating from 12 th century, with greens, large churches, sandstone buildings, traditional farm buildings within them and surrounded by former open common fields (and remnant medieval strip fields???). Prehistoric and medieval earthworks and Roman remains eg roads, camps, forts (A6 between Penrith and Carlisle). Inglewood Forest distinct from much of rest, in part of Barony of Greystoke created in 1120 and in Norman times former Royal Forest hunting ground only enclosed in late 19 th century hence rectilinear fields and straight roads and characterised by post medieval squatter settlements.
Ecology Wide range of localised ecological interest Designations limited to main rivers and becks generally SSSIs sometimes SACs Few small pocket SSSIs over woods, pastures or moss some also SACs	Improved pasture with species-rich hedgerows, occasional areas of rush pasture and purple moor grass. Couple of mire basins and occasional species rich road verges near Penrith. Small woodlands in Eden valley and more extensive ones in White and Black Lyne valleys of Borders area with range of upland oak and wet woodland communities.
Cultural	Vale of Eden supposed links to legends of King Arthur eg name 'Lyvenett' possible connection with 'last King of the kingdom of Rheged who lived at Llwyfenwydd.

LANDSCAPE TYPE 6: INTERMEDIATE LAND

Capacity Statement

Overall the Intermediate Land is judged to have **moderate** capacity to accommodate small to large turbine groups. This reflects moderate sensitivity and low/medium value overall. Notable geographical variations in character and higher landscape values within and close to international and national designations affect appropriateness.

Greatest potential occurs across the broad valleys and gently rolling areas benefiting from visual interruption by tree cover and ridges. Here groups could relate well to the medium to large scale of landform, fields or woodland without over dominating wide views. Ordered groupings would integrate well with rectilinear field patterns and plantation blocks, particularly in the Inglewood Forest area. Elsewhere simple lines of turbine could flow with the grain of topography and highlight intermediate ridgelines.

A key characteristic limiting capacity is the rich and diverse historic environment and general absence of large modern development structures. Across the Vale of Eden any type of turbine development would compromise the distinctive pattern of planned villages and surrounding fields of medieval origin. Elsewhere the widespread occurrence of prehistoric or medieval earthworks and Roman remains present problems.

Other limiting factors include the dispersed pattern of small settlements making it difficult to site development sufficiently distant without affecting their sense of scale and character, conflicts with a sense of remoteness in the Borders area, potential for over dominance and incongruity with the detailed natural variety of gills and incised valleys, visual intrusion on neighbouring upland prospects and major valleys such as the Irthing and Eden.

The close interrelationship and dramatic contrast between the North Pennines AONB scarp and the Vale of Eden indicate that any scale of turbine development would be difficult to accommodate in this area. A small area of Type 6 clips the edge of the AONB* encompassing a string of vulnerable historic sandstone villages along the foot of the western scarp.

The setting of the AONB is also vulnerable in terms of views in and out including:

- *inspiring views over the Vale towards the Lakeland fells provided from the western scarp most notably from the A686 pass, Hartside Cross viewpoint, the Maiden Way and the Coast2Coast (C2C) Cycle Route (NCR 7) and further south from the Pennine Way around High Cup*
- *views from below where the scarp forms an imposing wall above the Vale visible from the A66, A686, Settle Carlisle Railway and C2C and Eden Valley Cycle Routes (NCR 7 and 68)*

Particular sensitivities in relation to the setting of other national and international designations include:

- *sequential views of the southern fringe of the Borders area from Hadrian's Wall Trail and Cycle Route (part of NCR 72) and from viewpoints at the turrets, forts, milecastles and camps between Castlesteads and Birdoswald*
- *sequential views towards Hadrian's Wall from the south with the Borders area behind from the Pennine Way as it descends into the Irthing Valley and from the A69*
- *views to and from the Caldbeck Fells on the north-eastern fringe of the Lake District National Park and views from the C2C Cycle Route (NCR71) 'gateway' into the Park near Greystoke*

* For those areas that fall within the North Pennines Area of Outstanding Natural Beauty Policy R45 in the Cumbria and Lake District Joint Structure Plan 2001 – 2016 applies

LANDSCAPE TYPE 7: DRUMLINS

Landscape Sub-Types	7a Low Drumlins 7b Drumlin Field	7c Sandy Knolls and Ridges
Key Characteristics	Sensitivity	
Scale and Enclosure Small to medium scale landscapes defined by hummocky patterns of small hills, ridges and valleys moulded by glacial processes. Pronounced relief (7b, c) creates enclosure becoming more open on edges: around Carlisle merging with rolling lowland (5c) and in South Lakeland and Furness low drumlins towards coast becoming barer, more isolated and subdued (7a). Features include streams, hedges, hedgerow trees, walls and small woods. Exposed hill tops afford long views.	Moderate / High (4) Single or small group development would not intimidate broad hilltops or dominate wider views on open edges of this type. Towards coast exposure also suggests a strong design rationale. More pronounced rolling terrain highly sensitive due to intimate scale and potential for over dominance in narrow zones of visibility. Potential conflicts of scale between turbines and size of receiving hills and frequent land cover features in more sheltered inner areas.	
Complexity and Order Balanced well managed working countryside distinguished by topographic patterns. Consistent alignment of drumlins (7a, b) creates a strong topographic grain overlain by regular geometric grid of fields enclosed by hedges. Generally improved pastureland with occasional arable fields. Winding becks and tarns in valleys. Bare on coast (7a) increasingly varied inland with natural accents of woodland and hedgerow trees. Small mature woodlands and plantations combine with more irregular field pattern of 7c to create attractive parkland appearance. Patterns and grain sometimes disrupted by motorway and power lines.	Moderate (3) Opportunities for organic cluster configured in response to particular shape of hill or ridge and topographic grain. Likely to read reasonably well as a simple contrast in barer areas. In more complex but ordered parts turbines likely to disrupt harmony of scenic compositions between hills, small woods and winding valley features.	
Manmade Influence Intensively farmed 'working' countryside modified by field enlargement and new farm buildings. Some historical features such as historic village cores, industrial archaeology, medieval sites and castles, Roman road (7c) and Lancaster Canal (7a/b). Development and recreational pressures associated with proximity to urban centres include village expansion, barn conversions, farm diversification, golf courses and public access. Large modern structures include isolated industrial developments, pylons, and major route ways.	Moderate/High (4) Some potential to relate to 'working' character of improved farmland and integration with regular field patterns. However turbines likely to appear conspicuous in absence of similar man-made structures particularly on hilltops and may be perceived as further urbanisation. Potential for localised conflict with character of heritage features.	
Remoteness and Tranquillity Rural heavily settled landscape. In lower open edges (7a) noise and movement along main roads, motorway and railway intrude. Elsewhere more contained by pronounced relief. On fringe of urban centres village expansion, barn conversions and recreation generate traffic and create busier feel whilst other areas retain a sense of calm.	Moderate/High (4) Noise and movement of turbines may be assimilated against context of existing intrusive infrastructure development. However elsewhere could further erode sense of pastoral calm which is valued for recreation.	
Settlement and Key Views Dispersed pattern of small settlements, heaviest in South Lakeland sparser in Furness and Brampton areas. Linked by network of winding lanes and crossed by major through routes. Many retain a strong historic structure either nucleated within hollows with houses grouped around squares, greens or tarns or linear along the side of hills or important route ways. W2W Cycle Route crosses Furness and S Lakeland (7b).	High (5) Limited scope to site development away from settled areas particularly in South Lakeland. Size of development constrained by small scale nature of existing settlements with potential over dominance especially where views are restricted between hills.	
Visual Interruption Hummocky landscape significantly interrupted by variety of small hills or ridges, woods, hedges, walls, plantations and villages. Reducing towards coast where drumlins subdued and have fewer features.	Moderate (3) Generally absorption in wider landscape would be assisted by presence of frequent interruptions; in barer areas of subdued relief turbines would be more widely visible.	
Skyline Varying from discrete bare and rolling hills to complex tapestry of interwoven ridges, woodland and trees. Vertical manmade structures limited to pylons. Occasionally hilltop woods stand out as landmarks in barer areas. From enclosed valleys hills create immediate and dominant skylines whilst hilltops afford long views.	Moderate/High (4) Limited scope for isolated development to punctuate discrete hilltops and form a clear contrast with barer skylines. In areas of pronounced relief hilltop turbines likely to have confused image due to incoherent relationship with skyline and partial visibility; appear overbearing from enclosed valleys and hollows; be emphasised by framing effects of hills and trees.	
Connections and Adjacent Landscapes Generally weak connections due to visual interruptions and gradual transitions in elevation. Inter-visibility between drumlins and neighbouring (7a/b) limestone hills such as Birkrigg and fells including Arncliffe/Silverdale AONB (3b), LDNP, N Pennines AONB(11/13) and Farleton (3a). Contributes to setting of important valleys of Irthing, Kent, Goldmire.	Low/Moderate (2) Some potential for localised intrusion in open prospects from neighbouring limestone hills or fells often of national importance, setting of Hadrian's Wall, Barrow, Furness Abbey and important valley rims.	
Overall Sensitivity	Moderate/High	

LANDSCAPE TYPE 7: DRUMLINS

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Hadrian's Wall Military Zone World Heritage Site and Setting N tip of 7c nr Naworth Castle (setting)	International: Protection of core archaeological features of the Roman wall and coastal defences as well as their landscape setting
Landscape of County Importance Sub-type 7c and South Lakeland part of 7b	County: Protection of distinctive character attributable to distinctive rolling topography; variety of attractive features such as woods, small fields, hedges and trees, streams, and tarns; varied views (7b); woodland and historic character (7c) creating a strong positive response.
Ancient Woodland Absent across 7a and only small isolated woods across 7b Concentration around Gelt Valley/Naworth Park/Talkin Tarn in 7c	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity	Area of County
7a Low Drumlins 7b Drumlin Field 7c Sandy Knolls and Ridges	0.4%: rare 1.8%: unusual 0.4%: rare
Associations	Description
Historic Environment Varied interest especially 7c Conservation Areas: Milnthorpe (7a) Burton-in-Kendal and Lindal-in-Furness (7b)	Dispersed settlement pattern generally with historic core of buildings are constructed of limestone of variable form responding topographic or important route ways. Number of traditional large village market centres. Features include medieval fortified sites and castles, Roman road (7c) and some parkland/ estates eg Naworth. Recently modified traditional field patterns, some fossilised strips (7c). Industrial heritage (7a/7b) with evidence of former iron works around Barrow, corn or paper mills and gun powder works in valleys around Kendal and northern reaches of Lancaster Canal.
Cultural Landscape popular subject for artists	Sandy knolls and ridges of 7c popular location for variety of artists such as Ben Nicholson, Winifred Nicholson, George Howard, Christopher Wood and Donald Wilkinson. Drumlins with nestling farms of 7b painted by artists such as William Collingwood, Arthur Tucker and Herbert Coutts.
Geomorphology Important evidence of glacial processes	Drumlins of boulder clay (7b) and outwash sands and gravels moulded by and reflecting direction of ice sheet movements. Kettle tarn features formed in basins by melting ice. Gravel ridge east of Brampton is a 'kame' formed by glacial meltwater.
Ecology Agricultural improvement limits ecological interest Designations absent across 7a. Largely absent across 7b apart from occasional SSSIs along rivers and odd LPO and RIGGS. River Gelt SSSI/SAC/SPA and RIGGS dissect 7c.	Improved pasture with species rich hedgerows. Occasional interest in small semi-natural woodlands, tarns and rush pasture in hollows, rivers, streams and roadside verges, and in 7c frequent upland oak woodland eg Gelt valley. Lancaster Canal supports range of aquatic plants.

LANDSCAPE TYPE 7: DRUMLINS

Capacity Statement

The Drumlins landscape is judged to have **low/moderate** capacity to accommodate single turbines or small cluster sized developments. This reflects a moderate/high sensitivity overall, medium/high landscape value of parts recognised by LoCI designation and rarity. Variation within this capacity range is primarily dictated by the degree of relief, proximity to the coast and settlement density.

Pronounced relief is the defining characteristic of this landscape and a key factor limiting capacity. Turbine development is likely to intimidate the small scale nature of the component hills and ridges, not only in terms of its overall development size but individual turbines, with current heights of around 100m likely to appear out of scale. The restricted views created by this relief are vulnerable to visual dominance, an issue likely to be of heightened significance in areas such as South Lakeland which have a heavy pattern of small dispersed settlements. In sheltered areas scenic compositions of hills, woods and winding valley features similar to parkland and valued as Landscapes of County Importance are vulnerable to disruption. The outer subdued and more open hills, particularly towards the coast, present fewer problems and benefit from positive associations with exposure and opportunity to create simple contrasts with barer skylines.

Whilst significant interruption by relief and vegetation (across inland parts) would assist absorption in the wider landscape these same features are likely to result in unpredictable relationships with a variable skyline and intensifying or disturbing effects such as framing and blade flash. Other issues include absence of similar manmade vertical features; potential erosion of rural qualities and calmness valued for recreation by residents of nearby towns and localised intrusion on open prospects from limestone hills and important valley rims.

Particular sensitivities in relation to the setting of international and national designations include:

- *sequential views from Hadrian's Wall Trail and National Cycle Route (NCR 72) and from viewpoints at the turrets, forts, milecastles and camps between Castlesteads and Birdoswald*
- *vistas to and from the north-western tip of the North Pennines AONB most notably from parkland and recreation routes such as NCR 72 as it descends from the Tindale Fells*
- *contrast at the Kendal 'gateway' into the Lake District National Park between the rich managed drumlins and the sparse, rugged and wilder limestone scars as viewed from the A591, National Cycle Route 6, the Dales Way and popular viewpoints on the scars*
- *open prospects across the low drumlins from the eastern side of the Arncliffe/Silverdale AONB, from Farleton Fell back to the AONB and the Limestone Link recreation route between them*

LANDSCAPE TYPE 8: MAIN VALLEYS

Landscape Sub-Types	8a Gorges 8b Broad Valleys	8c Valley Corridors 8d Dales
Key Characteristics	Sensitivity	
Scale and Enclosure Variable depending on height and location. Range from intimate tightly enclosed gorges(8a) with views channelled along valley through to broad and open large scale valleys with extensive views but narrow and winding in parts (8b,c,d). Variety of scale indicators including small woods, ghylls, scrub, hedges, stone walls, plantations, individual trees and buildings. Broader valleys feature large scale infrastructure.	High / Moderate (4) Gorges and narrower valleys highly sensitive due to intimate scale and/or potential for over dominance in narrow zones of visibility. Broadest valleys maybe able to accommodate small or large groups on flatter floodplains or valley sides related to larger fields and plantations. Turbines often likely to appear awkward and out of scale against wide variety of small scale features. No obvious functional rationale in shelter of valleys.	
Complexity and Order Generally attractive but variable in character. In gorges (8a) and narrower parts of other valleys semi-natural hanging woodlands featuring rocky outcrops and cliffs and fast flowing rivers create scenic compositions. Lower valleys (8b,c) have soft managed character derived from mixed pattern of improved pasture, small woods/plantations, parkland, hedges, frequent trees in hedges, by roads and meandering rivers. Harmony sometimes disrupted by infrastructure. Dales (8d) and Lune Gorge (8c) higher with wilder more rugged character derived from rough pasture, barns, ghylls, waterfalls, rocky scarps on valley sides and strong pattern of stone walls.	High (5) Scenic harmony vulnerable to disruption. Would be difficult to relate turbine groupings to variety of irregular landforms shapes, meandering rivers and complex patterns of natural and historic features. Arrangements aligning the course of meandering rivers unlikely to read clearly.	
Manmade influence Varies from largely natural landscape of Eden Gorge (8a) to semi-natural historic landscape of dales (8d) to rural mixed character of broad valleys (8b) to urbanised corridors containing frequent man-made structures such as roads, motorways, railways, pylons and scattered development (8c). Common pressures include afforestation and recreation. Heritage features widely visible including Roman remains; medieval castles/abbeys; early mining; 18 th century industrial sites related to waterpower; parkland and historic houses.	Moderate/High (4) Variable but turbines likely to be most incongruous in gorges and dales. Elsewhere may be limited scope for positive association with intensively farmed areas in lower valleys and integration with occasional geometric field and plantation patterns or large scale infrastructure. However conflict with character and scale of historic features difficult to avoid and turbines likely to exacerbate visual confusion in more urbanised parts.	
Remoteness and Tranquillity Lower valleys (8b,c) generally calm with little movement except where main roads intrude. Kent valley seen as busier. Beyond key villages Eden gorge and dales (8a,d) have a quieter sometimes remote character.	Moderate (3) Noise and movement of turbine development maybe appropriate adjacent to main roads. Elsewhere turbines, especially larger groupings, likely to reduce sense of calmness and remoteness.	
Settlement and Key Views Lower valleys have heavy but dispersed pattern of settlements ranging from isolated farmsteads to small market towns often with historic stone built core but affected by urban expansion and accommodating major transport routes (8b,c). In Eden gorge and North Pennines concentrated into a few large villages with an industrial past (8a/8d). In southern dales settlement generally absent. Tourist facilities include riverside walks, historic sites and parks and trails along the valleys: Hadrian's Wall Trail (Irthing); Pennine Way (South Tyne), Settle to Carlisle railway (Eden); Eden Valley Cycle Route. Some valleys are crossed by the Pennine Bridleway and C2C and W2W Cycle Routes.	High (5) Limited scope to site development away from settled areas in lower main valleys. Size of development constrained by small scale nature of existing settlements with potential for over dominance especially where views restricted in narrower valleys. Widespread potential for intrusion on important landscape settings and sequential views.	
Visual Interruption Views often frustrated by variety of features including undulations, woods, scrub, hedges, walls, plantations and individual trees.	Moderate (3) Generally absorption in wider landscape would be assisted by presence of frequent interruptions	
Skyline Broad sometimes distant horizons in wider valleys interrupted by woods. Narrow valleys or gorges have more immediate dominant skylines that can be textured or stark. Intermediate horizons frequently created by valley bottom undulations or stepped valley sides. Vertical features scarce apart from historic castles, mansions or abbeys and occasional pylons. Cliffs and angular limestone scarps create landmarks.	Moderate/High (4) Turbines likely to dominate and interrupt distinctive rims and intermediate horizons of narrower valleys and feel over bearing. Wider more distant horizons of broadest valleys less vulnerable but development likely to have confused image due to unpredictable relationship with skyline and partial visibility. Turbines may also compromise or compete with natural landmark skylines and historic punctuations.	
Connections and Adjacent Landscapes Sometimes dramatic backcloths of adjacent limestone escarpments (3,12), sandstone ridge(10) and fells or moors including Howgills and N. Pennines (13) with strong inter-visibility. Elsewhere views into adjacent lower farmland and hills restricted by ridge marking edge of valley. However valley rims can still feature strongly in views from surrounding ridge tops and larger valley towns (U).	Moderate (3) Whilst large scale backdrops of fells, moors and scarps may assist absorption potential for intrusion in open prospects across valleys and within wider compositions or dramatic contrasts with neighbouring high ground, sometimes of national or international importance. Elsewhere valley rim development could sometimes compromise townscape settings eg Workington or local vantage points.	
Overall Sensitivity	Moderate/High	

LANDSCAPE TYPE 8: MAIN VALLEYS

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Hadrian's Wall Military Zone World Heritage Site and Setting 8b Irthing Valley (site and setting)	International: Protection of core archaeological features of the Roman wall and coastal defences as well as their landscape setting
North Pennines AONB North Pennine dales (8d)	National: National: Conservation and enhancement of natural beauty derived from the special qualities of: a unique landscape unit with a distinctive geology and unusually large extent of high, exposed semi-natural moorland which has outstanding wilderness qualities; scenic contrasts and unfolding sequence of simple moorland, sheltered dales and dramatic scarp as well as spectacular individual features; moorland landscapes valued for their long views and western scarp affords panoramic views; special interests of historic mining landscape, unique flora and fauna, unusual range of geological and geomorphological features and wealth of archaeological and historical remains which contribute to landscape character.
Landscape of County Importance All outside AONB except Derwent and Barrow (8c)	County: Protection of distinctive character attributable to distinctive landform; variety of natural and cultural features; absence of detractors and in parts mixed land cover patterns; views and peaceful quality creating a strong positive response.
Registered Historic Parks and Gardens Workington Hall, Corby Castle, Appleby Castle and Levens Hall	National: Protection of special historic interest of parks and gardens and their settings
Ancient Woodland Numerous in Irthing Valley (8b) and Eden Gorge (8a)	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity	Area of County
8a Gorges 8b Broad Valleys 8c Valley Corridors 8d Dales	0.2%: unique 5.1%: ordinary 0.6%: rare 1.1%: unusual
Associations	Description
Historic Environment Rich and diverse interest sometimes exceptional Conservation Areas: Settle/Carlisle Railway and several villages and towns along Eden Valley. Ravenstonedale and Kirkby Lonsdale in Lune Valley. Alston and Garrigill in N Pennine dales. Heversham in Kent Valley and Furness Abbey, Barrow.	Varying building styles with sandstone in north / limestone in south. Water powered 18 th and 19 th century industrial sites on Kent and Eden Gorge, corn mills on others. Historic weirs and bridges. Roman sites and route ways particularly on Eden and Lune, Hadrian's Wall and forts in Irthing Valley. Medieval defensible structures eg Pendragon Castle, Mallerstang (8d) and abbeys/priories eg Furness (8c). Ornamental landscape /parks and historic houses especially in S. Lune; Kent (8b) and Eden Gorge (8a). Historic field pattern defined by drystone walls in dales (8d) featuring ring garths intakes and field barns. Rich coal quarrying and lead mining heritage and associated villages in N. Pennines (8d).
Cultural Scenic qualities often inspirational	Popular location for artists/writers/sculptors eg Ruskin, JMW Turner, Norman Adams, David Morris and Andy Goldworthy. Settle to Carlisle railway in parts runs along the Eden Valley and is regarded as most scenic railway in England.
Ecology Rich and diverse interest sometimes exceptional Designations generally limited to rivers themselves. Most rivers extensively covered by SSSI and sometimes SACs, except Lune and Esk. Gorges and rocky sections often covered by RIGGS,	Central interest in rivers eg otter; Atlantic salmon; lampreys; crayfish; bats; birdlife and shingle banks giving rise to national and international designations. Upland oak woodland also of high interest especially ancient woods in Eden Gorge where damp cliffs also support diverse assemblage of mosses etc. (8a). Wet woodland also important in other valleys together with rush pasture. Further interest in small remnants of lowland raised bog and grazing marsh in lower valleys (8b, c); species rich roadside verges and hedgerows. Dales (8d) also feature hay meadows and black grouse habitat in North Pennines.

LANDSCAPE TYPE 8: MAIN VALLEYS

Capacity Statement

Overall the Main Valleys landscape is judged to have **low/moderate** capacity to accommodate turbine development. Potential is limited by the overall moderate/high sensitivity of the valleys landscape character and because of their medium/high or high landscape value recognised by LoCI and North Pennines AONB designation*, and strong associated values.

Any type of turbine development is likely to disrupt the scenic richness and harmony for which the valleys are valued. Character varies according to height, degree of enclosure and urban influence but all valleys exhibit a variety of natural and historic features and complex irregular land cover patterns and this limits opportunity for integration of turbines. Potential for visual intrusion and dominance is also a major issue due to the pattern of frequent small scale settlements and concentration of route ways and tourist facilities in the valleys. Dominance is likely to be exacerbated by the tightly enclosed character of many valley landforms where the zone of visibility is restricted and potential for turbines sited on exposed upper valley slopes to feel overbearing.

Whilst the intimate character of narrower valleys would be threatened by turbines there may be limited scope for groups of turbines in broader valleys with sufficient wind resource such as in the uplands or near the coast. However they would still be likely to appear out of scale against the wide variety of small features typically found in this landscape type. Other issues include the absence of comparable vertical structures; intrusion and blade flash over distinctive valley rims; vulnerability of historic monument and townscape settings and landmark skylines of adjacent fells, limestone escarpments and sandstone ridges.

Within the North Pennine dales recognised qualities of enclosure, diversity, intricacy and sense of history, with a wealth of traditional built features and the scattered remains of lead mining activity, are vulnerable in terms of overall harmony, dominance, scale and character. Potential intrusion on sequential views from the Pennine Way which passes along South Tynedale, the setting of Alston and connecting A roads is a further issue. The dales also make a vital contribution to the wider identity of the North Pennines through contrast with adjacent moors, amplifying their sense simplicity, extent and wildness. These sensitivities indicate that any scale of wind energy development is likely to be inappropriate within the AONB.

Particular sensitivities in relation to the setting of international and national designations include:

- *key views across and from the Irthing Valley in relation to both Hadrian's Wall and the northern edge of the North Pennines AONB most notably from Hadrian's Wall Trail and Cycle Route (NCR 72) and from viewpoints at the turrets, forts, milecastles and camps between Castlesteads and Birdoswald, the Pennine Way as it descends into the valley and the A69*
- *contribution of the Eden Valley to panoramic views towards the Lakeland Fells across the Vale of Eden from the western scarp of the North Pennines AONB*
- *the Mallerstang (Eden Valley) 'gateway' into the Yorkshire Dales NP featuring the Settle Carlisle Railway and National Cycle Route 68*
- *contrast between the enclosed and diverse Tebay Gorge and the Lune Valley landscapes with the open and sleek Howgill Fells on the western side of the Yorkshire Dales NP as viewed from the M6, W2W Cycle Route (NCR68) and A683/4 Sedbergh 'gateway'*
- *contribution of the lower Kent and Lyth Valleys to picturesque estuarine compositions between the limestone escarpments of the south-eastern Lake District NP and the Arncliffe/Silverdale AONB and dramatic contrast at the Gilpin Bridge 'gateway' between flat drained mosslands and imposing limestone scars as viewed from the A590, A5074, and the W2W Cycle Route (NCR 72) and National Cycle Route 6*

* For those areas that fall within the North Pennines Area of Outstanding Natural Beauty Policy R45 in the Cumbria and Lake District Joint Structure Plan 2001 – 2016 applies

LANDSCAPE TYPE 9: INTERMEDIATE MOORLAND AND PLATEAU

Landscape Sub-Types	9a Open Moorlands 9b Rolling Farmland and Heath	9c Forests 9d Ridges
Key Characteristics	Sensitivity	
Scale and Enclosure Mainly large scale moorland but varies to vast (9c) and medium (9b) at extremes. Variable landform of undulating to rolling plateaus with dissecting valleys and steep sides (9a,b,c) sometimes dividing into distinct ridges (9d). Generally open and exposed with wide views. Can be locally enclosed within valleys or detailed hummocky relief (9b) or extremely enclosed within extensive forest cover (9c). Generally open pasture or heath unfenced or divided into fields or very large lots. Limited scale indicators include walls, isolated buildings, rocky outcrops, tarns and trees.	Low (1) Scale and wide views generally suggest scope for large group development. However higher and broader ridges and plateaus might accommodate windfarms whilst on rolling farmland and heath small groups maybe more appropriate. In close range turbines may appear incongruous and out of scale against detailed features of relief and land cover. Upland exposure presents a strong design rationale.	
Complexity and Order Generally simple sometimes monotonous. Core moorland areas retain an untamed character created by rough grassland with areas of rush, heath and bog. 9d blanketed by coniferous forest. Below transitional often disordered character with plantations, unkempt boundaries and indistinct patchy land cover patterns (lower 9c/9b South Lakeland). At lower levels smoother improved pasture fields occasionally strongly defined by stone walls (9d). Features scarce/decreasing with altitude: stonewalls; conifer plantations; rocky outcrops (9b) and crags (9a,d); broadleaved woods in valleys or small belts; reservoirs (9b); low ridges, marshy hollows, tarns and scrub (9b). Topographic grain of ridges sometimes distinctive (9b,d).	Low/Moderate (2) Opportunities for organic configurations in response to particular form of hills or sweep of ridges. Simple moorland canvas presents scope for a sculptural image illuminating emptiness of this landscape. In lower managed areas more ordered arrangement might relate to regular field patterns and compare visually with plantation blocks. Some areas constrained by undulating landforms where varied turbine heights likely to appear visually confusing or varied land cover patterns which offers less scope for visual linkage.	
Manmade Influence General trend towards more managed character in late 20 th century through degradation or loss of rough moorland due to overgrazing, drainage and conversion to improved pasture or commercial forestry. Symptoms of neglect particularly on urban edges include dilapidated walls, fencing, and grazed woods. Localised intrusion of large scale development eg reservoirs, masts, motorway, wind turbines (9b,d) quarrying and open cast mining (9a,d) and military development (9c).	Low/Moderate (2) Turbine development has potential to erode integrity of untamed and featureless character of core moorland areas. However a well designed isolated group could be perceived as a complementary contrast. Potential for positive association with working character of intensively farmed or afforested areas and large scale engineered aspects such as reservoirs and quarries.	
Remoteness and Tranquillity Feeling of remoteness and space derived from wide horizons and absence of settlement on high plateaus and ridges. Lightly settled lower areas retain a peaceful backwater character. Occasional through routes such as the M6 intrude on edges.	High (5) Noise and movement of turbines likely to compromise sense of remoteness and peace.	
Settlement and Key Views Absent across large areas of high moorland plateau and ridge tops. Sparse settlement of isolated farmsteads, houses and occasional hamlets/small villages occurs in valleys or along spring lines at foot of scarps (9a Bewcastle,c,d). More frequent and evenly dispersed across lower plateaus (9a Copeland, b). Views across 9b near Appleby from Eden Valley Cycle Route.	Low/Moderate (2) High moorland plateaus and ridges offer scope to site development well away from settlements. Localised potential to be over bearing and intrusive in relation to settlement around edges. Dispersed settlement on lower plateaus presents greater limitations on siting and size of development.	
Visual Interruption Varies from prominent open moorland and ridges (9a,d) to rolling farmland and heath interrupted by relief and plantations (9b) to forested moorland with significant visual containment but also some prominent underlying hills (9c).	Moderate (3) Sensitivity variable. Turbine development on plateau edges and ridges likely to stand out and be widely visible. Higher degree of visual containment towards centre of plateaus and within forested areas likely to assist absorption.	
Skyline Mostly simple and smooth skylines lacking strong foci or drama. Can be masked by bland forest (9c) cover or occasionally broken by plantations. Often featureless although occasional crags, isolated woods and buildings can stand out. In a few parts manmade vertical structures eg masts, poles and existing turbines are prominent (9b,c,d).	Low/Moderate (2) Opportunity for isolated turbine groupings to create a new focal point in clear visual contrast to simple moorland skylines although maintenance of a predominantly uncluttered skyline is an issue. Other issues relate to potential for localised confusion of form and function with other manmade verticals and competition with natural or historic punctuations.	
Connections and Adjacent Landscapes Visual connections with heavily settled coastal lowlands (5,2) and broad valleys (8b) containing some important towns. Strongest for ridges (9d) due to shape and elevational contrast. Weakest for Bewcastle area (9a,c). Furness ridge important to open and scenic estuarine vistas with Lakeland fells. Views often restricted by steep ridge or plateau sides. Inter-visibility with surrounding fell tops some of which are nationally valued.	Moderate (3) Broader plateaus offer scope to site development away from sensitive plateau edges. Potential for intrusion on sensitive valley rims, setting of important towns, prospects from and adjacent fells and estuaries and scenic compositions with these landscapes often of national value. Potential for localised intrusion on views from Hadrian's Wall.	
Overall Sensitivity	Low/Moderate	

LANDSCAPE TYPE 9: INTERMEDIATE MOORLAND AND PLATEAU

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Hadrian's Wall Military Zone World Heritage Site and Setting Southern fringe of 9c and a near Birdoswald	International: Protection of core archaeological features of the Roman wall and coastal defences as well as their landscape setting
Landscape of County Importance All except 9c, 9a Copeland and 9b Eden	County: Protection of distinctive character attributable to absence of detractors, natural moorland land cover, views and natural or built features of interest creating a strong positive response.
Ancient Woodland Generally sparse: few on plateau sides in Borders (9a), around Gilgarran and Branthwaite in W Cumbria (9a/d), gill woodland on W side of moors in Furness (9d), Hoff Lunn Eden and Lune Valley fringes S Lakeland (9b)	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity	Area of County
9a Open Moorlands 9b Rolling Farmland and Heath 9c Forests 9d Ridges	1.8%: unusual 2.3%: unusual 3.6%: ordinary 1.1%: unusual
Associations	Description
Historic Environment Localised interest Conservation Areas: Settle/Carlisle Railway in Eden (9b) and Ireleth in Furness (9d)	Settlement pattern dispersed some clusters of 19 th century industrial workers housing (9a) limestone built farmsteads (9b) dating from 17 th century. Largely unenclosed 9c fields often large and formed by moorland late enclosure sometimes regular (9d). Nucleated lower areas (9d) Early enclosure field pattern containing fossilised strips (9b Eden). Earthworks including prehistoric settlements and burial cairns (9a,c,d) and medieval shielings (9a). Border remains fortified sites 16/17 th century bastles (9c) Roman roads (9a Bewcastle). Evidence of coal mining (9a Copeland). 20 th century heritage includes Blue Streak missile/satellite launcher testing Spadeadam (9c) and large scale quarrying (9d).
Ecology Strong widespread interest Patchy coverage of designations. Moorland tops or flows in Furness (9d) and around Bewcastle area (9a/9c beyond forests) covered by SSSIs and sometimes SACs. Designations largely absent across 9b in Eden and South Lakeland apart from SSSIs along rivers and isolated wetland pocket. Also absent from 9a/d in West Cumbria apart from a few small RIGGS.	Moorland landscape of rough pasture with areas of rush and purple moor-grass, acid grassland and upland heath, extensive blanket bog (9a,d) and small raised bogs (9b,c) characterised by sphagnum moss. Moorland important for a variety of butterflies, moths and breeding birds such as skylark, lapwing and curlew and grouse. Other habitats include species rich springs and flushes (9a,d); upland oak woodland present in steep river valleys (9a,d) and alder wet woodland (9a,c); species rich roadside verges (9b Eden); coniferous plantations supporting goshawk (9c) long-eared owl (9b).
Geology RIGGS as above.	Significant exposures of Permian rocks in Eden including Penrith Brockram.

LANDSCAPE TYPE 9: INTERMEDIATE MOORLAND AND PLATEAU

Capacity Statement

Overall the Intermediate Moorland and Plateau landscape is judged to have a **moderate/high** capacity to accommodate turbine development. This reflects low/moderate sensitivity overall, however some notable variations in character, landscape value and wildlife association affect acceptability and the appropriate size of development

This landscape type is distinguished by a moorland character typified by broad tracts of elevated, windswept and largely empty land covered by rough grass and heather. These core moorland characteristics suggest scope to accommodate a large turbine group. If isolated and well designed in response to the scale and shape of landform such a development could create a symbolic focal point in clear visual contrast to the simple moorland vegetation canvas and smooth skylines. However such development may also be perceived as cluttering open undeveloped skylines and eroding a sense of remoteness and wildness. Siting on plateau edges and narrower ridges would also raise issues of visual intrusion on adjacent heavily settled coastal lowlands and valley landscapes.

Wind farm development may be appropriate on the broader plateaus around Bewcastle. The absence of settlement and visual containment offered by large scale forest backdrops are also likely to assist absorption here.

Turbine developments would sit less comfortably in the patchy and varied character of lower transitional areas which neither offer the potential for simple contrast or visual linkage. In South Lakeland this problem tends to be exacerbated by the hummocky nature of the rolling farmland and heath near Kendal. Aside from this issue the medium scale of this landscape also suggests that small groups would be a more appropriate size of development.

In Furness and Copeland lower more managed areas offer potential to relate development to regular field patterns and plantation blocks as well as positive association with a 'working' and large scale engineered elements such as quarries and reservoirs.

Particular sensitivities in relation to the setting of international and national designations include:

- *backdrop to Hadrian's Wall provided by moorland around Spadeadam*
- *contribution to tranquil and picturesque compositions with Lakeland fells around the Duddon estuary and views from the Furness Fells and trunk road the skirting edge of Lake District NP*
- *in West Cumbria contribution of the High Park ridges and moors to vistas and coastal panoramas from the C2C Cycle Route (NCR 71), the Ennerdale and Loweswater Fells and 'gateways' to the Lake District NP off the A5086*
- *views from the western Howgill Fells in the Yorkshire Dales NP and Sedbergh 'gateway' towards the rolling farmland and heath near Kendal and back towards the Park from the A684, M6 and Killington Reservoir viewpoint*
- *contribution of the rolling farmland and heath near Appleby to panoramic views of the Vale of Eden and Lakeland fells beyond from the western scarp of the North Pennines AONB, most notably from the Pennine Way as it descends from High Cup Nick, and views back towards the imposing scarp from National Cycle Routes 68 and 71 and the Pennine Bridleway*

LANDSCAPE TYPE 10: SANDSTONE RIDGE

Landscape Sub-Types	10a Sandstone Ridge
Key Characteristics	Sensitivity
Scale and Enclosure Distinctive large scale ridge generally open and steep sided running north from Penrith. Breaks up into a series of hills at north end and Whinfell forms an outlier at southern end. Higher parts rolling with individual fell summits. Attractive long distance and expansive views west to Lake District fells and east to North Pennines. Broad elements of improved farmland, conifer plantations and heathland. Detailed features limited apart from stone walls, hedges and occasional buildings.	Moderate (3) Large group would not intimidate overall scale of ridge, especially in context of large fields and plantations. However in close range scale of receiving hills and individual fell tops on the ridge suggest single turbine to small group developments more appropriate. Exposure suggests a strong design rationale.
Complexity and Order Sometimes varied and picturesque in character but generally balanced and managed. Distinguished by prominent north-south grain of ridge containing some sweeping lines and angular scarps around individual summits. Overlain by a patch work of improved grassland and conifer plantations with some isolated areas of heathland. Regular patterns of late enclosure fields defined by stone walls and plantation blocks. Agricultural improvement has led to blander appearance particularly in northern half.	Moderate (3) Opportunities for ordered turbine grouping to flow along overall grain of ridge and relate to rectilinear elements in land cover pattern. Picturesque and balanced compositions around distinctive summits vulnerable and hilly more varied parts offer less scope for visual linkage.
Manmade Influence Substantial change to more managed character in late 20 th century due to afforestation and agricultural improvement. Most of area was previously dry heathland and rough pasture. 'Open range' and more intensive farming methods have also led to removal or neglect of field boundaries and presence of detractors such as intrusive modern farm buildings. Other manmade development limited to pylons at foot of ridge and telecommunication masts on some ridge tops and Oasis holiday complex in Whinfell Forest.	Moderate (3) Some potential for positive association with 'working' intensively managed character and integration with regular patterns. However may be perceived as exacerbating recent deterioration of natural qualities although scope for development to contribute to restoration through appropriate land management.
Remoteness and Tranquillity Rural lightly settled landscape which feels balanced and calm.	Moderate/High (4) Noise and movement of turbine development likely to reduce sense of calmness.
Settlement and Key Views Dispersed low density pattern of isolated farms and houses and a few small nucleated villages/hamlets at northern end. Clipped by A6, Settle/Carlisle railway and C2C Cycle Route.	Moderate (3) Some areas of land sufficiently distant from settlement so as to avoid over dominance by turbines. Elsewhere development constrained to single/twin or small group size in context of small villages/hamlets.
Visual Interruption Open with a low incidence of visual interruptions. Some containment by conifer plantations, undulations/folds and individual summits within the ridge.	Moderate/High (4) Turbine development likely to be widely visible. Some localised screening but also potential for some disturbing effects due to partial visibility.
Skyline Strong simple flowing horizon that is either smooth or textured by forestry. Individual fell tops can stand out and ridge becomes fragmented and more complicated at hilly northern end. Pylons generally inconspicuous due to location at foot of slopes and masts restricted to ends of ridge.	Moderate(3) Likely to read reasonably well in simpler parts as a new focal point contrasting with the extended horizontal emphasis of ridge. More confused unpredictable relationship likely in hilly parts. Other issues relate to maintenance of an uncluttered skyline in central part and confusion of form and function in proximity to pylons and masts.
Connections and Adjacent Landscapes Relative elevation and narrow configuration produces strong and protracted connections. Forms distinctive skyline along its length to Petteril Valley and M6 corridor (6), Eden Valley and A66 (8b). Beacon Hill at southern end forms distinctive backdrop to Penrith. Elsewhere tends to bleed into adjacent low (5) and intermediate farmland (6). Important western backdrop to Eden gorge (8a).	Moderate/High (4) Potential for intrusion on setting of Penrith and sensitive rim of Eden Gorge and setting of villages within it. Any development likely to be prominent but not necessarily intrusive from major roads given breadth of views towards the ridge and low sensitivity of travellers.
Overall Sensitivity	Moderate

LANDSCAPE TYPE 10: SANDSTONE RIDGE

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Landscape of County Importance Small part: outlying area E of Lune Gorge	County: Protection of distinctive character, area included in 1996 through Eden Local Plan justification and main attributes unclear
Ancient Woodland Generally sparse but include Whinfell Forest (replanted), Barrock Park and Baronwood	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity	Area of County
10a Sandstone Ridge	1.7%: unusual
Associations	Description
Historic Environment Limited interest Settle/Carlisle Railway Conservation Area clips E fringes of main ridge	Part of Inglewood Forest belonging to Barony of Greystoke created in 1120 and in Norman times former Royal Forest hunting ground. Field pattern is regular of 19 th century origin. Settlement is sparse but mainly nucleated.
Ecology Interest in parts and most notably heathland Designations limited to SSSIs of Wan Fell, Lazonby Fell, Cliburn Moss and small RIGGS site	Main areas of lowland heathland in Cumbria on Wan fell and Lazonby Fell. Conifer plantations south of Penrith support range of uncommon plants associated with native Scot's pine woodland eg northern bilberry and red squirrels. Also occasional interest of basin mire (south end); rush pasture; ponds and wetlands formed by mineral extraction (north end) which support swamp and fen communities.
Geology Isolated sites of interest	Scientifically important exposures of Permian sandstone occur

LANDSCAPE TYPE 10: SANDSTONE RIDGE

Capacity Statement

Overall the Sandstone Ridge landscape is judged to have **moderate** capacity to accommodate turbine development reflecting mixed characteristics and sensitivities.

The overall scale of the ridge coupled with a regular land cover pattern of large fields and plantation blocks suggests scope to accommodate a large group. However in the context of individual fell tops and hills or small villages and hamlets single turbines to small group sized development would be more appropriate. A strong skyline presents the opportunity for a linear or elongated group of turbines flowing along the main grain of the ridge and clearly contrasting with its horizontal emphasis. However picturesque and balanced compositions of heath, rocky outcrops, woods and sweeping farmland around distinctive summits are highly sensitive.

Due to the elevation and openness of the ridge any development is likely to be widely visible. A simple predictable relationship with the ridge top and logical appearance in an exposed position would assist in portrayal of a positive image whilst development sited in peripheral hilly parts, on ridge sides or in the context of existing pylons and masts is likely to appear more confusing.

A significant constraint is potential for intrusion on the setting of Penrith and rim of the Eden Gorge as well as over dominance of villages within it. Although there is some potential for positive association with an intensive land management and integration with rectilinear patterns turbine development may also be perceived as spoiling a largely uncluttered ridge, conflicting with a sense of calmness and exacerbating a trend towards blandness and deterioration in natural character.

Particular sensitivities in relation to the setting of national designations include:

- *contribution of the ridge to inspiring views over the Vale of Eden towards the Lakeland fells from the from the western scarp of the North Pennines AONB most notably from the A686 pass, Hartside Cross viewpoint, the Maiden Way and the C2C Cycle Route (NCR 7) and further south from the Pennine Way around High Cup*
- *views from the Penrith 'gateway' to the Lake District NP and M6, A592, A66 approaches*

LANDSCAPE TYPE 11: UPLAND FRINGES

Landscape Sub-Types	11a Foothills 11b Low Fells
Key Characteristics	Sensitivity
Scale and Enclosure Varies with altitude from medium scale enclosed rolling or hilly farmland to larger scale plateau farmland, open fell bottoms or moorland and outlying low fells (11b). Land cover also varies from improved pasture fields to open moorland. Field size reflects local relief, small in hilly parts but large on flatter plateaus. Variety of scale indicators emerge in lower parts including walls, hedges, conifer plantations, deciduous trees and small woods, rocky outcrops and minor valleys but higher areas tend to be featureless.	Moderate (3) Small group would not intimidate low fells and plateau farmland. Exceptionally a large group might relate to broad sweep of fell side or moorland. Lower more pronounced hilly terrain highly sensitive due to intimate scale and potential for over dominance in restricted zones of visibility. In close range turbines may appear incongruous and out of scale against detailed features of relief and land cover. Most likely to appear rational on windswept hill/fell tops of southern and western upland fringes.
Complexity and Order Transitional but generally balanced and calm. Simple open moorland of rough pasture with colourful patches of heather and extensive conifer plantations in parts gives way to lower farmland dominated by improved pasture. Farmland can be bland with a pattern of large square fields and small plantations with poor hedges, fences and walls or diverse in hillier parts with smaller fields and a variety of features such as streams and wooded minor valleys, wooded steep slopes, tarns and marshy hollows, rocky outcrops, boundary trees and tree clumps round farms. Low fells (11b) have NE/SW grain.	Moderate (3) Opportunities for organic configurations related to form of individual low fells and larger hills or sweep of lower fell sides. Simple moorland canvas offers potential for dramatic contrast. On lower flatter farmland plateau rectilinear group might mirror regular filed pattern and plantation blocks. More diverse hilly terrain highly sensitive due to potential confusion of variable heights and limited scope for visual linkage.
Manmade Influence Trend towards increased blandness due to agricultural intensification and afforestation in 20 th century. Symptoms include neglect or removal of walls, hedges, deciduous woodland and loss moorland to improved pasture or conifer plantations. Largely unspoilt but harmony sometimes locally weakened by large modern quarries, pylons, conifer blocks, masts, M6 or farm sheds.	Moderate/High (4) Potential for positive association with working character of intensively farmed or afforested areas and large scale engineered aspects such as quarries or roads. However may be perceived as exacerbating deterioration of rough untamed qualities and compromising unspoilt character.
Remoteness and Tranquillity Rapid transition from remote open uplands to more settled farmland generally perceived as peaceful rural backwaters. Only major disturbance is the M6 motorway which carves through the low fells (11b) and to lesser extent other through routes such as A595, A6, A685, A684 and A69.	Moderate/High (4) Noise and movement of turbines maybe appropriate adjacent to through routes but elsewhere likely to compromise sense of remoteness in higher parts and peaceful backwater character of settled parts.
Settlement and Key Views Absent or only isolated farmsteads across higher parts but frequent scattered farmsteads, hamlets and small villages served by minor roads evenly spread across lower foothills. Concentration of villages evident along foot of North Pennine scarp and elsewhere along main through routes. Views of southern part of N Pennines from Pennine Bridleway, C2C Cycle Route (also Copeland), Eden Valley Cycle Route and W2W Cycle Route (also S Lakeland). Fox's Pulpit view (11b).	Moderate (3) Higher parts offer scope to site development well away from settlements whilst dispersed settlement in lower foothills presents greater limitations on siting and size of development.
Visual Interruption Varies from prominent sweeps of open fell side/moorland to lower rolling foothills where visibility is significantly interrupted by the relief, individual and clumps of trees, plantations, hedges and buildings. Low fells (11b) open but broken configuration into individual summits tends to shorten views.	Moderate (3) Turbine development assisted by rolling topography and frequent interruptions resulting in glimpsed or intermittent views. However likely to stand out on fell sides and moorland.
Skyline Complex skyline of interwoven hills with intermediate horizons interrupted by trees and woods gives way to emptier smooth fells or moorland. Frequently backed by higher uplands. Few points of vertical focus except occasional pylons, masts, and existing turbines. Pronounced hills can create immediate and dominant skylines relative to valleys and frame vistas.	Moderate/High (4) Potential for confusing and unpredictable relationship with complex skyline of lower foothills. In higher parts limited scope for isolated turbine grouping to form a predictable and clear visual contrast with barer fell and moorland skylines but may appear illogical in context of higher upland skylines. Potential for localised over dominance and visual confusion with pylons, masts and existing turbines.
Connections and Adjacent Landscapes Generally part of a wider hierarchical and uplifting scene with adjacent uplands (13) including N. Pennines escarpment, Lakeland Fells and Howgills. Often contrasting textures and colours serve as a foil. Also contribute to setting of main valleys (8b), towns such as Kendal, Ulverston and Cleator Moor and Hadrian's Wall. Furness foothills important to open and scenic estuarine views. Intervisibility with surrounding fell tops some of which nationally valued.	Moderate/High (4) Whilst large scale backdrops of uplands likely to assist absorption in terms of scale turbines have potential to clutter and detract from foreground of wider restful and well composed scenery. Also potential for intrusion on sensitive valley rims, setting of important towns and Hadrian's Wall as well as prospects from adjacent fells.
Overall Sensitivity	Moderate

LANDSCAPE TYPE 11: UPLAND FRINGES

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Hadrian's Wall Military Zone World Heritage Site and Setting Northern fringe of 11a N Pennines (setting)	International: Protection of core archaeological features of the Roman wall and coastal defences as well as their landscape setting
North Pennines AONB Eastern fringes of 11a North Pennines strip	National: Conservation and enhancement of natural beauty derived from the special qualities of: a unique landscape unit with a distinctive geology and unusually large extent of high, exposed semi-natural moorland which has outstanding wilderness qualities; scenic contrasts and unfolding sequence of simple moorland, sheltered dales and dramatic scarp as well as spectacular individual features; moorland landscapes valued for their long views and western scarp affords panoramic views; special interests of historic mining landscape, unique flora and fauna, unusual range of geological and geomorphological features and wealth of archaeological and historical remains which contribute to landscape character.
Landscape of County Importance All areas beyond AONB	County: Protection of distinctive character attributable to natural/built features, absence of detractors, views, and sometimes landform or land cover creating a strong positive response.
Registered Historic Parks and Gardens E part of Holker Hall	National: Protection of special historic interest of parks and gardens and their settings
Ancient Woodland Concentrations along River Gelt in N Pennines, Ellerside and Millom Park in Furness and Gt Wood in West Cumbria	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity 11a Foothills 11b Low Fells	Area of County 8.5%: common 0.5%: rare
Associations	Description
Historic Environment Widespread archaeological remains Conservation Areas: Cumrew and Dufton in N Pennines Cartmel and Newland in Furness	Settlement pattern dispersed in foothills (11a) and few isolated farmsteads in low fells (11b). Field system product of late enclosure. Some farms originated as late as 16 th century. Ring garths and intakes identifiable. Widespread upstanding remains include prehistoric stone circles and cairns, medieval shielings and droveways, remnants of late medieval deer parks and prolific industrial remains eg quarrying and lead mining. Some areas especially rich eg Warcop Common.
Ecology Many small pockets of interest Limited in N. Pennines and S Lakeland to SSSIs and sometimes SACs or SPAs over main rivers and becks or moorland extensions. Also LPOs east of Kirkby Stephen. Designations absent in Furness except for RIGGS near Millom. In W Cumbria small RIGGS, SSSI/SAC on R Ehen and few small sites.	Low fells (11b) and N/ E areas (11a) support areas of upland heath and acid grassland. Rush pasture frequent on poorly drained ground throughout and species rich hedgerows in lower parts. Many small valleys often support upland oak woods and habitat for otters and dippers. Occasional outcrops of limestone support limestone grassland and upland ash woodland. Purple moor grass, gorse scrub and small stands of wet woodland in damp hollows also found in low fells (11b).

LANDSCAPE TYPE 11: UPLAND FRINGES

Capacity Statement

Overall the Upland Fringes landscape is judged to have **low/moderate** capacity to accommodate turbine development. This reflects moderate sensitivity overall, and a medium/high to high landscape value recognised by LoCI and AONB designation*. Rapid transitions in character occur with changes in altitude which affect acceptability.

Within the North Pennines gently rolling or terraced upland fringe landscapes along the northern edge and the south west end around Stainmore Gap have a particular sensitivity because of their contribution to the contrasting sequence of landscapes valued under the AONB designation. In between foothills on the edge of the Vale of Eden run up to join the dramatic western scarp and together these form one of the most attractive parts of the AONB. Here dramatic and varied landforms, panoramic views and a string of historic scarp foot sandstone villages are qualities likely to be compromised by any scale of wind energy development.

Key constraints within this type include the potential for wind turbines to compromise the unspoilt character and sense of remoteness or peace found in these rural backwaters; general absence of comparable man-made structures; visual context against higher uplands in which turbines may appear illogical if placed below the main skyline and clutter the foreground of wider and uplifting landscape compositions.

Higher parts offer some aspects favourable to turbine development. The larger scale outlying low fells, moorlands, fell bottoms and high plateau farmland suggest scope for small group development and possibly a large group on broader topographic sweeps. This could create a focal point in clear visual contrast to a simple moorland canvas of rough pasture and heathland or relate to the regular large scale pattern of fields and plantations and associate with large scale engineered aspects such as main roads and large quarries.

The restricted views and intimacy of the lower foothills are likely to be intimidated by turbine development. A dispersed pattern of small settlements would make it difficult to avoid over dominance and a complex skyline of interwoven hills and diverse farmland exhibiting a variety of natural and historic features suggests potential for visual confusion.

Particular sensitivities in relation to the setting of national and international designations include:

- *sequential views towards the AONB from Hadrian's Wall Trail and Cycle Route (part of NCR 72) and from viewpoints at the forts, milecastles and camps between Lanercost and Birdoswald*
- *sequential views towards Hadrian's Wall from the Tindale Fells in the AONB (NCR 72), Pennine Way as it descends into the Irthing Valley and A69*
- *panoramic views from the upland edges of the AONB over the Vale of Eden towards the Lakeland fells most notably from the Pennine Bridleway around Croglin Fell and Knock Gill, the A686 pass, Hartside Cross viewpoint, the Maiden Way and the C2C Cycle Route (NCR 7), the Pennine Way around High Cup and from the Stainmore Gap A66, Coast to Coast footpath and W2W Cycle Route 'gateway'*
- *views from below where the scarp forms an imposing wall above the Vale of Eden most notably from the A66, A686, Settle Carlisle Railway, Pennine Bridleway and C2C and EV Cycle Routes (NCR 7/ 68)*
- *views from the Shap Fells and Potter Fell on the south-eastern fringe of the Lake District NP and sequential views in from the W2W Cycle Route (NCR 68), Dales Way and A6*
- *contribution to tranquil and picturesque compositions with fells in the Lake District NP around the Duddon and Leven estuaries and views from the trunk road skirting edge of Park and 'gateways' off it, National Cycle Route 72, Furness Fells and Black Combe*
- *in West Cumbria views from the C2C Cycle Route (NCR 71) and views out from the Ennerdale and Loweswater Fells and 'gateways' off the A5086 to the Lake District NP*
- *views from the western Howgill Fells in the Yorkshire Dales NP over the low fells and back towards them from the A684 and M6*

* For those areas that fall within the North Pennines Area of Outstanding Natural Beauty Policy R45 in the Cumbria and Lake District Joint Structure Plan 2001 – 2016 applies

LANDSCAPE TYPE 12: HIGHER LIMESTONE

Landscape Sub-Types	12a Limestone Farmland 12b Rolling Fringe	12c Limestone Foothills 12d Moorland & Commons
Key Characteristics	Sensitivity	
Scale and Enclosure Mostly large scale rolling or undulating hills and fells with occasional steep slopes and scars. Generally open and bare with wide views sometimes exposed (12d) or more enclosed in valleys. Medium/small scale fields in settled farmland (12a) and foothills (12c south). Otherwise broad scale land cover fabric of open commons (12d), large allotments of rough pasture and remnant heath or conifer plantations sometimes extensive (12b, 12c north). Scale indicators scarce increasing in settled farmland (12a) include: walls, hedges, occasional tree clumps, relict broadleaved woods, and rock outcrops.	Low/Moderate (2) Scale and wide horizons generally suggest scope for a small to large scale group development. Lower improved farmland and valleys highly sensitive due to intimate scale, potential for over dominance in restricted zone of visibility and context of more frequent natural and built scale indicators.	
Complexity and Order Generally pleasant and balanced. Core areas include simple moorland of rough grassland/heather mosaics with extensive limestone pavements/scars and isolated trees (12d) and rolling farmland with improved pasture divided by stone walls into a strong pattern of small fields around ancient villages softened by trees (12a). Transitional fringe areas of mixed pasture are sometimes quite bland divided into large rectangular fields with isolated plantations and occasional tree clumps with signs of neglect (12b) or more distinctive estate land with extensive plantations, parkland and some ancient woodland (12c).	Moderate/High (4) Turbines likely to disrupt scenic harmony of core limestone areas of rolling farmland with distinctive historic patterns and simple craggy moorland with mosaics of natural grassland and heather. Blander fringe areas less sensitive with potential for ordered turbine groupings to mirror large regular fields or plantation blocks.	
Manmade Influence Strong sense of history in core areas (12a,d) with evidence of settlement as early as Neolithic. Rich legacy of visible archaeological remains including medieval field patterns. Trend towards increased blandness due to agricultural intensification and afforestation in 20 th century. Symptoms include neglect or removal of walls, woods, boundary trees loss of species rich grassland/heather moorland and intrusive large farm sheds. Localised intrusion of large quarries, masts, pylons and roads with concentration by M6.	Moderate/High (4) Turbines likely to appear incongruous in context of historic field patterns and visible remains. Limited potential for positive association with afforestation and large scale engineered aspects such as quarries or roads. However may be perceived as exacerbating deterioration of rough untamed qualities and compromising unspoilt character.	
Remoteness and Tranquillity Only major disturbance is the M6 motorway and to lesser extent other through routes such as A66, A685, A595 and A5086. Population tends to be concentrated in historic villages with surrounding agricultural areas generally perceived as quiet and calm. Higher unsettled parts remote and tranquil.	Moderate/High (4) Noise and movement of turbines maybe appropriate adjacent to through routes but elsewhere likely to compromise sense of remoteness found in higher parts and quietness elsewhere.	
Settlement and Key Views Largely absent across 12d and other higher parts. On lower farmland population concentrated in historic villages or isolated farmsteads. Villages often linear located in minor valleys or more nucleated next to springs on edge of moors, with strong limestone built character, greens and farm buildings within them. Views from national recreation routes: Pennine Bridleway; Coast to Coast footpath; W2W and C2C Cycle Routes.	Moderate/High (4) Higher parts offer some scope to site development well away from settlements but can be constrained tourism facilities. Lower settled farmland presents greater limitations on siting and size of development constrained by small scale nature of historic villages with potential for over dominance.	
Visual Interruption Generally open ranging from bare grazing land and limestone pavements to settled farmland with trees concentrated around villages and farms or in valleys. Low incidence of interruption although localised containment by relief and plantations.	Moderate/High (4) Turbine development likely to stand out and be widely visible.	
Skyline Simple flowing horizons sometimes stepped in profile with (12a,d) or more rounded (12b,c). Generally bare and smooth occasionally textured by trees. Can form landmark skylines eg Hilltop/Sandale escarpment (12b) or eye catching scars (12d). Skyline complicated by trees scrub and interweaving ridges in lower areas. Pylons and masts conspicuous in parts.	Moderate (3) Some scope for isolated turbine grouping to form a predictable and clear visual contrast with barer fell and moorland skylines but visual clutter is an issue. Distinctive landmark skylines likely to be compromised. Potential for unpredictable relationship with complex skyline of lower farmland and visual confusion with pylons and masts.	
Connections and Adjacent Landscapes Strongly connected by inter-visibility with nearby fells (13) some of which nationally valued including Lakeland Fells, North Pennines and Howgills. In Allerdale (12b north) defines the edge of the Solway Basin. Can contribute to setting of important valleys, settlements and viewpoints eg upper Lune valley and Kirkby Stephen, Caldbeck valley and Faulds Brow.	Moderate/High (4) Whilst large scale backdrops of uplands may sometimes assist in absorption of turbines they may clutter and detract from pleasant sometimes breathtaking views of adjacent fells. Also potential for intrusion on sensitive valley rims, settlement settings and prospects from adjacent fells.	
Overall Sensitivity	Moderate/High	

LANDSCAPE TYPE 12: HIGHER LIMESTONE

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Landscape of County Importance 12a, c, d and parts of 12b.	County: Protection of distinctive character attributable to landform (except 12b,c Eden) natural/built features (except 12b Allerdale), absence of detractors, views, and sometimes cultural features (a,d) or land cover (b,c,d) creating a strong positive response.
Registered Historic Parks and Gardens N tip of Lowther Castle and Image Garden Reagill (12b)	National: Protection of special historic interest of parks and gardens and their settings
Ancient Woodland A few notably Crosby Gill and Scandal Beck (12a), gill woods on edge of Solway Basin (12b), Hoff Lunn Eden (12a/b) and around Greystoke Park (12c)	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity	Area of County
12a Limestone Farmland 12b Rolling Fringe 12c Limestone Foothills 12d Moorland & Commons	2.7%: ordinary 2.3%: unusual 1.3%: unusual 2.0%: unusual
Associations	Description
Historic Environment Rich concentration of visible remains particularly in 12a and 12d. Conservation Areas: Settle/Carlisle railway (12a/d) and several villages across 12a	In Eden nucleated villages often with greens and traditional farm buildings within them surrounded by mix of late and early enclosures with fossilised strips (12a,b Eden,c) sometimes linked to commons by droveways or outgangs. In 12d little settlement, commons unenclosed and what enclosure exists is late. Features include earthworks eg prehistoric boundary walls, stone circles and cairns (12a,d), Viking remains (12b Allerdale), Roman roads (12d,c), early medieval settlement remains and evidence of medieval deer parks (12a,c), ridge and furrow and lynchets (12a,b), abandoned quarries and limekilns (12a,b,d), and isolated barns(12a).
Ecology Rich interest especially in 12d and 12a. Limited interest in 12b. Core areas of 12d covered by SACs/SSSIs/ large LPOs and a NNR. Some of these spill over into fringes of 12a which also has patchy designation of SSSIs along rivers and grassland plus RIGGS near Nateby. Designations virtually absent across 12b except a few SSSIs along main rivers, a few RIGGS. Also very limited across 12c except small LPOs near Greystoke, RIGGS and SSSI	Internationally important limestone pavements, upland heathland and acid grassland predominate in 12d. Limestone grassland present where limestone outcrops (12a,c,d, 12b occasional) species rich springs and flushes(12a,c,d). Parts notable for species rich hay meadows and broad roadside verges (12a,c). Stands of upland ash woodland often along gills and river valleys (12a, 12b occasional, 12c) many small rivers and becks support otter and crayfish. Some interest in disused quarries eg great crested newts (12b). Wood pasture and veteran trees in Greystoke Park (12c).
Geology and Geomorphology Important exposures of carboniferous limestone. LPOs and RIGGS as described above	Till and fluvio-glacial deposits exposed along Scandal Beck provide key evidence in Quaternary stratigraphy. Glacial erratic boulders of pink Shap Granite east of Shap (12d).

LANDSCAPE TYPE 12: HIGHER LIMESTONE

Capacity Statement

Overall the Higher Limestone landscape is judged to have **low/moderate** capacity to accommodate turbine development. This reflects a moderate/high sensitivity overall, a medium/high landscape value recognised by LoCI designation in most areas and strong geological, ecological and historical associations. Acceptability is affected by marked variations in the degree to which limestone characteristics are exhibited and wealth of historic features.

A key limiting factor is the open character of this type whereby any development is likely to be widely visible with only localised containment by relief or trees. This is liable to exacerbate potential problems of over dominance and intrusion relative to historic villages, and prospects from tourist routes and viewpoints both within this type and from the nearby fells of national landscape importance. Whilst there is some localised intrusion from modern developments, especially around the M6 corridor, this landscape type is largely unspoilt. Therefore protection of uncluttered and distinctive landmark skylines and a sense of remoteness or quietness are also major issues. Most parts are also rich in visible historic remains which are vulnerable in terms of both their scale and character.

Core areas that exhibit attractive limestone features such as limestone pavements, scars and historic field patterns and others with parkland and ancient woodland are vulnerable because of their scenic richness and harmony. However there are some blander fringes that would not be intimidated by a small or possibly large sized group development especially if visually linked to large scale field patterns or forestry blocks. There is also some potential for positive association with large scale engineered components such as quarries and roads.

Particular sensitivities in relation to the setting of national designations include:

- *contribution of the rolling fringe around Ullock to coastal panoramas from the Loweswater Fells and C2C Cycle Route in the Lake District NP*
- *contribution of the rolling fringe on the edge of the Solway Basin to coastal panoramas from the northern fells of the Lake District NP including outliers such as Binsey, Green How and Faulds Brow, the Uldale and Caldbeck Fells and the Skiddaw massif, framed views out of valley 'gateways' off the A595 and sequential views from the Allerdale Ramble, Cumbria Way and Regional Cycle Route 10*
- *contribution of the lightly settled limestone foothills, which extend into the LDNP, to the quieter north-eastern fells*
- *panoramic views across the limestone foothills around Greystoke towards the Vale of Eden from the Carrock/ Bowscale fells and Blencathra massif in the Lake District NP and views back to the imposing steep eastern faces of these fells most notably from the C2C Cycle Route*
- *views from the Pooley Bridge 'gateway' to the Lake District NP and M6, A592, A66 approaches*
- *close affinity between limestone commons and farmland around Shap and the Haweswater Lake District NP 'gateway' landscape, with geological, historic and cultural connections*
- *key views out from the popular High Street range and back towards the Park from the M6, A6, Coast to Coast footpath and W2W Cycle Route (NCR 68)*
- *contribution to Vale of Eden panoramas from the Stainmore Gap North Pennines AONB 'gateway' most notably from the A66 and W2W Cycle Route (NCR 71) and towards the AONB from the same cycle route (NCR 68), the Settle Carlisle Railway, Pennine Bridleway and A685*

LANDSCAPE TYPE 13: FELS AND SCARPS

Landscape Sub-Types	13a Scarps 13b Moorland, High Plateau	13c Fells
Key Characteristics	Sensitivity	
Scale and Enclosure Exposed large scale upland. N Pennines comprise expansive undulating moorland plateau (13b) with wide horizons but distinct high fells and summits in central section and dramatic western scarp (13a) with conical shaped outliers. Fells of SE Cumbria (13c) comprise either Lakeland extensions with steep sided rounded forms and deeply incised valleys or Pennine extensions with more angular craggy outlines. Largely rough grazing devoid of trees. Occasional features eg rock outcrops, screes, waterfalls and walls, farms woods on lower slopes.	Low/Moderate (2) Expansive scale and wide horizons of Pennine moorland would not be intimidated by a wind farm development whilst a large group might relate to the scale of individual fells. Incised valleys vulnerable to over dominance due to more intimate scale and restricted zone of visibility. Occasionally turbines may appear incongruous and out of scale against natural and built features particularly on lower slopes. Most likely to appear rational on windswept fell tops.	
Complexity and Order Essentially a simple empty landscape. Contours of land generally smooth, in places rugged especially around the scars, sills and crags of the scarps (13a), moorland summits (13b) and limestone fells (13c Pennines) or remarkably sleek and gently domed as in the Howgills with fascinating shadow patterns (13c). Unenclosed rough pasture predominates in mosaics of colour and seasonal contrast with rushes, bracken and remnant heather or more uniform expanses of blanket bog on Pennines plateau (13b). Gully features frequent on steep slopes sometimes cloaked by remnant ancient woodland.	Moderate (3) Opportunities for organic configurations related to individual form of fells or ridges within plateau areas. Simple moorland canvas offers opportunities for turbines to create a dramatic contrast illuminating emptiness of this landscape. However potential to conflict with irregular vegetation mosaics and detract from existing features such as rock outcrops, gills and broadleaved woodland. Elsewhere turbines may be perceived as compromising simplicity of virtual 'upland deserts' or sleek and majestic landforms.	
Manmade Influence Semi- natural moorland and associated birdlife creates a strong sense of 'wildness'. Evidence of woodland clearance settlement and enclosure since prehistoric times and also visible remains of lead mining in N. Pennines (13b). Open moorland has been vulnerable to some overgrazing pressures and localised afforestation eg Whinell. In most part unspoilt by modern development. Training and firing ranges above Warcop but most of permanent structures below scarp. Very few roads and large modern structures limited to odd communication or radar installations and pylons next to A6 at Shap (13c).	High (5) Little or no opportunity to relate to other modern manmade structures or regular patterns of management. Turbines likely to stand out as alien structures and be perceived as incongruous within an essentially wild unspoilt landscape.	
Remoteness and Tranquillity Limited access and absence of settlement conveys a strong feeling of remoteness and tranquillity. Scale and wide horizons of landscape makes viewer feel small and evokes a dramatic sense of space and freedom. Localised noise and movement from M6 motorway and A6 (13c) and A66 at Stainmore (13b).	High (5) Presence, noise and movement of turbines likely to compromise sense of freedom, tranquillity and remoteness	
Settlement and Key Views Scarp and high moorland/fells uninhabited with very limited road access. A few houses and farmsteads in some valleys. Occasional quiet country roads through some dales and across moors between them. Occasional farms/quarry or installation tracks. Some popular walking areas eg Howgills and national trails: Pennine Way/Bridleway; C2C/W2W Cycle Routes.	Low/Moderate (2) High moorland plateau areas offer scope to site development well away from settlements. However potential to be overbearing and intrusive in relation to popular walking routes and tourist trails.	
Visual Interruption Exposed with very few if any non-topographical containment features. In parts some topographic containment by ridges and individual summits but flatness of moorland plateau areas and raised profile of scarp increases exposure.	High (5) Turbine development likely to stand out and be widely visible.	
Skyline Strong bare horizons. Can be simple and wide on moorland plateau or ridges or more complex where fells/summits interlock. Limestone of Pennines (13a,b,c) produces distinctive angular stepped profiles, scarps, scars, and flat tops where capped by Millstone grit. Lakeland extensions (13c Lakes) more rounded but with glacial features eg craggy cirques and screes. Very few masts or other vertical structures.	Moderate/High (4) Scope for turbine development to form a predictable and clear visual contrast in relation to flatter moorland parts or simple ridges. However likely to compromise distinctive landmark profiles of markedly domed or angular fells and craggy parts. Also likely to be less predictable relationship with skyline where summits and fells interlock. Maintenance of uncluttered skylines is an issue.	
Connections and Adjacent Landscapes Contribute to setting of valleys (8) and settlements eg upper Lune and Kirkby Stephen, Tynedale and Alston, Kent and Kendal, middle Lune and Kirkby Lonsdale. Pennine scarp and W summits form impressive backdrop to Vale of Eden. Prominent from major route ways eg M6, W coast mainline, A6 and A66. Inter-visibility between 13c and fell tops of national parks and high limestone around Orton (12)	Moderate (3) N Pennines plateau offers scope to site development away from sensitive edges. Elsewhere potential for intrusion on sensitive valley rims, settings to important towns, prospects from adjacent fells of national importance and major route ways.	
Overall Sensitivity	Moderate/High	

LANDSCAPE TYPE 13: FELLS AND SCARPS

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
North Pennines AONB All of Moorland, High Plateau (13b) and Scarps (13a) except southern tip at Mallerstang.	National: Conservation and enhancement of natural beauty derived from the special qualities of: a unique landscape unit with a distinctive geology and unusually large extent of high, exposed semi-natural moorland which has outstanding wilderness qualities; scenic contrasts and unfolding sequence of simple moorland, sheltered dales and dramatic scarp as well as spectacular individual features; moorland landscapes valued for their long views and western scarp affords panoramic views; special interests of historic mining landscape, unique flora and fauna, unusual range of geological and geomorphological features and wealth of archaeological and historical remains which contribute to landscape character.
Landscape of County Importance All of 13c and 13a/b beyond AONB at Mallerstang	County: Protection of distinctive character attributable to landform, land cover (Barbon and Middleton Fells), natural/built features eg steep slopes, crags, scree, wooded gills, tree clumps round farms, absence of detractors, views creating a strong positive response and remote peaceful character.
Ancient Woodland Very few. Group at S end 13a around Helbeck, none in 13b except R Gelt and isolated gill or valley woods in 13c especially Middleton/Barbon Fells on E fringes of Lune Valley.	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity 13a Scarps 13b Moorland, High Plateau 13c Fells	Area of County 1.4%: unusual 9.2%: common 4.1%: ordinary
Associations	Description
Cultural Scenic qualities have been inspirational	Central figure in N Pennines is 20 th century poet WH Auden who was inspired by lead mining landscapes. JMW Turner followed the route and produced scenes along the modern-day Pennine Way through to High Cup Nick and Dufton. AW Wainwright recorded the majestic beauty of the Howgills whilst Thomas Pennant writing in 1769 condemned the fells around Shap as bleak and destitute of picturesque beauty.
Historic Environment Interest in woodland clearance, settlement and enclosure since prehistoric times and lead mining remains in N Pennines Conservation Areas: Settle/Carlisle Railway on E edge of Mallerstang Valley (13c)	Little or no modern settlement apart from isolated farmsteads, often on ancient sites (13c) and some abandoned post-medieval farmer/miner small holdings (13a,b). Woodland once covered all but highest parts. Clearance for agriculture began in prehistoric times and relict prehistoric field systems and settlements occur (13a,b) and in Howgills probably caused severe gully erosion. Field systems now generally absent, lower slopes of 13a/ c sometimes enclosed by often large, though not always regular, fields bounded by walls. Historic enclosure features include droveways, pennings and bields (13c) small fields (13a north). Evidence of coal and lead mining 14 th -19 th century (13b) eg ruined buildings, bell pits and smelt mill chimneys. Sheiling remains common in Howgills (13c). Occasional 19 th century grouse pits (13b).
Ecology Extensive tracts of moorland and heath supporting upland bird communities and often under international wildlife designations Majority of N Pennines (13a/b) covered by extensive SPA/SAC/SSSI designations and also large central NNR (Milburn Forest). Partial coverage in other areas (13c). Northern part of Birkbeck/Shap Fells covered by SAC/SSSI and central part of Howgills covered by a large SSSI, elsewhere designations absent. Small patches of SSSI/SAC designation across Barbon Fells and Wild Boar Fell.	High Pennine moorlands (13b) Shap Fells, Birkbeck Fells and Middleton Fells (13c) have extensive areas of blanket bog and upland heathland. Supports important breeding populations of upland birds eg golden plover. Also areas of limestone grassland where this rock outcrops (13a,b,c Pennines), acid grassland particularly Howgills, localised species rich springs and flushes with rarities eg gentians (13a,b) Rush pasture locally frequent on moorland edge (13a,b) supporting black grouse. Montane heath present on several summits and mine spoil supports unique lead tolerant flora (13b) Upland oak woodland present along some gills (13c). Fauna includes merlin, peregrine, kestrels, foxes, hares and red deer.
Geology and Geomorphology Significant interest in pockets especially along Pennine scarp and around limestone outcrops. International importance of AONB for geology and classic example of base metal ore field recognised by European Geopark status. LPOs at southern end N Pennines and Wild Boar Fell. Occasional RIGGS along N Pennines scarp slope (13a) Howgills, Barbon Fells and Wild Boar Fell.	Exposures of limestone and volcanic rock and dramatic landform features eg U-shaped valley of High Cup Nick along scarp edge 13a, ore field; glacial and periglacial features;caves and other karst features of Carboniferous limestone and various natural and engineered rock exposures (13c)

LANDSCAPE TYPE 13: FELLS AND SCARPS

Capacity Statement

Overall the Fells and Scarps landscape is judged to have **low** capacity to accommodate turbine development. This reflects a moderate/high sensitivity and medium/high to high landscape value recognised by LoCI and the North Pennines AONB designation* with strong ecological and geological associations.

Whilst the large scale, breadth of horizons and absence of settlement especially within plateau areas suggest scope to accommodate wind farm or large group development in contrast to simple moorland canvases there are some overriding constraints.

The key characteristics of this landscape are a strong sense of wildness, freedom, remoteness and an unspoilt nature. These are attributable to the predominance of semi-natural moorland vegetation and associated birdlife, expanse and general absence of roads, manmade structures and field enclosure. They also possess a variety of dramatic scenic qualities including steep slopes, crags and scarps; bleak and empty 'upland deserts'; awesome domed profiles such as the Howgills and distinctive angular profiles as in the Pennine fells. These essential qualities are likely to be compromised by any scale of turbine development with little or no scope for visual linkage or association with manmade patterns or forms. These problems are likely to be exacerbated by the extreme openness of this landscape where turbines would be exposed to view from sensitive receptors such as settlements and route ways in adjacent valleys, popular fell tops and national trails such as the Pennine Way.

Particular sensitivities in relation to the setting of international and national designations include:

- *sequential views towards the northern tip of the North Pennines AONB from Hadrian's Wall Trail and Cycle Route (part of NCR 72) and from viewpoints at the forts, milecastles and camps between Lanercost and Birdoswald and sequential views back towards Hadrian's Wall from the Tindale Fells within the AONB*
- *contribution of the fells to an unbroken expanse of predominantly empty natural upland landscape extending from within the Lake District NP eastwards across the Howgill Fells into the YDNP enjoyed for its sense of openness, tranquillity, freedom, wildness, solitude and panoramic views*
- *key views across the fells to and from both national parks and the southern end of the North Pennines most notably from the unrestricted access areas in the LDNP, the popular High Street range, Coast to Coast footpath, M6 'gateway', A6, Dales Way, W2W Cycle Route, Pennine Bridleway, Wainright walks, Orton Fells, Howgill Fells, Wild Boar Fell, Middleton Fells and Barbondale*

* For those areas that fall within the North Pennines Area of Outstanding Natural Beauty Policy R45 in the Cumbria and Lake District Joint Structure Plan 2001 – 2016 applies

LANDSCAPE TYPE 14: URBAN AREAS AND FRINGES

Landscape Sub-Types	Urban Areas 2d Coastal Urban Fringe 5d Urban Fringe
Key Characteristics	Sensitivity
Scale and Enclosure Underlying landscape variable but generally medium to large scale. Urban fringes vary from flatter coastal areas with big skies and wide horizons (2d) to rolling farmland with some sheltered valleys (5d). Large scale elements include disused airfields, heavy industrial buildings and docks, power stations, gas terminals, prisons, reclaimed slag/spoil heaps (2d) and light industrial/retail estates. Smaller scale indicators include pylons, houses, plantations and hedges and trees declining towards coast.	Moderate (3) Scale and openness suggest scope to accommodate development up to large group size. Coastal locations and broad ridges offer greatest scope whilst sheltered valleys and undulating terrain likely to be more sensitive due to more intimate scale potential for over dominance in narrow zones of visibility. Presence of large industrial elements may assist absorption. Likely to appear out of scale in context of houses and fabric of remnant farmland. Positive design rationale on exposed coasts.
Complexity and Order Typically mixed and complicated land cover pattern with varying degrees of urban influence. Neglected farmland with run down boundaries, rough grassland and scrub, scars of former industry eg spoil heaps and disused railway lines and derelict buildings particularly in W Cumbria, encroaching housing and sporadic industrial/commercial development or institutional buildings and holiday parks (2d). Attractive aspects eg parks and wooded valleys. Some organising linear elements eg hard coastal edges, major roads/railways.	Moderate/High (4) Introduction of turbines likely to compound visual confusion of disordered urban fringes. Some scope for an ordered grouping to relate to key linear elements or grain of existing large scale industrial layouts. Likely to appear incongruous against form and pattern of irregular scenic aspects such as parkland.
Manmade Influence Varies from built up areas to rural areas with strong urban influences. Coastal areas most dynamic with a visible industrial heritage stimulated by coal and iron mining dating back to 18 th century eg Georgian and Victorian ports, small mining villages, spoil and slag heaps, disused railways and derelict or degraded land. Tourism heritage especially in Sillioth and Furness. All subject to urban expansion pressures, new road and leisure developments. Farmland often rundown due to fragmentation of holdings and public access pressures.	Low/Moderate (2) Scope for positive association with industrial landscapes and historic utilisation of natural resources and power generation. In urban fringes potential conflicts with scale and character of traditional rural and industrial heritage features. May be perceived as exacerbating urbanisation and run down appearance.
Remoteness and Tranquillity Mostly busy with noise intrusion from roads, railways, and industrial, commercial or leisure activities. However also includes quieter residential areas, small villages and rural backwaters, derelict or reclaimed areas and parks often rich in wildlife and valued as green refuges for quiet recreation.	Low/Moderate (2) Noise and movement of turbines could relate to busier parts but likely to detract from quietness in some locations.
Settlement and Key Views Edges of towns mostly suburban post 1930s characterised by spacious pattern of streets, low houses, gardens, communal amenity grassland and institutional buildings sometimes interspersed with commercial/light industrial development. Heavier industrial areas usually separate and often on coastal edge next to docks or reclaimed areas. Historic stone or brick built cores sometimes organic and winding of Medieval origin or planned grid patterns with squares formal parks and squares from Industrial Age. Holiday parks, Cumbria Coastal Way and Hadrian's Wall Trail present along coast (2d). Dense pattern of former mining villages in W Cumbria (5d), elsewhere more dispersed.	Moderate/High (4) Limited scope to site development away from residential edges, small villages within urban fringes or key amenity/tourism receptors. Likely to appear incongruous in terms of character, pattern and scale with potential for over dominance. Also potential for intrusion on important settings to historic cores or gateways and important open spaces eg promenades, parks, cemeteries, 'green wedges'. Some opportunities on urban edges and fringes where related to large scale industrial land, airfields, docks or major route ways.
Visual Interruption Fairly enclosed urbanised landscapes with containment offered by extensive built development assisted by ridges and woods across urban fringe (5d). Reducing on exposed coastal plains (2d) with less interruption by relief and vegetation.	Low/Moderate (2) Buildings and other screening features likely to assist absorption and create glimpsed and intermittent views. Turbines likely to be more widely visible in coastal plain locations.
Skyline Variable depending on topographic setting from broad plains with strong coastal horizons to valleys enclosed by hills. Frequent vertical structures including pylons, industrial sheds and silos, communication masts, chimneys, and existing wind turbines. Urban landmarks include church or town hall towers, castles and reclaimed spoil heaps.	Moderate (3) Flatter coastal horizons offer scope for predictable contrast. Valley settings more vulnerable due to presence of intensifying features eg valley rims, framed vistas and prospects. Scope to correspond to other vertical structures but also potential for clutter and conflicts of form and function. Historic landmark buildings and landforms vulnerable to intrusion.
Connections and Adjacent Landscapes Coastal locations have strong backdrop of open sea whilst inland often weak connections with subdued hinterland (2, 5). Nearby Heritage Coast, ridges (4, 5a, 9d - Whitehaven/ Workington) or high ground (3a, 10, 11a - Ulverston/ Kendal/ Penrith) Lakeland Fells, estuaries, dunes and beaches (1a, 2a - Millom/ Barrow/Solway) create significant backdrops/prospects.	Moderate (3) Along coast simple large scale context of seascape likely to assist absorption. Contribution to picturesque compositions and open views in relation to estuaries, enclosing high ground and natural coastal edges may be sensitive. Some potential for intrusion on prospects from landscapes of international and national importance.
Overall Sensitivity	Moderate

LANDSCAPE TYPE 14: URBAN AREAS AND FRINGES

Value	
Landscape Designations and Planning Policies	Scale it Matters and Why
Hadrian's Wall Military Zone World Heritage Site and Setting N Carlisle Urban Area, 2d and 5d (site and setting) Silloth Urban Area and 2d (setting)	International: Protection of core archaeological features of the Roman wall and coastal defences as well as their landscape setting
Registered Historic Parks and Gardens Workington Hall (Curwen Park) Grade II and Carlisle Cemetery	National: Protection of special historic interest of parks and gardens and their settings
Ancient Woodland Few isolated woods in Cockermouth, Whitehaven, Barrow and nr Disington (5d)	National/Regional: Conservation of ancient semi-natural woodlands as irreplaceable nature conservation assets with associated interests including characteristic landscapes
Rarity Urban Areas 2d Coastal Urban Fringe 5d Urban Fringe	Area of County Not measured 1.3%: unusual 0.7%: rare
Associations Historic Environment Variable interest but common themes of ports, industrialisation and mining. Conservation Areas: Most limited to historic town centres and/or harbours: Silloth; Maryport; Workington; Whitehaven; Cleator Moor; Egremont; Dalton-in-Furness. Some extending beyond centre to edges of town: Penrith -Beacon Edge; Cockermouth-extensive and branching along Cocker and Derwent Valleys; Ulverton -Stonecross; Kendal -Fellside. Couple with dispersed pockets beyond centre and on urban edges: Carlisle -Stanwix/Rickerby to N, Botcherby to E and Caldew Valley to S; Barrow -Furness Abbey to NE, docks to S and Vickerstown Walney to W	Description Evidence of prehistoric habitation on Walney and outskirts of Carlisle. In Furness monks first exploited iron ore industrially in 12 th /13 th centuries. Barrow developed later as Victorian model town planned on grid utilising local iron ore and natural harbour for ship building. Now terminus for offshore gas. Much evidence of 18 th and 19 th century coal and iron mining in W. Cumbria. Stimulated early industrial development and ports including Maryport and Whitehaven a Georgian planned town second west coast port (after Bristol). High grade ore led to early growth of iron and steel making in Workington. Disused 19 th century railways also legacy helped growth mining and tourism (Silloth, Roa Island Barrow, Walney), agricultural industries. 2 nd WW military airfield remains feature around Silloth. Fields regular and indicative of late enclosure 5d
Ecology Pockets of interest SSSIs and sometimes SACs along main rivers through Carlisle, Cockermouth, Cleator Moor and Kendal and in Barrow Walney Channel SPA/SAC/SSSI. SSSI dunes at Silloth and RIGGS on cliffs at Whitehaven. Variety of designations eg SPAs, SACs, SSSIs and RIGGS covering old quarries/mine workings/docks/dismantled railways at Maryport, Workington, Egremont, Millom, Ulverston, and Barrow.	2d supports wealth of wildlife often associated with former industrial sites and adjoining areas eg iron slag colonised by herb-rich grassland, Hodbarrow lagoon Millom breeding and wintering birds, damp ground and pools for great crested newts and natterjack toads, mudflats and saltmarsh for waders and wildfowl. In 5d mainly species poor hedgerows and occasional small areas of woodland.

LANDSCAPE TYPE 14: URBAN AREAS AND FRINGES

Capacity Statement

Overall the Urban Areas and Fringes landscape is judged to have **moderate** capacity to accommodate turbine development up to small group size and possibly large groups in coastal contexts. This reflects a moderate sensitivity overall, however some notable variations in character affect acceptability. These relate to proximity of the coast and residential development, presence of comparable large scale structures, and complexity of the topographic setting.

Greatest potential occurs in the context of large scale industrial land, disused airfields, docks or major route ways. Existing group developments have already been satisfactorily absorbed in locations on the outer Cumbrian coast which benefit from the large scale context of coastal plain and backdrop of the open sea; relationship with other large structures; simple and predictable contrasts with flat horizons and the natural order imposed by the coastline. In addition their logical position on windswept coasts and association in these locations with a history industrialisation and power generation based on local resources tends to promote a positive image. However these areas are at or near capacity and pressure for new development or extensions is likely to generate issues of visual clutter and confusion with existing turbines or other vertical structures such as pylons. Less exposed sites further inland are now attracting interest and whilst they might share the advantages of an industrial context, the higher sensitivity of adjacent rural landscapes and/or more intimate valley settings will not be as favourable as coastal locations.

Elsewhere residential amenity is a major constraint with the edges of towns dominated by suburban housing development and the urban fringes dotted with small villages issues of visual intrusion and over dominance are likely to arise. The settings to historic town centres or gateways and open spaces such as promenades, parks, cemeteries and 'green wedges' are vulnerable. There is also potential for intrusion on key landmarks within urban skylines such as historic castles and nearby prospects from nationally valued landscapes. Problems of visual intrusion are likely to be exacerbated where towns are set within valleys or hilly terrain with potential for effects such as blade flash over valley rims, dominance of limited vistas between hills, overbearance from turbines set on adjacent hilltops, and 'gateway' prospects from valley rims.

Another key factor limiting capacity is the potential for turbines to compound problems of visual confusion. The urban fringes are typified by patterns of neglected farmland fragmented by sporadic development and cluttered by pylons etc. and hence they offer little scope for convincing visual linkage with turbine groupings. Incompatibility between proposed turbines and the form and function neighbouring vertical structures such as industrial sheds and chimneys may also be a constraint unless coherent and balanced compositions can be achieved.

Particular sensitivities in relation to the setting of international and national designations include:

- *backdrop of Maryport, Silloth and Carlisle urban areas and fringes to open sequential views from recreation and tourist routes along the coastal edge of the Solway AONB and Hadrian's Wall most notably from Cumbria Coastal Way, the B5300, National Cycle Route 72, Hadrian's Wall Trail and from viewpoints at coastal forts associated with the Wall*
- *open prospects between Whitehaven and the St Bees Heritage Coast and integrity of the dramatic sandstone cliff scenery that extends beyond the boundary of this designation as viewed from the northern approaches via Cumbria Coastal Way*
- *contribution of the West Cumbrian urban areas and fringes to the Lake District NP in relation to coastal panoramas from the Ennerdale and Loweswater Fells and vistas from 'gateways' off the A5086 and A595 and the C2C Cycle Route (NCR 71)*
- *contribution of the Furness urban areas and fringes to picturesque estuarine compositions with fells in the Lake District NP and limestone hills of the Arnside and Silverdale AONB as viewed from the trunk road skirting edge of Park and 'gateways' off them, coastal railway, National Cycle Route 72, Black Combe, Furness Fells, Hampsfell, Arnside Knott and coastal edges*
- *location of the Cockermouth, Penrith and Kendal urban areas on or near the boundary of the Lake District NP, role as major 'gateways' into the Park and integrity of limestone and foothill landscapes that extend from within the boundary of the Park up to the edge of these towns*

Scale and Enclosure

Scale and enclosure explores factors such as relative size and extent of views. Understanding these factors help in gauging how a landscape will feel and whether there is a positive design rationale. Assessment of the size of the topography and land cover elements provides an understanding of how the height and extent of turbines will appear in relation to their landscape context. Many landscape elements have sizes and characteristics which are familiar to us and the size of development may be gauged against these. In the close range the presence of vertical elements such as buildings, hedges, trees, pylons etc can indicate the relative height of turbines. At middle range and longer distances horizontal elements such as long ridges, bands of woodland or built up areas may be compared against the extent of development. Amongst other things the degree of visual dominance depends on the proportion of the view occupied by any proposed development, therefore the existing openness or breadth of typical views is relevant.

eg an intimate and enclosed landscape of a valley with hedgerows and trees is likely to be more sensitive to turbine development than a large scale open and featureless plateau where the sense of exposure to wind evokes a stronger rationale for this form of development

eg an enclosed valley where views are channelled by topography and woodland is likely to be more sensitive than a coastal plain landscape with an overriding sense of openness because any given development would occupy a greater proportion of the zone of visibility.

Complexity and Order

Understanding the complexity of a landscape – whether it has a simple predictable composition or complex composition comprised of overlapping elements that results in constant visual surprise and interest – can help to determine how turbine development will relate or contrast with its character. It is important to consider this complexity both in relation to topography and land cover and the way the two interact. In contrast to *visual complexity* where there is some order, hierarchy and rationale to the arrangement of elements, *visual confusion* refers to a landscape that is bewildering and unclear. This occurs where there is no obvious rationale for the combination of elements and often being haphazardly placed with no direct relationship to the landscape or to each other. Balance and harmony in the overall composition are also relevant.

e.g. the introduction of large modern turbines into a scenic landscape composition of craggy mountains with related mosaic of natural vegetation cover and historic features such as cairns and stonewalls is likely to be more unsettling than their introduction into an extensive simple moorland landscape where they could create a new focal point contrasting with the horizontal plain illuminating the vast scale and emptiness of this landscape

eg a coastal plain landscape with a simple pattern of fields and isolated farmsteads might comfortably accommodate turbine development whilst their introduction into a busy and disordered urban fringe landscape is more likely to compound visual confusion

Manmade Influence

It is important to consider the degree of man-made influence on a landscape in order to determine how turbine development will relate to both the form and function of existing elements and how it will be perceived. The tall mechanical forms of turbines relate well to other modern man-made structures such as masts, pylons, chimneys, silos, towers, cranes, buildings etc and associate with landscapes perceived as working, utilitarian or industrial in nature. Because of their regular standardised shapes and efficiency requirements turbines lend themselves to geometric layouts. In turn these can be more readily integrated into regular man-made patterns such as geometric systems of fields and plantations.

e.g. turbines are likely to be less conspicuous in industrial landscapes dominated by built structures with a vertical emphasis whilst they would be the focus of attention within the more semi-natural and irregular forms of a limestone farmland landscape dominated by historic buildings

Remoteness and Tranquillity

The opportunity to experience a sense of peace isolation and remoteness is valued by a growing number of people for relaxation and recreation. The number of places where this can be achieved is increasingly limited. The introduction of a strong human element can have an impact on these experiences. Interpretation of the degree of physical and/or perceived remoteness and tranquillity will assist in determining how changes, as a result of wind energy development, will be experienced.

eg in the fells landscape turbine development may increase the sense of human influence and detract from the remote and tranquil character of the landscape

Settlement and Key Views

Settlement structures and patterns often have a distinctive relationship with the landscape for example linear villages on ridge tops commanding extensive views or nucleated villages nestled between hills with restricted views. Understanding settlement patterns, density and scale can help predict how turbine development will relate to the settled landscape and how they will appear in views from settlements. Visual receptors that are likely to be most sensitive to wind energy development need to be considered. These will include residents, communities and tourists or visitors whose attention or interest is focused on the landscape. Key views to consider include not only those from settlements but also those from strategic transport and recreation routes, tourist destinations and established viewpoints as well as potential changes to important landscape settings or 'gateways'.

eg in and around towns turbine development may be located in close range without appearing too dominant, especially in the context of similar industrial developments and provided they do not intrude on residential areas, valued landscape settings or views enjoyed by the community

eg where a landscape contains small-scale dispersed settlements, turbine development may be appropriate provided it has a complementary scale and/or is sufficiently distanced from these settlements so as not to be over dominant or intrusive

Visual Interruption

Understanding the visual containment characteristics of a landscape forms a basis of assessing the degree to which the available views referred to above might be vulnerable to wind energy development. It can also assist in assessing landscape sensitivity to cumulative effect (the most open landscapes being the most sensitive). The previous supplementary planning guidance considered this by reference to visual interruption created by topographic, natural and man-made features and grouped landscape types into five categories.

Skyline

Understanding the skyline of a landscape – whether it is defined by the presence of vertical structures or is a simple empty horizon – can help to determine how turbine development would relate or contrast with its character. The nature and form of other vertical structures will also have a bearing with cross references to the key characteristic of manmade influence. Distinctive skylines or landmarks likely to be compromised by turbine development also need to be considered. Elevation of potential developments relative to key views can effect the degree of visual dominance in a variety of ways including backgrounding screening, the eye being drawn to a prominent skyline, or emphasising the verticality of turbines.

eg in a moorland landscape where there are few vertical elements, turbine development may be appropriate as it could form a point of focus in the landscape and clear visual contrast

eg in an urban fringe landscape that has many vertical elements of varied sizes and form such as existing turbines, pylons, industrial buildings, chimneys and cranes turbine development could increase the sense of clutter

eg in a rural landscape with dramatic local landmarks such as vertical faces of limestone scars, or sandstone cliffs or symbolic features such as lighthouses, church spires or towers turbine developments could compete with and dilute the perceived value of these elements

e.g. in the case of Wharrel's Hill appeal the inspector considered that the landscape was able to absorb the proposed development because from the receptors within the national park viewpoints looked down on the proposed development such that it occupied a small proportion of the open and broad coastal plain landscape and that the vertical emphasis of the development was not apparent. This contrasts for example with the coastal plain and lowland ridges landscape ie the Solway Basin, where the vertical emphasis of proposed wind energy developments would be relatively more imposing upon coastal edge receptors, because the viewer is looking up at the development and often drawn to the prominent skyline behind defined by the Lakeland fells

Connections with Adjacent Landscapes

Views of turbines usually extend well beyond the boundaries of the landscape type within which they are located. It is therefore essential to consider views into and from adjacent landscape to understand the impact of a development upon areas of different character. A neighbouring landscape may also form a strong backdrop and its characteristics may influence the sensitivity of the receiving landscape.

eg the location of a turbine on the edge of one landscape may adversely affect the character of an adjacent landscape of higher sensitivity to turbine development

eg the introduction of turbines on a coastal strip or farmland lying below a large escarpment need to be viewed in the context of the large scale character of the adjacent seascape or landscape

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'Planning and Renewable Energy in Cumbria' ETSU Cumbria County Council and South Lakeland District Council 1994

'Visual Assessment of Windfarms: Best Practice' University of Newcastle 2002 Scottish Natural Heritage

APPENDIX 2

Threshold Criteria for Landscape Importance and Rarity

Importance	Typical Scale	Typical Designations
<i>High</i>	International National	World Heritage Site, National Park, AONB
<i>Medium/High</i>	Regional Sub-Regional	Landscape of County Importance
<i>Medium</i>	Local	Area of Local Landscape Importance
<i>Medium/Low</i>	Local	Undesignated
<i>Low</i>	Local	Areas identified for recovery

Rarity	Area (%)*
<i>Unique</i>	<0.3
<i>Rare</i>	0.4 – 1.0
<i>Unusual</i>	1.1 – 2.6
<i>Ordinary</i>	2.7 – 7.2
<i>Common</i>	>7.3

* Area occupied by Landscape Type/Sub-type as % of all Types based on Cumbria Landscape Classification 1995 p.7

APPENDIX 3

Baseline GIS Information

Data	Dataset	Source
Base Map	OS 1:50,000 raster	Ordnance Survey
<u>Settlement and Views:</u>		
Settlement Pattern	Addresspoint	Ordnance Survey
National Cycle Routes	National Cycle Routes: Coast to Coast (C2C) Eden Valley Walney to Wear	Sustrans
National Trails	Hadrian's Wall Trail Pennine Bridleway Pennine Way	
Rights of Way	Rights of Way – Cumbria Outside LDNP	Cumbria County Council
Strategic Transport Routes	Roads – Motorways – Cumbria; A Roads – Cumbria; Railways - England	Ordnance Survey
<u>Strategic Landscape Designations</u>		
World Heritage Sites	World Heritage Sites – Visual Impact Zones (Hadrian's Wall)	English Heritage
WHS Setting	World Heritage Sites – Visual Impact Zones (Hadrian's Wall)	English Heritage
AONBs	AONBs - Cumbria	Cumbria County Council
Heritage Coast	Heritage Coast - Cumbria	Cumbria County Council
Landscapes of County Importance	Landscapes of County Importance (LOCI)	Cumbria County Council
Registered Historic Parks and Gardens	HER – Registered Historic Parks and Gardens	English Heritage
Conservation Areas	HER – Conservation Areas	Cumbria County Council
Ancient Woodlands	NC – Ancient Woodlands	English Nature
<u>Associated Values</u>		
SPAs	NC – Special Protection Areas	English Nature
SACs	NC – Special Area of Conservation	English Nature
SSSIs	NC – Special Sites of Scientific Interest	English Nature
RIGGS	Geological and Geomorphological Sites	Cumbria RIGS Group
Limestone Pavement Orders	NC – Limestone Pavement Orders	Cumbria County Council
National Nature Reserves	NC - National Nature Reserves	English Nature

**Cumbria Wind Energy Supplementary Planning Document
Consultation Draft July 2006
Part 3
Guidance on Landscape and Visual Impact Assessment**

PART 3

GUIDANCE ON LANDSCAPE AND VISUAL IMPACT ASSESSMENT

CUMBRIA WIND ENERGY SUPPLEMENTARY PLANNING DOCUMENT

CONSULTATION DRAFT

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INTRODUCTION

Aim and Basis

This guidance seeks to define the requirements for the landscape and visual impact assessment (LVIA) of proposals for wind energy development (WED) within Cumbria in order to ensure that such assessments are:

- **Comprehensive:** cover all the significant issues whilst being focused and succinct
- **Credible:** provide high quality information representing current best practice
- **Effective:** are part of an iterative process of development planning and design through which best environmental fit may be achieved
- **Consistent:** provide levels of information that are comparable between different developments
- **Legible:** communicate information easily and provide a true impression

This guidance has been developed using the second edition of the Guidelines for Visual and Landscape Impact Assessment (GLVIA)¹ and tailored to suit the complex effects arising from second and third generation wind turbines observed within Cumbria and recorded in recent studies^{2 3}.

It is recognised that it is the primary responsibility of the landscape professionals carrying out the LVIA to develop a methodology appropriate to the nature, location and scale of the WED proposal and the potential sensitivity of the site. This methodology should be appended to the LVIA and preferably agreed with the regulatory authority prior to the assessment. As a general principle the methodology should clearly describe the assessment process and most importantly spell out the criteria used for professional judgements in predicting effects and determining significance.

Definition of Landscape and Visual Effects

In PPS 22 the Government recognises that “Of all the renewable technologies, wind turbines are likely to have the greatest visual and landscape effects”⁴. These are independent but related issues and the GLVIA makes the following distinction “landscape effects are changes in the landscape, its character and quality, whilst visual effects relate to the appearance of these changes and the resulting effect on visual amenity”.

Cumulative Effects

Cumulative effect is a complex issue which will be increasingly relevant to the assessment of wind energy schemes as more and larger developments are proposed. For any given proposal developers should determine whether cumulative landscape and visual impact assessment (CLVIA) is necessary by reference to the requirements set out in Part 1: Chapter 4. The guidance on CLVIA has been adapted from guidance issued by Scottish

Natural Heritage⁵ and ODPM to suit the landscape and experience of cumulative effects in Cumbria.

When is an Assessment Needed?

The statutory framework for Environmental Impact Assessment (EIA) provides the basis for the methodology*. However the GLVIA recognises that the *'EIA process may benefit other projects, for which EIA is not formally required, in helping to achieve environmentally sensitive and sustainable development'*. The Companion Guide to PPS 22⁶ advises that the issue of landscape and visual impact should be considered in relation to smaller renewable energy applications that do not require full EIA highlighting it as a specific issue with regard to wind, because of the large scale of turbines, and one that local planning authority may require information on. Consequently the following guidance applies to LVIAs reported in either a formal environmental statement (ES) or any informal information accompanying a planning application. It is recognised that the level of detail in the LVIA will need to be tailored to suit the size of development and consultation and agreement on this is expected with the planning authority and relevant statutory consultees.

Treatment of Turbine Size

The guidance is written on the basis of experience of on-shore turbine structures in Cumbria to date (ie maximum overall height to blade tip around 120m). As and when new models are introduced which are larger than this, due allowance will have to be made in applying the guidance.

Document Structure

The structure of this guidance is framed around the relevant chapters of an Environmental Statement (ES) including the initial chapters of site selection and project description common to other environmental topics. Questions are highlighted in the margins to alert readers to issues frequently raised by WED in Cumbria. These serve as a checklist for the scope of issues to be covered in the LVIA alongside additional site specific issues emerging from scoping and consultation exercises for each individual proposal.

Iterative Process of Project Design and LVIA

It is stressed that developers are expected to involve a suitably experienced landscape architect from the beginning of the EIA process. Landscape and visual aspects should be set alongside economic and technical requirements as well as other environmental considerations at all stages of project development. Site selection and the initial design should be informed and respond to an ongoing LVIA. If proposals are to meet the high

* DETR Circular 02/99 Environmental Impact Assessment advises that an EIA is more likely to be required for commercial developments of 5 or more turbines, or more than 5 MW of new generating capacity. This advice is still current, however, given the increased generating capacities of turbines this indicative threshold in practice translates to developments of 3 or more turbines.

standards of siting and design set out in the planning policy framework it is essential that landscape and visual considerations are primary in the siting and overall concept for the layout. WEDs will be visible and both individual turbines and groupings of turbines should be carefully designed as three-dimensional objects or groups of objects (compositions) within the landscape⁷. This assessment guidance should therefore be read in conjunction with the guidance on siting and design contained in Part 1: Chapter 5. This iterative approach is illustrated in Figure 1.

Figure 1: The Iterative Design Approach

Project Design Stage	Landscape Design Stage		Link to LVIA
Feasibility and Site Selection (including comparative site appraisals)	Strategic overview of location	Confirm location in the broad landscape context is acceptable in and identify appropriate development size thresholds.	Initial evaluation through desk study of broad landscape context by reference to the main landscape type descriptions and their capacity indicated in Part 2 of the CWESPD.
	Siting and initial sizing	Test suitability of specific site against landscape sensitivity and value criteria (CWESPD Part 2 Tables 1 & 2) and determine appropriate form of development e.g. large cluster related to geometric field pattern. Refine in response to scoping exercise and preliminary survey and analysis.	Scoping study identifying main issues through desk study of local landscape setting by reference to the landscape sub-type descriptions, preliminary site survey to confirm this and preliminary ZVI key receptor analysis. Identify any significant infrastructure issues e.g. access or grid connection.
Conceptual Design (including assessment of alternative design options)	Composition/ Outline Layout	Initial design as a 3D object in terms of height, number and arrangement of turbines, orientation to find the optimum relationship with the local landscape character and visual composition with the main elements of the landscape setting appreciated from key views.	Study the baseline conditions and identify critical constraints through analysis of key sensitivity characteristics of the local landscape setting e.g. broad scale and enclosure, complexity, order and broad patterning; key receptors and modifying factors in the landscape setting relevant to these e.g. screening, contrast, framing.
Detailed Layout Design	Micro-Siting	Design to protect and minimise damage to features and maximise opportunities for screening and landscape integration. Respond to micro-siting proposals led by engineering and other environmental consideration e.g. ecology, archaeology and noise to ensure that the 3D composition in the wider landscape setting is not subverted.	Study the baseline conditions of the site, access routes and immediate landscape setting; identify detailed patterns and key landscape features combined with analysis of the nature of the site's visibility from key close range receptors.
Component Design	Detailed design of turbines, infrastructure and ancillary developments	Devise strategies and parameters for turbine design e.g. colour, reflectivity, ancillary structures, access tracks, buildings, reinstatement and landscape mitigation measures to reduce or off-set adverse effects e.g. replacement of hedgerows, removal or downgrading of access tracks	Analysis of compositional qualities relative to key receptors e.g. dominant background and character of local elements and features and extent of potential damage to those on site.
Secondary Mitigation	Detailed design of off-site mitigation measures and land management proposals	Design measures to reduce visual effects e.g. off-site planting to screen specific receptors and devise long term measures to directly compensate for adverse effects e.g. loss of hedgerow off-set by hedgerow restoration and general landscape enhancement to off-set unrelated damage e.g. restoration of heather moorland	Identification of residual adverse effects to landscape and visual amenity. Analysis of value and condition of characteristic elements and features with reference to management guidelines e.g. Cumbria Landscape Strategy

SITE SELECTION

Alternatives Considered and Selection Rationale

Describe the alternative sites considered and their landscape constraints/opportunities. Indicate why the final choice was chosen and why it was considered suitable in terms of potential landscape and visual effects.

It is a requirement of the EIA regulations to provide an outline description of the main alternatives considered and an indication of the main reasons for the final development choice. This should reduce misinformed criticism and demonstrate how environmental factors have been taken into account. Increasingly, consideration of alternatives even for projects outside EIA requirements is seen as good development practice. It helps to demonstrate that proposals meet the high standards of siting and design set out in Planning Policy Statement 22, County and District planning policies.

THE PROPOSED DEVELOPMENT

Alternative Compositions Considered

Describe the alternative conceptual design options considered. Recent experience has shown that with regard to landscape and visual impacts the most crucial considerations are turbine heights, numbers of turbines, layout configurations and orientation of groupings. The assessment should describe and illustrate these alternative 3D compositions and explain why the preferred solution represents the optimum fit e.g. demonstrate that the height of turbines is appropriate to the scale of the receiving landscape and the orientation presents the best aspects of the development relative to key visual receptors (draft Zones of Visual Influence (ZVI) and wireframes would provide appropriate illustration).

Design Philosophy and Primary Mitigation Measures

Describe the design principles, landscape criteria and rationale adopted. The primary means of mitigating the impact of WEDs will be through careful consideration of siting, 3D composition, detailed layout and component design to achieve the optimum landscape fit and avoid visual dominance and intrusion as part of an environmentally integrated and iterative design process. Primary mitigation measures that avoid or reduce adverse landscape and visual effects are therefore best described as design iterations within this section of the ES or Supporting Information.

Description

Describe each stage of the WED project life cycle in sufficient detail to identify landscape and visual effects including:

- Form - shape, bulk, and orientation
- Materials - colour, reflectivity and texture

- Location and physical dimensions of major construction plant, delivery vehicles, buildings, structures and site areas under different uses
- Movements of turbine blades, construction plant, materials and work force
- Construction and reinstatement methods
- Duration of the life cycle stage

Relevant activities and project elements requiring description are:

Construction Phase

Will there be any off-site damage to landscape fabric due to easement or widening requirements to accommodate large turbine components?

Is the detailed site layout integrated with the landscape pattern, have losses been minimised, damage to sensitive features and habitats avoided and screening potential maximised?

Have all elements that are not essential to the operation of the development been removed and can others such as internal tracks and the site access be downgraded at the end of the construction phase to reduce landscape impacts?

- External access and haulage routes for construction and delivery vehicles
- Site access from the public highway meeting including turning circle and visibility splay requirements
- Removal and protection of existing features
- Internal site access tracks (noting any that are temporary or that may be reduced in width on completion of construction phase, any cut and fill or drainage requirements)
- Site cable runs
- Borrow pits and disposal areas
- Temporary lay down areas and crane hard standings
- Contractors compound for temporary accommodation, parking and storage of materials and plant
- Turbine foundations
- Temporary anemometer
- Site reinstatement

Operational Phase

Can site conditions and vegetation be reinstated; are there any opportunities for improving landscape character, what are the relevant timescales?

Has site clutter been minimised e.g. incorporation of transformer in base of turbine tower; under grounding cables?

- Number and type of turbines
- Transformers
- Substation compound and switch gear/metering building
- Grid connection
- Signage and fencing
- Landscape mitigation measures
- Operational wind speeds and turbine blade rotation speed
- Servicing and emergency operations
- Land management operations and objectives

Decommissioning Phase

- Removal of the turbines, ancillary structures e.g. the substation, infrastructure e.g. site access, internal tracks, external road easements or widening, overhead power lines
- Reinstatement e.g. covering foundations and re-seeding

- Future land management

BASELINE CONDITIONS

Area of Study

The ZVI of turbines extends over a considerable area and the nature and magnitude of effects varies with the range from the proposal. Since an ES is required by regulation to assess potential significance, as a minimum the study area should cover a range within which significant impacts could potentially occur. This will entail a consideration of the perceived size and intensity of visual effect at different ranges (see references⁸ and Appendix 1) and sensitivity of the receptors. Given the scale of current third generation turbines (95-120m to blade tip) 18km is considered to be a minimum radius for the ZVI and study area for a stand alone scheme. This reflects the limit of potential visual significance. The presence of receptors of exceptionally high sensitivity such as a National Park or AONB landscapes or significant viewpoint like a popular mountain peak, would be expected to extend the range, with 30km considered to be a maximum radius. Determination of the study area extent should be fully justified in relation to these aspects.

Cumulative Study Area

Where CLVIA is required the cumulative ZVI and study area should have a minimum radius of 30km from the centre point of the new proposal. However the Planning Authority may request an extension of the study area to address specific cumulative issues. This should normally be decided at the scoping stage of the project with decisions informed by a base plan of all existing consented proposed and relevant prospective schemes within a 60km radius (see Part 1: Chapter 4).

Viewpoints and Routes

Identify and justify the selection of representative viewpoints routes used for assessment of landscape and visual effects. Tables indicating each viewpoint location, range, receptor type and reason(s) for selection are useful in this respect. Early draft ZVIs can help the Planning Authority and consultees to advise on the selection of fixed viewpoints and routes for sequential visual assessment. Preferably these should be agreed at the scoping stage or during the baseline studies for the EIA and chosen to represent:

- the range of landscape character and visual receptor types at different points on the compass and distances relative to the development
- key views (or sequences of views) where the most significant effects are anticipated e.g. highly valued landscapes/ townscape/ 'gateways' or settings, established public viewpoints, settlements, tourist destinations, regularly used strategic transport and recreation routes

Have settlements, important footpaths or roads etc been carefully investigated to locate viewpoints representing the best vantage point of the prospective WED?

Have all the relevant landscape and visual receptors been identified at each viewpoint?

- locations where cumulative effects will occur with other WEDs either in combination or succession from fixed positions or in sequence on a journey (within areas of ZVI overlap)

The number of viewpoints required will depend on the size of WED and site sensitivity but is likely to be around 15 – 25. These should increase exponentially with proximity to the proposed development so that the majority are within the mid to close ranges. Wireframe visualisations should be used to illustrate the potential changes in view at all the viewpoints and supplemented by photomontages at a selection of viewpoints agreed with the Planning Authority. It is recommended that priority should be given to close and mid range views (ie within 2.4km and 6km) and to receptors of highest sensitivity. The total number of photomontages required will again depend on the size of WED and site sensitivity but 5 is regarded as an absolute minimum.

Precise locating of viewpoints should follow thorough field investigation to ensure the 'worst case situation' is assessed for the relevant receptor.

Format of Landscape Descriptions

Experience has shown it appropriate to consider the baseline landscape and subsequent assessments within the ranges expressed below which in turn relate to variations in the appearance or perception of WEDs described in Appendix 1. This approach also has the advantage of linking into the iterative design process described in Figure 1 and addressing the effects created by interrelationships between landscape types and sub-types within a landscape setting. Connection with adjacent landscapes is recognised as a key sensitivity characteristic for WED (see Part 2 Appendix1).

- **Broad Landscape Context** (within 18-30km): Describe by reference to the existing regional classification of landscape character areas⁹ and the county level classification of main landscape types^{10 11}.
- **Local Landscape Setting** (within approx 12km): Describe by reference to character descriptions for landscape sub-types in the county level classification and confirm key characteristics described in the capacity assessments (Part 2) by rigorous field survey and analysis from the representative viewpoints.
- **Immediate Landscape Setting** (within approx. 2.4km): Describe the key characteristics within close range by field survey and analysis from the representative viewpoints.
- **The Site:** Describe the detailed topography, land use, vegetation, features of landscape ecological, cultural or archaeological interest, access points, and rights of way through detailed site survey and analysis.

Description of Landscape Resource

Within this framework use a structured approach to describe the landscape resource in terms of the following receptors:

- **Physical Fabric:** Elements (main parts) e.g. ridges, valleys, woodland, pastureland, fabric of walls and hedges, settlements and features (eye-catching details) e.g. crags, streams, hedgerow trees, masts, chimneys, farm buildings, views. May pertain to landform, land cover, culture and land use.
- **Characteristics:** Characteristic patterns, combinations and interactions of the above elements and features which make a particular contribution to the sense of place. Including aesthetic factors (scenic qualities) e.g. scale of landform, grain of hills and ordered pattern of geometric fields, confusion of elements and the way it is perceived (impression conveyed) e.g. tranquil, picturesque, remote, wild, industrial, managed, historic
- **Overall Character:** Combination of physical fabric and characteristics making up a distinct and consistent character in a particular type of landscape.

The physical fabric of a landscape is generally quantifiable, easily and objectively described. With regard to landscape characteristics aesthetic factors can still be "recorded in a rational, rigorous and standardised, if not wholly objective way"¹². They are distinct from the perceptual aspects of landscape character, which are much more subjective and where responses to them will be more personal and coloured by the experience and the preferences of the individual¹³. Aesthetic and perceptual aspects are both important dimensions of character which will lie at the heart of any acceptability judgements on WEDs. The original Cumbria Landscape Classification should be referred to as it crucially describes these in a section entitled 'Subjective Impression' in each landscape sub-type description.

Landscape Sensitivity

The GLVIA explains that sensitivity is derived by a consideration of the intrinsic characteristics of the receiving landscape and their evaluation. The degree to which a particular landscape can accommodate change will vary according to intrinsic characteristics. Those exhibiting particular sensitivity to WED have been defined as key characteristics in Part 2: Table 1. They determine tolerance to change which is tested out on application of a specific WED proposal and reflected in the impact magnitude scores. Therefore they should not be double counted as part of sensitivity for the purposes of weighting the significance of effects. In this respect sensitivity should be restricted to the evaluation of the landscape resource.

Classify and justify the relative sensitivity of elements, features, characteristics and overall character using a textual scale. A scale of 4 - 5 levels such as that used by the DETR (GLVIA Appendix 6) is preferred given the diversity of landscapes occurring in Cumbria. Judgements should reflect such factors as:

- **Landscape Dynamics and Condition:** Indicate the extent to which the landscape is changing and the likely direction

Even if a landscape has been damaged does it still have a local value in providing 'green' relief between built up areas or recovering towards a richer landscape after previous development e.g. opencast mining?

Is there scope for the development to contribute to the restoration or enhancement of the landscape?

and rate of change together with the likely future character of the landscape without the proposed WED. This will provide a yardstick for the impact of the proposed development. Take account of the Cumbria Landscape Strategy¹⁴ which provides land management guidelines for individual elements and features. Refer to the overall state of the area e.g. degraded and condition of individual elements e.g. buildings hedgerows.

- **Landscape Value:** Describe the value and importance of the landscape components. Identify at what geographical scale it is important, who it is important to and why.

Refer to the key indicators of value defined in Part 2: Table 2 and confirm the evaluations in the capacity assessments. In addition acknowledge local designations and perceptions of value through consultation with the local authority, local amenity groups and residents or visitors at the scoping stage. Within Cumbria values are likely to include the contribution a landscape makes to tourism or image in relation to economic development.

Description of Visual Context and Importance

Does the site contribute to any valued settings e.g. to a settlement or valued landscape? Is it already the focus of attention e.g. landmark ridge or hill?

Within the Zone of Visual Influence (ZVI) review and confirm the visual enclosure and interruption characteristics described in the capacity assessments. Describe the site's local contribution to visual amenity and the compositional qualities as observed in key views. Key views are defined in Part 2: Appendix 1 and include those from settlements, strategic transport and recreation routes, public open spaces, established viewpoints and tourist destinations as well as settings or 'gateways'. Significant visual effects are most likely to occur in the close (2.4km) and middle (6km) distance ranges so the description should concentrate and be structured according to these. Identify factors likely to modify visual effects and apparent size of WEDs such as valley rims; visual corridors; deflection, screening, filtering or framing by mid/foreground elements or features; background screening; presence of visual clues or scale indicators; elevation above key views.

Visual Receptor Sensitivity

Classify and justify the relative sensitivity of different types of receptor including communities; occupiers of residential properties and caravans; users of outdoor recreational facilities; and people travelling through or past the affected landscape using a textual scale with 4 - 5 levels.

Distinguish between users of outdoor recreational facilities whose attention is focused on the landscape e.g. walkers (high sensitivity) and those whose attention is focused on an activity e.g. wind surfers (low sensitivity). Consider of the landscape setting to settlements valued and enjoyed by the community. Distinguish between the different levels of familiarity and expectations between residents and visitors or tourists. As with landscape value specific visual receptors are likely to have relevance to assessment of effects on tourism or economic

development.

ASSESSMENT OF EFFECTS

General

This section should:-

- Systematically describe the likely effects of the development
- Indicate the primary and secondary mitigation measures
- Estimate the magnitude of the effects
- Provide an assessment of the nature (adverse/ neutral/ beneficial) and significance of these effects supported by clear evidence and reasoned argument

Focus on the potentially significant effects which have preferably been agreed with the consultees at the scoping stage. Consider changes likely to be brought about by the WED at various stages of the project life-cycle: construction, operation and, where appropriate, decommissioning and after-use. The duration of expected impacts, whether they are likely to be permanent or only temporary, should also be made clear.

Distinguish between direct and indirect effects. A direct (or primary) effect would be attributable to a WED itself e.g. a physical effect on landscape elements such as removal of a hedgerow to create an access or visual appearance effect on landscape characteristics such as creating a strong vertical accent in a landscape of subdued relief. An indirect (or secondary) effect is not a direct result of the development but may be delayed in time or produced away from the site such as subsequent car park and signage in response visitor interest; off-site extraction of stone; traffic generation and grid connections.

Format and Description of Landscape Effects

In the first instance describe the predicted landscape change arising at each representative viewpoint. Extrapolate the findings to describe the more general landscape changes in respect of the physical fabric, characteristics and the consequential effect on the overall landscape character. In recognition of the variation in turbine and landscape appearance with distance the description of landscape effects should again be structured according to four ranges established at the baseline stage (see baseline conditions section above).

- **Physical Fabric:** Wherever possible quantify effects such as physical damage or loss, improvements or gains to landscape elements and features e.g. area of heather or length of stone walling/hedgerow lost; extent of replacement planting.
- **Characteristics:** By reference to the criteria set out in 2: Table 1 systematically consider how the visual appearance of wind turbines, their blade movement and noise will affect

Will the WED have a confusing and variable relationship with character because it will be seen against a variety of landscape types?

Will the WED appear as a single cohesive feature through unity of turbine type and appropriate spacing between turbines?

the key characteristics sensitive to WED. This will cover both aesthetic aspects such as scale or pattern and perceptual aspects such as tranquillity and wildness. Whilst the latter are more subjective varying perceptions should be acknowledged since they often lay at the heart of debates on acceptability. Describe how the WED will be typically seen, for instance will it be intermittently or widely visible? Within the immediate landscape setting include a description of how the visual appearance of the detailed layout, site infrastructure and ancillary structures will affect local characteristics.

What image does the landscape convey e.g. managed; wild; degraded; urbanised; industrial; rural; exposed. What kind of image will the proposed development possess in relation to this?

- **Overall Character:** Overall will the development appear to weaken, maintain or reinforce the character of the landscape? And what kind of image will the WED possess in relation to the landscape. Will it be perceived as being positive/neutral/negative? How well it is designed and sited in relation to the landscape setting of the site will have an important bearing on this.

Format and Description of Visual Effects

Describe the general extent and pattern of visibility by reference to the ZVIs. Highlight any significant topographic features that limit visibility or create areas of shadow. Qualify the topographic model by reference to any significant screening or interruption by tree cover or buildings.

In the first instance describe the predicted change in the view from each representative viewpoint. Extrapolate the findings to provide a general summary of the likely visual effects on high sensitivity receptors within this ZVI and key views (as described above). This summary should convey an overall picture of the extent of significant effects on visual amenity. The summary should be structured in some way for instance by range, receptor type, or compass direction.

The level of detail should relate to the range and potential significance of effects for instance in the close range (within 2.4 km) quantify and describe effects on individual properties as well as groupings in settlements and towns; in the mid range (2.4 - 6 km) reduce the level of detail to a summary of the general pattern of likely effects on individual properties and settlements. Pick out any significant effects on middle to long range receptors (beyond 6km).

Describe the change in the view by comparing the existing view with that which would result if the development went ahead by reference to:

- **Compositional Qualities:** Describe how the WED is likely to read in terms of extent of visibility, prominence (see typical descriptors in Appendix 1) and response to the compositional quality of the view. Consider how the development will appear in relation to key elements and features in the landscape setting and respond to existing visual forces. How it will look as a basic visual element in the landscape for example in relation to the skyline, the coastline, hill shapes, other vertical structures and

Will the WED appear separated from nearby landscape features, creating a simple focal point and avoiding visual confusion with over elements?

Will the development appear visually stable in relation to landform it is placed on?

landmarks. Consider whether a harmonious composition has been achieved through iterative siting and design measures as described in Part 1: Chapter 5 (primary mitigation). Describe the composition not only between the wind turbine and the landscape elements but to each other. Identify and explain how certain modifying factors in the landscape (as described in the baseline conditions section above) may tend to reduce or intensify the magnitude of the impact. Note any intrusive or disturbing effects such as blade overlap, proportional visibility or over dominance.

- **Journey Scenarios:** In relation to walkers or travellers it will be relevant to describe the sequential view with reference to constancy, degree of screening or interruption and resultant effects e.g. transient, surprise or glimpsed views.

Format and Description of Cumulative Effects

Describe cumulative effects in terms of the change to both landscape character and visual amenity brought about by the combined effects of the proposal and other existing or proposed developments. Identify the extent to which the proposal would add additional impacts. Use the cumulative sensitivity criteria set out in Table 3, Part 1: Chapter 4 as a checklist for systematically identifying both cumulative landscape and visual effects. It is important that the landscape and visual assessments should take account not only of the number of individual turbines, but also of the number of separate developments.

Landscape

In the first instance describe the predicted change in the view from each representative viewpoint. Analyse the cumulative ZVI and describe the geographical area(s) where the combined effects between the proposal and other WEDs would be shared. Identify the WEDs contributing to those effects and the landscape sub-types that make up those areas. By extrapolating the findings from the representative viewpoints describe the cumulative landscape effects on each area by reference to:

- **Physical Fabric:** Two or more developments may cumulatively affect landscape elements or features, wherever possible quantify combined effects such as physical damage or loss, improvements or gains.
- **Characteristics:** Consider how the WEDs relate to each other i.e. do they appear to form a singular collective feature in the landscape or as separate, disunited individuals. Consider their relationship to the receiving landscape characteristics, for example complementing an existing repetitive pattern or conflicting with a sense of remoteness and solitude. Some characteristics may lend themselves to cumulative development whilst others may constrain it.

Visual

In the first instance describe the predicted change in the view

Will the WEDs portray a clear simple image by appearing well and consistently related to the landscape characteristics, visually separated and create a predictable rhythm through similarities in composition and placement in the landscape?

Will there be a confusing and bewildering combination of WEDs because of visual overlaps, variable design and relationship to landscape?

Will the viewer(s) feel uncomfortably surrounded by WEDs or will two developments create unresolved duality whereby the eye jumps from one to the other?

Does the configuration of the view in terms of skyline, relative elevation or framing make the WEDs appear disproportionately dominant or overbearing?

Do the WEDs impinge on detract from existing focal points distort the sense of scale or distance?

from each representative viewpoint Extrapolate the results to summarise the extent to which, taken together, a significant proportion of resident and visitor experiences will be significantly changed. Describe combined visual effects of WEDs by reference to:

- **Compositional Qualities:** Consider how they will appear in relation to each other. Consider how they will balance with other elements or respond to existing visual forces in the composition and how effects maybe modified by the view configuration.
- **Journey Scenarios:** Consider sequential visibility by walkers, riders and cyclists as well as motor or rail travellers. Describe the manner, duration and frequency with which WEDs may be seen while travelling through a landscape and how this may affect the perception of the landscape as a whole. Speed of travel needs to be taken into account. The cumulative impression created by seeing two wind farms in an hour's driving is of a quite different (lesser) order from seeing two in an hour's walk.

Will views be glimpsed with disconcerting sudden/partial visibility of turbines above the horizon or prolonged with predictable relationships between turbines and skyline?

Taking account of on the speed of the observer and /or the distance between viewpoints will turbines appear frequently or occasionally?

Where proposals are extensions or adjacent to existing WED, the cumulative effect is essentially one of enlargement and the CLVIA should consider the effects of both developments as a single entity on the pre-development landscape (see Part 1: Chapter 4). Where a proposal is suggested within about 6km of another, in addition to the general issue of cumulative effect, there are important issues of compatibility in terms of turbine size, density, design, layout and overall cohesion that should be considered. (see Part 1: Chapter 5).

Magnitude of Effects

Categorise the magnitude of effects using a textual scale e.g. negligible, low, medium, high, very high for both adverse and beneficial effects. A scale of 4 - 5 levels is preferred as research has found it to be more representative of the diversity of size (magnitude) found in visual impact assessment. The typical criteria for each level should be defined in the methodology and are expected to make reference to the following:

Landscape Effects:

- Extent of physical change to key elements or features
- Extent of the area subject to change and prominence of turbines
- Degree of variance or compatibility between turbines and each key characteristic of the baseline landscape
- Degree of change to overall character and image brought about by incremental and combined effects on key characteristics

Visual Effects:

- Extent of visibility and the number and proportion of turbines

that would be visible

- Proportion of the view occupied by the proposed WED which relates to the distance of the viewpoint from it and breadth of the existing view
- Apparent size and prominence taking account of modifying factors in the view likely to reduce or intensify this e.g. degree of contrast, framing, scale cues, backgrounding and disturbing effects e.g. proportional visibility
- Degree of contrast or integration with the character of existing elements e.g. scale, texture, form and design resolution with the visual dynamics of the composition e.g. stability, cohesion, separation

Following the principle of the 'worst case situation' evaluation in winter is preferred when leaf cover and therefore vegetative screening and/or filtering are minimal. In any event seasonal variations should be noted.

Cumulative Effects:

Criteria used to categorise the magnitude of cumulative effects are expected to make reference to the following:

- Relative impact of each individual WED according to the above
- Extent of combined influence (reflected by overlaps in ZVIs and visual interruption)
- Degree of variance or compatibility of multiple WEDs with key characteristics of the baseline landscape
- Degree of change to overall landscape character (see definitions in Part 1: Chapter 4)
- Frequency and duration of sequential views
- Proportion of view occupied by multiple WEDs
- Apparent prominence reflecting number, scale and proximity (density) of WEDs or turbines and taking account of modifying factors in the configuration of the view

Nature of Effects

Determination of the nature of WED effects (ie adverse/neutral or beneficial) it is not a clear cut matter because of the varying responses of individuals to WED and varying ways a landscape is perceived. The expectation of the viewer and their familiarity with WED will have a bearing on this. In terms of landscape aesthetics assessment should be more straight forward. Proposals that complement key characteristics* and create stable harmonious compositions with key landscape elements are more likely to be positively received. Variations in landscape perceptions and likely

*Normally through a comfortable fit e.g. with scale of landscape elements but sometimes through simple contrast e.g. isolated vertical on horizontal plain whereby the magnitude of change is high but not necessarily adverse.

responses to the proposed WED should be highlighted in any assessment since they will often lie at the heart of considerations of acceptability. It is therefore preferable to separate out the nature of effects from considerations of magnitude.

Significance

Categorise the significance of effects using a textual scale e.g. 7 levels from negligible to major. The two principal criteria determining significance are magnitude of effect and sensitivity of the receptor. In line with the best practice advocated by Newcastle University the use of matrices setting out the main correlations between these two variables is preferred. These make the link between magnitude and sensitivity explicit and are considered to be a helpful tool in mapping and explaining the basis for the judgements made. In reality the theoretical position indicated by these matrices may need adjustment according to particular circumstances. These are a matter for professional judgement and they should be supported by a thorough justification where appropriate.

The level of significance should be qualified according to the nature of the effect, duration i.e. short, medium, long term or permanent, and geographical scale it is significant at e.g. local, regional, national or international. The number of people affected is also likely to be relevant with regard to significance of visual effects.

Given the complexity and size of wind energy projects it will generally be appropriate to provide separate assessments of the effects on each component of the landscape i.e. elements, characteristics, and resulting effect on overall character at each of the different range bands established at the baseline stage (cross reference).

A record of the landscape analysis and the visual analysis at each viewpoint and visual extrapolations should be provided through tables or schedules appended to the LVIA. These should systematically set out: location, distance to nearest turbine, angle and elevation, landscape component type or visual receptor type and number, sensitivity, description of the change to the landscape or view, magnitude, nature and duration of change, and likely significance. This approach will increase the transparency of the assessment process.

Secondary Mitigation

Secondary mitigation measures should be designed to specifically address the remaining (residual) negative (adverse) effects of the final development proposals. These would include 'add-on' measures such as off-site screen planting relative to a specific visual receptor to remedy the negative effects of an otherwise fixed design scheme. These should be seen as distinct from landscape integration measures developed as part of the iterative design process and identified as design iterations within the

project description.

Compensatory measures or related environmental improvements may offset unavoidable residual effects e.g. loss of hedgerow to site access offset by restoration of remaining hedgerows. In general compensation should be regarded as a last resort and treated with caution. Some mature habitats may be irreplaceable or take centuries to replicate.

Experience has shown that WEDs present opportunities for enhancing the landscape. Although often linked to mitigation, enhancement is a separate issue that explores opportunities to contribute positively to the landscape of the development site and its wider setting. Examples of enhancement opportunities include species rich grassland, heather moorland and Cumbrian bank and hedgerow restoration. Such measures contribute to sustainable development. Reference should be made to the Cumbria Landscape Strategy (CCC 1998) which identifies enhancement opportunities for each landscape type.

PRESENTATION MATERIAL

In addition to standard text, the following illustrations will assist understanding of the assessment. The requirements respond to problems encountered with the legibility, ease of use and realism of maps and visualisations. To ensure readability of maps and visualisations it is important that they should not be restricted to the standard A3 format commonly used for Environmental Statements, where larger than A3 they should be included in loose leaf format in plastic pockets within the LVIA or in 'fold out' format. Supplementary illustrations in digital format maybe helpful, the format of these should be agreed with the local authority bearing in mind that file sizes are likely to be large. It is also important that any digital images are of high resolution so that visual clarity is not compromised and the colour and tonal quality on photomontages is maintained.

Information Type	Required Format
Proposed Development	
Site Layout	<p>Site Layout Plan Showing position of turbines, services, tracks, all ancillary elements and temporary lay down areas or compounds with site levels in context of physical landscape fabric (including: contours; type and condition of land cover, boundaries and trees; existing access points; existing utilities; public rights of way; and important environmental features) and landscape mitigation measures. Scale 1:2.5k – 1:5k</p>
Turbines and other Elements	<p>Scaled Elevations Showing technical detail of turbines and ancillary buildings with key dimensions</p> <p>Typical photographs of turbines proposed</p>
Baseline Conditions:	
Landscape Character and Policy Context	<p>Showing site location, landscape types and sub-types, designations and policies superimposed on the blade tip ZVI and OS 50k Landranger colour map base within study area. Indicate range bands i.e. 2.4, 6, 12 and 18km related to broad similarities in appearance (see Appendix 1) Reproduction scale: 1:100k</p>
Immediate Landscape Setting	<p>Showing landscape analysis with radius of 2.4 - 6km (including main landscape characteristics and elements/features influencing modifying visual extent and effects) Scale 1:10k</p>
Assessment of Effects:	
Extent of Visibility	<p>ZVI for hub height and blade tip on OS 50k Landranger colour map base with radius of 18 – 30 km as a composite ZVI combining individual ZVIs for each turbine. Use shading to indicate different numbers of turbines which may be visible. Indicate representative viewpoint locations and range bands i.e. 2.4, 6, 12 and 18km related to broad similarities in appearance (see Appendix 1) Reproduction scale: 1:100k</p> <p>Enlarged ZVI to blade tip on OS 50k Landranger colour map base within 6km and indicate representative viewpoint locations. Reproduction scale: 1:50k</p> <p>Colour and density of ZVI should not obscure OS base information</p>

Visualisations	<p>Visualisations based on photographs taken with a 50mm lens in a 35mm film format, reproduced at a size for viewing at normal reading distance (approx. 46cm, commonly A3 landscape format giving an image height of approx. 20 cm) and at a viewing angle close to the original field of view of the scene (45 - 130 degrees). On each state location (NGR), elevation, distance to nearest visible turbine, dimensions of all turbines, camera format, lens focal length, horizontal angle of view and appropriate viewing distance.</p> <p>Computer generated wireframe views for all viewpoints (15 – 25 no. with majority within close and mid ranges ie 2.4 and 6km). Colour photomontages at all or a selection of viewpoints where significant effects likely as agreed with regulatory authority (5 no. min)</p>
Cumulative Visibility	<p>Cumulative base plan for all built, consented, undetermined applications and relevant schemes in the public domain within a radius of 60km on OS 250k Travelmaster black and white map base plus: national landscape designations, public viewpoints, national trails and cycleways. Indicate the footprint of each development, 30km radius around each in a solid line and 2.4, 6, 12 and 18km range bands in a dashed line.</p> <p>Reproduction scale: 1:150 - 250k (depending on no. of WEDs and complexity)</p> <p>Cumulative ZVI to blade tip for all built, consented and undetermined applications within a min radius of 30km of the proposal on OS 50k Landranger black and white map base. Indicate viewpoint locations representing cumulative effects and 2.4, 6, 12 and 18km range bands. Highlight national landscape designations, public viewpoints, national trails and cycleways. Use colour shading/hatching to distinguish each development and areas from where one or more development is likely to be seen.</p> <p>Reproduction scale: 1:100k</p>
Cumulative Visualisations	<p>Photomontages and or wireframe views for all viewpoints representing cumulative effects. Within 15km illustrate individual turbines beyond this show as an array. Clearly annotate to interpret the different developments or proposals. Format and information requirements as above plus status of existing developments i.e. installed/consented/decision pending and distance to nearest visible turbine for each development and dimensions of turbines in each.</p>

REFERENCES

- ¹ 'Guidelines for Landscape and Visual Impact Assessment' Second Edition, The Landscape Institute and Institute of Environmental Management and Assessment 2002
- ² 'University of Newcastle: Visual Assessment of Windfarms: Best Practice' Scottish Natural Heritage 2002
- ³ 'Guidelines on the Environmental Impacts of Windfarms and Small Scale Hydroelectric Schemes' Scottish Natural Heritage February 2001
- ⁴ 'Planning Policy Statement 22: Renewable Energy' ODPM 2004
- ⁵ 'Guidance: Cumulative Effect of Windfarms' Scottish Natural Heritage 2005
- ⁶ 'Planning for Renewable Energy: A Companion Guide to PPS 22' ODPM 2004
- ⁷ 'Wind Farms in Scotland' Marc van Grieken et al, Landscape Design Journal Oct 2003
- ⁸ PAN45(revised 2002): Renewable Energy Technologies, Scottish Executive
- ⁹ 'Countryside Character Initiative: North West' Countryside Agency (www.countryside.gov.uk/cci)
- ¹⁰ 'Cumbria Landscape Classification' Cumbria County Council, 1995
- ¹¹ 'Cumbria and Lake District Joint Structure Plan 2001-2016: Technical Paper 5: Landscape Character' Cumbria County Council
- ¹² 'Landscape Character Assessment Guidance for England and Scotland' Countryside Agency and Scottish Natural Heritage, 2002
- ¹³ 'Landscape Character Assessment: Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity' Countryside Agency and Scottish Natural Heritage 2003/4
- ¹⁴ 'Cumbria Landscape Strategy' Cumbria County Council, 1998

Appendix 1

Guidance on the effects of distance on perception of Wind Energy Developments

From the analysis of guidance and research information (set out below), and experience in Cumbria, the following table presents guidance on the relationship between distance and likely appearance or perception of third generation WEDs featuring turbines of approximately 95 – 120m high to blade tip. This guidance assumes an open landscape and should not be used mechanistically as a large number of modifying factors can affect likely appearance. These include different weather conditions, season, time of day, direction of view, the number of turbines and breadth of development relative to the viewer, relationship of WED to other elements in the view and their compositional qualities, familiarity and expectations of the viewer.

Distance	Likely Appearance	Range
Up to 2.4 kms	Dominant focus, movement of turbines clear and may collectively convey a distinct rhythm	close
2.4 - 6 kms	Prominent, key element of the landscape, turbine details still evident	middle
6 - 12 kms	Conspicuous, noticeable element in wider landscape, only prominent in clear visibility, movement of blades perceptible to casual observer	
12 – 18 kms	Apparent, visible element of a wide landscape, turbines begin to be perceived as a group forming a windfarm rather than individual elements, blade movement only perceptible in clear conditions	long
18 – 30 kms	Inconspicuous, minor element of a wide landscape composition, only seen in very clear visibility, movement of blades generally unclear	

Background Research

PAN 45 (revised 2002): Renewable Energy Technologies, Scottish Executive

The following table is presented in paragraph 78 as a general guide to the effect which distance has on the perception of the development in an open landscape. It is not clear what turbine heights these distances relate to. It was also recognised that perception would also be dependent on whether the turbines can be viewed adjacent to other features, different weather conditions, the character of the development and the landscape and nature of the visibility.

Fig 8: General Perception of a Wind Farm in an Open Landscape

	Perception
Up to 2 kms	Likely to be a prominent feature
2-5 kms	Relatively prominent
5-15 kms	Only prominent in clear visibility – seen as part of the wider landscape
15-30kms	Only seen in very clear visibility – a minor element in the landscape

Guidelines on the Environmental Impacts of Windfarms and Small Scale Hydroelectric Schemes Scottish Natural Heritage February 2001

Broad similarities of visibility extent are described in Section 2.3.3. Again it is recognised that the CONSULTATION DRAFT CUMBRIA WIND ENERGY SUPPLEMENTARY PLANNING DOCUMENT PART 3
Coates Associates ©

extent to which a wind farm will be visible will depend on its size and positioning in relation to particular landscape characteristics, especially landform, other vertical features and the clarity of the light and prevailing weather conditions. However assuming an open landscape their descriptions can be summarised as set out in the table below. The distance bands correspond to those used in PAN 45 and appear to be based on experience of turbines up to a blade tip height of 90m.

	Likely Appearance
Up to 2 kms	Dominant focus, movement of turbines clear and may collectively convey a distinct rhythm
2-5 kms	Key element of the landscape
5-15 kms	Part of the wider landscape, only prominent in clear visibility, movement of blades may still be discernible
15-30kms	Minor element of a wide landscape composition, only seen in very clear visibility, movement of blades generally unclear

*University of Newcastle: Visual Assessment of Windfarms: Best Practice
Scottish Natural Heritage 2002*

Conclusions based on analysis of eight windfarms operating in Scotland are drawn in Section 5 with a caveat that they are only likely to be applicable to other areas in UK of similar character. The sizes of the windfarms ranged from 9 to 46 turbines and were therefore generally larger than those experienced in Cumbria to date. The turbine heights to blade tip were between 53.5 and 85.5m, typical of second generation machines. It is noted that higher turbines are visible over larger distance and they judge that an increase in height to something approaching 100m to blade tip for third generation wind turbines will result in the distance ranges increasing by around 20% in many cases. They note that at distances much greater than 30km the limit of visibility to the human eye is being approached. The following table summarises their conclusions:

Conclusions based on 2nd generation turbines	Predictions for 3rd generation turbines (ie 20% increase)	General Visibility
5 - 8 kms	6 – 9.6 km	Turbine detail noticeable
10 - 15 kms	12 – 18kms	Perceptible to a casual observer, begin to be perceived as a group forming a windfarm rather than individual turbines, blade movement perceptible in clear conditions
15-25 kms	18 – 30km	Perceptible in clear conditions by sensitive observers and residents

The 20% increase is reflected in their recommendation for a ZVI distance of 30km for turbines of 100m to blade tip.

They state that distance should not be used mechanistically to predict magnitude at a particular viewpoint because it can be modified by a large number of factors, some related to human perception and some related to physical elements and the design of the environment. Consequently a detailed table of six visual size classes rather than distances is provided which has some useful descriptors.

**Cumbria Wind Energy Supplementary Planning Document
Consultation Draft July 2006
Maps**

Key

- Lake District National Park
- Yorkshire Dales National Park
- Solway Coast AONB
- North Pennines AONB
- Arnsdale and Silverdale AONB
- Cumbria County Council Boundary
- Wind Speeds >6.5m/second

Please note that in some areas it may be technically feasible to operate wind turbines at speeds of less than 6.5m/second

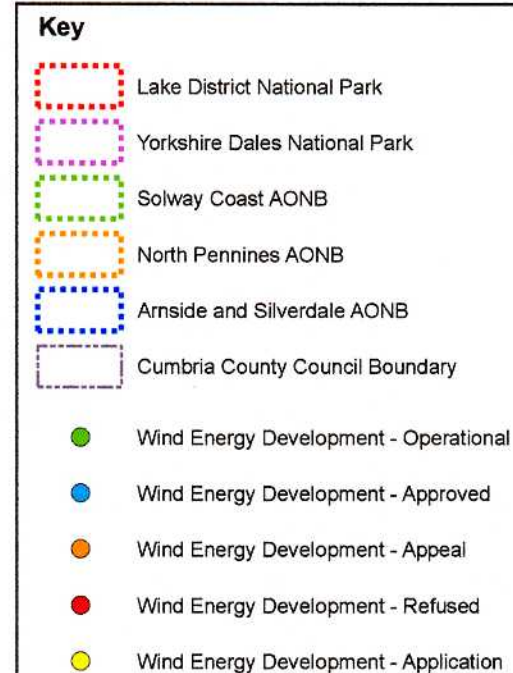
0 2 4 6 8 10 20

km

N



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- **Wind Energy Development - Operational**
 - 1 Oldside
 - 2 Siddick
 - 3 Winscales
 - 4 Great Orton
 - 5 Swineside*
 - 6 Newlands Mill
 - 7 Haverigg
 - 8 Lowca
 - 9 Harlock Hill
 - 10 Kirkby Moor
 - 11 Lambrigg Fell
 - 12 Far Old Park
 - 13 Black Sail Hut*
 - 14 Winscales Extension
- **Wind Energy Development - Approved**
 - 15 Wharrels Hill
 - 16 Vordian
 - 17 Pirelli
 - 18 Hesketh Newmarket
 - 19 Bolton Low Houses
 - 20 Laverock Howe*
- **Wind Energy Development - Refused**
 - 21 Hiltop
 - 22 Whinash Wind Farm
 - 23 Drigg
 - 24 Fairfield
 - 25 Gunson Height
 - 26 Lowick Beacon
 - 27 Lowick Common
 - 28 Barkin House
 - 29 Firkbank Fell
 - 30 High Pow
- **Wind Energy Development - Application**
 - 31 Hoff Moor
 - 32 Lamonby
 - 33 Grise

**Schemes within the Lake District National Park are small scale, providing power to individual buildings only.*

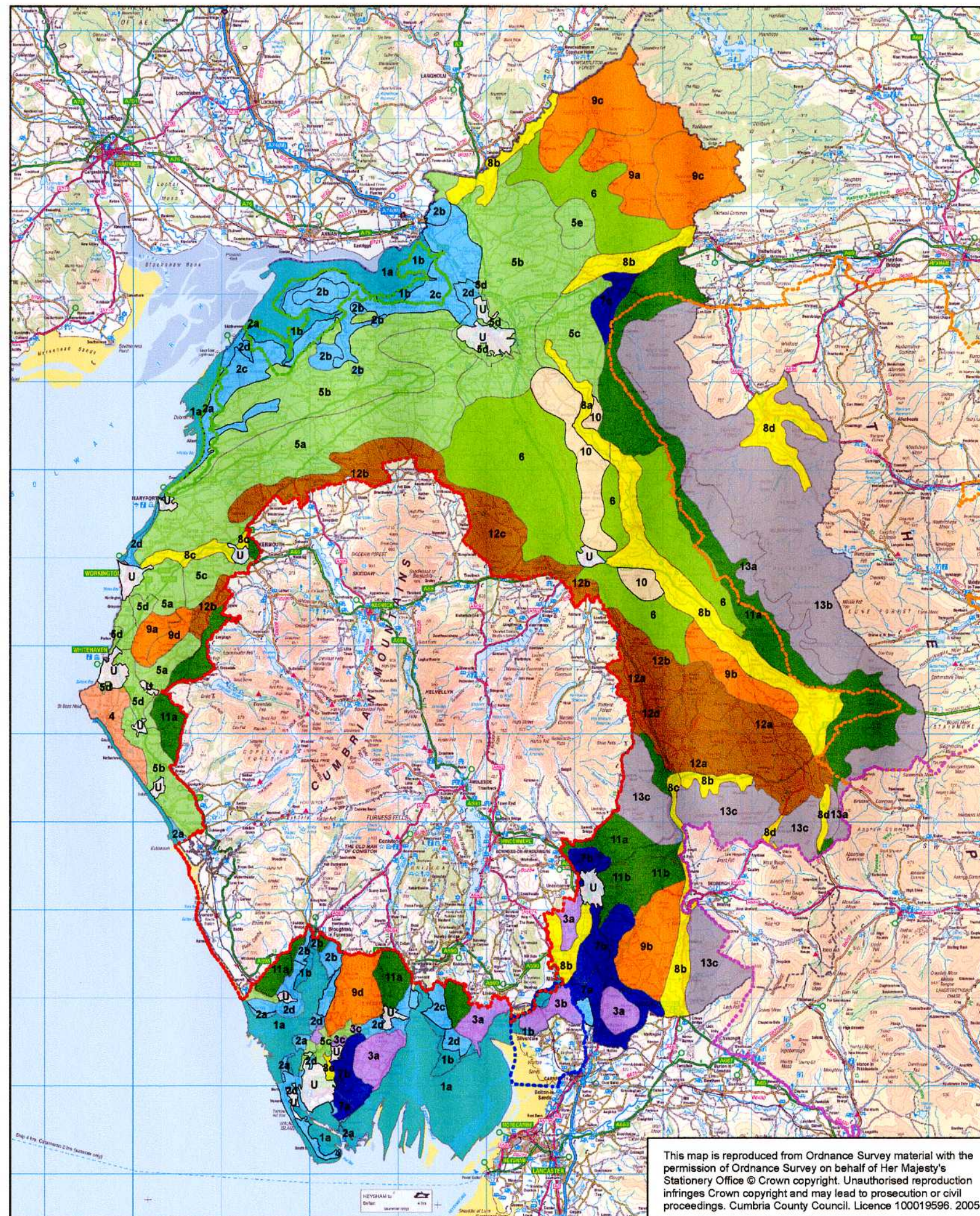
0 2 4 6 8 10 20
km



Map 2
Wind Energy Development Sites

June 2006

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- Landscape Character Type and Sub Types**
- 1 Estuary and Marsh**
 - 1a Intertidal Flats
 - 1b Coastal Marsh
 - 2 Coastal Margins**
 - 2a Dunes and Beaches
 - 2b Coastal Mosses
 - 2c Coastal Plain
 - 2d Coastal Urban Fringe
 - 3 Coastal Limestone**
 - 3a Open farmland and Pavements
 - 3b Wooded Hills and Pavements
 - 3c Disturbed Areas
 - 4 Coastal Sandstone**
 - 5 Lowland**
 - 5a Ridge and Valley
 - 5b Low Farmland
 - 5c Rolling Lowland
 - 5d Urban Fringe
 - 5e Drained Mosses
 - 6 Intermediate Land**
 - 7 Drumlins**
 - 7a Low Drumlins
 - 7b Drumlin Field
 - 7c Sandy Knolls and Ridges
 - 8 Main valleys**
 - 8a Gorges
 - 8b Broad Valleys
 - 8c Valley Corridors
 - 8d Dales
 - 9 Intermediate Moorland and Plateau**
 - 9a Open Moorlands
 - 9b Rolling Farmland and Heath
 - 9c Forests
 - 9d Ridges
 - 10 Sandstone Ridge**
 - 11 Upland fringes**
 - 11a Foothills
 - 11b Low Fells
 - 12 Higher Limestone**
 - 12a Limestone Farmland
 - 12b Rolling Fringe
 - 12c Limestone Foothills
 - 12d Moorland and Commons
 - 13 Fells and Scarps**
 - 13a Scarps
 - 13b Moorland, High Plateau
 - 13c Fells
 - 14 (U) Urban Areas and Fringes**

- Key**
- Lake District National Park
 - Yorkshire Dales National Park
 - Arnside and Silverdale AONB
 - Solway Coast AONB
 - North Pennines AONB
- Cumbria Landscape Classification**
- Type 1 Estuary and Marsh
 - Type 2 Coastal Margins
 - Type 3 Coastal Limestone
 - Type 4 Coastal Sandstone
 - Type 5 Lowland
 - Type 6 Intermediate Land
 - Type 7 Drumlins
 - Type 8 Main Valleys
 - Type 9 Intermediate Moorland Plateau
 - Type 10 Sandstone Ridge
 - Type 11 Upland Fringes
 - Type 12 Higher Limestone
 - Type 13 Fells and Scarp
 - Type 14(U) Urban Area
 - Cumbria County Council Boundary

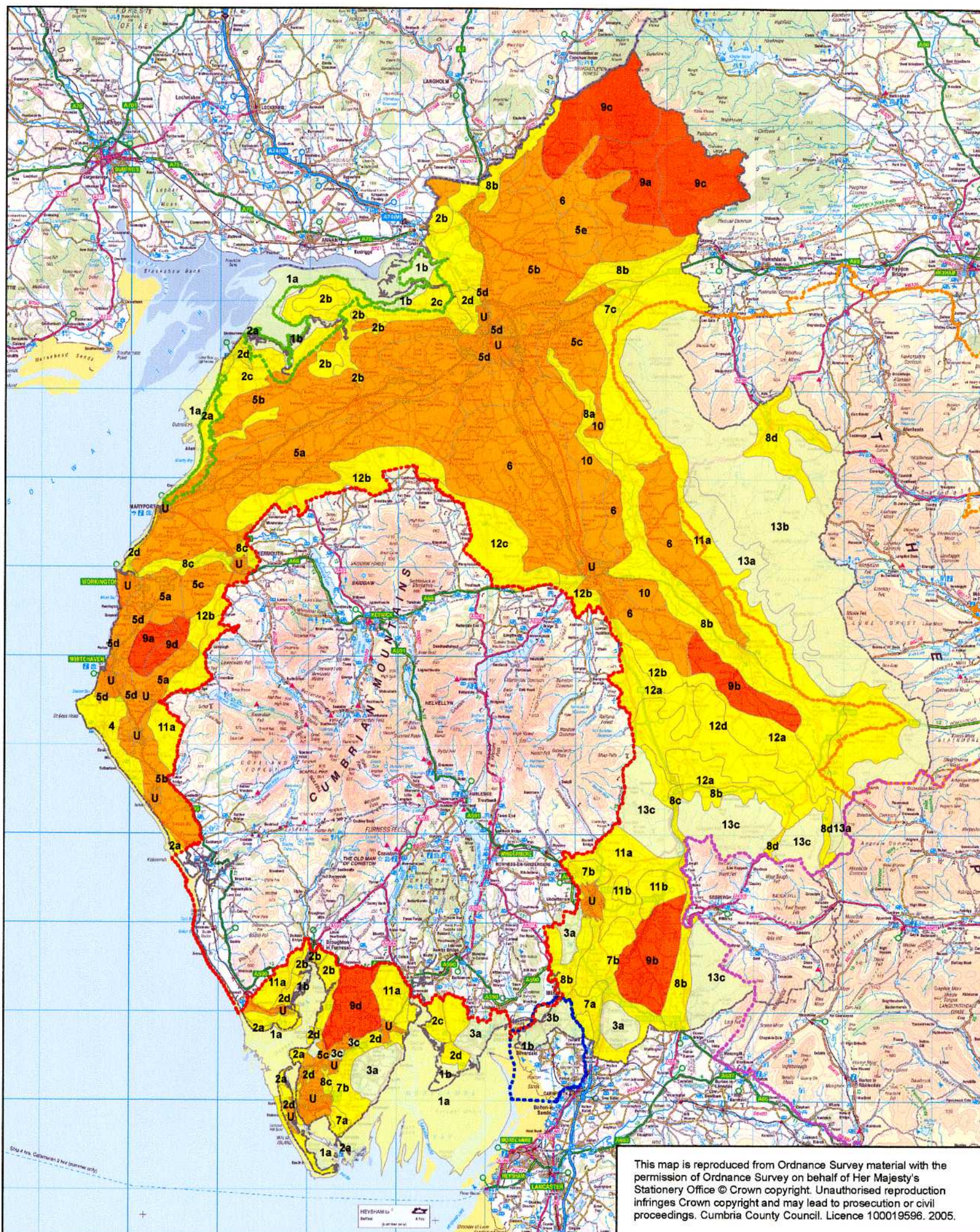
0 2 4 6 8 10 20
km



Map 3
Landscape Character

June 2006

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Key

	Lake District National Park
	Yorkshire Dales National Park
	Solway Coast AONB
	North Pennines AONB
	Arnsdale and Silverdale AONB
	Cumbria County Council Boundary
	Landscape Classification Subtype
	Moderate / High Landscape Capacity
	Moderate Landscape Capacity
	Low / Moderate Landscape Capacity
	Low Landscape Capacity

Landscape Character Type	Landscape Capacity	Appropriate Scale of Development (small group = 3-5 turbines, large group = 6-9 turbines)
1 Estuary and Marsh	Low	All scales generally inappropriate
2 Coastal Margins	Low/moderate	Up to a small group, exceptionally a large group in most extensive parts and where unconstrained by settlement
3 Coastal Limestone	Low	All scales generally inappropriate
4 Coastal Sandstone	Low/moderate	Up to a small group beyond St Bees Head Heritage Coast
5 Lowland	Moderate	Up to a small group, exceptionally large group
6 Intermediate Land	Moderate	Up to a small group, exceptionally large group
7 Drumlins	Low/moderate	Single turbines or a small group
8 Main valleys	Low/moderate	Up to a small group, exceptionally large group, in broader valleys
9 Intermediate Moorland and Plateau	Moderate/high	Up to a large group, exceptionally up to a medium wind farm on a broad moorland plateau
10 Sandstone Ridge	Moderate	Up to a small group, exceptionally large group
11 Upland fringes	Low/moderate	Up to a small group, exceptionally large group on broader topographic sweeps
12 Higher Limestone	Low/moderate	Up to a small group, exceptionally large group, in blander parts
13 Fells and Scarps	Low	All scales generally inappropriate
14(U) Urban Areas and Fringes	Moderate	Up to a small group, exceptionally large group in coastal contexts

0 2 4 6 8 10 20
km



Map 4
Landscape Capacity

June 2006

**Cumbria Wind Energy Supplementary Planning Document
Draft
Sustainability Appraisal Stage C
Sustainability Appraisal Report
July 2006**

CUMBRIA WIND ENERGY SUPPLEMENTARY PLANNING DOCUMENT

SUSTAINABILITY APPRAISAL:

CONSULTATION DRAFT

(SUSTAINABILITY APPRAISAL STAGE C - SUSTAINABILITY APPRAISAL REPORT)

August 2006

Executive Summary

This report represents the third stage (Stage C) of the sustainability appraisal of the Cumbria Wind Energy Supplementary Planning Document (WE SPD). It follows the publication of the Scoping Report, Stage A of the sustainability appraisal in January 2006 and the assessment of likely effects, Stage B which was carried out throughout May and June 2006.

Like the Scoping Report this stage will be subject to consultation in line with Government guidance on carrying out sustainability appraisal and in accordance with the SEA Directive.

Stage C presents the technical part of the appraisal process where the WE SPD options are considered, environmental, social and economic indicators are developed to provide a yardstick for measuring change and the WE SPD is tested to ascertain its likely contribution to sustainable development objectives.

The likely effects of implementing the WE SPD are predicted, interpreted and measured against pre-determined sustainability objectives. Mitigation measures are suggested in order to provide a method for reducing environmental, social and economic impacts and monitoring framework is suggested to maintain a future programme for measuring the effectiveness of the WE SPD.

A set of recommendations are produced as a result of the sustainability appraisal. The recommendations will provide advice on aligning the WE SPD with the sustainability framework.

Stage D will follow this report and will allow representation to this consultation stage to be taken into account. Stage D will also provide an opportunity to retest any significant changes made to the WE SPD as a result of consultation and the recommendations contained within this report.

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1.0 Summary and Outcomes

1.1 Non-Technical Summary

- 1.1.1 Government guidance issued¹ in November 2005 means that certain plans and guidance documents will require an assessment of their socio-economic and environmental impacts (the sustainability appraisal). Plans which require a sustainability appraisal are:
- Regional Spatial Strategies (RSS) and revisions
 - Local Development Documents (LDD including Minerals and Waste LDDs) and revised Development Plan Documents (DPD)
 - Supplementary Planning Documents (SPDs)
- 1.1.3 The sustainability appraisal of the Cumbria Draft Wind Energy Supplementary Planning Document (WE SPD)² must meet the requirements of the Strategic Environmental Assessment Directive (2001/42/EC)³. This Directive, commonly referred to as the SEA Directive requires the assessment to be centred around and measured against a clear set of evidence or baseline data.
- 1.1.4 The purpose of sustainability appraisal (SA) is to promote more sustainable development by checking and testing a plan for the quality and robustness of its environmental, social and economic content. The SA informs the plan of how it can improve its 'sustainability score' by providing a series of recommendations based on the performance of the plan when measured against a series of predetermined sustainability objectives.
- 1.1.4 Sustainability appraisal must be closely linked with the plan making process, be iterative and help shape the plan to be more sustainable. The idea behind sustainability appraisal and strategic environmental assessment is that if a plan or guidance document can provide more sustainable policy direction or advice the development that the plan is guiding should inherently become more sustainable. Project level environmental assessment has existed for a long time but with sustainability appraisal much of the unsustainable development that previously 'slipped through the net' might be avoided altogether through more sustainable policy making.
- 1.1.5 This sustainability appraisal has been carried out using the Cumbria Sustainability Framework. The framework tests the WE SPD against 16 sustainable development objectives relating to potential effects of the guidance on environmental, social, economic and resource issues. The SA does this by comparing the WE SPD objectives with that of the SA, assessing the likely effects of the guidance against the 16 objectives, predicting the effects against the baseline and measuring performance against a series of indicators. The guidance will then be monitored against these indicators to keep a check on performance of the WE SPD and to assess any impacts.
- 1.16 The following report sets out the first two stages of sustainability appraisal, the scoping and assessment stages. Recommendations are provided to make the WE SPD more sustainable. There is then an opportunity to amend the WE SPD in the light of these recommendations. Following this report, further assessment will be made of any significant changes to the WE SPD as part of establishing the movement towards more sustainable wind energy guidance the alignment with the SA framework.

1.2 Summary of the likely significant effects of the WE SPD

- 1.2.1 One of the key roles of the sustainability appraisal is to establish what impacts the WE SPD might have on the environment, society and the economy in Cumbria. To do this the document is assessed and appraised against the Cumbria Sustainability Framework. This framework essentially consists of 16 sustainability led objectives. For an in depth explanation of this framework refer to **section 4.5** of this report.
- 1.2.2 The initial scope of the WE SPD was guided by the recommendations of the Cumbria Joint Structure Plan Examination in Public (EIP) and the scope of the original wind energy SPG (1997). The result was a focus on the landscape and visual impacts of wind energy development.
- 1.2.3 The clear but narrow focus of the WE SPD obviously affected how well the guidance performed against the 16 varied sustainability objectives. **Section 6.0 and 7.0 and Appendix 7 and 8** of this report provide a detailed analysis of how well the WE SPD accords with the sustainability framework but in summary these are the key findings:
- The WE SPD performs most strongly against objectives relating to landscape and visual impact.
 - The WE SPD performed relatively well against objectives relating to air quality and climate change.
 - The WE SPD performed relatively well against objectives relating to public participation.
 - The WE SPD performed less well against objectives related to the water environment.
 - The WE SPD performed less well against objectives related to biodiversity.
 - The WE SPD performed less well against objectives related to soil quality and sustainable resources and waste management.
 - The WE SPD generally performed less well against the social objectives.
- 1.2.4 Due to the interrelationship and integrated nature of many of the factors being assessed under the 16 SA objectives a key recommendation of the sustainability appraisal is that the scope of WE SPD be broadened to include a wider range of topic areas. In particular it was recommended that the guidance should seek to provide a more robust direction on biodiversity, the water environment, the impact on the local economy, skills education and training, and natural resource management.

1.3 Statement on the difference the process has made to date

- 1.3.1 Stage A (Scoping) of the sustainability appraisal provided an early indication of how well the WE SPD aligned with the sustainability framework. This compatibility test gave a direction on how the WE SPD could be redrafted to offer developers wider and more detailed guidance to allow them to design and plan for more sustainable wind energy developments.
- 1.3.2 Following the early recommendations set out in the Scoping Report the WE SPD would be redrafted whilst the sustainability appraisal of the original document continued. Changes to the WE SPD will be reappraised during the next stage of the appraisal process. This re-testing of the guidance will give an indication of where the WE SPD has improved to better accord with the sustainability objectives.
- 1.3.3 The fact that the scope of WE SPD has already been reviewed in response to the Scoping Report demonstrates the function of the sustainability appraisal and shows

how it can influence the documents content. As more detailed recommendation flow out of the later stages of the appraisal, the WE SPD will continue to be refined to provide more sustainable guidance.

1.4 How to comment on the report

- 1.4.1 The WE SPD sustainability report is available for consultation with interested parties and the general public for a period of six weeks from 30th October 2006 to 10th December 2006. All comments must be received no later than 10th December 2006.
- 1.4.2 All comments and feedback will be taken into account during the next stages of the sustainability process. A paper copy is available for inspection at County Offices, Kendal and in Cumbria County Council main libraries and information centres.
- 1.4.3 Paper copies have been issued to the 4 statutory consultees, the district councils and the national parks as well as the lists of specific and general consultees referred to above.

Comments on this Sustainability Report should be sent to:

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Principal Planner - Landscape and Countryside
Cumbria County Council
County Offices
Kendal
LA9 4RQ

jenny.wain@cumbriacc.gov.uk

2.0 Appraisal Methodology

2.1 Approach/structure adopted for the SA

- 2.1.1 The Sustainability Appraisal is being carried out in accordance with guidelines issued by the Office of the Deputy Prime Minister, the SEA Directive and the requirements of the Strategic Environmental Assessment Regulations (2004)⁴ which gave the SEA Directive legislative effect in the UK.
- 2.1.2 The Sustainability Appraisal process can be broken down into five stages:

A: Stage A of the sustainability appraisal process involves 'setting the context and objectives, establishing the baseline and deciding on the scope' In detail, this involves:

- Identifying other relevant plans and policies programmes and sustainability objectives;
- Collecting baseline information;
- Identifying sustainability issues and problems;
- Developing the sustainability appraisal framework; and
- Consulting on the scope of the sustainability appraisal.

B: Developing and refining options and assessing effects. This stage involves testing the SPD objectives against the SA framework that was developed in Stage A. It also requires predictive analysis and evaluation of the likely effects of the SPD, mitigation measures for any adverse effects predicted,

proposals to maximise positive effects and proposals for monitoring the significant likely effects of the SPD.

C: Preparing the sustainability appraisal report.

D: Consultation on the preferred options of the SPD and the SA report. This stage involves the final SA report that was developed in Stage C. Any significant changes that need to be made as a result of consultations will be appraised before the Supplementary Planning Document and the Sustainability Appraisal are submitted to the Secretary of State.

E: Monitoring the significant effects of implementation of the SPD. This involves finalising the monitoring programme and responding to any significant adverse effects of the SPDs at an early stage.

2.2 When was the SA carried out?

- 2.2.1 The appraisal began at the end of 2005 with initial meetings between the appraiser and the WE SPD planners. Between January and February 2006 the Scoping Report⁵ was written, consulted on internally and published as a draft document for consultation. The wider, statutory consultation period on the draft Scoping Report was held between 13th February and 20th March 2006. Comments received were then collated and assessed during the final week of March before the draft Scoping Report was reviewed in light of the representations and updated with a short supplementary report. The two documents read in conjunction effectively became the final Scoping Report and this was completed by the middle of April 2006.
- 2.2.2 Stage B of the appraisal process, developing and refining the options and predicting effects⁶ was written during May and June.
- 2.2.3 Stage C, this report was written throughout July 2006.

2.3 Who carried out the SA?

- 2.3.1 The sustainability appraisal is being carried out internally by Cumbria County Council's Sustainability Team. The Sustainability Team does not form part of the County Council's Strategic Planning Team and therefore provides an impartial viewpoint and approach to the appraisal process.
- 2.3.2 The Sustainability Team is not directly involved with formulating planning policy or planning guidance for the county but is charged, as part of its remit to provide an internal consultancy service for carrying out sustainability appraisals on County Council plans, policies and programmes that require appraisal under the SEA Directive.
- 2.3.3 Within the Sustainability Team there is a depth of knowledge of the appraisal process having carried out sustainability appraisals of the Cumbria Joint Structure Plan, three Cumbria Community Strategies and managed the Strategic Environmental Assessment of the Local Transport Plan for Cumbria.
- 2.3.4 The Sustainability Team also devised the Sustainability Appraisal Framework and objectives for Cumbria that has been agreed by the four statutory consultees (Environment Agency, Countryside Agency, English Nature and English Heritage) as well as the District Authorities in the county and provides the basis for this appraisal.

2.4 Who was consulted, when and how?

- 2.4.1 The WE SPD currently sits against the County Structure Plan and informs the production of LDFs across the county. Unlike LDFs the Structure Plan did not require a plan detailing how consultation would be carried out such as a Statement of Community Involvement (SCI) that would guide an LDF. The process by which consultation should be carried out on the SPD is guided by Regulation 16 of the Town and Country Planning (Local Development) (England) Regulations 2004⁷. Consultation in the case of the WE SPD sustainability appraisal is carried out in accordance with Regulation 16.
- 2.4.2 Regulation 16 makes it clear that the Sustainability Report that accompanies the SPD should also be subject to a formal consultation period. Also, through PPS12⁸ and the SEA Directive itself, there is a requirement to consult on the sustainability appraisal report at various stages of its production. Reg 16 prescribes that the duration of a consultation period should be no shorter than 4 weeks and no longer than 6 weeks. In the case of the Scoping Report the consultation period lasted for 5 weeks. Consultation on the full sustainability report will last for six weeks. As mentioned above the consultation period on the draft Scoping Report was held between 13th February and 20th March 2006.
- 2.4.3 As well as consulting with the public, consultation on the SA has also involved a range of organisations including district councils, local strategic partnerships and neighbourhood forums.
- 2.4.4 In addition to the statutory consultation periods the County Council facilitated discussion with the 4 statutory consultees (English Nature, English Heritage, the Environment Agency and the Countryside Agency), the Lake District National Park and the 6 district councils on sustainability appraisal and the need for baseline data.
- 2.4.5 These discussions helped identify which organisations held relevant data sets and explored possible mechanisms for sharing data. The discussions also agreed the list of key sustainability issues and pressures affecting Cumbria and agreed a generic sustainability framework for use across Cumbria. The generic framework was then adapted for use in the WE SPD sustainability appraisal.
- 2.4.6 In addition to the 4 statutory consultees, the planning regulations also list a number of specific consultation bodies that must be consulted. These include regional planning bodies and regional development agencies along with the Strategic Rail Authority, the Highways Agency, telecoms companies, the Strategic Health Authority, gas, electricity, water and sewage companies.
- 2.4.7 Additional bodies are identified as possible consultees. This could include government departments, voluntary organisations, environmental groups, and a myriad of social and industry related groups. Consultation with these bodies at each stage of the sustainability appraisal process is at the discretion of the Council.
- 2.4.8 The following organisations were identified as specific consultation bodies:
- Carlisle City Council, Allerdale Borough Council, Copeland Borough Council, Eden District Council, South Lakeland District Council and Barrow Borough Council;
 - The Yorkshire Dales National Park Authority and The Lake District National Park Authority;
 - The North West Development Agency.
 - The North West Regional Assembly.

- 2.4.9 Cumbria County Council's Sustainability Team has compiled a list of environmental organisations to be consulted, along with wind energy professionals. Other companies and voluntary and social sector organisations which operate in Cumbria and may have an interest in the outcome were also identified for consultation.
- 2.4.10 It is intended that this document will also be posted on the County council's web site to enable public comment. (<http://www.cumbriacc.gov.uk>)

3.0 Background

3.1 Purpose of the SA and the SA Report

- 3.1.1 The purpose of sustainability appraisal (SA) is to promote sustainable development through the integration of environmental, social and economic considerations into the preparation of a plan or strategy.
- 3.1.2 There are a great many definitions of sustainable development. Here the term is used to describe a society in which social and economic progress are pursued in a way that does not damage the environment (both local and global) and positive action is taken to reduce and restore previous environmental damage caused by human activity. Underpinning this is a concern that future generations should inherit a healthier planet with sufficient resources available to support the world's populations.
- 3.1.3 Sustainability appraisal builds on earlier techniques of environmental appraisal which were developed to assess and mitigate the likely effects of a decision or a policy proposal on the environment. The important thing is to make the appraisal process part of the policy process so that the findings of the appraisal can shape the final version of the policy.
- 3.1.4 Sustainability appraisal broadens the appraisal process by adding social and economic assessment to the environmental assessment of a draft plan or developing programme. Again the aim is to use the assessment results to shape the final version of the plan or programme.
- 3.1.5 Appraisal involves identifying, quantifying, weighing up, and reporting on the pros and cons of each option. Since policies generally describe the state of things which will exist when the policy is put into effect, the appraisal process needs to contain a thorough analysis of the measures to be used to implement the policy.
- 3.1.6 A systematic appraisal ensures that the options are clearly laid out and assessed. This gives an assurance to the public that the policy and the way it is to be applied have been thoroughly thought out and leaves a clear record showing how the policy was formulated to be used by those responsible for monitoring and reviewing the policy at later date.
- 3.1.7 Sustainability appraisal needs to be part of the plan-making process and this is also the case when formulating guidance such as SPDs. It aims to promote sustainable development through better integration of sustainability considerations into the preparation and adoption of plans. There is no point in carrying out an appraisal after the plan has been finalised since the opportunity to shape the plan has been lost.
- 3.1.8 The Government takes the view that sustainability appraisals will help local planning authorities contribute to national policy objective of achieving sustainable development.

- 3.1.9 This SA report (Stage C in the overall SA process) draws together the findings of both Stage A and Stage B of the appraisal process, the scoping report and predictive assessment stages. By drawing this information together in one document it is possible to consult on the findings of the appraisal and provide background and context on the process as a whole.

3.2 Wind Energy SPD objectives

- 3.2.1 The Strategic Planning Team developed a number of draft Wind Energy SPD objectives to focus the purpose of the SPD. The draft WE SPD objectives are set out below:

- To provide clear, objective guidance to developers, professionals and the local community to facilitate the appropriate location of wind energy development (WED) in Cumbria.
- To maximise the potential of Cumbria to accommodate WED by guiding development to appropriate locations whilst ensuring that the key characteristics and quality of the county's landscapes are not adversely affected.
- To facilitate the appropriate location of WED in Cumbria to help reduce CO2 emissions and mitigate climate change.
- To support Cumbria to benefit from the positive contributions of WED to the local economy.
- To enable Cumbria to make a positive contribution towards local, regional and national sustainability and renewable energy targets.

- 3.2.2 The draft WE SPD objectives have been tested against the draft sustainability objectives to determine whether or not the SPD objectives are likely to contribute to sustainable development in Cumbria or not. This compatibility analysis provides the 'plan-maker' with guidance on developing and amending strategic options for the WE SPD which follow sustainability principles.

- 3.2.3 This level of objective testing acts only as a broad indicator of whether or not the SPDs objectives are generally in line with the sustainability framework objectives. It is not intended to provide a detailed assessment of the sustainability of the SPD. The assessment of the content of the guidance is carried out later in the sustainability appraisal process.

- 3.2.4 In summary, the compatibility analysis demonstrated that whilst there is little conflict or incompatibility identified between the SPD and SA objectives there is potential to broaden the scope of the objectives and provide developers with clearer guidance on a wider range of sustainability issues. This raised the question about the overall scope of the SPD and whether it should be providing guidance that goes beyond the visual and landscape agenda.

- 3.2.5 For a full explanation of the compatibility analysis and the scoring matrix refer to the scoping report section 11.

3.3 Compliance with the SEA Directive/Regulations

- 3.3.1 The SA of the Wind Energy SPD has been carried out in accordance with the SEA Directive European Directive 2001/42/EC "on the assessment of the effects of certain plans and programmes on the environment".

- 3.3.2 The SEA Directive was given legislative effect in the UK through the Environmental Assessment of Plans and Programmes 2004 (the Strategic Environmental Assessment Regulations). Government guidance on meeting the requirements of the SEA was issued in September 2005.
- 3.3.3 The SEA Directive requires environmental considerations to be integrated into the plan-making process so that the environment enjoys a high level of protection and plans and programmes contribute to sustainable development. It introduces a broad consultation process as part of the environmental assessment. The final version of the plan must show how any environmental considerations identified as part of the assessment process have been dealt with and set out a monitoring programme to measure the effect of the plan's implementation on the environment. The monitoring process is included to trigger remedial action on unforeseen outcomes.
- 3.3.4 The Directive applies to a range of plans that includes land-use and spatial plans.
- 3.3.5 The Directive is quite specific and clearly sets out the how the environmental assessment should be carried out. Plans which fail to meet the requirements of the SEA Regs. may be challenged by third parties and their implementation delayed pending the outcome of an inquiry into the validity of the complaint.
- 3.3.6 The requirements to carry out a sustainability appraisal and an environmental assessment are distinct. However Government guidance on sustainability appraisal has been issued to enable sustainability appraisals to be carried out which meet the requirements of the SEA Regs. Responsibility for ensuring that the sustainability appraisal meets the requirements of the SEA Regs. rests with the appraiser.
- 3.3.7 The key requirements of the SEA Directive are set out in **Appendix 2**.

4.0 Sustainability objectives, baseline and context

4.1 Links to other policies, plans and programmes and sustainability objectives

- 4.1.1 When preparing a Supplementary Planning Document it is necessary to identify other plans and policies which relate in some way to the SPD being prepared and to establish any policy influences being directed at the development document in question. In this way the 'plan-maker' can ensure the plan/guidance being prepared reflects policy direction emanating from Government, from the EU, from the wider international community or indeed from sources nearer home. A thorough review of relevant plans, policies and programmes can simplify the plan-makers task by ensuring policy harmony at the outset and help avoid potential conflicts with other programmes.
- 4.1.2 Equally the plan-maker would wish to ensure that the plan/guidance contributed to sustainable development and therefore it is necessary to establish sustainability issues or objectives that can be taken into account in the preparation of the plan.
- 4.1.3 The SEA Directive (Annex 1) is quite clear on the need to identify relevant plans and environmental protection objectives and ensure that these are fully considered during the plan-making process.
- 4.1.4 International conventions and protocols were not ignored but not reviewed directly. This was done to save time and avoid repetition. In the majority of cases the EU and indeed the UK government are signatories to most international agreements on environmental action and this is invariably reflected in European legislation or communications and in many cases UK government strategy.

- 4.1.5 The review of relevant plans is expanded at **Appendix 3** to provide a brief summary of the plan or programme or relevant piece of legislation. This makes clear the link with the WE SPD and identifies any external policy direction with which the WE SPD needs to respond. Following on from this, **Appendix 3** also identifies policy issues for both the WE SPD and helps identify appropriate objectives around which to build the sustainability appraisal framework.
- 4.1.6 Other influences on the objectives to be included in the sustainability framework include the Profile of Key Issues and Pressures Affecting Cumbria. This profile (shown at **Appendix 4**) gives some measure of social, economic and environmental concerns in Cumbria and helps identify sustainability objectives for inclusion in the sustainability framework.

4.2 Description of the social, environmental and economic baseline characteristics and the predicted future baseline

Characterising Cumbria

- 4.2.1 Cumbria is the second largest county in England. Its boundaries enclose 6,810 sq. kms which represents 48% of the land area of the North West region. The WE SPD guidance area includes the whole of Cumbria except that part covered by the Yorkshire Dales National Park. The WE SPD does include the Lake District National Park.
- 4.2.2 The total area covered by the WE SPD is approximately 6000 sq kms. The resident population of the plan area is 480,000 (mid year 2004 estimate).

Deprivation

- 4.2.3 The Index of Multiple Deprivation (2004) measures deprivation across a series of factors and combines these into a single weighted deprivation index. The areas measured are income deprivation (22.5% weighting), employment deprivation (22.5% w), health deprivation and disability (13.5% w), education skills and training (13.5% w) barriers to housing and services (9.3% w), living environment deprivation (9.3% w) and crime (9.3% w).
- 4.2.4 **Map 1** in **Appendix 9** illustrates the Index of Multiple Deprivation in Cumbria. This measures deprivation in small areas of about 500 households. The higher the score the greater the level of deprivation. This is shown by the use of darker shading.
- 4.2.5 Looking at the 354 district council areas in England, Barrow stands out as the 29th most deprived district. Copeland is the 84th most deprived while Allerdale and Carlisle rank 105 and 108 respectively. Eden and South Lakeland districts more comfortably sit at the other end of the deprivation spectrum with average scores of 200 and 258 respectively.
- 4.2.6 The type of deprivation can be identified within districts so for example deprivation in Allerdale relates to employment, health and disability and barriers to services. In Barrow there are significant issues of deprivation relating to employment, health and disability and living environment. In Eden and South Lakeland deprivation relates solely to barriers to services. This is a significant issue in Eden.

Health and Lifestyles

- 4.2.7 In 2003, the 3 Primary Care Trusts that cover Carlisle, Eden and west Cumbria carried out a health and lifestyle survey (71.2% response rate) of 25,504 people registered with a GP in North Cumbria. Again while not an exact match this area broadly equates to the plan area. Survey results show that: 8% report their health

as bad or very bad; 54% of people are overweight or obese; 40% consume less than 5 pieces of fruit or vegetables a day; 10% have a sedentary lifestyle; 27% of men and 17% of women drink in excess of recommended alcohol levels; 16% of men and 9% of women over 65 reported suffering a heart attack; 17% of the population reported shortness of breath with wheezing; around 18% may have mental health problems; and in rural area difficulty is experienced with access to services (A & E, GPs, and food stores selling fresh fruit and vegetables).

Housing

- 4.2.8 In Cumbria 34.9% of people own their homes outright while a further 36.9% are buying their homes with a mortgage or loan. 27.8% of people rent their homes either from local councils, registered social landlord or private landlords. An estimated 0.36% Of the population is thought to be homeless while 4.3% are living in homes which fail to meet the decent homes standard.
- 4.2.9 There are a number of housing issues in Cumbria. Affordable housing is a particular problem in parts of Cumbria. Research has shown that South Lakes and Eden have a worse affordability gap than anywhere else in the North of England. They also have the second (South Lakes £179,000) and forth highest (Eden £169,500) median house prices in North West England.
- 4.2.10 Second homes ownership is thought to contribute to affordability. There are 7,374 second homes of which 4,136 are in and around the Lake District National Park while the rest are located in the Eden Valley and the Solway coast AONB.

Employment and Earnings

- 4.2.11 In the Plan area 125,000 people are employed full-time with a further 49,000 employed part time and 27,402 people self employed. In Cumbria 4.4% of the population claims incapacity benefit.
- 4.2.12 Unemployment in Cumbria during May 2006 is running at 2%. Male unemployment is 3.2% and female unemployment is 1.1%. Excluding the National Park areas, 5,587 people (2.2%) were registered as unemployed during May 2006.
- 4.2.13 Average earnings exist at ward level and range from £17,507 to £39,308. In recent years gross weekly earnings for men and women in full time employment have been lower in Cumbria when compared to both the North West Region and the UK. However in 2005 gross weekly pay for male full time workers in Cumbria exceeded the North West average by 3.0% and all full-time workers in Cumbria earned 97.3% of the national average gross weekly wage. Males in Cumbria also earned £128.30 per week more than full-time women.

Education and Skills

- 4.2.14 Analysing educational attainment within the population is difficult because of the range of qualifications and the data collection systems used. In addition levels of work based competence (vocational skills and knowledge) are equated to academic qualifications. Government data on this should therefore be regarded as illustrative. In Cumbria an estimated 32% of the population aged 16 – 74 is without qualifications of any kind while a further 38% has 5 GCSEs or equivalent vocational qualifications (levels 1 and 2). A further 6.5% of the population is educated to A level standard or vocational equivalent (level 3) while an estimated 16% is educated to degree level or vocational equivalent (levels 4 and 5). The qualification level of the remaining 7.5% of the population is unclear.

Employment by Sector

- 4.2.15 In Cumbria, excluding the National Parks, the retail sector is the largest employer with 37,643 employees. Manufacturing is the second largest employer with 35,043 employees while 'real estate' employs 19,135 (note: this sector includes property, rental of property, cars and machinery, computers, legal and accountancy, advertising and a number of sundry activities). Health and social work is the third largest employer with 24,567 employees.
- 4.2.16 Altogether Cumbria has more than 200,000 employees (2006 data). Construction employs 9,485; transport employs 9,347; hotels employ 13,742; public administration and defence employ 8,651 while schools and higher education employs 14,890. Some smaller sectors have not been listed nor do the figures shown take account of the self-employed.

The Local Economy

- 4.2.17 Overall the state of the economy is not buoyant. Cumbria contributes about 6% of the economic output of the North West region (cf. Lancashire generates around 20%, Merseyside 16% and Cheshire 18% respectively, while Greater Manchester contributes some 40%).
- 4.2.18 Cumbria's economic performance (gross value added per capita) has declined from 92% in 1995 to 77% in 2001. This makes it the worst performing economic sub region in the UK. In part this reflects some refinement of the statistics but in real terms is due to contraction in manufacturing and agriculture.
- 4.2.19 Another factor which contributes to the lack of growth in the Cumbrian economy is the comparatively large numbers of small companies: 83% employ less than 10 people. This is associated with competitive weakness arising from a combination of factors: limited capital and management skills; limited growth ambitions; restricted markets; low investment in training and limited promotion opportunities for staff.

The Environment

- 4.2.20 Cumbria's environment is diverse. Its unique topography has been shaped by the passage of time and climatic conditions acting on the underlying rock structures. These processes, including melting glaciers, have influenced soil, vegetation and wildlife distribution. Human activity has also been affected by topography. This can be seen in the pattern of settlements and road and rail links which in the main skirt the central High Fells of the Lake District.
- 4.2.21 Penrith weather data (169 metres above sea level) averaged for the period 1971 to 2000, gives a maximum daytime temperature of 12.1°C, around 58 days of air frost each year, with 1243 hours of sunshine each year, and 149 days of rainfall providing 929 mm of rain.
- 4.2.22 Cumbria is made up of distinct character areas (see **Map 10**). The Solway Basin has stretches of sandy and pebble beaches backed by dunes and raised beaches along the Irish Sea. These give way to the inter-tidal mud-flats of the Solway Firth. Other features include Victorian seaside resorts, raised peat bogs, and narrow country lanes winding through gently, undulating pastureland with little tree cover.
- 4.2.23 The West Cumbria Coastal Plain stretches south from Maryport to Barrow in Furness. The main towns abut areas of industrial activity or redundant industrial land. The coastline contains a mixture of mudflats, shingle and pebble beaches interspaced with smaller areas of dunes, sandy beaches and sandstone cliffs. Inland undulating or flat pasture with hedgerows and some tree cover is the dominant feature.

Wetlands and herb-rich meadows exist along with river valleys with some semi natural ancient woodland. Elsewhere there are extensive areas of estuary with a range of inter-tidal habitats.

- 4.2.24 The River Eden and its tributaries dissect the Eden Valley. These river valley landscapes sit amidst open, rolling mixed farmland, neatly delineated by hedgerows and drystone walls. Broadleaved woodland is common and settlements are generally constructed from red sandstone, although around the fringes, limestone construction is the norm. On either side of the valley foothills, unimproved grassland and moorland merge into the wilder Cumbrian High fells and the North Pennines.
- 4.2.25 The Orton Fells lie within a line drawn south east from Penrith to Kirkby Stephen, then west to Tebay, north to Shap and northwest to Askham.
- 4.2.26 The Orton Fells are distinguished by moorland with extensive areas of limestone pavements, rock outcrops, screes and calcareous grassland. There are few trees and few deep flowing rivers or streams. Sheep are reared on the higher, rough pastures while lower down grass is grown for hay, silage and winter grazing. Dwellings and field boundaries are built with limestone.
- 4.2.27 The Howgill Fells form a heart shape range of rounded hills bounded by Tebay, Sedburgh and Ravenstonedale. Only the northern half of the Howgills falls in the WE SPD area. The landscape comprises ridges and valleys, with steep scree slopes, occasional waterfalls and crags, open moorland with rough grass and bracken, few trees, few settlements all of which combines to give a sense of wilderness. Farming is dominated by sheep with cattle rearing confined to the lower slopes.
- 4.2.28 The Cumbrian Low Fells are noted for undulating pastureland, areas of woodland and managed estates which give a parkland appearance. Settlements are again built of limestone.

Biodiversity

- 4.2.29 Cumbria is rich in habitats and species. Within the Solway Basin, key habitats are saltmarsh and grazing marsh, sand dunes, vegetated shingle, lowland raised mire, valley woodlands, rivers and hay meadows. The Solway Estuary attracts wintering and passage waders and wildfowl many of which use the saltmarsh and nearby unimproved grassland to roost and feed. Internationally important species include pink footed goose, the barnacle goose, oystercatcher, knot, bar-tailed godwit, curlew and redshank. Species of principal importance include the Water Vole, European Otter, the Brown Hare, Pipistrelle Bat, Red Squirrel, Skylark, Nightjar, Linnet, Reed Bunting, Corn Bunting, Spotted Fly-catcher, Tree Sparrow, grey partridge, Bullfinch, Natterjack Toad, Great Crested Newt, Marsh Fritillary Butterfly and the Square-spotted Clay Moth. Many other species of birds and bats have been recorded in the Solway Basin. Other species of interest, many of which are considered to be nationally scarce include numerous water and ground beetles, weevils, dragonfly, a variety of flies, grasshoppers, moths, spiders, bugs, liverworts, mosses and vascular plants.
- 4.2.30 The West Cumbrian Coastal Plain also has saltmarshes around the Duddon Estuary, at Drigg and at Walney Island. Other important habitats include sand dunes, dune grassland, dune heath, vegetated shingle, coastal grasslands, St. Bees Head sea cliffs, rivers and floodplains, unimproved hay meadows, tarns and ponds, semi-natural woodland, hedgebanks, lowland and raised mires. Principal bird species and amphibians are the same as those listed for the Solway Basin. Again there are numerous nationally scarce species of beetle, crustacean, moth, and assorted

insects, mosses and vascular plants. Two distinctive species are present: *Cicendela hybrida* a ground beetle and *Margaritifera margaritifera* a freshwater mussel.

Eden Valley

- 4.2.31 The biodiversity interest centres on the aquatic environments of the River Eden, its tributaries and adjacent habitats. The geology of the area gives the Eden mid range nutrient status which results in a high diversity of aquatic plants. Riparian habitats include gorge woodland with varied tree and shrub cover dependant on soil type and moisture levels. South of Lazonby there is a broad floodplain but with few habitat features normally associated with floodplains with the exception of the Salkeld area where oxbow lakes, ponds, swampy woodland and old channels can be found. Near Ormside there is large area of floodplain comprising wet grassland, marsh and pools which attract wintering and breeding wildfowl.
- 4.2.32 Other principal habitats include basin and raised mires, many of which are designated as SSSIs, remnant lowland heathland which provides one of the few suitable habitats for the nightjar, lowland grassland (species rich, traditionally managed), wet or seasonally inundated meadows, hay meadows and hay meadow fragments, and away from the river banks areas of semi natural woodland, particularly those with rich shrub layers.
- 4.2.33 Principal vertebrate species are broadly similar to those found in Solway Basin and the West Cumbria Coastal Plain. Additional Principal species include the Bittern, the Wryneck, Marsh Clubmoss and a moss (*Fissidens exiguus*), Marsh fritillary and White Clawed Crayfish. Absent from the area is the Natterjack Toad. Again there are numerous vascular plants, mosses.

The High Fells, Orton Fells, The Howgills and parts of the South Cumbria Low Fells

- 4.2.34 The High Fells are largely found within the Lake District National Park Boundary. Differing geology across the fells gives rise to distinct shape and character across the National Park. The fells have a great many and varied habitats from acid grassland, tarns and other water bodies, dry and wet heath, alpine and boreal heath, blanket bog mixed and oak woodland. Remnant woodlands can be largely be found on lower slopes or in gills. Gills are important for mosses, liverworts and ferns.
- 4.2.35 The Orton Fells is a limestone ridge characterised by limestone pavements. Drift deposits allow heath and acidic grassland to become interspaced with the limestone outcrops. Lime rich springs and flushes support rare plant and invertebrate communities while Sunbiggin Tarn supports aquatic and fen communities. Other important habitats include unimproved lowland meadows and remnant woodlands around gills.
- 4.2.36 Vegetation cover on the Howgill Fells is largely acidic grassland with expanses of bracken on lower slopes and remnant areas of heather. Springs and flushes on lower slopes add diversity of habitat and support comparably more plants than nearby grassland. Again remnant woodlands can be found on lower slopes or in gills. Gills are important for mosses, liverworts and ferns.
- 4.2.37 South Lakes Low Fells are associated with extensive semi-natural and coniferous woodland, improved grassland and large areas containing a mixture of grassland, heath, mire and juniper scrub.
- 4.2.38 Other maps in **Appendix 9** give further context to Cumbria' environmental assets and landscape character such as lakes and reservoirs, ancient woodlands, geological

and geomorphological sites, AONBs, World Heritage Sites, special protection areas and RAMSAR sites.

Baseline Data

- 4.2.39 The introduction of the Strategic Environmental Assessment (SEA) Directive brought with it the need for assessment and appraisal to be made against a strong, accurate and robust evidence base. The establishment of an evidence base allows predictive analysis of potential impacts of the policies contained in the 'plan' being assessed, followed by an evaluation of policy impacts and the development of monitoring and mitigation measures. This is the 'hub' of SEA/SA.
- 4.2.40 Cumbria County Council has developed a sustainability appraisal framework based on best national practice and tested the fitness of purpose of the framework in carrying out appraisals on LDF's and community strategies. This framework has now been adopted by all district councils in Cumbria as the basis for sustainability appraisal and agreed following consultation by the 4 statutory consultees. The framework has been modified to ensure it fully reflects the requirements of the SEA Directive.
- 4.2.41 The framework contains 16 of sustainability objectives. Baseline data has been gathered, where available for all 16 objectives.
- 4.2.42 Baseline data for the appraisal of the WE SPD has been gathered from a variety of sources including the County Council's Intelligence and information Team, various websites, the 4 statutory consultees (Environment Agency, Countryside Agency, English Nature and English Heritage) and a number of different organisations.
- 4.2.43 The data is used to provide a baseline of the environmental, social and economic characteristics of the area influenced by the WE SPD. The information provides the basis for predicting and monitoring effects and helps to identify sustainability problems/gaps and alternative ways of dealing with them later in the SA process. Sufficient information is required about the current and likely future state of the geographic area covered by the WE SPD to allow the documents effects to be adequately monitored.
- 4.2.44 Indicators have been identified to allow the performance of the plan to be monitored (**Appendix 5** sets out baseline data and indicators where available). Once a set of indicators has been agreed, data can be collected based on each indicator. Key indicators for the WE SPD are set out in **Table 1** below. Some of this information is available and some information will be gathered as the SA process continues. The following questions taken from Government guidance on SA, have helped gauge the level of detail required in each data set:
- How good or bad is the current situation? Do trends show that it is getting better or worse?
 - How far is the current situation from any established thresholds or targets?
 - Are particularly sensitive or important elements of the receiving environment affected (e.g. people, resources, species, habitats)?
 - Are the problems reversible or irreversible, permanent or temporary?
 - How difficult would it be to offset or remedy any damage?
 - Have there been significant cumulative, synergistic or indirect effects over time? Are there expected to be such effects in the future?

- 4.2.45 Baseline data trends are identified where available and some constraints and notes are added in the final column of **Appendix 5** explaining where data originates from and any potential limitations on the data.

4.3 Main social, environmental and economic issues and problems identified

- 4.3.1 In Cumbria, the County Council's Sustainability Team had already identified a profile of key issues and pressures affecting Cumbria in 2002 and had used this list as the basis for developing a set of sustainability objectives. These objectives were adopted by the County Council in 2004 and are used to guide County Council policy development. These sustainability objectives also provided a basis for an earlier version of a sustainability appraisal framework.
- 4.3.2 The original sustainability appraisal framework has been used to carry out sustainability appraisals of the Cumbria and Lake District Joint Structure Plan 2001-2016 and sustainability appraisals of the Barrow, South Lakes and West Cumbria community strategies. During these appraisals the sustainability framework has been refined in discussion with participants in the appraisal process and also modified in the light of practical experience.
- 4.3.3 The advent of the SEA Regs 2004 and early draft Government guidance on conducting sustainability appraisals to ensure that they met the requirements of the SEA Directive led to the establishment of a sustainability group. Membership was drawn from the 4 statutory consultees, the 6 district councils, the Lake District National Park Authority and the County Council.
- 4.3.4 These discussions explored areas of mutual interest and possible joint working on sustainability appraisals and the availability of baseline data.
- 4.3.5 The existing set of key issues and pressures affecting Cumbria originally developed by the Sustainability Team was re-examined by the group and by other colleagues in the County Council's Planning and Economic Development units. As a result of this consultation process the Profile of Key Issues and Pressures was added to and refined by drawing on the detailed knowledge of the consultees. The list was further widened to specifically include a new section on resources.
- 4.3.6 The profile of key issues and pressures affecting Cumbria is shown at **Appendix 4**.
- 4.3.7 The profile of key issues helps demonstrate how interrelated the different sections of the scoping report are since the key pressures relate to sustainability, help shape the sustainability framework and add to the size of the evidence base for policy-making. This led to the emergence of a new draft set of sustainability objectives:
- To make more affordable housing available
 - To improve access to facilities
 - To create safer communities
 - To improve education opportunities
 - To retain young people in Cumbria
 - To widen employment opportunities
 - To diversify the economy
 - To develop growth sectors within the local economy
 - To protect and enhance species and habitats

- To improve the quality of water resources
- To adapt to climate change
- To protect designated landscapes
- To conserve the character of the built environment
- To protect people from floods
- To minimise waste and recycle more
- To secure modern sustainable waste management facilities
- To sustainably manage mineral resources
- To increase the supply of recycled material used in lieu of mineral resources

4.3.8 This new draft set of sustainability objectives was fed into the sustainability appraisal framework development process.

4.4 Limitations of the information and assumptions made

- 4.4.1 There have been a number of difficulties in accessing, collating, presenting relevant data sets: data sets available to CCC do not always match the requirements of the SA; data can be completely unavailable, unavailable at the right scale, out of date, unreliable, partial or biased. Because of this, decisions have been taken on the quality of data gathered and questions have been asked such as: should the data set be rejected; used with a cautionary note; or new information sought to remove uncertainty and fill data gaps?
- 4.4.2 Whilst it has been possible within the appraisal timeframe to gather some baseline data, gaps remain. Government guidance on carrying out sustainability appraisals encourages a pragmatic approach saying that whilst data must be robust and fit for purpose, when gathering baseline data a realistic approach should be taken. The overall SA process should not be delayed because of difficulties in obtaining certain data sets. Data gaps are acknowledged but the SA process will continue. SA is an iterative process and the baseline database will evolve over time, be constantly updated and be in place for any future review or update of the SPD. Monitoring regimes that will be put in place through Stage E of the SA process will further identify data requirements and act as a mechanism for obtaining missing data sets.

4.5 The SA Framework, including objectives, targets and indicators

- 4.5.1 The County Council's Sustainability Team developed a sustainability appraisal framework which had been tried and tested in the sustainability appraisal of land use plans and community strategies. The sustainability group made up of the district councils, the LDNPA, English Nature, English Heritage, the Environment Agency, the Countryside Agency and the County Council took this appraisal framework as a starting point and compared it to the draft list of new sustainability objectives which came out of the key pressures exercise.
- 4.5.2 This led to a composite framework being developed which included new objectives thrown up by the key pressures exercise. Further discussion on the range and meaning of the list of sustainability objectives led to further refinement of the list of objectives and their precise wording.
- 4.5.3 Each objective was originally accompanied by a series of questions which were designed to guide the appraisal process and allow the appraiser to test whether or

not the plan was likely to contribute to a particular objective. These were modified in the light of the consultation process and the knowledge and experience of the members of the group.

- 4.5.4 In developing the revised framework, care was taken to ensure that the SEA Directive's environmental objectives were also comprehensively included.
- 4.5.5 This consultation process has led to the adoption by the Cumbrian local authorities and the Lake District National Park of a robust sustainability appraisal framework which has the approval of the 4 statutory consultees and is based on a tried and tested methodology. This new sustainability appraisal framework is to be used as the basis for sustainability appraisals across Cumbria.
- 4.5.6 While this framework is generally regarded as a comprehensive framework that can be applied 'off the shelf' to carry out appraisals, clearly some plans are of a specialist nature and therefore further refinement may be necessary to tailor the framework to a specific plan. In the case of the WE SPD the general framework has been altered, not significantly, but sufficiently to increase its suitability for the task of appraising the WE SPD. The revised sustainability appraisal framework which will be used in the appraisal of the WE SPD is shown in **Appendix 1**.

WE SPD Key Indicators Set

- 4.5.7 **Appendix 5** sets out a comprehensive list of baseline data and indicators. Whilst it is important to have a broad range of baseline information some of the information listed provides only contextual data that helps to characterise Cumbria and provide an indication of the environmental, societal and economic conditions that the WE SPD is operating within.
- 4.5.8 **Table 1** below draws from the data in **Appendix 5** but shows only the indicators considered to be the key indicators for the WE SPD. These are indicators that should be monitored and used as a 'yardstick' and gauge of the WE SPD performance over time against the 16 SA objectives – the WE SPD Key Indicator Set.

Table 1: WE SPD Key Indicator Set	
SA Framework Objectives	Indicator
SP1: To increase the level of participation in democratic processes (SEA: Population)	Number of local liaison committees in operation
	Number of Cumbrians who submitted a written response to the WE SPD Consultation
SP2: To improve access to services, facilities, the countryside and open spaces (SEA: Population)	No Key Indicators at this time – indicators in development
SP3: To provide everyone with a decent home (SEA: Material Assets)	No Key Indicators at this time – contextual indicators only. Objective largely outside the scope of the WE SPD
SP4: To improve the level of skills, education and training (SEA: Population)	To increase the number of environmental education programmes in operation at wind energy sites
	To increase the number of visits by wind energy developers to schools/business
SP5: To improve the health and sense of well-being of people (SEA: Human Health)	To reduce the % of nuisance complaints received relating to wind energy sites.
SP6: To create vibrant, active, inclusive and open-minded communities with a	To increase the % of residents who are satisfied with their neighbourhood as a place to live

strong sense local history (SEA: Population)	
EN1: To protect and enhance biodiversity (SEA: Biodiversity, flora and fauna)	Loss of UK and Cumbria BAP species and area of BAP habitat (and species and habitats named in the Birds and Habitats Directives).
	Area lost from non-statutory designations, such as County Wildlife Sites.
	Area of land lost from Sites of Special Scientific Interest.
	Area of land lost to wind energy development immediately adjacent to designated areas and sites with protected and priority species.
	Area of land created to support biodiversity as a result of wind energy development.
EN2: To preserve, enhance and manage landscape quality and character for future generations (SEA: Landscape)	Number of wind energy developments located within designated landscape areas (National Parks and Areas of Outstanding Natural Beauty).
	Number of wind energy developments located adjacent to designated landscape areas.
	Number of wind energy sites with significant visibility from designated landscapes.
	Loss of key landscape features as defined in the Cumbria Landscape Classification and Cumbria Landscape Strategy
EN3: To improve the quality of the built environment (SEA: Cultural Heritage)	% of local materials supplied for construction phase of wind energy development.
	Number of historic sites in each category sited within or adjacent to a wind energy development.
	Grade I, II* and II listed buildings at risk sited within or adjacent to a wind energy development.
	Scheduled monuments at risk sited within or adjacent to a wind energy development
	Registered parks and gardens at risk sited within or adjacent to a wind energy development
	Number of conservation areas adjacent to a wind energy development.
	Number of traditional buildings renovated/reused as a result of wind energy development.
NR1: To improve local air quality and reduce greenhouse gas emissions (SEA: Air) (SEA: Climatic Factors)	Estimated emissions CO ₂ (tonnes) from wind energy development construction phases
	Estimated emissions CO ₂ (tonnes) offset from wind energy development
NR2: To improve water quality and water resources (SEA: Water)	Number of water pollution incidents caused by wind energy development.
	Number of wind energy development sites located within groundwater protection zones.
	Number of wind energy developments permitted in flood risk zones.
	Amount of high quality agricultural land lost through wind energy development
NR3: To restore and protect land and soil (SEA: Soil)	Number of Wind energy developments located on brownfield land
	Number of soil contamination incidents as a result of wind energy development.
NR4: To manage mineral resources sustainably and minimise waste (SEA: Air) (SEA: Climatic Factors) (SEA: Soil) (SEA: Water)	% of renewable energy generated from waste in Cumbria
EC1: To retain existing jobs and create new employment opportunities (SEA Population) (SEA Material Assets)	Numbers of new or extended wind energy developments.
	% People aged 16-74 Unemployed
	% People employed in industry
	Number of new wind energy related business created (focused on those created in high areas of unemployment)
EC2: To improve access to jobs (SEA Population) (SEA Material Assets)	% of people who travel to work by public transport
	Value to the Cumbrian economy of new wind energy development.
EC3: To diversify and strengthen the local economy (SEA Population) (SEA Material Assets)	No of jobs created in the wind energy sector in Cumbria.

5.0 Wind Energy SPD issues and options

5.1 Main strategic options considered and how they were identified

- 5.1.1 The WE SPD has been developed in response to recommendations from the Examination in Public to the Cumbria Joint Structure Plan. This sought to ensure that guidance was available on the landscape and visual impacts of wind energy development during the transition from the old planning system of a Structure Plan and Local Plans, to the new planning system of a Regional Spatial Strategy and Local Development Frameworks. The guidance will support the development of policies in the LDFs and provide guidance to developers when determining the location and design of future wind energy proposals. The WE SPD will replace the existing statement of supplementary planning guidance - Wind Energy Development in Cumbria.
- 5.1.2 The initial scope of the WE SPD was guided by the recommendations of the EIP and the scope of the original SPG. This focussed on the landscape and visual impacts of wind energy development. The WE SPD continues to focus mainly on landscape and visual impacts as these continue to be important in all areas of the County, are often the most controversial aspects of any wind energy proposal, and can be difficult to mitigate.
- 5.1.3 The document is being coordinated by Cumbria County Council and developed in conjunction with officers from each of the partnering local authorities. A Wind Energy Officers Group, comprising officers from each authority, has been set up to steer the development of the document. A Project Briefing on the WE SPD was developed setting out its objectives, scope and timescale for preparation. Consultation on this was carried out in Spring 2006 with over 100 stakeholders. Wider public consultation will be held in Autumn 2006 on the draft WE SPD in accordance with each local authorities Statement of Community Involvement.
- 5.1.4 The review of the 1997 wind energy SPG began in 2004. At this time it was unclear whether supplementary planning documents would require a full sustainability appraisal through the UKs interpretation of the SEA Directive. Given this uncertainty the formulation of the WE SPD continued and a Sustainability Appraisal was commissioned in December 2005 following Government advice.
- 5.1.5 The Sustainability Appraisal of the WE SPD was commissioned at a time when the WE SPD was already significantly advanced. The 'development of options' stage was complete and the SPD had reached a working draft stage. The appraisal began early enough to shape certain aspects of the plan but the broad direction and remit of the SPD was in place. As a result there were no SPD options as such to assess. For this reason, the 'options appraisal' section of the WE SPD sustainability appraisal makes a direct comparison between a 'business as usual' approach (the 1997 WE SPG remains in place) and 'implementation of new guidance approach' (the new WE SPD is introduced). Both approaches are assessed against the 16 sustainability appraisal objectives.

5.2 Comparison of the social, environmental and economic effects of the options

- 5.2.1 The purpose of the options testing stage of the SA process is to provide a broad assessment of the different options against the SA objectives. Options testing is not intended to provide a detailed analysis of the likely performance of the options against the SA objectives, that is addressed later in the process. The options testing stage does not provide specific recommendations either, again that is provided later

in the process. **Appendix 6** sets out the full assessment of the two 'options'. The table is designed to give a direct comparison of the SPG and the WE SPD. The table notes the likely impacts, be they positive or negative, of the overall document against the 16 SA objectives. Performance over time is gauged by 'scoring' the likely impact of the guidance on the objectives over the short, medium and long term.

- 5.2.2 For information on the performance of the SPD against each objective refer to **Appendix 7** – there are though some interesting aspects of the assessment that have been highlighted in the following paragraphs.
- 5.2.3 The headline from this analysis is that the revised WE SPD generally out-performs the 1997 SPG. The main reason for this is that the 1997 SPG is in place as adopted Council planning guidance and cannot be changed in its current form – the SPG, therefore has no scope to improve its sustainability performance beyond the short term. In contrast to this the revised WE SPD will provide updated and evolving guidance on planning for wind energy development and it has the potential to be re-shaped through the SA process to achieve more sustainable outcomes.
- 5.2.4 The WE SPD is likely to achieve a positive outcome when judged against SA objective SP1 (To increase the level of participation in democratic processes). This is possible as a result of direct consultation with the public and other stakeholders throughout the development of the WE SPD. By following Statements of Community Involvement (SCIs), more people have the option of commenting on the document and can do this through more varied media and different forums.
- 5.2.5 The revised WE SPD was initially formulated under a tight remit of landscape and visual impact. Its scope was never intended to go beyond these areas in any detail and therefore the document does not contain specific guidance relating to wider aspects of sustainability. This is acknowledged and has been taken into account during the assessment of options stage. Despite this 'caveat' it remains the job of the SA to identify areas in which the sustainability performance of the SPD can be improved. **Appendix 7** shows that the WE SPD performs less strongly against many of the SA objectives outside of those relating to landscape. This can be addressed by widening the scope of the WE SPD – this is discussed in more detail in **section 6.0**, the prediction of effects.
- 5.2.6 Whilst the WE SPD performed reasonably well against the SA objectives relating to the economy (EC1, EC2 and EC3), this could be further improved by expanding the guidance to cover the wider economic implications of wind energy development in Cumbria. At this time it is unclear whether this will be included within the scope of the WE SPD as these issues may be deemed to fall outside of a SPDs remit.
- 5.2.7 Refer to **Appendix 6** for the full assessment of options outcomes and results and **Appendix 7** for the full predictive analysis.

6.0 Predicting the effects of the draft WE SPD

6.1 Introduction

- 6.1.1 The SEA Directive requires the likely effects of the WE SPD section to be assessed. This is a key stage of the overall SA process. It sets out the likely impacts of the document being assessed and provides recommendations on how to bring the document more in line with the sustainability appraisal objectives.

6.2 Methodology

- 6.2.1 The purpose of this section of the SA is to predict the environmental, social and economic effects of the WE SPD. It takes the prediction of likely impacts of the WE

SPD a stage further than the options testing assessment procedure discussed in part 5.2 of this report. The assessment of options stage simply compares the two options in question and makes a broad assessment against the 16 SA objectives.

- 6.2.2 The prediction stage (set out in **Appendix 7**) assesses only the chosen option (to implement the revised WE SPD) and introduces the baseline data and indicators to make a judgement about whether the WE SPD will affect the indicators over time. The potential effects are quantified where appropriate or a judgement made where this is not possible, with reference to the baseline situation.

6.3 Outcomes

- 6.3.1 The outcomes of the predictive analysis are presented in the end column of **Appendix 7**. Here a judgement is made about how the WE SPD will contribute to each indicator against each of the 16 SA objectives. Further analysis is provided in the following section on evaluating the predicted effects. Here, the predictions are reviewed and recommendations provided on how the WE SPD can evolve to better accord with the SA objectives. More detail on evaluation can be found in **section 7** and **Appendix 8** evaluation table.
- 6.3.2 In summary the WE SPD performs best against the objectives relating to landscape and visual amenity. This is not surprising as landscape is the focus area for the WE SPD and provides the greatest level of detail on this subject. Generally the WE SPD performs less well against the social, environmental and natural resource objectives but better against those objectives relating to the economy.
- 6.3.3 The WE SPD, because of its narrow remit does not currently contain detailed guidance on issues other than landscape and visual amenity. Because of this the WE SPD scores relatively poorly against many of the SA objectives. At the same time it is acknowledged that the WE SPD was formulated under a tight remit and was never intended to cover wider sustainability issues. However, due to the interrelationship and integrated nature of many of the factors being assessed under the 16 SA objectives it is recommended that the scope of WE SPD be broadened to include a wider range of topic areas.
- 6.3.4 In particular the guidance should seek to provide more robust direction on biodiversity, the water environment, the impact on the local economy, skills education and training, and natural resource management.
- 6.3.5 For detailed explanation and comment on the performance of the WE SPD against each of the 16 SA objectives refer to **Appendix 8** and **Table 2** in the following sections.
- 6.3.6 (It should be noted that at the time of writing, the organisation/agency responsible for gathering each particular data set and monitoring certain indicators has not yet been decided and a programme for monitoring has not yet been put in place. Stage E of the SA process which concentrates on monitoring will resolve this issue. For the purposes of this Stage B report in the, 'Can the effect be quantified column' of **Appendix 7** where an authority/organisation is named it does not necessarily mean that that authority/organisation will ultimately be responsible for data gathering or indicator monitoring around that particular objective).

7.0 Evaluating the Effects of the Draft WE SPD

7.1 Background

7.1.1 The purpose of this stage of the SA is to evaluate the effects identified during the previous predictive analysis stage. Having identified and described the likely effects of the SPD in part 6, the evaluation stage involves:

- providing some assessment of likely scale and magnitude of the predicted effects;
- identifying whether there are any cumulative effects;
- identifying whether there are any synergistic effects;
- outlining possible mitigation measure that might be taken;
- providing clear recommendations on how the WE SPD might be better aligned with the 16 Sustainability Appraisal objectives.

7.1.2 Further explanation of the above stages:

- scale refers to the geographical scale that any likely impacts might affect;
- magnitude relates to the likely severity of an effect and the likelihood of the effect occurring.
- cumulative impacts – these arise, for instance, where several developments, individually each have insignificant effects but together have a significant effect; or where several individual effects of the SPD (e.g. noise, dust and visual) have a combined effect;
- synergistic effects interact to produce a total effect greater than the sum of the individual effects. Significant synergistic effects can occur when habitats, resources or human communities get close to capacity thresholds. For example a wildlife habitat can become progressively fragmented with limited effects on a particular species until the last fragmentation makes the area too small to support the species at all.
- mitigation – this is a key requirement of the SEA Directive – **Appendix 8** suggests ways in which mitigation of the predicted effects might be implemented. In most cases this is possible through simple alteration of the document being assessed to bring it more in-line with the SA objectives. Where this action is unlikely to fully mitigate the effects, technical mitigation measures might be required through the requirements of the planning and EIA processes. For example the EIA process might identify that a development is likely to have an adverse effect on a particular species. This effect could be mitigated by the provision of new habitat close to the development site.

7.2 Recommendations

7.2.1 Recommendations – the recommendations in **Appendix 8** set out the conclusions or results from the SA process. In effect these are the proposed directions for the redrafting of the document being assessed and provide the recommended ways in which the document can be revised to better accord with the SA objectives. This will create a more sustainable document in tune with the Sustainability Framework. For ease of reference a summary of the recommendations is set out below in **Table 2**:

Table 2: Summary Recommendations

SA Objective	Recommendation from the sustainability appraisal
SP1: To increase the level of participation in democratic processes (SEA: Population)	Include within the WE SPD a section on participation with links to District Authorities SCI's and include a section on how the SCI works and how members of the public and other interested stakeholders can participate in the WE SPD process. There should be some reference made to the history of consultation on the WE SPD to demonstrate how the document has been 'shaped'.
SP2: To improve access to services, facilities, the countryside and open spaces (SEA: Population)	Include a short section in the WE SPD guiding developers on access issues. The guidance should help developers understand the likely consequences of siting a wind energy development in the open countryside. Links should be made to the relationship to accessing the countryside and health and well-being and how this relates to achieving more sustainable wind energy developments.
SP3: To provide everyone with a decent home (SEA: Material Assets)	No direct recommendations relating to this objective. Housing falls outside the remit of the WE SPD.
SP4: To improve the level of skills, education and training (SEA: Population)	The WE SPD should include guidance on maximising the benefits to the local economy through improving education, skills and training both to schools, the wider community and the local workforce. Developers should be able to demonstrate some commitment to achieving this objective – there may be scope for this to be a requirement for granting planning permission in some instances though this may be difficult to implement – positive impacts on the local economy may be a planning consideration but not grounds enough for refusal. It should be made clear that whilst there will be a benefit to the Cumbrian economy through skills improvement and training programmes, developers will benefit by giving something back to the community. Links could also be made to economic and regeneration strategies and how developers might contribute to the aims of these.
SP5: To improve the health and sense of well-being of people (SEA: Human Health)	The WE SPD should include a section on the importance of well-being and how poorly planned, poorly sited and managed wind energy development might impact on this. Links should be made to health both physically in terms of possible construction impacts such as increased dust and pollution from vehicles but also mental health through maintaining people's well being and avoiding the impacts of noise pollution and visual disturbance/loss of amenity. The WE SPD already seeks to find the most appropriate sites for wind energy development but this is currently focussed on landscape issues.
SP6: To create vibrant, active, inclusive and open-minded communities with a strong sense local history (SEA: Population)	Communities close to wind farm developments will only remain open minded and inclusive places in which to live if the developers approach a wind energy project in the right manner. Excessive blight to an area from poorly planned, poorly sited and poorly managed wind energy developments will affect community spirit, cohesion leading to more divisive communities. Developers should be advised on how to avoid or minimise such impacts through careful and considerate liaison with town/village committees, interest groups and the wider public.
EN1: To protect and enhance biodiversity (SEA: Biodiversity, flora and fauna)	The WE SPD should contain a more specific section on biodiversity. This might take the form of a separate biodiversity chapter in which developers are encouraged to minimise their impact on biodiversity when designing, locating and constructing wind energy development. It may be appropriate to include maps which detail the most sensitive sites, habitats and species in the County. Objective EN1 also seeks some enhancement to biodiversity. Developers should be made aware that some mitigation measures may be required as a result of the EIA process.
EN2: To preserve, enhance and manage landscape quality and character for future generations (SEA: Landscape)	The WE SPD in its current form already provides robust guidance on landscape and visual impacts but more links could be made to the EIA process and landscape. Part 3 looks at the landscape and visual impacts and what's expected for the EIA but again this is centred around landscape/visual considerations of EIA.
EN3: To improve the quality of the built environment (SEA: Cultural Heritage)	Include a section on the built environment as part of the WE SPD, guiding developers on minimising the impact of their developments on archaeology and other built cultural assets in Cumbria. This might include maps detailing the areas most constrained by built heritage and advising developers on what will be required as part of the EIA process.
NR1: To improve local air quality and reduce greenhouse gas emissions (SEA: Air) (SEA: Climatic Factors)	Include a section on air quality and climate change. This section should make clear links to the requirements of the EIA process but there might also be scope to include a more contextual background section on wind energy and climate change and make links to regional targets for renewables and our responsibility to reduce greenhouse gases on the national and global scale. More specific guidance could be included on sustainable design and construction and sourcing local materials and minimising pollution from construction traffic and making links with local air quality and human health – sustainable construction/traffic planning.
NR2: To improve water quality and water resources (SEA: Water)	Broaden the scope of the WE SPD to take greater account of wind energy's relationship with the water environment. Links could be made with the requirements of the EIA process relating to water with a focus on the likely sources of pollution and demands on abstraction from the

	construction phases. Information and guidance could be in the form of illustrated maps (Environment Agency) detailing groundwater protection zones and areas of high pollution incidence and the most sensitive environments providing developers with knowledge of the most constrained areas.
NR3: To restore and protect land and soil (SEA: Soil)	Broaden the scope of the WE SPD to take account of soil pollution and resource issues. Developers should be guided and encouraged to take the necessary mitigation measures to avoid soil pollution incidents as a result of the manufacturing, construction and operational phases of wind farm development. Links can again be made to the requirements of the EIA process. It may be appropriate to provide developers with maps detailing where the most vulnerable environments are located in terms of soil degradation, PH levels and environments that include flora and fauna that are particularly sensitive to soil loss/pollution/damage.
NR4: To manage mineral resources sustainably and minimise waste (SEA: Air) (SEA: Climatic Factors) (SEA: Soil) (SEA: Water)	The WE SPD should take account of minerals and waste issues and guide developers on how to take a sustainable approach to the management of mineral resources and the minimisation of waste. Whilst energy from waste is outside the remit of the WE SPD, waste issues can still be addressed by guiding and encouraging developers to adopt practices that seek to minimise waste and use recycled material through the manufacturing, construction and operational phases of wind farm development. There are opportunities to make links to sustainable design and construction techniques, using local materials and reducing the demand for primary aggregates. The environmental, social and health benefits of this approach should be made clear and links made to the appropriate sections of the guidance. Links can also be made to the requirements of the EIA process.
EC1: To retain existing jobs and create new employment opportunities (SEA Population) (SEA Material Assets)	The WE SPD could make the links between the local economy and potential positive impacts of the wind energy sector much clearer. Links could be made to regeneration initiatives and strategies in place in Cumbria to help create a 'joined-up approach'. Developers should be encouraged to sustain the local economy through employing local contractors. Opportunities should be explored to link planning conditions/obligations for wind energy development consent and demonstrating a positive impact on the local economy through job creation.
EC2: To improve access to jobs (SEA Population) (SEA Material Assets)	Developers should be made aware of the need to diversify the Cumbrian economy and the role they can play in helping to achieve this. Renewable energy represents a new and growing industry that could increase the access to new employment opportunities in Cumbria. Developers should be encouraged through the WE SPD to improve the sustainability of their development by maximising their positive impacts on local economies. It should be made clear that this is part of 'committing to Cumbria' and creating good links and relationships with local communities.
EC3: To diversify and strengthen the local economy (SEA Population) (SEA Material Assets)	In order to influence this indicator a specific section could be included in the WE SPD guiding developers on maximising their influence on the local economy by employing local people both in designing and manufacturing and constructing/decommissioning wind energy development. There is an opportunity to guide developers to ensure that the variety and quality of employment in Cumbria's energy sector is improved. On top of this developers should be encouraged to support and help develop existing local businesses and companies.

8.0 Implementation

8.1 Proposed mitigation measures

8.1.1 The SEA Directive requires mitigation measures to be included in Stage B of the assessment process. Mitigation measures must prevent, reduce or offsets significant adverse effects of implementing the plan, policy or programme being implemented. Sound mitigation measures should include proactive avoidance of adverse effects as well as actions taken after the effects are noticed. Mitigation measures can also include recommendations for improving beneficial effects. Government guidance on carrying out sustainability appraisal states that mitigation can take a wide range of forms and approaches, including:

- changes to the plan, policy or programme as a whole, including bringing forward new options, or adding or deleting options;
- refining policies/guidance advice in order to improve the likelihood of beneficial effects and to minimise adverse effects, e.g. by strengthening policy criteria;

- technical measures to be applied during the implementation stage, e.g. buffer zones or application of design principles;
 - proposals in EIA's accompanying planning applications; and
 - proposals for changing other plans and programmes.
- 8.1.2 Clearly there is a wide range of possible mitigation techniques available. In the case of the WE SPD two main approaches are most appropriate and relevant. The proactive approach to mitigate adverse effects is through redrafting the WE SPD and broadening the remit of the document to cover wider sustainability issues other than landscape and visual effects. This provides an opportunity to guide developers on some of the areas that have been identified through the appraisal process as performing weakly against the SA objectives.
- 8.1.3 There is also a number of ways in which technical mitigation measures can be introduced to minimise adverse effects. The EIA process is a project level assessment that appraises the likely environmental effects of a development. The likely impacts across a range of areas and indicators are assessed and a report produced. Where impacts are identified mitigation measures will be required to be agreed before development can take place. The SPD could provide more links and information on the EIA process for developers which will inform the preparation of environmental statements.
- 8.1.4 **Appendix 8** includes mitigation measures set against each of the 16 SA objectives. Mitigation will link to the monitoring procedure to enable the success and effectiveness of the mitigation measures to be periodically checked and reviewed in accordance with the SEA Directive.

8.2 Monitoring the WE SPD

- 8.2.1 Monitoring is an integral part of the plan formulation and the SA process. Guidance suggests that decisions on what to monitor and how to do it should be made early in the process and not considered after the sustainability appraisal has been consulted on.
- 8.2.2 Monitoring allows the significant effects of plan implementation to be tested against those predicted in the sustainability appraisal. It helps to ensure that the problems which might arise during implementation can be identified and future predictions made more accurately. Monitoring can also help identify new indicators and develop new baseline data for future appraisals as plans are reviewed.
- 8.2.3 The SEA Directive (Article 10 (1)) specifically requires monitoring to identify unforeseen adverse effects and to enable appropriate remedial action to be taken. Monitoring systems are expected to be flexible. Most effects to be monitored will be taken from the list of predicted effects produced in this section of the overall SA. Other effects may not so easily be monitored through a rigid system such as effects that arise from an unforeseen event or from a change of circumstances. The need for flexibility is clear.
- 8.2.4 The Planning and Compulsory Purchase Act (2004) requires Local Planning Authorities to produce Annual Monitoring Reports (AMR) on progress in implementing their Local Development Documents (LDD). These AMRs should include the findings of SA monitoring.

8.2.5 The following example monitoring framework is proposed in accordance with Government Guidance on sustainability appraisals and monitoring. Monitoring procedures will be developed further later through Stage E of the SA process. The proposed monitoring framework set out below outlines a range of techniques and procedures for analysis. Stage E will refine the approach to be taken for monitoring the WE SPD and establish a working monitoring programme.

8.2.6 It should be noted that at the time of writing it is unclear where the responsibility for monitoring will lie. However, as the District Authorities will be adopting the SPD as part of their Local Development Frameworks and are responsible for the majority of wind energy planning decisions, the County Council is working closely with the Districts to determine the best mechanism for long term monitoring. Any monitoring framework will need to be agreed by the Wind Energy Officers Group in conjunction with the SEA monitoring group and others. An example monitoring framework is set out below.

8.3 Example Monitoring Framework

Step 1: Identifying what needs to be monitored

The first step is to consider exactly what needs to be monitored. Monitoring measures will be clearly linked to the SA process, for example:

- The objectives, targets and indicators that were developed for the SA (Stage A);
- Features of the baseline that will indicate the effects of the plan (Stage A);
- The likely significant effects that were identified during the effects assessment (Stage B); and
- The mitigation measures that were proposed to offset or reduce significant adverse effects (Stage B).

Monitoring procedures that could serve the monitoring requirements of several plans will be investigated to ensure information sharing is maximised and duplication of effort minimised. Monitoring will consider both beneficial and adverse effects. Effects relate to the plan as a whole, and monitoring will include consideration of secondary, cumulative and synergistic effects over and above the effects of the individual measures in the WE SPD, and effects over the lifespan of the guidance. Monitoring will focus on significant sustainability effects, e.g. those:

- that indicate a likely breach of international, national or local legislation, recognized guidelines or standards;
- that may give rise to irreversible damage, with a view to identifying trends before such damage is caused; and
- where there was uncertainty in the SA, and where monitoring would enable preventative or mitigation measures to be taken.

Step 2: What sort of information is required?

The type (e.g. quantitative or qualitative) and the level of detail of SA monitoring information required will depend on the characteristics and level of detail of the plan and its forecasted effects. SA monitoring involves measuring indicators which may establish a causal link between implementation of the plan and the likely significant effect being monitored. The monitoring framework may be established in a way that seeks to take account of external factors and focus upon the links between the plan implementation and the effect. Where it is difficult to establish these links it might be necessary to collect further information on plan output indicators.

It may be appropriate to undertake more contextual monitoring of social, environmental or economic change. This could involve measuring effects or aspects of sustainability that were not identified in the appraisal, or identifying changes in the broader social, environmental or economic context.

When selecting indicators to monitor, consideration will be given to the best techniques for analysis. Analysis could follow all or some of the techniques below:

- **Change in indicators:** The effects of plans can be gauged by examining patterns of change in the indicators and the extent to which related indicators have changed. This can be achieved through analysing groups of indicators together to create a profile of the issue being measured.
- **Baselines and predicted effects:** Changes in the direction of indicators can be measured against the baseline position and predicted effects documented.
- **Benchmarking:** Changes in the direction of indicators can also be measured against other comparable locations or receptors to establish whether similar effects are occurring. Benchmarking may help in the assessment of relative performance by taking into account external forces of change, which emphasises the value of qualitative data. This is best achieved by establishing a common set of core indicators.
- **Use of qualitative and quantitative information:** Monitoring of most indicators will be based on the collection of quantitative data, but there may also be a need to incorporate some qualitative information in the analysis to enrich understanding.
- **Interpretative commentaries:** One task of analysis is providing a considered interpretation of the results. This may be presented via appropriate explanations and commentaries within monitoring reports. The Planning and Compulsory Purchase Act requires AMRs to highlight areas where implementation is not occurring, state the reasons, and set out the actions needed to secure delivery. This could include mitigation of adverse effects.

Step 3: What are the existing sources of monitoring information?

Statutory monitoring under the Planning and Compulsory Purchase should focus on the implementation of a plan against predefined plan objectives, targets and indicators. This type of performance monitoring does not necessarily include sustainability effects, unless the RPB/LPA has developed sustainability performance indicators or sustainability best value indicators. But plan performance monitoring can be helpful when considered together with SA monitoring. Other existing monitoring is typically focussed on what is required by regulations and legal requirements, but may provide information which is useful either directly or with some degree of analysis or manipulation.

Wherever possible, existing monitoring arrangements will be used to obtain the required information identified in Step 2. Consideration will be given to such issues as:

- What are the existing monitoring arrangements for the plan, and does this provide any of the required information?
- What are the existing monitoring arrangements for other plans, programmes or projects within the authority, and is there scope for aggregating or disaggregating data to obtain any of the required information?
- Is any of the required information available from other sources, e.g. higher or lower level authorities or data sources used for establishing the sustainability baseline?
- What organisational arrangements are needed to deliver the monitoring?

Step 4: Are there any gaps in the existing information, and how can these be filled?

Additional information may be required to monitor those aspects selected in Step 1. Some ways in which the required information can be obtained in a cost-effective and efficient way include:

- incorporate SA monitoring into existing performance monitoring for plans;
- expand other existing monitoring systems to include additional parameters; and
- where applicable, enter into agreements with other authorities to standardize monitoring methods and share information.

Step 5: What should be done if adverse effects are found?

The SEA Directive does not require a plan to be modified if monitoring reveals adverse effects on the environment. However, SA monitoring is intended to enable mitigating activities to be taken, and action may be required either by the Responsible Authority or other bodies. It may be necessary to establish a mechanism or framework to identify if and when remedial action is needed in response to adverse effects, including:

- criteria or thresholds for remedial action (e.g. what are the social, environmental or economic conditions that would be regarded as undesirable or unacceptable).
- potential remedial actions that could be taken if a significant effect was identified (e.g. review aspects of the plan that are causing the effects and make amendments, develop mitigation measures).
- those responsible for taking the remedial action (e.g. another authority or agency may be responsible for taking the remedial action and may need to be consulted). Documentation of monitoring programmes in tabular form may be used, and might include the following information:
 - What needs to be monitored (effects, other trends)?
 - What sort of information is required (indicator)?
 - Where can the information be obtained (sources of information)?
 - Are there any gaps in existing information and how can these be resolved?
 - When should remedial action be considered?
 - What remedial action could be taken?

Step 6: Who is responsible for the various monitoring activities, when should these be carried out, and what is the appropriate format for presenting the monitoring results?

When documenting the monitoring strategy consider:

- the time, frequency and geographical extent of monitoring (e.g. link to timeframes for targets; and monitoring whether the effect is predicted to be short, medium or long-term);
- who is responsible for the different monitoring tasks, including the collection, processing and evaluation of social, environmental and economic information; and
- how to present the monitoring information with regard to its purpose and the expertise of those who will have to act upon the information (e.g. information may have to be presented in a form accessible to non-environmental specialists).
- A table might be a useful format for documenting how the monitoring process could be managed, and might include information on:
 - monitoring activity to be undertaken;
 - responsibility for undertaking the monitoring;
 - when the monitoring needs to be carried out (dates and frequency);

- how results should be presented and in what format; and
- status of monitoring and any problems encountered.

Reference	Sustainability Objectives	Sustainability framework: Guidance on making progress towards each objective
Social progress that recognises the needs of everyone		
SP1	To increase the level of participation in democratic processes	Does the guidance encourage and empower local people to become involved? Are all members of society able to participate fully in decision making processes? Does the guidance identify and set out how hard to reach groups will be involved? Will the guidance encourage local liaison committees to be set up with elected local representation? Does the guidance respect the needs of all communities and future generations?
SP2	To improve access to services, facilities, the countryside and open spaces	Does the guidance improve access and affordability for all to services, essential goods, facilities, including recycling facilities, education and employment opportunities (where possible within local communities using sustainable transport choices)? Does it help retain essential local facilities and ensure that physical access is suitable for those with a disability? Does the guidance promote and facilitate access to, and opportunities to enjoy, the countryside and natural green space?
SP3	To provide everyone with a decent home	Will the guidance help meet local housing need by ensuring that good quality, resource efficient, affordable housing with reduced environmental impact is available to all?
SP4	To improve the level of skills, education and training	Will the guidance deliver education and training which helps everyone develop the values, knowledge and skills necessary to enable them to live, act and work in society? Does the guidance recognise the need for people to adapt to economic change and retrain where necessary? Does the guidance enable people to live sustainable lifestyles?
SP5	To improve the health and sense of well-being of people	Do the guidance ensure all members of society have access to the health care that they require? Do they reduce health inequalities within society associated with income, lifestyle and diet? Does the guidance help create a healthy and safe working and living environment with low rates of crime and disorder and minimum disruption from wind energy development during construction phases and operation? Does the guidance help improve quality of life for all?
SP6	To create vibrant, active, inclusive and open-minded communities with a strong sense local history	Does the guidance promote a sense of community identity? Does it encourage social cohesion and help continue valued local traditions? Is recreational and cultural activity embracing the arts, heritage, the environment, dialect and sport promoted along with multicultural understanding, respect for all and equality of opportunity?

Effective protection of the environment		
EN1	To protect and enhance biodiversity	Does the guidance protect and conserve designated habitats and protected species? Will the plan ensure biodiversity sustainability by enhancing conditions whenever necessary to retain viability of the resource? Does the guidance minimise adverse impacts on species and habitats through human activities and development? Does the guidance ensure continuity of ecological frameworks such as river corridors, coastal habitats, uplands, woodlands and scrub to enable free passage of specific habitat dependent species? Will the guidance give effect to actions in the Cumbria BAP?
EN2	To preserve, enhance and manage landscape quality and character for future generations	Is local landscape quality, distinctiveness and character protected from unsympathetic development and changes in land management? Will the guidance protect areas of designated landscape value? Is the remoteness and tranquillity of landscapes maintained? Is the character and appearance of world heritage sites, designated archaeological sites, historic parks and gardens, battlefields and their settings protected? Are areas of high archaeological and historic landscape sensitivity protected? Will policies extend and sustain tree cover and hedgerows?
EN3	To improve the quality of the built environment	Does the guidance conserve features of historic and archaeological importance? Will guidance ensure that new development is of high quality, sympathetic to the character of the built environment, strengthen local distinctiveness, enhance the public realm and help create a sense of place? Will the guidance promote adaptive re-use of buildings, sustainable design, sustainable construction, the use of locally sourced materials and low impact operation? Will policies guide inappropriate development away from flood risk areas? Does the guidance ensure that where development in flood risk areas is permitted, the risks to people and property are mitigated? Will the plan reduce noise levels, light pollution, dust, and fly tipping?
Sustainable use and management of natural resources		
NR1	To improve local air quality and reduce greenhouse gas emissions	Will the guidance ensure that local air quality is not adversely affected by pollution from onsite activity and seek to improve it where necessary? Will the guidance limit or reduce the emission of greenhouse gases (including methane) and other air pollutants? Will the use of clean, low carbon energy efficient technologies be encouraged? Will the guidance maximise the use of energy from renewable resources? Will they reduce the need to travel especially by car, and switch goods from roads onto the rail network? Will the guidance introduce strategies to adapt to and mitigate other climate change impacts?
NR2	To improve water quality and water resources	Will the guidance help maintain and, where possible, improve the quality and quantity of all water resources? Will it minimise the risk of water pollution from minerals and waste sources? Will the guidance ensure sustainable drainage systems are widely used? Will the guidance lead to the effective management of demand for water, prevent stress on the natural environment and help water users adapt to the impacts of climate change?

NR3	To restore and protect land and soil	Will the guidance protect areas of designated geological value? Will the guidance encourage development on brown field sites, using sustainable remediation technology to treat contaminated soils on site? Will it minimise the loss of greenfield sites or areas of open space? Will the guidance prevent soil degradation, pollution of soil and the use of peat? Will the guidance ensure that sites are fully restored and blend sympathetically with the surrounding landscape?
NR4	To manage mineral resources sustainably and minimise waste	Will the guidance ensure a steady, sustainable flow of minerals and the efficient use of materials? Will the guidance protect mineral resources from sterilisation? Will the guidance minimise the extraction, transport and use of primary minerals and encourage the use of recycled material? Will the guidance minimise the amounts of industrial, commercial and household waste generated and landfilled and encourage increased re-use, recovery and recycling? Will it promote the use of energy recovered from waste? Will the guidance encourage the use of secondary and recycled materials? Will the guidance help raise awareness of the need for waste minimisation amongst consumers and industry? Will the guidance deliver sufficient waste management facilities?
Building a sustainable economy in which all can prosper		
EC1	To retain existing jobs and create new employment opportunities	Will the guidance increase the number, variety and quality of employment opportunities including those offered by tourism and social enterprise? Will the guidance support local wind energy companies and help local businesses develop export markets? Will the guidance help develop and retain a skilled workforce and graduates in Cumbria?
EC2	To improve access to jobs	Will the guidance increase access for all to a range of jobs through improved training, sustainable transport and communication links? Will the guidance lead to the location of new employment opportunities in areas of greatest need?
EC3	To diversify and strengthen the local economy	Will the guidance help create the right climate and infrastructure provision to encourage private sector investment? Will it encourage growth across all sectors? Will it stimulate the use of local companies, local materials, products and services and provide other forms of community benefit? Will it help increase the environmental performance of local companies and their products/services? Is innovation, entrepreneurship and diversification encouraged, particularly in rural areas? Does the guidance provide financial assistance? Will it help improve the competitiveness and productivity of the local economy? Does the guidance support research and development into environmental and other new key sector technologies including opportunities to recycle and re-use waste products?

Requirements of the SEA Directive

Preparation of an environmental report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and geographical scope of the plan or programme, are identified, described and evaluated. The information to be given is (Art. 5 and Annex I):
a) An outline of the contents, main objectives of the plan or programme, and relationship with other relevant plans and programmes;
b) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;
c) The environmental characteristics of areas likely to be significantly affected;
d) Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC;
e) The environmental protection objectives, established at international, Community or national level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation;
f) The likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors. (These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects);
g) The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme;
h) An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;
i) a description of measures envisaged concerning monitoring in accordance with Article 10;
j) a non-technical summary of the information provided under the above headings.
The report shall include the information that may reasonably be required taking into account current knowledge and methods of assessment, the contents and level of detail in the plan or programme, its stage in the decision-making process and the extent to which certain matters are more appropriately assessed at different levels in that process to avoid duplication of the assessment (Art. 5.2).
Consultation: <ul style="list-style-type: none"> • authorities with environmental responsibility, when deciding on the scope and level of detail of the information to be included in the environmental report (Art. 5.4). • authorities with environmental responsibility and the public shall be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan or programme and the accompanying environmental report before the adoption of the plan or programme (Art. 6.1, 6.2). • other EU Member States, where the implementation of the plan or programme is likely to have significant effects on the environment of that country (Art. 7).
Taking the environmental report and the results of the consultations into account in decision-making (Art. 8)

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
European PPPs		
EU Directive on the Conservation of Birds (79/409/EC).	The Directive and its amending acts are designed to protect 182 bird species living naturally in the wild, including their nests, eggs and habitats.	<p>The WE SPD will have to respect the Special Protection Areas designated as part of the Natura 2000 network and ensure minerals and waste operations do not take place there or in the immediate vicinity.</p> <p>The SA will need to include biodiversity as an essential part of the appraisal process.</p>
EU Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC).	This Directive is designed to protect some 253 habitat types, some 200 animal and 434 plant species.	<p>The WE SPD will need to ensure that development does not take place in or around Special Areas of Conservation set up as part of the Natura 2000 network.</p> <p>There are no additional implications for the SA.</p>
EU Noise Directive (2000/14/EC).	This Directive aims to control perceived noise levels in urban settings and in the open countryside arising from certain activities.	<p>The WE SPD will need to address noise arising from wind energy development management operations including transport and construction.</p> <p>The SA will need to deal with the prevention of noise pollution within its framework.</p>
Directive on Integrated Pollution Prevention and Control	The Directive deals with operating permits for polluting industrial and agricultural installations including those involving minerals and waste operations. It also sets out the minimum compliance requirements for inclusion in permits to enable compliance monitoring e.g. emission limit values for	<p>The WE SPD will need to ensure that wind energy development which employs best available techniques to minimise pollution.</p> <p>The SA framework will need to include objectives designed to protect air quality, soil and groundwater from pollution.</p>

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	certain pollutants.	
European Spatial Development Perspective (97/150/EC).	This Directive is tied to the EU aim of achieving Sustainable Development, particularly by economic and social cohesion.	<p>The WE SPD can manage wind energy development and help in the conservation and management of natural resources.</p> <p>The SA will need to take account of the effects on communities and the creation of local employment.</p>
Kyoto Climate Change Programme	This programme establishes a limit to greenhouse gas emissions. Member states are required to reduce emissions of a basket of 6 greenhouse gases by 8% by 2012.	<p>The WE SPD will need to address the issues of climate change and seek to maximise the reduction of greenhouse gases through its guidance to developers.</p> <p>The SA includes objectives for improving air quality and reducing greenhouse gases.</p>
Promotion of Electricity from Renewable Resources Directive (2001/77/EC).	This Directive establishes a framework to increase the share of green electricity, double renewable energy generation and reduce greenhouse gas emissions.	The WE SPD should seek to support this Directive by setting clear guidance to developers. By support this Directive a careful balance will need to be made between promoting wind energy and protecting the environment and communities.
EU Air Quality Framework Directives (1966/62/EC) and	These establish limit values for various pollutants (sulphur dioxide, nitrogen dioxide, nitrogen oxides, particulates and lead) and alert thresholds for concentrations in ambient air and that this information should be made available to the public.	<p>The WE SPD will need to include guidance which ensures that local air quality is not adversely affected by the construction phases of wind energy projects.</p> <p>The SA will need to include objectives on local air quality.</p>
EU Water Framework Directive (2000/60/EC).	This Directive seeks to protect inland coastal waters, transitional waters, coastal waters and groundwater. It also requires a more	The WE SPD will need to recognise that wind energy development and construction can impact on water quality and affect the management of catchment areas.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	integrated approach to the management of river catchments.	The SA will need to include objectives safeguarding water from pollution related to the construction of WE development.
European Biodiversity Strategy and action plan for the conservation of natural resources COM (98) 42 and Com (2001) 162 final	The Strategy aims to anticipate and prevent the causes of significant biodiversity loss as a means of reversing reduction trends and achieving satisfactory conservation status of endangered species. The action plan seeks to conserve species and habitats, reverse biodiversity losses and prevent biodiversity loss related to the management of water, soil, forests and wetlands.	<p>The WE SPD will need to include guidance which effectively protects biodiversity (both species and habitats) and which seek to exploit opportunities to enhance biodiversity.</p> <p>The SA will need to include robust objectives on biodiversity.</p>
Directive 1999/31/EC on the landfill of waste	The Directive seeks to prevent or reduce the adverse effects of landfill on the environment and in particular, on surface and groundwaters, soils, air and human health. This applies to landfilling of hazardous wastes, non hazardous and inert wastes. Clear waste treatment procedures and site licensing criteria are set out.	<p>The WE SPD will need to include guidance which gives a high degree of protection to the environment from landfill. This will apply in this case to the landfill of waste as a result of the construction process.</p> <p>The SA will need objectives which reflect this where landfill remains in operation.</p>
Framework Directive on waste disposal 75/442/EEC (amended 91/156/EEC, 91/692/EEC, 96/350/EC, and 96/59/EC)	The Framework Directive on Waste establishes community rules designed to protect human health and the environment from the harmful effects of waste collection, transport, treatment, storage and disposal. It encouraged resource recovery to conserve natural resources and introduced a licensing system for operators. Amending legislation	The Framework Directive on Waste and subsequent amending legislation gives a clear policy steer to ensure a high level of protection for people and the environment from waste management activity in Cumbria. European policy also points to conserving natural resources through resource recovery, recycling and re-use and waste minimisation. Guidance in the WE SPD will need to give effect to these objectives.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	strengthen policy on waste recovery; waste minimisation; use of clean technologies; recycling and re-use; reduced movement of waste; the need for waste management plans and tighter regulation of waste management companies.	The SA will need to test the WE SPD for environmental protection; protection of people's health; waste minimisation and resource recovery.
Directive on hazardous waste 91/689/EEC (amended Directive 94/31/EC)	This Directive seeks to facilitate the recovery and safe disposal of hazardous waste through the introduction of a licensing and recording regime for the segregation, control and management of hazardous waste.	<p>The WE SPD guidance will need to distinguish between hazardous waste and other wastes and ensure that appropriate minimisation and recovery techniques are employed. This will apply in this case to waste management activities as a part of the construction process.</p> <p>The SA should reflect the need for protection of the environment and people.</p>
EU Sustainable Development Strategy COM (2001) 264 final	The Strategy focuses European policy on tackling climate change and increasing the use of clean energy; addressing threats to public health; managing natural resources more responsibly; and improving the transport system and land-use management.	<p>The policy direction being taken by the EU has implications for the WE SPD in terms of reducing greenhouse gases, using natural resources sustainably, and protecting people from pollution.</p> <p>The SA objectives will need to balance, environmental concerns and economic activity in an integrated way.</p>
EU's 6 th Environmental Action Programme (2001-2010)	This defines the EU's environmental priorities and objectives. It supports the Sustainable Development Strategy. It focuses on climate change, biodiversity, environment and health and sustainable management of resources and wastes.	Implications for the WE SPD are: integration of environmental concerns into land use management policies; encouraging companies/developers to introduce EMAS and undertake environmental reporting. The WE SPD will need to reflect a higher level of concern about natural resource use, waste minimisation and soil quality and the extent of the soil resource. This will apply in this case to waste activities as a part of the construction process and well as

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
		some operational activities. The SA will need objectives which test for climate change, biodiversity, environmental protection, soil protection, waste minimisation, human health and the sustainable management of resources.
National PPPs		
Securing the Future: UK National Sustainable Development Strategy 2005	<p>This is a large complex strategy underpinned by concern for global issues and future generations. It consolidates the guiding principles of the previous strategy and expands these into a new integrated strategy. Five guiding principles form the basis for policy:</p> <ul style="list-style-type: none"> • Living within environmental limits • Ensuring a strong, healthy society • Achieving a sustainable economy • Promoting good governance • Using science soundly <p>Priority areas for immediate action are;</p> <ul style="list-style-type: none"> • Sustainable consumption and production • Climate change and energy • Natural resource protection and environmental enhancement • Sustainable communities 	<p>The Strategy's principles of living within environmental limits and achieving a strong economy have implications for the WE SPD as does good governance which promotes public involvement in decisions affecting their quality of life.</p> <p>All 4 priority areas need to be reflected in the SA objectives.</p>
UK Climate Change programme	Following Kyoto, the Government agreed to cut greenhouse gas emissions by 12.5% no later than 2012. The UK CCP takes this	This has implications for the WE SPD which will need to encourage energy efficiency in development proposals and reduced heavy goods transport from day to day activity to

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	further by introducing domestic target of 20% reduction in carbon dioxide emissions by 2010. This will involve all sectors of the economy contributing to energy efficiency and developing and using environmental technologies. Grant aid has been made available to stimulate and supplement private sector involvement.	<p>help improve local air quality and reduce greenhouse gas emissions.</p> <p>This is also an opportunity for the WE SPD to help promote a more sustainable low carbon economy.</p> <p>The SA will need to fully reflect the importance of reducing greenhouse gas emissions from the construction phase, site operations and transport.</p>
Draft vision for the natural environment	This draft vision being produced by Defra signals policy direction on the natural environment. It is clear about the need for clean air and water, productive soils, a stable climate, natural breakdown of waste, a high quality local environment, the value of biodiversity and designated landscapes.	<p>This strongly suggests that the WE SPD will need to build in a high degree of environmental protection with the emphasis on material recovery and re-use with the extractive industries more closely regulated to align with changing environmental values.</p> <p>The SA will need to anticipate and reflect all of these aspects of Defra's vision for the natural environment.</p>
Working with the Grain of Nature: a biodiversity strategy for England 2002	This aims to embed biodiversity considerations into all the main sectors of public policy working (as the title suggests) with the grain of nature rather than against it.	<p>The WE SPD will need to seek to protect biodiversity and minimise any impacts on biodiversity from wind energy development.</p> <p>The SA will need to include an objective on the protection and enhancement of biodiversity.</p>
Ramsar sites in England: a policy statement	This sets out the Government's policies for the protection and management of Ramsar sites in England. It provides a level of protection which permits development within Ramsar sites in only the rarest of circumstances and makes it clear that if consent is given, lost wetland interests will	The WE SPD will need to respond by directing development away from Ramsar sites. Wetlands are fragile ecosystems and susceptible to hydrological change on and off site. For this reason potential wind energy developers will need to avoid wetland areas. All terrestrial areas within Ramsar sites are SSSI's and there is a duty to further the conservation and enhancement of these sites – this should be reflected in

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	have to be replaced by restoring and recreating habitats.	the SPD. The SA framework will need to incorporate objectives which support the protection of wetland habitats and species.
A new focus for England's Woodlands: a forestry strategy for England 1998	This sets out policies responding to climate change, reduced domestic oil gas and coal production, and aging energy distribution networks. Policy direction points to a low carbon economy.	Whilst this strategy focuses on biomass as a renewable fuel source there are still implications for the WE SPD. This includes the impact of wind energy development on woodland areas as a result of construction works. The SA framework will need to take account of the potential impacts on woodlands.
The first soil action plan for England 2004-2006.	This is aimed at policy-makers, planners and industry whose influence touches on construction, minerals extraction, agriculture, forestry, and nature conservation, cultural heritage and landscape conservation. It aims to protect and improve the management of England's soils.	The key points for the WE SPD are: protecting soils through the planning system from contamination; recognising that soils house biodiversity; and promoting recycled material for site restoration. This will have significant implications for the construction, management and decommissioning of wind energy developments. The SA framework will need to take account of the potential impacts on woodlands.
The Energy White Paper 2003	This sets out policies responding to climate change, reduced domestic oil gas and coal production, and aging energy distribution networks. Policy direction points to a low carbon economy with renewable energy technologies helping the UK to produce 10% of its electricity from renewable sources by 2010 – wind is expected to play a significant role in this.	Implications for the WE SPD include encouraging energy wind. Supporting policies relate to reducing carbon emissions, and this will have implications for the construction phases. The SA Framework will need to measure the SPDs contribution to reducing the impact of climate change.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
Air Quality Strategy	This sets standards, objectives and targets for the 8 main air pollutants, amended to include polycyclic aromatic hydrocarbons and tougher targets for particles, benzene and carbon monoxide. Overall the strategy aims to improve air quality and reduce death and ill health amongst people in urban areas and those who live near industrial sites.	<p>The WE SPD should look to manage air quality and reduce emissions during the construction phases.</p> <p>The SA will need to include an objective on improving air quality.</p>
The Future of Transport 2004	The Strategy extends the existing 10 year plan on transport to 2014 and scans ahead to 2030. It aims to facilitate personal mobility while minimising the impacts on the environment and other people, including future generations. It also aims to provide transport networks to support the economy. Sustainable freight transport, a robust approach to protecting the environment generally and reducing environmental impacts of transport all feature strongly.	<p>The WE SPD will need to take account of transport impacts of wind energy development. Local communities should be protected from potential negative effects of road noise, dust, vibration, poor air quality and risk of accidents. This will apply to the construction phases as well as normal operations of sites</p> <p>The SA will need to include sustainable transport objectives which support reduced lorry movement and reduced emissions and better quality of life for residents living near sites.</p>
The Waste Strategy 2004 (plus recent amendments)	Policy direction can be summarised as: reducing the growth in household, industrial and commercial waste; recovering more value from waste through higher levels of recycling, composting and energy recovery; developing markets for recycled and secondary materials; and reduced use of landfill. Overall the aim is to utilise waste in a way that improves national productivity and contributes to sustainable development and a	<p>The WE SPD will need to accord with national policy on waste minimisation, recovery and recycling of both industrial and commercial wastes. Of most relevance will be the need to address the use of recycled aggregates and building materials during the construction phases as well as links to manufacturers practices when designing a building turbines.</p> <p>The SA will need to include specific objectives on sustainable waste management.</p>

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	cleaner environment.	
The Historic Environment: A Force for the Future 2001.	The historic environment is fragile and not renewable. Government policy is developing along the lines of utilising the historic environment as a learning resource, making it accessible to everyone, maximising its economic potential while minimising damage and preserving it for future generations.	<p>The main issues arising for the WE SPD is one of protection, ensuring that wind energy development planning permissions do not allow the historic environment or its immediate setting in the landscape to be damaged or compromised.</p> <p>The SA needs to make provision for the protection of the historic environment in its sustainability objectives.</p>
Wildlife and Countryside Act 1981 (as amended)	This sets out the law on the protection of birds, wild animals, wild plants, and gives effect to many international conventions and European Directives. The Act provides for the notification and protection and management of SSSI's (by reason of their flora, fauna, geological or physiographical features). The Act also requires authorities to maintain definitive maps of footpaths.	<p>The WE SPD should make provision for site environmental impact assessment before granting planning permission in order to help protect biodiversity and designated sites and footpaths from minerals and waste development.</p> <p>The SA will need to contain objectives on biodiversity and access to the countryside.</p>
Countryside and Rights of Way Act 2000		<p>The WE SPD will need to provide for the protection of biodiversity, SSSI's and AONB's and help deliver Government aims.</p> <p>No additional requirements placed on the SA.</p>
PPS 1 Delivering Sustainable Development	This sets out the key principles of national planning policy whereby sustainable development has been integrated with other principles to facilitate and promote	The WE SPD should be underpinned by sustainable development objectives. The WE SPD should help to deliver prudent use of natural resources, protection and enhancement of the environment, social progress and

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	sustainable and inclusive patterns of urban and rural development.	<p>economic regeneration. The WE SPD will need clear aims and objectives to deliver a sustainable approach to planning for wind energy develop.</p> <p>The SA will need to include objectives which pursue sustainable development in an integrated way.</p>
PPS 7 Sustainable Development in Rural Areas	Policies apply to rural areas, including settlements as well as the undeveloped countryside. The policies aim to improve quality of life and the quality of the environment by promoting inter alia a more sustainable pattern of development and a diverse agricultural sector.	<p>The WE SPD will need to help deliver sustainable development by supporting economic activity and employment creation at suitable sites, and protect the quality and character of the wider countryside (designated areas, landscapes, geological and historic features and biodiversity).</p> <p>The SA will need to include objectives reflecting the quality and character of the countryside and the need for economic regeneration in rural areas.</p>
PPS 9 Biodiversity and Geological Conservation	The guidance sets out national planning policies on the protection and enhancement of biodiversity and geological diversity as part of the Government's wider objective of delivering a more sustainable society.	<p>The WE SPD should encourage developers to consider and protect biodiversity and geological diversity. This should integrate with other land use development policies in a way which is consistent with international, national, regional and local priorities and objectives on biodiversity and geological diversity. The WE SPD will need to identify important sites.</p> <p>The SA will need to include objectives which protect and enhance biodiversity and geological diversity.</p>
PPS 11 Regional Spatial strategies	This gives guidance on creating a spatial framework to inform the preparation of local development documents which will in time	The WE SPD guidance should broadly reflect the objectives of the Regional Spatial Strategy.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	reflect aspects of local development documents as they evolve. The RSS will contribute to sustainable development and deal with a range of policy themes including, housing, environment, biodiversity, infrastructure, minerals extraction and waste treatment and disposal. Energy will be dealt with in a separate strategy though there will be interrelated elements of the RSS relevant to the WE SPD. Regional and Local development documents have to broadly conform to each other.	The SA objectives should tie in with regional sustainability objectives.
PPS 12 Local Development Frameworks	LDF's have been introduced to enable the planning system to allow plans to be revised more quickly; encourage wider public involvement in the planning process; allow key decisions to be taken earlier in the plan-making process; ensure that local plans contribute to sustainable development by undergoing a sustainability appraisal; and ensure that all plans are soundly based and that policies are backed by credible evidence.	SPDs form part of the LDF. The WE SPD will be drawn up in accordance with PPS 12 and will undergo a sustainability appraisal which as well as assessing the SPDs contribution to sustainable development will identify a range of baseline information and appropriate indicators to allow on-going monitoring of the evidence base.
PPG 13 Transport	This sets out the planning policies necessary to deliver an integrated transport policy which aims to promote more sustainable transport choices for people and for moving freight; promote access to jobs, services and facilities by public transport, walking and cycling; and reduce the need to travel by car.	The WE SPD will need to reflect Government policy on sustainable transport. Whilst there is no direct relationship between transport and the operation of wind energy site there will be transport implications as a result of the construction phases that will need to be considered. The SA will need to contain objectives that relate to

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
		potential impacts of transport.
PPG 15 Planning and the Historic Environment	PPG 15 recognises the value and the need to protect the physical remains of our past which contributes to our culture and sense of identity. The policies recognise the contribution the historic environment can make to the local economy and urge authorities to incorporate a commitment to stewardship of the historic environment.	<p>The WE SPD will need to incorporate guidance to protect the best of the historic environment from the impacts of development (noise, dust, visual intrusion, vibration, transport emissions etc.).</p> <p>The SA needs to include stewardship of the historic environment in its objectives.</p>
PPG 16 Archaeology	National policy regards archaeological remains a finite, often fragile, non-renewable resource to be managed for the benefit of society and not needlessly or thoughtlessly destroyed.	<p>The WE SPD will need to provide guidance on protecting nationally important archaeological remains and their settings from development and include policies requiring an assessment of the merits of all archaeological evidence and take this into account when determining applications relating to minerals and waste.</p> <p>The SA framework already incorporates protection of the historic environment.</p>
PPG 21 Tourism	PPG 21 outlines the economic significance of tourism, its environmental impact, and its importance in land-use planning. It explains how the needs of tourism should be dealt with in development plans and in development control. It considers the scale and character of tourist activity, its economic significance, and future trends in tourism. PPG 21 acknowledges the need for supplementary planning guidance on certain aspects but makes it clear that policy	<p>The WE SPD will need to consider the potential impacts of the wind energy development on the tourist industry in Cumbria.</p> <p>The SA framework should consider the impact of wind energy development on the economic objectives EC 1, 2 and 3 of which tourism relates.</p>

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	direction for tourism should be set out in the statutory development plan.	
PPS 22 Renewable Energy	National policy is to reduce carbon emissions by 60% by 2050 and generate 10% of UK's electricity from renewables by 2010. Wind energy is regarded as a key element of how this will be achieved.	<p>The WE SPD needs to include policies promoting renewable energy, particularly harnessing energy from waste, irrespective of the scale and output of the development. Policies should also encourage greater public awareness and acceptance of the possibilities afforded by waste.</p> <p>The SA will need to include objectives on reducing carbon emissions and promoting renewable energy from waste streams.</p>
PPS 23 Planning and Pollution Control	Policy seeks to control and minimise pollution as part of a wider strategy to promote sustainable development. The precautionary principle underpins policy and its use is intended to protect people, livestock, biodiversity and the environment, including the built environment, from pollution, particularly where the risk cannot be assessed with confidence.	<p>The WE SPD will need to build its guidance around the precautionary principle.</p> <p>The SA will need to incorporate objectives on protecting local air quality and other environmental components as well as nearby residents, open countryside, flora and fauna by minimising pollution from wind energy development proposals.</p>
PPG 24 Planning and Noise Policy is to separate noise sensitive development from roads, rail and some types of industrial development all of which generate noise and where this is not possible to	The WE SPD will need to include guidance that is designed to encourage noise emitting development to be located away from residential areas and also remote tranquil areas of designated countryside. Additional policies will also be required on reducing and mitigating noise pollution from wind energy	The SA will need to incorporate noise avoidance in its objectives on local environmental quality.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
reduce and mitigate noise levels through planning conditions.	activity.	
Landscape Character Assessment Guidance for England and Scotland' (2002)	<p>"Landscape Character Assessment - Guidance for England and Scotland" was published in April 2002 by the Countryside Agency and Scottish Natural Heritage.</p> <p>The guidance provides advice on Landscape Character Assessment. Landscape Character Assessment is an important tool for all those involved in influencing the landscape. The guidance reflects how methods and techniques for Landscape Character Assessment have developed in recent years and builds upon interim guidance which was the subject of consultation in 1999. The guidance has been prepared for England and Scotland, although aspects might have relevance to other parts of the British Isles.</p>	<p>The WE SPD is centred around landscape and visual impacts. There are no additional matters raised by this document to concern the formulation of the WE SPD outside those raised by the Cumbria Landscape Strategy and Character Assessments.</p> <p>The SA will need to take account of landscape impacts.</p>
Regional PPPs		
Regional Economic Strategy 2003	The RES focuses on business development, regeneration, skills and employment, infrastructure and image of the NW Region. Underpinning the Strategy is the need for sustainable development, improved quality of life, equality and diversity and partnership	The WE SPD guidance needs to respond by helping to create a framework within which investment and economic growth can take place, creating jobs particularly in rural areas, in a way which protects and enhances the natural environment and ensures that natural resources are used prudently.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	working with delivery at the appropriate level.	The SA framework needs to include objectives on regeneration, jobs creation, skills and training, sustainable management of natural resources, protection of the environment and biodiversity and social inclusion and equality.
Regional Economic Strategy Consultation Draft 2005	New emerging, evidence based regional economic strategy seeks to integrate social, environmental and urban rural issues into each component part of the Strategy (business, skills, regeneration, infrastructure and quality of life). The draft Strategy aims to transform the region through sustainable economic development into a competitive, high added value, knowledge based inclusive economy by raising business output and productivity, creating more and better jobs, ensuring people have good skills and access to work, helping disadvantaged communities and reducing household income variations.	This Strategy poses no new or additional implications for the WE SPD or indeed the SA since the policy implications are similar to those identified above and therefore the implications for the SA are also the same.
Regional Planning Guidance (RPG 13) 2003	RPG provides a regional spatial strategy within which development and local transport plans can be prepared. It also informs other strategies. RPG's objectives are: greater economic competitiveness and growth coupled with social progress; urban renaissance; the revival of coastal resorts; expanding rural economies; active management of environmental and cultural assets; a better regional image; and an	RPG is being superseded by RSS but key indicators remain relating to the sustainable management of environmental resources (the historic environment, landscape character, biodiversity, water resources and air quality). Implications for the SA are a range of objectives covering sustainable transport, sustainable production and waste minimisation with environmental protection and enhancement as well as economic regeneration.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	accessible region with an efficient, integrated transport system.	
Regional Spatial Strategy Draft Revisions 2005	<p>The draft RSS incorporates the Regional Transport Strategy and identifies the scale and distribution of housing development and priorities for environment, transport, infrastructure, economic development, agriculture, minerals and waste treatment and disposal.</p> <p>It informs and is influenced by other plans and strategies including national and regional sustainable development strategies.</p>	<p>LDF's are required to be in conformity with RSS and therefore the WE SPD guidance will need to reflect relevant policies contained in the RSS. More detailed regional policies relating to energy are covered in the Regional Sustainable Energy Strategy. To ensure conformity sustainable development will need to inform the WE SPD guidance and produce high standards of environmental protection and enhancement.</p> <p>The SA will need to reflect the Region's sustainable development priorities on sustainable transport and sustainable production and consumption, biodiversity and landscapes, climate change, healthy communities and enterprise and innovation outlined above.</p>
Action for Sustainability 2004	<p>The regional sustainability framework seeks to influence other strategies to produce sustainable outcomes. It aims to bring about sustainable transport and access; sustainable production and consumption; social equity; high quality biodiversity and landscape; active citizenship; and lifelong learning. It also supports cultural distinctiveness, healthy communities and enterprise and innovation while taking care that all policy objectives include action to mitigate and adapt to climate change.</p>	<p>The WE SDP will need to contribute to sustainable transport, sustainable production and consumption, biodiversity and landscape, enterprise and innovation while bringing about policy outcomes which do not accelerate climate change.</p> <p>The SA framework will need to contain a range of objectives which broadly conform with those contained in Action for Sustainability.</p>
Regional Waste Strategy 2004	Aims to contribute to sustainable	The WE SPD guidance will need to be aware of waste

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	development in the Region by encouraging waste management systems that will reduce waste generation, lessen the environmental impacts of waste production and improve resource efficiency. It also aims to stimulate investment and maximise associated economic opportunities.	<p>minimisation especially with regards to the construction phases of wind energy development..</p> <p>The SA will need to include objectives on waste minimisation.</p>
Regional Sustainable Energy Strategy consultation draft 2005	The Strategy focuses on reducing energy use, increasing use of renewable energy and combined heat and power technologies. It aims to establish a policy framework which integrates sustainable energy into planning and development control, new construction, refurbishment work and energy use in the home and by organisations and companies. It also sets targets for renewable energy and energy efficiency based CO2 reductions.	<p>The WE SPD policies will need to facilitate energy from renewables by providing a clear framework of guidance for potential wind energy developers.</p> <p>The SA will need objectives on climate change and renewable energy.</p>
Local PPPs		
Cumbria and Lake District Joint Structure Plan 2001-2016 (Modification 2005)	The JSP guides land use in Cumbria and provides a framework for local plan making at District level outside the Lake District National Park. A major policy theme is sustainable development that seeks to protect the environment, ensure prudent use of natural resources and maintain social progress and economic growth.	<p>The WE SPD will need to contain guidance which promotes sustainable development with particular emphasis on environmental protection, sustainable use of natural resources without stifling social progress and economic growth.</p> <p>The SPD will need to be consistent with other JSP policies protecting local communities, the local environment and local transport infrastructure with policies requiring high standards of aftercare and restoration.</p>

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
		The SA will need to include objectives on the sustainable use of natural resources and site remediation. Other objectives on biodiversity and landscape and quality of life will need to be included too.
Cumbria's Sub Regional Spatial Strategy 2004 to 2024	This strategy differs markedly from the JSP. It complements Sustainable Cumbria the strategy for securing economic growth, social progress and environmental protection. It provides a spatial planning framework to enable actions to achieve these broad aims in specific locations. It sets out an agreed list of priority measures to reduce dependency on towns outside Cumbria for jobs and services; to increase the complementary nature of key towns; and to develop and maintain high quality transport networks.	<p>It is not clear how the WE SPD should respond to what is in effect more of an aspirational document more suited to lobbying than land-use planning. The key messages that come out of the strategy are aimed at quality of life and economic growth in particular areas. Nonetheless it does seek to protect areas of nature conservation and landscape importance, historic sites and parks and gardens along with air quality and water quality. The WE SPD will need to be aware of these policy and incorporate them.</p> <p>The SA can best respond by having a comprehensive set of objectives which cover social and economic progress within a framework of environmental protection and sustainable use of resources. It also proposes a cost benefit approach to planning decisions and calls for a range of impact assessments to facilitate decision-making. The SA framework needs to include a full range of objectives covering social progress, sustainable use of natural materials, environmental protection and regeneration.</p>
Sustainable Cumbria 2004 to 2024	This is a strategy for growth and progress in Cumbria with 9 priority areas and 7 cross cutting themes against which partner	Key policy signals for the WE SPD include sustainable development coupled with a number of locational foci aimed at creating wealth and regenerating local economies through

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	organisations are expected to assess their policies and programmes. The overarching priority is to create sustainable communities and promote social, economic and environmental well-being in Barrow and West Cumbria, Carlisle, the Lake District National Park; other priorities include improving the tourism experience in Cumbria, improving strategic communications, creating wealth and a diversified economy, rural regeneration and resolving housing market failures.	<p>various measures.</p> <p>The WE SPD can best respond by having aiming to meet Cumbria's sustainability objectives where possible. This will ensure that the WE SPD contributes as fully as practicable to a more sustainable society.</p> <p>There are no additional implications for the SA framework which comprehensively covers these issues.</p>
Provisional (2005) Local Transport Plan 2006 -2011	The LTP covers all of Cumbria and provides a framework for the delivery of transport by all transport organisations operating in Cumbria. The LTP aims to: provide an integrated transport network that supports the economy; enable access to jobs and services; reduce road casualties; contribute to the quality of the built and natural environments; improve public health; make appropriate use of existing infrastructure; and enable sustainable access to culture, heritage and the countryside.	<p>The WE SPD will need to respond by seeking to prevent any significant increases in road transport of bulk materials during construction phases of wind energy development. In this way the WE SPD can help contribute to a number of LTP core objectives.</p> <p>The SA framework already embraces all the LTP objectives on access to services and jobs, on public health, the economy, the environment, on access to the countryside and on reducing road freight shipments.</p>
Allerdale Local Plan 1996-2006	The Local Plan provides aims to ensure that 'new development is broadly sustainable in terms of global impact, natural resources and local environmental quality'. Development which is likely to cause unacceptable harm	The WE SPD will need to respond by adopting an equally positive approach to sustainability and tailoring its policies to respect the Local Plan's approach to protecting designated sites; controlling inappropriately located wind energy planning applications; protecting open space from

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	<p>will be resisted. Key principles guiding the plan are that the local economy will be promoted in a sustainable way and that the natural environment will be protected and enhanced. More detailed policies relate to the control of environmental pollution; avoiding increased movement of heavy lorries to and from sites; avoiding greenfield development; protecting quality agricultural land from development; reclamation of derelict sites; resisting development which would adversely affect sites designated for either landscape quality or biodiversity and protecting open spaces from development.</p>	<p>development and reducing lorry movements.</p> <p>The SA will need to include a comprehensive range of objectives which support environmental aims and encourage economic and social progress.</p>
Barrow in Furness Local Plan review 1996-2006	<p>The Plan sets out policies guiding the development and use of land. The Plan has a strong environmental protection core designed to enhance the Plan area's essential character and main environmental assets. Within this strategic context 4 guiding principles operate: regeneration through sustainable development; protecting and improving the local environment; providing a balanced supply of housing and developing as a sub regional centre for leisure and shopping. Proposals which are likely to damage environmental interests through pollution will not be permitted. The Proposals</p>	<p>Broadly the implications for the WE SPD have already been identified from the previous local plan. The key policy influences to be taken on board are protection of the natural environment and its various components.</p> <p>There are no additional implications for the SA.</p>

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	Map sets out areas of risk and protection relating to groundwater and county landscapes. Policies also set high standards of landscaping for new development and seek to avoid loss of tree cover and sites of historical or archaeological importance. Biodiversity is also given policy protection.	
Eden Local Plan 1996-2006	The Local plan is based on 7 principles: promoting sustainable development in the management and use of resources; protecting against inappropriate development particularly in areas of historic, cultural, landscape, nature conservation value; balancing development against the amenity of settlements and the countryside; Ensuing sufficient land is made available to meet the needs of communities; to promote viability of local communities; to promote access to jobs, homes and services; and to promote energy efficiency.	The broad policy influences identified in other district plans apply here too. There are therefore no additional implications for the WE SPD or indeed the SA.
Copeland Local Plan 2001-2016 2 nd Deposit version April 2005	The Local Plan will when adopted, set out the council's policies and proposals for the future development and use of land, improvements to the physical environment and the management of traffic. The Plan aims to: secure a stable and balanced population; improve public health, safety and quality of life; protect and	Additional influences on economic regeneration and community participation add to a comprehensive suite of policies pursuing environmental protection and sustainable development. There are no additional implications for the SA.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	<p>enhance landscapes, habitats and the built and natural environments; make the most effective use of existing buildings and infrastructure, previously developed land and natural resources; and promote economic regeneration.</p> <p>A number of more detailed objectives exist on: increasing community participation; protecting and enhancing landscapes, biodiversity and the historic environment; protecting and improving ground and surface waters and ensuring air quality is not adversely affected by development.</p>	
Carlisle Local Plan 2001-2016 Redeposit Draft August 2005.	<p>This is a Local Plan prepared under the transitional regulations. It sets out the spatial strategy and detailed policies for the control of development in the area. A number of supplementary planning documents are being developed to provide more detail on policies. It is likely to be adopted in June 2006. Economic prosperity and environmental sustainability form the key principles at the heart of the Local Plan. Policies seek to conserve scenic beauty, natural resources and the quality of the built environment from inappropriate development. Designated sites (wildlife and archaeology) and landscapes are given protection from development. It seeks to protect the open countryside, including</p>	No additional implications for either the WE SPD or the SA.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	high quality agricultural land, from development that need not be there. It also aims to promote environmental protection and enhancement, (public open space, wildlife, historic environment, groundwater and surface waters). Other policies exist on preventing pollution and to encourage rail freight.	
South Lakeland Local Plan 2006 amended by Composite Plan 2004.	The Plan contains policies and proposals to guide development within the local authority area. The plan will be replaced during 2006/07 by a Local Development Framework. Work has begun on this. The most relevant policy area is environment and conservation. The District has quality natural and built environments, important nature conservation interests, high quality landscapes and a historic legacy. Plan policies seek to protect designated landscapes and less distinguished open countryside with important landscape qualities. Other policies seek to protect a high quality agricultural land, prevent light pollution from external lights, protect designated wildlife sites and habitats, the historic environment, the freshwater resource, control pollution and reduce derelict land.	No additional implications for either the WE SPD or indeed the SA.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
Cumbria Biodiversity Action Plan 2001	<p>The objectives of the CBAP are:</p> <ul style="list-style-type: none"> To implement national biodiversity targets at the local level. To address local priorities not identified in the UK Biodiversity Action Plan. To engender greater awareness and understanding of Cumbria's biodiversity and wider participation in its conservation. <p>The CBAP introduces a number of specific species and habitat actions plans to focus the protection and conservation efforts in the county on the most sensitive flora and fauna and environments.</p>	<p>The WE SPD will need to seek to protect biodiversity and minimise any impacts on biodiversity from wind energy development.</p> <p>The SA will need to include an objective on the protection and enhancement of biodiversity.</p>
Cumbria Wind Energy Supplementary Planning Guidance (SPG) 1997	<p>This SPG is in the process of being replaced by the Cumbria Wind Energy Supplementary Planning Document (SPD) 2006.</p> <p>This SPG was prepared to provide local planning authorities and developers with additional guidance on wind energy development in Cumbria. The guidance is focussed on landscape and visual impacts leaving the development itself to guide developers on matters such as biodiversity and noise.</p>	<p>The WE SPD has been informed by this preceding guidance document and seeks to reinforce and develop the guidance to provide more robust guidance on landscape and visual matters.</p> <p>No additional implications for the SA.</p>
Cumbria Landscape Classification Study (1995)	This study has been superseded by the Cumbria Joint Structure Plan Technical Paper 5 – Landscape Character.	The WE SPD has been informed by this study during its formulation.

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	<p>The Landscape Classification study provides a classification of landscape types across Cumbria using a methodology provided by the Countryside Commission. A number of factors go towards deciding what areas fall under which classification such as amount of built development, vegetation type, topography and how heavily managed each area is. 13 discrete areas are identified each with a consistent character.</p>	<p>The SA will need to take account of landscape impacts.</p>
Cumbria Landscape Strategy	<p>The main objective of this strategy is to manage changes in the landscape to satisfy economic and other aspirations in a manner which leaves distinctive and high quality landscapes for the benefit of future generations. The strategy sets out key characteristics of the Cumbrian landscape, recent impacts of changes on the landscape, a management strategy and more detailed guidance on particular features and landscapes. The strategy covers all of Cumbria except the National Park but does include the small part of the Yorkshire Dales National Park that falls within the County boundary.</p>	<p>The WE SPD has been informed by this study during its formulation.</p> <p>The SA will need to take account of landscape impacts.</p>
Cumbria Joint Structure Plan Technical Paper 5 – Landscape	<p>This technical paper aims to provide a clear understanding of Landscape Character and</p>	<p>The WE SPD has been informed by this study during its formulation.</p>

Review of Relevant Policies, Plans and Programmes (PPPs)

Relevant Plan or Programme Identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
Character	<p>how it has been defined in Cumbria. It updates and rationalises two previous publications, the Assessment of County Landscapes Technical Paper No 4 (published in July 1992) and the Cumbria Landscape Classification (published in October 1995).</p> <p>This technical paper notes that the character of upland and coastal areas of the County are particularly vulnerable to change resulting from the introduction of wind energy developments.</p>	<p>The SA will need to take account of landscape impacts.</p>
Cumbria Joint Structure Plan Technical Paper 6 – Renewable Energy	<p>Technical Paper 6 identifies a number of areas within Cumbria where onshore wind energy developments could be located in order to meet the County's contribution towards the Government's national renewable energy targets. Such areas have been identified by using a sieving process which, from a map showing all suitable areas in terms of wind resource, then excludes areas protected by statutory and non-statutory designations (such as National Park, Area of Outstanding Natural Beauty, World Heritage Site etc). It then refines the information to look at factors such as the potential for 'cumulative' impact i.e. the landscape becoming to a greater or lesser degree a 'wind energy' landscape and on the likely</p>	<p>The WE SPD has been informed by this study during its formulation.</p> <p>The SA will need to take account of energy/climate change.</p>

Review of Relevant Policies, Plans and Programmes (PPPs)

identified	Brief overview and outline of policy	Issues arising for the Wind Energy Supplementary Planning Document (WE SPD) and Sustainability Appraisal (SA)
	environmental impacts of developing particular sites.	

Social
Pressure for housing pushing prices up – implications for housing to meet local needs and affordability of housing (S. Lakeland, Eden & LDNP)
Second homes/holiday lets and inward migration by retired people adds to this pressure (S. Lakeland, Eden & LDNP)
Run-down and vacant properties not utilised fully (Barrow & West Coast)
Access to services and facilities problematic in rural communities
Public transport network inadequate in rural areas
Comparatively safe communities overall but fear of crime disproportionately high in isolated rural areas
Some alcohol-fuelled anti social behaviour linked to the night-time economy (Carlisle and Barrow) and a comparatively high number of race related incidents
'Tourist' shops, for example in LDNP, may reduce the number of shops and services providing for local needs
Established out of town shopping affecting the viability of smaller town centres
Traffic congestion at peak times (Carlisle, Kendal) and also seasonal congestion (LDNP)
Lack of cycle networks within towns and cities
Lack of Cumbrian university
Loss of young people, particularly graduates and a reluctance of young people to continue family farming traditions
Economic
Unemployment with higher levels of economic inactivity in West Cumbria and Furness partly linked to large number of incapacity benefit claimants
Low unemployment and skills shortage in Eden and South Lakes;
Economic vulnerability due to decline of manufacturing & uncertain future of nuclear industry (West Coast & Barrow)
Increasingly frequent relocation of jobs outside the county (and the country)
Low wage economy particularly tourism related jobs
Below average share of growth sectors in local economy
Limited research and development facilities
Gross Value Added growing more slowly than the rest of the UK causing the economy to under perform and a widening of regional disparities of wealth
Recent farming crises causing problems for agriculture coupled with unique problems of farming in upland areas (falling incomes and the labour intensive nature of the work)
Poor access to West Cumbria and Barrow
Redundant port and harbour areas in need of rejuvenation
Pressure from mobile phone and internet companies/users to improve telecommunications in Cumbria
Lots of derelict/contaminated (brown field) land in some areas due to decline in industry
Environmental
Loss of tranquillity and impact of lights on dark skies
Vulnerability of the landscape to recreational, leisure and sporting activities
High proportion of species identified for national conservation priority
Large tracts of upland and coastal habitat remain but elsewhere there are declines in extent (fragmentation) and quality of wildlife habitats and populations for some species

High proportion of nutrient rich lakes supporting a wide range of aquatic plants, invertebrates and breeding and wintering wildfowl
Vulnerability of nutrient rich lakes and nutrient poor lakes (and their resident species) to additional enrichment from farming fertilizer run off and sewage
Significant pressure on rivers, lakes and tarns from diffuse sources of pollution (agricultural wastes, fertilizers and run off from drains and road surfaces, coupled with some air pollution)
Unknown impact of climate change possibly leading to outward migration of some species and inward migration of other as average temperatures rise
Unsympathetic alterations to old buildings and bland new developments altering historic character and damaging archaeology in some areas
National renewable energy targets likely to lead to pressures for more development of wind farms which could affect landscape character and quality
Air quality problems in urban areas
Need to reduce the risk to people and property from flooding (Carlisle, Kendal and Keswick)
Resources
Pressure responding to regulations preventing biodegradable waste going to landfill
The need to develop alternative waste management methods and secure the necessary level of investment in additional facilities
Problems of disposal and storage of radioactive wastes
Pressure to continue to supply scarce mineral resources to meet national demand (gypsum and skid resistant roadstone)
The need to meet mineral demand by substituting secondary and recycled material for primary aggregates

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
Social progress that recognises the needs of everyone					
SP1: To increase the level of participation in democratic processes (SEA: Population)	Number of local liaison committees in operation	Currently unavailable for Cumbria	None currently available		
	Number of Cumbrians who submitted a written response to the WE SPD Consultation	Currently unavailable for Cumbria	None currently available		
SP2: To improve access to services, facilities, the countryside and open spaces (SEA: Population)	Car ownership	75.6%	73.2% England and Wales average	Increased in Cumbria from 63.1% in 1981 and 69.2% in 1991 to 75.6% in 2001	Census 2001 data
	The following indicators under SP2 show the % of rural households at set distances from key services				
	% of Cumbrian households more than 4km from a bus service	Currently unavailable for Cumbria	None currently available		
	% of Cumbrian households more than 4km from a train service	Currently unavailable for Cumbria	None currently available		
	% of Cumbrian households more than 4km from a hospital		North West 26.2% England 29%		
	% of Cumbrian households more than 4km from a	51%	North West 91.8% England 86.8%		

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
	doctors surgery				
	% of Cumbrian households more than 4km from a dental surgery	48%	North West 90% England 81.3%		
	% of Cumbrian households more than 2km from a post office	81.3%	North West 93.9% England 90.5%		
	% of Cumbrian households more than 4km from a supermarket	53%	North West 87.8% England 79.2%		
	% of Cumbrian households more than 2km from a Primary School	82.7%	North West 95.3% England 92%		
	% of Cumbrian households more than 4km from a Secondary School	61%	North West 87% England 75.8%		
	% of Cumbrian homes within 1km of a public footpath or Bridleway	Currently unavailable for Cumbria	None currently available		
SP3: To provide everyone with a decent home (SEA: Material Assets)	Home ownership in Cumbria	72.3%	68.9% England and Wales average		Census 2001 data
	% of Cumbrians living in rented accommodation	9.2%	9.9% England and Wales average		Census 2001 data
	% of Cumbrians	16%	19.2% England and		Census 2001 data

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
	living in sheltered/social housing		Wales average		
	% of homeless people in Cumbria	0.36%	0.67% in England		Neighbourhood Statistics, Households accepted at homeless
	% of Cumbrians living in home deemed unsuitable for habitation/lacking amenities	4.3%%	4.8% England and Wales average		Unfit dwellings from Housing Investment Programme (HIP) Strategy Statistical Appendix (HSSA).
SP4: To improve the level of skills, education and training (SEA: Population)	Number of environmental education programmes in operation at wind energy sites	Currently unavailable for Cumbria	None currently available		
	Number of visits by wind energy developers to schools/business	Currently unavailable for Cumbria	None currently available		
SP5: To improve the health and sense of well-being of people (SEA: Human Health)	% of nuisance complaints received relating to wind energy sites.	Currently unavailable for Cumbria	None currently available		

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
	Population in 'not good' health	10% (2003)	North West: 11% England: 9% (2003)		These percentages were calculated from the following raw data: Cumbria 48,587 of 487,607 North West 737,114 of 6,729,764 England 4,435,876 of 49,138,831 (2003).
	Population with limiting long-term illness	20% (2003)	North West: 20.7% England: 17.9% (2003)		These percentages were calculated from the following raw data: Cumbria 97,706 of 487,607 North West 1,394,609 of 6,729,764 England 8,809,194 of 49,138,831 (2003).
	Population sedentary/taking no exercise	10% (for Allerdale, Carlisle, Copeland and Eden combined)	Unavailable	Unavailable	From North Cumbria Public Health Survey, 2003
SP6: To create vibrant, active, inclusive and open-minded communities with a strong sense local history (SEA: Population)	% of residents who are satisfied with their neighbourhood as a place to live	94% very satisfied or fairly satisfied in Cumbria	No national comparison		From Cumbria Economic Intelligence Partnership household survey 2004.
Effective Protection of the Environment					
EN1: To protect and enhance	Loss of UK and Cumbria BAP species	Currently unavailable for Cumbria	None currently available		

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
biodiversity (SEA: Biodiversity, flora and fauna)	and area of BAP habitat (and species and habitats named in the Birds and Habitats Directives).				
	Area lost from non-statutory designations, such as County Wildlife Sites.	Currently unavailable for Cumbria	None currently available		
	Area lost from Sites of Special Scientific Interest.	Currently unavailable for Cumbria	None currently available		
	Area lost to wind energy development immediately adjacent to designated areas and sites with protected and priority species.	Currently unavailable for Cumbria	None currently available		There are 1,800 sites but no condition surveys have been undertaken. The sites are currently under review and this process is likely to continue until 2008.
	Area of land created to support biodiversity as a result of wind energy development.	Currently unavailable for Cumbria	N/A	Recent surveys suggest that the condition of Cumbria's roadside verges is worsening.	There are 7,000 miles of roadside verges in Cumbria at most altitudes up to 600m above sea level. 400 miles of verges have been designated as 'Special' due to their ecology and conservation value.
EN2: To preserve, enhance and	Number of wind energy developments	Currently unavailable for Cumbria	None currently available		

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
manage landscape quality and character for future generations (SEA: Landscape)	located within designated landscape areas (National Parks and Areas of Outstanding Natural Beauty).				
	Number of wind energy developments located adjacent to designated landscape areas.	Currently unavailable for Cumbria	None currently available		
	Number of wind energy sites with significant visibility from designated landscapes.	Currently unavailable for Cumbria	None currently available		
	Loss of key landscape features as defined in the Cumbria Landscape Classification and Cumbria Landscape Strategy	Currently unavailable for Cumbria	None currently available		
EN3: To improve the quality of the built environment	% of local materials supplied for construction phase of wind energy development.	Currently unavailable for Cumbria	None currently available		

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
(SEA: Cultural Heritage)	Number of historic sites in each category sited within or adjacent to a wind energy development.	7,681 listed buildings 847 scheduled monuments 19 parks and gardens 115 conservation areas (2004).	There is generally a small increase in numbers each year.	Of the region's counties/local authority areas Cumbria has the greatest number of scheduled monuments and listed buildings. Cumbria has less parks and gardens and conservation areas than the more urban areas.	No data available in relation to numbers affected by wind energy development.
	Grade I, II* and II listed buildings at risk sited within or adjacent to a wind energy development.	Grade I 185 buildings with 4 (2%) on the Buildings Risk Register (2005). Grade II* 447 buildings with 11 (2%) on the Buildings at Risk Register (2005). Grade II – data currently unavailable for Cumbria	North West: 481 buildings with 16 (3%) on the Buildings at Risk Register (2005).		Data correct as of 23/06/05, the figures have been updated since the publication of <i>Heritage Counts 2004</i> . 38% of the figure for the North West refers to Cumbria.
	Scheduled monuments at risk sited within or	912 monuments with 29 (3%) on the Buildings at Risk	North West : 1,369 monuments with 52 (4%) on the Buildings		These data were correct as of 23/06/05. The figures have been updated

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
	adjacent to a wind energy development	Register	at Risk Register (2005)		since the publication of <i>Heritage Counts 2004</i> . 66% of the figure for the North West refers to Cumbria.
	Registered parks and gardens at risk sited within or adjacent to a wind energy development	Currently unavailable for Cumbria	None currently available		
	Number of conservation areas adjacent to a wind energy development.	Currently unavailable for Cumbria	None currently available		
	Number of traditional buildings renovated/reused as a result of wind energy development.	Currently unavailable for Cumbria	None currently available		
	Percentage of conservation areas in local authority area with an up-to-date character appraisal	98%	None currently available		From: http://www.defra.gov.uk/erdp/docs/nwchapter/section12/NW122.htm
	Percentage of conservation areas with published	Currently unavailable for Cumbria	None currently available		

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
	management proposals				
Sustainable use and management of natural resources					
NR1: To improve local air quality and reduce greenhouse gas emissions (SEA: Air) (SEA: Climatic Factors)	Estimated emissions CO ₂ (tonnes) from wind energy development construction phases	Currently unavailable for Cumbria	None currently available		
	Estimated emissions CO ₂ (tonnes) offset from wind energy development	Currently unavailable for Cumbria	None currently available		
	Background levels of air pollutants listed in the National Air Quality Strategy	AQMA also established in an area encompassing the A7 between Hardwicke Circus and J44 of the M6, and Brampton Road for a distance of 100m from the Stanwix Bank junction. At Lowther Street (Kendal) the annual mean value for NO ₂ is 90.9µg/m ³ (2000). An AQMA has been declared.	Under the National Air Quality Strategy the Government Objective level for NO ₂ is 40µg/m ³ .	Projections suggest that the Lowther Street AQMA will be revoked in 2010. Levels of NO ₂ may also lead to an AQMA being declared on Highgate and Kirkland (Kendal). Air quality is worsening in Carlisle and an AQMA is likely to be declared at Stanwix Bank. N.B. Current air quality issues in Kendal	The level of PM ₁₀ has also been noted as a problem at Lowther Street (2000).

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
				have been attributed to a trial traffic system.	
	Estimated change in CO ₂ emissions from road traffic locally	Currently unavailable for Cumbria	None currently available		
	Mode share of work journeys to work	Car = 63.0% Foot = 14.4% Bus = 5.0% Train/underground = 0.8%	England and Wales Car = 61.5% Foot = 10.0% Bus = 7.4% Train/underground = 7.1%		
	Mode share of work journeys to school	Currently unavailable for Cumbria	None currently available		
NR2: To improve water quality and water resources (SEA: Water)	Number of water pollution incidents caused by wind energy development.	Currently unavailable for Cumbria	None currently available		
	Number of wind energy development sites located within groundwater protection zones.	Currently unavailable for Cumbria	None currently available		
	Number of wind energy developments permitted in flood risk zones.	Currently unavailable for Cumbria	None currently available		
	Rivers with good to fair biological quality	98.59% (2003)	North West: 87.68% England: 87.69%	Cumbria has seen an improvement of	Good to fair' includes the categories very good, good, fairly good, and fair.

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
			(2003)	2.11% since 2000.	
	River with good to fair chemical quality	98.19% (2003)	North West: 90.56% England: 93.43% (2003)	Cumbria has seen a negligible decrease of 0.49% in chemical river quality since 2000.	Good to fair' includes categories very good, good, fairly good, and fair. Across the Districts there little variance, only 3% between the top five. However, Barrow suffers the greatest with 77.66% of rivers having good to fair chemical quality.
	Flood risk area	Currently unavailable for Cumbria	None currently available		
NR3: To restore and protect land and soil (SEA: Soil)	Amount of high quality agricultural land lost through wind energy development	Currently unavailable for Cumbria	None currently available		
	Number of wind energy developments located on brownfield land	Currently unavailable for Cumbria	None currently available		
	Sales of secondary/recycled aggregates as % of total primary aggregates sold in Plan area	Currently unavailable for Cumbria	None currently available		
	Number of soil contamination incidents as a result	Currently unavailable for Cumbria	None currently available		

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
	of wind energy development.				
NR4: To manage mineral resources sustainably and minimise waste (SEA: Air) (SEA: Climatic Factors) (SEA: Soil) (SEA: Water)	% of primary aggregates imported into Cumbria	Currently unavailable for Cumbria	None currently available		
	% of renewable energy generated from waste	Currently unavailable for Cumbria	None currently available		
Building a sustainable economy in which all can prosper					
EC1: To retain existing jobs and create new employment opportunities (SEA Population) (SEA Material Assets)	No of jobs created in the wind energy sector in Cumbria.	Currently unavailable for Cumbria	None currently available		
	Numbers of new or extended wind energy developments.	Currently unavailable for Cumbria	None currently available		
	% People aged 16-74 Unemployed	2.68%	England and Wales average 5.0%		
	% People employed in industry	13%			
EC2: To improve access to jobs (SEA Population) (SEA Material	Number of new wind energy related business created (focus on those created in high areas	Currently unavailable for Cumbria	None currently available		

SA Objectives	Indicator	Quantified Information for Cumbria	Comparators and Targets (e.g. Regional UK/English/Welsh average)	Trend	Notes/Issues/Constraints
Assets)	of unemployment?				
	% of people who travel to work by public transport	2.61%	6.5%		
EC3: To diversify and strengthen the local economy (SEA Population) (SEA Material Assets)	Value to the Cumbrian economy of new wind energy development.	Currently unavailable for Cumbria	None currently available		

	Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place				Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
Social progress that recognises the needs of everyone								
SP1: To increase the level of participation in democratic processes	-	-	?	The current Wind Energy SPG (1997) forms the adopted planning guidance for Cumbria. There would not be any formal consultations stages on the document itself until it was reviewed.	+	++	++	The WE SPD will increase the level of participation in democratic processes by allowing the public and other stakeholders to be involved in its development. The WE SPD will be subject to wider consultation through the District Authorities Statements of Community Involvement (SCIs). SCIs require Authorities to consult more widely and increase participation in the planning process through different media to reach a greater audience. This will be particularly beneficial in the medium to long term as SCIs continue to be implemented across Cumbria Local Authorities.
SP2: To improve access to services, facilities, the countryside and open spaces	-	-	-	The 1997 SPG is likely to have only a limited effect on improving access to anything other than the open countryside. There is no specific guidance included in the 1997 SPG on protecting or improving the access to countryside as a result of wind energy development.	-	?	?	The SPD is likely to have only a limited effect on improving access to anything other than the open countryside. There is no specific guidance included in the WE SPD on protecting or improving the access to countryside as a result of wind energy development. Detailed guidance is now included as part of the SPD on siting and design and visual impact assessment. These 'checks' on development should provide an opportunity to consider a developments impact on accessing the countryside, for example, will a development create a footpath closure?
SP3: To provide everyone with a decent home	NDR	NDR	NDR	There is no clear or direct relationship between the objectives of the SPG and the SA objective SP3. A tenuous link could be made through the positive impact of jobs, benefits to the local; economy and possible planning gain from	NDR	NDR	NDR	There is no clear or direct relationship between the objectives of the SPD and the SA objective SP3. A tenuous link could be made through the positive impact of jobs, benefits to the local; economy and possible planning gain from wind energy

	Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place				Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
				wind energy development.				development.
SP4: To improve the level of skills, education and training	-	-	-	The 1997 SPG does not mention the potential wider benefits of wind energy development in terms of skills, education and training. The primary focus and scope of the 1997 SPG is to advise developers on the siting and design of wind turbines and minimise the impact on the landscape. The SPG has raised awareness and educate developers, officers, councillors and members of the public on issues relating to wind energy developments.	-	-	-	The revised WE SPD does not mention the potential wider benefits of wind energy development in terms of skills, education and training. The primary focus and scope of the revised WE SPD is to advise developers on the siting and design of wind turbines and minimise the impact on the landscape. Developers should also be encouraged to consider how they might maximise the educational value of their schemes by improving skills and offering training schemes. The production of the WE SPD will raise awareness and educate developers, officers, councillors and members of the public on issues relating to wind energy developments.
SP5: To improve the health and sense of well-being of people	-	-	-	By its very nature, wind energy development is likely to have some impact on the landscape that some may regard as negative and therefore affect health and well-being. It would only be possible to assess the direct impact on well-being on a site by site/project by project basis as each development/location will be unique. The primary focus and scope of the 1997 SPG is to advise developers on the siting and design of wind turbines and minimise the impact on the landscape – it does not contain guidance to developers on how to reduce impact on people's health or sense of well-being.	-	-	?	By its very nature, wind energy development is likely to have some impact on the landscape that some may regard as negative and therefore affect well-being. It would only be possible to assess the direct impact on health and well-being on a site by site/project by project basis as each development will be unique. The primary focus and scope of the revised WE SPD is to advise developers on the siting and design of wind turbines and minimise the impact on the landscape – it does not contain guidance to developers on how to reduce impacts on people's health or sense of well-being. It is acknowledged that the revised WE SPD seeks to minimise impacts on landscape and as a result should reduce the impact on people and their

Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place					Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
								amenity but it is not possible to conclude that this will always be the case. The WE SPD could be improved to cover social issues relating to health and well-being.
SP6: To create vibrant, active, inclusive and open-minded communities with a strong sense local history	-	-	-	<p>Similar to the above – by its very nature wind energy development is likely to have some impact on landscape and therefore potentially impact negatively on communities located close to the development. Again, it would only be possible to assess direct impacts on a site by site basis and each development and location will be unique. The SPG does not provide information on community engagement.</p> <p>The scope of the 1997 SPG was defined before it was formulated and a decision was taken to focus on guiding developers on landscape matters only. It was never the intention of the document to provide guidance on the broader potential impacts on communities.</p>	-	-	?	<p>Similar to the above – by its very nature wind energy development is likely to have some impact on landscape and therefore potentially impact negatively on communities located close to the development. Again, it would only be possible to assess direct impacts on a site by site basis and each development and location will be unique. The scope of the revised WE SPD was defined before it was formulated and a decision was taken to focus on guiding developers on landscape and visual impact matters only. It was never the intention of the document to provide guidance on the broader potential impacts on communities. However, guidance could be provided to encourage developers to engage with local communities to enable them to influence any local development and to take local ownership. Guidance could also be provided on community owned developments.</p> <p>This should be addressed should if it be decided that the WE SPD needed to cover wider issues of sustainability – alternatively this might be handled through a separate document.</p>
Effective protection of the environment								

	Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place				Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
EN1: To protect and enhance biodiversity	-	-	-	The 1997 SPG does not contain a specific section relating to biodiversity. Any guidance provided for assessing wind energy development's potential impacts is focussed on landscape and visual impact. The guidance does provide information on landscape character areas. Greater protection is usually associated with the more sensitive landscape designations such as SSSIs and AONBs. Detailing where these areas are located means that the guidance might be, indirectly offering some protection to biodiversity. This is an assumption and does not replace guidance that would directly inform developers of sensitive habitats or protected species.	-	-	?	The revised WE SPD does not contain a specific section relating to biodiversity. Any guidance provided for assessing wind energy development's potential impacts is focussed on landscape and visual impact. The guidance includes the contribution of nature conservation interests when considering landscape capacity such as SSSIs County Wildlife Sites. Detailing where these areas are located means that the guidance might be, indirectly offering some protection to biodiversity. This is an assumption and does not replace guidance that would directly inform developers of sensitive habitats or protected species. It is acknowledged that the revised WE SPD seeks to minimise impacts on landscape and as a result should reduce the impact on people and their amenity but it is not possible to conclude that this will always be the case. The WE SPD could be improved to cover social issues relating to health and well-being.
EN2: To preserve, enhance and manage landscape quality and character for future generations	+	+	-	The main focus of the 1997 SPG is to provide guidance on landscape and visual impacts. Whilst the SA Objective EN2 specifically tests for a contribution to 'enhance' landscape quality and character, in this instance it is more appropriate to concentrate on the 'management' of the landscape. Due to the nature of wind energy development, the SPG can only realistically expect to provide guidance that manages impacts on the landscape rather than enhance	+	+	++	The main focus of the revised WE SPD is to provide guidance on landscape and visual impacts. Whilst the SA Objective EN2 specifically tests for a contribution to 'enhance' landscape quality and character, in this instance it is more appropriate to concentrate on the 'management' of the landscape. Due to the nature of wind energy development, the revised WE SPD can only realistically expect to provide guidance that manages impacts on the landscape rather than enhance landscape character although there may be some opportunity here through the

	Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place				Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
				landscape character although there may be some opportunity here through the remediation of sites following decommissioning. There is some question over the longer term performance of the 1997 SPG due to the development and evolution of practice and methodology in landscape and visual impact assessment since the SPG was adopted.				remediation of sites following decommissioning. The revised WE SPD includes a full and up-to-date landscape capacity assessment of Cumbria specific to wind energy development and the ability of different landscapes across the County to accommodate it. This provides clear guidance to developers as to where wind energy development will have the least impact. The revised WE SPD also includes guidance for developers on how to carry out a landscape and visual impact assessment. Both these additions to the 1997 guidance result in a more robust document – as developers become more familiar with these approaches in the future the impacts on the landscape from wind energy development in the longer term are expected to be further reduced.
EN3: To improve the quality of the built environment	-	-	-	<p>Similar to EN2, this objective looks for some positive contribution to improving the built environment.</p> <p>The 1997 SPG focuses on the design of wind turbines but only in relation to the effect on the landscape and visual amenity. The SPG does not include a section on sustainable design and construction and the use of local materials.</p>	-	+	?	<p>Similar to the 1997 SPG, the revised WE SPD focuses on the role that good design and siting can play in minimising the impact on the landscape and visual amenity. The revised guidance differs from the 1997 version with the addition of more detailed criteria on the design of infrastructure and ancillary development. This includes adopting principles that will protect features such as archaeological remains. This goes some way to meeting this objective but there is still an absence of clear guidance around the use of sustainable design and construction techniques as well as the use of local materials. There may be some scope to include a section covering these issues.</p>

	Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place				Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
Sustainable use and management of natural resources								
NR1: To improve local air quality and reduce greenhouse gas emissions	+	+	+	<p>Objective NR1 again seeks a positive contribution by using the word 'improve' air quality. The scope of the 1997 SPG provides little opportunity to actively and directly improve local air quality.</p> <p>The other element of this objective seeks a reduction on greenhouse gases. The SPG can have both direct and indirect influences on this part of the objective. Wind energy is a renewable power source and will therefore contribute to the reduction of greenhouse gas emissions from power generation in Cumbria and the north west. There will of course only be a reduction in greenhouse gas emission if other generating methods are replaced with wind energy and decommissioned. This is unclear at this time.</p> <p>There are also some indirect influences. There is an opportunity to guide developers on the best construction techniques and manufacturing techniques that have the least polluting effects in terms of climate change gas emissions.</p> <p>The SPG does not include a section on air quality or climate change.</p>	+	+	+	<p>Objective NR1 again seeks a positive contribution by using the word 'improve' air quality. The scope of the revised WE SPD provides little opportunity to actively and directly improve local air quality. The SPD can influence this objective by providing guidance to developers on managing the impact on local air quality from the construction phase of wind energy development.</p> <p>The other element of this objective seeks a reduction on greenhouse gases. The SPD can have both direct and indirect influences on this part of the objective. Wind energy is a renewable power source and will therefore contribute to the reduction of greenhouse gas emissions from power generation in Cumbria and the north west. There will of course only be a reduction in greenhouse gas emission if other generating methods are replaced with wind energy and decommissioned. This is unclear at this time.</p> <p>There are also some indirect influences. There is an opportunity to guide developers on the best construction techniques and manufacturing techniques that have the least polluting effects in terms of climate change gas emissions.</p> <p>The SPD does not include a section on air quality or climate change. There may be some scope to include a section covering these issues.</p>

	Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place				Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
NR2: To improve water quality and water resources	-	-	-	<p>Objective NR2 also looks for a positive contribution by using the word 'improve' water quality. As with NR1 on air quality, the remit of the 1997 SPG provides little opportunity for the guidance to actively and directly improve water quality and resources.</p> <p>The SPG does not include a section on water quality or resources.</p>	-	-	+	<p>Objective NR2 also looks for a positive contribution by using the word 'improve' water quality. As with NR1 on air quality, the remit of the revised WE SPD provides little opportunity for the guidance to actively and directly improve water quality and resources. There is potential for the SPD to influence objective NR2 by providing guidance to developers on managing the impact on water quality and resources from the manufacturing and construction phase of wind energy development. Guidance could advise developers on the best construction techniques and manufacturing techniques that have the least polluting effects on the hydrology of an area.</p> <p>The revised guidance differs from the 1997 version with the addition of more detailed criteria on the design of infrastructure and ancillary development. This includes adopting principles that will avoid negative impacts on local hydrology. However, the SPD does not include a specific section on water quality or resources. There may be some scope to include a section covering these issues.</p>
NR3: To restore and protect land and soil	-	-	-	<p>The SPG does make reference to Environmental Statements as part of the EIA process stating that an ES should include details of ancillary development and describe mitigation measures. However, the SPG does not include a specific section on land and soil.</p>	-	+	+	<p>There is potential for the revised WE SPD to influence objective NR3 by providing guidance to developers on managing the impact of wind energy development on land and soil. There are 3 areas that guidance could focus on limiting the impact of wind energy development on land and soil. Firstly the planning stage – development should be sited on previously developed land wherever possible. Secondly the construction</p>

	Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place				Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
								<p>phase, including the impact of different materials used – can materials be from a recycled source – what about decommissioning and reusing materials after the development is removed - this links in with EN3 on the built environment and employing sustainable design and construction techniques. Thirdly, guidance for developers on minimising the direct impact on land and soil from the operational period of the development – in other words, what will the impacts be whilst the development is in service?</p> <p>The SPD does make reference to “avoiding sensitive soils and vegetation, eg peat bogs, heathers and grassland” when describing principles that should be followed when planning infrastructure and ancillary development. However, at this stage due to the remit of the SPD, it does not include a specific section on land and soil. There may be some scope to include a section covering these issues though this is currently unclear.</p>
NR4: To manage mineral resources sustainably and minimise waste	-	-	-	The SPG does not include a specific section on the management of mineral resources or minimising waste.	-	+	+	There are a number of ways in which the revised WE SPD could influence objective NR4. This would involve providing clear guidance to developers on sustainable design and construction techniques and how this might focus the use of recycled aggregates and materials for construction but also how materials might be recovered following decommissioning to reduce waste to landfill.

	Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place				Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
								However, at this stage due to the remit of the SPD, it does not include a specific section on the management of mineral resources or minimising waste. There may be some scope to include a section covering these issues though this is currently unclear.
Building a sustainable economy in which all can prosper								
EC1: To retain existing jobs and create new employment opportunities	-	-	-	The 1997 SPG was formulated under a tight remit of landscape and visual impact. Its scope was never intended to go beyond these areas and therefore the document does not contain specific guidance relating to the local economic implications of wind energy development in Cumbria. There is a brief reference made to short term employment opportunities through the construction/decommissioning phases of development in the background consideration section at the beginning of the document.	-	-	+	<p>The revised WE SPD was initially formulated under a tight remit of landscape and visual impact. Its scope was never intended to go beyond these areas and therefore the document does not contain specific guidance relating to the local economic implications of wind energy development in Cumbria.</p> <p>Indirectly by supporting the growth of wind energy development in Cumbria the WE SPD could support new employment opportunities across the County. In order to better meet the requirements of this objective a specific section should be included guiding developers on maximising their influence on the local economy by employing local people both in designing and manufacturing and constructing/decommissioning wind energy development. There is an opportunity to guide developers to ensure that the variety and quality of employment in Cumbria's energy sector is improved. On top of this developers could be encouraged to support</p>

	Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place				Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
								existing and developing local businesses and companies. There may be some scope to include a section covering these issues though this is currently unclear. Longer term the SPD would be expected to perform better against this objective if its scope extended out to include socio-economic aspects of wind energy development.
EC2: To improve access to jobs	-	-	-	Similar to EC1 above – the 1997 SPG would not make a significant contribution to meeting the requirements of this objective. The document does not include a specific section to guide developers on maximising the benefits of accessing new employment opportunities through the wind energy industry.	-	-	+	Similar to EC1 above – the SPD might expand its scope to include specific guidance on improving access to job opportunities as a result of wind energy development. There may be some scope to include a section covering these issues though this is currently unclear. Longer term the SPD would be expected to perform better against this objective if its scope broadened out to include socio-economic aspects of wind energy development. Developers should also be encouraged to consider how they might maximise the accessibility to job opportunities both physically in terms of transportation and in terms of improving skills and offering training schemes. Longer term the SPD would be expected to perform better against this objective as its scope extended out to include socio-economic aspects of wind energy development.
EC3: To diversify and strengthen the local	-	-	-	Similar to EC2 above – the 1997 SPG would not make a significant contribution to meeting the requirements of this objective	-	-	+	Similar to EC2 above – the SPD might expand its scope to include specific guidance on diversifying and strengthening the local economy as a result of wind energy development.

	Option 1: No Action taken/policy/plan implemented SPG (1997) to remain in place				Option 2: Implement Wind Energy SPD			
SA Objective	Short Term	Medium Term	Long Term	Comments/Explanation	Short Term	Medium Term	Long Term	Comments/Explanation
economy				The document does not include a specific section to guide developers on maximising the benefits of diversifying and strengthening the local economy through the wind energy industry.				<p>In order to do this there are a number of key questions that the WE SPD would need to address. Is the guidance encouraging developers to stimulate and strengthen the local economy by employing local people, contractors and companies and promoting indigenous growth, be innovative and promote entrepreneurship, particularly in rural areas, lead the development of new economic sectors (in renewable energy in this instance).</p> <p>There may be some scope to include a section covering these issues though this is currently unclear. Longer term the SPD would be expected to perform better against this objective if its scope extended out to include socio-economic aspects of wind energy development.</p>
KEY								
-	Guidance currently moving away from the SA objective							
--	Guidance currently moving away from the SA objective significantly							
+	Guidance currently moving towards the SA objective							
++	Guidance currently moving towards the SA objective significantly							
NDR	Guidance Not Directly Relevant to the objective or has no direct relationship							
?	Currently unsure of guidance relationship with the objective							

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
Social progress that recognises the needs of everyone				
SP1: To increase the level of participation in democratic processes	Number of local liaison committees in operation.	Yes – through monitoring of SCI targets Data not currently available.	++	The WE SPD will contribute positively to this indicator by increasing the level of participation in democratic processes by allowing the public and other stakeholders to be involved in its development. The WE SPD will be subject to wider consultation through the District Authorities Statements of Community Involvement (SCIs). SCIs require Authorities to consult more widely and increase participation in the planning process through different media to reach a greater audience. This will be particularly beneficial in the medium to long term as SCIs continue to be implemented across Cumbria Local Authorities.
	Number of Cumbrians who submit a written response to SPD Consultation.	Yes – responses to any planning document will be collated by the Environment Team. Data not currently available	++	The WE SPD will contribute positively to this indicator by increasing the level of participation in democratic processes by allowing the public and other stakeholders to be involved in its development. Consulting and engaging more closely the public is a key requirement of the planning reforms and will achieve this through carrying out actions contained within the SCIs.
SP2: To improve access to services, facilities, the countryside and open spaces	Car ownership – no specific target but this indicator will be monitored	Yes – Car ownership levels across the County will continue to be monitored. Car ownership at 75.6% in Cumbria (Census 2001)	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrian households more than 4km from a bus service	Yes – through CCC Information Intelligence Unit monitoring Data not currently available	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrian households more than 4km from a train	Yes – through CCC Information Intelligence Unit monitoring	NDR	The WE SPD will not have a direct influence on this indicator

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
	service	Data not currently available		
	% of Cumbrian households more than 4km from a hospital	Yes – through CCC Information Intelligence Unit monitoring Data not currently available	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrian households more than 4km from a doctors surgery	Yes – through CCC Information Intelligence Unit monitoring Currently 51% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrian households more than 4km from a dental surgery	Yes – through CCC Information Intelligence Unit monitoring Currently 48% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrian households more than 2km from a post office	Yes – through CCC Information Intelligence Unit monitoring Currently 81.3% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrian households more than 4km from a supermarket	Yes – through CCC Information Intelligence Unit monitoring Currently 53% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrian households more than 2km from a Primary School	Yes – through CCC Information Intelligence Unit monitoring Currently 82.7% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrian households more than 4km from a Secondary School	Yes – through CCC Information Intelligence Unit monitoring Currently 61% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrian homes within 1km of a public footpath or Bridleway	Yes – through CCC Information Intelligence Unit monitoring	NDR	The WE SPD will not have a direct influence on this indicator

SA Objective	Baseline Data/Indicator/ Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
		Data not currently available		
SP3: To provide everyone with a decent home	Home ownership in Cumbria	Yes – through CCC Information Intelligence Unit monitoring Currently 72.3% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrians living in rented accommodation	Yes – through CCC Information Intelligence Unit monitoring Currently 9.2% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrians living in sheltered/social housing	Yes – through CCC Information Intelligence Unit monitoring Currently 16% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
	% of homeless people in Cumbria	Yes – through CCC Information Intelligence Unit monitoring Currently 0.36% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
	% of Cumbrians living in home deemed unsuitable for habitation/lacking amenities	Yes – through CCC Information Intelligence Unit monitoring Currently 4.3%% in Cumbria	NDR	The WE SPD will not have a direct influence on this indicator
SP4: To improve the level of skills, education and training	Number of environmental education programmes in operation at wind energy sites	Yes – monitoring of this indicator will be carried out by the District Authorities/County Council. Data not currently available	+	Whilst the WE SPD does not currently contain a section guiding developers on Wind Energy and education/training/skills. The WE SPD could increase the number of environmental education programmes in operation at wind energy sites. Whilst the SPD cannot do this through direct policy as it is a guidance document there is potential for the guidance to contain a specific section advising developers on the need to make accessing sites for educational purposes.

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
	Number of visits by wind energy developers to schools/business	Yes – monitoring of this indicator will be carried out by the District Authorities/County Council. Data not currently available	+	Whilst the WE SPD does not currently contain a section guiding developers on Wind Energy and education/training/skills. The WE SPD could increase the number of visits by wind energy developers to schools/business. Whilst the SPD cannot do this through direct policy as it is a guidance document there is potential for the guidance to contain a specific section advising developers on the need for the wind energy industry in Cumbria to become more closely involved with schools and other educational establishments.
SP5: To improve the health and sense of well-being of people	% of nuisance complaints received relating to wind energy sites.	Yes – monitoring of this indicator will be carried out by the District Authorities/County Council. Data not currently available	+	The WE SPD will provide clearer guidance to developers on the appropriate siting of wind energy development including development close to residential dwellings. This may be counteracted to an extent by the increased number of wind energy developments expected to be built in Cumbria over the period of the SPD guidance. This is an 'unknown' so it is assumed for the purpose of this exercise that more sensitive and sympathetic siting of wind energy development will have a positive effect on this indicator.
	Population in 'not good' health	Yes – through CCC Information Intelligence Unit monitoring 10% in Cumbria (2003)	NDR	The WE SPD will not have a direct influence on this indicator
	Population with limiting long-term illness	Yes – through CCC Information Intelligence Unit monitoring 20% in Cumbria (2003)	NDR	The WE SPD will not have a direct influence on this indicator
	Population sedentary/taking no exercise	Yes – through CCC Information Intelligence Unit monitoring 10% (for Allerdale, Carlisle, Copeland and Eden combined)	NDR	The WE SPD will not have a direct influence on this indicator

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
SP6: To create vibrant, active, inclusive and open-minded communities with a strong sense local history	To increase the % of residents who are satisfied with their neighbourhood as a place to live	Yes – through CCC Information Intelligence Unit monitoring 94% very satisfied or fairly satisfied in Cumbria	?	It is unclear at this stage what effect the WE SPD will have on this indicator. The indicator is focussed on an unpredictable and subjective area that is open to many different personal and conflicting viewpoints among Cumbria's population. An increase in the number of wind energy developments in Cumbria may result in less people being satisfied with the area in which they live. This might be offset and mitigated through careful planning, design and siting of wind energy developments and the SPD is very strong on promoting this through its landscape character and visual impact assessment guidance.
Effective protection of the environment				
EN1: To protect and enhance biodiversity	Loss of UK and Cumbria BAP species and area of BAP habitat (and species and habitats named in the Birds and Habitats Directives).	Yes – through information and monitoring from the Cumbria Biological Data Network, the District Authorities/County Council. Data not currently available	-	<p>Whilst the WE SPD does not currently contain a section guiding developers on Wind Energy and Biodiversity, sensitive sites and landscapes are identified affording some protection as a result to certain specific species. This would not offer any protection to the flora and fauna found outside designated sites – indeed it may place more pressure in these areas and development will be encourage to locate away from designated sites. There will also be an opportunity to avoid negative impacts on biodiversity through Environmental Impact Assessment (EIA) as part of the planning process.</p> <p>There is though an opportunity for the SPD to reinforce the importance of Cumbria's biodiversity by setting out a specific section guiding developers on how to avoid and reduce the impacts of wind energy on the flora and fauna of Cumbria. This could be linked to the EIA process by describing to developers what will be required in their Environmental Statements (ES) and what will be covered in the EIA itself.</p> <p>The SPD was developed and written within a defined remit/scope</p>

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
				covering landscape and visual issues. There is an opportunity to include guidance within the SPD that would guide developers on wider environmental and sustainability issues.
	Area lost from non-statutory designations, such as County Wildlife Sites.	Yes – through information and monitoring from the Cumbria Biological Data Network, the District Authorities/County Council. Data not currently available	-	Same comments/explanation as first indicator (above) for objective EN1.
	Area lost from Sites of Special Scientific Interest.	Yes – through information and monitoring from the Cumbria Biological Data Network, the District Authorities/County Council.	-	Same comments/explanation as first indicator (above) for objective EN1.
	Area of lost to wind energy development immediately adjacent to designated areas and sites with protected and priority species.	Yes – through information and monitoring from the Cumbria Biological Data Network, the District Authorities/County Council. Currently unavailable for Cumbria	-	Same comments/explanation as first indicator (above) for objective EN1.
	Area of land created to support biodiversity as a result of wind energy development.	Yes – through information and monitoring from the Cumbria Biological Data Network, the District Authorities/County Council. Currently unavailable for	-	Same comments/explanation as first indicator (above) for objective EN1. The provision of guidance in the WE SPD on the creation of habitats could benefit a range of flora and fauna, both protected and unprotected in Cumbria.

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
		Cumbria		
EN2: To preserve, enhance and manage landscape quality and character for future generations	Number of wind energy developments located within designated landscape areas (National Parks and Areas of Outstanding Natural Beauty).	Yes – through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	++	The main focus of the SPD guidance is on landscape and guiding developers on how they can go about avoiding/minimising the negative impacts of wind energy development on the landscape. There is though an element of uncertainty when assessing the likely effects of the SPD on this indicator. There is likely to be an increase in the number of wind energy developments in Cumbria which may result in greater pressure to build in/close to more sensitive designated landscape areas. At the same time this will be offset and mitigated through careful planning, design and siting of wind energy developments and the SPD is very strong on promoting this through its landscape character and visual impact assessment guidance.
	Number of wind energy developments located adjacent to designated landscape areas.	Yes – through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	++	Same comments/explanation as above
	Number of wind energy sites visible from designated landscapes.	Yes – through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	++	Similar comments to above – there is likely to be pressure for wind energy development on land close to the Lake District and Yorkshire Dales National Parks and the County's 3 AONBs. The National Park comes under its own landscape classification in the current version of the WE SPD. Work is underway to carry out a more detailed landscape character assessment of the National Park and is due to be completed by the end of 2006.
	Loss of key landscape features as defined in the Cumbria Landscape Classification and Cumbria Landscape	Yes – through information and monitoring from the Spatial Planning and landscape team. Currently unavailable for	++	The WE SPD will have a positive effect on this indicator over time providing clear guidance to developers on the areas most sensitive landscapes and affording them greater protection. The WE SPD also provides guidance on carrying out landscape and visual impact assessments.

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
	Strategy	Cumbria		
EN3: To improve the quality of the built environment	% of local materials supplied for construction phase.	Currently unavailable for Cumbria	-	The SPD was developed and written within a defined remit/scope covering landscape and visual issues. The SPD does not currently include a section on sourcing construction materials. There is an opportunity to include guidance within the SPD that would guide developers on wider environmental and sustainability issues including sustainable design and construction techniques. Within this there should be clear guidance to developers to use local materials where possible during the construction phase.
	Number of historic sites in each category sited within or adjacent to a wind energy development.	Yes - through information and monitoring from the District Authorities/County Council. 7,681 listed buildings 847 scheduled monuments 19 parks and gardens 115 conservation areas (2004) - battlegrounds (information not currently available for Cumbria)	NDR	The WE SPD has no direct relationship with this indicator and therefore will not have a direct effect on it over time. It is however a useful contextual indicator – the number and location of historic sites will key data for developers when considering constraints at different sites.
	Grade I, II* and II listed buildings at risk sited within or adjacent to a wind energy development.	Yes - through information and monitoring from the District Authorities/County Council. Grade I 185 buildings with 4 (2%) on the Buildings Risk Register (2005). Grade II* 447 buildings with 11 (2%) on the Buildings at Risk	-	The SPD was developed and written within a defined remit/scope covering landscape and visual issues. The SPD does not currently include a section on the historic environment. There is an opportunity to include guidance within the SPD that would guide developers on wider environmental and sustainability issues which should include cultural heritage and historic assets of Cumbria. Whilst unlikely to cause damage to built heritage itself, wind energy development has the potential to affect the setting and environment around a listed structure/site of archaeological importance. The SPD should provide clear guidance to developers

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
		Register (2005). Grade II – data currently unavailable for Cumbria		to avoid development which would negatively impact upon the setting of listed built historic heritage in Cumbria (this includes parks and gardens).
	Scheduled monuments at risk sited within or adjacent to wind energy development.	Yes - through information and monitoring from the District Authorities/County Council. 912 monuments with 29 (3%) on the Buildings at Risk Register	-	Same comments/explanation as above
	Registered parks and gardens at risk sited within or adjacent to wind energy development.	Yes - through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	-	Same comments/explanation as above
	Number of conservation areas adjacent to wind energy development.	Yes - through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	NDR	The WE SPD has no direct relationship with this indicator and therefore will not have a direct effect on it over time - the number and location of conservation areas will be key data for developers when considering constraints at different sites – the character of the settings of Conservation Areas could be affected by wind energy developments.
	Number of traditional buildings renovated/reused as a result of wind energy development.	Yes - through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	?	The WE SPD may bring about the reuse of some traditional buildings but this is location specific and it is therefore not possible at this time to judge whether the effect on the indicator will be positive or negative.

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
	Percentage of conservation areas in local authority area with an up-to-date character appraisal Yes - through information and monitoring from the County Archaeology Team	Currently 98% in Cumbria	NDR	The WE SPD has no direct relationship with this indicator and therefore will not have a direct effect on it over time – it is however a useful contextual indicator.
	Percentage of conservation areas with published management proposals	Yes - through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	NDR	The WE SPD has no direct relationship with this indicator and therefore will not have a direct effect on it over time. It is however a useful contextual indicator.
	Percentage of conservation areas with published management proposals	Yes - through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	NDR	The WE SPD has no direct relationship with this indicator and therefore will not have a direct effect on it over time. It is however a useful contextual indicator.
Sustainable use and management of natural resources				
NR1: To improve local air quality and reduce greenhouse gas emissions	Estimated emissions CO ₂ (tonnes) from wind energy development construction phases	Currently unavailable for Cumbria	-	The scope of the revised WE SPD provides little opportunity to actively and directly improve local air quality. The WE SPD can influence this objective by providing guidance to developers on managing the impact on local air quality from the construction

SA Objective	Baseline Data/Indicator/ Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
	Yes – through information and monitoring from the District Authority Planning Teams.			phase of wind energy development. A section to this effect could be included and linked to the requirements of the EIA process.
	Estimated emissions CO ² (tonnes) offset from wind energy development	Currently unavailable for Cumbria	+	The WE SPD is likely to have a positive influence on this indicator by facilitating more wind energy development.
	Background levels of air pollutants listed in the National Air Quality Strategy	Yes - through information and monitoring by the District Authorities/County Council. . AQMA also established in an area encompassing the A7 between Hardwicke Circus and J44 of the M6, and Brampton Road for a distance of 100m from the Stanwix Bank junction. At Lowther Street (Kendal) the annual mean value for NO ₂ is 90.9µg/m ³ (2000). An AQMA has been declared.	-	This is relevant to the construction phase of wind energy development but the WE SPD is likely to have a relatively slight impact on this objective as the AQMA are in urban settings. As it stands the WE SPD does not contain guidance for developers on how best to approach issues around transport to and from wind energy construction sites. A section to this effect could be included and linked to the requirements of the EIA process.
	Estimated change in CO ₂ emissions from road traffic locally	Yes - through information and monitoring from the District Authorities/County Council.	-	This is most relevant to the construction phase of wind energy development but the WE SPD is likely to have a relatively slight impact on this objective. As it stands the WE SPD does not contain guidance for developers on how best to approach issues around transport to and from wind energy construction sites. A section to this effect could be included and linked to the requirements of the EIA process.
	Mode share of work journeys to work	Yes - through information and monitoring from the District	-	This is relevant to the construction phase of wind energy development but the WE SPD is likely to have a relatively slight

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
		<p>Authorities/County Council.</p> <p>Car = 63.0%</p> <p>Foot = 14.4%</p> <p>Bus = 5.0%</p> <p>Train/underground = 0.8%</p>		<p>impact on this objective. Again as it stands the WE SPD does not contain guidance for developers on how best to approach issues around transport to and from wind energy construction sites. A section to this effect could be included and linked to the requirements of the EIA process.</p>
NR2: To improve water quality and water resources	Number of wind energy development sites located within groundwater protection zones.	<p>Yes – from the Environment Agency and/or the District Authorities/County Council.</p> <p>Currently unavailable for Cumbria</p>	-	<p>The WE SPD does not currently include a section guiding developers on water issues. There is potential for the SPD to influence this indicator by providing guidance to developers on siting development away from groundwater protection zones. There could be links made to the EIA process and requirements.</p>
	Number of wind energy developments permitted in flood risk zones.	<p>Yes – from Environment Agency and/or the District Authorities/County Council.</p> <p>Currently unavailable for Cumbria</p>	-	<p>The WE SPD does not currently include a section guiding developers on water issues. There is potential for the SPD to influence this indicator by providing guidance to developers on siting development away from flood risk areas. There could be links made to the EIA process and requirements.</p>
	Rivers with good to fair biological quality	<p>Yes – from the Environment Agency</p> <p>98.59% (2003)</p>	-	<p>There is potential for the SPD to influence this indicator by providing guidance to developers on managing the impact on water quality and resources from the manufacturing and construction phase of wind energy development. Guidance could advise developers on the best construction techniques and manufacturing techniques that have the least polluting effects on the hydrology of an area as well as the least demand in terms of water abstraction. Again, there could be links made to the EIA process and requirements.</p>
	River with good to fair chemical quality	<p>Yes – from the Environment Agency</p> <p>98.19% (2003)</p>	-	<p>As above.</p>
	Flood risk area	Yes – from the Environment	NDR	<p>The WE SPD has no direct relationship with this indicator and</p>

SA Objective	Baseline Data/Indicator/ Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
		Agency		therefore will not have a direct effect on it over time. It is however a useful contextual indicator.
	Amount of high quality agricultural land lost through wind energy development	Yes - through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	?	There is potential for the SPD to influence this indicator by providing guidance to developers on avoiding the highest grade agricultural land. This is unlikely to be significant in Cumbria as much of the farming is of a pastoral nature in the areas most likely to receive planning applications for wind energy developments.
NR3: To restore and protect land and soil	Wind energy developments located on brownfield land	Yes - through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	?	There is potential for the SPD to influence this indicator by providing guidance to developers on avoiding green field sites where possible and this would have particular relevance to the more built up and urban areas in the County – also disused airfield for example. This is unlikely to be significant in Cumbria as many of the favoured areas for wind energy development are around the higher fells where brownfield sites are very scarce – there may be more relevance here to applications along the more developed coastal fringe.
	Number of soil contamination incidents as a result of wind energy development.	Yes - through information and monitoring from the District Authorities/County Council/ Environment Agency Currently unavailable for Cumbria	-	The WE SPD does not currently include a section guiding developers on soil contamination issues. There is potential for the SPD to influence this indicator by making developers aware of best practice construction techniques to avoid soil contamination. There could be links made to the EIA process and requirements.
NR4: To manage mineral resources sustainably and minimise waste	% of renewable energy generated from waste in Cumbria	Yes - through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	NDR	The WE SPD has no direct relationship with this indicator and therefore will not have a direct effect on it over time. It is however a useful contextual indicator.

SA Objective	Baseline Data/Indicator/ Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
	% of primary aggregates imported into Cumbria	Yes - through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	-	There is potential for the SPD to influence this indicator by providing advice to developers on reducing the amount of primary aggregates used in the construction process and encourage recycled materials to be used wherever possible.
Building a sustainable economy in which all can prosper				
EC1: To retain existing jobs and create new employment opportunities	Numbers of new or extended wind energy developments.	Yes - through information and monitoring from the District Authorities/County Council. Currently unavailable for Cumbria	?	There are likely to be an increasing number of wind energy development applications in Cumbria in the future. It is difficult at this time to make a judgement as to direct level of influence the WE SPD might have over this increase.
	% People aged 16-74 Unemployed	Yes – through CCC Information Intelligence Unit monitoring Cumbria 2.68% England and Wales average 5.0%	+	There is potential for the SPD to influence this indicator by providing advice to developers on how best to engage young people in understanding the wind energy industry and encouraging and informing developers of employing locally and maintaining a sustainable local economy.
	% People employed in industry	Yes – through CCC Information Intelligence Unit monitoring Cumbria 13%	+	There is potential for the SPD to influence this indicator by providing advice to developers on how best to engage young people in understanding the wind energy industry and encouraging and informing developers of employing locally and maintaining a sustainable local economy.
	Number of new wind energy related business created (focused on those created in high areas of	Yes – through CCC Information Intelligence Unit/ Regeneration Unit Currently unavailable for	?	It is difficult at this time to make a judgement on the likely impact the WE SDP can have on this indicator as it is location specific. Wind energy development is guided more strongly by other factors than workforce such as the windiest sites – this is likely to mean that new development doesn't necessarily take place close

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
	unemployment)	Cumbria		to those areas with the highest unemployment rates. Much of the work associated with wind energy development occurs around the manufacturing and construction phases so there is still an opportunity here for the WE SPD to influence this indicator by seeking to encourage developers/manufacturers to locate in Cumbria (in the areas of highest unemployment) and also to use local contractors.
EC2: To improve access to jobs	% of people who travel to work by public transport	Yes – through CCC Information Intelligence Unit monitoring Cumbria 2.61% England and Wales average 6.5%	NDR	There is potential for the SPD to influence this indicator by providing advice to developers on best practice on sustainable travel planning. This includes people who work at a 'fixed site' manufacturing products, how employees reach constructions sites and also how maintenance teams operate/travel.
	Value to the Cumbrian economy of new wind energy development.	Yes – through CCC Information Regeneration Team/Intelligence Unit monitoring Currently unavailable for Cumbria	?	The WE SPD does not currently include a section on maximising the economic benefits of wind energy development. The value of the wind energy sector to the Cumbrian economy is likely to increase but it is not possible to say at this time how much of this increase can be attributed to the WE SPD directly. There is an opportunity to maximise this benefit through encouraging the industry to locate in Cumbria.
EC3: To diversify and strengthen the local economy	No of jobs created in the wind energy sector in Cumbria.	Yes – through CCC Information Intelligence Unit/Strategic Planning Team Currently unavailable for Cumbria	+	In order to influence this indicator a specific section could be included guiding developers on maximising there influence on the local economy by employing local people both in designing and manufacturing and constructing/decommissioning wind energy development. There is an opportunity to guide developers to ensure that the variety and quality of employment in Cumbria's energy sector is improved. On top of this developers should be encouraged to support existing and developing local businesses and companies.

SA Objective	Baseline Data/Indicator/Targets (where available)	Can the effect be quantified?	Effects over time	Comments / Explanation
KEY				
-	Guidance currently moving away from the SA objective			
--	Guidance currently moving away from the SA objective significantly			
+	Guidance currently moving towards the SA objective			
++	Guidance currently moving towards the SA objective significantly			
NDR	Guidance Not Directly Relevant to the objective or has no direct relationship			
?	Currently unsure of guidance relationship with the objective			

SA Objective	WE SDP Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
Social progress that recognises the needs of everyone							
SP1: To increase the level of participation in democratic processes (SEA: Population)	<p>Positive contribution through SCI process.</p> <p>Increased stakeholder involvement and engagement</p>	<p>Scale: Cumbria wide consultation</p> <p>Magnitude: Significant opportunity to engage the public on a sensitive issue.</p>	None likely other than including more people in decision might lead to a more robust and accepted guidance document.	None likely	No direct links	None required	To make links with the District Authorities SCIs and set out clearly in the WE SPD a section on how consultation works, when the document has been consulted on and how members of the public and other interested stakeholders can participate in the WE SPD process. This will help add context to the document for developers and ensure that they understand the document has broad backing and 'buy-in' from a range of individuals, the public and other groups/organisations and isn't simply a authority driven planning tool.
SP2: To improve access to services, facilities, the countryside and open spaces (SEA: Population)	<p>Many of the indicators used against this objective have no direct relationship with the WE SPD. The guidance could affect access to the countryside but there is no indicator to measure this at this time.</p>	<p>Scale: Potential to affect access to the countryside Cumbria wide.</p> <p>Magnitude: Potential to affect access to areas of land on or close to wind farm development. Risks will be reduced through the requirements</p>	None likely	None likely	'Vulnerability of the landscape' 'National renewable energy targets likely to lead to pressures for more development of wind farms which could affect landscape character and quality'	Rewording/drafting of the WE SPD to include guidance on access to the countryside and avoiding rights of way. Mitigation measure on development prescribed through the EIA process.	<p>To include a short section in the WE SPD guiding developers on access issues.</p> <p>Developers should be made aware of the most sensitive areas vulnerable to loss of access – this will have most impact on access to the countryside where developers should be guided in terms of avoiding footpaths and bridleways and other areas of open access land wherever possible. Developers should be seeking to maintain and</p>

SA Objective	WE SPD Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
		of the EIA process.					improve access wherever possible.
SP3: To provide everyone with a decent home (SEA: Material Assets)	All of the indicators used against this objective have no direct relationship with the WE SPD but provide useful contextual information about the WE SPD area.	NDR	None likely	None likely	No direct links	None required	Housing falls outside the remit of the WE SPD.
SP4: To improve the level of skills, education and training (SEA: Population)	Potential for a positive contribution to this objective. Much will depend on whether the WE SPD expands its remit to include guidance on maximising the benefits of wind farm development on education.	<p>Scale: This could affect all wind energy sites across Cumbria.</p> <p>Magnitude: Potential to reach large numbers of people and send out a message about the need for a balanced approach to wind energy development where local landscapes are protected but Cumbria makes its contribution to fighting the impacts of climate change through renewables. Improve training</p>	None likely	Yes – if wind energy developers are encouraged to interact with schools and improve training and skills to the Cumbrian workforce, this could improve the local economy.	<p>'Loss of young people, particularly graduates'</p> <p>'Unemployment with higher levels of economic inactivity in West Cumbria and Furness partly linked to large number of incapacity benefit claimants'</p> <p>'Low unemployment and skills shortage in Eden and South Lakes'</p> <p>'Low wage economy particularly tourism related jobs'</p> <p>'Below average share of growth sectors in local economy'</p>	Rewording/drafting of the WE SPD to reflect education and skills. Make links to the strategic regeneration and economic development strategies.	Rewording/drafting of the WE SPD to include guidance on maximising the benefits to the local economy through improving education, skills and training both to schools and the local workforce. Developers should be able to demonstrate some commitment to achieving this objective – there may be scope for this to be a requirement for granting planning permission.

SA Objective	WE SDP Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
		and job opportunities in sectors in decline in Cumbria.					
SP5: To improve the health and sense of well-being of people (SEA: Human Health)	The WE SPD has the greatest impact on this objective through protecting people's sense of well-being by avoiding high impact and inappropriate wind energy development.	<p>Scale: This is relevant to the whole of Cumbria – wherever wind energy development could take place</p> <p>Magnitude: Potentially large due to the strong local feeling in opposition to wind farm development and the attachment of local people to their environment and local landscapes. Potentially large negative effect on well-being.</p>	Yes – One wind energy development might in turn lead to another which would exacerbate the impact of the first. The SPD does address this issue looking at cumulative effects of development	Yes – there is the possibility that careful placement of wind energy development to avoid a certain landscape designation might mean the development is sited near to habitation. The WE SPD is clear though in linking landscape and visual impact together when assessing sites for development.	<p>'Loss of tranquillity'</p> <p>'Vulnerability of the landscape'</p>	<p>Redrafting of the WE SPD to reflect well-being.</p> <p>Monitor impact from existing development.</p> <p>Technical mitigation through careful planning, design and location. Landscape and visual impact assessment will facilitate this.</p>	<p>Possible inclusion in the WE SPD of a section on the importance of well-being and how poorly planned, poorly sited and managed wind energy development might impact on this.</p> <p>Links should be made to health both physically in terms of possible construction impacts such as increased dust and pollution from vehicles but also mental health through maintain people's well being and avoiding the impacts of noise pollution.</p>
SP6: To create vibrant, active, inclusive and open-minded communities with a strong sense local history	To gauge the effects on this objective some measure of how satisfied people are with their area as a place to live will need to be measured – this will be most	<p>Scale: This is relevant to the whole of Cumbria – wherever wind energy development could take place</p> <p>Magnitude; Same comments</p>	As for objective SP5 above	As for objective SP5 above	As for objective SP5 above	As for objective SP5 above	As for objective SP5 above. Communities close to wind farm developments will only remain open minded and inclusive places in which to live if the developers approach a wind energy project in the right manner. Excessive blight to an area from poorly planned, poorly sited and

SA Objective	WE SDP Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
(SEA: Population)	relevant close to wind farm development.	as for SP5 above.					poorly managed wind energy developments will affect community spirit, cohesion leading to more divisive communities. Developers should be advised on how to avoid or minimise such impacts through careful and considerate liaison with town/village committees, interest groups and the wider public.
Effective protection of the environment							
EN1: To protect and enhance biodiversity (SEA: Biodiversity, flora and fauna)	The overall score against the biodiversity indicators in the prediction table was -. The WE SPD scored negatively as there is currently no section guiding developers on biodiversity included in the guidance.	Scale: This is relevant to the whole of Cumbria – wherever wind energy development could take place Magnitude: The WE SPD needs to be stronger on biodiversity to guide developers at an early stage on the issue. Impacts will be greatly mitigated through the requirements of the EIA process.	Yes – there are many potential cumulative effects. Ecosystems can operate close to their minimum sustainable thresholds. A relatively small impact in one area could have large scale and far reaching effects.	Yes – there is the potential for many synergistic effects. One example is that Cumbria depends on its natural beauty, including its biodiversity for tourism. Any loss of tranquillity, landscape and biodiversity could impact the tourist economy in Cumbria.	‘High proportion of species identified for national conservation priority’ ‘Large tracts of upland and coastal habitat remain but elsewhere there are declines in extent (fragmentation) and quality of wildlife habitats and populations for some species’ ‘Unknown impact of climate change possibly leading to outward migration of some species and inward migration of other as average temperatures rise’	Redrafting of the WE SPD to reflect biodiversity. Through the EIA process. Technical mitigation measures delivered and facilitated through the EIA process as a requirement/condition for planning permission.	Whilst it is noted that the WE SPD will afford biodiversity some protection through its landscape guidance, there needs to be more specific attention on biodiversity matters. This might take the form of a separate biodiversity chapter in which developers are encouraged to minimise their impact on biodiversity when designing, locating and constructing wind energy development. Objective EN1 also seeks some enhancement to biodiversity. Developers should be aware that some mitigation measures may be required as a result of the EIA process.

SA Objective	WE SDP Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
EN2: To preserve, enhance and manage landscape quality and character for future generations (SEA: Landscape)	This is the main focus of the WE SPD. The WE SPD scores well against the landscape objectives and indicators. Landscape impact will be managed through careful planning, siting and design of windfarms. The WE SPD also contains guidance on landscape and visual assessment and guides developers on avoiding the most sensitive landscape as set out in the landscape strategy for Cumbria.	Scale: This is relevant to the whole of Cumbria – wherever wind energy development could take place Magnitude: Impact is significantly reduced due to the robust nature of the WE SPD guidance on landscape and visual impact issues and also through the requirements of the EIA process.	Yes – there are many potential cumulative effects. There is potential for several small wind energy developments that would not, in isolation have a significant effect on this objective to have a large negative impact as a collective. The WE SPD is clear in acknowledging the potential risk of cumulative effects and contains a section on cumulative impact assessment and where and when it will be required.	Yes – there is the potential for many synergistic effects. Tourism is a good example again here – people are drawn to Cumbria for its landscape quality – the potential impact on the national park from peripheral windfarm development could have an affect on the tourist sector.	‘Loss of tranquillity’ ‘Vulnerability of the landscape’ ‘National renewable energy targets likely to lead to pressures for more development of wind farms which could affect landscape character and quality’	Technical mitigation measures delivered and facilitated through the EIA process as a requirement/condition for planning permission.	The WE SPD in its current form already provides robust guidance on landscape and visual impacts but more links could be made to the EIA process.
EN3: To improve the quality of the built environment (SEA: Cultural Heritage)	The overall score against the built environment indicators in the prediction table was -. The WE SPD scored negatively as there	Scale: This is relevant to those areas of Cumbria that contain archaeological heritage as well as conservation areas and listed	Yes – Again there is potential for several small wind energy developments that would not, in isolation have a significant effect on this objective to	None likely	‘Unsympathetic new developments altering historic character and damaging archaeology in some areas’	Redrafting of the WE SPD to reflect the built environment. Technical mitigation measures delivered and facilitated through the EIA	Include a section on the built environment as part of the WE SPD guiding developers on minimising the impact of their developments on archaeology and other built cultural assets in Cumbria. This might include maps detailing the areas most

SA Objective	WE SDP Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
	is currently no section guiding developers on the built environment included in the guidance.	buildings – wherever wind energy development could take place Magnitude: Unlikely to be significant due to the requirements placed on developers to protect cultural heritage assets	have a large negative impact as a collective.			process as a requirement/condition for planning permission.	constrained by built heritage and advising developers what will be required as part of the EIA process.
Sustainable use and management of natural resources							
NR1: To improve local air quality and reduce greenhouse gas emissions (SEA: Air) (SEA: Climatic Factors)	There are two elements to this: 1. The effect on local air quality, mainly through the construction of new wind energy development. 2. The wider implication of the WE SPD on climate change and through the release/reduction of CO ₂ as a result of implementing the WE SPD. The WE SPD does not contain a section on climate	Scale: Cumbria wide in terms of local air quality issues but global in terms of climate change impacts. Magnitude: Potential impacts are likely to have trans-boundary effects beyond the County boundary of Cumbria though protection will come through the requirements of the EIA process.	Yes – there are many potential cumulative effects. Cumulative effects might include the impacts on biodiversity – if climate change accelerates and cause certain species to migrate and leave Cumbria this could create a positive feedback system or ‘chain reaction’ that could have wider and more catastrophic effects on the ecosystem as a	Yes – there is the potential for many synergistic effects. This objective cuts across all the others in one way or another. It has the clearest links with biodiversity, human health and well-being and sustainable resource management.	(This objective link to many sustainability issues – for full list refer to Appendix 4 of the Scoping Report). ‘Air quality problems in urban areas’ ‘Need to reduce the risk to people and property from flooding (Carlisle, Kendal and Keswick)’ ‘Unknown impact of climate change possibly leading to outward migration of some species and inward migration of other as average temperatures	Redrafting of the WE SPD to reflect air quality and climate change issues. Technical mitigation measures delivered and facilitated through the EIA process as a requirement/condition for planning permission.	Include a section on air quality and climate change. This section should make clear links to the requirements of the EIA process but there might also be scope to include a more contextual background section on wind energy and climate change and make links to regional targets for renewables and our responsibility to reduce greenhouse gases on the national and global scale. More specific guidance could be included on: <ul style="list-style-type: none">• Sustainable Design and Construction and sourcing local materials.• Minimising pollution from

SA Objective	WE SDP Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
	change or air quality and therefore scored poorly against this objective. Despite this it is acknowledged that the WE SPD aims to steer wind energy development away from the most sensitive areas and encourages developers to site their development in areas that will reduce negative effects on the environment. It is unclear at this time what effect this will have on the number of wind energy applications made and the number that gain planning consent. Should the wind power generation capacity across Cumbria increase as a result of implementing the WE SPD this will clearly result in a positive effect with		whole. Another example is the potential effect of climate change on flooding – whilst a sea level rise of 1 metre may be mitigated against a further rise of 10 centimetres might render large areas uninhabitable.		rise' 'Significant pressure on rivers, lakes and tarns from diffuse sources of pollution (agricultural wastes, fertilizers and run off from drains and road surfaces, coupled with some air pollution)'		construction traffic and making links with local air quality and human health – sustainable construction traffic planning. It should be noted that many of the adverse effects of the manufacturing and construction phases will be mitigated indirectly through the positive contribution that wind energy can make to meeting increased energy demands. This is likely to lead to a reduction in demand for fossil fuel power generation and should significantly outweigh the negative impacts of manufacturing and construction related pollution.

SA Objective	WE SDP Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
	regards objective NR1.						
NR2: To improve water quality and water resources (SEA: Water)	The WE SPD does not contain a specific section on water quality and resources. There is brief reference made to local hydrology issues. Because of this the WE SPD generally scored poorly against the indicators relating to this objective.	<p>Scale: This is relevant to the whole of Cumbria – wherever wind energy development could take place There is the potential for trans-boundary impacts to occur with this objective – pollution incidents that occur with Cumbria could affect watercourses downstream outside the County boundary.</p> <p>Magnitude: Unlikely to be significant due to the requirements place on developers to protect the water environment through the EIA process.</p>	<p>Yes – there are many potential cumulative effects.</p> <p>Small amounts of pollution could have a significant effect on aquatic flora and fauna. There is potential for several small wind energy developments that would not, in isolation have a significant effect on this objective to have a large negative impact as a collective.</p>	<p>Yes – there is the potential for many synergistic effects.</p> <p>This objective cuts across and could potentially influence many other such as human health, biodiversity, managing resources and access to services (water as a resource)</p>	<p>‘Significant pressure on rivers, lakes and tarns from diffuse sources of pollution (agricultural wastes, fertilizers and run off from drains and road surfaces, coupled with some air pollution)’</p>	<p>Redrafting of the WE SPD to reflect water quality and resource issues.</p> <p>Technical mitigation measures delivered and facilitated through the EIA process as a requirement/condition for planning permission.</p>	<p>Broaden the scope of the WE SPD to take greater account of wind energy's relationship with the water environment. Again links could be made with the requirements of the EIA process relating to water with a focus on the likely sources of pollution and demands on abstraction from the construction phases. Information and guidance could signpost to other sources, such as illustrated maps from the Environment Agency detailing groundwater protection zones and areas of high pollution incidence.</p>
NR3: To	The WE SPD does	Scale: This is	Yes – there is the	Yes – there is the	Pressure to continue to	Redrafting of the WE	Broaden the scope of the WE

SA Objective	WE SDP Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
restore and protect land and soil (SEA: Soil)	not contain a specific section on protecting soils. There is brief reference made to protecting sensitive soils such as peat bogs. Because of this the WE SPD generally scored poorly against the indicators relating to this objective.	relevant to the whole of Cumbria – wherever wind energy development could take place Magnitude: Unlikely to be significant due to the requirements place on developers to protect soils through the EIA process.	potential for cumulative effects. Increased risk of wider impacts from the cumulative effects of more than one windfarm. Soil contamination or loss through erosion from the cumulative impacts of more than one wind energy development could cause significant and unpredicted damage. The WE SPD is clear in acknowledging the potential risk of cumulative effects and contains a section on cumulative impact assessment and where and when it will be required.	potential for synergistic effects. Soil pollution can have implications on ecology and human health. Primary minerals abstraction from quarry sites can also affect heath, visual impact, landscape character and well-being.	supply scarce mineral resources to meet national demand (gypsum and skid resistant road stone) The need to meet mineral demand by substituting secondary and recycled material for primary aggregates Vulnerability of nutrient rich lakes and nutrient poor lakes (and their resident species)	SPD to reflect soil quality and resource issues. Technical mitigation measures delivered and facilitated through the EIA process as a requirement/condition for planning permission.	SDP to take account of soil pollution and resource issues. Developers should be guided and encouraged to take the necessary mitigation measures to avoid soil pollution incidents as a result of the manufacturing, construction and operational phases of wind farm development. Links can again be made to the requirements of the EIA process.
NR4: To manage mineral resources sustainably and minimise waste	The WE SPD does not contain a specific section on managing mineral resources sustainably and minimise waste.	Scale: This is relevant to the whole of Cumbria – wherever wind energy development could take place	Yes – there is the potential for cumulative effects. Increased risk of wider impacts from the cumulative	Yes – there is the potential for synergistic effects. Demand for primary aggregates will result in	Pressure to continue to supply scarce mineral resources to meet national demand (gypsum and skid resistant road stone)	Redrafting of the WE SPD to reflect mineral and waste sustainability issues. Technical mitigation measures delivered	The WE SPD should take account of mineral and waste issues and guide developers on how to take a sustainable approach to the management of mineral resources and the minimisation of waste. Whilst

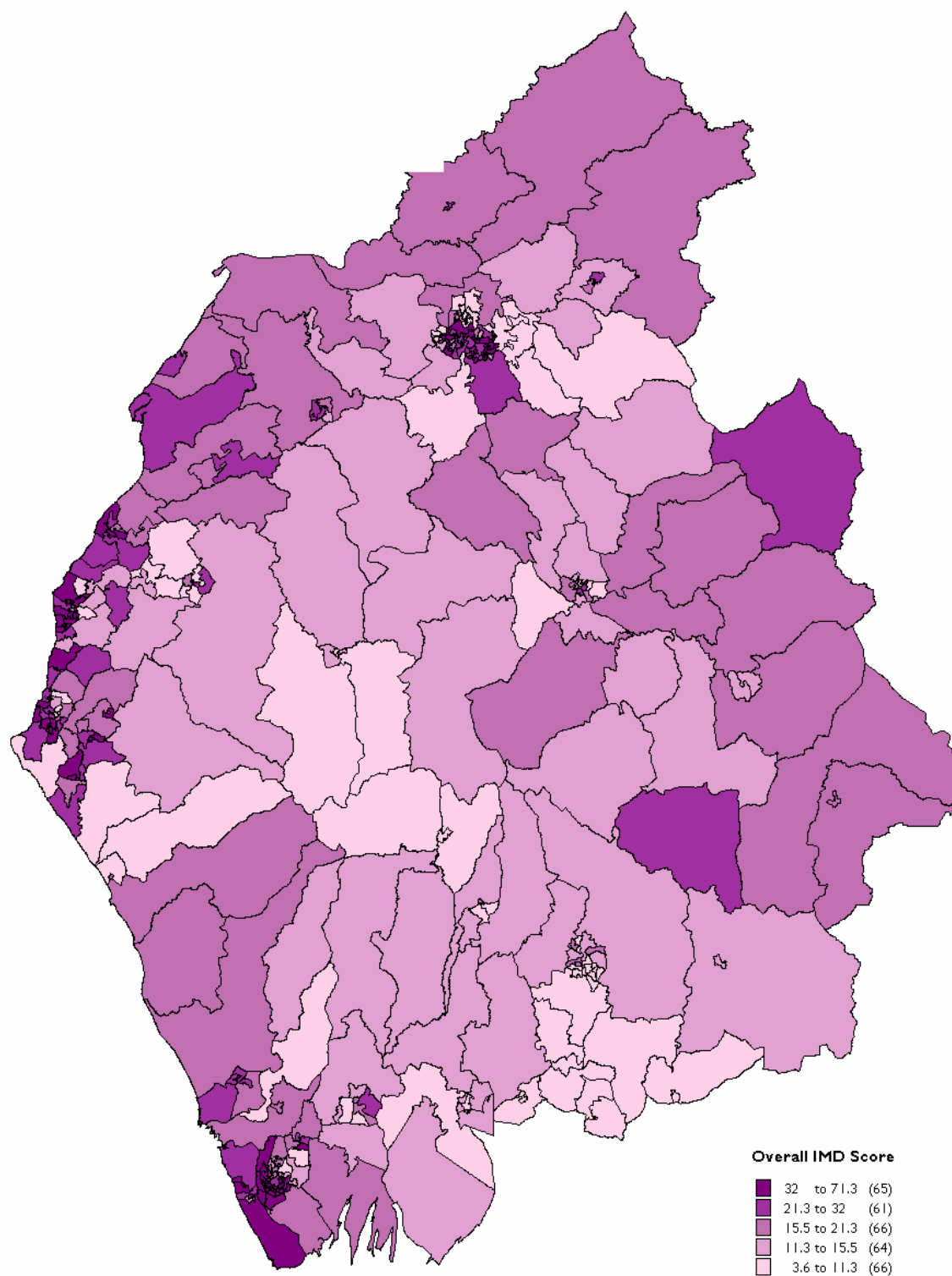
SA Objective	WE SPD Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
(SEA: Air) (SEA: Climatic Factors) (SEA: Soil) (SEA: Water)	Because of this the WE SPD does not currently provide protection to soils or encourage the increased use of recycled aggregates.	but has wider impacts in terms of resource use. Magnitude: Potentially great as large number of wind farms will be resource intensive during manufacturing and construction.	effects of more than one windfarm.	increased quarrying with potential knock-on effects for human health, biodiversity, visual impact, landscape character and well-being.	The need to meet mineral demand by substituting secondary and recycled material for primary aggregates 'Pressure responding to regulations preventing waste going to landfill'	and facilitated through the EIA process as a requirement/condition for planning permission.	energy from waste is outside the remit of the WE SPD, waste issues can still be addressed by guiding and encouraging developers to adopt practices that seek to minimise waste and used recycled material through the manufacturing, construction and operational phases of wind farm development.
Building a sustainable economy in which all can prosper							
EC1: To retain existing jobs and create new employment opportunities (SEA Population) (SEA Material Assets)	Generally the WE SPD has a positive influence on the economic SA objectives. By bringing in a new industry to Cumbria there is the potential for significant benefits to the local economy. Questions remain about how many jobs might be created, whether or not energy companies will locate in Cumbria and the wider spin	Scale: This is relevant to the whole of Cumbria but is likely to affect the economy of other areas outside the County. Magnitude: There is the potential for a significant job creation in Cumbria as a result of increased wind energy development. It remains to be	Yes – there is the potential for positive cumulative effects. Cumulative effects could occur if one company chose to locate in Cumbria this could lead to spin-off companies starting up as a result and therefore create further employment opportunities.	Yes – there is the potential for synergistic effects. Greater numbers and range of employment opportunities is likely to increase earnings and enable people to access more facilities, improve health and standards of housing and boost the levels of education, skills and training in the wind energy sector.	'Unemployment with higher levels of economic inactivity in West Cumbria and Furness' 'Low unemployment and skills shortage in Eden and South Lakes' 'Economic vulnerability due to decline of manufacturing & uncertain future of nuclear industry (West Coast & Barrow)'	Redrafting of the WE SPD to reflect the need to ensure the sustainability of the local economy. Mitigation could potentially occur through the refusal to grant planning permission to development deemed likely to have a significant negative effect on the local economy.	The WE SPD could make clearer the links between the local economy and potential positive impacts of the wind energy sector. Links could be made to regeneration initiatives and strategies in place in Cumbria. Developers should be encouraged to sustain the local economy through employing local contractors. Opportunities should be explored to link planning conditions/obligations for wind energy development consent and demonstrating a positive

SA Objective	WE SDP Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
	offs to other sectors like the manufacturing, construction and tourist industry.	seen whether companies will chose to locate in the County or employ the local workforce and contractors.					impact on the local economy through job creation.
EC2: To improve access to jobs (SEA Population) (SEA Material Assets)	Access to jobs will largely be improved through increasing the numbers and types of jobs available. Physical access to employment opportunities will be improved by the careful location of potential new wind energy job opportunities in the areas of greatest need.	Scale: This is relevant to the whole of Cumbria but is likely to affect the economy of other areas outside the County. Magnitude: Much will depend on the ability to influence developers to locate in Cumbria and employ local people through the various phases of wind energy development.	See EC1 above	See EC1 above	'Increasingly frequent relocation of jobs outside the county (and the country)' 'Low wage economy particularly tourism related jobs'	Redrafting of the WE SPD to reflect the need to ensure the sustainability of the local economy. Developers should demonstrate a commitment to improving access to jobs to those people in those areas that need it most.	Developers should be made aware of the need to diversify the Cumbrian economy and the role they can play in helping to achieve this. Renewable energy represents a new and growing industry that could increase the access to new employment opportunities in Cumbria. Developers should be encouraged through the WE SPD to improve the sustainability of their development by maximising their positive impacts on the local economies. It should be made clear that this is part of committing to Cumbria and creating good links and relationships with local communities.
EC3: To diversify and strengthen the local economy (SEA Population) (SEA	The WE SPD does not currently include a section on the broader impacts and relationship that wind energy development in	Scale. This is relevant to the whole of Cumbria but is likely to affect the economy of other areas outside the County.	See EC1 above	See EC1 above	'Below average share of growth sectors in local economy' 'Limited research and development facilities' 'Gross Value Added	Redrafting of the WE SPD to reflect the need to ensure the sustainability of the local economy. Leverage applied through the planning system to help	In order to influence this indicator a specific section could be included in the WE SPD guiding developers on maximising there influence on the local economy by employing local people both in designing and manufacturing

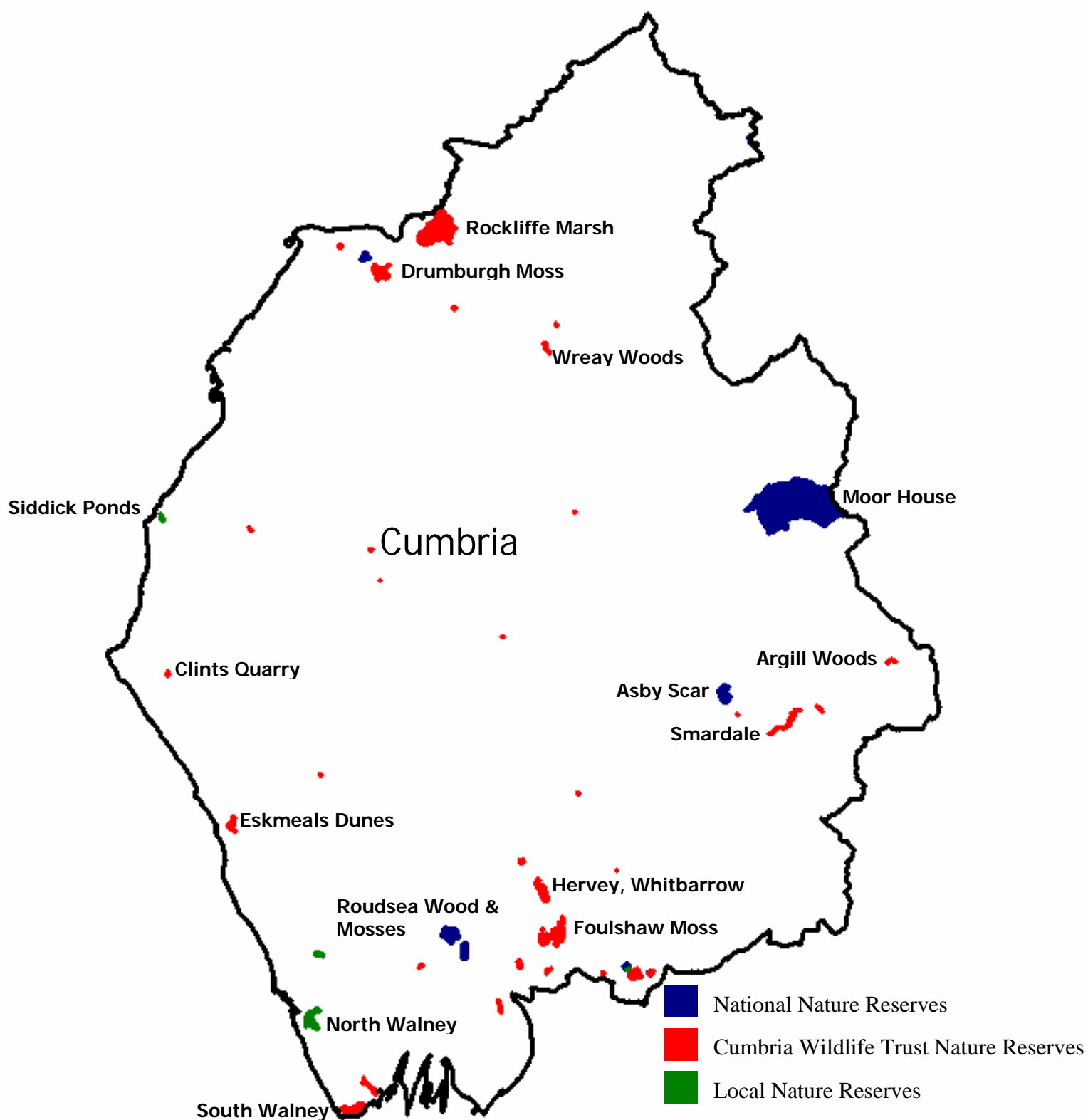
	WE SDP Predicted Effects	Scale and Magnitude	Cumulative Effects?	Synergistic Effects?	Links to Key Sustainability Issues in Cumbria	Mitigation	Recommendation (s)
Material Assets)	Cumbria will have on the County's economy. The effects of this might be that developers do not fully understand why and how they could help achieve this objective.	Magnitude: See EC2 above.			growing more slowly than the rest of the UK causing the economy to under perform and a widening of regional disparities of wealth' 'Recent farming crises causing problems for agriculture coupled with unique problems of farming in upland areas (falling incomes and the labour intensive nature of the work)'	achieve the objective. (See EC1 and EC2 above)	and constructing/decommissioning wind energy development. There is an opportunity to guide developers to ensure that the variety and quality of employment in Cumbria's energy sector is improved. On top of this developers should be encouraged to support existing and developing local businesses and companies.

Baseline Data Context Maps

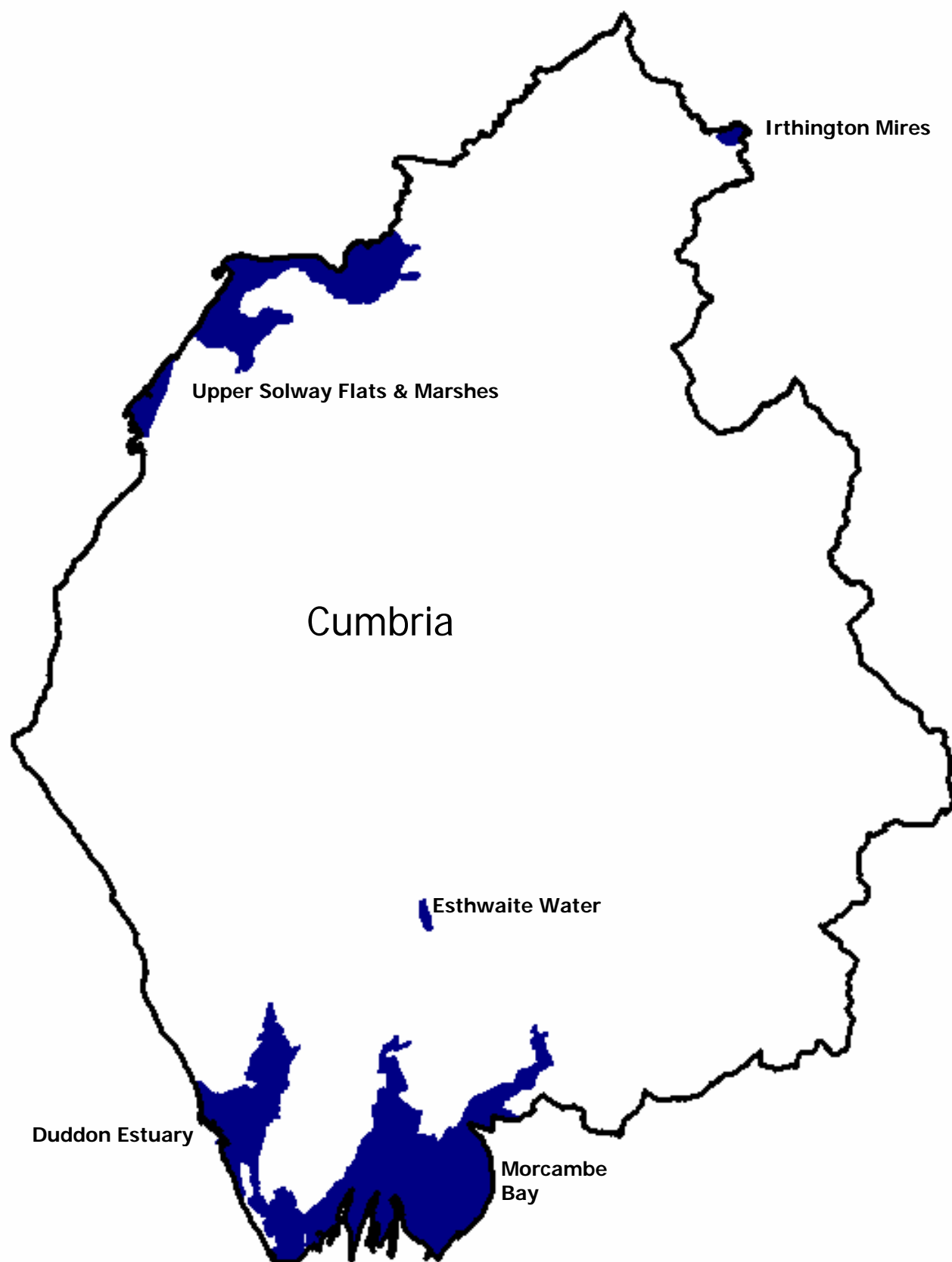
Index of Multiple Deprivation (IMD) Overall Scores for Cumbria



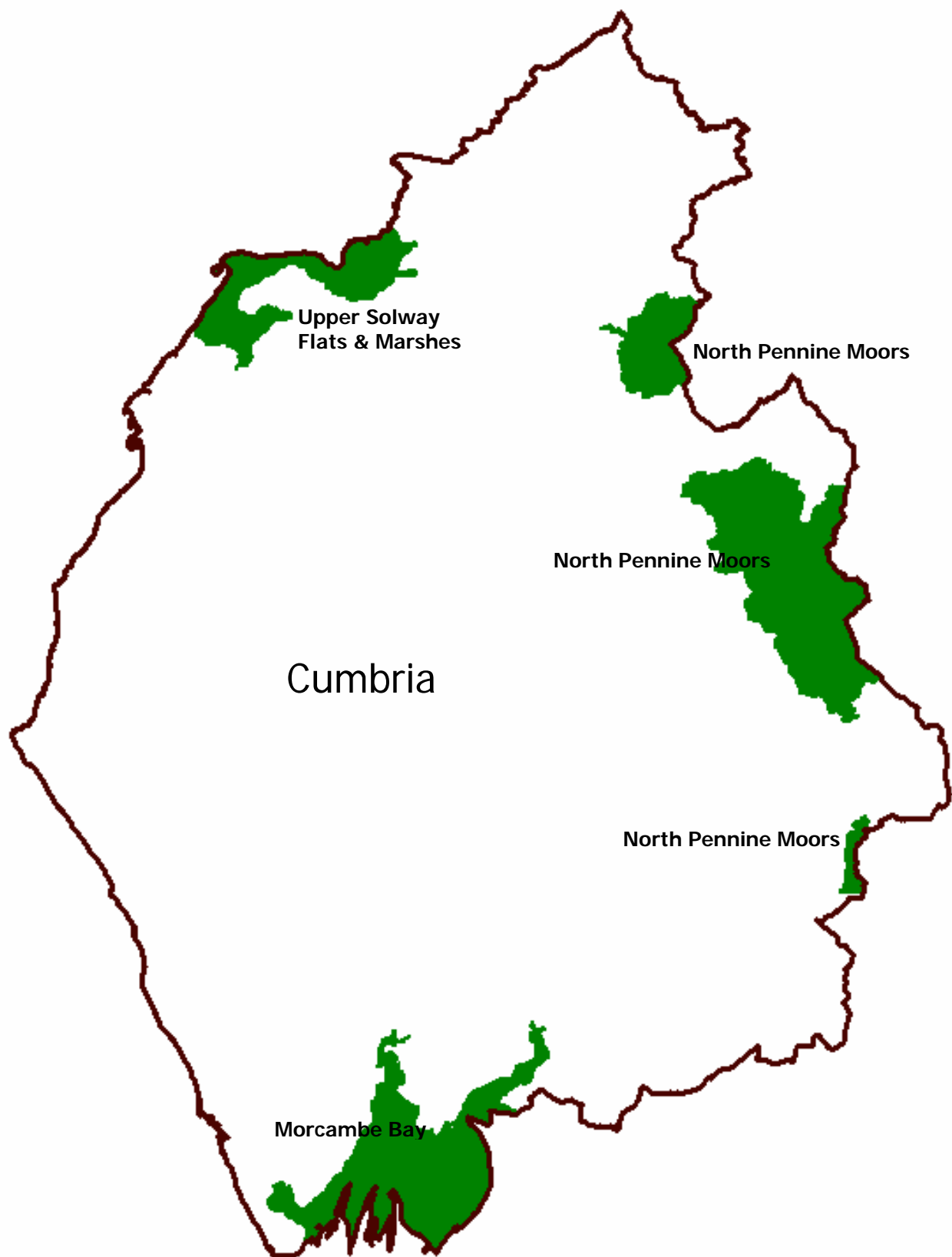
Nature Reserves in Cumbria



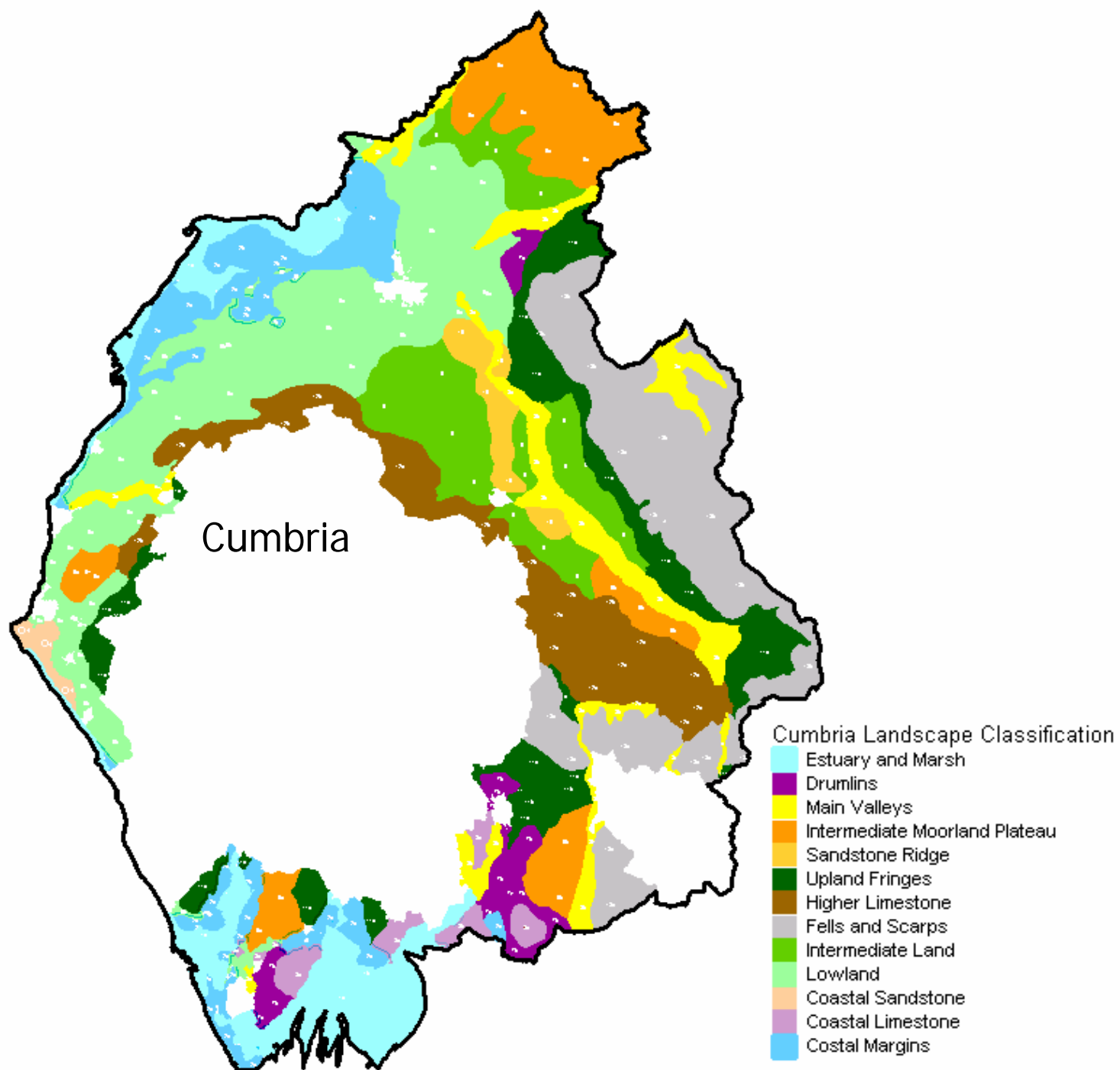
RAMSAR Sites in Cumbria



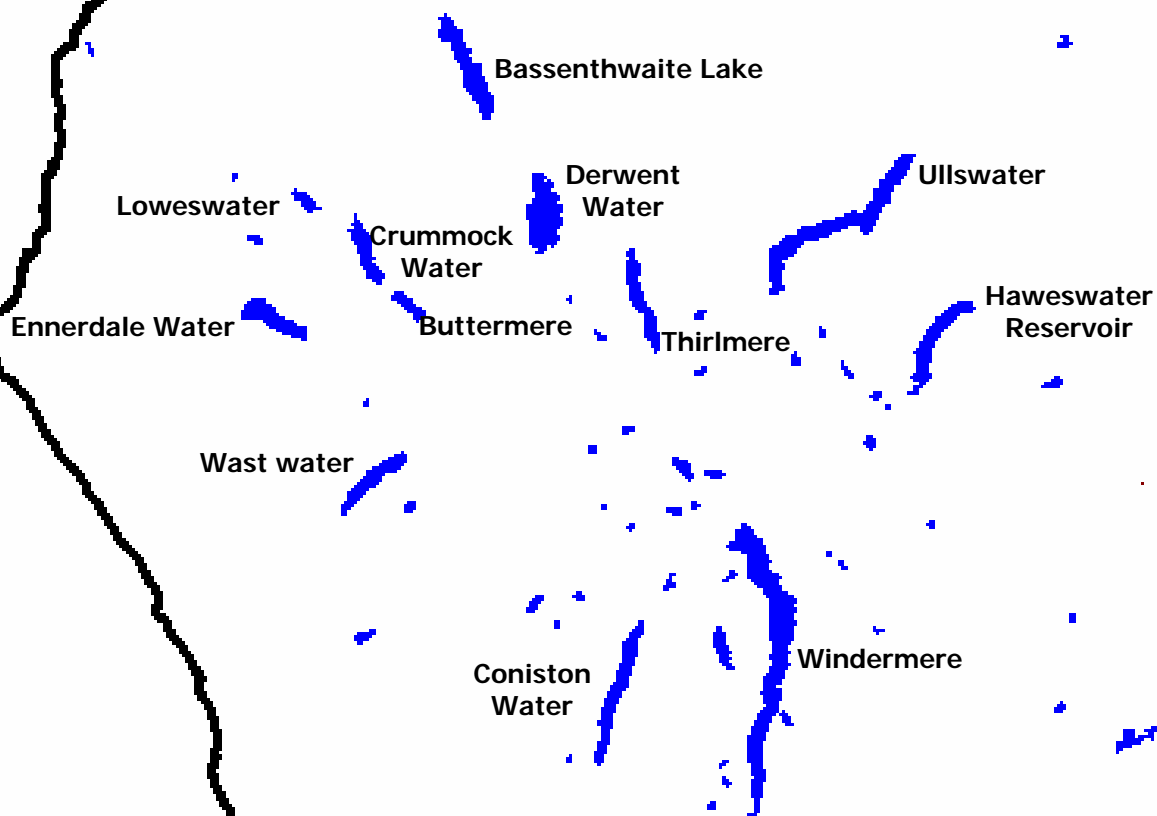
Special Protection Areas in Cumbria



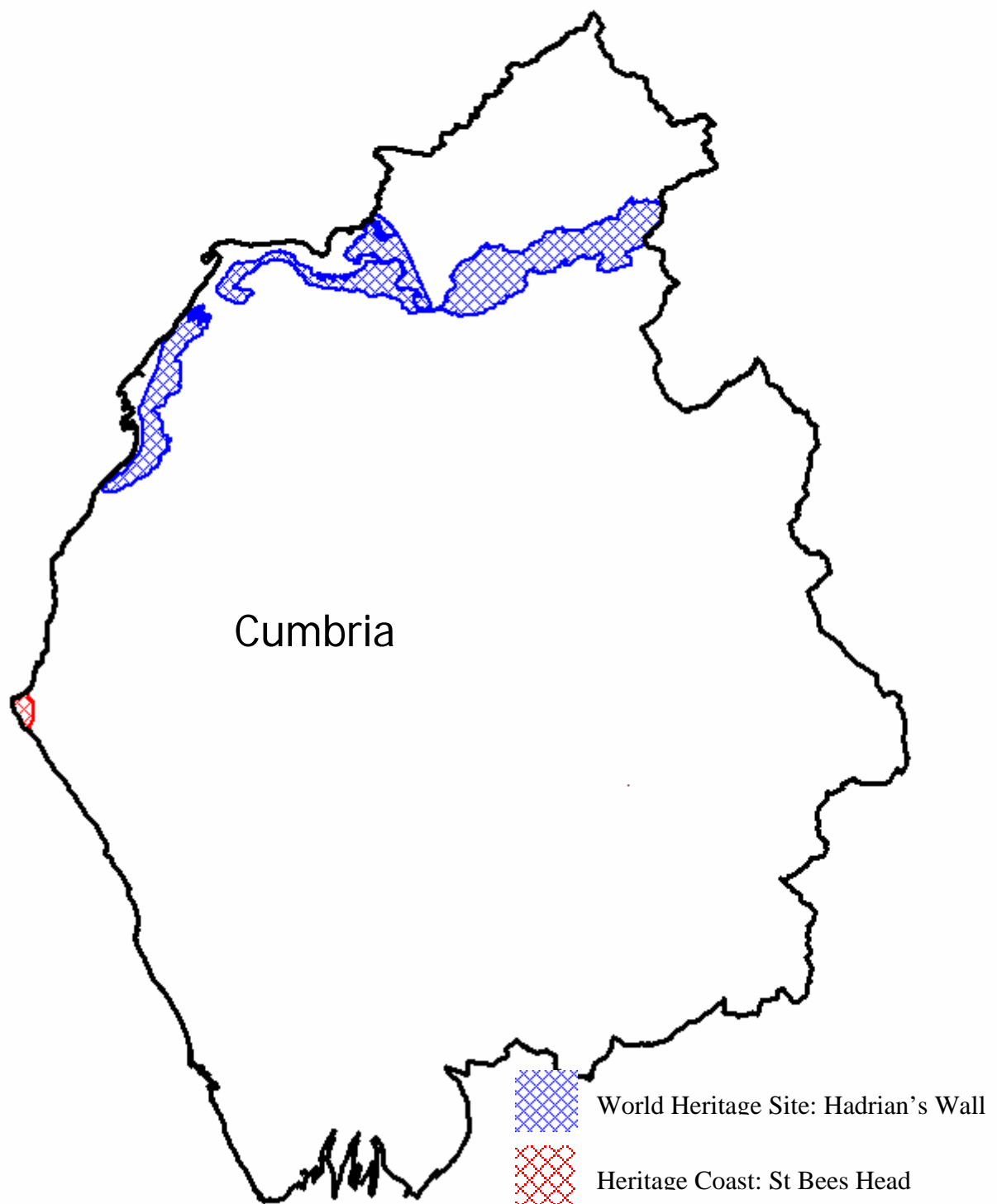
Cumbria Landscape Classification



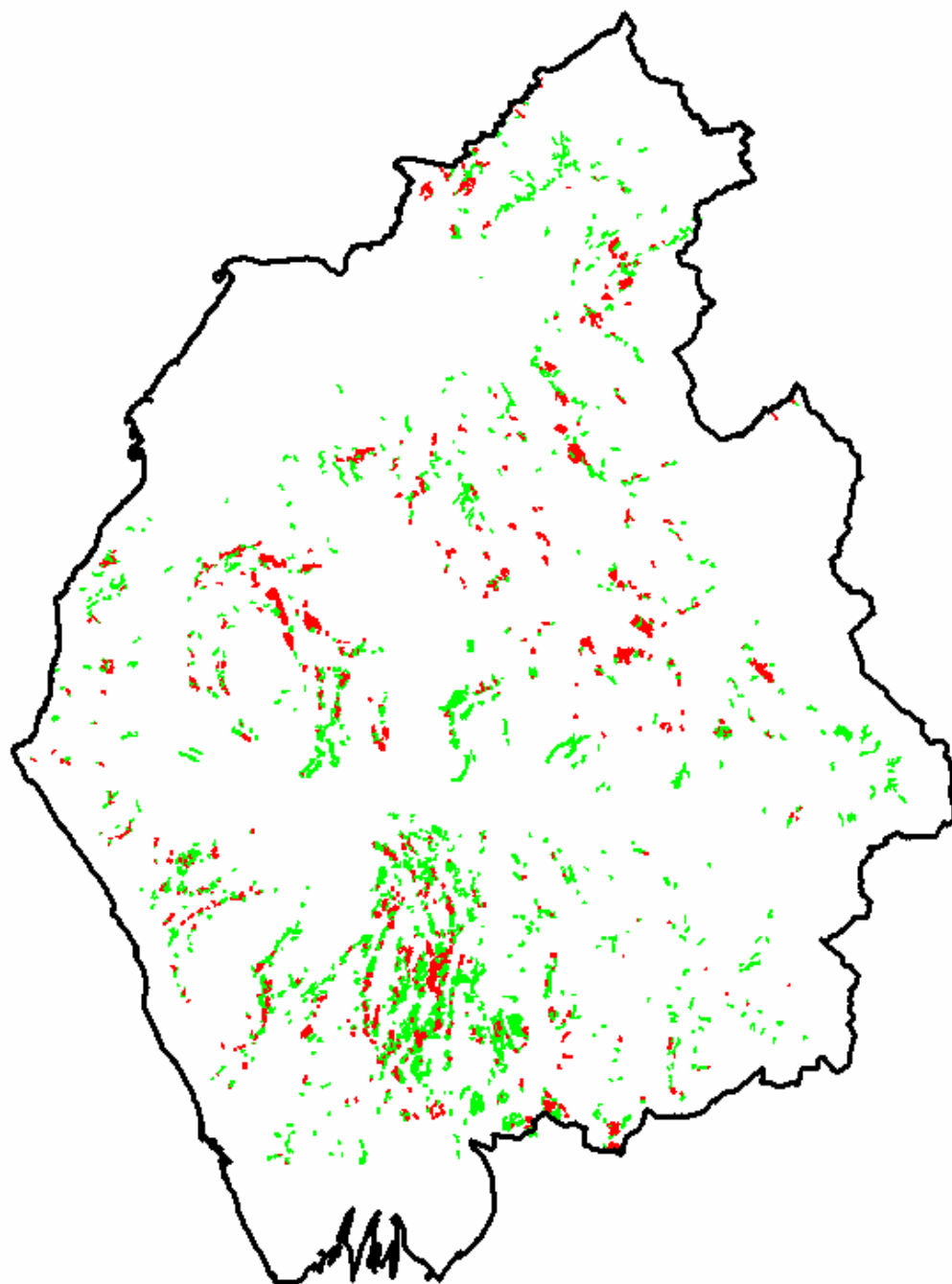
Cumbria's Primary Lakes and Reservoirs



World Heritage & Heritage Coast Sites in Cumbria



Ancient Woodlands in Cumbria

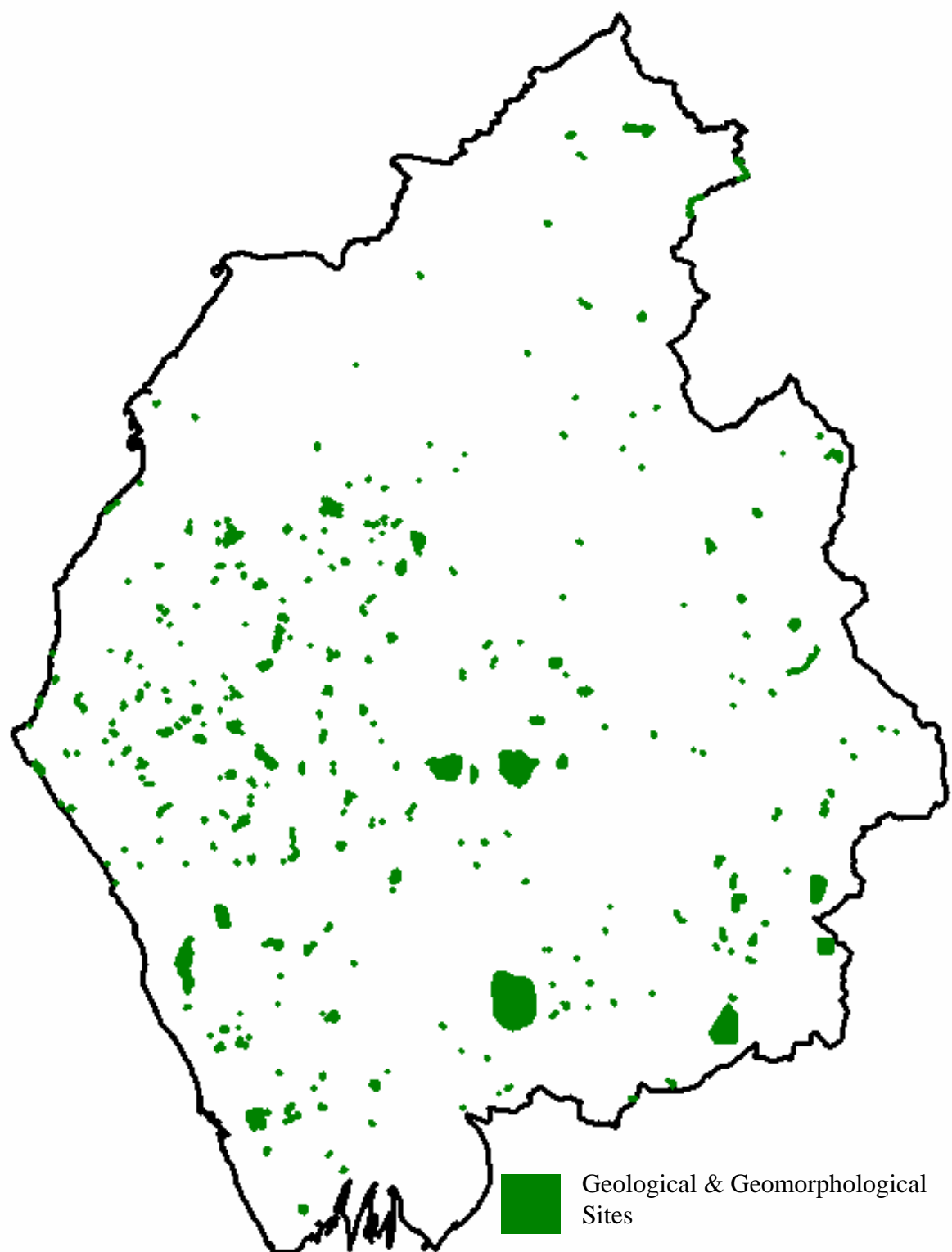


Ancient Replanted Woodland

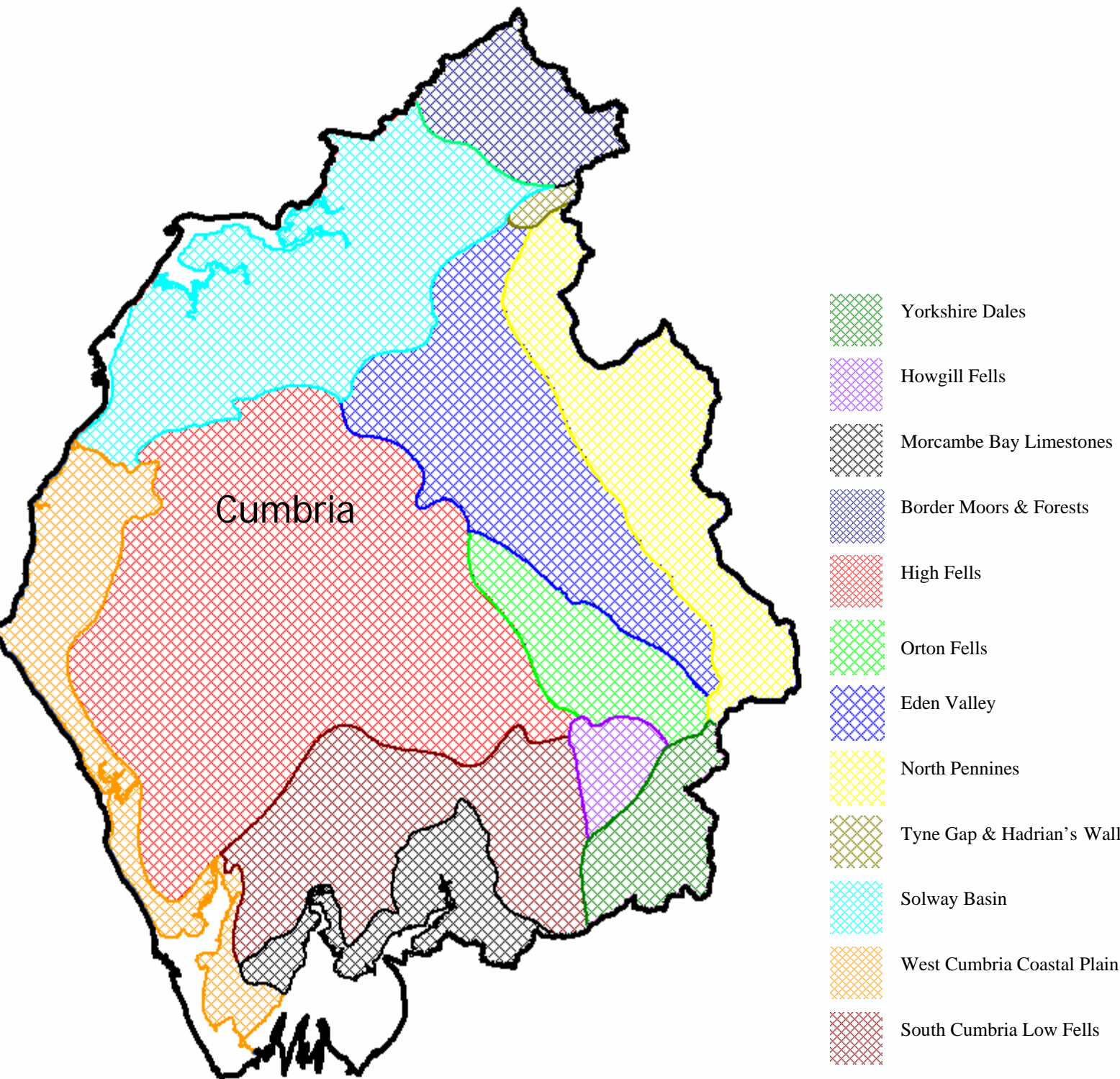


Ancient & Semi-Natural Replanted Woodland

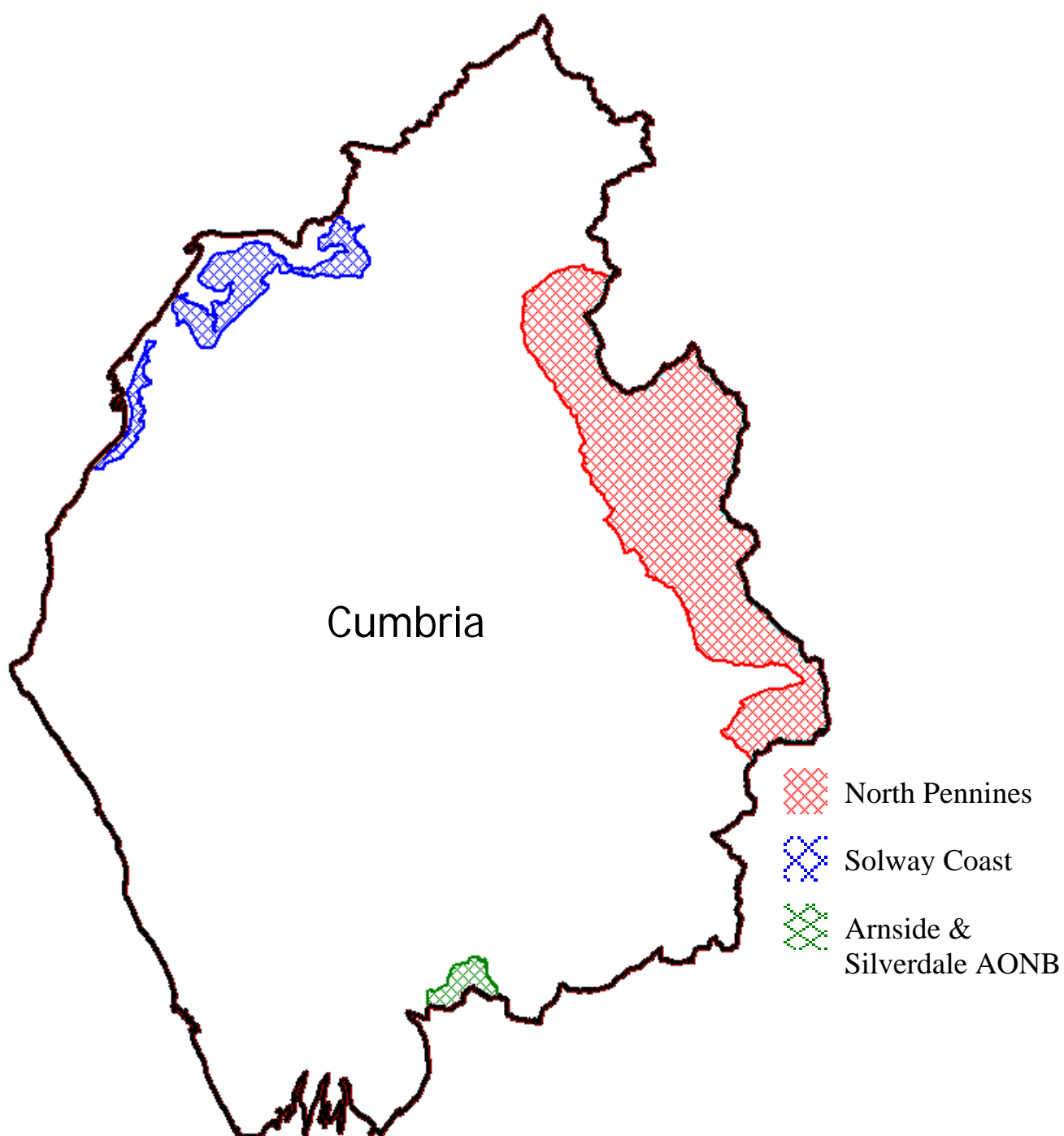
Locations of Geological & Geomorphological Sites in Cumbria



Cumbria Character Areas



AONB's in Cumbria



References

- 1) Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents, ODPM, London. November 2005.
- (2) Draft Cumbria Wind Energy Supplementary Planning Document 2006.
- (3) SEA Directive – European Directive 2001/42/EC “on the assessment of the effects of certain plans and programmes on the environment”.
- (4) The Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No.1633).
- (5) Cumbria Wind Energy Supplementary Planning Document – Sustainability Appraisal Stage A, Scoping Report (January 2006).
- (6) Cumbria Wind Energy Supplementary Planning Document – Sustainability Appraisal Stage B, Developing and refining options, predicting and assessing effects.
- (7) The Town and Country Planning (Local Development) (England) Regulations 2004 (Statutory Instrument 2004 No. 2204).
- (8) Planning Policy Statement 12: Local Development Frameworks. ODPM, London, 2004.

Glossary/Abbreviations

LDD – Local Development Document

LDF- Local Development Framework

ODPM – Office of The Deputy Prime Minister (Now the DCLG – Department for Communities and Local Government).

PPS – Planning Policy Statement

RSS – Regional Spatial Strategy

SA – Sustainability Appraisal

SEA – Strategic Environmental Assessment

SPD – Supplementary Planning Document

SPG – Supplementary Planning Guidance

WE SPD – Cumbria Wind Energy Supplementary Planning Document.

4 Statutory Consultees: English Nature, Countryside Agency, Environment Agency and English Heritage. PPS 12 on Local Development Frameworks, ODPM 2004 identifies the 4 statutory consultees as organisations which must be consulted on sustainability appraisal of Local Development Documents in accordance with the town and Country Planning (Local development) (England) Regulations 2004.