Northumberland County Council

Northumberland Local Plan

Publication Draft Plan

Potentially suitable areas for wind energy development Technical Paper

Updated for the Publication Draft Local Plan (Regulation 19)

December 2018

If you need this information in Large Print, Braille, Audio or in another format or language please contact us:

(Telephone) 0345 600 6400
(Typetalk) 018001 0345 600 6400

Contents

1. Introduction

Purpose of this document

1.1 The purpose of this document is to provide a high level assessment of the extent and distribution of planning and environmental considerations that could affect the potential suitability of areas of Northumberland for onshore wind energy development involving one or more wind turbines. The analysis has then been used to understand whether it is appropriate to identify potentially suitable areas for wind turbine development in the Northumberland Local Plan.

1.2 This document responds to the policy and guidance relating to wind energy development in the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG) respectively. The NPPF states that, when determining planning applications for a proposed wind energy development involving one or more turbines, they should not be considered acceptable unless it is in an area identified as suitable for wind energy development in the development plan. PPG goes on to state that these areas need to be identified clearly in a Local or Neighbourhood Plan.

1.3 This report details the context for this study, its scope and the approach taken. The report also provides maps and makes recommendations on the approach to the identification of potentially suitable areas for wind energy development in the Northumberland Local Plan.

1.4 This document was first published in March 2018 and was used to inform the preparation of the Draft Local Plan for Regulation 18 consultation in July 2018. It has now been updated to inform the Regulation 19 Publication Draft of the Local Plan (January 2019). The changes largely reflect updated national planning policy following the publication of the revised NPPF in July 2018 and also seek to provide greater clarity on the approach following feedback received through the consultation on the Draft Local Plan.

Background

1.5 The Climate Change Act 2008 commits the UK to reducing its greenhouse gas emissions by 80% over 1990 levels by 2050. The development of renewable energy generation rather than using fossil fuels for energy generation is seen by Government as an important means of achieving this. This was reflected in the UK target for renewable energy generation of obtaining at least 15% of energy from renewable sources by 2020, which originates from the EU's Renewable Energy Directive (2009/08/EC). Wind, both onshore and offshore, was viewed by

Government as the main renewable resource to achieve this target (see UK Renewable Energy Strategy 2009).

1.6 Northumberland has a wind resource that has been attractive to those wishing to construct and operate wind turbines. There are now a number of operational wind energy developments in Northumberland, ranging from smaller single turbine schemes, typically under 25 metres in height, to larger developments with multiple turbines and heights in excess of 100 metres. Table 1.1 below lists wind energy developments in Northumberland where the height of the wind turbines exceeds 60 metres in height to the tip of the blade.

Table 1.1: Wind energy developments in Northumberland with a height of turbine(s) to blade tip greater than 60 metres

Wind farm scheme	Number of turbines	Height of turbine (To blade tip)	Power per turbine
Barmoor	6	110 metres	2 MW
Bavington Mount	1	61 metres	0.5 MW
Bewick Drift	1	110 metres	2.3 MW
Blyth Harbour	1	130 metres	3.4 MW
Boundary Lane	3	110 metres	2 MW
Cramlington (MSD)	2	125 metres	2.5 MW
Green Rigg	18	100 metres	2 MW
Kiln Pit Hill	6	100 metres	2 MW
Kirkheaton	3	66 metres	0.6 MW
Low Horton Farm	1	71 metres	0.275 MW
Lynemouth	13	121.5 metres	2 MW
Middlemoor	18	125 metres	3 MW
North Steads	9	125 metres	2 MW
Ray	16	125 metres	3.4 MW
Sisters	4	125 metres	2 MW
Steps of Grace	1	74 metres	0.5 MW
Wandylaw	10	125 metres	2 MW
Wingates	6	110 metres	2.5 MW

1.7 There are also more than 80 wind turbines in Northumberland that are below 60 metres in height with the majority of these being below 25 metres in height. There are also additional ‘microgeneration’ wind turbines, both ground mounted and building mounted, that benefit from permitted development rights.

1.8 Northumberland has previously experienced significant development pressure in respect to wind energy development but following the ending of government subsidies the number of planning applications has fallen since 2015.

2. Policy context

2.1 This section of the report provides an overview of the national and local policy context applicable to planning for onshore wind energy development. There is a positive approach to renewable energy in national planning policy, which largely reflects wider policy aspirations relating to climate change mitigation and reducing emissions of greenhouse gases from energy production. National planning policy does, however, provide for onshore wind energy development in a different way to that of other renewable energy development.

National Planning Policy

2.2 National planning policy specifically relating to renewable and low carbon energy is set out in paragraphs 151 to 154 of the National Planning Policy Framework (NPPF) (2018). The NPPF states that plans should:

- Have a positive strategy to promote energy from renewable and low carbon sources that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
- Consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
- Support community-led initiatives for renewable and low carbon energy, including developments outside such areas being taken forward through neighbourhood planning.

2.3 In addition, Paragraph 154 of the NPPF sets out that when determining planning applications, local authorities should:

- Not require applicants to demonstrate the overall need for renewable or low carbon energy and also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions (Paragraph 154 a); and
- Approve the application if the impacts are (or can be made) acceptable (Paragraph 154 b).

2.4 Paragraph 154 b is, however, caveated with Footnote 49, which states: "*Except for applications for the repowering of existing wind turbines, a proposed wind energy development involving one or more turbines should not be considered acceptable unless it is in an area identified as suitable for wind energy development in the development plan; and, following consultation, it can be demonstrated that the planning impacts identified by the affected local community have been fully addressed and the proposal has their backing".*

2.5 Paragraph 154 and Footnote 49 essentially incorporate the provisions of the Written Ministerial Statement (WMS) relating to planning for wind turbine development that was issued by the Secretary of State for Communities and Local Government on 18 June 2015 into national planning policy contained in the NPPF. This WMS stated that local planning authorities should only grant planning permission for proposals for wind energy development if the development site is in an area identified as suitable for wind energy development. It went on to note that these areas need to be identified clearly in a Local or Neighbourhood Plan.

2.6 The implications of the NPPF appear to be that the repowering of existing wind energy developments is acceptable in principle subject to the planning impacts being acceptable taking into account all relevant material considerations. However, in order to permit new wind energy development not constituting repowering, it needs to be, in the first instance, located within an area identified as suitable for wind energy development in the development plan (i.e. local plans and/or neighbourhood plans).

Planning Practice Guidance

2.7 Planning Practice Guidance (PPG) provides guidance to support the NPPF. It states that the planning system has an important role in the delivery of new renewable and low carbon energy infrastructure in locations where the local environmental impact is acceptable[1].

2.8 It reaffirms that, in the case of wind turbines, a planning application should not be approved unless the proposed development site is in an area identified as suitable for wind energy development and that suitable areas will need to have been allocated clearly in a Local Plan or Neighbourhood Plan[2].

2.9 In identifying potentially suitable areas for wind energy development, the PPG[3] states that there are no hard and fast rules about how suitable areas for renewable energy should be identified, but in considering locations, local planning authorities will need to ensure they take into account the requirements of the technology and, critically, the potential impacts on the local environment, including from cumulative impacts. The views of local communities likely to be affected should be listened to. When identifying suitable areas it is also important to set out the

[1] Planning Practice Guidance. Planning for renewable and low carbon energy. Paragraph 001. Reference ID: 5-001-20140306, Revision Date: 06/03/2014.
[2] Planning Practice Guidance. Planning for renewable and low carbon energy. Paragraph 005. Reference ID: 5-005-20150618, Revision Date: 18/06/2015.
[3] Planning Practice Guidance. Planning for renewable and low carbon energy. Paragraph 005. Reference ID: 5-005-20150618, Revision Date: 18/06/2015.

factors that will be taken into account when considering individual proposals in these areas.

2.10 In terms of technical considerations relating to the siting of wind turbines, the PPG[4] gives the following examples:

- Site size;
- Proximity of grid connection infrastructure;
- Predicted wind resource;
- Air safeguarding;
- Electromagnetic interference; and
- Access for large vehicles.

2.11 Support for criteria-based policies is given in the PPG[5] where they are clear and expressed positively. In shaping the criteria in local plans the PPG outlines the following factors that should be taken into account:

- the need for renewable or low carbon energy does not automatically override environmental protections;
- cumulative impacts, particularly in respect to landscape and local amenity;
- local topography;
- heritage assets and their setting;
- proposals in National Parks and Areas of Outstanding Natural Beauty, and in areas close to them where there could be an adverse impact on the protected area, will need careful consideration; and
- local amenity and its importance when making planning decisions.

2.12 In terms of buffer zones/separation distances between renewable energy development and other land uses, the PPG[6] advises that otherwise acceptable renewable energy developments should not be ruled out through inflexible rules on buffer zones or separation distances. Distance is part of the assessment but the local context such as the topography, the local environment and near-by land-uses are also important. Set-back distances for safety are the exception to this.

Northumberland Local Plan

2.13 Northumberland County Council is currently preparing a new Local Plan document for Northumberland. It will include the planning policies that will be used to guide development proposals and determine future planning applications in

[4] Planning Practice Guidance. Planning for renewable and low carbon energy. Paragraph 006. Reference ID: 5-006-20140306, Revision Date: 06/03/2014.
[5] Planning Practice Guidance. Planning for renewable and low carbon energy. Paragraph 007. Reference ID: 5-007-20140306, Revision Date: 06/03/2014.
[6] Planning Practice Guidance. Planning for renewable and low carbon energy. Paragraph 008. Reference ID: 5-008-20140306, Revision Date: 06/03/2014.

Northumberland, detail the scale and distribution of new development and include land allocations and designations.

2.14 The new local plan will replace existing planning policies for Northumberland that are contained in the adopted core strategies and ‘saved’ policies of the local plans of the former local planning authorities that made up Northumberland prior to local government reorganisation in 2009. The current planning policies do not identify suitable areas for wind turbine development. The Alnwick Core Strategy identifies areas of least constraint and the Castle Morpeth District Local Plan identifies areas of search.

2.15 This study forms part of the evidence base to inform the policy approach to onshore wind energy development in the emerging Northumberland Local Plan, specifically in respect to the identification of potentially suitable areas for this type of development.

3. Approach

3.1 This section of the report provides an overview of the approach and methodology used to understand the particular planning and environmental considerations in Northumberland that would influence the potential suitability of areas for wind energy development. It includes details of the broad scope of the work, the planning and environmental considerations mapped and those considerations that are not within the scope of this work due to the limitations of the approach.

Scope of the study

3.2 This takes the form of a desk-based study using a Geographical Information System (GIS) to map the location of a range of planning and environmental considerations and constraints that will influence the suitability of locations for wind energy development in Northumberland at a strategic scale. It is not intended to identify specific sites appropriate for wind energy development.

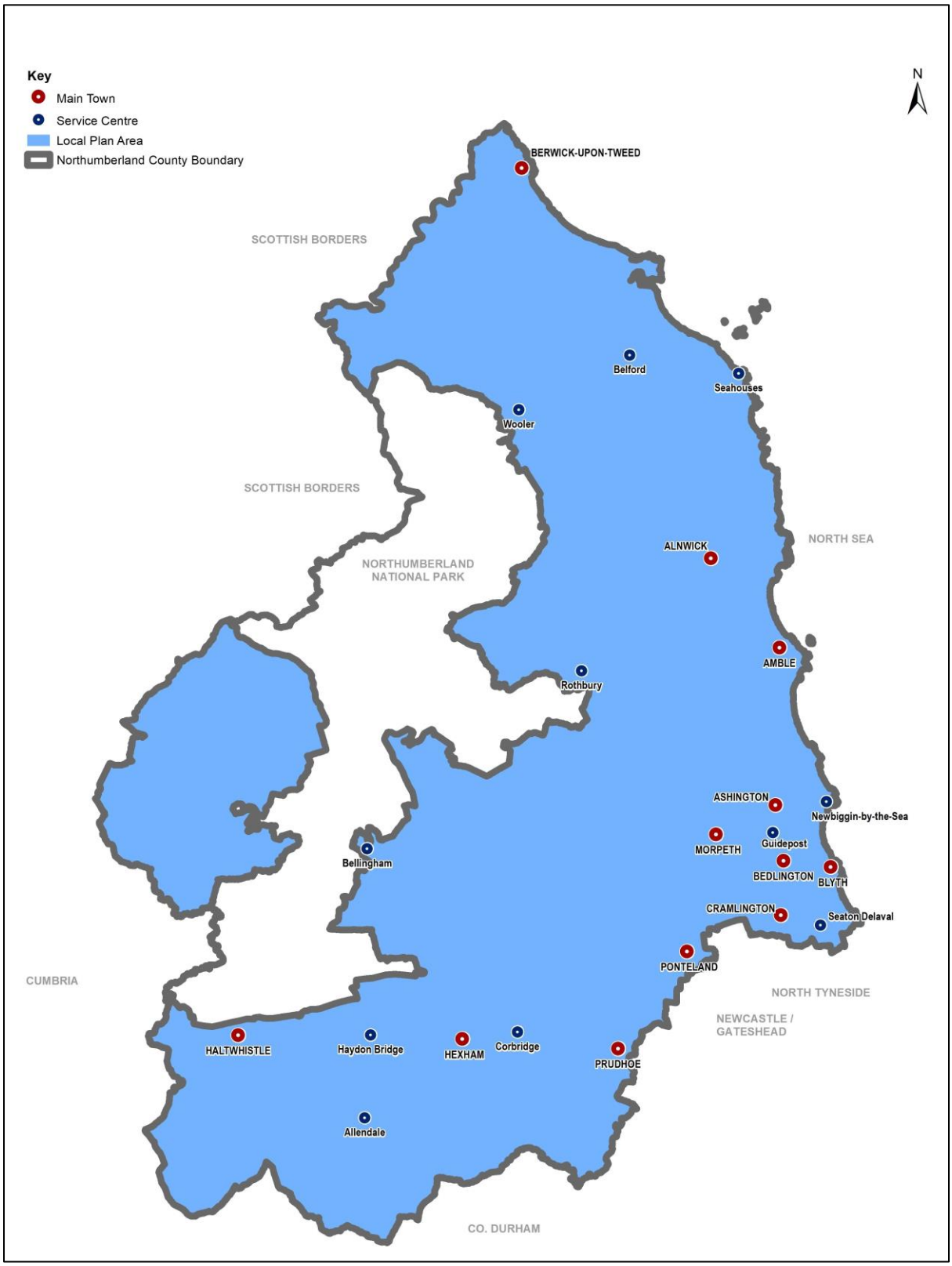
3.3 Mapping data in GIS has its technical limitations but it can, nonetheless, give an understanding of the considerations that will influence the potential suitability or otherwise of locations for wind energy development. It is acknowledged that there are additional matters not covered in this study that will influence the potential suitability and acceptability of a particular location for wind energy development. These matters are discussed below but these are generally considered to be matters that are best dealt with as part of more detailed site-specific investigations and/or factors that are not readily mapped at the scale of this study.

3.4 The study outputs show those areas that are unlikely to be suitable for wind energy development based on the factors mapped and those areas that are potentially suitable for wind energy development at a county scale.

Geographical coverage

3.5 The study covers the whole of Northumberland outside Northumberland National Park (see Figure 3.1). The area covered is consistent with the plan area for Northumberland Local Plan being prepared by Northumberland County Council in its role as the local planning authority for this area.

Figure 3.1: Study area



Wind turbine types considered

3.6 Different scales of wind energy development are likely to have different planning impacts. As such, it is considered important to identify different scales of wind energy development in order to recognise these differences. For the sake of simplification, this study recognises the key differences based on the height of the wind turbine to the tip of the blade, rather than attempting to quantify varying impacts as a result of different combinations of, for example, turbine height, rotor diameter and numbers of turbines in a given wind energy development. Notwithstanding this it is acknowledged that landscape and visual effects are not always directly proportionate to wind turbine height. Other important considerations in terms of understanding the nature of an effect include turbine numbers, design, layout, scale and cumulative effects and these are important considerations in terms of wind turbine siting and design.

3.7 A review of previous planning applications for wind energy developments in Northumberland has given an indication of the range of wind turbine heights most likely to come forward in Northumberland, notwithstanding future technological changes. Table 3.1 provides details of the wind turbine typologies that have been used in this study and their typical characteristics. These typologies reflect those used in a study looking at the sensitivity of landscapes in Northumberland to wind turbine development[7] and the rationale behind them. References in the table to typology names such as 'small' or 'large' should not be taken to imply any degree of potential impact. These terms are simply used to aid description of the relative differences in wind turbine heights.

3.8 Smaller standalone wind turbines that do not exceed 11.1 metres in height and building mounted wind turbines that do not exceed an overall height of 15 metres do not generally require planning permission under the permitted development rights contained within the Town and Country Planning (General Permitted Development) (England) Order 2015.

[7] The Planning and Environment Studio and Bayou Bluenvironment (2018). *Assessment of the sensitivity of the landscapes in Northumberland to wind energy development.* Report for Northumberland County Council, January 2018. Available at: http://www.northumberland.gov.uk/Planning/Reports.aspx

Table 3.1: Wind turbine typologies used in this study

Typology name	Height of wind turbine (to blade tip)	Typical characteristics of developments
Small	Up to 25 metres	• Single turbines • Typically serving individual properties and farms
Small-Medium	26 to 40 metres	• Single turbines • Typically serving businesses and larger farms
Medium	41 to 65 metres	• Single turbines • Typically providing electricity to meet wider needs
Medium-Large	66 to 100 metres	• Single turbines or groupings of turbines • Typically generating electricity on a commercial basis
Large	101 to 135 metres	• Single turbines or groupings of turbines • Typically generating electricity on a commercial basis

Figure 3.2: Example of a 20 metre high turbine at Felkington

Figure 3.3: Example of a 34 metre high turbine at Haggerston

Figure 3.4: Example of a 46 metre high turbine at Bridge Hill near Haggerston

Figure 3.5: Example of 110 metre high turbines at Barmoor Wind Farm

Planning and environmental features and designations to be considered

3.9 The considerations mapped in this study are detailed in Table 3.6 and Appendix A. It is acknowledged that there are factors not covered in this study that will influence the suitability of locations for wind energy development but these are considered to be matters that are best dealt with as part of more detailed site-specific investigations accompanying planning applications for specific wind energy development, and/or factors that are not readily mapped at the scale of this study or in a GIS due to various limitations. Considerations and constraints used in this study are discussed in more detail below.

Table 3.6: Considerations mapped in this study

Consideration	Features mapped	Data source	Notes
Residential amenity	Noise Shadow flicker Visual amenity	Northumberland Local Land and Property Gazetteer (LLPG)	To protect residential amenity from noise, shadow flicker and visual impacts, appropriate distances should be maintained between wind turbines and sensitive premises. In this study a distance of six times the turbine height from a residential address has been mapped. This is considered to provide a reasonable proxy for when the effects of noise and visual dominance would prevent development.
Infrastructure	Railways Roads: ● A roads ● B roads ● C roads Public Rights of Way	Northumberland County Council	This is mapped as a safety consideration. A buffer of the turbine height plus 10% is applied reflecting Highways England advice. It has been applied to all turbine typologies used in the study with the buffer adjusted to reflect turbine height.
	Overhead electricity transmission lines: ● 400 kV ● 275 kV	National Grid	This is mapped as a safety consideration. A buffer of the turbine height plus 10% is applied. It has been applied to all turbine typologies used in the study with the buffer adjusted to reflect turbine height.

Consideration	Features mapped	Data source	Notes
Nature conservation	International designations: ● Special Areas of Conservation (SACs) ● Special Protection Areas (SPAs) ● Ramsar sites National designations: ● Sites of Special Scientific Interest (SSSIs) ● National Nature Reserves (NNRs) Other designations: ● Local wildlife site ● Ancient woodland	Natural England	The study maps the designated areas for each of these. These considerations are mapped as constraints to wind energy development in this study as in most cases the presence of these designations would prevent development. There could be circumstances where development outside of the designated area could have adverse effects on the designation. The presence of protected species would be a matter for detailed assessment at the planning application stage. Comprehensive data is not available to map these.

Consideration	Features mapped	Data source	Notes
Historic environment	● World Heritage Site ● Historic Parks and Gardens ● Scheduled Monuments ● Registered Battlefields ● Conservation Areas	Historic England	This study maps the designated areas for each of these features. These considerations are mapped as constraints to wind energy development in this study as in most cases the presence of these designations would prevent development. There could be circumstances where development outside of the designated area could harm the significance of the designated heritage asset. The effects on the setting of the heritage assets are considered to be a matter for detailed assessment at the planning application stage and therefore not mapped here. The exception is the World Heritage Site associated with Hadrian's Wall where the buffer zone is also mapped. The World Heritage Site lies within the study area. Listed buildings are not mapped. It is considered that the effect of a proposal on a setting of a listed building is a matter for detailed assessment at the planning application stage.

Consideration	Features mapped	Data source	Notes
Landscape	Landscape Character Areas (LCAs) with a moderate-high or high landscape sensitivity to wind energy development.	Northumberland County Council	The study maps the landscape character areas that have been assessed as having a 'moderate-high' or 'high' sensitivity to wind energy development[8] using each of the wind turbine typologies set out in Table 3.1. Those areas that were assessed in that study as having a 'high' or a 'moderate-high' sensitivity to a particular scale of wind turbine development (using the typologies in Table 3.1) are considered to be 'unsuitable' or 'unsuitable in principle' respectively to wind energy development. The landscape sensitivity study sets out a number of caveats regarding the approach (set out in the report) and also discussed elsewhere in this technical report.
Natural features	Bodies of water	Ordnance Survey mapping	The study maps the extent of water bodies based on the mapped feature. The presence of water bodies is mapped as a constraint as these areas are unlikely to be suitable for wind energy development
Green Belt	Green Belt	Northumberland County Council	Wind turbine development could have a harmful effect on Green Belt. The study maps Green Belt as a constraint for >25m in height. Effects on Green Belt will depend to a large extent on the scale of the turbine proposed. Green Belt would still be a matter for assessment at the planning application stage for turbines under 25m.

[8] The Planning and Environment Studio and Bayou Bluenvironment (2018). *Assessment of the sensitivity of the landscapes in Northumberland to wind energy development.* Report for Northumberland County Council, January 2018. Available at: http://www.northumberland.gov.uk/Planning/Reports.aspx

Consideration	Features mapped	Data source	Notes
Wind speed	Areas with a wind speed of 5.0 metres per second at 45 metres above ground level.	NOABL	This factor is not a technical limit to wind turbine development but could affect how viable or commercially attractive a proposal is. A DECC methodology[9] for quantifying opportunities and constraints for renewable energy development recommends using a wind speed of 5.0 metres per second at 45 metres above ground level. For smaller wind turbines that are linked to individual properties and businesses, wind speed is likely to be less critical in terms of viability. Therefore a speed of 5.0 metres per second at 45 metres above ground level has been mapped for medium sized turbines and above.

[9] Department of Energy Climate Climate (DECC) and Department for Communities and Local Government (DCLG) (2010). Renewable and low carbon energy capacity methodology: Methodology for the English Regions. SQW Energy and Land Use Consultants.

3.10 In respect to landscape sensitivity discussed in Table 3.6 the sensitivity identified in the study should not be taken as a definitive assessment that a particular landscape is suitable for wind energy development. The study advised that those Landscape Character Areas (LCAs) assessed as having a lower sensitivity are described as 'suitable in principle' to wind energy development of a given scale but advises that there could still be significant landscape and visual effects, including cumulative effects, within these LCAs such that wind energy development may result in unacceptable harmful landscape change or visual intrusion. Where this is the case, a site within an LCA considered as potentially suitable for wind energy development but found to be experiencing significant effects (for example following detailed landscape and visual impact assessment of a specific wind energy proposal) could be unsuitable for wind energy development (of the scale being proposed) in that LCA, even though the overall sensitivity of the landscape character area is lower than moderate-high sensitivity (i.e. where wind energy development would be 'suitable in principle').

Matters excluded from the mapping exercise

3.11 Mapping data in GIS has its technical limitations. If the data for a particular planning or environmental consideration is not available in an appropriate form or is not of an appropriate quality it cannot be readily mapped. In addition, there are some planning and environmental considerations that are matters for detailed assessment and mitigation at a site specific level.

3.12 Some examples of the considerations that have not been mapped in this study include:

- Presence of protected species;
- Listed buildings and their settings:
- Settings of designated and non-designated heritage assets;
- Non-designated heritage assets;
- Aviation operations and navigational systems;
- Electricity grid connection and grid capacity;
- Stand-off distance to water courses and water features and vegetation such as trees;
- Air and water quality:
- Landscape capacity;
- Landscape designations;

3.13 In terms of landscape designations, such as the North Pennines AONB, Northumberland Coast AONB and the Northumberland Heritage Coast, these are not mapped as planning and environmental constraints in this technical document

because the landscape sensitivity work[10] (which is included in the mapping work) has considered the qualities and sensitivities that underpin these designations at the county-wide (landscape character area) scale. To include them as mapped constraints could be construed as double counting. The landscape sensitivity assessment considers the interactions of the LCAs with other areas and this includes the Northumberland National Park, which adjoins the area covered by the Northumberland Local Plan. Notwithstanding this the landscape sensitivity study assesses sensitivity at a LCA scale only. Landscape and visual impact assessment of a specific wind energy development should consider the range of factors that can help establish the value of the potentially affected landscape which should include landscape designations and their settings, and undesignated landscapes. Policy criteria in the Local Plan should ensure individual proposals fully consider and address this matter.

Relationship with neighbourhood planning

3.14 Local communities (through the Parish and Town Councils in Northumberland) can prepare a neighbourhood plan. Once 'made' following independent examination and a referendum, neighbourhood plans form part of the statutory development plan. This means that the planning policies in neighbourhood plans are used in determining planning applications.

3.15 The scope of neighbourhood plans is determined by Town and Parish Councils in consultation with their communities. Neighbourhood plans may cover a wide range of topic areas and include land allocations or alternatively they may be limited to selective topics or sites. For example a neighbourhood plan may not include planning policies for renewable energy if the community do not wish to cover this topic, in which case policy within an up-to-date Local Plan will be of primary significance.

3.16 In line with the NPPF, PPG sets out that suitable areas for wind energy development will need to have been clearly identified in a local plan or a neighbourhood plan. The identification of potentially suitable areas for wind energy development in a local plan would not prevent suitable areas being identified in a neighbourhood plan. Where potentially suitable areas are identified in the local plan, communities may additionally wish to identify suitable area or sites in neighbourhood plans. This may be to support a particular proposal, which could be community-led in nature, or it may be to support this type of development more generally.

[10] The Planning and Environment Studio and Bayou Bluenvironment (2018). *Assessment of the sensitivity of the landscapes in Northumberland to wind energy development.* Report for Northumberland County Council, January 2018. Available at: http://www.northumberland.gov.uk/Planning/Reports.aspx

3.17 Addressing potentially suitable areas for wind energy development through the local plan allows the spatial assessment of suitability to take place at a county-wide scale and allows for a consistent, objective methodology to be utilised and consequently for a policy to be incorporated into the Local Plan. This allows the local plan to demonstrate a positive approach to renewable energy as required by the NPPF. Approaching the issue of potentially suitable areas for wind energy development in the local plan does not undermine the opportunity for local communities to express views in relation to proposals and influence those decisions.

4. Analysis

4.1 This section of the document describes the extent of the mapped considerations for each of the wind turbine typologies used in this study.

Extent of the planning and environmental considerations mapped

Residential amenity

4.2 The exercise has mapped the areas within six times the turbine height of a residential address point as being potentially unsuitable for wind energy development. The exception to this is for wind turbines that are up to 25 metres in height as it is considered that this scale of turbine is more typically used to provide energy to an individual property and could be located in closer proximity to the host property than six times the turbine height. Suitable policy criteria would still be required to ensure that the effects on the amenity of neighbouring residential dwellings is acceptable for both this scale of turbine and to ensure the set-back distance for an individual turbine is acceptable even if more than six times the turbine height. The study has not mapped non-residential buildings.

4.3 The protection of residential amenity is an important consideration and is a significant constraint to wind energy development, particularly in the more populous areas of Northumberland but also in those locations where there is a more scattered settlement pattern. The most populous areas of Northumberland are in the south east of the County, where the larger settlements include Ashington, Bedlington, Blyth, Cramlington, Morpeth and Seaton Delaval amongst others. Across the north and west of the County the most populous areas include the settlements of Alnwick, Berwick- upon-Tweed, Hexham, Ponteland and Prudhoe as well as a number of other smaller settlements. While many areas of Northumberland are rural in nature and have a lower population density, there are still many small hamlets and isolated properties where the development of wind turbines could have an unacceptable adverse effect in respect to amenity from noise, shadow flicker and visual intrusion, for example.

Infrastructure

4.4 The location of A, B and C roads, Public Rights of Way, railways and major overhead electricity transmission lines have been mapped in this study with a 10% buffer adjusted to reflect wind turbine height as a safety consideration. The principal road transport links in Northumberland include the A1, A19 and A69. The principal railways include the East Coast Mainline Railway, which runs north-south in the east of the County and the Newcastle-Carlisle railway which runs through the Tyne Valley via Prudhoe, Hexham and Haltwhistle.

Nature conservation

4.5 Northumberland contains a number of designated areas relating to biodiversity, wildlife and nature conservation. This includes Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar sites, Sites of Special Scientific Interest (SSSIs), Ancient Woodland and local wildlife and geological sites. Some of the most noteworthy designations include the international designations along the Northumberland coast, in the North Pennines area and the Border Uplands.

4.6 The study maps only those areas covered by these designations as a constraint and does not map as a constraint those areas outside of the designated site that may be functionally linked to it because they are important in supporting the populations for which the site has been designated. The study also does not map the presence of protected species. The reason both of these have not been mapped is that comprehensive data is not available on these matters. Policy criteria would be needed in the Local Plan so individual proposals consider and address these matters.

Historic environment

4.7 Northumberland contains a large number of designations relating to the historic environment. This includes the scheduled monuments that form part of World Heritage Site associated with Hadrian's Wall, 18 Registered Park and Gardens, Registered Battlefields, nearly 1,000 other Scheduled Monuments and 69 Conservation Areas.

4.8 The study maps as a constraint the areas covered by these designations. Wind energy development outside of these designations could harm the significance of the heritage asset, including the setting of the heritage asset. The settings of heritage assets are not mapped here as the assessment of harm on the significance of the setting of the heritage would be a matter for detailed assessment at the planning application stage. In addition, listed buildings and their settings are not mapped as harm to the significance of these would be a matter for detailed assessment at the planning application stage. Non-designated heritage assets have also not been mapped here as comprehensive information at a county-wide level is not readily mapped and it is considered to be best taken account of as part of detailed assessment on site-by-site basis. Policy criteria would be required to address these matters in the context of detailed proposals.

Landscape

4.9 The approach to landscape in the mapping exercise has been informed by work undertaken by The Planning and Environment Studio and Bayou

Bluenvironment[11] on behalf of Northumberland County Council, which has assessed the relative sensitivity of each of the Landscape Character Areas (LCAs) in the area covered by the Northumberland Local Plan to wind energy development using each of the wind turbine development typologies detailed in Table 3.1. The detailed methodology is set out in that evidence base report.

4.10 For each LCA, the assessment categorises the sensitivity to each of the five wind turbine typologies as either 'high', 'moderate-high', 'moderate', 'low-moderate' or 'low'. Where a LCA was assessed as having a 'high' landscape sensitivity or a 'moderate-high' landscape sensitivity to a particular scale of wind turbine development, those areas are considered to be ‘unsuitable’ or ‘unsuitable in principle’, respectively, to wind energy development and therefore mapped as a strategic constraint.

4.11 Figure 4.1a to Figure 4.1e show the sensitivity of each of the landscape character areas in Northumberland to wind energy development based on the findings of the landscape assessment work. These illustrate that the level of sensitivity of the LCAs to wind energy development tend to increase as the size of the wind turbines increases. For example a greater number of LCAs are assessed as having a high sensitivity to wind energy development as the height of the turbines increases. However, it must be borne in mind that while wind turbine height is a major influence on the scale and extent of landscape and visual effects, other factors such as turbine numbers, design, layout, scale and cumulative effects are important considerations in terms of siting and design.

4.12 There are number of landscape designations in Northumberland, including two Areas of Outstanding Natural Beauty (AONB) (Northumberland Coast AONB and North Pennines AONB) and Heritage Coast. Wind energy development of some scales and at some locations (both inside and outside of these designated areas) could have significant effects on their special qualities and purposes of these designated landscapes. These designated areas have not been mapped as an absolute constraint in the mapping exercise as the landscape sensitivity work has considered the qualities and sensitivities that underpin the designations at a LCA level. Northumberland National Park is also not included in this study as it is not within the area covered by the Northumberland Local Plan. Notwithstanding this it is recognised that wind energy development can have impacts on the special qualities of the Northumberland National Park even if it is located outside of this area and, as with the AONB designations, the landscape sensitivity work has considered the qualities and sensitivities that underpin the designation when assessing the sensitivity of the LCAs in the study area at the county-wide (landscape character

[11] The Planning and Environment Studio and Bayou Bluenvironment (2018). *Assessment of the sensitivity of the landscapes in Northumberland to wind energy development.* Report for Northumberland County Council, January 2018. Available at: http://www.northumberland.gov.uk/Planning/Reports.aspx

area) scale. As referred to above, to include them as mapped constraints could be construed as double counting. However, landscape and visual impact assessment of a specific wind energy proposal should consider the range of factors that can help establish the value of the potentially affected landscape which should include landscape designations and their settings (as well as undesignated landscapes). Policy criteria will be needed in the Local Plan to ensure individual proposals fully consider and address this matter.

4.13 While a proposal could be located within a LCA that has been assessed as having a lower sensitivity where wind energy development would be suitable in principle, a proposal could still give rise to significant landscape and visual effects, including cumulative effects, that would result in unacceptable harmful landscape change or visual intrusion Suitable policy criteria are therefore needed in the Local Plan to assess the acceptability of the landscape and visual effects of a detailed proposal at the planning application stage.

Natural features

4.14 The presence of water bodies is mapped as a constraint as these areas are unlikely to be suitable for wind turbine development. The mapping does not, however, map any required stand offs to the identified water bodies. It also does not map vegetation features such as trees and hedgerows. These would form part of a detailed assessment at the planning applications stage.

Green Belt

4.15 The Green Belt in Northumberland forms part of a wider area of Green Belt designation surrounding the conurbation of Tyne and Wear. The Green Belt covers an area of land in the south of Northumberland between Newcastle upon Tyne and the towns of Cramlington and Ponteland, between North Tyneside and the towns of Blyth and Cramlington, and extends around Corbridge, Hexham and Morpeth.

4.16 Wind energy development can have an impact on the openness of the Green Belt. Green Belt is therefore mapped as a constraint in this mapping exercise for wind turbines over 25 metres in height. Smaller scale turbines are more likely to be associated with providing energy to an existing building within the Green Belt and could potentially be acceptable if well-sited. Policy criteria would be needed to assess the acceptability of any detailed proposals for wind turbines under 25 metres within the Green Belt and this would need to accord with national planning policy on Green Belt.

Wind speed

4.17 The wind speeds at a 45 metre level in Northumberland have been mapped. The wind resource in Northumberland is such that there are large parts of the plan area that have speeds of five metres per second and above.

Figure 4.1a: Map showing the landscape sensitivity of the landscape character areas in Northumberland to wind turbines with a height to the tip of the blade of up to 25 metres

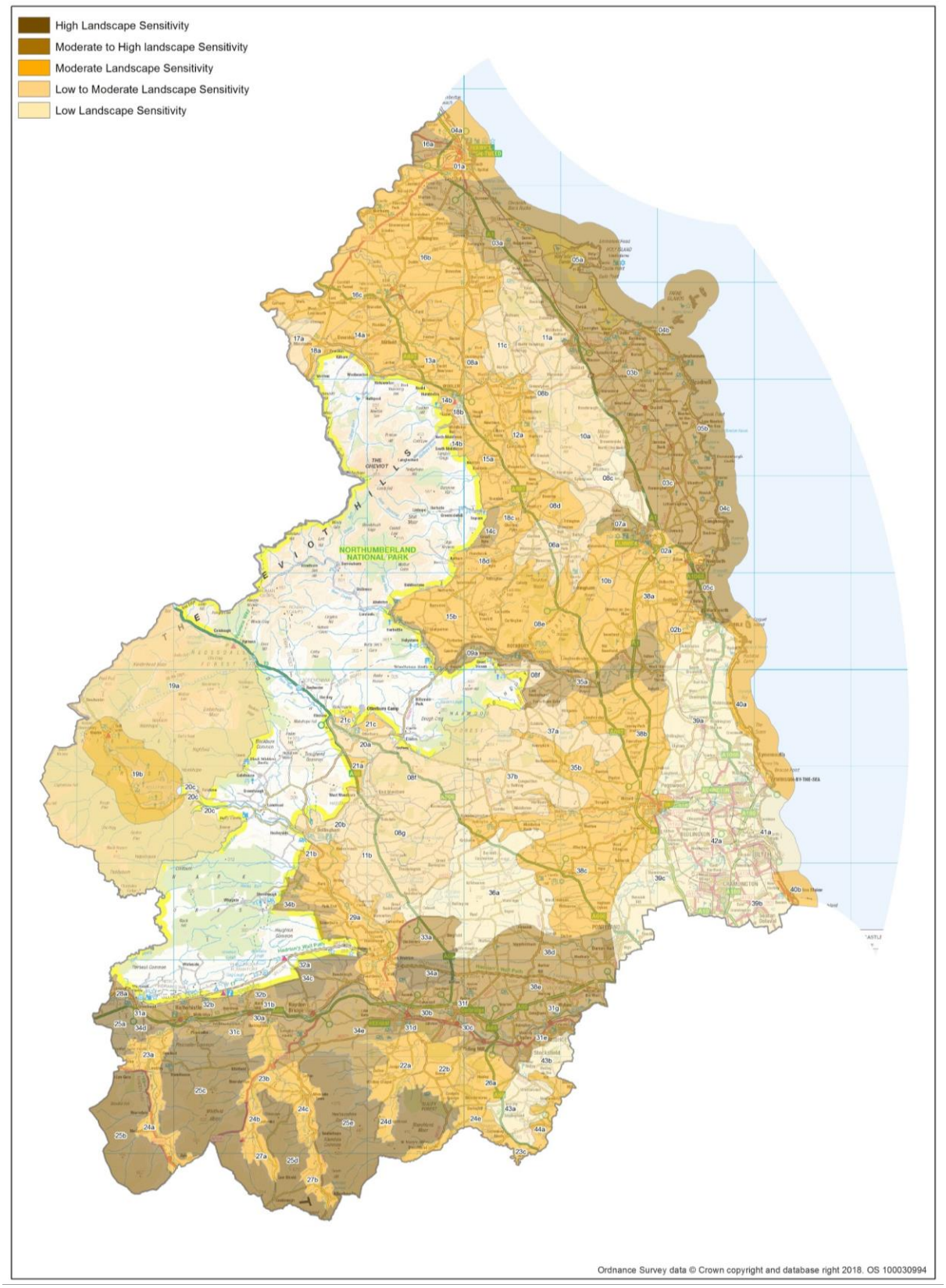


Figure 4.1b: Map showing the landscape sensitivity of the landscape character areas in Northumberland to wind turbines with a height to the tip of the blade of 26 to 40 metres

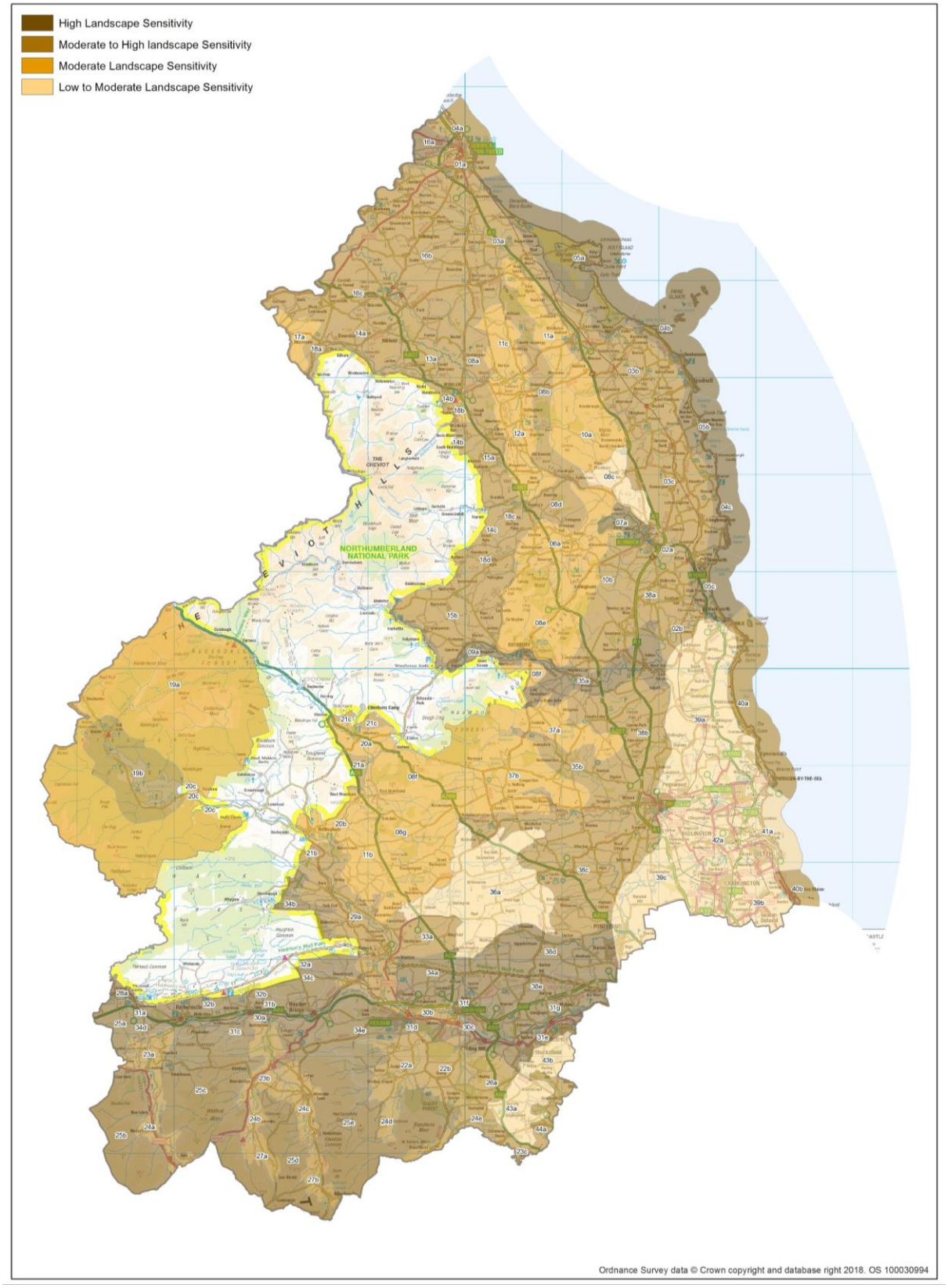


Figure 4.1c: Map showing the landscape sensitivity of the landscape character areas in Northumberland to wind turbines with a height to the tip of the blade of 41 to 65 metres

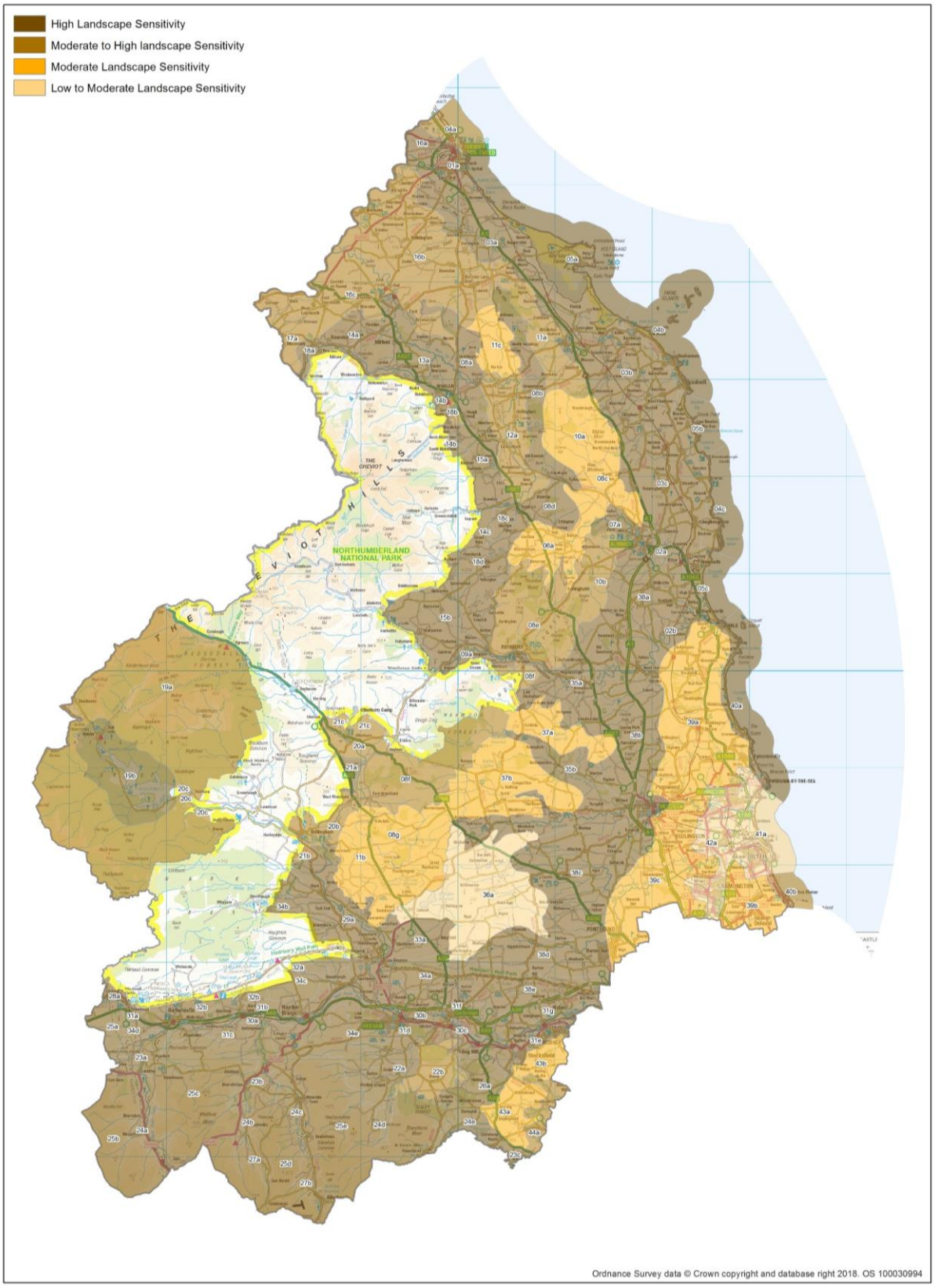


Figure 4.1d: Map showing the landscape sensitivity of the landscape character areas in Northumberland to wind turbines with a height to the tip of the blade of 66 to 100 metres

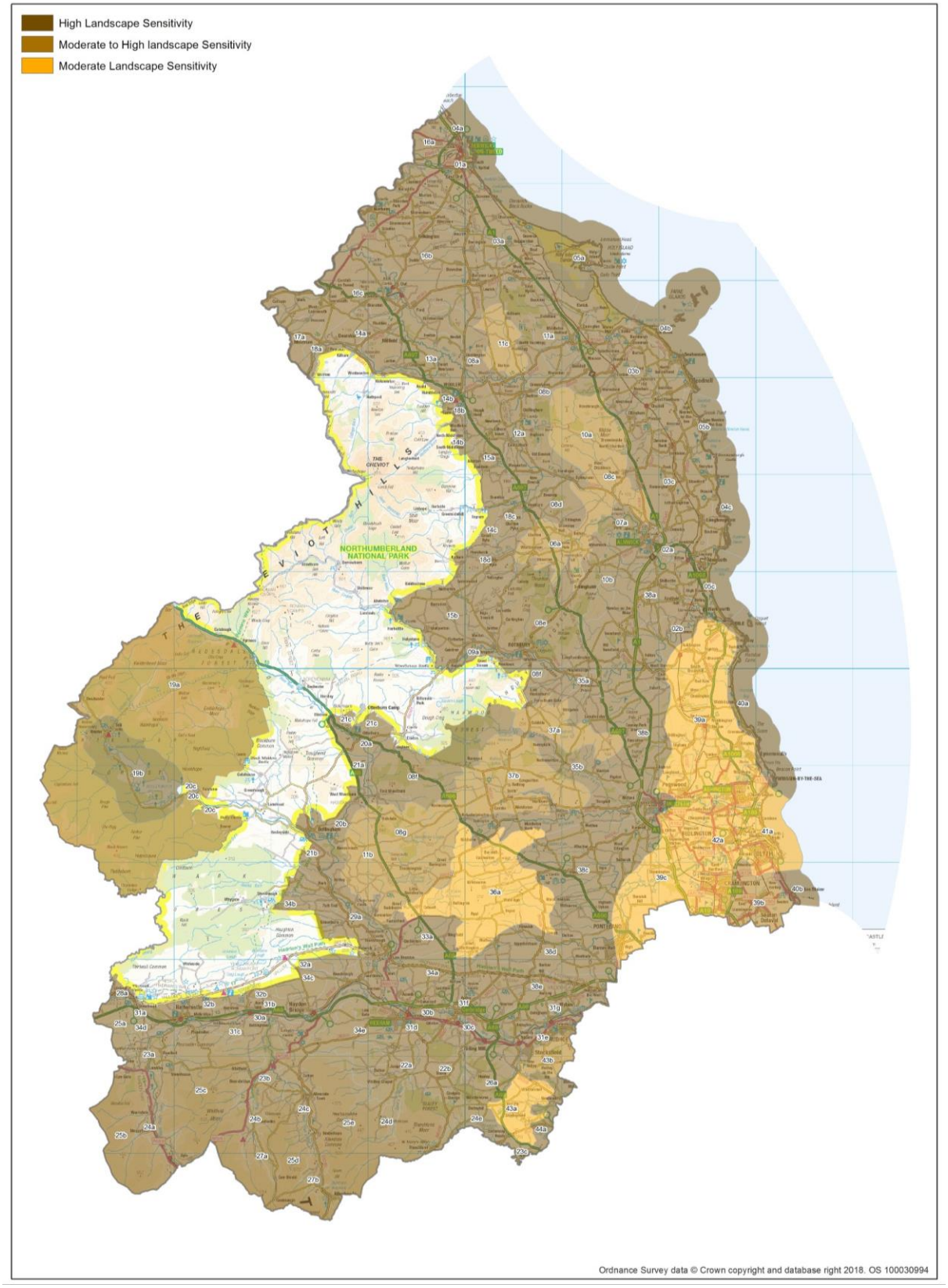
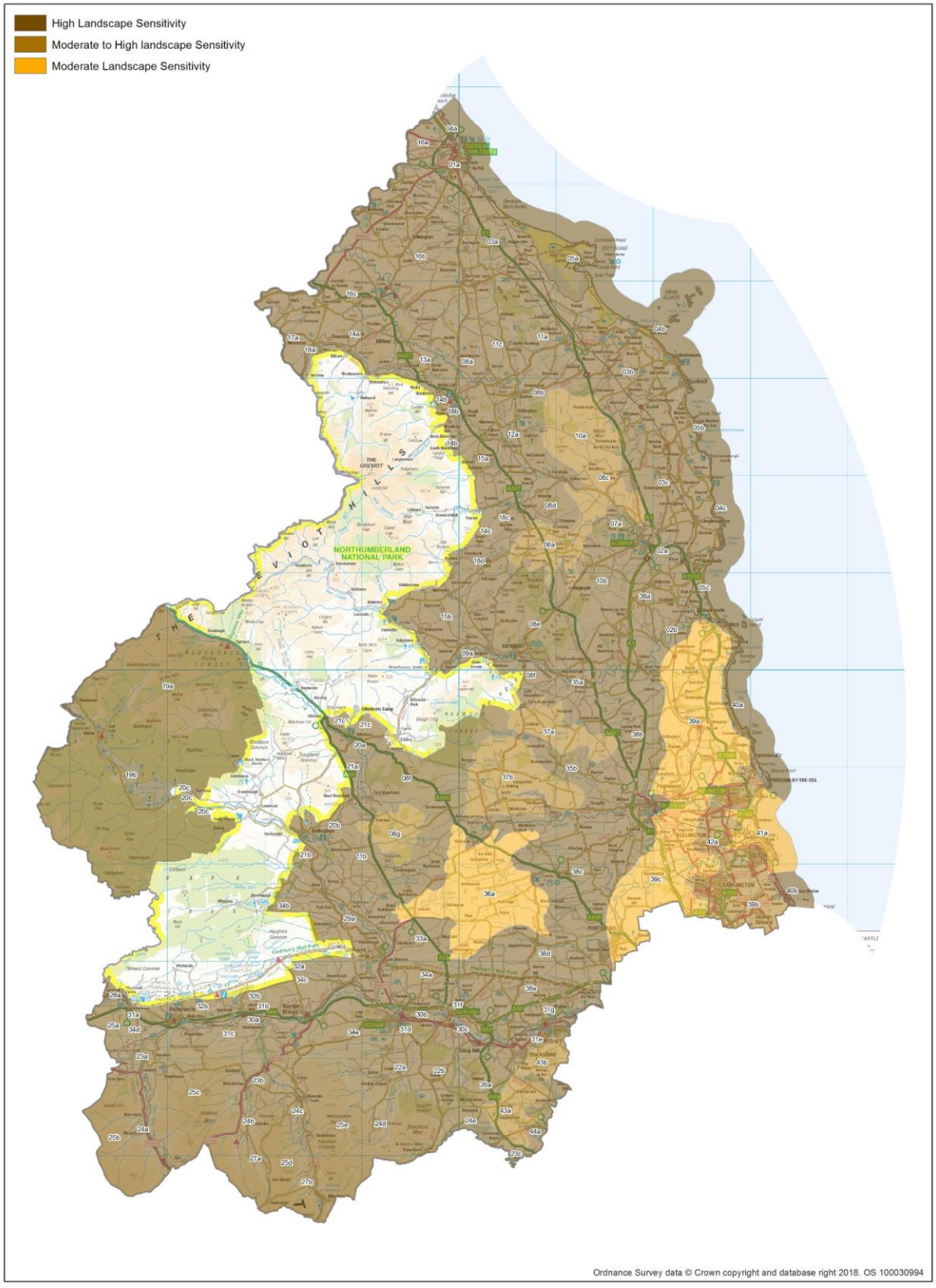


Figure 4.1e: Map showing the landscape sensitivity of the landscape character areas in Northumberland to wind turbines with a height to the tip of the blade of 101 to 135 metres



Combined considerations for each wind turbine typology

4.18 The combined considerations for each of the wind turbine typologies used in the mapping exercise have been mapped and the results are shown in Figures 4.2 to 4.6. Analysis is also provided on whether the mapping indicates whether there are areas identified as being potentially suitable or unsuitable for wind energy development for each of the wind turbine typologies.

4.19 The shaded areas on these maps are the areas that have planning and environmental considerations that mean in principle they would not be suitable for wind energy development. The areas shown in white within the plan area are those areas where none of the planning and environmental considerations included in this exercise have been mapped and these therefore represent areas that could be potentially suitable for wind energy development of that scale.

Wind turbines up to 25 metres and 26 to 40 metres in height to the tip of the blade

4.20 These two wind turbine typologies have been grouped together in this analysis as they have shared characteristics. The characteristics of the developments are typically single wind turbines that are used to provide energy to individual residential properties, business premises or farms.

4.21 Figures 4.2 and 4.3 show the areas that could be potentially suitable for these scales of wind turbine in Northumberland when considered at a landscape character area scale. For the wind turbines up to 25 metres in particular, Figure 4.2 shows that there are large areas across Northumberland where none of the planning and environmental considerations included in this exercise have been mapped and therefore on this basis could be potentially suitable for wind energy development of this scale. There are also large areas that are mapped as potentially suitable for the turbines that are 26 to 40 metres in height to the tip of the blade (Figure 4.3) but these potentially suitable areas are less extensive than those for the turbines under 25 metres in height.

4.22 Some of the more extensive areas of Northumberland that have been mapped in this study as having planning and environmental considerations that mean they would in principle be unsuitable for the development of wind turbines under 25 metres in height (excluding those that benefit from permitted development rights) include areas along the North Northumberland coast, Coquetdale, North Pennines and Tyne Gap. For wind turbines 26 to 40 metres in height, the areas mapped as having planning and environmental considerations that make them unsuitable in principle for development are more extensive and cover wider areas in the north of the County, the fringes of the Cheviot Hills and the wider area around the North Pennines AONB and the Tyne Gap. For wind turbines under 25 metres in height

there are also more extensive areas in the south of the County that are identified as potentially suitable largely because Green Belt has not been mapped as an absolute constraint for this scale of wind turbine.

Wind turbines 41 to 65 metres, 66 to 100 metres and 101 to 135 metres in height to the tip of the blade

4.23 These three wind turbine typologies, which cover wind turbines over 40 metres in height, typically involve developments that will generate electricity to feed into the grid and meet wider needs feed into the grid rather than just for an individual residential property, business or farm. The turbines in the category 41 to 65 metres typically involve single wind turbines. Those in both the 66 to 100 metres and 101 to 135 metres categories more commonly involve groups of more than one turbine but can involve developments of single turbines.

4.24 Figures 4.4, 4.5 and 4.6 show there are extensive areas of Northumberland that would not be suitable in principle for wind energy development of these scales, particularly wind turbines 66 to 100 metres in height and wind turbines 101 to 135 metres in height. There are some small areas on the coastal plain in the area north of Ashington and south of Amble and inland around Kirkheaton where there is existing wind energy development, indicating potentially decreased sensitivity to some wind energy typologies. The areas become smaller and more fragmented as the scale of wind turbine increases.

Figure 4.2: Combined considerations for small turbines (up to 25 metres)

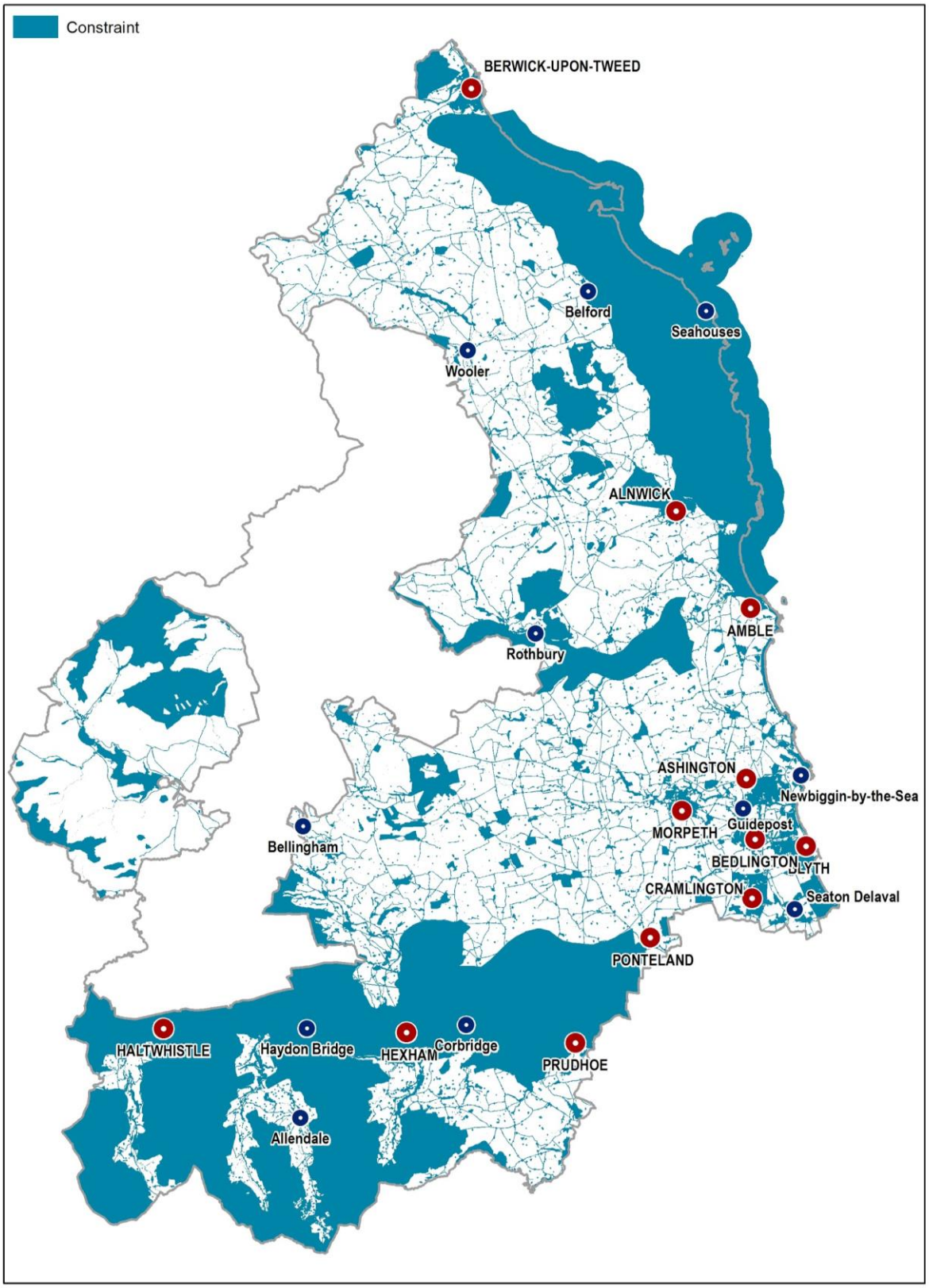


Figure 4.3: Combined considerations for small to medium turbines (26 to 40 metres)

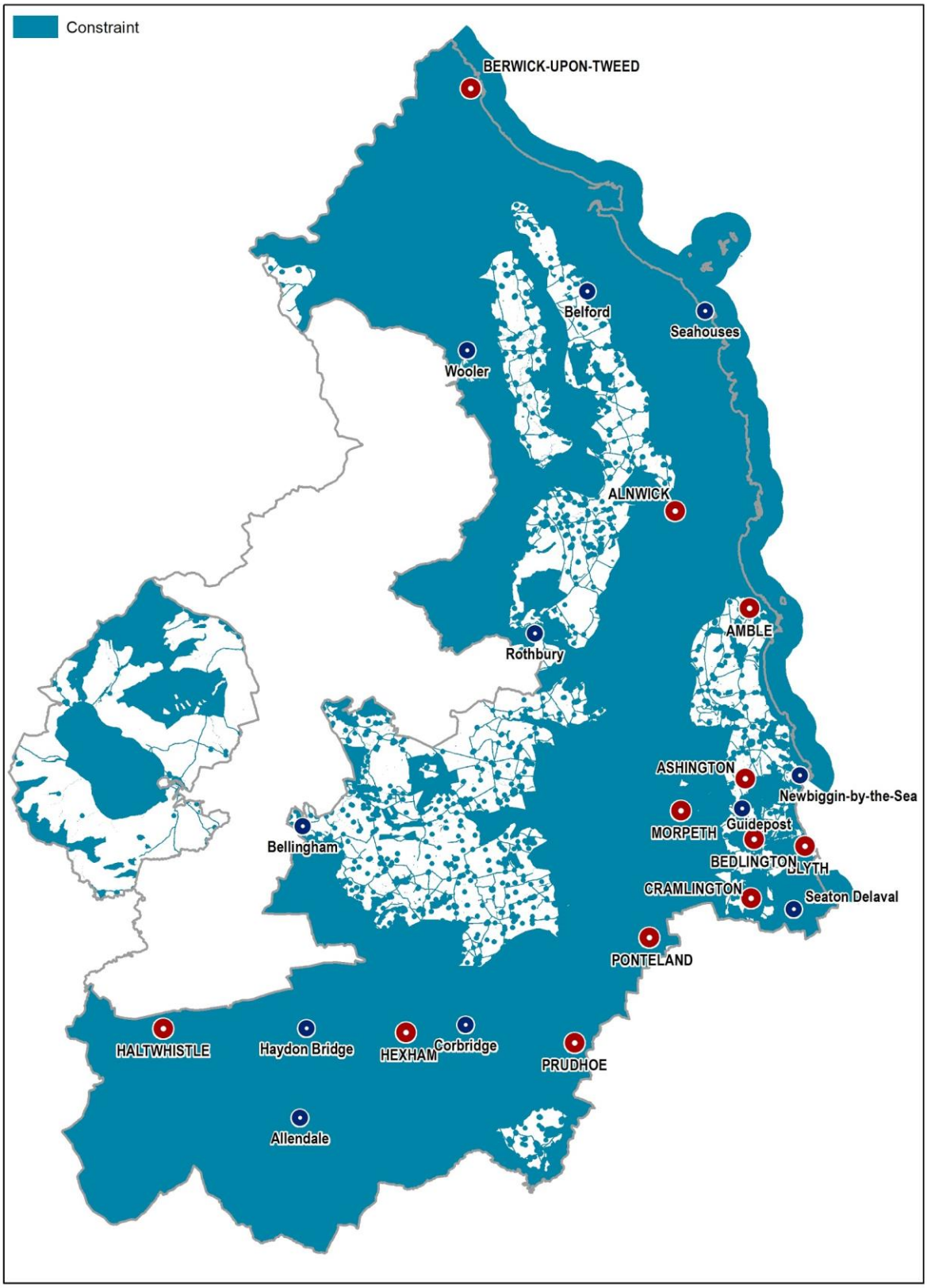


Figure 4.4: Combined considerations for medium turbines (41 to 65 metres)

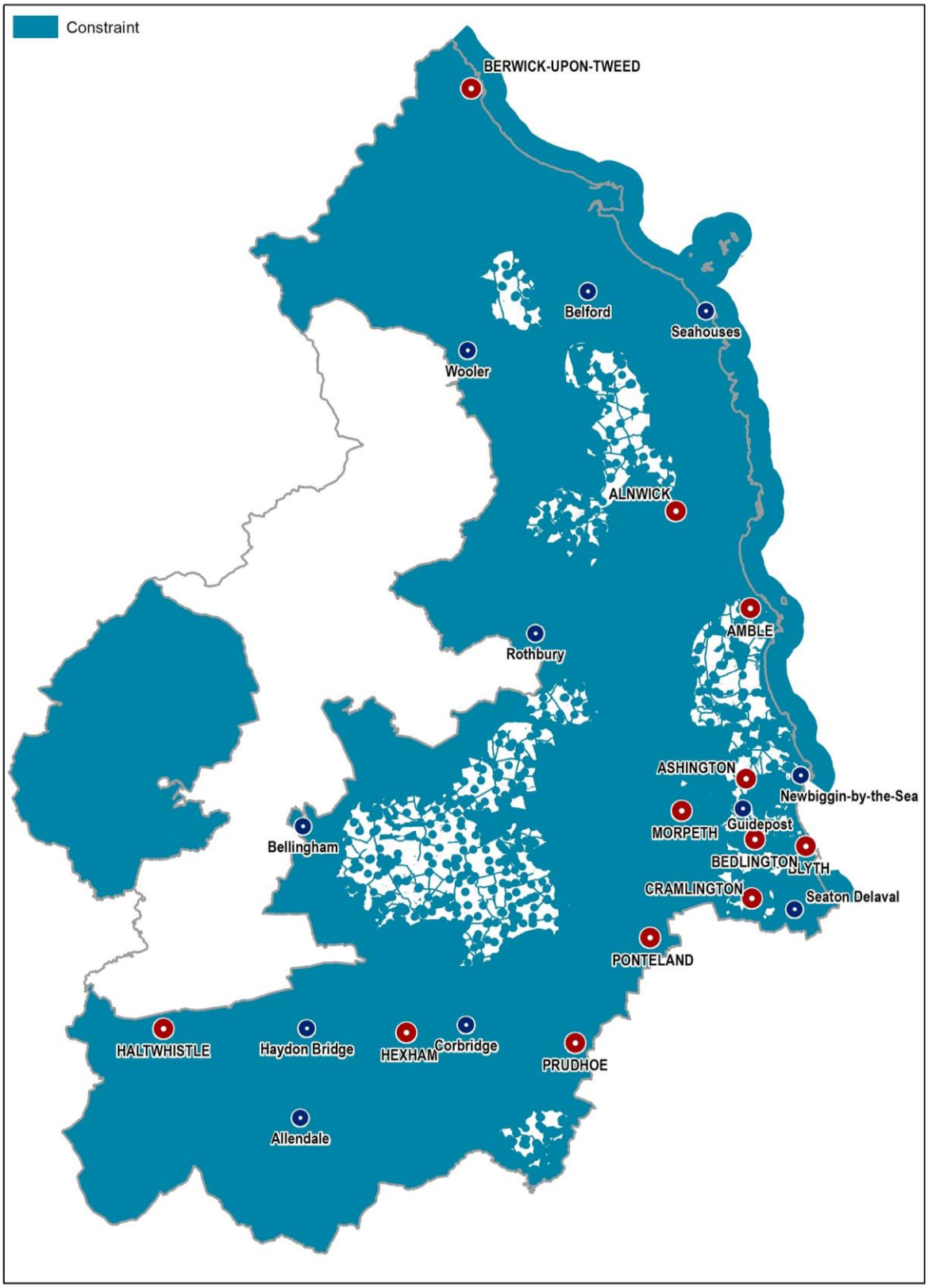


Figure 4.5: Combined considerations for medium to large turbines (66 to 100 metres)

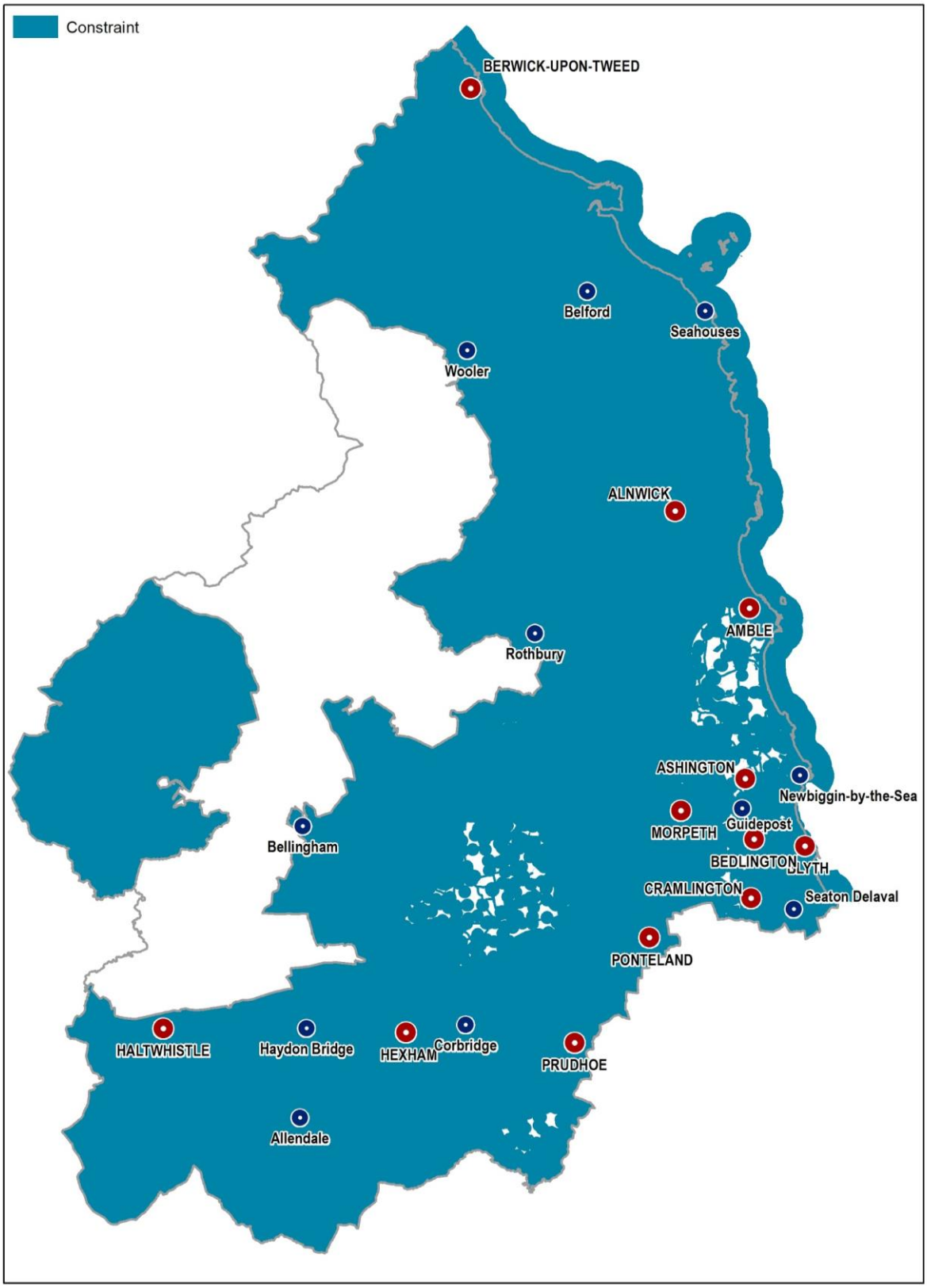
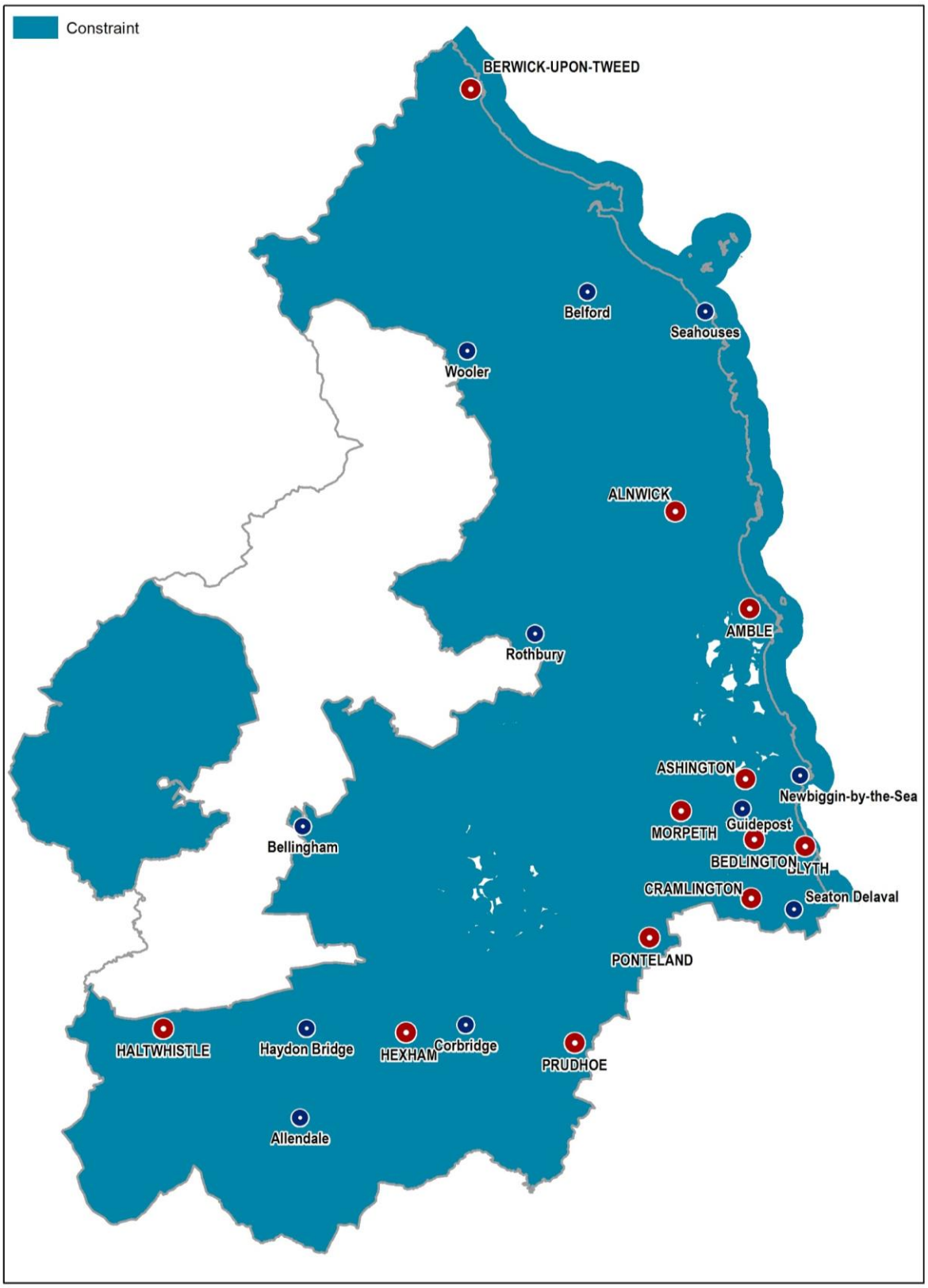


Figure 4.6: Combined considerations for large turbines (101 to 135 metres)



5. Study findings and recommendations

5.1 This study maps a number of planning and environmental considerations in the area covered by the Northumberland Local Plan, which consists of the area of Northumberland outside of the Northumberland National Park. The intention of this study is to provide an indication of the areas where, at strategic, county-wide level, areas are potentially suitable or unsuitable for wind energy development due to the presence or otherwise of the planning and environmental considerations included in this study. The aim of this is to assist in the development of the policy approach to onshore wind energy development in the emerging Northumberland Local Plan.

Recommendations for wind energy development involving turbines up to 25 metres in height and 26 to 40 metres in height

5.2 These wind energy developments typically tend to involve single turbines serving individual residential properties, businesses and farms. Based on the methodology of this study, there are large areas across Northumberland that could be potentially suitable for wind energy development for these scales of wind turbine development (turbines with a height of up to 25 metres and 26 to 40 metres to the tip of blade). Potentially suitable areas for wind turbine development of this scale could therefore be identified in the Local Plan.

5.3 The potentially suitable areas would not provide a definitive assessment of the suitability of a particular location for wind energy development and any proposals for wind turbine development in these areas would require more detailed assessment to inform and assess the acceptability of a proposal. This would include a range of issues, including those matters that this study has indicated would be best considered as part of a more detailed site appraisal and a more detailed consideration of some of the matters included in this study. It is, therefore, also recommended that the identification of potentially suitable areas for wind energy development for these scales of wind turbine is accompanied by policy criteria to assess the merits of the proposal at a site level. In order to meet the requirements of national planning policy, before being permitted, a proposal would also need to demonstrate that the planning impacts identified by the affected local community have been fully addressed and the proposal has their backing.

Recommendations for wind energy development involving turbines 41 to 65 metres in height, 66 to 100 metres in height and 101 to 135 metres

5.4 These wind energy developments tend to be commercial in nature with a more significant power output aimed at generating energy to meet wider needs, rather than just the needs of individual households or businesses as is the case with

the smaller scale wind turbines (those under 40 metres in height in this case). These wind energy developments can involve single turbines or groupings of turbines but single turbines typically account for those in the 41 to 65 metres category and groupings of turbines for those over 65 metres in height to the tip of the blade.

5.5 Based on the methodology used in this study, there are planning and environmental considerations and designations that suggest large areas of Northumberland are unsuitable in principle for wind energy development of these scales. Potentially significant effects of wind energy development are likely to increase as the size and numbers of turbines increases, but these effects are difficult to judge at the scale of this study. It is, therefore, recommended that potentially suitable areas for new wind energy development of this scale should not be identified in the Local Plan.

5.6 It is recognised that there are existing wind energy developments with this scale of wind turbine that are in operation in Northumberland and which would not be located within an area identified as potentially suitable for wind energy development. National planning policy does, however, take a different approach to the repowering[12] of existing wind turbines. The NPPF[13] sets out that proposals for the repowering of existing wind turbines do not need to be located in an area identified as suitable for wind energy development in the development plan. The acceptability of such proposals would be considered against the policy criteria, which would include a range of issues, including those matters that this study has indicated would be best considered as part of a more detailed site appraisal. Policy criteria in the Local Plan are needed to assess the acceptability of any repowering proposals that may come forward to ensure they are sited and designed well to minimise adverse effects, including cumulative effects.

Proposed approach in the Northumberland Local Plan

5.7 The recommendations from this study have been used to inform the approach to planning for onshore wind energy development in the Northumberland Local Plan, including the inclusion of potentially suitable areas for wind energy development. The wording of the policy relating to onshore wind turbine development reflects the NPPF (Paragraph 154b and Footnote 49) where proposals for new wind energy developments are first required to be located within an area identified as potentially suitable for wind turbine development and then demonstrate that the planning impacts related to the proposal identified by affected local communities have been addressed fully and the proposal has their backing. Where these circumstances apply, the acceptability of the proposal will be dependent on a range of criteria,

[12] Repowering involves replacing older wind turbines with newer ones.
[13] National Planning Policy Framework, Paragraph 154a (Footnote 49).

which cover many of the factors that have been identified as matters to be considered as part of a detailed proposal on a case-by-case basis. The areas identified as being potentially suitable for onshore wind energy development are also shown on the Policies Map that accompanies the Local Plan.

5.8 National planning policy has a different approach to the repowering of existing wind turbines compared to that for new wind energy developments, whereby proposals for the repowering of existing wind turbines do not need to be located in an area identified as suitable for wind energy development in the development plan. Policy criteria to assess the planning impacts of wind energy development and the acceptability of proposals is included in the Local Plan and would be relevant to the assessment of the acceptability of any repowering proposals that may come forward.

Appendix A: Mapped constraints

Table A.1: Considerations mapped in this study by theme and wind turbine typology

Constraint	**Mapped feature**	**Mapped feature for each turbine typology**				
		Small turbines (<25 metres)	**Small to medium turbines (26 to 40 metres)**	**Medium turbines (41 to 65 metres)**	**Medium to large turbines (66 to 100 metres)**	**Large turbines (101 to 135 metres)**
Theme: Residential amenity						
Residential dwelling	Six times the turbine height from a residential address point	Not mapped	240m	390m	600m	810m
Theme: Infrastructure						
Railways	Turbine height plus 10% from the feature	27.5m	44m	71.5m	110m	148.5m
Roads: - A roads - B roads - C roads						
Public Rights of Way						
Higher voltage overhead power lines: - 400 kV - 275 kV						
Theme: Nature conservation						
International designations: - Special Protection Areas - Special Area for Conservation - Ramsar sites	Designated area	Extent of feature	Extent of feature	Extent of feature	Extent of feature	Extent of feature

Constraint	Mapped feature	Mapped feature for each turbine typology				
		Small turbines (<25 metres)	**Small to medium turbines (26 to 40 metres)**	**Medium turbines (41 to 65 metres)**	**Medium to large turbines (66 to 100 metres)**	**Large turbines (101 to 135 metres)**
National designations: - Sites of Special Scientific Interest - National Nature Reserves	Designated area	Extent of feature	Extent of feature	Extent of feature	Extent of feature	Extent of feature
Other designations: - Local Wildlife and Geological Site - Ancient woodland	Designated area	Extent of feature	Extent of feature	Extent of feature	Extent of feature	Extent of feature
Theme: Landscape						
Landscape sensitivity to wind energy developments	Landscape Character Areas (LCAs) assessed as having a 'moderate to high sensitivity' or a 'high sensitivity' to wind energy development.	LCAs with moderate to high or high sensitivity	LCAs with moderate to high or high sensitivity	LCAs with moderate to high or high sensitivity	LCAs with moderate to high or high sensitivity	LCAs with moderate to high or high sensitivity
Theme: Historic environment						
Hadrian's Wall World Heritage Site	Designated area	Extent of feature	Extent of feature	Extent of feature	Extent of feature	Extent of feature
Conservation Area	Designated area	Extent of feature	Extent of feature	Extent of feature	Extent of feature	Extent of feature
Scheduled Monument	Designated area	Extent of feature	Extent of feature	Extent of feature	Extent of feature	Extent of feature
Registered parks and gardens	Designated area	Extent of feature	Extent of feature	Extent of feature	Extent of feature	Extent of feature
Registered battlefields	Designated area	Extent of feature	Extent of feature	Extent of feature	Extent of feature	Extent of feature

Constraint	Mapped feature	Mapped feature for each turbine typology				
		Small turbines (<25 metres)	**Small to medium turbines (26 to 40 metres)**	**Medium turbines (41 to 65 metres)**	**Medium to large turbines (66 to 100 metres)**	**Large turbines (101 to 135 metres)**
Theme: Natural features						
Water bodies	Extent of water bodies	Extent of feature	Extent of feature	Extent of feature	Extent of feature	Extent of feature
Theme: Green Belt						
Green Belt	Designated area	Not mapped	Extent of feature	Extent of feature	Extent of feature	Extent of feature
Theme: Wind speed						
Wind speed	Wind speed 5m/s at 45 metres above ground level	Not mapped	Not mapped	Wind speed 5m/s at 45 metres above ground level	Wind speed 5m/s at 45 metres above ground level	Wind speed 5m/s at 45 metres above ground level

Northumberland
County Council

Planning Policy
Northumberland County Council
County Hall, Morpeth
Northumberland NE61 2EF

T: 0345 600 6400
E: planningstrategy@northumberland.gov.uk
W: www.northumberland.gov.uk