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Cumulative Landscape and Visual Assessment of Wind Energy in Caithness

Prepared by LUC for The Highland Council
July 2014

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Scope and approach

The Cumulative Landscape and Visual Assessment (CLVA) of Wind Energy in Caithness was undertaken between February and July 2013, and finalised in 2014. LUC was commissioned jointly by The Highland Council and Argyll and Bute Council to provide an analysis of cumulative landscape and visual effects arising from existing and proposed wind energy developments within parts of the two Council areas. The focus of this study is Caithness, within The Highland Council area.

The Scottish Government's online renewable energy advice note 'Onshore Wind Turbines' (December 2013) states:

"*In areas approaching their carrying capacity [for wind energy development] the assessment of cumulative effects is likely to become more pertinent in considering new wind turbines, either as stand alone groups or extensions to existing wind farms. In other cases, where proposals are being considered in more remote places, the thresholds of cumulative impact are likely to be lower, although there may be other planning considerations.*"

The purpose of this CLVA is to specifically identify areas where existing and potential cumulative effects may be a factor in determining opportunities for further development. The study does not identify the cumulative effects of individual wind farms, but seeks to identify areas where such effects are more or less likely to occur. It differs from cumulative assessment usually carried out as part of landscape and visual impact assessment (LVIA), in that the potential for cumulative effects is considered strategically, rather than in the context of one specific development.

The recommendations of the study are intended to inform planning decisions in relation to wind energy proposals, and will feed into the preparation of supplementary planning guidance. It will also provide assistance to developers in identifying potential locations for development. The CLVA does not set out to determine the capacity of the landscape for wind energy development, which will be influenced by a number of other factors.

The scope of the study was set out in LUC's proposal of January 2013, and was revised following discussion at the inception meeting, held on 15 February at Fort William. The approach taken to the CLVA is based on the analysis of existing and proposed wind energy developments, known to the council at the time of writing, within a clearly defined study area.

The sensitivity of the underlying landscape to wind energy development was evaluated, and areas which are highly valued for their scenic or wild land qualities were identified. Viewpoints across the study area were selected to represent locations where people enjoy views of the landscape. These landscape and visual receptors form the baseline for the CLVA.

The theoretical visibility of existing and proposed wind energy developments was determined through a computer-generated analysis, and interpretation of this data forms the main part of the study. Landscape and visual receptors which are already experiencing high levels of cumulative effect are identified, and the likely additional effects of proposed development can be estimated.

In describing the potential for cumulative effects, consideration is given to existing and emerging patterns of development within the landscape. The CLVA concludes with a series of recommendations applied to different parts of the Caithness landscape, identifying areas where cumulative effects may be a limiting factor on development. Broad guidance is provided on how future development may be steered towards or away from certain areas, in order that the spread of cumulative effects is limited.

Findings

Recommendations are made based on the definition of specific areas within the study area, according to how existing and potential cumulative effects are likely to influence further development.

Areas are categorised as follows:

- Areas where **receptor sensitivity** to potential cumulative effects is a limiting factor to further development;
- Areas where additional development may give rise to the **extension of cumulative effects** in relation to existing and emerging development patterns;
- Areas where cumulative effects could be limited by siting additional development **in association with existing patterns** of development; and
- Areas where additional development could be sited **away from existing development patterns**, with reduced potential for cumulative effects.

Limitations

The process followed in conducting the CLVA has been clearly set out within the methodology chapter of the report (**Section 2**). The methodology was specifically adapted to correspond with the project scope. There are a small number of limitations to bear in mind in using the report.

The CLVA does not form a landscape capacity study. "Landscape capacity" seeks to define the level of development which a landscape can accommodate, and beyond which the character of the landscape would change. From this it could be inferred that the level of change should be a distinct threshold or amount of development which can be accommodated. However, when considering wind energy developments there is no such threshold, since it is widely accepted that all commercial scale wind turbine developments will result in changes to landscape character. Any such threshold must therefore be dictated by need, i.e. an ultimate level of development which must be accommodated in the study area. This question, essentially is "how much change in the landscape are we prepared to accept?", and is outside the scope of this CLVA.

Furthermore, landscape capacity studies do not relate only to cumulative landscape and visual effects, rather cumulative effects form one consideration is assessing overall capacity. This CLVA therefore stands alone, but is aimed at informing the overall assessment of landscape capacity.

It is important to note that high levels of cumulative landscape and visual effects do not necessarily indicate areas in which further development should be avoided, and likewise that areas of lesser cumulative effects are areas with scope to accommodate turbines. For example, it may be desirable to avoid locating new development in areas currently without turbine visibility, or appropriate to extend some areas of existing development, where cumulative effects already exist.

The methodology used in assessing landscape and visual sensitivity is considered appropriate for the purposes of the CLVA. No work was undertaken to update the existing baseline landscape character assessments.

The focus of the CLVA is onshore wind energy development, and offshore wind farms are not considered as part of this assessment. Additionally, the focus of the assessment is on the presence of turbines themselves, and limited consideration has been given to cumulative effects associated with tracks, power lines and ancillary development.

The CLVA has been carried out in the context of existing and proposed wind energy developments known to the council at the time of writing. Data was obtained from The Highland Council in spring 2013. This information was not updated during the project lifetime, and therefore represents a snapshot of a continually changing pattern of development.

The recommendations within this report are not a substitute for the detailed consideration of cumulative landscape and visual effects of wind energy proposals. All proposals will continue to be judged on their own merits on a case-by-case basis.

Glossary

Cumulative effect on landscape: The effect of multiple wind energy developments on the physical fabric or character of the landscape, or any special values attached to it (also relating to perception and aesthetics).

Cumulative effect on visual amenity: The effect of multiple wind energy developments on the way in which people view their surroundings, including effects on specific views. Cumulative effects may be:

- **Combined**, where several wind farms are within the observer's arc of vision at the same time;
- **Successive**, where the observer has to turn his or her head to see the various wind farms; and
- **Sequential**, when the observer has to move to another viewpoint to see different developments, or different views of the same development (such as when travelling along a route).

Cumulative visibility: The theoretical *visibility* of multiple wind energy developments, as distinct from the *cumulative effect* of this visibility as experienced by a receptor.

Cumulative zone of theoretical visibility (CZTV): A computer-generated map showing areas of land within which one or more wind energy development(s) are theoretically visible, usually based on a bare ground topographical model. Visibility is theoretical as the map does not take into account the effects of screening by built elements, vegetation or small variations in topography.

Landscape capacity for wind energy: The inherent ability of a landscape to accommodate the types of change expected to arise from the introduction of wind energy development at different scales, without resulting in an overall change in character type.

Landscape character: A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

Landscape character type: These are distinct types of landscape that are relatively homogenous in character. They share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement patterns, and perceptual and aesthetic attributes.

Landscape receptors: Aspects of the landscape resource that have potential to be affected by multiple wind energy developments.

Nature of cumulative effect: A term that combines judgements about the size and scale of the effect and the extent of the area over which it occurs.

Sensitivity: A term applied to specific receptors, combining judgements of the susceptibility of the receptor to multiple wind energy developments, and the value placed on the resource.

Theoretical visibility: Computer-generated mapping defines visibility of wind turbines based on a bare ground digital terrain model. This theoretical visibility therefore takes no account of buildings, trees and other above ground features which may restrict actual visibility. Theoretical visibility represents a maximum-case scenario.

Visual receptors: Individuals or defined groups of people, who have the potential to be affected by multiple wind energy developments

1 Introduction

Background

1.1 LUC was commissioned jointly by The Highland Council and Argyll and Bute Council to provide an analysis of cumulative landscape and visual effects arising from existing and proposed wind energy developments within parts of the two Council areas. The focus of this study is Caithness, within The Highland Council area.

1.2 The purpose of the study is to specifically identify areas where existing and potential cumulative effects may be a factor in determining opportunities for further development. It is intended to feed into forthcoming supplementary planning guidance being prepared by The Highland Council, but does not represent Council policy.

1.3 The approach taken to the CLVA is based on the analysis of existing and proposed wind energy developments, known to the council at the time of writing, within a clearly defined study area. Existing and potential cumulative effects are considered through an analysis of landscape sensitivity and visual receptors, combined with an analysis of theoretical visibility of wind turbines. In describing the potential for cumulative effects, wider consideration is given to existing and emerging patterns of development, and broad guidance is provided on how future development may be steered towards or away from certain areas, in order that the spread of cumulative effects is limited.

1.4 The scope of the study was set out in LUC's proposal of January 2013, and was revised following discussion at the inception meeting, held on 15 February at Fort William. The draft report was submitted to The Highland Council in July 2013, with the report being finalised in April 2014, following detailed comments provided by the council.

Study area

1.5 At the project outset, two separate study areas – Caithness and Ardross – were identified within Highland. Following discussions at the inception meeting it was agreed that the focus of the Highland element of the contract would be mainly on Caithness in order to advance that sufficiently within the resource available. This document reports on the Caithness study area only.

1.6 Caithness is a former county, now a ward management area within The Highland Council area. The extent of the study area varies slightly from the ward boundary, and was defined for the purposes of the CLVA by The Highland Council. To examine the sensitivity of the study area and the potential for cumulative effects, a series of outer study areas were added to take account of intervisibility with other landscapes and wind farms. The outer study areas are defined in **Section 2**. The study area is illustrated in **Figure 2.1**, and is fully described in **Section 3** of this report.

Structure of the report

1.7 This report sets out information on:

- Methodology (**Section 2**);
- The study area (**Section 3**);
- Wind energy development in the study area (**Section 4**);
- Landscape character sensitivity (**Section 5**);
- Designated landscapes and areas of wildness (**Section 6**);
- Visual receptors (**Section 7**);
- Cumulative visibility analysis (**Section 8**);
- Strategic assessment of cumulative effects (**Section 9**); and
- Recommendations (**Section 10**).

2 Methodology

Introduction

2.1 The methodology included the following steps:

- Review of the study area and existing wind energy guidance;
- Analysis of operational and proposed wind energy development;
- Review of baseline landscape and visual material;
- Cumulative visibility analysis;
- Strategic assessment of cumulative effects; and
- Recommendations.

2.2 The study was undertaken at a strategic level, aimed at identifying areas where cumulative landscape and visual effects are more or less likely to occur. It was primarily desk-based, but was supported by a field visit to Caithness in April 2013. The purpose of this visit was to:

- verify the landscape baseline and the analysis of landscape sensitivity;
- visit viewpoint locations and identify visual receptor groups; and
- gain an understanding of the level of development currently operating within Caithness, and the cumulative effects that these developments give rise to.

Analysis of wind energy development

2.3 To enable an analysis of patterns of current and proposed wind energy development, data was obtained from relevant local authorities on the location and status of wind farms in the study area and outer study areas (defined below). This included information on the number and height of turbines in each scheme, representing a range of scales of development.

2.4 To simplify the analysis, wind energy developments were grouped into three size categories based on height, set out in **Table 2.1**. The number of turbines in each scheme was not a factor in defining the size categories. Turbines with a height below 35m were not considered in this study.

Table 2.1 Turbine size categories

Size category	Height of turbines including blades (m)
Small-medium	35 to 50m
Medium	51 to 85m
Large	86 to 150m

2.5 The wind energy developments considered included operational and consented schemes, those with live planning applications, and projects at scoping stage. Considering the range of unbuilt schemes, there is a greater level of certainty around consented proposals compared to undetermined applications and scoping sites. In the case of scoping sites, little information is generally available: where no data on turbine height and layout was available, these are based on a single turbine of the maximum height within the size categories (i.e. 150m in height). Further details of all the wind energy developments considered are set out in **Section 4**.

Outer study areas

2.6 To examine the potential for cumulative effects within the study area itself, a series of outer study areas were added to take account of intervisibility with other landscapes and wind farms.

2.7 For the purposes of applying outer study areas, the following distances have been adopted for each the three size categories[1]:

- Small-medium (35 to 50m): 15km;
- Medium (51 to 85m): 25km; and
- Large (86 to 150m): 35km.

2.8 The boundaries of the study area and outer study areas are shown in **Figure 2.1**.

Intervisibility

2.9 The outer study areas, particularly the 35km outer study area, encompass a large area extending well beyond Caithness, including parts of Sutherland and the Orkney Islands. The outer study areas include some landscapes which are not visually related to Caithness, and where cumulative effects are unlikely to occur, i.e. where there is no visibility of turbines within the study area. In order to focus on those areas where cumulative effects are likely, an intervisibility analysis was carried out.

2.10 This is shown in **Figure 2.2** and illustrates areas where turbines of 150m to tip, located in the study area, would be theoretically visible throughout the study area and outer study areas. Theoretical visibility in **Figure 2.2** was mapped based on turbines of 150m to tip located across the study area only (not including outer study areas) on a square grid at 250m intervals. Visibility of these turbines is shown both within the study area itself, and within the outer study areas. The unshaded areas of this map indicate areas within the outer study area where there is no theoretical visibility of turbines within the main study area. These areas therefore do not require further consideration. Turbines of 150m in tip height were used to demonstrate theoretical visibility of the largest size category considered in the study, and is therefore representative of the most widespread theoretical visibility of the size categories considered.

Landscape and visual sensitivity

2.11 Relative sensitivity across the study area has been determined with reference to different receptors.

2.12 Landscape receptors are aspects of the landscape resource that have potential to be affected by multiple wind energy developments, and include:

- Landscape character, as described in published landscape character assessments;
- Designated landscapes which are recognised for their scenic quality; and
- Areas valued for their relative wildness or 'wild land' quality.

2.13 Visual receptors are individuals or defined groups of people who have the potential to be affected by views of multiple wind energy developments.

2.14 Landscape and visual receptors often share the same or similar geographical location, with different degrees of overlap. Landscape receptors and visual receptors therefore illustrate different but interrelated patterns of sensitivity within the study area and outer study areas.

[1] Distances based on Horner + Maclennan; Envision (2006) Visual Representation of Windfarms: Good Practice Guidance. Scottish Natural Heritage.

Landscape character

2.15 The sensitivity of the landscape was examined within the study area and the 15km outer study area. It was agreed with The Highland Council that landscape character sensitivity was most relevant within area, since significant effects on landscape character (as distinct from effects on views) are unlikely to occur beyond this zone. Landscape character sensitivity is judged based on both physical and visual aspects of landscape character, in accordance with published guidance on the subject.

2.16 The foundation of sensitivity analysis is provided by landscape character type (LCTs) as defined in the Caithness and Sutherland Landscape Character Assessment (see **Section 3**). LCTs cover the full extent of the study area and outer study areas. They represent areas with consistent landscape characteristics, including both physical and perceptual aspects, and so describe the component parts of an area as well as its overall nature or experience. The boundaries between LCTs usually tend to be intermediate or transitional rather than being clear-cut, and this occurs to different degrees.

2.17 It was initially anticipated that details of landscape character sensitivity could be drawn directly from the Assessment of Landscape Sensitivity to Wind Turbine Development in Highland: Summary Report, prepared for the Council by the Macaulay Institute. However, based on discussions at the inception meeting, it was agreed with The Highland Council that the Macaulay work would not be used as a direct basis for judging landscape character sensitivity.

2.18 It was therefore agreed with The Highland Council that a new landscape character-based assessment of sensitivity would be undertaken for the Caithness area. This aimed to present a robust evaluation of sensitivity to wind energy development, which was both fit for purpose and could be completed within the project resources and timescale. The detailed approach to assessment of landscape character sensitivity in these areas is described in **Section 5** of this report.

Designated landscapes

2.19 Landscape designations can be an indicator of the recognised value of a landscape. They are designated for their landscape and/or scenic quality at the national, regional or local level. Designations tend not to correspond directly to LCTs, and as such have been treated as a separate layer in this study. Their presence is an indicator of areas where development may affect particularly valued qualities, and which may be of higher sensitivity. Designated landscapes were identified across the study area and the 35km outer study area, and are described further in **Section 6**.

Wild land and wildness

2.20 Wildness is a quality of the landscape, and wild land is the area in which this quality may be experienced. Wild land is generally associated with large areas of "*uninhabited and often relatively inaccessible countryside where the influence of human activity on the character and quality of the environment has been minimal,*"[2] although the quality of wildness may be found in all landscapes, including settled areas.

2.21 Scottish Planning Policy (2014) recognises the importance of wild land:

"*Wild land character is displayed in some of Scotland's remoter upland, mountain and coastal areas, which are very sensitive to any form of intrusive human activity and have little or no capacity to accept new development. Plans should identify and safeguard the character of areas of wild land as identified on the 2014 SNH map of wild land areas.*" (paragraph 200).

2.22 SPP, and the accompanying 2014 SNH map of wild land areas, was published as this study was being finalised. Due to the timescale the updated wild land areas have not been built into the study.

2.23 Areas of wild land tend not to correspond directly to LCTs or designations, and have therefore been treated as another layer in this study. They indicate landscapes which are sensitive to human influence, and are valued for their remote experiential quality. Wild land is considered

[2] SNH (2002) Wildness in Scotland's Countryside. Policy Statement No. 02/03.

through the Search Areas for Wild Land (SAWL) identified by SNH in 2003, and through the stretches of coastline identified as 'isolated coast' within The Highland Council's Coastal Development Strategy. Areas of wildness value were identified across the study area and the 35km outer study area, and are described further in **Section 6**.

Visual receptors

2.24 The listing of key visual receptors seeks to identify individuals or defined groups of people who are sensitive to changes in their visual amenity, and the locations from which they have views of the landscape of the study area. Key receptors were identified across the study area and outer study areas, based on location. **Section 7** presents details of the representative locations which have been selected, including settlements, hills, coasts, cultural heritage, recreation and other OS-marked viewpoints, as well as road, railways, ferry and cycle routes. Receptor locations are selected to represent places where people gather or are present in higher numbers, and therefore indicate points of higher sensitivity within the study area and outer study areas. Some visual receptors may be considered more sensitive than others. Visual receptors with views from static locations are considered through the use of viewpoint locations, whilst visual receptors on the move are considered through analysis of routes.

Limitations of the sensitivity assessment

2.25 The methodology used in assessing landscape and visual sensitivity is considered appropriate for the purposes of the CLVA. No work was undertaken to review or update the existing baseline description or classification of character areas.

2.26 LCTs have been assigned overall sensitivity levels, and information on designated landscapes, wild land and visual receptors has been provided as an indication of the more detailed pattern of landscape and visual sensitivity within the study area and outer study areas. The sensitivity of landscape receptors and visual receptors is separate but interrelated: while effects on the landscape can arise in relation to both physical and aesthetic changes, effects on the visual amenity of people relate solely to the way in which effects on landscape are seen.

Cumulative visibility analysis

2.27 "Cumulative visibility" describes the theoretical *visibility* of multiple wind energy developments, as distinct from the *cumulative effect* of this visibility as experienced by a receptor. A GIS-based analysis was carried out as the primary means of understanding the visibility of operational and proposed wind energy developments, and how and where they are likely to be seen within the study area and outer study areas.

Development scenarios

2.28 The current pattern of cumulative visibility is the result of operational wind turbine developments. To this baseline may be added those schemes which are under construction, since there is a high level of certainty that these will become operational in the near future. Consented schemes may or may not be built, but once consented, there is a relatively high level of certainty that they will become operational.

2.29 There is less certainty regarding schemes with an undetermined planning application, which may either be consented or refused. The lowest level of certainty is accorded to proposals at scoping or design stage, as these may not even progress to a planning application.

2.30 Accordingly, wind energy developments were divided between two development scenarios:

- Those which are operational, under construction, or consented; and
- Those which are at application or scoping stage.

2.31 **Section 4** sets out information on relevant wind energy developments, current at the time of writing and based on data obtained from The Highland Council in spring 2013. Details are provided on their status, turbine count and tip heights, and how they fit into the size categories defined for the purposes of the study.

Cumulative visibility mapping

2.32 Cumulative zone of theoretical visibility (CZTV) mapping was prepared to illustrate the visibility of both multiple wind farms and multiple turbines. Separate CZTVs have been generated for each of the two development scenarios described above.

2.33 The CZTVs were created using specific computer software designed to calculate the theoretical intervisibility between wind farms and their surroundings. ArcGIS© with Spatial Analyst Extension software was used to generate the CZTVs. This programme calculates areas from which the turbines are potentially visible. This is performed on OS Landform Panorama data, a 'bare ground' digital terrain model (DTM), which does not take account of potential screening by buildings or vegetation. The DTM uses a 50m x 50m grid which means that the computer calculates the number of turbines (to tip height) visible from 2m above the centre point of each 50m x 50m square in the horizontal plane. As it assumes the same height within the entire 50m x 50m square it is not able to take account of small scale topographic features. As it uses a 'bare ground' model, it is considered to over emphasise the extent of visibility of the wind farm and therefore represents a 'maximum potential visibility' scenario.

2.34 Each CZTV is comprised of many individual ZTVs for each of the wind farms considered. The radius of each ZTV is based on the height of each turbine, as recommended by SNH Guidance.[3] Each CZTV for each development scenario is presented according to both 'number of turbines visible' and 'number of wind farms visible'. The individual ZTVs (of wind farms or individual turbines) are added together and the result is the CZTV. Where turbine layouts are not available a single turbine is used in the calculations.

2.35 CZTVs provide a means of identifying areas where cumulative visibility may affect landscape and visual receptors, but do not indicate the nature of cumulative effects. There may be areas of high cumulative visibility, for example, where turbines which are theoretically visible are in fact viewed across a great distance, resulting in little or no effect. Further analysis of patterns of visibility based on interrogation of the CZTVs has therefore been carried out in order to take account of size, proximity and visibility of wind energy developments. An analysis of turbine visibility for each landscape and visual receptor is provided in **Section 8**, according to development scenario (set out in **Tables 8.1** to **8.5**). These tables identify the extent of turbine visibility currently, and where existing pressure for development is likely to create further visibility.

Types of cumulative visibility

2.36 Patterns of visibility can be interpreted in different ways, according to receptor type. The way in which turbine visibility is interpreted in relation to receptor type is an important factor in going on to determine the presence of (or potential for) cumulative effects in relation to landscape and visual sensitivity.

2.37 Landscape receptors may be affected by the presence of wind energy developments in terms of changes in the physical fabric of the landscape and/or in terms of the visual characteristics of the landscape.

2.38 Cumulative effects on visual receptors relate purely to the way in which wind energy developments are seen. This can be in a number of different ways, whether from static locations or whilst passing through the landscape. Three types of cumulative visibility may be experienced by people[4]:

- Combined, where several wind farms are within the observer's arc of vision at the same time;
- Successive, where the observer has to turn his or her head to see the various wind farms; and
- Sequential, when the observer has to move to another viewpoint to see different developments, or different views of the same development (such as when travelling along a route).

[3] Horner + Maclennan; Envision (2006) Visual Representation of Windfarms: Good Practice Guidance. Scottish Natural Heritage.
[4] Scottish Natural Heritage (March 2012) *Assessing the Cumulative Impact of Onshore Wind Energy Developments*

2.39 The CZTVs represent all types of cumulative visibility, in that they show the full extent of theoretical visibility of each wind farm included. Within the areas of the CZTVs shown as having visibility, these different patterns and type of visibility occur, sometimes simultaneously. For example, an OS marked viewpoint on a route could be considered a static viewpoint in its own right (having combined or successive visibility), or could be considered part of the sequential visibility of the route. It is necessary to interrogate the layers of data which make up the CZTV, in order to draw out detailed information on types of cumulative visibility. This is addressed in **Section 8**.

Limitations

2.40 Where no cumulative visibility is shown on CZTVs, it can be said that there will be no cumulative effect on visual receptors, based on the wind energy development considered in this report, as they are not visible from these locations. However for landscape receptors, cumulative effects may occur independently of cumulative visibility.

2.41 Information on existing and proposed wind energy developments was not updated during the project lifetime, and therefore represents a snapshot of a continually changing pattern of development.

Strategic assessment of cumulative effects

2.42 The final task was to draw together the outputs from the sensitivity assessment and the cumulative visibility analysis, to provide an indication of the types of current and potential cumulative visual and landscape effects. The consideration of landscape and visual sensitivity results in an understanding of the susceptibility and value of receptors. The analysis of cumulative visibility provides a foundation for understanding the type of change arising as a result of multiple wind energy developments, in terms of the interrelationship between different developments and their overall siting and design.

2.43 Cumulative effects are discussed in **Section 9**, in **Tables 9.1** to **9.10**. They are set out according to LCT, with reference to the receptors located within each, including designated landscapes, wildness value, and viewpoint locations. Each table includes a list of development located within the LCT, and reference is also made to developments in neighbouring LCTs where they are considered likely to have an effect. In the case of landscape receptors, additional analysis is included in order to establish where cumulative effects may occur independently of visibility (i.e. on the physical landscape).

2.44 Broad guidance is provided on how future development may be steered towards or away from certain areas, in order that the spread of cumulative effects is limited. In providing this guidance the study recognises that the implications of cumulative effects vary, in part as a result of the sensitivity of landscape and visual receptors. In some cases it may be desirable to accommodate future developments within areas which are already experiencing cumulative effects where this avoids or limits effects on more sensitive receptors, or where it prevents cumulative effects being extended into new areas which are currently unaffected by development. In currently undeveloped areas which are of lower sensitivity, it may be possible to site new development in order to ease pressure on more densely developed areas.

Criteria for analysing cumulative effects

2.45 Interpretation and checking is required to analyse the potential for cumulative effects. This analysis, presented in **Section 9**, has been undertaken based on a series of criteria to help ensure judgements and interpretations are consistent at this stage. Outlined below, the criteria relate to both landscape and visual sensitivity and to the nature of cumulative visibility or patterns of development, and were applied in order to establish a detailed understanding of how cumulative effects may arise.

2.46 Assessing the Cumulative Impact of Onshore Wind Energy Developments (SNH, 2012) sets out a series of factors to be considered in assessing cumulative effects, as follows (paragraph 45):

"*The cumulative impact of windfarm development on landscape and visual amenity is a product of:*

- *the distance between individual windfarms (or turbines),*
- *the distance over which they are visible,*
- *the overall character of the landscape and its sensitivity to windfarms,*
- *the siting and design of the windfarms themselves, and*
- *the way in which the landscape is experienced."*

2.47 For each of the receptors, the following criteria are considered in coming to a judgement on cumulative effect:

- the number of wind farms visible;
- distance from the receptor to the wind farm(s);
- the extent of each wind farm likely to be seen by an visual receptor;
- the direction of each wind farm in relation to the receptor;
- the distribution and visual separation of the wind farms in relation to one another; and
- the relative turbine size and extent of each proposal.

2.48 The first two items were derived from GIS analysis, with manual interpretation of the other criteria.

Further considerations

2.49 Other factors identified by the SNH guidance are also considered, including landscape character and sensitivity, and the way in which landscape is experienced. These relate to baseline issues, in the form of the landscape and visual sensitivity of landscape character, visual receptors, designated landscapes and areas of wild land. The different receptor types represent different ways in which the landscape is experienced or perceived.

Recommendations

2.50 Conclusions on cumulative landscape and visual effects are focussed on identifying areas where the greatest potential for cumulative effects currently occurs or is predicted to occur, and where there is opportunity to accommodate additional development without giving rise to cumulative landscape and visual effects which may be considered unacceptable.

2.51 By considering the underlying sensitivity of each LCT and the varying levels of cumulative effect occurring across the study area, a range of possible conclusions can be reached. These have been distilled into four recommendations, one of which has been applied to each part of the study area. The four recommendations are defined and described in **Table 2.2**. The areas where each of these recommendations is applied are described in **Section 10**.

Table 2.2 Recommendations and their definitions

Areas where receptor sensitivity to potential cumulative effects is a limiting factor to further development
These are areas where receptor sensitivity tends to be highest, and where cumulative landscape and visual effects are therefore more likely to be considered unacceptable. Receptor sensitivity may relate to landscape character (including landscapes designated for their scenic quality or wildness), and/or to the presence of high numbers of sensitive visual receptors. Areas may or may not be subject to existing cumulative effects, and in these areas cumulative effect may not be the primary 'limiting factor' on development. Rather the sensitivity of landscape and visual receptors indicates that relatively low levels of cumulative effect may be considered unacceptable.
Areas where additional development may give rise to the extension of cumulative effects in relation to existing and emerging development patterns
These are areas where the potential for cumulative effect is likely to be a limiting factor on further development. These areas often take the form of undeveloped areas between existing clusters of wind turbines, where the introduction of new development would lead to the merging of these clusters, and a resulting erosion of landscape diversity. SNH guidance on strategic planning for wind farms refers to "clustering and gaps" as a means of limiting cumulative effects.[5] Areas identified under this heading represent the key 'gaps' in the emerging pattern of wind energy development. Maintenance of these gaps will ensure that some areas of landscape, and sections of views including views from routes, remain unaffected by turbines.
Areas where cumulative effects could be limited by siting additional development in association with existing patterns of development
These are areas where the potential for cumulative effects may be limited by closely associating additional development with existing clusters of wind turbines, and tying in with existing cumulative patterns. Receptor sensitivity may be lower in these areas, which already have some wind energy development. Additional development within these areas would be perceived in the context of existing turbine groups. Locally, cumulative effects would arise as a result of the concentration of development, but the benefit would be at the wider scale. By concentrating development the dispersal of turbines, and cumulative effects, across the landscape would be avoided. There would be a need for consistency of design in these areas.
Areas where additional development could be sited away from existing development patterns, with reduced potential for cumulative effects
These are areas which are not associated with existing clusters of wind turbines, but where the sensitivity of landscape and visual receptors is not considered to be so high as to preclude development on the grounds of cumulative effect. In these areas there are currently no existing or consented developments, and so the potential for such effects would be limited. In effect, these are areas which could form new clusters of development, adequately separated from existing clusters. This would continue the "clustering and gaps" approach to accommodating wind turbines while retaining undeveloped areas of landscape.

[5] SNH (2009) Siting and Designing Windfarms in the Landscape. Part 2 paragraph 18. Note that Part 2 of this document, "Strategic planning for windfarms" has not been superseded by the recently published version 2 of Siting and Designing Windfarms in the Landscape, which only replaces section 1 of the 2009 document.

Application of the conclusions

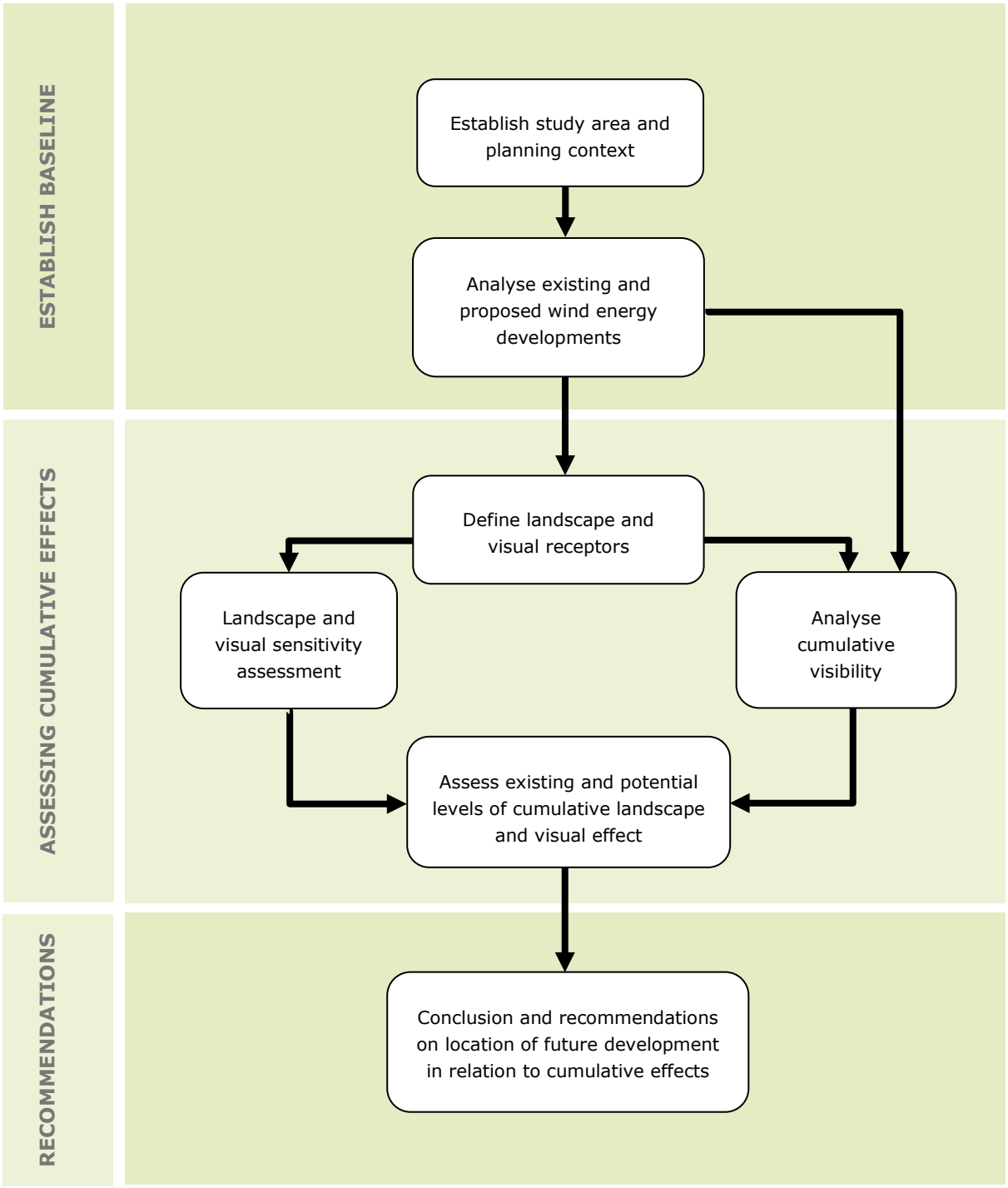
2.52 While this study provides guidance on opportunities to accommodate additional development, this is purely in relation to the current and potential cumulative landscape and visual effects. It is based only on the analysis of visibility of known existing and proposed wind energy development included within the study (see **Section 4**).

2.53 Similarly, the evaluation of landscape and visual sensitivity described in the study focuses on cumulative effects. The study concludes that, in some areas, landscape sensitivity is likely to be more of a limiting factor on development than cumulative effects, but does not define areas which have 'no capacity' for development. Similarly, it does not define areas where any or all wind energy proposals would be acceptable.

2.54 There are several different considerations to be made in assessing the overall capacity of landscapes for wind energy development, and cumulative landscape and visual effects is only one such consideration. Reliance should not be placed on the recommendations of this study without reference to these other matters.

Summary of methodology

2.55 The diagram below sets out the methodology used to undertake the CLVA. This process was supported by digital modelling work to map intervisibility within the study area and outer study areas and CZTVs of existing and proposed wind farms. Further data analysis was carried out using GIS.



3 The study area

Policy and Supplementary Guidance

3.1 The development plan currently in place for Caithness includes the Highland-wide Local Development Plan (LDP), adopted in April 2012, and Caithness Local Plan (as continued in force, April 2012). Policy 67 of the LDP covers Renewable Energy Developments. The area-specific Caithness and Sutherland Local Development Plan is in the early stages of preparation.

3.2 The Highland Council has produced interim guidance on wind energy to supplement the Highland-wide LDP. The Onshore Wind Energy - Interim Supplementary Guidance (March 2012) sets out detailed policies and guidance where the main principles have been established in the LDP. It provides a spatial framework to guide the location of large wind farms and includes development guidelines. The spatial framework defines:

- Areas requiring significant protection;
- Areas with potential constraints; and
- Areas of search.

3.3 In relation to cumulative effects, the Interim Supplementary Guidance states:

"*The Council will continue to work on the identification of areas within Highland which require significant protection due to the cumulative impact of existing and consented windfarms limiting further development. (This will include consideration of such areas both within and outwith the two 'pilot areas' that were referred to in the April 2011 draft of the Onshore Wind Energy Supplementary Guidance).*"[6]

3.4 The preceding draft supplementary guidance of April 2011 included detailed landscape and visual assessment work (including consideration of cumulative effects) undertaken for two pilot areas: Caithness and Monadhliath, set out in Appendix 1 of the report. Based on these pilot area studies, Appendix 1 sets out 'areas at or near their cumulative limit in landscape capacity terms', to be included as part of 'areas requiring significant protection'.

3.5 It is understood that within the Interim Supplementary Guidance the 'areas where the limits of cumulative impact have been reached' (as assessed in draft guidance) have not been followed through in defining current 'areas requiring significant protection'.

3.6 Areas defined in the draft supplementary guidance as at or near their cumulative limit in landscape capacity terms are listed in **Table 3.1** below, along with their reason for selection.

[6] The Highland Council (March 2012) Onshore Wind Energy - Interim Supplementary Guidance (page 8)

Table 3.1 Areas at or near their cumulative limit in landscape capacity terms

Areas at or near cumulative limit	Reason for selection[7]
(3) Watten, Durran and Halkirk	*"To include the main settled areas north of the B876 and at Westerdale and Olgrinmore to the west. The boundary is loosely defined by change in character type which helps keep the clear distinction between different character types rather than blurring this by having windfarm development across the transition in character types. Mainly medium visibility sensitivity from settlement (The Macaulay Report)."*
(5) Spittal Hill	*"Almost entirely High Visual Sensitivity from Routeways (The Macaulay Report). This area prevents overwhelming cumulative impacts in a High visibility area from routeways (The Macaulay Report). Offers a separation/screening area from development providing relief from cumulative impacts. Boundary defined by extent of hill relative to surrounding land. Prevents scaling this important and highly visible landmark which is seen from large distances away (despite its limited height)."*
(6) Hill of Oliclett	*"From Wick this is the rough extent of visibility to Southwest and prevents an encirclement of Wick. There is some medium sensitivity for visibility from settlements (The Macaulay Report). This area prevents overwhelming cumulative impacts in a High visibility area from routeways (The Macaulay Report)."*
(7) West of A9	*"The boundary is loosely defined by change in character type which helps keep the clear distinction between different character types rather than blurring this by having windfarm development across the transition in character types. High Visual Sensitivity from Routeways (The Macaulay Report). This is a respite gap on A9 to lessen cumulative impact. It protects a representation of an important view across Flow country pool systems to the striking skyline profile of well-defined distant summits. This area prevents overwhelming cumulative impacts in a High visibility area from routeways (The Macaulay Report). NB Presence of The Flow Country."*

3.7 The Spatial Framework within the Interim Supplementary Guidance sets out identified areas of search, based on the elimination of areas of significant protection, and area with potential constraints. The largest areas of search are found in the north of the study area, between Thurso, John O' Groats and Wick. The west of the study area is quite heavily constrained by areas of significant protection. Coastal areas are largely excluded as areas of search, with the exception of the area northwest of Thurso.

Landscape character assessment

3.8 The landscape character assessment of Caithness and Sutherland provides the baseline landscape characterisation for the area.[8] In considering the baseline landscape, no updating of the underlying landscape character assessment has been undertaken. However, the study does take account of changes in the landscape arising from operational wind turbines which have been developed since 1998.

3.9 The Caithness and Sutherland character assessment includes guidance on wind energy developments in relation to selected LCTs, under the heading 'key forces for change and design guidance'. It is understood that LCTs were selected based on perceived pressure for this kind of

[7] As stated within Draft Supplementary Guidance (April 2011).
[8] Caroline Stanton (1998) Caithness and Sutherland landscape character assessment. Scottish Natural Heritage Review No. 103.

development at the time of writing (over 15 years ago). This information has been reviewed in the context of its age.

Landscape sensitivity

3.10 As outlined in **Section 2**, it was initially anticipated that details of landscape character sensitivity could be drawn directly from the Assessment of Landscape Sensitivity to Wind Turbine Development in Highland: Summary Report, prepared for the Council by the Macaulay Institute. It was agreed that the Macaulay work would not be used as a direct basis for judging landscape character sensitivity, and a new landscape character-based assessment of sensitivity would be undertaken for the Caithness area.

3.11 The sensitivity of landscape character is considered in detail, according to clear sensitivity criteria, in **Section 5** and **Appendix 2**.

4 Wind energy development in the study area

Wind energy developments

4.1 Data was obtained from The Highland Council in spring 2013 relating to consented and proposed wind farms and wind turbines in the study area and 35km outer study area. Information on a total of 47 schemes was obtained. Turbines with tip heights below 35m are not considered in this study. Additional information was obtained from Orkney Council on a total of four schemes located within the outer study area.

4.2 **Table 4.1** breaks this information down by size category as well as status. In the case of scoping sites, little information is generally available: where no data on turbine height and layout was available, these are based on a single turbine of the maximum height within the size categories (i.e. 150m in height, measured to blade tip).[9] This height has been selected to represent a maximum-case scenario and does not imply that such a height would be acceptable.

4.3 **Figure 4.1** maps this information, using the colours and symbols indicated in **Table 4.1**.

Table 4.1 Summary of wind energy developments

Size category		Operational / under construction	Consented	Application	Scoping	Total
Small-medium	○	0	1	0	0	1
Medium	□	3	2	4	3	12
Large	△	11	3	4	16[10]	34
Total		14	6	8	19	47

4.4 It can be seen that only one development of under 50m was identified, which is the consented single turbine at Moss of Geise. On this basis, the 'small-medium' size category has not been considered further in the analysis of operational and consented development; however, consideration is given to small-medium developments in **Section 9**, in relation to hypothetical future development, where appropriate.

4.5 In addition to the wind energy developments listed below, there are number of existing and proposed offshore turbines within the Moray Firth. Two demonstrator turbines are operational at Beatrice, and a large number of turbines are proposed as part of Beatrice, Telford, Stevenson and MacColl Offshore Wind Farms. These have not been considered as part of the CLVA.

4.6 The 47 schemes range from single turbines to the 77-turbine Strathy South proposal. Together they represent around 648 individual turbines. A more complete list is presented in **Table 4.2**, which indicates whether each proposal is within the study area, or within one of the outer study areas. Patterns of development and visibility are discussed in **Section 8**.

[9] In some cases the number of proposed turbines was known, but without layout information this cannot be plotted, so a single turbine was still used in these cases. There are no cases in which tip height was known but not the layout.
[10] Includes 12 schemes for which no height data was available.

Table 4.2 Wind energy developments

Name	Status	Tip Height	Turbine Count
Wind farm developments within the Caithness Study Area			
Achairn	Operational	100	3
Achlachan	Design/Scoping[11]	Not known – assumed 150m	6
Bad á Cheò, Mybster	Design/Scoping[12]	Not known – assumed 150m	13
Baillie	Under Construction[13]	110	21
Bilbster	Operational	100	3
Bower Quarry	Design/Scoping	75	1
Broubster	Design/Scoping	127	20
Buolfruich	Operational	70	15
Burn of Whilk	Consented	116	13
Camster	Under Construction[14]	120	25
Camster Forest	Design/Scoping[15]	Not known – assumed 150m	20
Causeymire - Phase 1	Operational	101	21
Causeymire - Phase 2	Under Construction	101	3
Cnoc nan Airigh, south of Reay	Design/Scoping[16]	Not known – assumed 150m	50
Cogle Moss, Bilbster	Design/Scoping	100	7
Dunbeath	Application Submitted[17]	125	23
East Of Earl's Cairn Barrock	Design/Scoping	Not known – assumed 150m	13
Flex Hill, Flex, Watten	Design/Scoping	Not known – assumed 150m	3
Forss - Phase 1	Operational	76	2

[11] Consented, November 2013 (5 turbine scheme, with tip height of 110m).
[12] Refused by THC in September 2013, then appeal allowed and permission granted by DPEA in May 2014.
[13] Operational, August 2013
[14] Operational, July 2013
[15] Now known as Camster II
[16] Now known as Limekiln (24 turbine scheme, with tip height of 126m or 139m), at appeal July 2014, awaiting determination.
[17] Refused at inquiry, June 2013

Name	Status	Tip Height	Turbine Count
Forss - Phase 2	Operational	78	4
Halsary	Application Submitted[18]	100	15
Nottingham Mains	Design/Scoping[19]	Not known – assumed 150m	2
Rattar Mains	Application Submitted[20]	79.6	1
Rumster Forest, Lybster	Application Submitted	75	3
Seater Farm	Design/Scoping	80	4
Stroupster	Consented[21]	86	12
Upper Smerral Wind Cluster	Design/Scoping	67	3
Wathegar	Under Construction[22]	101	5
Wathegar 2	Consented	101	9
West Of The Rowans, Moss Of Geise	Consented	46	1
Westerdale	Design/Scoping[23]	Not known – assumed 150m	60
Wind farm developments within the 15km outer study area			
Ackron Farm	Application Submitted	78	1
Melvich	Design/Scoping	Not known – assumed 150m	6
Strathy Wood	Design/Scoping[24]	Not known – assumed 150m	28
West of Dalhalvaig	Design/Scoping	Not known – assumed 150m	28
Wind farm developments within the 25km outer study area			
Bettyhill	Application Submitted[25]	120	2
Binga Fea	Consented	74	2

[18] Consented, September 2013
[19] Scoping lapsed, January 2014
[20] Now known as Taigh Na Muir, consented November 2013
[21] Under construction, November 2013
[22] Operational, March 2013
[23] Scoping lapsed, January 2014
[24] Application submitted , November 2013
[25] Operational, January 2013

Name	Status	Tip Height	Turbine Count
Crackaig	Design/Scoping[26]	96	7
Gordonbush	Operational	110	35
Ore Brae Farm	Application Submitted	67	2
Ore Farm	Consented[27]	67	1
Rysa Lodge	Application Submitted	67	3
Strathy North	Under Construction	107	33
Strathy South	Application Submitted	107	77
Wind farm developments within the 35km outer study area			
Balnacoil	Design/Scoping[28]	121	15
Kilbraur	Operational	115	19
Kilbraur Extension	Operational	125	8

[26] Scoping lapsed, January 2014
[27] Operational, October 2011
[28] Refused by THC in March 2014, at appeal June 2014.

5 Landscape character sensitivity

Introduction

5.1 This section sets out the methodology used in the assessment of landscape character, in accordance with current good practice guidance. Sensitivity is judged based on the extent to which a landscape can accept change of the type and scale proposed, without adverse effects on its character. Sensitivity is considered in relation to the height size categories set out in **Table 2.1**. The sensitivity evaluation has been undertaken for the specific needs of the present study only, and should not be relied on for other purposes.

Baseline

5.2 The sensitivity of the landscape as a whole is considered primarily on the basis of LCTs, as defined in published landscape character assessments. LCTs represent areas with consistent landscape characteristics, including both physical and perceptual aspects of landscape, and so describe the component parts of an area as well as the overall nature or experience of the area. The boundaries between LCTs tend to be intermediate or transitional rather than being clear-cut, and this occurs to different degrees.

5.3 The LCTs considered were derived from the Assessment of Landscape Sensitivity to Wind Turbine Development in Highland: Summary Report, which presented a slight revision of the LCTs shown in character assessments published by SNH. No further work was undertaken to review or update the existing baseline character studies, as this was outside the scope of works. The sensitivity assessment reflects change already occurring within LCTs as a result of operational wind energy developments.

5.4 For the purposes of the desk-based evaluation, information on each of the LCTs was drawn from the Caithness and Sutherland Landscape Character Assessment (Caroline Stanton, 1998). While the boundaries of the LCTs in these reports differ slightly from those in the wind turbine study, the overall characteristics are largely the same.

5.5 The desk-based evaluation was followed by field work undertaken in April 2013, the purpose of which was to verify the findings of the evaluation and, where necessary, make revisions to the findings.

5.6 The sensitivity to wind energy development of LCTs within the study area and 15km outer study area was assessed. It was agreed that landscape character sensitivity was most relevant within this nearest outer study area, since effects on landscape character (as distinct from effects on views) are more likely to occur within this zone. Built-up areas, as represented by the Town and Harbour LCTs, within the study area and 15km outer study area have not been considered in the assessment, as the presence of wind turbines is unlikely to affect their developed character. Additionally, the Inland Lochs LCT has been excluded on the basis it would be unsuitable for the location of turbines. The sensitivity of the Island of Stroma has been considered based on fieldwork and desk-based study, as it is not currently covered in character assessments published by SNH. Orkney is not considered in terms of its landscape sensitivity, though consideration is given to landscape designations and viewpoints on the islands.

5.7 LCTs within the study area and 15km outer study area are shown in **Figure 5.1**.

Sensitivity criteria

5.8 **Table 5.1** sets out the criteria which are used to evaluate the sensitivity of LCTs to wind turbine development, and the aspects of the landscape which are considered to indicate higher or lower sensitivity. For each LCT, an assessment of the landscape is made against each of the criteria. The assessments are based on desk study and professional judgement.

5.9 The selected criteria have been developed from approaches utilised by LUC for a number of sensitivity studies undertaken in recent years. Details of the development of the criteria are presented in **Appendix 1**.

Table 5.1 Criteria for Assessing Landscape Sensitivity to Wind Farm Development

Characteristic	Aspects indicating lower sensitivity to wind turbine development	⟷	Aspects indicating higher sensitivity to wind turbine development
LANDSCAPE			
Landform and scale: patterns, complexity and consistency	Large scale landform Simple Featureless Absence of strong topographical variety	⟷	Small scale landform Distinctive and complex Recognisable scale indicators Presence of strong topographical variety
Land cover: patterns, complexity and consistency	Simple Predictable Smooth, regular and convex or flat and uniform	⟷	Complex Unpredictable Irregular or rugged
Settlement and man-made influence	Concentrated settlement pattern Presence of contemporary structures eg utility, infrastructure or industrial elements	⟷	Dispersed settlement pattern Absence of modern development, presence of small scale, historic or vernacular settlement
VISUAL			
Skylines	Simple predictable skylines Presence of existing vertical features	⟷	Complex unpredictable skylines Uninterrupted horizons
Key views, vistas and landmark features	Obscured landmarks or views towards/ from landmarks, absence of vistas Indistinctive or industrial settings	⟷	Prominent key landmarks, views towards/ from landmarks or key vistas Distinctive settings or important public viewpoints
Intervisibility with adjacent landscapes	Limited views into and out of landscape Neighbouring landscapes of low sensitivity Weak connections, self-contained area and views Simple large scale backdrops	⟷	Prospects into and out from high ground or open landscapes Neighbouring landscapes of high sensitivity Contributes to wider landscape Complex or distinctive backdrops
Perceptual aspects: sense of remoteness, tranquillity, or wildness	Close to visible or audible signs of human activity and development	⟷	Physically or perceptually remote, peaceful or tranquil

Levels of sensitivity

5.10 An overall landscape character sensitivity level was given to each LCT, based upon a professional judgement made through careful consideration of the combined assessment criteria and weight of evidence. Sensitivity levels were assigned using a five-point scale, as detailed below in **Table 5.2**. The overall sensitivity evaluation is given in relation to each of the turbine size categories identified in **Table 2.1**. The number of turbines in each size category was not a factor.

5.11 Sensitivity levels are representative of the LCT when considered as a whole. Therefore in order to understand the complexities of sensitivity, it is important to consider the overall sensitivity in relation to the detailed evaluations as well as other indicators of sensitivity (ie visual receptors and designated landscapes).

Table 5.2 Sensitivity evaluation

Overall sensitivity evaluation	Definition
Lowest (LL)	The development size category relates well to key landscape characteristics and change is able to be accommodated without significant adverse effect.
Low (L)	Some sensitive landscape characteristics although opportunities to accommodate the development size category in most locations.
Moderate (M)	Some key landscape characteristics are sensitive but with some ability to accommodate development in some situations without significant character change; development size category relates to some aspects of landscape character.
High (H)	Most of the key landscape characteristics are sensitive but with limited ability to accommodate development in certain situations.
Highest (HH)	The majority or all of the key landscape characteristics are vulnerable to change. Development would conflict with key aspects of landscape character with widespread and significant adverse effects likely to arise.

Findings

5.12 The findings of the sensitivity evaluation are presented in tabular form, with accompanying detailed text on overall sensitivity, in **Appendix 2**. The findings are summarised in **Table 5.3**.

Table 5.3 Overall landscape character sensitivity

LCT	Name	Turbine size category		
		Large	Medium	Small-Medium
1	Sweeping Moorland	H	M	M
1a	Flat Peatland	H	H	H
2	Moorland Slopes and Hills	H	M	L
4	Lone Mountains	HH	HH	HH
6	High Cliffs and Sheltered Bays	HH	H	H
7	Long Beaches, Dunes and Links	H	M	M
9	Strath	H	H	M
10	Coastal Shelf	H	M	M
13/14	Intensive Mixed-Agriculture and Settlement	M	L	L
15	Small Farms and Crofts	H	H	M
-	Coastal Islands (Stroma)	M	L	L

Patterns of landscape sensitivity

5.13 The findings relating to landscape sensitivity to wind energy development in the Caithness study area and its outer study area are mapped in **Figures 5.2a-c**. One map has been produced for each of the three size categories.

6 Designated landscapes and wild land

Designated landscapes

6.1 The following designated landscapes were identified within the study area and outer study areas:

- National Scenic Areas (NSA); and
- Special Landscape Areas (SLA).

6.2 Designated landscapes are listed in **Table 6.1** and are illustrated in **Figure 6.1**.

Sensitivity of designated landscapes

6.3 The sensitivity of designations in landscape terms depends on their reason for designation. In the case of NSAs these reasons are well-defined in their 'special qualities'.[29]

6.4 In Highland, SLAs, originally known as Areas of Great Landscape Value, were identified in the Structure Plan of 2001. In 2010 the Council published the *Assessment of Highland Special Landscape Areas*, which set out detailed citations for each SLA.

6.5 For the purposes of a strategic study, the NSAs are considered to be of high sensitivity (national interest), and the SLAs of medium sensitivity (regional interest).

Table 6.1 Designated landscapes within the Caithness study area and outer study areas

Designation	Location and brief description	Study Area	15km outer study area	25km outer study area	35km outer study area
Hoy and West Mainland NSA	• Covering an area including two of Orkney's islands. Includes the Old Man of Hoy sea stack and 'Heart of Neolithic Orkney' UNESCO World Heritage Site.			●	●
Kyle of Tongue NSA	• Characterised by beautiful sandy beaches and high windswept peaks.				●
Dunnet Head SLA	• Prominent headland and cliffs, with adjoining sandy beach at Dunnet Bay.	●			
Duncansby Head SLA	• Spectacular cliff scenery and commanding views, east of John O' Groats.	●			
Flow Country and Berriedale Head SLA	• Wide expanse of peatland with highly distinctive hills, including the cliffs of Berriedale.	●	●		

[29] Scottish Natural Heritage (2010) *The special qualities of the National Scenic Areas*. Scottish Natural Heritage Commissioned Report No.374

Designation	Location and brief description	Study Area	15km outer study area	25km outer study area	35km outer study area
Farr Bay, Strathy and Portskerra SLA	• Dramatic, deeply indented coast between Bettyhill and Melvich.		●	●	
Bens Griam and Loch nan Clar SLA	• Remote, prominent hills rising out of sweeping open moorland and lochs.		●	●	
Loch Fleet, Loch Brora and Glen Loth SLA	• Rolling moorland hills contrasting with glens and lochs and coastal farmland.		●	●	
Ben Klibreck and Loch Choire SLA	• Prominent lone mountain and adjacent secluded glen.				●

Consideration of wild land and wildness

6.6 In addition to landscape designations, it was agreed at the outset that the study would give some consideration to wildness and wild land, and that the best method of achieving this was through the search areas for wild land (SAWL) identified by SNH. Although not a landscape designation, these have been included alongside the above designations to enable inclusion of their recognised potential 'wild land' value.

Search areas for wild land

6.7 SAWLs are largely defined by the methodology presented in the SNH policy statement *Wildness in Scotland's Countryside*. In it, SNH describe the range of values people find in wild landscape to have the following attributes: engagement with the physical world; solitude and sanctuary; closeness to nature; and wildness as a quality valued in its own right.

Wild land areas

6.8 SNH have revised and updated their mapping of wild land, publishing a map for consultation in 2013. Until this consultation was complete, SNH advised that the established SAWLs would continue to be applied. The revised wild land areas were published in June 2014 as this study was being finalised, and due to the timescale have not been built into the study. The 2014 map adds a further wild land area (numbered 39) to the south-west of Thurso and east of the A897, but otherwise they are similar in coverage to the SAWLs.[30]

Isolated coast

6.9 The SAWLs are generally located inland, but it was also considered appropriate to recognise the wildness value of the least developed coastlines of the area. The stretches of coastline identified as 'isolated coast' within the Council's Coastal Development Strategy were therefore included. The Strategy outlines that areas of 'isolated coast' tend to be distant from centre of populations, lacking obvious signs of development, and are also likely to be relative inaccessible.

6.10 Areas representing wildness are listed in **Table 6.2** and are illustrated in **Figure 6.1**.

[30] SNH, Map of Wild Land Areas 2014, available at http://www.snh.gov.uk/docs/A1323225.pdf

Table 6.2 Wildness within the Caithness study area and outer study area

Area	Location and brief description	Study Area	15km outer study area	25km outer study area	35km outer study area
Morven SAWL	• Extensive area of inaccessible moss and flow country with isolated mountains to the south.	●	●		
Ben Armine SAWL	• Area of extensive plateau moorland and isolated hills, extending beyond the outer study area.			●	●
Dunnet Head isolated coast	• Dunnet Head comprises prominent undeveloped headland and cliffs forming the most northerly point of the Scottish mainland.	●			
Stacks of Duncansby isolated coast	• Spectacular cliff scenery and commanding views, east of John O' Groats and relatively inaccessible.	●			
Melvich to Reay isolated coast	• Relatively low relief, compact (but imposing) headlands without modern development.		●		
Ardmore Head isolated coast	• Moderate relief, rocky and indented on a small scale. Rugged and inaccessible.			●	
Torrisdale Bay isolated coast	• Diverse dune formations and wide intertidal beach, in undeveloped area between Torrisdale and Bettyhill.				●
Tongue Bay isolated coast	• Scenic rugged cliffs, north of Coldbackie, including inaccessible islets.				●

7 Visual receptors

Types of receptors

7.1 Visual receptors are individuals or defined groups of people, who have the potential to be affected by multiple wind energy developments. As set out in **Section 2**, visual receptors can experience visibility of more than one development from static locations, such as at specific viewpoints; or on the move, for example when travelling along a route. The following section explains how visual receptors were selected in order to consider different types of cumulative effect.

7.2 Receptors were identified based on their likely sensitivity to change arising from wind energy development. For the purposes of this study, all the identified receptors can be considered to have high sensitivity to change. Receptors of lower sensitivity, for example people at work, are not considered in this study.

7.3 A desk-based study was undertaken to identify the locations from which key visual receptors experience visual amenity. Receptor locations are set out in the following groups:

- Routes, including:
  - all A-roads, along with certain B-roads with a strong network function;
  - railway lines;
  - scheduled ferry routes; and
  - long-distance cycle routes;
- Key settlements;
- Popular, well-visited or prominent hill summits;
- Coastal locations which are visited by tourists and local people for outdoor recreation;
- Cultural heritage assets which are visited by people, such as castles, monuments and gardens that are open to the public and readily accessible, and which may or may not be designated;
- Other recreational receptors (eg golf courses); and
- Other notable viewpoints (eg those marked on OS base maps).

Viewpoints and routes

7.4 In order to reflect both static and sequential visibility experienced by visual receptors, viewpoints and routes were selected to be representative of the landward and coastal areas within the study area and outer study areas, reflecting places and routes frequented by the visual receptors (people). They were chosen to represent key locations where the public may view the landscape, and were selected according to the following criteria:[31]

- Being publicly accessible;
- Having a reasonably high potential number of people, or being of particular significance to the visual receptors affected;
- Providing a representative range of viewing distances (i.e. short, medium and long distance views) and elevations;

[31] Not all selection criteria apply to all viewpoints selected. The selection criteria are in accordance with: SNH (2006) Visual Representation of Wind Farms, Good Practice Guidance.

- Representing a range of viewing experiences (i.e. static views, for example from settlements, designated viewpoints or car parks, and sequential views of wind farms seen while moving along, for example, public highways and walking and cycling routes);
- Representing a range of visual receptor types (i.e. residential, recreational, and travelling receptors); and
- Representing locations with potential views of multiple wind energy developments.

7.5 Only the larger settlements have been included as key receptor locations, to identify the most sensitive visual receptor groups based on number of people. Individual houses and smaller or dispersed settlements have not been separately recognised due to the strategic scale of the study.

7.6 The initial desk–based lists were circulated to the steering group and amended based on the comments received. A field visit was undertaken during which the viewpoints and routes were verified in terms of the criteria above. The majority of the viewpoints and routes were visited, although time constraints meant that no hill summits were climbed.

7.7 The finalised list is presented in **Table 7.1**, and indicates the type of receptor location, and whether it is within the study area or one of the outer study areas. The visual receptor locations are mapped on **Figure 7.1**.

Table 7.1 Visual Receptors in the Caithness study area and outer study area

Receptor location type	Location	Description/reasons for selection	Study Area	15km outer study area	25km outer study area	35km outer study area	Grid reference
Transport routes	A9	• Major route across Caithness and along the southern coast: Thurso to Helmsdale and beyond. Long stretches of coastal views.	●	●	●	●	n/a
	A99	• Main coastal route from Latheron to John O' Groats via Wick.	●				n/a
	A836	• Main north coast road from Tongue to John O' Groats.	●	●	●	●	n/a
	A882	• Wick to Halkirk.	●				n/a
	A897	• Helmsdale to Melvich.		●			n/a
	A961	• Main route on Orkney (South Ronaldsay to Kirkwall).		●	●	●	n/a
	B876	• Important route between Wick and Castletown.	●				n/a
	Far North railway line	• Running from Golspie and Helmsdale north to Thurso and Wick through varying landscapes.	●	●	●	●	n/a
	Scrabster to Stromness ferry	• Offers panoramic views across the Pentland Firth and surrounding land.		●	●		n/a
	Gills Bay to St Margaret's Hope ferry	• Views of the Pentland Firth.		●	●		n/a
	National Cycle Network Route 1	• Follows A836 and minor roads to John O' Groats, and the A961 on Orkney.	●	●	●	●	n/a

Receptor location type	Location	Description/reasons for selection	Study Area	15km outer study area	25km outer study area	35km outer study area	Grid reference
Key settlements	Thurso	• Popular tourist destination on the north coast of this study area with views to Orkney.	●				311779 968161
	Wick	• Prominent settlement on the east coast of this study area.	●				336114 951757
	Halkirk	• Located at the confluence of all main transport links in the study area.	●				312976 959521
	John O' Groats	• The UK mainland's most north-westerly settlement, the village is a popular tourist attraction.	●				337981 973368
	Helmsdale	• Coastal settlement, located at the foot of a steep slope. Viewpoint on old bridge allows inland views.		●			302584 915408
	Castletown	• Planned settlement on Dunnet Bay.	●				319470 967978
	Lybster	• Coastal settlement south of Wick, with views over the Moray Firth.	●				324926 936337
	Dunbeath	• Coastal settlement south of Wick, with views over the Moray Firth.	●				315887 929767
	Brora	• Settlement on the Sutherland coast, within the area of intervisibility.			●		290988 904029

Receptor location type	Location	Description/reasons for selection	Study Area	15km outer study area	25km outer study area	35km outer study area	Grid reference
Hills[32]	Morven	• Highest point in Caithness (706m).		●			300317 928460
	Ben Griam Mor	• Relatively high hill (590m).			●		280650 938950
	Spittal Hill	• Low but prominent hill within the study area.	●				316785 955649
	Ben Ratha	• Low but significant hill within the study area.	●				295442 961306
	Ben Alisky	• Low but significant hill within the study area.	●				304582 938641
	Ben Dorrery	• Low but significant hill within the study area.	●				306292 955036
Coastline	Strathy Bay	• A small stretch of beach located on the north Caithness coast, halfway between Thurso and Tongue.		●			283769 965724
	Dunnet Bay	• Popular recreational beach stretching across the bay from Dunnet to Castletown with unobstructed views across the North Sea.	●				321849 970493
	Melvich Bay	• Accessible beach and coastline walks.		●			288746 964915
	Dunnet Head	• Recognised for its panoramic views including views to Orkney, this is a popular tourist spot and is the most northern point of Great Britain. Marked viewpoint on OS maps.	●				320578 976622
	Thurso Cliffs	• Cliffs overlooking Thurso Bay and Scrabster harbour, close to the town.	●				311059 968622

[32] There are no Munros or Corbetts in the Caithness study area or outer study areas.

Receptor location type	Location	Description/reasons for selection	Study Area	15km outer study area	25km outer study area	35km outer study area	Grid reference
	Duncansby Head	• Located near John O' Groats this headland offers panoramic views and coastal walks.	●				340210 973120
Cultural heritage assets which are visited by people	Grey Cairns of Camster	• Two chambered burial cairns of Neolithic date. Located on moorland to the south west of Wick. A Historic Scotland property accessible by road.	●				325991 944218
	Standing stones of Achavanich	• Neolithic to late Bronze Age monument consisting of 36 standing stones in a horse shoe plan. Accessible by road close to the A9.	●				318690 941706
	Yarrows Archaeological Trail	• A popular archaeological walking trail located south of Wick. Sites to be seen include a Neolithic Long Cairn (around 3000 BC), an Iron Age Broch (200 BC - AD 200), the remains of numerous Bronze Age/Iron Age roundhouses and burial cairns. Locally promoted and accessible by road.	●				330562 942141
	Hill o' Many Stanes	• Located north east along the coast from Lybster. Twenty two rows of stones up to 3 feet high can be seen at this prehistoric site. Nearly 200 stones survive. A Historic Scotland property accessible by road.	●				329410 938363
	Castle Sinclair Girnigoe	• Overlooking Sinclair's Bay north of Wick. An accessible site which is open to the public.	●				337808 955061
	Castle of Mey	• Castle and gardens are open to public. The site is an inventory-listed designed landscape.	●				328803 973616
Recreational	Reay Golf Club	• Views of the Pentland Firth.	●				296755 965155

Receptor location type	Location	Description/reasons for selection	Study Area	15km outer study area	25km outer study area	35km outer study area	Grid reference
receptors	Lybster Golf Club	• Coastal golf course.	●				325055 935755
	Thurso Golf Club	• Golf course with inland views.	●				309855 967155
	Brora Golf Club	• Located on the south Caithness coast with views across the North Sea.			●		291055 905255
Other notable viewpoints	Viewpoint on A99 at Warth Hill	• Marked viewpoint on OS maps.	●				337255 970355
	A9 layby near Halsary	• Marked viewpoint on A9 with RAF memorial. Overlooking Causeymire Wind Farm.	●				317059 948434
	Viewpoint on A836 at Kirtomy	• Marked viewpoint on OS maps, overlooking John O' Groats.			●		274852 961951
	Viewpoint on A961, South Ronaldsay	• Marked viewpoint on OS maps, high point on southern Orkney.		●			344442 987835

8 Cumulative visibility analysis

Approach to cumulative visibility analysis

Developments by status

8.1 As set out in **Section 2**, cumulative visibility analysis has been carried out through the consideration of two development scenarios. Consented schemes (which are likely to become operational in the near future), have been added to the baseline of existing operational wind farms. There is less certainty regarding schemes with an undetermined planning application, or schemes at scoping at design stage, and as such these have been considered as a separate development scenario. Accordingly, the 47 developments identified in **Section 4** have been divided between:

- Those which are operational, under construction, or consented (20 developments); and
- Those which are at application or scoping stage (27 developments).

8.2 Cumulative zone of theoretical visibility (CZTV) mapping was prepared to illustrate the cumulative visibility of each of the scenarios across the study area. **Tables 8.1** to **8.5** set out cumulative visibility for each landscape and visual receptor according to the two development scenarios. These tables identify the extent of cumulative visibility currently, and where existing pressure for development is likely to create further cumulative visibility.

8.3 For several of the scoping-stage proposals, no information was available on turbine locations. In these cases, the proposed wind farm is represented in the CZTV by a single indicative turbine at the site centre. For developments where no height information was available, turbines were assumed to be of the large size category, 150m in height to tip.

Patterns of visibility

8.4 Relatively high levels of cumulative visibility are indicative of the potential for cumulative visual effects, but the two are not equivalent. There may be areas of high cumulative visibility where cumulative effects do not occur (for example, due to distance). However, the reverse is not true: cumulative visual effects will not occur where there is no cumulative visibility. Patterns of visibility are described below in relation to the two scenarios, and cumulative effects are considered in **Section 9**.

Baseline CZTV

8.5 CZTVs were generated for schemes which are operational, under construction or consented, representing the 'baseline' in terms of what current cumulative visibility there is, or is very likely to occur in the near future. This scenario includes 20 developments, of which 14 are operational or under construction. A CZTV was generated to illustrate the cumulative visibility of all the existing and consented wind turbines. This is shown in **Figure 8.1**. The colours represent the numbers of wind turbines which are theoretically visible.

8.6 A second CZTV was generated based on the same information, but coloured according to the number of wind farms visible, presented in **Figure 8.2**. The colours represent the numbers of wind energy developments which are theoretically visible. In this CZTV, each development is treated equally, whether it is a single turbine, a large group, an extension to another scheme, and so on.

8.7 **Figures 8.1** and **8.2** present similar patterns of visibility. Both the turbine and wind farm CZTVs show that the highest levels of visibility are from moorland in central and northeast Caithness. Areas with potential visibility of 9-14 wind farms include: Brabster, Keiss and Killimster in the northeast; parts of the landscape on both sides of the A9 south of Mybster in central Caithness; parts of the railway line between Scotscalder and Altnabreac in the west; and Scrabster Hill to the

west of Thurso in northern Caithness. The lowest levels of visibility are generally along the coast and in southern Caithness, and include the settlements of Thurso and Castletown in the north, John O' Groats in the northeast and Dunbeath in the south.

CZTV of all existing, consented and proposed development

8.8 The developments in the second group (project which are at application or scoping stage) were then added to illustrate a possible future scenario, indicative of emerging patterns of development and developer interest. This scenario includes all 47 schemes, as illustrated in **Figure 8.3** (turbines) and **Figure 8.4** (wind farms).

8.9 Since scheme details are unknown or yet to be finalised for developments at scoping stage, these CZTVs may not accurately represent those scoping schemes which are represented by a single indicative turbine of 150m in height to tip.

8.10 **Figure 8.3** and **Figure 8.4** present similar patterns of visibility. Both of these CZTVs show that the highest levels of visibility are from the moorland parts of central and northern Caithness, including east of the A9 in central Caithness, Ben Dorrery (244m AOD) in the west, west of Thurso at Cairnmore Hillock in the north west, Stroupster Hill in the north east and Killimster and outer Wick in the east. The lowest levels of visibility are generally along the coast, which tend to be where the larger settlements are located, these include Thurso and Castletown in the north, John O' Groats in the north east and Dunbeath in the south.

Receptor types

8.11 Patterns of development (and of visibility, shown by the CZTVs), have been compared against the landscape and visual receptors identified in this report, as follows:

- Patterns of landscape character sensitivity to turbines of different scales (**Section 5**);
- Designated landscapes (**Section 6**); and
- Areas of recognised wildness value (**Section 6**).
- Locations representative of sensitive visual receptors, including viewpoints and routes through the area (**Section 7**);

8.12 The following paragraphs describe the approach taken for each of these receptor groups. The patterns of cumulative visibility are described in **Tables 8.1** to **8.5**.

Landscape Character Types

8.13 The landscape character sensitivity analysis, presented in **Section 5** and **Appendix 2**, was undertaken for turbines at small-medium, medium and large sizes. As noted in **Section 4**, the small category has not been considered further as only one turbine in this category has been identified (a single turbine at Moss of Geise). Consideration is however given to small-medium developments in this section, where appropriate, in relation to hypothetical future development.

8.14 The LCTs were overlaid on to the CZTVs and compared with the landscape character sensitivity analysis for medium and large turbines respectively. The following sections describe patterns of development and patterns of visibility across the affected LCTs, in relation to sensitivity.

Designated landscapes

8.15 Designated landscapes have been identified within the study area and outer study areas, as set out in **Section 6**.

8.16 National Scenic Areas are described in detail in The Special Qualities of the National Scenic Areas[33]. Special Landscape Areas are described in the report: Assessment of Highland Special Landscape Areas[34].

[33] Scottish Natural Heritage (2010). The special qualities of the National Scenic Areas. SNH Commissioned Report No.374
[34] Horner + Maclennan, with Mike Wood, for The Highland Council (2011) Assessment of Highland Special Landscape Areas

Wild land

8.17 Areas of recognised wildness or wild land value have been identified within the study area and outer study areas, as set out in **Section 6**.

8.18 Search Areas for Wild Land were identified by SNH in the policy statement Wildness in Scotland's Countryside (2003). This sets out the method used to define 'wild land', and the approach to defining these search areas. In the absence of detailed citations for each SAWL, it is necessary to refer to this document to ascertain how the areas were defined in order to identify how wind energy development may result in cumulative effects.

8.19 Stretches of the Caithness coastline described as 'isolated coast' are identified in the Council's Coastal Development Strategy. This document classifies the coast in line with Scottish Planning Policy, as an important resource in its own right and unsuitable for development. 'Isolated coast' is considered a locally/regionally important feature through the Highland-wide Local Development Plan, Policy 57 - Natural, Built and Cultural Heritage policy.

Visual receptors

8.20 Visual receptors, set out in **Section 7**, are individuals or defined groups of people, who have the potential to be affected by multiple wind energy developments. Visual receptors are represented by locations (viewpoints and routes), which are considered according to their type: routes (cycle, ferry, railway, and road), key settlements, hills, coastlines, cultural heritage assets, other recreational receptors and notable viewpoints. Each type acts as an indicator of the overall patterns and types of visibility across the study area and outer study areas.

8.21 The principal consideration for the analysis of routes is sequential visibility, where developments are seen from a sequence of different points. For key settlements, views tend to be highly variable, glimpsed from within settlements and more focussed from settlement edges or high points. Views from hills and other notable viewpoints tend to be successive, part of a wide angle panorama, and across a long distance. From coastlines views may be across water, or from exposed headlands. Views from cultural heritage assets and other recreational receptors are highly variable. Each visual receptor type provides insight into specific types of visibility pattern.

Table 8.1 Cumulative visibility analysis of LCTs

See **Figure 8.5** and **Figure 8.6** for CZTV maps overlaid with LCT boundaries.

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
Sweeping Moorland	In the current situation, the areas of Sweeping Moorland LCT north of the A882 road and north of the Far North railway line do not contain any wind energy development. Camster, Burn of Whilk and Buolfruich are located within areas of the LCT south of the Far North railway line, as distinct separate developments. Sweeping Moorland LCT accounts for a large area of Caithness. In the northeast of the study area, the consented Stroupster Wind Farm will be visible from the areas of the LCT north of the A882 road, including from the Dunnet Head area and south and west of Duncansby Head. Visibility of the close grouping of wind farms directly south of the A882 will also be available from this area, including Achairn, Bilbster, and Wathegar (1 and 2). In the areas of the LCT south of the A882 road, and south of the Far North railway line, there are some areas currently without turbine visibility, particularly south of Ben Alisky. Turbine visibility is highest in the east of this area, between the A9 and A882 roads. North of the Far North railway line turbine visibility is generally lower, with a small concentration of higher visibility west of Halkirk. Within the study area, there are no wind farms in this part of the LCT; however Strathy North Wind Farm is located in the Sweeping Moorland LCT within the 15km outer study area.	There are proposed developments within the small separate areas of the Sweeping Moorland LCT north of the A882 road, including at East of Earl's Cairn Barrock, Cogle Moss, and Seater Farm. South of the A882 road, and south of the Far North Railway Line, there are some proposed wind energy developments located within the LCT, including several small separate groups of three turbines (Flex Hill, Rumster Forest and Upper Smerral), and larger groups at Achlachan, Halsary, Camster Forest and Dunbeath. These developments are likely to increase turbine visibility in the east, and may extend visibility to some areas that are currently without visibility, in the west. North of the Far North railway line there are a number of proposed wind energy developments including Broubster and Cnoc an Airigh, within the study area, and Ackron, Melvich, Strathy Wood and West of Dalhalvaig within the 15km outer study area. Together these developments are likely to increase turbine visibility throughout this part of the LCT, particularly from open moorland east of Strath Halladale.
Flat Peatland	Developments at Causeymire (1 and 2) and Stroupster are located within the Flat Peatland LCT. There are several concentrations where a large number of turbines are visible within this LCT. The main concentrations occur either side of the A9 road. The	The extension of development around Causeymire (by Halsary, Achlachan, and Bad á Cheò wind farms), are likely to continue to increase the levels of turbines visible from within the LCT. Turbines at Halsary would extend turbines to both sides of the A9. From the area around

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
	areas affected are south, west, and east of the operational Causeymire Wind Farm; and west of consented Stroupster Wind Farm. These turbines would be seen at close range, ie less than 10km, in unobstructed views across the LCT.	Stroupster, there is likely to be some visibility of turbines at East of Earl's Cairn Barrock and at Rattar Mains to the northwest of the LCT, and Seater Farm and Cogle Moss to the southwest.
Moorland Slopes and Hills	There are no turbines located within this LCT. The main area of Moorland Slopes and Hill LCT is located in south Caithness, south and west of Morven, with some smaller fragmented areas east of the A9, and north of the Far North railway line. Turbine visibility from this LCT is generally limited. The highest levels of visibility are from the small areas west of Glutt Water (visibility to developments over 20km away), and west of Rumster Forest (some visibility to Buolfruich Wind Farm, within 5km).	Proposals within the Moorland Slopes and Hill LCT are limited to the small area east of the A9. Within this area there is one proposal for 2 turbines at Nottingham Mains. Next to the northeast boundary of the LCT, there is a proposal for 3 turbines at Rumster Forest. The proposed Dunbeath Wind Farm is located in close proximity to the LCT, but visibility across the LCT is likely to be generally limited (with the exception of the area adjacent to Berriedale Water, nearest to the development). Two small areas of the LCT west of Ben Dorrery are likely to have close visibility of the proposed Broubster Wind Farm.
Lone Mountains	There are no wind energy developments within this LCT. Areas of this LCT with higher levels of turbine visibility include hill summits such as Morven, which overlook very broad areas of Caithness. From Morven, the closest turbines are the operational Buolfruich Wind Farm, around 10km to the northeast. Apart from this 15-turbine scheme, other visible turbines are all around 20km distant or over.	There are no proposed wind energy developments within this LCT. Dunbeath Wind Farm is likely to increase turbine visibility from the Morven and Ben Alisky areas of the LCT.
High Cliffs and Sheltered Bays	There are no wind energy developments within this LCT. The High Cliffs and Sheltered Bay LCT comprises narrow coastal strips, including areas between Helmsdale and Berriedale, Duncansby Head, and northwest of Thurso. Northwest of Thurso there is some visibility of Forss, Baillie and Strathy North wind farms. From the area at Duncansby Head there is likely to be some visibility of	There are no proposed wind energy developments within this LCT. The proposed wind farm at Dunbeath is likely to introduce a limited amount of additional visibility to the area between Helmsdale and Berriedale. There is likely to be some visibility of turbines at East of Earl's Cairn Barrock and at Rattar Mains, from the area at Duncansby Head. Visibility from the area northwest of Thurso is

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
	Stroupster. Between Helmsdale and Berriedale there is likely to be very limited visibility of Burn of Whilk (over 10km away).	likely to remain relatively unchanged.
Long Beaches, Dunes and Links	There are no wind energy developments within this LCT. Long Beaches, Dunes and Links LCT comprises several small areas: Sinclair's Bay, Dunnet Bay and Sandside Bay. The consented Stroupster Wind Farm is likely to be visible from the full Sinclair's Bay area, with turbines at Achairn, Bilbster and Wathegar (1 and 2) visible from the northern end of the bay. From Dunnet Bay there is likely to be limited visibility of Stroupster and Baillie wind farms. Baillie and Forss wind farms are likely to be visible from limited parts of Sandside Bay.	There are no proposed wind energy developments within this LCT. It is likely that turbines at Cnoc an Airigh would be visible from Sandside Bay; turbines at East of Earl's Cairn Barrock and Rattar Mains would be visible from Dunnet Bay; and turbines at Cogle Moss and Seater would be visible from northern parts of Sinclair's Bay (each wind farm located within around 10km of the LCT areas).
Strath	There are no wind energy developments within this LCT. There are two areas of Strath LCT located within the study area: at Berriedale Water / Langwell Water, and at Strath Halladale. The current situation shows very limited visibility within these areas. There is likely to be some visibility of Baillie Wind Farm (around 15km away) in the northwest of the Strath Halladale area, around Portskerra.	Analysis of proposed development suggests there are likely to be slightly increased levels of turbine visibility within the two LCT areas, though there are no proposals within the LCT. At Strath Halladale, increased turbine visibility is likely, mainly as a result of turbines at Melvich. At Berriedale Water / Langwell Water, increased turbine visibility is likely as a result of Dunbeath Wind Farm.
Coastal Shelf	There are no wind energy developments within this LCT. There are three small areas of Coastal Shelf LCT located just outside the study area within the 15km outer study area, near to Helmsdale. These areas do not have visibility of turbines in the current situation.	There are no proposed wind energy developments within this LCT. Proposed turbines at Crackaig are like to introduce turbine visibility to the part of the LCT south of Helmsdale. The areas north of Helmsdale remain unaffected.
Intensive and Mixed Agriculture and Settlement	Developments at Forss (1 and 2), Baillie, West of the Rowans, Achairn, Bilbster, and Wathegar (1 and 2) are located within the Intensive and Mixed Agriculture and Settlement LCT. The Intensive Mixed-Agriculture and Settlement LCT is located in the northeast of Caithness, between Thurso	Proposed wind energy developments within the Intensive Mixed-Agriculture and Settlement LCT include single turbines at Rattar Mains and Bower Quarry (both medium size category). Proposals at Cogle Moss, Seater Farm, and East of Earl's Cairn Barrock (within the Sweeping Moorland LCT) are also located in close proximity. The

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
	and Wick, and includes parts of the coast between Dunnet and John O' Groats. There is generally a high level of turbine visibility north of the A882 in the east, associated with visibility of Achairn, Bilbster, and Wathegar (1 and 2) wind farms, with turbines at Camster and Causeymire also visible. Higher areas of turbine visibility also occur west of Thurso, as a result of Forss and Baillie wind farms, and south of Halkirk, as a result of Baillie, Causeymire and Camster. Levels of turbine visibility between Dunnet and John O' Groats are generally lower, and relate to turbines at Stroupster.	proposed development pattern suggests that turbine visibility will continue to increase most in the area north of the A882, west of Wick.
Small Farms and Crofts	There are two wind farms partly located within the area of LCT between Berriedale and Thrumster: Burn of Whilk and Buolfruich. Small Farms and Crofts LCT includes much of the coast between Berriedale and Thrumster, a small area at Achavanich, three small areas west of Halkirk, and a small area between Wick and John O' Groats. The LCT generally has lower levels of turbine visibility than other LCTs. Burn of Whilk and Buolfruich wind farms are visible between Berriedale and Thrumster, and Camster Wind Farm is also visible from this area. Visibility from Achavanich is as a result of Buolfruich and Causeymire wind farms. Visibility west of Halkirk is as a result of Causeymire and Baillie wind farms. The consented wind farm at Stroupster will be visible from much of the area between Wick and John O' Groats.	There are no proposed wind energy developments within this LCT. Increased turbine visibility in the area between Berriedale and Thrumster is likely to arise from Dunbeath Wind Farm, and other smaller schemes located in close proximity within neighbouring LCTs. Halsary Wind Farm is likely to be visible from the Achavanich area. Visibility of turbines at Broubster and Westerdale is likely from the areas west of Halkirk.
Stroma	Visibility of turbines in Caithness is likely to be predominantly from the southern side of the island. The consented Stroupster Wind Farm is likely to be visible (around 10km away).	Visibility of turbines from Stroma is likely to increase with the development of East of Earl's Cairn Barrock and Rattar Mains, (around 20km away).

Table 8.2 Cumulative visibility analysis of designated landscapes

See **Figure 8.7** and **Figure 8.8** for CZTV maps overlaid with designated landscape boundaries.

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
Hoy and West Mainland NSA	The Hoy and West Mainland NSA is likely to receive very limited views of turbines in Caithness from locations on the southeast coast of Hoy, although at a distance of well over 20km. To these can be added views of the small number of turbines located on Hoy (Binga Fea and Ore Farm). From West Mainland any turbines likely to be visible will be viewed at a distance of over 30km.	Turbine visibility is unlikely to change considerably in the proposed development situation, with very limited potential visibility of the East of Earl's Cairn Barrock and Rattar Mains wind farms. Two small additional wind farms located on Hoy (Ore Brae Farm and Rysa Lodge) may also be visible in this situation.
Kyles of Tongue NSA	The Kyles of Tongue NSA is in the far west of the outer study areas, over 25km from Caithness. Only a small section of the NSA is located within the outer study area, between Coldbackie and Bettyhill. From this area two turbines at Bettyhill are likely to be visible, as well as Strathy North from elevated east-facing slopes. Long distance views of wind farms within Caithness may be available from eastern hill summits beyond the outer study areas.	Visibility of turbines from Kyles of Tongue NSA is likely to increase slightly with the development of wind farms adjacent to Strathy North, within 5km of the NSA.
Dunnet Head SLA	There is likely to be some existing visibility of turbines at Stroupster Wind Farm in the east, and Baillie and Forss (1 and 2) wind farms in the west, from Dunnet Head SLA. These turbines will be visible at a distance of 10-20km. There is also likely to be some visibility of turbines located on Hoy, around 20km away.	Proposed turbines at East of Earl's Cairn Barrock and Rattar Mains, within around 5km of the SLA are likely to be visible in close proximity. Two turbines at Ore Brae Farm on Hoy may also be visible.
Duncansby Head SLA	From Duncansby Head SLA turbine visibility is generally limited. There is likely to be some visibility of consented Stroupster Wind Farm, within 10km. There is also likely to be some visibility of turbines located on Hoy, around 20km away.	Proposed turbines at East of Earl's Cairn Barrock and Rattar Mains, within around 15km of the SLA are likely to increase turbine visibility in some parts. Additional turbines on Orkney (Ore Brae Farm and Rysa Lodge) are also likely to increase turbine visibility.
Flow Country and Berriedale	This SLA is relatively large, covering an area between the A9 and A897, south of the Far North Railway Line.	There are a number of wind farm proposals nearby to the north and east of the SLA, which are likely to cause an

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
Head SLA	Relatively low numbers of turbines are visible from the SLA overall, but the highest concentrations of turbine visibility are focussed on limited areas in the northeast and from hills summits in the south. These areas of high turbine visibility arise as a result of wind farms at Causeymire, Camster and Buolfruich. Some visibility of turbines at Gordonbush is available from southern parts of the SLA.	increase in turbine visibility. Turbines adjacent to and south of Causeymire, including Dunbeath Wind Farm, extend visibility to some areas of the SLA which do not currently have visibility of turbines. Other more distant proposals which increase turbine visibility in small parts of the southwest of the SLA include developments near Strathy North and west of Gordonbush. Some large areas of the SLA remain without any turbine visibility, particularly in the south.
Farr Bay, Strathy and Portskerra SLA	This coastal SLA has limited visibility of turbines at Strathy North, mainly from the eastern part around Strathy. There is also likely to be some visibility of turbines at Baillie and Forss (1 and 2).	Proposed turbines at Bettyhill, Melvich and Ackron Farm are likely to increase close visibility of turbines from some parts of the SLA. Developments east and south of Strath North Wind Farm are also likely to contribute to an increase in turbine visibility, at a distance of around 10-15km. Some parts of the SLA remain without any turbine visibility.
Bens Griam and Loch nan Clar SLA	Bens Griam and Loch nan Clar SLA is located west of the A897 near to Forsinard, within the outer study area. The SLA is approximately half way between turbines at Strathy North and Gordonbush, each located around 15km from the SLA boundary. Visibility of Strathy North is likely to be limited to hill summits and north facing slopes. Visibility of Gordonbush is greater, from hill summits and south facing areas, including from parts of Loch nan Clar. Turbines at Kilbraur are also visible in views south from hill summits.	Proposed developments at Strathy South, Strathy Wood and West of Dalhalvaig will increase turbine visibility from hill summits and north facing slopes. Turbines will appear closer in views, located within 10km of the SLA boundary. The proposed development at Balnacoil, south of the SLA, will increase the number of turbines visible in views south from hill summits.
Loch Fleet, Loch Brora and Glen Loth SLA	This SLA is located within the outer study area, between Helmsdale and Golspie. Based on the current situation, turbine visibility is generally limited, several areas without turbine visibility altogether. There is likely to be some existing visibility of turbines at Gordonbush and Kilbraur.	One wind energy development, Crackaig, is proposed within the SLA near to Glen Loth. This will introduce close visibility of turbines within the Glen Loth area and from parts of the wider SLA. Balnacoil Wind Farm is located outside the SLA between Kilbraur and Gordonbush, and is likely to introduce some additional visibility to the area around Loch Brora.

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
Ben Klibreck and Loch Choire SLA	The Ben Klibreck and Loch Choire SLA is located the far southwest of the outer study area, over 25km from Caithness. Only a small section of the SLA is located within the outer study area, including three hills in the southeast. Ben Klibreck and Loch Choire themselves are located outside the outer study area. Wind turbines at Gordonbush and Kilbraur (over 10 km away) are likely to be visible from some or all of the hill summits within this eastern part of the SLA. Strathy North is likely to be visible from north facing slopes. Wind turbines at Gordonbush and Kilbraur are also likely to be visible from summits on Ben Klibreck.	The SLA is likely to have some increased turbine visibility arising as a result of proposed wind farms at Balnacoil and Crackaig, over 10km away. Turbines at Strathy South are likely to introduce some additional visibility from north facing slopes.

Table 8.3 Cumulative visibility analysis of areas of recognised wildness value

See **Figure 8.9** and **Figure 8.10** for CZTV maps overlaid with areas of wildness value.

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
Morven SAWL	The Morven SAWL has some overlap with the Flow Country and Berriedale Coast SLA, but is located further inland, and extends further north and west. Turbine visibility in the existing situation is generally limited, with the highest concentrations of turbine visibility in the northeast, arising as a result of wind farms at Causeymire, Camster and Buolfruich. There is likely to be close visibility of turbines at Causeymire and Buolfruich from some parts of the SAWL, as these are located within 5km of the boundary. There will also be close visibility of turbines at Gordonbush within the southwest of the SAWL, located within 10km of the boundary.	There are a number of wind farm proposals nearby to the north and east of the SAWL, which are likely to cause an increase in turbine visibility. Turbines adjacent to and south of Causeymire, including Dunbeath Wind Farm, extend visibility to some areas of the SAWL which do not currently have visibility of turbines. Other more distant proposals which increase turbine visibility in small parts of the western part of the SAWL include developments near Strathy North and west of Gordonbush. Some large areas of the SLA remain without any turbine visibility.
Ben Armine SAWL	The Ben Armine SAWL contains the Ben Klibreck and Loch Choire SLA, but extends to a wider area, particularly in	Proposed turbines at Balnacoil are partly located within the SAWL, between Gordonbush and Kilbraur. Turbines

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
	the east. Only part of the SAWL is located within the outer study area, the area east of Ben Armine. Gordonbush Wind Farm is located within the SAWL which is likely to be visible from much of this eastern area, in close views. Additionally turbines at Kilbraur, located within 10km of the SAWL boundary are likely to be visible.	at Balnacoil will be visible in close proximity from the eastern area of the SAWL, usually in combination with Gordonbush and Kilbraur.
Dunnet Head isolated coast (including Stroma)	Dunnet Head isolated coast is likely to have some visibility of turbines over 10km away, at Stroupster in the east, and at Baillie and Forss (1 and 2) in the west.	Proposed turbines at East of Earl's Cairn Barrock and at Rattar Mains are likely to be visible from some parts of the isolated coast, within 10km.
Stacks of Duncansby isolated coast	There are likely to be low levels of turbine visibility from Stacks of Duncansby isolated coast. Consented Stroupster Wind Farm, within 10km is likely to be visible from some areas.	There is likely to be some additional visibility of turbines at East of Earl's Cairn Barrock, beyond 10km, however levels of turbine visibility remain low.
Melvich to Reay isolated coast	Turbines at Baillie, (Forss 1 and 2) and Strathy North are likely to be visible from some parts of the isolated coast.	Proposed turbines at Melvich, Ackron Farm and Cnoc an Airigh are likely to increase the numbers of turbines visible from this area of isolated coast. The single turbine at Ackron Farm will be located within 5km.
Ardmore Head isolated coast	Turbine visibility from Ardmore Head is very limited, much of the area without any visibility of turbines. There are some very small parts of the isolated coast with visibility of Strathy North, located around 10km away. There is likely to be some visibility of two turbines at Bettyhill, from a limited part of the western side of the isolated coast. Bettyhill is located within 10km.	There may be some additional visibility of proposed turbines in the vicinity of Strathy North.
Torrisdale Bay isolated coast	Torrisdale Bay has very limited turbine visibility, with the exception of some small areas likely to have visibility of turbines at Strathy North, 10km away. The two turbines at Bettyhill, within 5km of the isolated coast, are also likely to be visible.	There may be some additional visibility of proposed turbines in the vicinity of Strathy North. The two turbines at Bettyhill, within 5km of the isolated coast, are likely to introduce additional visibility to this area.

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
Tongue Bay isolated coast	There are no turbines located in close proximity to Tongue Bay isolated coast. There is likely to be some limited visibility of two turbines at Bettyhill, around 10km away. There is a small amount of turbine visibility associated with Strathy North, around 20km away.	Turbines at Strathy South and West of Dalhalvaig increase the numbers of turbines visible.

Table 8.4 Cumulative visibility analysis of visual receptors

See **Figure 8.11** and **Figure 8.12** for CZTV maps overlaid with the locations of viewpoints.

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
Settlements	Visibility of wind farms from settlements along the north coast, including Thurso, Castletown and John O' Groats, are very limited. Castletown has visibility of Stroupster to the east. Visibility from settlements inland is also limited, and there is currently no visibility of any wind farms from Halkirk. Visibility from settlements along the south coast, including Brora, Helmsdale, Dunbeath and Lybster, are also limited. A number of wind farms are, however, visible in views to the west from Wick. These include Achairn, Bilbster, Burn of Whilk, Camster, Causeymire, Wathegar and Wathegar 2.	Visibility of wind farms would continue to be limited for wind farms along the north coast. In addition to operational and consented wind farms, Castletown would have visibility of East of Earl's Cairn Barrock and Rattar Mains to the east. Visibility from the larger inland settlements would continue to be limited, and no wind farm developments would be visible from Halkirk. Visibility from settlements along the south coast including Brora, Helmsdale, Dunbeath and Lybster would continue to be limited; however a number of wind farms would be visible from Wick. These would include Achairn, Bad á Cheò, Camster Forest, Cogle Moss, Flex Hill, Halsary, Seater Farm and Westerdale, in addition to other operational and consented schemes in views to the west.
Hills	Visibility of wind farms is generally extensive from the hills throughout inland Caithness, particularly from Ben Alisky (348m AOD) in the south west and Ben Ratha (242m AOD) just outside of the Caithness boundary in the north west.	Several additional schemes would be visible from Ben Alisky. These would include Dunbeath and Upper Smerral to the south east, and Bad á Cheò to the north east, and would be visible alongside other operational and consented schemes.

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
	From Ben Alisky the closest schemes are Buolfruich to the south east and Causeymire Phases 1 and 2 to the north east. From Ben Ratha the closest scheme is Baillie to the north east, with Forss 1 and 2 also visible on the north Caithness coast beyond. From Morven, the most visible schemes are those to the south west, beyond the Caithness boundary. These include Gordonbush, Kilbraur and Kilbraur Extension. These schemes are also visible from Ben Griam Mor, in addition to other schemes to the north including Strathy North. From Ben Dorrery and Spittal Hill in central Caithness the closest schemes are Baillie to the north west and Causeymire Phases 1 and 2 to the south east.	From Ben Ratha, Cnoc nan Airigh immediately to the east would be visible, as would Ackron Farm and Melvich to the north west, and Broubster to the south east. From Morven additional schemes would be visible to the south west, including Crackaig and Balnacoil. These schemes would also be visible from Ben Griam Mor, in addition to further schemes to the north including Strathy South, Strathy Wood and West of Dalhalvaig. From Ben Dorrery and Spittal Hill several other schemes would be visible, including Broubster to the west, and a concentration of schemes to the south east including Westerdale, Achlachan, Halsary and Bad á Cheò, in addition to other existing and consented schemes.
Coastal locations	Visibility of wind farms from the Caithness coast is generally limited, with only a few schemes being visible. Baillie is the most visible wind farm, and can be viewed from several locations on the north coast, including Thurso Cliffs, Dunnet Bay and Dunnet Head. Several schemes are visible from Dunnet Head, including Stroupster to the south east, and Forss 1 and Forss 2 along the coast to the south west. From Lybster Bay on the south coast only Burn of Whilk and Camster are visible, to the north east. No schemes are currently visible from Duncansby Head at the north east tip of Caithness. No schemes are currently visible from Melvich Bay on the northern coast to the west of Caithness. From Strathy Bay on the northern coast to the west of Caithness, Strathy North is visible.	Visibility of wind farms from the Caithness coast would continue to be limited. Several additional schemes would be visible from Dunnet Head, including East of Earl's Cairn Barrock and Rattar Mains to the south east. No additional schemes would be visible from Lybster Bay on the south coast, or from Duncansby Head on the north east coast. From Strathy Bay and Melvich Bay on the northern coast to the west of Caithness, only a few additional schemes would be visible. Ackron Farm and Melvich would be visible from Melvich Bay. Strathy Wood and Strathy South would be visible from Strathy Bay, in addition to existing and consented schemes.

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
Heritage (cultural heritage features visited by the public)	From the Castle of Mey on the north Caithness coast, several schemes are visible, although the site is wooded. These include Baillie along the coast to the west, and several schemes on the island of Hoy to the north including Binga Fea and Ore Farm. From Castle Sinclair Girnigoe on the east coast, several schemes are visible. These include Achairn, Bilbster, Wathegar, Wathegar 2 and Camster, to the west, and Stroupster to the north. From Yarrow Archaeological Trail in south east Caithness a number of schemes are visible, including Achairn, Bilbster, Burn of Whilk, Wathegar, Wathegar 2, Camster and Stroupster. From Grey Cairns of Camster the closest schemes are Burn of Whilk and Camster. From the Standing stones of Achavanich the closest schemes are Buolfrich to the south west. Baillie is visible to the north. From the Hill O' Many Stanes, Burn of Whilk is the only wind farm visible, to the north.	From the Castle of Mey several other schemes will be visible, including Broubster, East of Earl's Cairn Barrock and Rattar Mains to the south west and Ore Brae Farm and Rysa Lodge on the island of Hoy to the north. From Castle Sinclair Girnigoe on the east coast, several additional schemes would be visible. These include Bad á Cheò, Flex Hill, Seater Farm and East of Earl's Cairn Barrock. From Yarrow Archaeological Trail several additional schemes would be visible. These include a single turbine at Bower Quarry, Camster Forest, Cogle Moss, East of Earl's Cairn Barrock and Flex Hill. From Grey Cairns of Camster several additional schemes would be visible. These include Achlachan, Camster Forest, Flex Hill and Halsary. From the Standing stones of Achavanich, several additional schemes would be visible. These include Westerdale, Rumster Forest, Nottingham Mains, Broubster, Cnoc nan Airigh and Dunbeath. From the Hill O' Many Stanes no other additional schemes will be visible.
Recreation	Current visibility of wind farms from recreational receptors is limited. Baillie is visible from Reay Golf Club on the north coast of Caithness, in views to the east. From Thurso Golf Club on the north coast, a single turbine at West of the Rowans is visible to the south and Stroupster is visible in views to the east. Burn of Whilk is visible from Lybster Golf Club on the south coast, in views to the north east.	In addition to existing and consented schemes, Cnoc nan Airigh would be visible from Reay Golf Club, in views to the south, and Melvich would be visible in views to the west. Broubster and Rattar Mains would also be visible from Thurso Golf Club, in views to the south west and north east respectively. Camster Forest, Dunbeath, Nottingham Mains, East of Earl's Cairn Barrock and Flex Hill would be visible from Lybster Golf Club, forming a semi-circle of visible wind

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
	No wind farms are currently visible from Brora Golf Club on the east coast, outside of the Caithness boundary.	farms in views to the north. Crackaig would be visible from Brora Golf Club, in views to the north east.
Other (OS marked viewpoints)	From the viewpoint on the A99 at Warth Hill, theoretical visibility levels are low. Consented Stroupster and those wind farms located in the southeast of the study area, are visible from an area just south of the viewpoint. Visual receptors at the A9 layby near Halsary will have near visibility of Causeymire Phase 1 and 2. From the viewpoint on A836 at Kirtomy, there is currently no theoretical turbine visibility. From the viewpoint on A961, South Ronaldsay, Baillie Wind Farm is theoretically visible, while the contented scheme at Stroupster is visible from the area just south of the viewpoint.	Visibility from Warth Hill remains similar taking into account proposed development, as Earl's Cairn Barrock and Rattar Main are visible from the area south of the viewpoint, rather from the viewpoint itself. At the A9 layby near Halsary, cumulative visibility will increase as a result of a number of proposed developments nearby and adjacent to Causeymire, including Achlachan, Bad a Cheò and Halsary, and also Westerdale, slightly further west. Low levels of visibility will occur at Kirtomy as a result of the proposed development at Betty Hill and Strathy South. Visibility from the A961 viewpoint on South Ronaldsay will increase as a result of Earl's Cairn Barrock and Rattar Mains.

Table 8.5 Cumulative visibility analysis of routes

See **Figure 8.11** and **Figure 8.12** for CZTV maps overlaid with the locations of routes.

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
A9	Heading south from Thurso, Baillie is to the west, and Causeymire is due south. To the south-east the group including Achairn, Camster and Wathegar can be seen, with Burn of Whilk in the distance. Past Causeymire, Buolfrich is visible, but once the coast is reached there are limited views of turbines along the remaining route. Travelling south to north a similar pattern would occur,	The scoping proposal at Crackaig would introduce views of turbines in the coastal stretch of the A9 south of Helmsdale. The Dunbeath and Upper Smerral proposals would add to visibility of turbines heading north past Dunbeath and Latheron. The greatest level of visibility would still occur within the inland section, though with additional turbines close to the road at Rumster Forest,

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
	with limited visibility along the coast and more turbines visible in the section between Achavanich and Halkirk.	Achlachan, Bad á Cheò and Halsary. The last proposal, opposite Causeymire, would lead to the surrounding of the A9 at this location. Beyond Spittal Hill there would be little change on the current situation.
A99	Travelling north on the A99, visibility of turbines is generally lower, although Burn of Whilk is seen, with Camster behind and the Achairn group becoming visible from Thrumster and the approach to Wick. North of Wick the Achairn group is to the south-west, with Stroupster becoming visible to the north. From Warth Hill, south of John O' Groats, Binga Fea on Hoy is visible. Travelling south, Stroupster is seen at close range, then long views of the Achairn group, Causeymire and Camster are seen approaching and passing Wick.	Travelling north, Rumster Forest and Camster Forest would be visible along with Burn of Whilk, adding to visibility along the coastal section. Beyond Wick the Seater Farm and Cogle Moss proposals will be seen to the north-west. Travelling south, these schemes would be seen against a background of wind farms to the south-west, including Causeymire, Halsary, the Achairn group and Camster. Dunbeath wind farm would be seen from areas beyond Lybster.
A836	Travelling west between John O' Groats and Reay, visibility of turbines is initially very limited. From Dunnet there are theoretical long views to Baillie and Causeymire. Wind farms are only a presence from this road west of Thurso, where Baillie and Forss are seen on opposite sides of the road. Beyond the study area, Strathy North is seen further west. Travelling east the same pattern occurs, though there may be some intermittent visibility of turbines at Stroupster from the road west of Dunnet.	There are single turbines proposed close to the A836 at Rattar Mains and East of Earl's Cairn Barrock, both east of Dunnet. In the west, the 50-turbine Cnoc nan Airigh scheme would increase views of turbines in conjunction with Forss and Baillie. Other changes to visibility would be long-range and would not affect the sequential pattern.
A882	Travelling southeast there are glimpses of Causeymire to the south, and views of the group including Achairn, Bilbster and Wathegar ahead, with Stroupster more distant to the east. The road approaches close to the Achairn group, with Camster seen behind. Travelling northwest there are similar views, though views to the north are more open.	In addition to the current situation, the proposed Cogle Moss and Seater Farm schemes would introduce turbines at close range to the north side of the road, opposite the Achairn group. The same pattern of views to the south would be apparent, though with greater concentrations of turbines.

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
A897	The A897 is located outside the study area, connecting Melvich and Helmsdale. There is no visibility of turbines in the study area from this route, and only glimpses of the wind farms at Strathy North and Gordonbush from either end of the route.	Proposals within the study area would add little to the visibility of turbines on this route, with the possible exception of Cnoc nan Airigh in the north. The Melvich and Ackron Farm schemes are also in the north, and together with Strathy South they would add to the experience of turbines along this northern section of the route.
A961	The A961 passes between South Ronaldsay and Kirkwall, in the Orkney Islands. Turbines on Hoy are visible to the west. On clear days, distant views of turbines in Caithness are seen, though at a distance. The closest being Stroupster, at least 20km away.	Additional turbines located in the northeast of the Caithness may be visible from this route, including Rattar Mains and East of Earl's Cairn Barrock, but at over 20km distance they would not give rise to sequential effects.
B876	Travelling from Wick to Castletown, several wind farms are visible including the group of Achairn, Bilbster and Wathegar to the southwest, and Stroupster to the north. Travelling further north these schemes are left behind and views north and west are unaffected. In southbound views these two turbine clusters are likely to be almost continuously visible.	Additional wind farms would be visible from the B876, including Cogle Moss, Seater Farm and Bower Quarry in relatively close views to the south, and East of Earl's Cairn Barrock and Rattar Mains in views north. These additional schemes would make views of turbines a feature of most sections of this road, travelling in both directions.
Far North railway line	Travelling north on the railway, there is little visibility of turbines from the coastal section, or the section through Strath Ullie. Between Altnabreac and Scotscalder there are theoretical views to Baillie in the north and Causeymire in the east. Around Georgemas Junction and north to Thurso views of turbines are limited. Southeast to Wick the railway follows the A882 and the sequential experience will be the same as for that route (see above).	Between Altnabreac and Scotscalder the proposed Westerdale and Broubster schemes will be visible, closer to the railway than turbines in the current situation. Proposed developments around Causeymire will be visible, including Achlachan and Halsary, though these will not change the sequential pattern. Views from the Thurso line will be largely unchanged, and from the Wick line changes will be as for the A882 (see above).
Scrabster to Stromness ferry	Travelling from Stromness, there are long views of Caithness, with distant views of a number of wind farms. Approaching Scrabster the most prominent schemes are Forss and Baillie, both to the southwest.	Additional schemes at Rattar Mains and East of Earl's Cairn Barrock will be visible on the approach to Scrabster, to the southeast, in addition to those visible to the southwest in the current situation. Other proposals will

Receptor	Current situation (existing and consented)	Proposed development (current situation plus application and scoping schemes)
		only be seen in distant views.
Gills Bay to St Margaret's Hope ferry and John O' Groats to Burwick ferry (summer only)	These ferries follow similar routes. Leaving St Margaret's Hope, there are views of turbines on Hoy. Approaching the Caithness coast on either boat, views of turbines are likely to be limited to the Stroupster scheme to the south.	Proposed wind farms in the study area will add little to the experience of turbines from these ferries. There may be views of Rattar Mains and East of Earl's Cairn Barrock to the south-west, on approach to the Caithness coast.
National Cycle Network (NCN) Route 1	Cycling east, this route follows the A836 as far as Reay (see above). East of Reay the route approaches close to Baillie to the north, with Forss beyond. Past Baillie there are no close views of large turbines, though there are long views to Causeymire and other schemes in the interior. East of Castletown there are glimpsed views of Stroupster. Cycling west, from Orkney there are very long views south to wind farms on Caithness. Once in Caithness there are limited views of turbines to the west until Castletown, from where Baillie and Forss become increasingly visible until they are past the viewer.	Cnoc nan Airigh wind farm would be visible from the route around Reay, in proximity to Baillie and on the other side of the route. Further west, proposed schemes at Rattar Mains and East of Earl's Cairn Barrock will be close to the route, and will affect a section of the route which currently has more limited views of turbines.

9 Strategic assessment of cumulative effects

Introduction

9.1 The levels of cumulative visibility, described in **Section 8**, have been analysed on the basis of criteria set out in **Section 2**. The sensitivity of receptors and the level of cumulative visibility in relation to receptors have been reviewed in previous sections, reinforced by desk study and field work, and inform the professional judgements made in describing the likely levels of cumulative effect in each part of the study area.

9.2 Cumulative effects are considered only in relation to wind energy developments within the study area of Caithness, and are not assigned to developments within the outer study areas.[35] Wind energy developments within the study area are considered under the LCT in which they are located. In almost all situations, cumulative effects will extend beyond the LCT in which the development is located. Reference is therefore made to LCTs and receptors across the wider area, where affected by the development. Where there are no proposed developments within LCTs, consideration has been given as to what cumulative effects hypothetical developments may have. The Coastal Shelf and Stroma LCTs are referred to where relevant, but are not considered in detail, since they are located outside the study area.

9.3 Landscape and visual receptors represent different, but interrelated, patterns of sensitivity across the study area. In order to understand these interrelationships, all landscape and visual receptors are grouped under the LCT in which they occur. The following sections discuss each LCT in turn, beginning with a table which lists the designated landscapes, areas of wildness, viewpoints and routes which occur within it. The sensitivity of the LCT to large and medium size categories (as described in **Section 5** and **Appendix 2**) is also noted, as well as the adjacent LCTs. These are then discussed together to identify locations within the LCT where significant cumulative effects may occur.

Sweeping Moorland

9.4 Sweeping Moorland LCT is assessed as being of high sensitivity to the large turbine size category, and moderate sensitivity to the medium size category. This LCT represents a large proportion of the overall study area. Overall, cumulative effects in the existing situation are higher in the east than in the west. Generally speaking visibility within the LCT, in the existing situation, is of turbines peripheral to or outside the LCT (with the exception of Camster Wind Farm).

Table 9.1 Receptors within Sweeping Moorland

Landscape Character Type	Sweeping Moorland	
Sensitivity	Large size category: High	Medium size category: Moderate
Designated landscapes	Dunnet Head SLA Duncansby Head SLA The Flow Country and Berriedale Coast SLA Farr Bay, Strathy and Portskerra SLA Bens Griam and Loch nan Clar SLA	
Wildness	Morven SAWL Duncansby Head isolated coast Dunnet Head isolated coast	

[35] Developments within outer study areas are referred to only where they form a part of the context of the landscape and visual receptors being assessed.

	Melvich to Reay isolated coast
Viewpoints and routes	(17) Dunnet Head (24) Grey Cairns of Camster (26) Standing Stones of Achavanich (35) A99 viewpoint, Warth Hill Routes: A9, A99, A836, A897, B876, Far North railway line, NCN Route 9
Adjacent LCTs	Flat Peatland; Moorland Slopes and Hills; Lone Mountains; High Cliffs and Sheltered Bays; Long Beaches, Dunes and Links; Strath; Intensive and Mixed Agriculture and Settlement; Small Farms and Crofts.

9.5 There are a large number of proposed wind farms within the LCT, including the following developments:

North of the A882

- Cogle Moss (7 turbines, large size category);
- Seater Farm (4 turbines, medium size category);
- East of Earl's Cairn Barrock (13 turbines, assumed to be large size category);

South of the A882 road and Far North railway line

- Achlachan (6 turbines, assumed to be large size category)
- Halsary (15 turbines, large size category);
- Flex Hill (3 turbines, assumed to be large size category)
- Camster Forest (20 turbines, assumed to be large size category);
- Rumster Forest (3 turbines, medium size category)
- Upper Smerral (3 turbines, medium size category);
- Dunbeath (23 turbines, large size category);

North of the Far North railway line

- Broubster (20 turbines, large size category);
- Cnoc nan Airigh (50 turbines, assumed to be large size category);

9.6 North of the A882, there may be some opportunity for the addition of turbines of the medium size category and at the lower end of the large turbine size category, without causing greater cumulative effects. Proposed developments within this part of the LCT are likely to have the greatest cumulative effect where several developments are visible from coastal SLAs, such as Dunnet Head and Duncansby Head SLAs and isolated coasts, or near to sensitive visual receptors, such as Dunnet Head and the A99 viewpoint at Warth Hill. Therefore, developments located inland are likely to be most appropriate. Due to the relatively flat nature of the area, sequential views of turbines from routes are likely.

9.7 South of the A882 road and Far North railway line, proposals are generally focussed in the east near to other existing developments, and where turbine visibility is already relatively high. While developments located in close proximity to each other would result in a larger single cluster of turbines, it may be desirable to accommodate turbines within these clusters rather than dispersing turbines, and cumulative effects, into areas which are currently unaffected. The pattern of proposed development in this area is likely to lead to combined and sequential views of developments in views west from the A9 and from associated settlement, particularly between Berriedale and Ulbster. It would be desirable to avoid cumulative landscape and visual effects on Morven SAWL and the Flow Country and Berriedale Coast SLA.

9.8 North of the Far North railway line, proposals are located within an area currently with low levels of turbine visibility, and with few existing wind farms. Levels of cumulative effect are likely to be

relatively low in this area, as a result of lower cumulative visibility and lower sensitivity compared to other parts of the LCT (due to its distance from designated landscapes and areas of wildness). The proposed wind farms are not likely to greatly increase turbine visibility east of Strath Halladale, but may increase turbine visibility from areas of Flat Peatland in the south, and Intensive and Mixed Agriculture and Settlement in the east.

Flat Peatland

9.9 Flat Peatland LCT is assessed as being of high sensitivity to large and medium turbine size categories. The LCT comprises two main areas: one relatively small area in the northeast, near to the coast, and a larger area inland, and to the west of Caithness. There is generally a high level of turbine visibility across this LCT; however this is locally reduced in some western areas.

Table 9.2 Receptors within Flat Peatland

Landscape Character Type	Flat Peatland	
Sensitivity	Large size category: High	Medium size category: High
Designated landscapes	The Flow Country and Berriedale Coast SLA	
Wildness	Morven SAWL	
Viewpoints and routes	(33) A9 viewpoint, Halsary Routes: A9, Far North railway line	
Adjacent LCTs	Sweeping Moorland; Moorland Slopes and Hills; Lone Mountains; Intensive and Mixed Agriculture and Settlement	

9.10 There are no proposed developments within the smaller northeast area of the LCT. The existing situation, which includes consented wind farms, indicates that Stroupster Wind Farm within the LCT is likely to be visible from many of the surrounding areas that have existing visibility of turbines at Achairn, Bilbster, Camster and Causeymire, located 15-20km to the south. The proximity of turbines at Stroupster, when seen in combination with proposed turbines in neighbouring LCTs nearby, is likely to have a greater cumulative effect on receptors than longer-distance views of existing wind farms.

9.11 There are three proposed wind farms within the LCT, located in the larger inland area to the east:

- Bad a Cheò (13 turbines, assumed to be large size category)
- Halsary (15 turbines, large size category)
- Westerdale (60 turbines, assumed to be large size category)

9.12 The remoteness of the LCT and potential vulnerability of the land cover are likely to be locally reduced where routes, such as the A9 and Far North railway line, pass through the LCT, and also in areas of forest. There may be some scope to accommodate additional turbines at the lower end of the large size category within such areas, without giving rise to greater cumulative effects.

9.13 Turbines located near to Causeymire are likely to be read an extension, due to the even lie of the land, but may encroach on views of the LCT from the A9. Turbines located near to the Far North railway line may contribute to combined or successive views of wind energy developments, from within the Morven SAWL and The Flow Country and Berriedale Coast SLA, affecting receptors at elevated locations such as Ben Alisky. Cumulative effects on the area north and west of the Far North railway line, may arise in some areas from combined or successive views of Westerdale and Broubster (within Sweeping Moorland). The two developments are likely to be read as separate developments.

Moorland Slopes and Hills

9.14 Moorland Slopes and Hills LCT is assessed as being of high sensitivity to the large turbine size category, and moderate sensitivity to the medium size category. The LCT comprises a large area

in South Caithness, as well as several smaller satellite areas to the north and east. There are no turbines currently within this LCT. The main body of the LCT has low levels of turbine visibility, with smaller areas tending to have some visibility of turbines in surrounding LCTs.

Table 9.3 Receptors within Moorland Slopes and Hills

Landscape Character Type	Moorland Slopes and Hills	
Sensitivity	Large size category: High	Medium size category: Moderate
Designated landscapes	The Flow Country and Berriedale Coast SLA Loch Fleet, Loch Brora and Glen Loth SLA	
Wildness	Morven SAWL	
Viewpoints and routes	(12) Ben Ratha Routes: A9	
Adjacent LCTs	Sweeping Moorland; Flat Peatland; Lone Mountains; High Cliffs and Sheltered Bays; Strath; Coastal Shelf; Small Farms and Crofts	

9.15 One proposal exists within the Moorland Slopes and Hill LCT, located within the small area east of the A9:

- Nottingham Mains (2 turbines, assumed to be large size category)

9.16 Turbines at Nottingham Mains may be seen from the A9 and A99, in successive or sequential views with other developments in the area, particularly those located along and within around 5km of the Caithness coastline. Should all the proposed developments in this area become operational (Dunbeath, Upper Smerral, Rumster Forest, Camster Forest), added to the existing baseline of Buolfruich and Burn of Whilk, there would likely be greater cumulative effects on the visual amenity of receptors within the Small Farms and Crofts LCT than currently exist.

9.17 The relative lack of wind energy development within and near to the larger area of the Moorland Slopes and Hills LCT in the south means that cumulative visual effects may be minimal, if only one or two wind farms were located in this area[36]. However, The Flow Country and Berriedale Coast SLA, Loch Fleet, Loch Brora and Glen Loth SLA, and the Morven SAWL together cover much of this area, illustrating its high sensitivity to wind energy development. This suggests that there are likely to be greater cumulative effects on the landscape character and special qualities of the designated landscape, should several developments be located in this area, despite lower cumulative effect.

9.18 Additionally, any development proposed within 5km of the Caithness coast, is likely to be viewed sequentially with other developments (Gordonbush, Dunbeath, Buolfruich) in views from the A9, and in combined or successive views from coastal settlements, causing an increase in cumulative effects on this sensitive area.

Lone Mountains

9.19 Lone Mountains LCT is assessed as being of highest sensitivity to all turbine size categories. It comprises several relatively small areas in the southwest of Caithness, including within the study area Maiden Pap, Scaraben and Ben Alisky. Morven and Sletill Hill are located within the 15km outer study area. There are no existing or proposed wind energy developments within this LCT.

[36] Generally, the more developments there are within an area, the greater the cumulative effects.

Table 9.4 Receptors within Lone Mountains

Landscape Character Type	Lone Mountains	
Sensitivity	Large size category: Highest	Medium size category: Highest
Designated landscapes	The Flow Country and Berriedale Coast SLA Bens Griam and Loch nan Clar SLA	
Wildness	Morven SAWL	
Viewpoints and routes	(9) Ben Alisky (11) Ben Griam Mor (13) Morven Routes: None	
Adjacent LCTs	Sweeping Moorland ; Flat Peatland; Moorland Slopes and Hills; Strath	

9.20 The lack of existing and proposed developments within the LCT reflects its very high sensitivity and prominence across Caithness. Within the study area, all parts of the LCT are designated as part of The Flow Country and Berriedale Coast SLA, and included as part of the Morven SAWL. Visibility from hill summits is extensive, and likewise visibility is extensive towards the LCT from many parts of Caithness. The highest sensitivity of the area combined with the likely higher levels of cumulative visibility, would ultimately lead to greater cumulative effects.

9.21 There is not considered to be any opportunity for wind energy development within this LCT, without giving rise to high levels of cumulative effect. These would arise from extensive intervisibility with other developments, direct changes to the physical fabric of the landscape, and likely incongruity with the special qualities of the designated landscape.

High Cliffs and Sheltered Bays

9.22 High Cliffs and Sheltered Bays LCT is assessed as being of highest sensitivity to the large turbine size category, and high sensitivity to the medium size category. It comprises long, narrow coastal areas of Caithness, at Berriedale, Duncansby Head, and northwest of Thurso. There are no existing or proposed wind energy developments within this LCT.

Table 9.5 Receptors within High Cliffs and Sheltered Bays

Landscape Character Type	High Cliffs and Sheltered Bays	
Sensitivity	Large size category: Highest	Medium size category: High
Designated landscapes	Duncansby Head SLA The Flow Country and Berriedale Coast SLA Farr Bay, Strathy and Portskerra SLA	
Wildness	Duncansby Head isolated coast Melvich to Reay isolated coast	
Viewpoints and routes	(15) Duncansby Head Routes: None	
Adjacent LCTs	Sweeping Moorland; High Cliffs and Sheltered Bays; Coastal Shelf; Intensive and Mixed Agriculture and Settlement; Small Farms and Crofts	

9.23 Some areas of the LCT may be of slightly higher sensitivity than others, for example, the area of the LCT at Duncansby Head is mostly located within Duncansby Head SLA and/or is recognised as 'isolated coast', and the area at Berriedale is located within The Flow Country and Berriedale

Coast SLA. Others are more likely to result in combined visibility with nearby turbines, should development be located within them, for example, northwest of Thurso, where turbines at Baillie and Forss (1 and 2) are already visible within close proximity.

9.24 In most parts of Caithness, wind energy developments are located inland, and settlements located towards the coast, associated with routes, but inland of the High Cliffs and Sheltered Bays LCT. This means that turbines located within the LCT are more likely to result in cumulative effects arising from successive views. In other words, receptors on routes and within settlements may have visibility of turbines both inland and in coastal views.

9.25 It is considered that there is little or no opportunity for the addition of turbines within this LCT, without an increase in cumulative effects, however turbines would be most in-keeping with existing cumulative patterns if located in the area to the northwest of Thurso.

Long Beaches, Dunes and Links

9.26 Long Beaches, Dunes and Links LCT is assessed of being of high sensitivity to the large turbine size category, and moderate sensitivity to the medium size category. It comprises three bays within the study area: Sinclair's Bay, Dunnet Bay and Sandside Bay. There are no existing or proposed wind energy developments within this LCT.

Table 9.6 Receptors within Long Beaches, Dunes and Links

Landscape Character Type	Long Beaches, Dunes and Links	
Sensitivity	Large size category: High	Medium size category: Moderate
Designated landscapes	Dunnet Head SLA	
Wildness	-	
Viewpoints and routes	(16) Dunnet Bay (19) Melvich Bay (30) Reay Golf Club Routes: A836	
Adjacent LCTs	Sweeping Moorland; Strath; Intensive and Mixed Agriculture and Settlement LCT; Small Farms and Crofts	

9.27 There may be some visibility of turbines in the existing situation within this LCT, of Stroupster from Sinclair's Bay and Dunnet Bay, and of Baillie from Sandside Bay. Generally, turbines visible are located 10-20km from the LCT. Turbines located within this LCT are unlikely to be read as a part of any existing or consented developments, and would introduce much nearer visibility of turbines. Potential cumulative effects may be greater on Dunnet Bay, due the presence of other turbines proposed nearby.

9.28 It is considered that there is little or no opportunity for the addition of turbines within this LCT, as this would be contrary to existing patterns of development, and is likely to affect sensitive recreational receptors. As with other coastal LCTs, the location of turbines within this LCT is likely to result in receptors on routes and within settlements having visibility of turbines both inland and in coastal views.

Strath

9.29 Strath LCT is assessed as being of high sensitivity to large and medium turbine size categories. There is only one area of the Strath LCT located within the study area, at Berriedale Water / Langwell Water, located within The Flow Country and Berriedale Coast SLA. There are no proposed wind energy developments within this LCT.

Table 9.7 Receptors within Strath

Landscape Character Type	Strath	
Sensitivity	Large size category: High	Medium size category: High
Designated landscapes	The Flow Country and Berriedale Coast SLA Farr Bay, Strathy and Portskerra SLA	
Wildness	Morven SAWL	
Viewpoints and routes	(5) Helmsdale Routes: A9, A836, A897, Far North railway line, NCN Route 1	
Adjacent LCTs	Sweeping Moorland; Moorland Hills and Slopes; Lone Mountains; High Cliffs and Sheltered Bays; Long Beaches, Dunes and Links; Coastal Shelf; Small Farms and Crofts	

9.30 Due to the nature of the topography in the Strath LCT, cumulative effects are more likely to arise when several developments are located within this same LCT or near to its boundaries, since intervisibility with other LCTs is generally limited. The sensitivity of the Strath is particularly related to character and scale, and several developments within the LCT would likely affect the physical fabric of the landscape, the character, and potentially the special qualities of the SLA.

9.31 Due to the scale of the LCT, the small turbine size category is likely to be most appropriate in limiting cumulative effects. Should development be located within the Strath LCT, it is likely there would be some cumulative effects arising in relation with the proposed Dunbeath Wind Farm.

Intensive and Mixed Agriculture and Settlement

9.32 The Intensive Mixed-Agriculture and Settlement LCT is assessed as being of moderate sensitivity to the large turbine size category, and low sensitivity to the medium size category. The LCT comprises one relatively large area in the northeast of the Caithness, between Thurso and Wick. It contains a number of existing wind farms in the north, including Forss (1 and 2), Baillie, and a single turbine at West of the Rowans, and number in the east, including Achairn, Bilbster, and Wathegar (1 and 2).

Table 9.8 Receptors within Intensive and Mixed Agriculture and Settlement

Landscape Character Type	Intensive and Mixed Agriculture and Settlement	
Sensitivity	Large size category: Moderate	Medium size category: Low
Designated landscapes	Dunnet Head SLA	
Wildness	Duncansby Head isolated coast	
Viewpoints and routes	(2) Castletown (4) Halkirk (6) John O' Groats (14) Spittal Hill (22) Castle of Mey (23) Castle Sinclair Girnigoe Routes: A9, A99, A836, A882, B876, Far North railway line, NCN Route 1	
Adjacent LCTs	Sweeping Moorland; Flat Peatland; High Cliffs and Sheltered Bays; Long Beaches, Dunes and Links; Small Farms and Crofts	

9.33 Two proposals exist within Intensive and Mixed Agriculture and Settlement LCT:

- Bower Quarry (1 turbines, medium size category)

- Rattar Mains (1 turbine, medium size category)

9.34 The single turbine at Bower Quarry is located in close proximity to the Far North railway line, at the centre of the LCT. It is likely to be seen in combination with turbines at Seater Farm and Cogle Moss, each as a separate development in most views. The single turbine at Rattar Mains is located relatively far from existing groups of turbines, north of the A836 near Dunnet, around 3km from Dunnet Head SLA.

9.35 An existing pattern of development within the LCT is that turbines are generally positioned near to areas of coniferous forest (with the exception of Forss, on the coast). It may be desirable to continue a pattern that associates developments with existing large-scale man-made features, such as forests, or quarries, or large farm buildings. Such location may reduce cumulative effects on landscape character specifically, by focussing development in more modern industrial or commercial settings, and steering development away from smaller scale features of historic vernacular. It may also be desirable to focus development near to existing wind farms, in order to reduce cumulative visual effects associated with successive and sequential views of turbines spread throughout the area. Turbine size category should relate to surrounding features – the larger size category may be more appropriate to forest settings, whereas small-medium or medium size categories may be more appropriate for developments linked to farms.

9.36 This Intensive and Mixed Agriculture and Settlement LCT surrounds both Thurso and Wick. Careful planning will be required to protect the settings of these towns from cumulative effects associated with successive views and encirclement. Additionally, a planned approach is required, in considering whether the presence of single turbines or small groups of turbines, may reduce the potential for larger developments.

Small Farms and Crofts

9.37 Small Farms and Crofts LCT is assessed as being of high sensitivity to large and medium turbine size categories. It comprises much of the coast between Berriedale and Thrumster, a small area at Achavanich, three small areas west of Halkirk, and a small area between Wick and John O' Groats. There are no proposed wind energy developments within this LCT.

Table 9.9 Receptors within Small Farms and Crofts

Landscape Character Type	Small Farms and Crofts	
Sensitivity	Large size category: High	Medium size category: High
Designated landscapes	The Flow Country and Berriedale Coast SLA Farr Bay, Strathy and Portskerra SLA	
Wildness	-	
Viewpoints and routes	(3) Dunbeath (10) Ben Dorrery (18) Lybster Bay (20) Strathy Bay (25) Hill O' Many Stanes (27) Yarrows Archaeological Trail (29) Lybster Golf Club Routes: A9, A99	
Adjacent LCTs	Sweeping Moorland; Moorland Hills and Slopes; High Cliffs and Sheltered Bays; Long Beaches, Dunes and Links; Straths; Intensive and Mixed Agriculture and Settlement	

9.38 This LCT is of high sensitivity and contains a relatively large number of coastal, settlement and recreational receptors. The area between Berriedale and Thrumster is located adjacent to a large number of existing and proposed developments in neighbouring LCTs. The high sensitivity of the LCT and the proximity and number of developments nearby suggest a potential for greater

cumulative landscape effects. Should additional development be located within the LCT, the level of cumulative effect is likely to increase further.

9.39 The smaller areas of the LCT at Achavanich and west of Halkirk are likely to be particularly sensitive to the location of multiple wind farms or turbines, due to their size and scale, with cumulative effects on landscape character and on views from settlement. Between Wick and John O' Groats the LCT is similarly vulnerable, and any future developments within the area would likely be visible in combination with Stroupster Wind Farm.

9.40 There may be limited scope for development of the small-medium turbine size category, where it can be clearly associated with larger-scale modern development, such as large agricultural buildings, and linked with existing patterns of development. It would be desirable to avoid the spread of cumulative effects; by avoiding sporadic development which extends cumulative visibility is a way that is disproportionate to the number of turbines involved.

10 Recommendations

Introduction

10.1 The study analyses existing and potential patterns of cumulative effect associated with wind energy development in Caithness. It explores whether there is scope to accommodate additional development without giving rise to potentially unacceptable levels of cumulative effect. The question of acceptability will ultimately rest with The Highland Council, the Scottish Ministers, or their appointed Reporters, and will depend on the specific details of the proposed project. The study is intended to feed into forthcoming supplementary planning guidance being prepared by The Highland Council, but does not represent Council policy.

10.2 Landscape sensitivity is described in **Section 5**, with accompanying detailed text on overall sensitivity to the three turbine size categories, in **Appendix 2**. Overall, areas were less sensitive to small-medium and medium size categories than to the large turbine size category. The Landscape Character Type (LCT) with the highest sensitivity was Lone Mountains, and the LCT with the lowest sensitivity was Intensive and Mixed Agriculture and Settlement.

10.3 **Section 6** describes designated landscapes and areas with higher levels of perceived wildness as being of higher sensitivity. Visual receptors were also identified in **Section 7** as a means of representing groups of people likely to be sensitive to changes in their visual amenity. Visual receptors were broken down into viewpoints and routes, in order to represent different types of cumulative visibility whether static (from viewpoints, combined or successive) or sequential (from routes).

10.4 Patterns of theoretical visibility were examined in **Section 8**, with reference to two scenarios. Scenario 1 includes existing and consented developments, and Scenario 2 includes all baseline developments together with existing and proposed schemes (including applications and those at scoping). The current pattern of wind energy development in the study area gives rise to certain cumulative effects. These will have been weighed in the balance during the relevant decision-making processes (based on the information available at the time). The fact that each of these developments received consent suggests that these cumulative effects were considered acceptable in the wider landscape and planning contexts, although it is noted that decision-makers at a local and national level may have reached different conclusions with respect to strategic cumulative considerations overall.

10.5 Finally, **Section 9** provides a strategic assessment of cumulative effects, set out in **Tables 9.1** to **9.10**. Each table brings together a consideration of the sensitivity of landscape and visual receptors, in relation to cumulative visibility, in order to arrive at judgements with regards to likely cumulative effect and guidance for the location of future development. The findings of **Section 9** are summarised by the following recommendations. Therefore, in reviewing overall recommendations, reference should be made to **Section 9** for more detailed information.

Patterns of development

10.6 There are some distinct patterns of development emerging in Scenario 1, with concentrations of wind energy development northwest of Wick; adjacent to the A9 south of Mybster; and west of Wick south of the A882. Additionally, a single wind farm is located in the northeast between Wick and John O' Groats, and two developments are located west of the A9 between Dunbeath and Ulbster. Existing development is generally located within the Sweeping Moorland, Flat Peatland and Intensive and Mixed Agriculture and Settlement LCTs, largely outside designated landscapes, or areas of wildness. Other patterns include the association of turbines of the larger size category and groups, with larger-scale man-made features such as coniferous forest or industrial and

commercial settings, and the turbines of the small-medium size category associated with agriculture.

10.7 **Figures 10.1** and **10.2** illustrate where theoretical turbines of 150m to tip, located across the study area, would be visible from viewpoints and from routes (whether the whole turbine or part of the turbine). This gives an impression of where turbines of the largest size category are most likely to be highly visible, and is therefore representative of a possible maximum-case scenario. Both figures demonstrate that the highest levels of visibility of turbines from viewpoints and routes are likely to arise as a result of turbines located in the northeast, between Thurso and Duncansby Head.

10.8 Consideration of Scenario 2 seeks to identify where future pressure for additional wind energy development may lead to unacceptable levels of cumulative effect. Analysis suggests that one area where cumulative effects could result from additional development is in the southeast of the study area, within around 5km of the Caithness coastline. This is due to the nearby presence of a large number of sensitive landscape and visual receptors, and the likelihood of successive and sequential cumulative effects. Another area where cumulative effects may increase is in the northeast of the study area, north of the A882. While there is likely to be some scope to accommodate further turbines inland, there are a number of sensitive coastal receptors that are likely to experience cumulative effects as a result of the high levels of intervisibility in this area. Cumulative effects are also likely to increase as a result of turbines adjacent to Causeymire, particularly on views from the A9 should turbines be located to the east as well as the west of the road.

10.9 As a general rule, it is likely to be desirable to accommodate future turbines within these existing patterns, to limit unacceptable cumulative effects arising with new turbine groupings. There may also be scope to accommodate turbines where the sensitivity of receptors is likely to be low, and cumulative effects are currently limited. It may be appropriate to limit new development between existing single turbines or turbine groups that are already relatively close together, to prevent groups merging into a more extensive group of turbines that may result in unacceptable levels of cumulative effect.

Recommendations for Caithness

10.10 There are a number of variable factors which will affect whether or not a given area can accommodate additional development. These include the sensitivity of landscape and visual receptors in the area and its context, as well as existing patterns of development, and potential future development. Cumulative effects may occur as a result of interaction with existing development, or as a result of spreading development into new areas.

10.11 To reflect these variables, the study has considered four recommendations which apply to different parts of the study area. These are fully defined in **Table 2.2**, and are listed below with the key point highlighted in each case:

- Areas where **receptor sensitivity** to potential cumulative effects is a limiting factor to further development;
- Areas where additional development may give rise to the **extension of cumulative effects** in relation to existing and emerging development patterns;
- Areas where cumulative effects could be limited by siting additional development **in association with existing patterns** of development; and
- Areas where additional development could be sited **away from existing development patterns**, with reduced potential for cumulative effects.

10.12 Broadly speaking, the first two recommendations are 'negative' in that wind energy development should be generally discouraged in these areas, while the latter two recommendations are 'positive' in that there is more likely to be potential for wind energy development to be accommodated in these areas.

10.13 In saying this, it should be noted that this is a strategic study, and that these recommendations are not a substitute for project-specific landscape and visual impact assessment and cumulative

assessment. Areas of constraint do not correspond to areas where no development could be acceptable; similarly areas of opportunity do not indicate that any proposal could be accepted.

10.14 The recommendations present general conclusions on the different parts of the study area, but will require more detailed interpretation to apply to specific sites, particularly where these lie close to the boundaries between areas. The conclusions drawn in relation to each of the LCTs should also be referred to (see **Section 9**). Individual proposals will continue to be judged on their own merits.

10.15 The following sections describe each of the recommendations in more detail, and outline where they apply within the Caithness study area. **Figure 10.3** presents this information on a map of the area. It should be noted that the boundaries depicted on **Figure 10.3** do not represent distinct changes in patterns of cumulative effect, but represent zones of gradual transition from one category of potential effect to another.

Areas where receptor sensitivity to potential cumulative effects is a limiting factor to further development

These areas are coloured green on Figure 10.3

10.16 In certain parts of the study area there is heightened landscape and visual sensitivity associated with particular landforms and key views. In these areas, even relatively small levels of cumulative effect may be considered unacceptable. In these areas it is landscape and visual sensitivity, rather than the level of wind energy development, which presents the main limit to further development.

10.17 Areas where additional development may give rise to unacceptable cumulative effects due to high landscape and visual sensitivity have been defined as follows:

- The north coast between Dunnet and John O' Groats, including Dunnet Head and Duncansby Head;
- The area surrounding Thurso, and to the south of Thurso, including Halkirk;
- Wick and surrounding area, including areas between Noss Head and Ulbster; and
- The Flow Country between Loch More and Braemore, including parts of the Berriedale coast.

10.18 The development of wind turbines in these areas may be out of keeping with landscape character, and/or highly visible to high numbers of sensitive visual receptors. Any proposals for wind energy development in these areas would have to consider sensitive landscape and visual receptors in detail, and be very carefully sited and designed in response.

10.19 This study is focused on the potential for cumulative effect, and this recommendation relates primarily to receptor sensitivity. Since the study is not a capacity assessment, areas identified under this heading cannot be assumed to have 'no capacity' for development. However, the study concludes that wind energy development, particularly at larger scales, should generally be discouraged in these locations. There may be some scope to site small-medium scale turbines in association with more settled areas, in a way which does not give rise to cumulative effects.

Areas where additional development may give rise to the extension of cumulative effects in relation to existing and emerging development patterns

These areas are coloured blue on Figure 10.3

10.20 In certain parts of the study area there is potential for cumulative effects to arise as a result of new development conflicting with or interrupting existing patterns of development. New development in these areas may serve to spread cumulative effects into currently unaffected areas, or may begin to confuse existing patterns of development. In these areas it is the level of existing and proposed wind energy development, rather than underlying landscape and visual sensitivity, which presents the main limit to further development.

10.21 Areas where additional development may give rise to the extension of cumulative effects in relation to existing and emerging development patterns have been defined as follows:

- North of the A882, areas generally associated with main road or rail routes and areas of settlement;
- West of the A9, including areas around Reay, Loch Calder, and Scotscalder and Altnabreac railway stations;
- Areas between Watten, Achavanich, and Camster, and extending east south of Hill of Oliclett; and
- The southeast coast, between Newport and Ulbster, including Dunbeath, Latheron and Lybster.

10.22 The introduction of wind turbines into these areas may result in the merging of wind turbine clusters, thus extending the spread of turbines and confusing the image of separate, discrete groups of developments. The retention of these areas will maintain a pattern of clustering with distinct undeveloped spaces between. These undeveloped areas will be perceived in both static and moving views, including views from the A9, A822 and Far North Railway Line, and would maintain landscape diversity through the retention of undeveloped landscape.

10.23 Some of these areas have been defined to maintain separation around locations which could form clusters in future, but where no development is currently consented. An example of this is the area immediately north-east of the B876. However, the same strategic aim applies to all these areas.

10.24 Any proposals within these areas would have to be very carefully sited and designed to take account of the existing wind farms, in order to avoid further cumulative effects on landscape character and views, particularly sequential effects on routes. There may be scope for siting development at the edges of these areas, where it would principally be seen in association with the existing or emerging clusters. There may be some scope for small-medium single turbines in these areas, where they can be sited in such a way as to avoid cumulative effect. It is considered unlikely that large turbines or wind farms could be sited in these areas without significant cumulative effects.

Areas where cumulative effects could be limited by siting additional development in association with existing patterns of development

These areas are coloured brown on Figure 10.3

10.25 Opportunities for siting further wind energy development in the study area may occur in relation to the existing development pattern. By focusing development on locations where turbines already exist, or are consented, the spread of cumulative effects may be limited. In these areas, it may therefore be desirable to accept greater localised cumulative effect, in order to reduce cumulative effect on the wider area.

10.26 Areas where additional development could be sited with reduced potential for cumulative effects in association with existing development patterns have been defined as follows:

- Northwest of Thurso, in association with existing turbines at Baillie and Forss, continuing a pattern that associates development with existing large-scale man-made features;
- Inland areas of the northeast, in association with Stroupster, continuing a pattern that associates development with localised areas of lower sensitivity, such as within areas of coniferous forest;
- The area surrounding the section of the A9 south of Mybster, associating development with Causeymire, where it is likely to be clearly read as an extension due to the even lie of the topography;
- South of Bilbster, in association with Achairn, Bilbster, Wathegar and Camster, where additional development is likely to be clearly read as part of this group, and again in the context of forestry; and

- In the southeast of the study area, where there may be opportunities for development within moorland areas set back from, and with limited cumulative effect on, the sensitive coastline.

10.27 Proposals for wind energy development in these areas will limit cumulative effects only if they are very carefully sited and designed to tie in with the existing pattern of development. New proposals should ideally reflect the existing wind farms in terms of turbine arrangement, form and height. Analysis of key views will be required to demonstrate compatibility with the existing pattern of development.

10.28 The detail of proposals in these areas should therefore be guided by those wind farms which have already been consented. For example, in the area south of Bilbster the operational and consented developments are all within the range of 100m to 120m, and turbines of this size would be preferred in this area. Much larger turbines would appear out of scale with the existing developments, as would medium or small-medium turbines. Similar consistency of form should be the aim for other areas identified under this heading.

Areas where additional development could be sited away from existing development patterns, with reduced potential for cumulative effects

These areas are coloured purple on Figure 10.3

10.29 Opportunities for siting further wind energy development in the study area may occur in areas which are not associated with emerging clusters of development. In these areas, new proposals could be sited in such a way as to avoid conflict with existing development patterns, but with reduced effects due to separation from other schemes.

10.30 Areas where cumulative effects could be limited by siting additional development in association with existing patterns of development have been defined as follows:

- Areas west of Dorrery, including forest south of Dounreay and area around Loch Scye;
- Area between B874 and B876, south of Castletown.

10.31 These are locations which have the potential to form new, discrete clusters of wind energy development, with adequate separation from the emerging clusters. The siting and design of any proposed wind energy developments in these areas would need to respond primarily to the landscape and visual context of the chosen site. The potential for cumulative effects would most likely relate to effects on static and moving viewers.

10.32 These areas have been identified as locations where wind energy development may generally be encouraged, based on the relatively reduced cumulative effects which would occur. However, there are some key considerations in each area.

10.33 An area west of Dorrery has been identified as a Wild Land Area in SNH's updated mapping, published in June 2014. This will place an additional constraint on this landscape, limiting the potential of this area to form a new focus of development within Caithness.

10.34 In relation to the area between the B874 and B876, unlike other areas of wind energy development this is a relatively settled landscape. It is considered unlikely that large groups of turbines would be appropriate in this area, but that single turbines or compact groups of up to four turbines could be accommodated in the landscape, subject to detailed assessment. Due to the settled nature of this landscape, there may be increased sensitivity to large turbines.

Appendix 1
Sensitivity criteria development

Sensitivity criteria development

Wind turbine development will affect different characteristics of the landscape in different ways. It is therefore important to understand the nature and sensitivity of different components of landscape character, and to set these out and assess them in a consistent and transparent fashion. In order to do this, a set of criteria were used to highlight specific landscape and visual characteristics which are most likely to be affected by wind farm development. The criteria are based on current good practice, developed by LUC through experience of carrying out work within this field and informed by information presented in a number of guidance documents relating to landscape sensitivity, LVIA and wind farm development, including the following documents.

Topic Paper 6

This paper[37] explores thinking related to landscape sensitivity and capacity, and provides examples of aspects which may be considered when making judgements on landscape sensitivity.

"When judging how sensitive a landscape is to some specified type of change it is essential to think in an integrated way about:

- *The exact form and nature of the change that is proposed to take place;*
- *The particular aspects of the landscape likely to be affected by the change, including aspects of both landscape character sensitivity and visual sensitivity…"* (p.9)

Siting and Designing Windfarms in the Landscape

Section 4 of the guidance[38] focuses on how design principles in relation to wind turbines relate to landscape and visual effects including in relation to landform, landscape scale, land use, pattern and focal features. This has been used to inform criteria relating to sensitivity, for example the following quote relating to landscape scale illustrates how large scale landform may be considered less sensitive to wind turbine development:

"…landscape scale can dictate the ability of an area to accommodate wind farm development, both horizontally in terms of its extent, and vertically with regard to wind turbine height." (p.23)

Guidelines for Landscape and Visual Impact Assessment

The guidance[39] refers to considering the following aspects (amongst others) when considering the sensitivity of the landscape resource:

- "*Existing land use;*
- *the pattern and scale of the landscape;*
- *visual enclosure/openness of views…"* (p.87)

Assessing the cumulative impact of onshore wind energy developments Version 3

With reference to describing and assessing cumulative landscape impacts, this guidance[40] makes reference to the landscape in terms of both landscape and visual characteristics. Key landscape characteristics include: landscape character, sense of remoteness or wildness and other special landscape interests. Visual impacts are discussed in terms of effects on visual receptors in the study area, views of the landscape and the relationship between wind farms.

Landscape Capacity Studies in Scotland

This review of capacity studies[41] refers to sensitivity analysis needing to be *"clear, easy to understand, consistently applied and robust under scrutiny."* (p.25)

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[37] The Countryside Agency and SNH (2002) *Topic Paper 6: Techniques and criteria for judging capacity and sensitivity*

[38] SNH (2009) *Siting and Designing Windfarms in the Landscape.*

[39] The Landscape Institute and IEMA (2002) *Guidelines for Landscape and Visual Impact Assessment.* 2nd Edition.

[40] SNH (2012) *Assessing the Cumulative Impact of Onshore Wind Energy Developments*

[41] Grant, A, in association with Clarke, P. and Lynch, S. (2010) *Capacity studies in Scotland – a review and guide to good practice.* SNH Commissioned Report No. 385

Appendix 2
Landscape sensitivity evaluation

Sensitivity assessment findings

Each of the LCTs is assessed in tabular form against the landscape sensitivity criteria set out in **Table 5.1**, and sensitivity evaluations are set out using definitions described in **Table 5.2**. Following the tabular evaluation, the general sensitivity of the landscape to wind farm development is discussed. The development size categories, identified in **Table 2.1**, are considered. This appendix includes an evaluation table and discussion text for each LCT.

Sweeping moorland

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns, complexity and consistency	• Broad open moor. • Fairly flat, gently sloping or undulating landform. • Forming subtype *flat peatland* in some areas.	lowest
Land cover: patterns, complexity and consistency	• Ribbons of broadleaf woodland occasionally run along the water courses and loch edges. • Water courses carve deep channels within the peat land. • Distinctive conifer plantations.	low
Settlement and man-made influence	• Largely uninhabited. • Ruined buildings, field boundaries and drainage channels represent a history of past population. • Existing settlements mainly on the periphery of this LCT. • Roads and power lines highly visible against otherwise bare landscape. • Peat cutting evident in some places.	moderate
Skylines	• Fairly flat skyline. • Horizontal or gently sloping, uninterrupted skyline (though power lines highly visible in some places).	moderate
Key views, vistas and landmark features	• Absence of dominant landmarks. • Coniferous plantations form a dominant characteristic within some areas.	lowest
Intervisibility with adjacent landscapes	• Viewed from *moorland slopes and hills*, *small farms and crofting* and *lone mountains.* • High degree of exposure affording extensive visibility.	high
Perceptual aspects: sense of remoteness, tranquillity, or wildness	• Sense of remoteness and exposure.	high

The *Sweeping Moorland* LCT has a simple, large scale landform, relatively flat and exposed. Land cover is predominantly moorland, with few vertical features. Elements such as coniferous plantation, settlement, and vehicles passing along roads stand out within the open, windswept moorland. There is a sense that the influence of man-made elements in the landscape has diminished over time, as modern features are set amongst ruined or remnant historic features that suggest a decrease in population.

The skyline is relatively simple, even and uninterrupted apart from a small number of noticeable vertical elements. Due to the openness of the landscape there tend not to be key views or vistas, and there are few landmark features. There is a generally a high level of intervisibility with adjacent LCTs, over long distances, though in some areas visibility is more contained by neighbouring LCTs of rising topography such as *Moorland Slopes and Hills* or *Lone Mountains*. There is a sense of remoteness and exposure, particularly at the core parts of the LCT.

Wind turbines could potentially relate to the large scale, windswept character of the area, but may conflict with the sense of remoteness in core parts of the LCT. The openness of the landscape means that visibility is likely to be extensive, and if several different turbine groups were established it is likely there would be a high level of intervisibility. The overall sensitivity of the *Sweeping Moorland* LCT is judged to be **Moderate** to small-medium and medium turbine size categories, and **High** to the larger turbine size category, reflecting the longer distances at which larger turbines would be visible.

Flat Peatland

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns, complexity and consistency	• Very simple landform comprising open, expansive sky and topography.	lowest
Land cover: patterns, complexity and consistency	• Lochans occur in distinct patterns. • Distinct wetland flora.	moderate
Settlement and man-made influence	• Largely uninhabited with absence of modern development. • Some parts have cover of mature coniferous plantation • Access limited to a few forest or estate tracks. • Singular train line runs through part of LCT.	highest
Skylines	• Flat, uninterrupted skyline. • Dominant sky due to openness.	moderate
Key views, vistas and landmark features	• Flat landform offers immense openness, extreme exposure and panoramic views. • Few visual foci within the LCT, but views exist to very distant hills with distinct profiles in neighbouring LCTs. • Water forms a dominant element	low
Intervisibility with adjacent landscapes	• Views to *open moorland.* • High degree of exposure affording extensive visibility.	high
Perceptual aspects: sense of remoteness, tranquillity, or wildness	• Strong winds circulate blowing and whistling around, effects swaying grasses, ripples on water, and the permanent sculpting of trees. • Vast open skies offer display of approaching and changing weather systems. • Very remote and wild in most parts.	highest

The *Flat Peatland* LCT comprises a very flat, open landform of extreme exposure. While the land cover appears simple in its regularity, it contains a distinct wetland flora set among a pronounced pattern of lochs, channels and lochans. It is considered that these features would be difficult to restore following any disturbance. There is limited human influence, mainly relating to forestry and the presence of a railway line that passes through this LCT.

The sky is starkly simple, extensively visible and uninterrupted by the flat landscape. The few vertical features present in the landscape can form noticeable features when viewed at a close distance. There tend not to be key views or vistas due to the openness of the landscape; however views of very distant hills are possible, depending on weather conditions. Adjacent LCTs form visual boundaries to the *Flat Peatland* LCT, with intervisibility over long distances. Many parts of the LCT seem very remote due to the absence of man-made features across large areas.

This open peatland landscape is of a large scale and simple in form. The simplicity of the form is not reflected by a simple land cover however, and a small number of receptors are an indicator of this landscape's remoteness. It is likely that wind turbines would be highly visible in this open landscape, and may contrast with the simple horizontal character of the LCT and lack of man-made features. The overall sensitivity of the *Flat Peatland* LCT is judged to be **High** to small-medium, medium and larger turbine size categories, due to its sense of remoteness and potentially vulnerable land cover, though sensitivity may be locally reduced in areas of forest.

Moorland Slopes and Hills

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns, complexity and consistency	• Mix of sloping landform gradually rising to form low broad hills. • Landform undulates forming some pockets of enclosure, though generally open.	low
Land cover: patterns, complexity and consistency	• Varying ground cover linked to geology, micro climate, land use and drainage. • Scattered rocky crags and outcrops, and dense areas of heather, grasses and bog. • Some limited areas of mature coniferous plantation close to access routes.	moderate
Settlement and man-made influence	• Access tracks visible. • Towns, estates, crofts, farms and infrastructure routes tend to be located along the straths and coastline, otherwise largely uninhabited. • Some existing power lines.	moderate
Skylines	• Skyline composed of even, gently rolling hills, providing screening from lower ground with more open visibility from higher points.	low
Key views, vistas and landmark features	• Concave character of the slopes tends to limit distant visibility and views of hill tops. • Hill tops create numerous foci of even character.	moderate
Intervisibility with adjacent landscapes	• This LCT acts as a transition between low lying sweeping moorland and the higher mountains. • Rolling hills provide screening to view from lower ground. • Distant views to the coastline.	high
Perceptual aspects: sense of remoteness, tranquillity, or wildness.	• Sense of remoteness in core areas. • Increased human activity near coastal or strath edges of LCT.	moderate

The *Moorland Slopes and Hills* LCT is characterised by undulating or gradually rising slopes which form a regular pattern of low, broad hills. These wide, concave hills tend to form a transition

between lower-lying sweeping moorland and higher hills, and in some areas link to coastal LCTs or straths. While core parts of the LCT tend to be uninhabited and with little in the way of human influence, edges associated with the coast and straths include some settlement, crofts and access roads. Power lines or masts are also occasionally present.

From lower-lying areas within the *Moorland Slopes and Hills* LCT, the skyline is of the enclosing rounded hills which tend to appear relatively even in height and contain views, the smooth slopes sometimes made more irregular by crags. From higher areas, the skyline is wider and more varied, extending to neighbouring LCTs. Key views limited to these high points are generally focussed towards the distinctive *Lone Mountains* LCT. Core areas of the LCT have a sense of remoteness, which diminishes towards edges where human influence is more apparent, though limited.

The introduction of wind turbines to this landscape could potentially relate to its simple, even character, if avoiding the remotest areas. The broad hills typical of the area may offer opportunities for some screening, however the regularity of the topography could also present challenges in locating turbines in several different groups, as this may create a confusing picture. The overall sensitivity of the *Moorland Slopes and Hills* LCT is judged to be **Low** to the small-medium turbine size category, **Moderate** to the medium turbine size category, and **High** to the larger turbine size category, owing to the relative scale of the hills and level of screening available.

Lone Mountains

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns, complexity and consistency	• Distinctive mountains lying isolated within an expanse of moorland. • Mountains tend to cover a small area within a surrounding wide open space. • Distinctive profiles visible from many different angles.	highest
Land cover: patterns, complexity and consistency	• Rugged mountain tops covered with exposed rocks leading to scree. • Slopes are partly covered with dwarf vegetation, merging into the moorland surroundings. • Occasional ribbons of broadleaf scrub woodland. • Some coniferous plantation located around the edges of foot slopes.	highest
Settlement and man-made influence	• Largely uninhabited. • Occasional estate houses or farm buildings.	high
Skylines	• A simple and clear yet distinctive skyline. • Inward and outward visibility over vast distances.	highest
Key views, vistas and landmark features	• The mountains themselves are prominent key landmarks, each with a distinctive profile of steep, sweeping, concave slopes. • Mountain peaks provide extensive views for walkers. • Landmarks created by some coniferous plantation on foothills.	highest
Intervisibility with adjacent	• Adjacent to *Cnocan* or *Moorland slopes and hills* LCTs.	highest

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
landscapes	• The focal dominance and elevation of the mountains means their influence extends into other LCTs.	
Perceptual aspects: sense of remoteness, tranquillity, or wildness	• The character of this area changes considerably in relation to the weather and visibility. • Experience of the landscape is strongly influenced by the wind and the noise it makes as it whips round the mountains. • Sounds of waterfalls echo through the landscape.	high

The *Lone Mountain* LCT covers distinctive, isolated hills or mountains set within the wide open ground of adjacent LCTs. These mountains are of varying height, but stand out in surrounding flat or undulating landform due to their steep, rough slopes which appear to project sharply and suddenly in distinctive contrasting forms. Land cover varies according to underlying geology, with patterns of exposed rock and scree, low windswept vegetation, and on foothills moorland vegetation, broadleaf scrub and some coniferous plantation. There are very few residential properties or farmsteads located within this LCT.

The isolated mountains are often seen to break the low, flat horizon in which they are set, creating distinct landmarks. From their peaks, views are available across vast distances, and the hills themselves are visible from far afield. There is a high level of intervisibility between this and adjacent LCTs. The experiential quality is of tranquillity and remoteness.

This LCT is vulnerable to disturbance and any turbines or related infrastructure placed here would be highly prominent and visible. Turbines of all sizes are likely to appear to dwarf the smaller of the *Lone Mountains*, leading to changes in sense of scale. The overall sensitivity of the *Lone Mountains* LCT is judged to be **Highest** to small-medium, medium and larger turbine size categories, reflecting the incompatibility of the key characteristics of this LCT to this type of development.

High Cliffs and Sheltered Bays

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns, complexity and consistency	• Long narrow strips of land and sea divided by a defining edge of cliffs or beaches. • Cliffs form a strong and limiting linear edge, with an equal emphasis of land and sea. • Pattern created by alternating characteristics from long stretches of high cliff to bays corresponding to the intersection of a glen. • Glens vary from being narrow and deep to wider more shallow glens. • High number of recognisable scale indicators.	highest
Land cover: patterns, complexity and consistency	• Very short mat of vegetation tends to cover cliff tops, grazed by sheep. • Thin groundcover reveals all the intricacies of the landform.	low

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Settlement and man-made influence	• A main road runs parallel to the Caithness and Sutherland coastline with a number of settlements occurring at frequent intervals. • Infrastructure in place to deal with high volumes of visitors over summer months. • Harbours, lighthouses and other maritime features.	moderate
Skylines	• Distinctive coastal skyline. • Distinctive landmarks such as lighthouses and castles are often set against the skyline.	moderate
Key views, vistas and landmark features	• High cliffs and sheltered bays form the dominant characteristic of this landscape. • Bays and beaches contain visibility. • High cliffs offer open, elevated views out to sea and along the coast line. • Occasional stacks and caves. • Castles, forts and brochs are located in defensive, prominent positions. • Lighthouses located in highly visible locations, forming distinctive landmarks.	highest
Intervisibility with adjacent landscapes	• Due to the narrow, linear shape of this LCT, there can be a high level of intervisibility with neighbouring LCTs from high points. • Abuts areas of *sweeping moorland, moorland slopes and hills* or *small farms and crofts.*	moderate
Perceptual aspects: sense of remoteness, tranquillity, or wildness	• Very exposed and open to the elements due to its connection with the sea. • Distinctive coastal light. • Bays are more sheltered often providing sun traps. • Sound of breaking waves provides an additional sensory element. • Combination of landscape elements provides an exciting landscape.	high

The *High Cliffs and Sheltered Bays* LCT is formed by a distinctive pattern of low, rounded bays where glens meet with long sections of tall cliffs. The irregular pattern of the rough vertical cliff face comprising layers of linear rock shelves, contrasts with the smooth, enclosed bays and the flat, even sea. The thin layer of groundcover atop the cliffs is simple and yet highlights variations in underlying geology. The cliff faces themselves are exposed and without cover. Settlement is located above the cliff tops, generally on the edges of the LCT, as it meets with adjacent types and coastal roads. Other prominent buildings in the LCT include lighthouses, such as at Duncansby Head, and castles such as Brimms.

Skylines are variable within the *High Cliffs and Sheltered Bays* LCT. From high, exposed cliffs the sky appears open and expansive, with views both inland and out to sea. From low, enclosed bays the skyline is focussed mainly on the sea, simple and uninterrupted. The cliffs form prominent features, particularly where stacks and caves occur, or where distinctive buildings are located on their edges. Intervisibility from adjacent landscapes is more limited for sheltered bays, but nearby LCTs are located in close proximity to and are visible from cliff tops. The experiential qualities from the *High Cliffs and Sheltered Bays* LCT are varied, including some areas of remoteness and exposure, and others with a maritime influence.

The presence of turbines in or near to this LCT may be out of scale with key features of this landscape. Elements such lighthouse and castles, may appear dwarfed or less monumental when viewed with turbines, and cliff faces may appear less sizeable. Turbines could relate to the experiential qualities of this landscape – a windy, exposed landscape. The overall sensitivity of the *High Cliffs and Sheltered Bays* LCT is judged to be **High** to small-medium and medium size categories and **Highest** to the larger turbine size category, as the scale of the landscape in comparison to the turbines is a key factor.

Long Beaches, Dunes and Links

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns, complexity and consistency	• Variable landform and slopes form a soft linear edge to the sea. • Landscape generally comprises curved forms and smooth surfaces formed by gentle slopes and interlocking dunes. • Horizontal emphasis with absence of many vertical elements. • Dune pattern contains high exposed points and low enclosed pockets.	moderate
Land cover: patterns, complexity and consistency	• Smooth mat of surface vegetation grazed by sheep and rabbits. • Wetland scrub vegetates hollows and marram grass covers most dunes. • Well-maintained golf-links.	moderate
Settlement and man-made influence	• Facilities for recreation are prominent such as campsites, golf courses and visitor centres.	moderate
Skylines	• Skylines tend to be most simple in views out to sea. • The coastline can sometimes be interrupted by occasional buildings or by woodland in adjacent LCTs.	low
Key views, vistas and landmark features	• Simple visual composition comprising sky, sea and land and the dividing lines between them. • Bay, buildings and woodlands form inland landmarks, and boats, rigs and small islands form landmarks at sea.	moderate
Intervisibility with adjacent landscapes	• Views from harbours and coastal settlements. • Borders many LCTs, particularly *mixed agriculture and settlement*, *coastal shelf* and *small farms and crofts*.	moderate
Perceptual aspects: sense of remoteness, tranquillity, or wildness	• Landscape offers wide open space and extreme exposure. Openness results in extensive visibility. • Dynamic landscape responsive to weather, affected by the clear northern coastal light accentuating textures, shapes and colours. • The activities of sea birds add to the experience of this landscape.	high

The *Long Beaches, Dunes and Links* LCT has a simple large scale landform, open and exposed. It forms long, linear coastal areas of stretching beaches backed by the irregular hummocks, slumps and slacks of dunes. Land cover comprises marram grass, eroded in exposed areas, wetland or scrub hollows and short grazed areas, or neatly mown links. Man-made influence in this LCT is mainly as a result of recreational facilities such as golf links, car parks, paths and holiday accommodation.

Due to the openness of the LCT, the skyline is wide and expansive, with a more complex pattern inland compared to views offshore. There are few key views or vistas, however small features often form minor foci as visibility is often unrestricted by topography, except to a degree in dune hollows. Long beaches have more intervisibility with the sea, and dunes and links have more intervisibility with their adjacent LCTs, which owing to the narrowness of *Long Beaches, Dunes and Links* LCT are commonly located in close proximity. The weather is a dominant force in affecting the perceptual aspects of this LCT, creating a dynamic and changing coastal experience.

While wind turbines could potentially relate to the large scale and exposed character of this landscape, they would be highly visible and may divert attention from smaller traditional foci. It is likely that turbines located in adjacent LCTs would also be visible, potentially across long distances. The overall sensitivity of the *Long Beaches, Dunes and Links* LCT is judged to be **Moderate** to small-medium and medium turbine size categories, and **High** to the larger turbine size category as visibility is likely to be far-reaching.

Strath

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns, complexity and consistency	• Channels passing through surrounding landscape types. • Distinct linear strath floor with contrasting slopes providing enclosure. • Water is a key influence on the landform, with central rivers or lochs shaping topography.	high
Land cover: patterns, complexity and consistency	• Land cover changes depending on the character of the ground surface. • Water forms rivers, lochs, tributaries and areas of wetland. • Ribbons of broadleaf woodland. • Conifer plantations on few strath slopes. • Field pattern associated with past crofting.	highest
Settlement and man-made influence	• Signs of ancient settlements including abandoned croft buildings and brochs. • Most access routes in Caithness and Sutherland pass through straths. • Roads, railway and power lines run parallel. • Settlements concentrated at bridging points, or at the mouths of straths.	high
Skylines	• Strath sits below the skyline, so views to the sky are limited by surrounding topography.	low
Key views, vistas and landmark features	• Central visual focus towards rivers or lochs, which channel and direct views. • Where strath curves, views are restricted. • Ancient brochs and old walled enclosures. • Features such as field, houses and	moderate

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
	woodland sub-divide views.	
Intervisibility with adjacent landscapes	• Strath tends to run through areas of *Moorland slopes and hills* or *Cnocan* LCTs. • Intervisibility limited to neighbouring LCTs by rising topography.	low
Perceptual aspects: sense of remoteness, tranquillity, or wildness	• Sense of enclosure depends on the height and steepness of slopes in relation to the width of the strath floor. • The degree of enclosure will affect experiential qualities such as shadows produced, sun traps, wind and degree of echoes.	moderate

The *Strath* LCT comprises enclosed, linear spaces carved out by rivers and lochs, often of historic character. Water generally forms a low central area, contained by inward-facing slopes of varying steepness. Landcover varies from wetland areas, to ribbons of broadleaf woodland, pasture, and coniferous plantation in some places. Settlement has been present in this landscape over a long period of time, evident in historical features such as brochs, mature woodland and walled enclosures. It continues in the form of evenly spaced individual farms and properties throughout the length of the straths, with larger groups forming at confluences and strath mouths.

Skylines are generally formed at a short distance by enclosing topography. Views are channelled along the length of the straths, often focussed on rivers and associated historic features or scattered properties and farms. Intervisibility to neighbouring LCTs is generally limited, although the transitional edges between LCTs may be visible in more open locations, such as around wide meandering stretches of river. Perceptually, the *Strath* LCT appears rural in character and with a degree of tranquillity and sense of history.

The sensitivity of the *Strath* LCT lies more in the landscape characteristics than in its visual aspect. While the area is enclosed, and intervisibility between adjacent LCTs is limited, the distinct pattern of the linear space and its historic character may be at odds with the scale and modernity of wind turbines. In some agricultural settings, small-medium turbine size categories may be appropriate, however medium or larger turbine size categories, particularly in groups are likely to conflict with the form and character of the LCT. The overall sensitivity of the *Strath* LCT is judged to be **Moderate** to the small-medium turbine size category, and **High** to medium and larger turbine size categories.

Coastal Shelf

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns, complexity and consistency	• A distinctive long, elevated platform above the open sea, contained by steeper slopes inland. • Some straths intersect the shelf creating deep, narrow, wooded crevices perpendicular to the length of the shelf. • Strongly influenced by the sea which it overlooks.	high
Land cover: patterns, complexity and consistency	• Crofting and agriculture, linear field pattern marked by stone dykes. • Woodland associated with river crevices.	moderate

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
	• Contained by sloping moorland hills.	
Settlement and man-made influence	• Linear elements such as main roads, power lines and railway. • Linear croft pattern parallel to the coast, and some small settlements. • Farm houses, castles, forts, churches, cemeteries and lighthouses, with some historic character.	moderate
Skylines	• Immediate skyline formed by inland hills. • Wide and expansive skyline in views offshore.	moderate
Key views, vistas and landmark features	• Views focussed along the coastline and offshore as views inland limited by topography. • Pylons, road and rail create pattern of linear features.	moderate
Intervisibility with adjacent landscapes	• Typically bordered by *moorland hill and slopes* LCT inland. • Semi-enclosed, open to the sea but views inland limited by sloping hills.	low
Perceptual aspects: sense of remoteness, tranquillity, or wildness	• Balance between land and sea. • Combined coastal and agricultural influence.	low

The *Coastal Shelf* LCT comprises a pronounced raised platform of land between the open sea and rising moorland slopes. This linear landform has a pattern of different uses and land cover, mainly relating to agriculture and infrastructure, with some historic features such as brochs and cairns. Field patterns are divided by stone dykes, rough rocky mounds and small woodland groups associated with watercourses.

The skyline varies from the flat, simple expansive horizon formed by the sea, to a foreground skyline created locally by the sloping moorland that contains the LCT. Views out to sea are open and long-distance, and views inland are short and contained. Views of the coastline are linear, with focal point features scattered along their length, at a range of scales. Intervisibility occurs mainly with other coastal LCTs, such as *High Cliffs and Sheltered Bays* or *Long Beaches, Dunes and Links*. There is a sense of historic and modern human influence that reflects the accessibility of the LCT, and the influence of the sea gives a sense of exposure.

The coastal windswept character, existing presence of key infrastructure and relatively contained visibility in this LCT may indicate some suitability for wind turbines. However there is a careful balance in the scale of the LCT, and it is possible that the larger size category may dwarf the scale of low hill slopes. Additionally, careful thought would be required as to how turbines may relate to the characteristic linearity of the LCT. The overall sensitivity of the *Coastal Shelf* LCT is judged to be **Moderate** to small-medium and medium turbine size categories, and **High** to the larger turbine size category.

Intensive Mixed-Agriculture and Settlement

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns,	• Wide plain of agricultural land and settlement.	low

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
complexity and consistency	• Very open landscape with flat or gently sloping landform. • Wetland and lochs occupy many hollows and shallow valleys. • Simple landform with few topographical features.	
Land cover: patterns, complexity and consistency	• Some areas are flatter, more fertile and intensively farmed for crops, particularly in coastal areas, while other areas comprise a network of arable fields and pasture. • Field patterns at various scales with different boundary treatments – fences, dykes, hedgerows. • Shelter belts of trees contrast with otherwise bare flat land.	moderate
Settlement and man-made influence	• Network of linear elements such as field boundaries, roads, power lines and railway, and points such as properties, masts and woodland. • Evenly spread population. • Mix of modern and historic settlements, with evidence of depopulation. • Straight roads reinforce the ordered pattern of land use.	moderate
Skylines	• Skyline formed by simple topography and pattern of vertical features such as buildings, masts and tree groups.	low
Key views, vistas and landmark features	• Few vistas or focussed views. • Historic features include chambered tombs dating from 3800 BC and 17th century crofts. • Open sea views from coastal areas.	moderate
Intervisibility with adjacent landscapes	• Some intervisibility with coastal LCTs. • Intervisibility with *sweeping moorland* and *flat peatland* LCTs in peripheral areas.	high
Perceptual aspects: sense of remoteness, tranquillity, or wildness	• Most fertile areas often located next to the coast where extreme weather conditions and coastal views are accentuated. • Constantly changing experience due to openness to changing weather and light conditions.	moderate

The *Intensive Mixed Agriculture and Settlement* LCT represents a combination of the *Open Intensive Farmland* LCT and the *Mixed Agriculture and Settlement* LCT, as these areas are considered to have the same or similar sensitivity to wind energy development.

The *Intensive Mixed Agriculture and Settlement* LCT has a simple, large scale, flat or gently sloping landform, with a more complex land cover pattern comprising a mix of agriculture and settlement of different scales, ages and conditions. The man-made elements within the LCT can appear disorganised and dispersed, historical and modern elements together reflecting a changing landscape.

The skyline is relatively simple and even, is often viewed across a long distance due to the openness of the topography, and is interrupted in places by vertical features. Due to the

openness of the landscape there tend not to be key views or vistas, and landmark features tend to be formed by historical elements. There are open sea views from coastal areas. Intervisibility with adjacent LCTs occurs over relatively long distances; however views are sometimes screened by intervening settlement or woodland. The sea is influential in coastal parts of the LCT, and inland the perceptual aspect is focussed on human influence and changes in the vernacular of agriculture and settlement.

The presence of wind turbines in this landscape could potentially relate to the openness of the landscape and influence of changing human activity. The overall scale of the landform could accommodate turbines, though occasional smaller scale topographical features, e.g. Spittal Hill may be locally sensitive. The scale and pattern of existing features within the landscape may also be locally sensitive, particularly settlement and historic features. Due to the openness of the LCT, it is likely that turbines may be visible over long distances. The overall sensitivity of the *Intensive Mixed Agriculture and Settlement* LCT is judged to be **Low** to small-medium and medium turbine size categories, and **Moderate** to the larger turbine size category.

Small Farms and Crofts

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns, complexity and consistency	• Sloping, semi-enclosed landform of small, intimate scale. • Steep glens along the coast. • Land division relating to coastal edge forms ordered pattern with linear repetition.	high
Land cover: patterns, complexity and consistency	• Comprises common elements e.g. houses and outbuildings, field patterns defined by fences and walls, access roads, power lines, remnants of woodland and clusters of trees and machinery. • Above elements are arranged variously, reflecting different character subtypes. • Visually complex composition of spaces edges, colours, textures and lines.	highest
Settlement and man-made influence	• Mainly agricultural occupation and activity of people dominates this landscape at differing scales. • Some crofts have historic quality, represented by a subtype. • Integrated with settlements. • Many small villages and large amounts of new housing. • Complex variety of different land use characteristics.	low
Skylines	• A varied yet undramatic skyline.	moderate
Key views, vistas and landmark features	• Limited views across landscape. • Croft ruins form distinctive features.	moderate
Intervisibility with adjacent landscapes	• Varied long and short distant views available. • Views often directed to foreground details. • As this LCT tends to be in localised areas, there tends to be some intervisibility with neighbouring LCTs.	moderate

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Perceptual aspects: sense of remoteness, tranquillity, or wildness	• Screening effect of buildings and tree bands and sloping landform results in semi-enclosed landscape.	low

The *Small Farms and Crofts* LCT is complex and represented by a variety of subtypes, which reflect the changeable character of this LCT:

- Dispersed farms and crofts;
- Small farm and crofting areas with local facilities;
- Small farm and crofting areas with new housing;
- Small farm and crofts surrounded by woodland; and
- Fringe crofting and historic features.

The overall character is of a fertile, sloping landform, intimate in scale, and highly influenced by rural human activity. The landform and features create a changing sense of enclosure, sometimes open and bare, and sometimes contained and well-occupied. Land cover is complex, reflecting different scales of crofting and agriculture. Man-made influence is both modern and historical within the landscape, and there is a sense of general depopulation.

The skyline is varied, often influenced by the different features present in the LCT, such as houses and outbuildings, fences and walls, access roads, power lines, remnants of woodland and clusters of trees and machinery. Intervisibility is changeable, coming and going depending on the density of settlement and other features. Perceptually, the *Small Farms and Crofts* LCT appears predominantly rural in character and with a sense of changing agricultural practices.

Wind turbines could potentially be associated with modern agricultural practice in some areas, if at an appropriate scale. The complexity and small scale of the LCT means that while some areas may be suitable for wind energy development, they may be likely to influence other more sensitive locations within the same or neighbouring LCTs. The overall sensitivity of the *Small Farms and Crofts* LCT is judged to be **Moderate** to the small-medium turbine size category, and **High** to medium and larger turbine size categories, reflecting the intimate scale of the landscape.

Coastal Islands (Stroma)

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Landform and scale: patterns, complexity and consistency	• Small island or holm. • Predominantly low and gentle relief.	moderate
Land cover: patterns, complexity and consistency	• Lack of trees and woodland cover. • Some areas of rough moorland to the west of the island, small scale geometric pattern of pasture to the east.	lowest
Settlement and man-made influence	• Uninhabited, but with remnant crofts indicating history of past population. • Some archaeological features.	high
Skylines	• Relatively simple and open.	lowest
Key views, vistas and landmark features	• Remnant crofts and lighthouse form vertical features against the flat island. • Surrounding views to Caithness and Orkney.	low

Criteria	Relevant characteristics drawn from the landscape character assessment	Sensitivity evaluation
Intervisibility with adjacent landscapes	• Open visibility of Caithness and Orkney. • Visibility to LCTS in northernmost Caithness.	moderate
Perceptual aspects: sense of remoteness, tranquillity, or wildness	• Subtle variations in character. • Open and windswept. • Intimate relationship with sea, sense of exposure to the elements, and influenced by high latitude.	moderate

The Island of Stroma is not covered by the Caithness and Sutherland Landscape Character Assessment. Stroma is a coastal island or holm, located 3km north of Huna, in the Pentland Firth, and passed by several ferry routes between mainland Scotland and the Orkney Islands. The consideration of Stroma as a location for turbines is outwith the scope of this study, but forms part of the wider study area for Highland. Therefore the sensitivity of Stroma relates only to its relationship and intervisibility with LCTs in Highland.

Stroma is a small, low lying island, once home to a population of several hundred, but now uninhabited and used primarily for sheep grazing. From Caithness the island appears flat and gently domed, with remnant crofts forming key vertical features in this landscape, and a distinct lack of trees. The wind-clipped land cover comprises some areas of rough moorland to the west of the island, and a small scale geometric field pattern of pasture in the east. The island has a number of archaeological features, and it is possible to visit the island, with permission.

Skylines in Stroma are simple and open, with visibility across to Orkney and to Caithness. There tend not to be key views or vistas due to the openness of the landscape. Locally, remnant crofts and the Stroma Lighthouse form focal points. Intervisibility with LCTs in Highland occurs across the Pentland Firth to the northernmost parts of Caithness, and southernmost parts of the Orkney Islands. There is a sense of remoteness attached to this uninhabited, windswept island, while the presence of sheep and pasture is a reminder that its primary use is now agricultural.

Wind turbine development located in the northernmost parts of Caithness may be visible from Stroma, to those working on or visiting the island. It is unlikely that turbines will be viewed in close distance. The overall sensitivity of the Stroma is judged to be **Low** to small-medium and medium turbine size categories and **Moderate** to larger the turbine size category, reflecting the separation of Stroma to the mainland, and windy and exposed character of the area.

Appendix 3
User guidance

Introduction

This appendix is designed to assist decision makers in considering applications for wind energy developments in the light of the findings of the CLVA. It is set out a series of questions in three stages, which are intended to act as prompts to assist in using available information.

In using this study to inform decisions, reference should be made to the limitations set out in the Executive Summary at the start of the report. Reference should also be made to SNH guidance on the topic of cumulative effects and landscapes with multiple wind farms.[42] [43]

Stage 1: Location and recommendations

- Where is the development proposed? Which of the four recommendations has been applied to the area in question (see **Figure 10.3**)?
- Refer to **Section 10** for general guidance applicable to areas where this recommendation applies.
- Does the proposal accord with the recommendations? If not, how does it conflict with them?

Note that where proposals are sited close to the boundary between two areas, it is advisable to make reference to the relevant recommendations for both areas, since the lines indicated on the map represent broad zones of transition rather than firm boundaries.

Stage 2: Patterns of development

- Would the proposal be located within or immediately adjacent to an existing 'cluster', i.e. would it be located in close proximity to operational and consented developments (areas coloured brown on Figure 10.3)?
    - If so, does its design and layout accord with those of the operational and consented developments? If it is substantially different, then the effect may be visually complicated, presenting a confusing visual image. If the proposal is of similar scale, with particular reference to tip height, then it is more likely to be accommodated as part of the cluster.
- Would the proposal introduce turbines into an area where there are currently no wind energy developments?
    - Does the proposal lie in one of the 'gaps' (areas coloured blue on Figure 10.3)? Consent of development in these areas may lead to changes in the pattern of development, potentially expanding the reach of cumulative effects, and reducing diversity in the landscape.
    - Does the proposal lie in an area where it could form the nucleus of a future cluster (areas coloured purple on Figure 10.3)? Assuming there are no other unacceptable effects, the proposal would need to be located at a sufficient distance from other consented developments, so as to appear as a discrete group in the landscape.
    - Does the proposal lie in an area where landscape and visual sensitivity may be higher (areas coloured green on Figure 10.3)? Careful consideration of the likely effects of the proposal will be required, although the potential for cumulative effects may be limited.

[42] SNH (2014) Siting and Designing Windfarms in the Landscape. Version 2.
[43] SNH (2012) Assessing the Cumulative Impact of Onshore Wind Energy Developments.

Stage 3: Considering recent change

The study presents a point-in-time analysis of a constantly changing situation. It should not be necessary to prepare updates of the analysis (such as the CZTVs). However, some consideration must be given to recently consented developments, which were not consented at the time of the study.

- Have any developments been consented within the vicinity of the proposal in question (with 5-10km), since the report was written? If not, then the recommendations remain valid.
- If other development has been consented, has this changed the pattern of development within the landscape substantially?
    - Does the new development form part of an existing cluster, or does it form the basis for a new cluster?
    - Does the new development narrow the strategic gaps between clusters?
    - Consider the scale of the recent development against the scale of other development in the area.
- In the case that a number of developments are consented in areas currently defined as 'gaps' (areas coloured blue on Figure 10.3), it may be necessary to redraft Figure 10.3 to redefine the clusters in which development may be acceptable, and to identify any areas which may have reached their capacity, through further examination of the residual capacity of the landscape.