

6.5 Residual Capacity for Further Development

(Refer to Figure 6.1b (i-v) for details of residual landscape capacity for turbines of different sizes)

This assessment has demonstrated that the landscape of Aberdeenshire has the underlying capacity to accommodate wind energy development of an appropriate type and extent. Appropriate development relates to the varied characteristics of the landscape, the visual sensitivities of the population spread across lowland Aberdeenshire and the higher value or sensitive context of some areas of landscape. In particular the sensitive context of the upland areas means there is no scope for the larger scale of development seen in similar landscape types elsewhere in Scotland.

The main underlying capacity for development lies within some of the larger scale more extensive lowland areas which can accommodate larger turbine sizes, but not the largest sizes or in large groupings. Other lowland areas have a more limited underlying capacity which would not be appropriate for larger turbine sizes and some areas have very limited or no capacity for wind energy development.

However with current levels of cumulative development there is no remaining capacity left in large parts of Aberdeenshire. Residual capacity for all areas has been detailed in Table 6.1 and Figure 6.1b (i-v)

Any future development in each landscape type or area should follow the guidance given in Table 6.1 in order to remain within the proposed wind turbine landscape types set out in Figure 6.3. The aim of the guidance is to ensure that the acceptable capacity for development in terms of turbine sizes, group sizes and spacing between turbines and groups is not exceeded, and that other issues guiding or limiting development are taken into account.

The underlying capacity would be further exceeded if all current proposals were implemented. The main opportunities and limitations on capacity are discussed below and the areas concerned illustrated in schematic form in Figure 6.4.

6.5.1 Areas with Highest Underlying Capacity

Figure 6.4 identifies in dark green areas which have the highest underlying capacity in Aberdeenshire for wind energy development. By this it is meant that they have the capacity to accommodate larger sizes of turbine and/or greater numbers and concentrations than other landscape areas. This is based on a combination of one or more factors including suitable larger scale simple landforms and landscape patterns; existing development/ land use affecting character; lower visual sensitivity and lower landscape value. Not all of these factors are present in every area identified and the analysis and guidance in Table 6.1 should be followed. The main areas are:

- Most of the 7. *Coastal Farmland* LCTs;
- Some of the 1. *Agricultural Heartland* LCTs.

As discussed significant numbers of wind turbines are already located in some of these areas, utilising much of the available capacity and limiting capacity for further development. The limitations resulting from this are discussed in 6.5.4 below.

6.5.2 Areas with Limited Underlying Capacity

Most of the remaining lowland and coastal areas of Aberdeenshire have some underlying capacity for wind energy development but are generally not suited to larger turbines, large groupings or extensive concentrations of wind turbine development. Capacity varies from the ability to accommodate only very occasional small or small/medium wind turbines in some of the *Coast* LCTs to more frequent medium turbines across some of the *Straths and River Valley* LCTs. The areas are shown in light green in figure 6.4

Wind turbines are already located in some of these areas, utilising some of the available capacity and limiting development. The limitations resulting from this are discussed in 6.5.4 below. Guidance in Table 6.1 is intended to steer any future development in these areas to an acceptable level.

6.5.3 Areas with No Capacity

Significant areas of Aberdeenshire have no underlying capacity for wind turbine development above 15m in height. These are left uncoloured in Figure 6.4:

- All of the 22. *Moorland Plateaux* LCAs, primarily due to their importance to the Aberdeenshire landscape, high visual prominence, high relative wildness and recreational value;
- All of 24. *River Valleys* and most of 25. *Straths and River Valleys* LCT which have high value, quality and sensitivity;
- Most of 26. *The Coast* and 9. *Coastal Strip* LCAs which are of high value due to recreation potential and high scenic quality.
- Area 7 (iv): *Sandstone Ridges and Valleys South of Troup* in *Coastal Farmland* which is locally rare and has high value, quality and sensitivity;

It is recommended that these landscape types and areas remain undeveloped with turbines over 15m in height to protect their character, avoid widespread visibility, protect key viewpoints and features and particularly to protect the key features of the *Grampian Outliers* and the Mounth.

When assessing the acceptability of larger turbine proposals in neighbouring landscape character areas, proximity to the sensitive areas described above should be taken into account.

6.5.4 Areas Where Cumulative Impact Limits Further Development

As described above, a number of landscape types and areas in Aberdeenshire have the underlying capacity to accommodate wind energy development. However, existing and consented development in or nearby some of these areas means that further significant development may exceed the acceptable cumulative capacity of the landscape. **It is**

recommended that no further turbine development beyond a domestic scale (less than 15m in height) occurs in these areas. The areas where current cumulative impact limits capacity for further development are shown as hatched areas in Figure 6.4. They are defined by:

- The developed areas of windfarms and turbines (operational and consented) and the cumulative extent of their impacts on the surrounding landscape;
- The underlying landscape capacity within the landscape areas and for those surrounding them;
- The extent of area within which further significant development should be limited to avoid extending unacceptable cumulative landscape and visual impacts between the groups of turbines within the cumulative area and other turbines outside the area.

The boundaries shown in Figure 6.4 are indicative. In the case of specific development proposals there should be an assessment relating to these criteria.

6.5.5 Areas between and Adjacent to Cumulative Impact Areas

Development in some areas has exceeded the underlying capacity of the landscape to accommodate wind turbines. The over capacity areas are shown as cross-hatched areas in Figure 6.5, however the boundaries of these areas are indicative. In the case of specific development proposals there should be an assessment relating to these criteria.

The issues lie in what to do in the areas where there is still residual capacity that are located either between or close to these 'over capacity' areas.

This study examined three different scenarios and developed computer generated wire-frame models of these to determine potential significant cumulative landscape and visual impacts of three different approaches. The options considered included:

- 1) Strictly Limit Further Development**
Tightly control further development, even where there is remaining capacity left, as a counterbalance to areas already at or over capacity.
- 2) Strategically Planned Development**
Accept further development where there is inherent capacity left, but apply good siting and design practice in these areas in terms of turbine typology, size, spacing etc, acknowledging features of higher than average value and sensitivity, and do not exceed acceptable capacity in these remaining areas.
- 3) Continue Existing Approach**
Accept further development on its own merits where there is remaining capacity even if in close proximity to the over capacity areas (site and development specific planning criteria would still apply e.g proximity to residential property).

Examples of the three approaches applied in selected locations are shown in Figure 6.6a and 6.6b

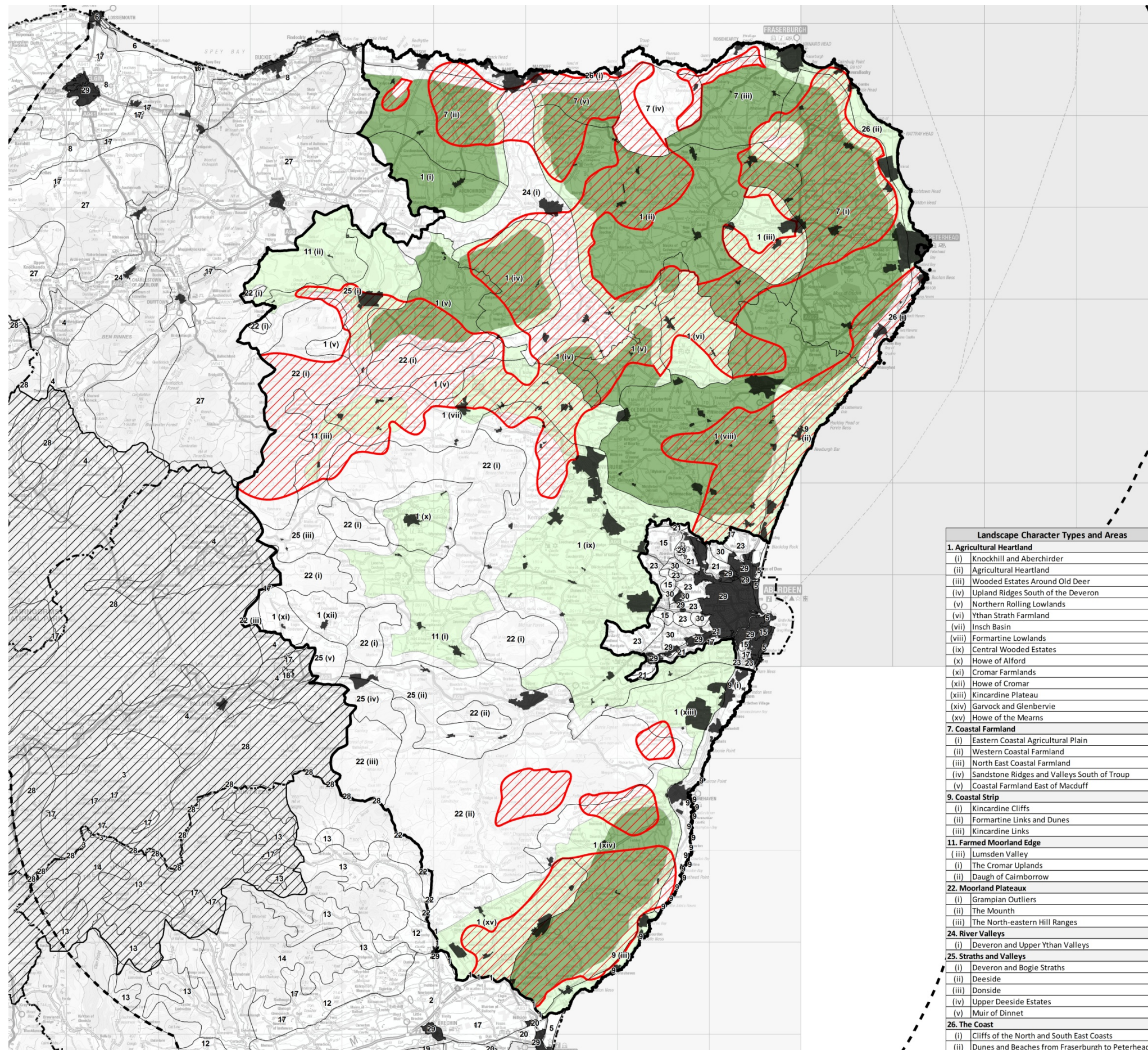
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Legend

- Study Area
- Study Area 30km Buffer
- Scottish Local Authority Boundaries
- Landscape Character Type / Area Boundary (see Table 3.1 for list)
- Cairngorms National Park
- Settlements
- Areas where cumulative impact limits development
- Areas with Highest Underlying Capacity
- Areas with Limited Underlying Capacity
- Areas with No Underlying Capacity



Landscape Character Types and Areas	
1. Agricultural Heartland	
(i)	Knockhill and Aberchirder
(ii)	Agricultural Heartland
(iii)	Wooded Estates Around Old Deer
(iv)	Upland Ridges South of the Deveron
(v)	Northern Rolling Lowlands
(vi)	Ythan Strath Farmland
(vii)	Insch Basin
(viii)	Formartine Lowlands
(ix)	Central Wooded Estates
(x)	Howe of Alford
(xi)	Cromar Farmlands
(xii)	Howe of Cromar
(xiii)	Kincardine Plateau
(xiv)	Garvock and Glenbervie
(xv)	Howe of the Mearns
7. Coastal Farmland	
(i)	Eastern Coastal Agricultural Plain
(ii)	Western Coastal Farmland
(iii)	North East Coastal Farmland
(iv)	Sandstone Ridges and Valleys South of Troup
(v)	Coastal Farmland East of Macduff
9. Coastal Strip	
(i)	Kincardine Cliffs
(ii)	Formartine Links and Dunes
(iii)	Kincardine Links
11. Farmed Moorland Edge	
(i)	Lumsden Valley
(ii)	The Cromar Uplands
(iii)	Daugh of Cairnborrow
22. Moorland Plateaux	
(i)	Grampian Outliers
(ii)	The Mounth
(iii)	The North-eastern Hill Ranges
24. River Valleys	
(i)	Deveron and Upper Ythan Valleys
25. Straths and Valleys	
(i)	Deveron and Bogie Straths
(ii)	Deeside
(iii)	Donside
(iv)	Upper Deeside Estates
(v)	Muir of Dinnet
26. The Coast	
(i)	Cliffs of the North and South East Coasts
(ii)	Dunes and Beaches from Fraserburgh to Peterhead

Figure 6.4

Wind Turbine Development Opportunities and Constraints



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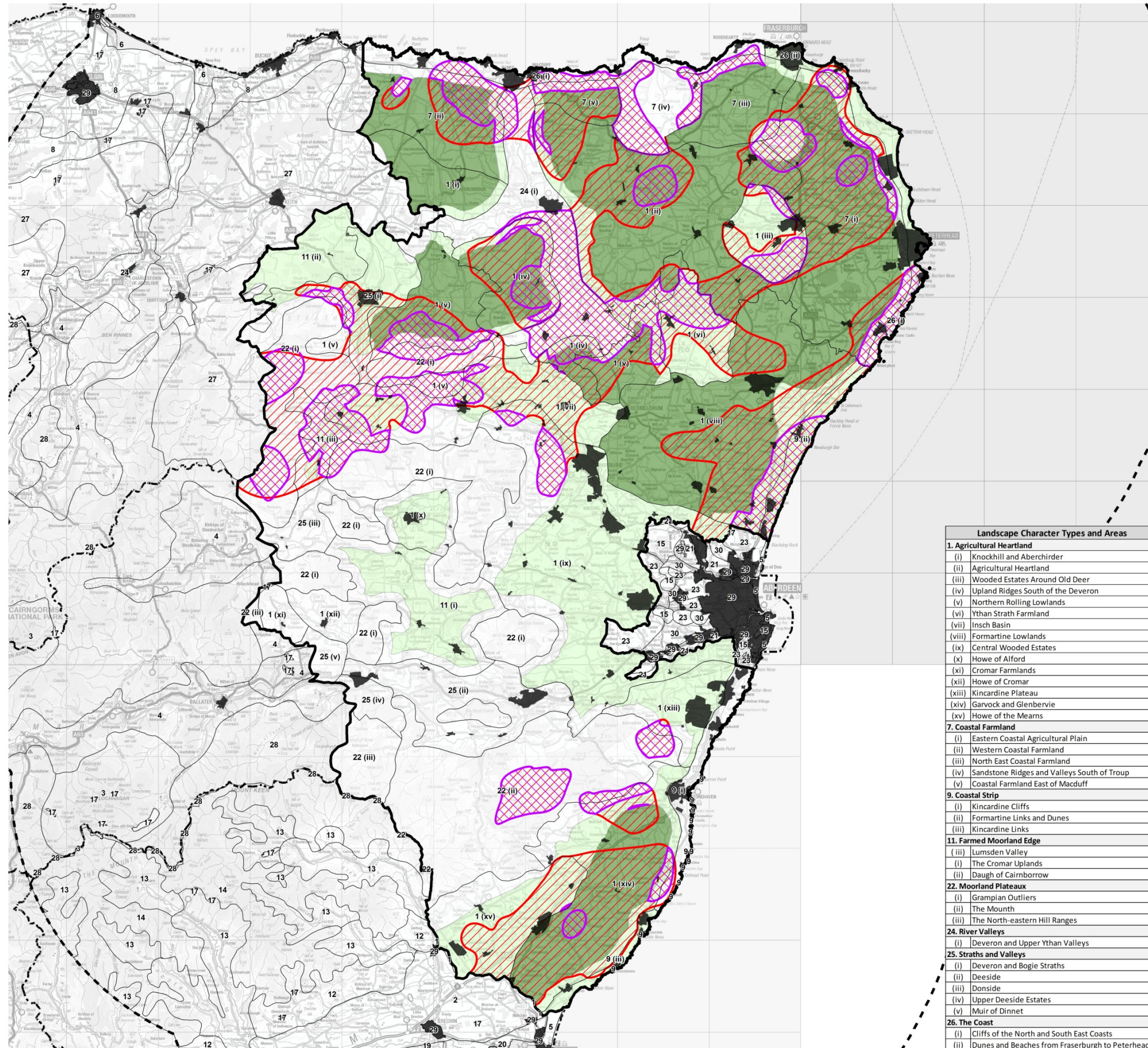
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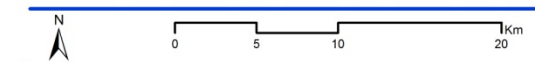
- Study Area
- Study Area 30km Buffer
- Scottish Local Authority Boundaries
- Landscape Character Type / Area Boundary (see Table 3.1 for list)
- Settlements
- Areas that have exceeded their underlying capacity
- Areas where cumulative impact limits development
- Areas with Highest Underlying Capacity
- Areas with Limited Underlying Capacity
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Figure 6.5

Areas That Have Exceeded Their Underlying Capacity



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Figure 6.6(a): Scenario Testing - Example Area 1 - The three different scenarios for Areas between and Adjacent to; Cumulative Impact Areas

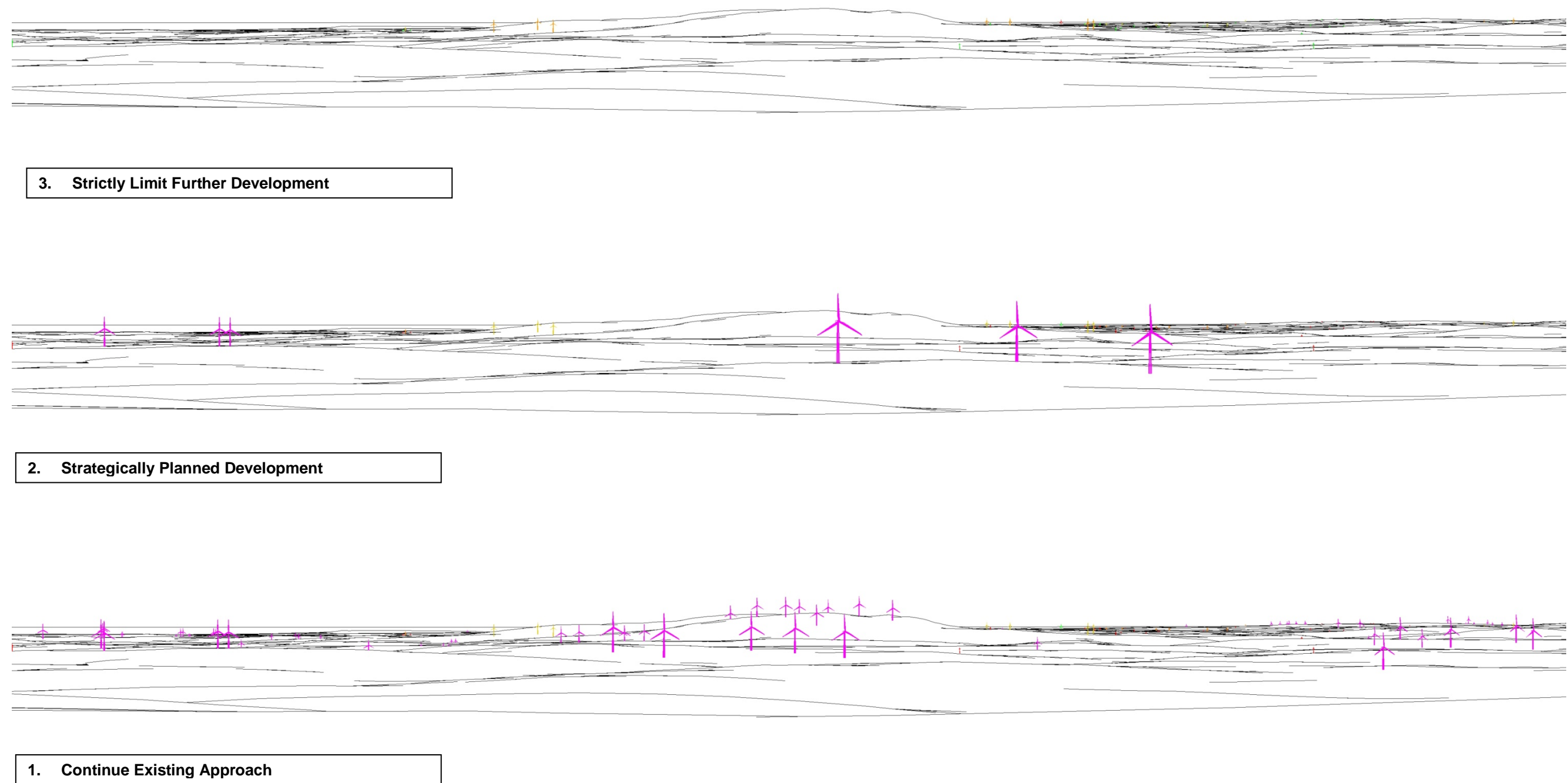
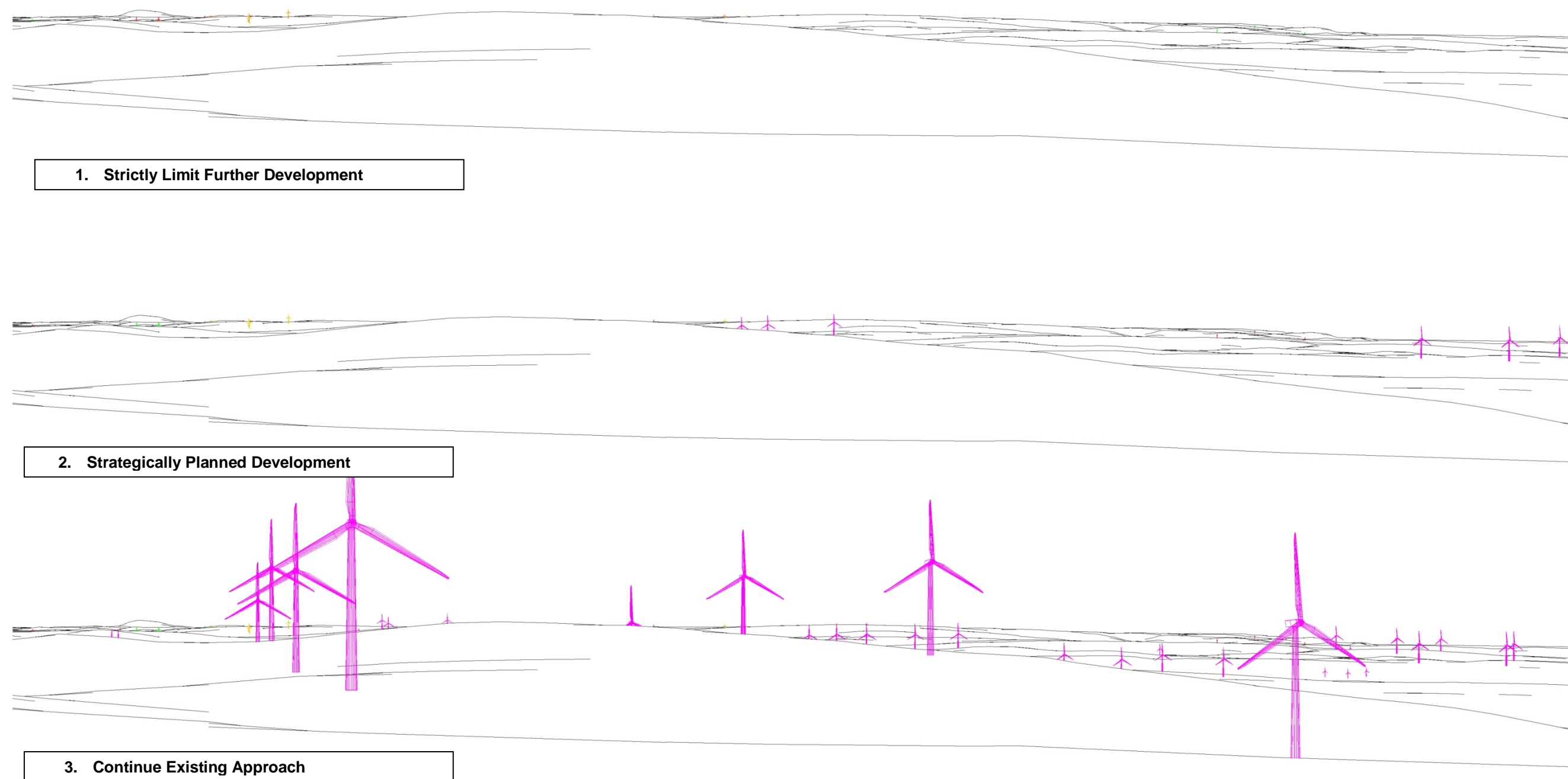


Figure 6.6(b): Scenario Testing - Example Area 2 - The three different scenarios for Areas between and Adjacent to; Cumulative Impact Areas



6.5.6 Development within Other Landscape Areas and Urban Areas

Whilst it is recognised that some parts of urban areas may be able to accommodate wind turbines, and indeed do, they have not been included in this landscape character based capacity assessment. Factors specific to townscape and urban planning are likely to guide location. Consequently urban areas have been left out of the constraints and opportunities map in 6.4 and the guidance in Table 6.1.

6.6 Guidance for Small Turbines

This cumulative assessment and capacity study has detailed the current distribution of all sizes of wind turbines of 15m or greater blade tip height. The strategic guidance above therefore applies to turbines 15m and greater in height when determining capacity for further development. This is because the smallest turbines below 15m have a similar scale to built structures and trees found commonly throughout the landscape and do not have the same eye-catching prominence and extensive visibility of larger turbines. They do not therefore have the same issues of wide scale cumulative effects across extensive landscape areas.

The issues relating to design and siting of small turbines concern mainly their localised effects on the area in which they are sited rather than wider cumulative effects on landscape character. Small wind turbines should be judged on their own merits, assessed against the criteria that apply to most other domestic or farm scale built structures. Landscape and visual considerations may include the following:

- Effects on designations including landscape quality designations, SAMs, listed buildings, conservation areas;
- Location in relation to scenic viewpoints;
- Relationship to skylines and seascapes;
- Relationship to other structures and buildings;
- Location in relation to approaches to and setting of settlements;
- Proximity to residential properties;
- Localised cumulative effects including potential for visual confusion or cluttering areas with significant numbers of small turbines and/or close proximity to other similar larger structures including taller wind turbines and electricity pylons.

Larger wind turbines are more often than not seen against the sky. The approach to colouring has been to adopt a neutral light grey colour relating to the sky colour most likely to be encountered as a backdrop. Small wind turbines are often fully or partially backclothed against landforms and/or trees, giving a closer relationship to the ground than the larger structures. SNH is currently carrying out research into this, with a view to updating its guidance. The results of this research will be available on the SNH website early in 2014.

GLOSSARY

Acceptability The likely acceptability of a proposed level of development determined by considering it against the underlying capacity of the landscape and other policy criteria and objectives.

Cumulative Impacts Additional changes caused by a proposed development in conjunction with other similar developments, or as the combined effect of a set of developments, taken together.

Cumulative Wind Turbine Development Typology A graduated landscape typology that defines terms of reference for increasing levels of development with turbines; describing their effect on landscape character and the experience of those living in or travelling through the landscape.

Designated Landscape Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.

Key Characteristics Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place.

Landscape An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.

Landscape Accommodation A degree of change that does not fundamentally alter key landscape characteristics and visual resources.

Landscape Capacity The degree to which a particular landscape character type or area is able to accommodate change without significant effects on its key characteristics, or overall change of landscape character type. Capacity is likely to vary according to the character of the landscape and nature of change being proposed.

Landscape Change Large amounts of change that may fundamentally alter key landscape characteristics and visual resources.

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 Areas (LCAs) These are single unique areas which are the discrete geographical areas of a particular landscape type.

Landscape Character Types (LCTs) These are distinct types of landscape that are relatively homogenous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.

Landscape Protection Maintaining existing landscape character.

Landscape Quality (Condition) A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.

Landscape Value The relative value that is attached to different landscape by society. A landscape may be valued by different stakeholders for a whole variety of reasons.

Perception Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources and experiences).

Residual Landscape Capacity The remaining landscape capacity of an area for a specific type of development, determined by considering the extent to which current levels of this development already occupies the underlying landscape capacity. This can vary according to the amount of underlying capacity and extent of consented development.

Sensitivity A term applied to specific receptors (eg. landscape or visual), combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that source.

Susceptibility The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences.

Underlying Landscape Capacity The inherent capacity of a landscape to accommodate a type of change (eg. wind energy developments) without significant effects on its key characteristics; specifically not accounting for levels of the same type of change that have already taken place in that landscape.

Visual Effects Effects on specific views and on the general visual amenity experienced by people

Visual Receptors Individuals and/or defined groups of people who have the potential to be affected by a proposal

Visibility Analysis An assessment of the potential visibility of a development or area of land from an identified viewpoint or viewpoints. It is often accompanied by an analysis of the number of people of different types who are likely to see it and the scope to modify visual impacts of the specified development by appropriate mitigation.

Wild Land An area which has physical attributes which evoke a range of perceptual responses (such as a sense of solitude, risk and of fulfilment from physical challenge), which people experience as a 'sense of wildness', namely:

- i. A high degree of perceived naturalness in the setting and in the natural processes affecting the land, as well as little evidence of contemporary human uses of the land;
- ii. The lack of any modern artefacts or structures;
- iii. Landform which is rugged or otherwise physically challenging; and
- iv. Remoteness and/or inaccessibility.