



UNDERSTANDING AND PURPOSE OF THESE FIGURES

These map-based figures provide information on the baseline conditions within the 30 km Study Area that has been used for this Landscape and Visual Impact Assessment. They must be viewed in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the LVIA that is described in Technical Appendix 4.2.

A Zone of Theoretical Visibility (ZTV) is a map-based diagram showing where the Proposed Development and other wind farms in the Cumulative Baseline (see Figure 4.4) would theoretically be visible from within the Study Area. They are created using computer-generated contour data at 50 m intervals and are useful in providing an initial indication of visibility within the Study Area that allows for more detailed assessment in the field. They do not illustrate actual visibility because they do not take account of above-ground features such as vegetation or buildings, or contour variations between 50 m intervals. A number of ZTV scenarios are assessed in this LVIA and categories of theoretical visibility are indicated using different colours, for example, areas with theoretical visibility of all the proposed turbines would be indicated by one colour, and areas with visibility of lesser numbers of turbines would be indicated by contrasting colours. The coverage of these areas is expressed as a percentage of the overall Study Area and also, in some instances, as a percentage of the Areas of Outstanding Natural Beauty which are located within the Study Area.

Blade tip visibility illustrates any parts of the Study Area where at least one blade tip would theoretically be visible without taking account of screening provided by contour variations or land cover elements such as trees and hedgerows. It shows the highest potential levels of theoretical visibility but not necessarily the most realistic because blade tips may be counted even where they protrude only a small amount above a skyline and this type of visibility will change continuously as the turbines rotate. However, this approach is in accordance with the SNH recommendation to err on the side of over-representation of potential effects. Hub height ZTV diagrams represent a more realistic illustration because they show theoretical visibility of all the upper parts of the turbine blades as a minimum. Reverse ZTV diagrams are used as a clear means of illustrating parts of the Study Area where no turbines would be visible; 15 km and 30 km reverse blade tip ZTVs can be found in Figure 4.8.

Different turbine dimensions were considered during the iterative design stage of the project including turbines with overall 150 m and 180 m blade tip heights. A comparative ZTV (Figure 4.5) has been prepared to illustrate the overall difference in visibility between these two turbine options. The Proposed Development would also be closely located to a number of other existing and consented wind farms. Therefore a cumulative ZTV has been prepared to illustrate the theoretical increase in visibility that the Proposed Development would create when considered as part of this cluster of wind farms as well as the incremental effects it would have when considered alongside all cumulative wind farms and other proposed wind farms located within the same Study Area. In total three cumulative ZTV scenarios are illustrated in Figure 4.9.

CARBUCK WIND FARM

Figures 4.5 - 4.9

Zone of Theoretical Visibility Diagrams

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LANDSCAPE AND VISUAL IMPACT ASSESSMENT

DRAWN / APPROVED:	DATE:	SCALE & PRINT SIZE:	REVISION:
SMc / FS	July 2022	no scale; A3	A

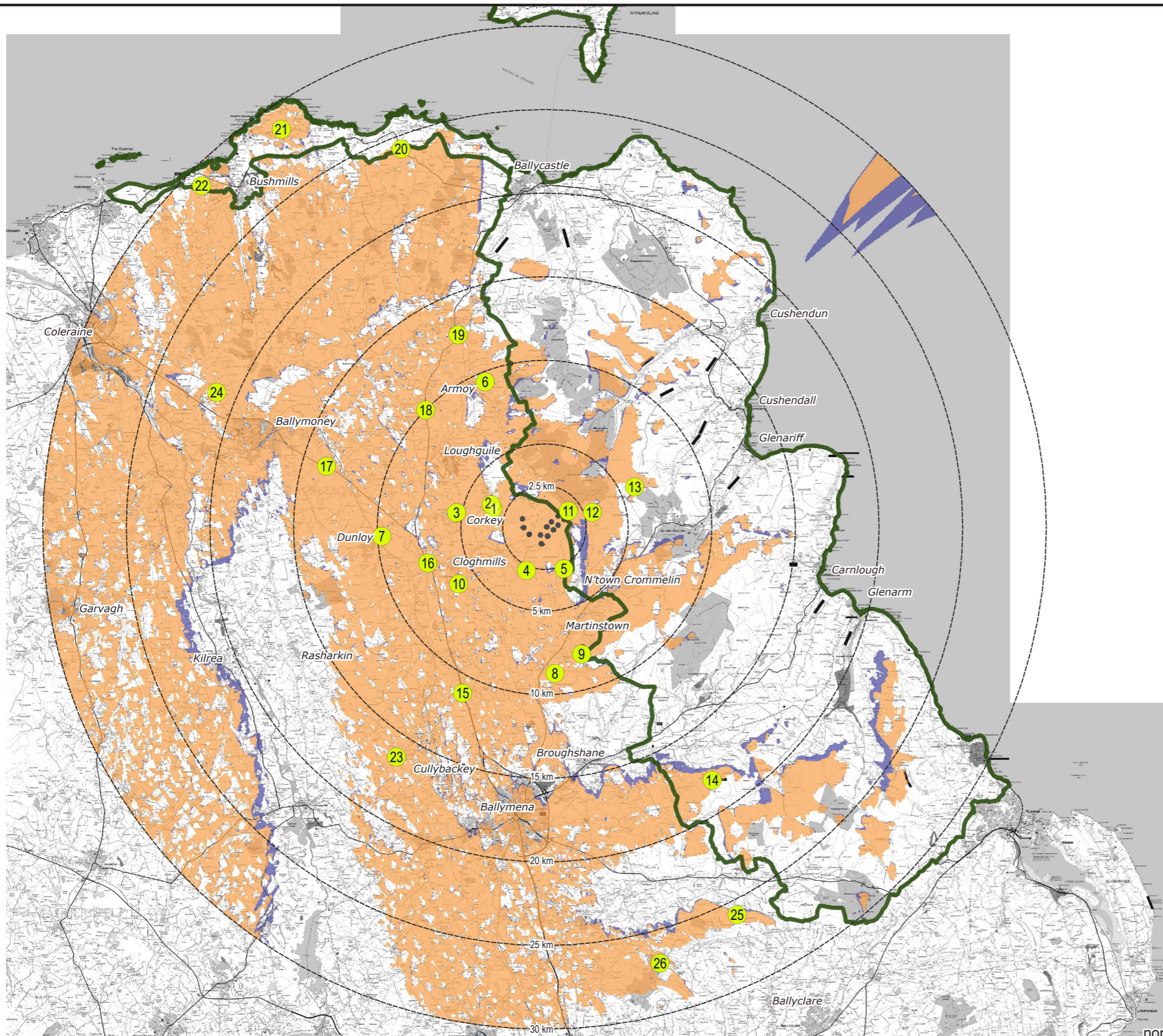
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CARBUCK WIND FARM

Figure 4.5

**Comparative Zone of Theoretical Visibility, 180 m vs. 150 m blade tip heights
30 km radius**



KEY

- Carnuck proposed turbines
- LVIA Viewpoint Locations (detailed in Figure 4.3)
- Zone of Theoretical Visibility of:
 - Turbines with 150 m blade tip height: 38.00% of Study Area
 - Additional visibility of turbines with 180 m blade tip height: 2.77% of Study Area
- Total area with theoretical visibility of at least 1 blade tip at 180 m height: 40.77 %
- Areas with no visibility are unshaded: 59.23 %
- Areas of Outstanding Natural Beauty

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**LANDSCAPE AND VISUAL
IMPACT ASSESSMENT**

DRAWN / APPROVED: SMc / FS	DATE: July 2022	SCALE & PRINT SIZE: 1:250,000 @ A3	REVISION: A
TURBINE LAYOUT NO: pNIRgrx047		0 5 10km	

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NOTES:

Turbine dimensions illustrated for Carnuck: 180 m max. tip height above ground level; 138 m rotor diameter; 111 m hub height compared with 150 m max. tip height above ground level; 117 m rotor diameter; 91.5m hub height

This Figure must be viewed in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the preparation of visualisations contained in Technical Appendix 4.2.

