The Effect of Focal Length on Perception of Scale and Depth in Landscape Photographs

Implications for visualisation standards for wind energy developments

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1 EXECUTIVE SUMMARY

1.1 Background

1.1.1 In January 2010, The Highland Council published detailed and prescriptive standards for the production of visualisations for the visual impact assessment (VIA) of proposed wind energy developments. The purpose of this study was to independently field test and verify The Highland Council's visualisation standards. It was also anticipated that the results obtained would contribute to the future revisions of the standards as necessary.

1.1.2 In the course of this study, interviews were conducted with over 500 members of the public during the preliminary pilot investigation and the subsequent main survey (n=346) between June and November 2011. The participants were recruited at 6 viewpoints located in the Central and Highland regions of Scotland.

1.1.3 The participants were shown single frame A3 photographs of the surrounding landscape at 7 different focal lengths (50mm, 60mm, 70mm, 80mm, 90mm, 100mm and 110mm) and asked to specify which of the images, in their opinion, provided the most realistic representation of the scale and distance to a specific focal point (or area) located centrally in the landscape in all photographs.

1.2 Main findings

1.2.1 The focal length considered by the public as that providing the most realistic representation of landscape scale varied markedly between participants and to a lesser extent between different viewpoints. However, the vast majority of participants in the main survey (n=334; 96.5% of the sample) were of the opinion that a 50mm single frame image for visualisation made the specified focal point (or area) appear too small and too far away relative to its appearance in the actual landscape.

1.2.2 The focal length most frequently specified by participants as that providing the most realistic representation of landscape scale and distance was the 70mm photograph (n=82; 23.7%) although an almost identical number of participants chose the 80mm photograph (n=81; 23.4%). These findings were broadly consistent across all the landscape views considered during the study with one exception where the public more frequently selected the 90mm image.

1.2.3 The distribution of focal length preferences was slightly skewed towards the longer focal lengths considered in the study. Hence, the mean focal length calculated from the participants' responses was 79.3mm (±1.58mm) for all responses obtained. This ranged between 75.3mm (±4.96mm) and 89.5mm (±3.88mm) for individual landscape views. The median of all participant responses was 80mm, but this ranged between 70mm and 90mm depending on the view under consideration.

1.2.4 The participants' choice of focal length did not demonstrate a clear and systematic relationship with the distance to the focal point under consideration in the landscape but this warrants further investigation. It was noted, however, that the way in which the images are viewed has a significant effect on perceptions of landscape scale.

1.3 Conclusions

1.3.1 The results suggest that images produced at a focal length of between 70mm and 80mm generally provide the most realistic representations of landscape scale and depth at least for the type of views considered during this study.

1.3.2 The use of a single frame image produced at a 75mm focal length is therefore considered to be broadly appropriate for wind farm visualisation and that most likely to be acceptable to the largest proportion of the public. The prescription of a single focal length standard also has the advantage of simplicity and clarity for applicants.

1.3.3 The use of alternative images produced at focal lengths shorter or longer than 75mm might be appropriate in very specific circumstances depending on the landscape context under consideration.

1.4 Recommendations

1.4.1 On the basis of the results obtained in this study, the following recommendations are made in relation to standards for the visualisation of wind energy developments.

- Single frame images produced at a 75mm focal length should be used for wind farm visualisation in most circumstances. The use of an additional image produced at a 50mm focal length is unnecessary.

- The specification of a 75mm focal length for visualisations should be accompanied by a caveat that alternative images at shorter or longer focal lengths might be required for some views at the discretion of the planning authority.

- The provision of visualisations for use by professionals and members of the general public should always be accompanied by detailed and precise instruction not only on the intended purpose of the visuals but also how the images should be correctly viewed.

The full 33 page study report is available from The Highland Council at a cost of £60 incl. VAT. Payment can be made by credit/debit card by telephoning 01349 886605 OR in person at any of The Highland Council Service Points OR by credit transfer/on-line banking as follows:

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