

# 16 Summary of Cumulative Effects

## Contents

16.1	Introduction	16-3
16.2	Cumulative Effects	16-3
16.3	Conclusions	16-9

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# 16 Summary of Cumulative Effects

## 16.1 Introduction

- 16.1.1 Schedule 4(5) of *The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017* states the need for cumulative impacts to be considered at a project level. Cumulative impacts are those new impacts, or enhancements of existing impacts, that occur only because of the interaction of the construction and operation of the Proposed Development with other developments, in particular wind energy developments, or from the interaction of different aspects of the Proposed Development.
- 16.1.2 Consideration has been given to the potential for cumulative effects to arise from the interaction of the Proposed Development with other wind energy developments within up to 35 km of the site that were either operational, consented and/or under construction, or were in planning either with an application that was not yet determined or subject to an appeal, as at 31 July 2018. Given their proximity to the Proposed Development site, consideration has also been given to the potential for cumulative effects with two projects that are at the scoping stage, namely the proposed Douglas West Extension and a revised scheme for the Cumberhead Wind Farm. Table 3.1 in Chapter 3 lists the wind energy developments within 5 km of the Proposed Development site which are also shown on Figure 1.3. These are the principal projects which were considered to have the potential to give rise to cumulative effects.
- 16.1.3 The following sections provide a summary of the potential cumulative effects already described in detail within each of the technical chapters (Chapters 6 to 15).

## 16.2 Cumulative Effects

### ***Landscape and Visual***

- 16.2.1 For the cumulative landscape and visual assessment, wind energy developments that are at scoping or at the pre-planning stage have not been considered due to the uncertainty that these schemes will come forward as a full application and the lack of adequate information about project details. This is in accordance with the approach advocated in GLVIA3<sup>1</sup>. The exceptions to this are the proposed Douglas West Wind Farm Extension, which is also proposed by the same group of companies to which the Applicant belongs and is located adjacent to the north-east of the site, and the proposed Cumberhead Wind Farm Revised Scheme which is located adjacent to the north-west of the site.
- 16.2.2 The purpose of the cumulative impact assessment section of Chapter 6 has been to consider the additional effects that might arise as a result of the Proposed Development in combination with other operational, consented and in planning (awaiting determination) schemes (assuming they all became operational). The effects of developing the Proposed Development in combination with other operational wind farms was covered in the main body of the assessment in Chapter 6, in line with GLVIA3 (refer to Chapter 6 for full details). The baseline in the cumulative impact assessment in Chapter 6 was therefore extended to consider other schemes that are not yet present in the landscape but are at various stages in the planning process. Accordingly, three separate scenarios

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<sup>1</sup> *The Guidelines for Landscape and Visual Impact Assessment, 3rd Edition* (GLVIA3). Landscape Institute and the Institute for Environmental Management and Assessment, 2013

were considered which reflect the different degrees of certainty that these schemes will be constructed:

- Scenario 1 - assumes that other consented (but as yet unbuilt) wind farms are operational;
- Scenario 2 - extends this further to assume that all schemes in planning are also operational; and
- Scenario 3 – also includes a consideration of the proposed Douglas West Wind Farm Extension and the revised Cumberhead Wind Farm proposal which are at scoping stage.

- 16.2.3 In this first cumulative scenario the character of the landscape context within which the Proposed Development is located would be markedly different. With reference to the typologies referred to in the SLLCSWE, these schemes collectively create a ‘wind turbine landscape’ which would extend over the two character types within which the Proposed Development is located and others in the locality of the site. In this context, the introduction of the Proposed Development would not alter the defining characteristics of the character types in the local area, but would instead reinforce the existing characteristics of the baseline landscape.
- 16.2.4 It is acknowledged that wherever more than one wind farm is present in the landscape there will be a greater overall or combined effect on landscape character than if just one wind farm was visible in the landscape. Likewise, it is acknowledged that the more wind turbines that are constructed in any given landscape, the greater will be the magnitude of overall (or combined) change to the landscape character that prevailed prior to the introduction of the first turbines. However, it is also noted that in any given landscape where turbines are already present the additional effect on landscape character of introducing further turbines may not be as significant as the initial introduction of turbines. Furthermore, in general, the greater the number of turbines in the baseline landscape the less significant the addition of further turbines may be in landscape character terms as the landscape will be more heavily characterised by turbines in the baseline situation.
- 16.2.5 Taking this into account it is considered that in the first cumulative scenario, the effect of introducing the Proposed Development on the landscape character of a local area in which the Douglas West Wind Farm, Dalquhandy Wind Farm, Poniel turbines, and Cumberhead Wind Farm were already present, alongside the other existing operational wind farms, would be less significant than previously assessed in the main LVIA. The combined effect on the local landscape would be significant but this level of significance would occur in any event in the absence of the Proposed Development.
- 16.2.6 Similar observations can be made about most of the surrounding LCTs, however in some cases the addition of the additional consented schemes to the baseline would serve to reduce the level of effect to such a degree that it would become non-significant. This would be the case for the section of LCT 8 between 3 and 4 km from the site; the area of LCT 5 up to 7 km to the north of the site; and areas of LCT 7 between 2.5 and 6 km to the south of the site. In each of the LCTs considered, where the overall combined effect would be greater and significant, this level of significance would generally occur in any event in the absence of the Proposed Development.
- 16.2.7 Within the lower lying land of the Douglas Valley SLA, the Proposed Development would be visible alongside the existing Hagshaw Hill Extension and Hazelside Farm turbines and the consented Douglas West Wind Farm and Poniel turbines. However, wind energy development beyond the lower sections of the valley would not become the single most dominant characteristic of the landscape. The topography, vegetation and watercourse would prevail as the defining characteristics of this area. The introduction of the Proposed Development would be significant, as would the combined effect, but there would already be a significant effect on the character of this

area as a result of the already consented and constructed developments. The introduction of the Proposed Development would not increase the level of cumulative effect of wind farm development such that the combined effect crosses the threshold of the whole SLA becoming part of the wind farm landscape.

- 16.2.8 In terms of cumulative visual effects in cumulative scenario 1, it is noted that the Proposed Development turbines would, from the vast majority of locations, be visible in combination with and appear as in the middle of the wider wind farm landscape which would include the consented Douglas West Wind Farm, Dalquhandy Wind Farm and Cumberhead Wind Farm, in addition to the existing operational wind farms of Hagshaw Hill Extension, Galawhistle Wind Farm, Hazelside Farm and Nutberry Wind Farm. Together these schemes would form a concentration of turbines extending from the rolling moorland down into the foothills bordering the farmland to the east. Furthermore, from most locations the proposed turbines would be visible either in combination with or in succession with the consented Poniel turbines and, also to the north of the Proposed Development, either in combination with or in succession with the scattered existing and consented medium to large scale individual turbines in the farmland along the M74 corridor (including Auchren Farm, Broken Cross Small, JJ Farm, M74 Eco-Park, Nether Fauldhouse, Letham Farm, Low Whiteside Farm and Yonderton Farm).
- 16.2.9 In general, where visible, the Proposed Development would reinforce the presence of turbines in views rather than introduce turbines into any views which are currently unaffected by turbines.
- 16.2.10 Measured against this baseline in cumulative scenario 1, whilst the overall combined impact might be greater, the additional effects arising as a result of introducing the Proposed Development would typically be less significant than reported earlier in the main assessment of Chapter 6. Indeed, the significant effects identified in the main assessment for the areas around Coalburn and Braehead; the eastern part of Douglas; the farmsteads and dwellings scattered along the eastern side of Bellfield Road; and properties in and around Lesmahagow, Brocketsbrae, Hawksland, Douglas Water and Rigside; would reduce to a non-significant level.
- 16.2.11 With regard to viewpoints in the wider landscape, the identified significant effect on visual receptors at viewpoints 4 (B7078 south of Lesmahagow), 5 (A70 Rigside) and 13 (Auchensaugh Hill) would also reduce to a non-significant level once the revised baseline including the consented schemes is considered.
- 16.2.12 It is recognised that there would be a significant cumulative effect in relation to a small number of properties as a result of the Douglas West Wind Farm and the Proposed Development being constructed in conjunction, however the overall effect would not be overbearing such as to render the properties an unattractive place to live.
- 16.2.13 It is recognised that there would be some sequential cumulative effects along the M74, A70, B7078 and NCN 74. However, in the context of the already consented and operational wind farms in this landscape, the additional effect of introducing the Proposed Development would not be significant. The overall effect on short stretches of these routes is likely to be significant but this effect would occur in any case in the absence of the proposed turbines.
- 16.2.14 It is noted that whilst the effects are considered to be long term, they are not ultimately permanent and upon decommissioning the Proposed Development the effects are almost entirely reversible. Therefore, there would be no permanent or irreversible effects on landscape character or visual amenity and these residual effects would not be significant.
- 16.2.15 Given the relatively high number of operational and consented schemes considered in cumulative scenario 1, the change to the baseline brought about by the other schemes in planning in scenario 2

would be minimal. Therefore, it is not considered that the cumulative effects would be discernibly greater in cumulative scenario 2 than in scenario 1 and no additional significant cumulative effects are predicted.

- 16.2.16 It is noted that localised significant effects on landscape character and visual amenity are inevitable as a result of commercial wind energy development anywhere in the UK. Whilst the LVIA identified some significant landscape and visual effects it is considered that the landscape has the capacity to accommodate the effects identified, particularly when the consented but as yet unbuilt wind farms are taken into account in the baseline.
- 16.2.17 Scenario 3 considers the proposed Douglas West Wind Farm Extension and revised Cumberhead Wind Farm proposals alongside the other consented and proposed schemes considered in scenarios 1 and 2. Both the Douglas West Wind Farm Extension and the revised Cumberhead Wind Farm, would be located within the heart of the cluster of developments that are either already operational or consented in the vicinity of the site. The effect of this would be to further reinforce the scale and nature of the existing wind farm landscape in this part of South Lanarkshire that already exists to a degree and would be greatly expanded following the introduction of the consented schemes considered previously in scenario 1.
- 16.2.18 The recent consents for other commercial scale wind farms, such as, Douglas West Wind Farm, Dalquhandy Wind Farm, Cumberhead Wind Farm and the Poniel turbines, are particularly relevant as once built they will serve to reinforce the wind farm landscape across the locality of the site. In the context of these consented turbines the Proposed Development will sit in the middle of an area already surrounded by large scale wind turbines and in this regard, would not appear incongruous with the pattern and distribution of existing wind turbines in this area.

### ***Ecology***

- 16.2.19 It is not considered likely that any significant cumulative effects will arise as a result of the Proposed Development due to the negligible/minor scale and nature of the predicted effects for the Proposed Development, the application of appropriate mitigation measures, and small geographical range of the species assessed.

### ***Ornithology***

- 16.2.20 A detailed and quantitative assessment was undertaken in regard to collision risk for Valued Ornithological Receptors (VORs) at the site, with cumulative assessment having been undertaken on populations of curlew. The assessment concludes a minor adverse effect, considered not significant within the context of the EIA regulations.

### ***Noise***

- 16.2.21 Initially, a broad-brush approach to the recommendations of the IOA Good Practice Guide was undertaken for the cumulative assessment in which no allowance is made for directivity, and every turbine was treated as if it were directly upwind of the receptor at a single point in time. This approach exaggerates the cumulative noise effects, because there are no receptor locations that can ever simultaneously fall downwind of every cumulative wind energy development in the locality. Nevertheless, the proposed noise limits for the Proposed Development were shown to be met under these circumstances at all of the receptor locations except Monksfoot and its immediate neighbours.
- 16.2.22 The properties at Monksfoot, The Shieling and Inches Cottage lie quite close to one another and similar cumulative noise immission levels can be expected at all three locations. Inspection of the map shows that the wind farms likely to have the greatest effect on the noise levels there are the

Proposed Development, Hagshaw Hill Extension, Galawhistle and Douglas West to the north, and Andershaw and Middle Muir to the south-east. There is no wind direction in which all these turbines will be substantially upwind of the receptor location at a single point in time, and this factor alone means that the cumulative noise immission levels will be 2 dB lower than the theoretical worst-case scenario explained above.

16.2.23 Moreover, no screening of individual turbines by landform has been taken into account, whereas any turbine not visible from the location in question will contribute noise levels at least 2 dB lower than the unscreened case assumed in the model. It is therefore concluded that the appropriate noise limits will be met by the cumulative case, and the assumed noise immission 'budget' in the area will not be exceeded by the Proposed Development.

16.2.24 The cumulative effects on noise are therefore considered to be not significant.

### ***Historic Environment***

16.2.25 Local cumulative wind farm developments are predominantly clustered around the Proposed Development, with only the area to the south and south-east being free of adjacent operational, approved, planned turbines or developments in scoping.

16.2.26 The addition of the Proposed Development to the local wind farm cluster has the potential to have a cumulative effect upon the setting of heritage assets which share intervisibility with the site. However, it is notable that the location within the existing wind farm cluster means that it is unlikely this will be seen as a new, separate turbine cluster from the identified heritage assets. While the height and elevation of the turbines may make these more prominent from certain vantage points, they will be seen as part of an existing turbine array alongside neighbouring developments rather than a collection of independent and visually separate wind farms.

16.2.27 Seven key heritage assets have been identified in the wider landscape for which cumulative wireframes have been produced which has shown that the cumulative effects of the Proposed Development can be considered negligible and not significant.

### ***Hydrology, Hydrogeology and Geology***

16.2.28 The assessment concluded that there will be no significant effects on geological resources associated with the Proposed Development. As such, no significant cumulative effects on geological resources associated with the Proposed Development, in combination with other similar local developments currently operational, consented or in planning, are predicted.

16.2.29 In terms of hydrology and hydrogeology, a number of operational and proposed wind energy projects in the vicinity lie partially within the catchments of the Poniel Water and/or Douglas Water.

16.2.30 A proportion of the drainage from these wind farms are also likely to drain into the Poniel Water and Douglas Water, although flows are likely to be distributed to other watercourses as well. All of these wind farms either have or will be required to prepare their own drainage strategies to protect all receiving watercourses from pollution and increased runoff. Therefore, with no or negligible predicted residual effects on the Poniel Water and Douglas Water from the Proposed Development, it is considered that the combined effect on hydrology will be negligible and no additional mitigation measures over and above those committed to in Chapter 11 are considered necessary to address potential cumulative effects on hydrology or hydrogeology.

### ***Traffic and Transport***

- 16.2.31 Potential cumulative effects could arise from the traffic generated by the Proposed Development and other consented developments. However, the traffic estimated to be generated by the Proposed Development is relatively small compared to that estimated to be generated by the consented developments. Furthermore, the traffic generated during the construction of the Proposed Development is expected to last for only around 24 months after which the Proposed Development will be operational and traffic volumes will reduce. The cumulative effects arising from the Proposed Development and the other consented developments in the locality is considered to be negligible.

### ***Socio-Economics, Tourism and Recreation***

- 16.2.32 There are three main ways in which the Proposed Development could contribute to cumulative socio-economic effects. Two of these could result in beneficial cumulative effects and the other could result in an adverse cumulative effect.
- 16.2.33 Adverse cumulative effects on tourism, recreation and socio-economics could occur if the Proposed Development was expected to have a significant cumulative visual impact on important tourism receptors. The cumulative visual impact of the Proposed Development is assessed in Chapter 6, Landscape and Visual. It is however, important to note that even if such effects were to occur, they would not necessarily be significant. This is because landscape is likely to be a somewhat less important driver of tourism in South Lanarkshire than it is for other parts of Scotland.
- 16.2.34 The Proposed Development also has the potential to generate beneficial cumulative impacts if it were to help encourage the development of a significant local renewable energy supply chain. Initial investigations undertaken by the Applicant have identified a number of potential suppliers in the local area so there is some evidence that this effect may already be occurring.
- 16.2.35 The development of a strong local supply chain would help to increase the economic benefits of the Proposed Development and similar projects in the local area, which could help to increase the magnitude of the long-term beneficial economic effects considered in Chapter 13. The Applicant's stated preference for securing supplies locally where possible should help to support this.
- 16.2.36 Additionally, if additional community benefit and shared ownership income was secured from other similar developments in the area this would enable the local community to leverage more funding and investment into the area. Physical wind farm infrastructure such as roads could also become part of the network of access paths around Junction 11 off the M74, attracting more people to the area and supporting the local community's aspirations to develop an Adventure Tourism destination.

### ***Aviation, Radar and Telecommunications***

- 16.2.37 It is considered that as none of the consented wind farm developments in the local area have significant residual effects on aviation, radar or telecommunication interests, following the implementation of the mitigation measures set out in Chapter 14, that there will be no significant cumulative effects on aviation, radar or telecommunication interests.

### ***Shadow Flicker***

- 16.2.38 As there are no inhabited receptors within the study area for Shadow Flicker, it can be concluded that there will be no shadow flicker effects arising from the Proposed Development.

## 16.3 Conclusions

- 16.3.1 All the technical assessments, with the exception of landscape and visual, conclude no significant cumulative effects as a result of the Proposed Development.
- 16.3.2 The landscape and visual cumulative assessment concluded that, in general, where visible, the proposed turbines would reinforce the presence of turbines in views rather than introduce turbines into any views which are currently unaffected by turbines. For the most part, the additional effect of introducing the Proposed Development would not be significant. Where combined effects would be significant, this level of significance would in most cases occur in any event in the absence of the Proposed Development.

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