

16 Summary of Cumulative Effects

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16.1 Introduction

- 16.1.1 Regulation 2(1) of the *Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011 (as amended)* emphasises 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 Revised Development with other developments, in particular wind energy developments, or from the interaction of different aspects of the Revised Development.
- 16.1.2 Consideration has been given to the potential for cumulative effects to arise from the interaction of the Revised Development with other wind energy developments within up to 35 km from 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 01 July 2017. Table 3.1 in Chapter 3 lists the wind energy developments within 5 km of the Revised Development site. These are the 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 GLVIA3¹.
- 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 Revised Development if other consented and in planning (awaiting determination) schemes were also operational. The effects of developing the Revised 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, two separate scenarios were considered which reflect the different degrees of certainty that these schemes will be constructed:
- Scenario 1 - assumed that other consented (but as yet unbuilt) wind farms are operational; and
 - Scenario 2 - extends this further to assume that all schemes in planning are also operational.
- 16.2.3 In this first cumulative scenario the character of the landscape within which the Revised Development is located would be markedly different, as these schemes collectively create a 'wind turbine landscape' which would extend over the two character types within which the Revised Development is located. In this context, the introduction of the Revised Development would not alter the defining

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

characteristics of LCST 5B or LCT 7 but would instead reinforce the existing characteristics of the baseline landscape.

- 16.2.4 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. Taking this into account it is considered that in the first cumulative scenario, the effect of introducing the Revised Development on the landscape character of LCST 5B in which the Dalquhandy Wind Farm is already present and the adjacent area of LCT 7 would be less significant than previously assessed in the main LVIA. The combined effect would be significant but this level of significance would occur in any event in the absence of the Revised Development. Therefore, in the first cumulative scenario, within LCST 5B and the small area of LCT 7 in which the site is located the additional effect of introducing the Revised Development would not be significant.
- 16.2.5 Similar observations can be made about most of the surrounding LCTs. In each of the main LCTs considered the combined effect would be significant but this level of significance would occur in any event in the absence of the Revised Development.
- 16.2.6 Given the relatively high number of operational and consented schemes considered in cumulative scenario 1, the change to the baseline brought about by the two other schemes in planning 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 on landscape character are predicted.
- 16.2.7 In terms of cumulative visual effects in cumulative scenario 1 it is noted that the proposed turbines would, from the vast majority of locations, be visible in combination with and appear as an extension to the consented Dalquhandy and Cumberhead Wind Farms; the exception being from within the Douglas Valley where the Dalquhandy and Cumberhead turbines will generally not be visible. This is in addition to the existing operational wind farms of Hagshaw Hill, Galawhistle, Hazelside Farm and Nutberry, which together with Dalquhandy 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 Revised 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).
- 16.2.8 Measured against this baseline in cumulative scenario 1 the additional effects arising as a result of introducing the Revised Development would typically be less significant than reported earlier in the main assessment (Chapter 6). It is recognised that there would be a significant cumulative effect however in relation to a small cluster of properties at West Toun House, Westoun Steadings, Westerhouse and Craigend as a result of the Poniel and the Revised Development being constructed in conjunction. In combination, the two schemes would result in a major effect on these properties but the greater impact by far resulting from Poniel; the overall effect would not be so overbearing as to render the properties an unattractive place to live.
- 16.2.9 In cumulative scenario 2, the pattern of wind farm development established and reported above in relation to cumulative scenario 1 would be not be greatly altered by the introduction of Glentaggart or Priestgill (if consented and constructed).

- 16.2.10 The two proposed schemes are located at distance from the Revised Development, with limited intervisibility, and as such would not alter the baseline or 'cumulative scenario 1' to such an extent that there would be any greater cumulative effects than already reported previously.
- 16.2.11 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 Revised Development would not be significant.
- 16.2.12 It is noted that whilst the effects are considered to be long term, they are not ultimately permanent and upon decommissioning of the Revised 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.
- 16.2.13 The recent consents for other commercial scale wind farms at Dalquhandy and Poniel are particularly relevant as once built they will introduce turbines onto the farmland at the foot of the rolling moorlands. In the context of these consented turbines (and assuming that they are built) the Revised Development will sit within an area already surrounded by large scale wind turbines and in this regard, would constitute an obvious extension to the pattern and distribution of existing wind turbines. 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.

Ecology

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

Ornithology

- 16.2.15 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 geese, black grouse, hen harrier and the local wader assemblage. The assessment concludes negligible to minor effects across the four receptors, considered not significant within the context of the EIA regulations.

Noise

- 16.2.16 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 Revised Development were shown to be met under these circumstances at all but three of the receptor locations used in the assessment in Chapter 9, with the exceptions being properties at Craigend, Stockhill and the consented housing development at Gunsgreen.
- 16.2.17 At Stockhill, the additive effect of the Revised Development turbines on the noise already occurring in the worst case from currently operational and consented turbines (excluding Cumberhead) is only 0.1dB, which will be completely undetectable. Stockhill Farm is a financially interested party in the Cumberhead Wind Farm and a higher noise limit (minimum 45dB) is applicable to those turbines. Any excess over this higher limit will be the responsibility of the operator of that project. The noise effect is therefore not significant.

- 16.2.18 The predicted exceedance at the permitted housing at Gunsreen using the broad-brush approach in Appendix 9.7 was very slight. The layout of proposed dwellings at Gunsreen is not yet known, but acoustical screening within the housing estate will tend to reduce the levels, which are already influenced by the permitted Dalquhandy Wind Farm. The noise effect is therefore considered to be not significant.
- 16.2.19 The apparent minor cumulative excess at Craigend necessitated further examination, taking into account the directional effects of all wind turbines in order to arrive at a better estimate of the cumulative noise effects. The location at Craigend places the dwelling approximately midway between the thirteen Revised Development turbines and the three at Poniel. This means that the worst case wind direction for the Revised Development puts the three Poniel turbines directly downwind, and their effects on the cumulative noise immission levels are therefore exaggerated. The contribution from each of the three Poniel turbines will be reduced by between 10 and 13dB overall at Craigend, and there will be no actual increase in noise from the introduction of the Revised Development turbines. The magnitude of the noise impact will therefore be slight, and the noise effect is therefore not significant.

Historic Environment

- 16.2.20 The placement of the Revised Development on the eastern edge of existing and consented wind farms would allow the wind farm developments to be viewed as one site, rather than a collection of independent and visually separated developments. As such, the cumulative impact of the Revised Development on the sites of historic interest within the wider landscape has been shown to be negligible.
- 16.2.21 The urban, inward looking setting of historic assets within Douglas, including the Conservation Area, means that many of the turbines will not be visible. This is also true of the other existing and proposed developments, therefore, any cumulative impact is considered to be negligible/minor.

Hydrology, Hydrogeology and Geology

- 16.2.22 This assessment has concluded that there will be no significant effects on geological resources associated with the Revised Development. As such, no significant cumulative effects on geological resources are predicted from the Revised Development in combination with other similar developments currently operational, consented or in planning within the local area.
- 16.2.23 The assessment predicted no residual effects on the Poniel Water or other local watercourses or groundwater bodies from the Revised Development, and it is therefore considered that the combined effect on hydrology and hydrogeology with other local projects will be negligible and no additional mitigation measures over and above those committed to in Chapter 11 are considered necessary.

Traffic and Transport

- 16.2.24 The cumulative transport assessment has included neighbouring wind energy developments, the Poniel Built Development and the M74 Heat and Power Park, off junction 11 of the M74. It is recognised that the other wind energy developments are at differing stages of development and it is therefore unlikely in reality that all projects would be constructed concurrently.
- 16.2.25 However, if all identified wind energy developments were to be constructed at the same time, it is considered that the cumulative impacts of day-to-day construction traffic would not be significant and the existing access arrangement would be more than capable of coping with those traffic volumes for the short duration of the construction period. The delivery of abnormal loads would be coordinated between the projects to minimise any disruption to the wider road network.

- 16.2.26 Much of the Poniel Built Development has already been developed and traffic associated with that is included in the baseline surveys. Given the short construction period of the Revised Development (12 months) and the timescales associated with any new development commencing at the M74 Heat and Power Park, the construction period of the renewable energy projects would likely have ceased by the time anything further at the development became operational.
- 16.2.27 There is therefore unlikely to be crossover between the schemes other than during the operational phase of the Revised Development and other wind farm projects, during which traffic effects have been demonstrated to be negligible.

Socio-Economics, Tourism and Recreation

- 16.2.28 There are three main ways in which the Revised 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.
- 16.2.29 Adverse cumulative effects on tourism, recreation and socio-economics could occur if the Revised Development was expected to have a significant cumulative visual impact on important tourism receptors. The cumulative visual impact of the Revised 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.
- 16.2.30 The Revised 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.
- 16.2.31 The development of a strong local supply chain would help to increase the economic benefits of the Revised 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.

Aviation, Radar and Telecommunications

- 16.2.32 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, the potential for cumulative effects is negligible.

Shadow Flicker

- 16.2.33 Two receptor locations, the permitted housing development at Gunsgreen and 8 Middlemuir Road, are located within the area of overlap between the study area for the Revised Development and the neighbouring Dalquhandy Wind Farm. The predicted shadow flicker hours of the combined realistic scenario for the Revised Development and Dalquhandy Wind Farm assessment was found to be within the recommended limits. There are therefore no significant cumulative shadow flicker effects as a result of the Revised 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 Revised 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 Revised 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 Revised Development.
- 16.3.3 Overall there are no significant changes to the cumulative assessment findings for the Revised Development compared with the Consented Development.