

Technical Appendix 7.4: Cumulative Assessment

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1.0 Introduction

Cumulative effects are assessed following the methodology set out in Technical Appendix 7.1. The following should be noted.

- Taking a precautionary approach, the sensitivity of receptors used for the cumulative assessment is taken to be the same as that identified in the Landscape and Visual Impact Assessment (LVIA).
- Judgements regarding the magnitude of change include consideration of all of the information considered in the LVIA plus consideration of changes to the relationship between wind farms in the cumulative baseline.
- The LVIA considered existing wind farms and those under construction in the baseline, and therefore represents the ‘Existing Scenario’¹.
- The cumulative assessment considers different cumulative scenarios:
 - **Consented scenario:** the addition of the Proposed Development in the context of operational, under construction and consented wind farms, i.e. a likely future scenario;
 - **Application scenario:** the addition of the Proposed Development in the context of operational, under construction, consented, undetermined planning applications and wind farm developments currently at appeal, i.e. a less certain future scenario; and
 - **Scoping scenario:** the addition of the Proposed Development in the context of operational, under construction, consented, undetermined planning applications and appeals, plus wind farm developments currently at scoping stage, i.e. a highly speculative future scenario.
- The cumulative assessment in this Technical Appendix considers additional effects as a result of the Proposed Development. In-combination effects of the Proposed Development are set out in Chapter 7.

2.0 Scope of the Cumulative Assessment

The list of existing wind farms has been set out in Table 7.2 of Chapter 7 which lists existing wind farms in the study area. Whitelaw Brae is under construction at the time of the assessment. The consented, application, and scoping stage wind farms considered in the two cumulative baselines are within approximately 25 km as shown on Figure 7.9. The consented and application developments are listed in Table 1.

Table 1 – Cumulative Wind Farms

Wind Farm	Status (February 2024)	Number of Turbines	Maximum Blade Tip Height	Approximate Distance (to the proposed turbines)
Glenkerie Extension	Consented	6	100 m	2.7 km
Priestgill	Consented	7	200 m	11 km
Lampits Farm	Consented	1	64 m	23 km
NHS The State Hospital	Consented	1	67 m	24 km
Grayside	Application	15	200 m	7 km
Rivox	Application	29	230 m	16 km
Daer	Application	17	180 m	18 km
Bodinglee	Application	37	250 m	18 km
Little Gala	Application	7	149 m	18 km
Scoop Hill Community	Application	60	250 m	23 km
Cloich Forest 2	Application	12	149.9 m	24 km

Regarding sites at scoping stage, NatureScot guidance states “Occasionally it may be appropriate to include proposals in an assessment which are at earlier stages of development (including at scoping), particularly where clusters of development or “hotspots” emerge, or where proposals are adjacent to one another” (NatureScot, 2020). Scoping stage sites are shown on Figure 7.9. For this assessment, the closest site at scoping stage is M74 West, approximately 15 km away beyond the Clyde group to the west. Two additional sites, West Andershaw and Stevenson Hill are over 20 km away from the Proposed Development. Given the highly speculative nature of scoping sites, and intervening existing wind farms, the scenario in which these sites are included has been scoped out.

¹ With under construction schemes included, it is the baseline that will exist in the near future and by the time the Proposed Development is constructed.

2.1 Development Patterns and Scope of Assessment

The pattern of wind farm development in the study area in the existing scenario is one of large groups of wind turbines along the M74 corridor, with Clyde and its extension (the Clyde Group); the Andershaw/Middle Muir group and the Hagshaw group further north. The Clyde group extends north-eastwards over the hill ridges between the Clyde Valley and the Tweed Valley, and Glenkerie forms a small group of turbines along a ridge to the north-east of Clyde, overlooking a section of the Tweed Valley. Whitelaw Brae will be on the opposite side of the Upper Tweed Valley from the Clyde group. There are currently no wind farms in the eastern half of the study area. The Proposed Development would be located between Clyde Extension and Glenkerie, approximately 2.5 km along the ridge from Clyde Extension, south across the Tweed Valley from Whitelaw Brae approximately 3.1 km away, and across the Kingledoors Valley approximately 2.3 km from Glenkerie. The effects of the Proposed Development in relation to these wind farms is considered throughout the LVIA (the existing scenario).

There are four consented wind farms within the study area, Glenkerie Extension will be located immediately to the west of Glenkerie; Priestgill will be located to the west of Clyde; and Lampits Farm and NHS the State Hospital turbines will be located 23 and 24 km to the north-west. These developments will not alter the pattern of development around the study area, although Glenkerie Extension will enlarge the Glenkerie group. The effects of the Proposed Development in relation to this alteration to the baseline is considered briefly below in the consented scenario.

There are several wind farm proposals at application stage as shown on Figure 7.9. The closest is Grayside, which would be located adjacent to the Clyde group to the north, extending that group slightly. Bodinglee and Little Gala will be beyond this part of the Clyde group to the north-west. Daer and Rivox would be located to the south of the Clyde group, between Clyde and Harestanes. Scoop Hill Community Wind Farm would be located south-east of Moffat. The interactions between the Proposed Development and these proposed wind farms would be distant and would not alter greatly from the relationships established by the existing and consented wind farm groups. Detailed consideration of the application scenario has therefore been scoped out, although application stage developments are shown on cumulative wireline figures.

As noted above, the scoping scenario has been scoped out of the assessment.

3.0 Consented Scenario

In the consented scenario, i.e. with existing, under construction and consented sites in the baseline, Glenkerie Extension will not alter the pattern of development except by extending the Glenkerie group westwards slightly. Priestgill will be located to the north-west of the Clyde group and will have little interaction with the Proposed Development given the intervening existing turbines. Lampits Farm and NHS the State Hospital turbines will be located in the distance to the north-west and will not alter the experience of the Proposed Development in the local area.

The effects resulting from the Proposed Development introduced into this scenario baseline, focussing on the relationship with Glenkerie Extension only, as the closest consented site, are considered below.

3.1 Cumulative Effects on Selected Landscape Character Types

Below are assessments of additional cumulative effects on the selected Landscape Character Types (LCTs) (as listed above) should the Proposed Development be introduced to the baseline of the consented scenario.

LCT 95 Southern Uplands – Borders

This LCT would host part of the Proposed Development, including all of the turbines.

The LVIA considered the existing baseline (the existing scenario) and concluded that the introduction of the Proposed Development within this LCT would give rise to a significant (moderate) effect for the ridge that would host the site, but not significant (minor to negligible) effects elsewhere². This relates to the introduction of the Proposed Development on the ridge, in the context of Glenkerie Wind Farm just within the LCT on the next ridge to the north, Whitelaw Brae to the south, and Clyde group turbines to the west.

Consented scenario: Glenkerie Extension will be within the LCT to the north, extending the Glenkerie group. Other consented schemes will not be within the LCT and will be distant from it. As such, the Proposed Development would be introduced into an LCT with wind farms nearby on ridges to the north (an enlarged Glenkerie group), west (Clyde group) and south (Whitelaw Brae). In this context, the likely effect attributable to the Proposed Development on the character of the LCT would be slightly less than predicted in the LVIA, but with no change to the medium magnitude of change for the ridge that hosts the

² The effect on the LCT in the existing scenario is assessed in Technical Appendix 7.2, and summarised here

site. With the sensitivity (taken as the same as in the LVIA) taken as medium, this would not alter the findings of effect from the existing scenario.

LCT 113 Upland Valley with Pastoral Floor

The LCT would host the lower part of the site, including the BESS, substation, and the access track junction with the A701.

The LVIA considered the existing scenario baseline and concluded that introduction of the Proposed Development would give rise to a significant (major) effect for the Upper Tweed unit of the valley LCT south of Hearthstane, and a significant (moderate) effect for the same valley unit between Hearthstane and Stanhope. This relates to the introduction of the Proposed Development on the ridge above the valley and affects a valley section within 6km of the Proposed Development.

Consented scenario: Glenkerie Extension will extend the Glenkerie group and will be visible from around Stanhope to Hearthstane, and from the road to Fruid Dam in the Tweed Valley, and also from the Holm Water Valley and around Broughton. No other consented schemes will be visible from the LCT unit. As such, the Proposed Development would be introduced into a wind farm context that is very similar to the existing scenario, and the findings of effect will not change.

3.2 Cumulative Effects on Selected Visual Receptors

Viewpoints

A review of viewpoints potentially affected by changes in cumulative relationships is set out in Table 2. Reference can be made to cumulative wirelines for each viewpoint, and to the combined Zone of Theoretical Visibility (ZTV) figures (Figures 7.2 and 7.13 onwards).

Table 2 – Review of Cumulative Visibility From Viewpoints

Viewpoint (VP)	LVIA findings (Existing Scenario ³)	Review of potential for significant effects (Consented Scenario)	Cumulative change and effect compared with the Existing Scenario in the LVIA
VP1: A701 Source of the Tweed layby	Significant (moderate)	Glenkerie Extension will increase the number of distant turbines seen at the end of the framed view (with Glenkerie).	The Proposed Development would remain the most prominent development in the view. The magnitude of change would be slightly reduced but would remain medium. Overall, the cumulative effect in this scenario is judged to remain significant (moderate) as identified for the existing scenario.
VP2: A701 Tweedhopefoot	Not significant (minor)	Glenkerie Extension will be seen as two blade tips over the forested horizon at the end of the valley, but will not notably alter the arrangement of wind farms in the view.	No change from existing scenario.
VP3: A701 layby south of Glenbreck	Significant (major)	No consented wind farms visible.	No change.
VP4 A701: near Hawkshaw	Significant (major)	No consented wind farms visible.	No change.
VP5: Tweedsmuir Village Hall	Significant (major)	No consented wind farms visible.	No change.
VP6: A701 Stanhope	Significant (major)	No consented wind farms visible.	No change.
VP7: Hopehead, Kingledoors Burn	Significant (major)	No consented wind farms visible.	No change.
VP8 Tweedsmuir Bridge	Significant (major)	No consented wind farms visible.	No change.
VP9: Fruid Dam	Significant (moderate)	Glenkerie Extension will increase the number of distant turbines seen at the end of the framed view (with Glenkerie).	The Proposed Development would be introduced in front of an enlarged Glenkerie group. This will not alter the situation notably from the existing scenario, such that the effect is judged to remain as identified in the LVIA.
VP10: Talla Dam	Significant (moderate)	Glenkerie Extension will increase the number of blade tips theoretically visible	No change.

³ The LVIA represents the existing scenario. These findings are taken from Technical Appendix 7.3.

Viewpoint (VP)	LVIA findings (Existing Scenario ³)	Review of potential for significant effects (Consented Scenario)	Cumulative change and effect compared with the Existing Scenario in the LVIA
		from this location, but are unlikely to be noticeable given the forested horizon	
VP11: Talla Linn	Significant (major)	No consented wind farms visible.	No change.
VP12: Broad Law	Not significant (minor)	Glenkerie Extension will be additional turbines in the middle distance, seen around Glenkerie..	The Proposed Development would be closer to the viewpoint than the enlarged Glenkerie group. Given the number of existing and consented turbines present in the baseline, the Proposed Development would be additional turbines, showing the succession of turbine sizes, and being closer, but not affecting the overall experience of the view. In this scenario, the cumulative effect in this scenario is judged to remain as identified for the existing scenario.
VP13: Hart Fell	Not significant (minor)	Glenkerie Extension will increase the number of turbines in the Glenkerie group in the distance to the north.	The Proposed Development would be seen partly in front of Glenkerie Extension. The turbines would appear larger than those of the Glenkerie group and would read as being closer. The cumulative effect in this scenario is judged to remain as identified for the existing scenario.
VP14: Chalk Rig Edge	Not significant (negligible)	Glenkerie Extension will increase the number of turbines in the Glenkerie group in the distance to the north.	The Proposed Development would be introduced in front of an enlarged Glenkerie group, and amongst Whitelaw Brae turbines. This will not alter the situation notably from the existing scenario, such that the effect is judged to remain as identified in the LVIA.
VP15: Trahenna Hill	Not significant (minor)	Glenkerie Extension will be additional turbines in the distance, seen between Glenkerie and the Clyde Group.	The Proposed Development would be introduced to a backdrop that has more turbines in it. This will not alter the situation notably from the existing scenario, such that the effect is judged to remain as identified in the LVIA.
VP16: Culter Fell	Significant (moderate)	Glenkerie Extension will be additional turbines in the middle distance, seen in front of Glenkerie, on the visible (northern) slopes of the same ridge.	The Proposed Development would be seen beyond the Coomb Hill ridge, in the context of additional turbines in front of the ridge. With Glenkerie Extension turbines closest to the viewpoint, the proposed turbines will take a reduced role in the view but will still appear to extend turbines southwards away from the viewpoint. The magnitude of change will be reduced, but the effect is judged to remain as identified in the LVIA.
VP20: Pykestone Hill	Not significant (minor)	Glenkerie Extension will be additional turbines in the middle distance, seen around Glenkerie.	The Proposed Development would be introduced to a backdrop that has more turbines in it. This will not alter the situation notably from the existing scenario, such that the effect is judged to remain as identified in the LVIA.

Settlements

Tweedsmuir: Glenkerie Extension will not be visible from Tweedsmuir. There will be no change to the baseline in the consented scenario, such that effects would remain as identified for the existing scenario.

Routes

The sequential experiences along routes through the study area that may be affected by cumulative relationships in the consented scenario are set out in Table 3. Reference can be made to cumulative wirelines for viewpoints, and to the combined ZTVs on Figures 7.10 to 7.12.

Table 3 – Review of Cumulative Visibility from Routes

Route	LVIA findings (Existing Scenario)	Review of potential for significant effects (Consented scenario)	Cumulative change and effect compared with the Existing Scenario in the LVIA
A701 along the Tweed Valley	Significant (major): Glenbreck to Tweedsmuir Significant (moderate): Stanhope to Kingledores	Glenkerie Extension will be visible from a short section of the A701 at the source of the Tweed only.	From Stanhope southbound, Glenkerie Extension will be closer to the route than the Proposed Development. The additional presence of Glenkerie Extension turbines close to this section of the route would reduce the magnitude of change due to the Proposed Development slightly, but there would be no change to the overall effect, which would be as identified in the LVIA.
Minor road from Tweedsmuir to Talla Linn	Significant (major) from the top of the Talla Linn to Talla Linnfoots; and within approximately 1 km of the dam to Tweedsmuir; Significant (moderate) along the eastern half of the Talla Reservoir	Glenkerie Extension will increase the number of blade tips theoretically visible from the Talla Dam but this is unlikely to be noticeable due to intervening vegetation.	As noted for viewpoints VP10 and the Talla Reservoir dam and VP11 at the top of the Talla Linn, there would be no changes in effect in the consented scenario, and the effect of introducing the Proposed Development would remain as identified in the LVIA.
Minor road from Tweedsmuir to the Fruid Reservoir	Significant (moderate) while open views over young woodland remain, reducing to not significant (minor) when roadside trees have grown	Glenkerie Extension will be seen from limited sections of the route.	Glenkerie Extension will be subject to some of the screening that obscures Glenkerie. The Proposed Development would be introduced to a scenario similar to the existing scenario, with Whitelaw Brae, Clyde Group and the enlarged Glenkerie Group. The magnitude of change is judged remain unchanged, and the effect would be as identified in the LVIA.
Core path Chapelgill Hill to Glenwhappen Rig	Significant (moderate) for two ridge sections of approximately 3.5 km long in total, but not significant (minor) overall.	Glenkerie Extension will be nearby to the east of the route.	The Proposed Development would remain the most prominent wind farm in views perpendicular to the ridge section over Glenwhappen Rig but would be seen in the context of a landscape with additional wind farms present nearby when compared with the existing scenario, with the enlarged Glenkerie group visible from sections of the route within the Holms Water Valley. The effect of the Proposed Development would be reduced in this context, with the effect on the Chapelgill Hill ridge section reducing to not significant (minor). The Glenwhappen Rig section (of approximately 1.5 km long) would remain with a significant (moderate) effect as identified in the LVIA. the overall effect on the route as a whole would remain not significant.
Core Path/ROW from Hearthstane to Broad Law	Significant (moderate)	Glenkerie Extension will be visible from much of this route beyond Glenkerie.	The Proposed Development would be seen from this route in the context of a larger group of turbines at Glenkerie. The magnitude of change would be reduced but would remain medium. The cumulative effect in this scenario is judged to remain as identified in the LVIA.
Core Path along the Fruid Reservoir to Spout Craig	Not significant (minor)	Glenkerie Extension will increase the number of turbines seen down the valley from the dam, and from Macrulle Hill and Ballaman Hill (with Glenkerie).	The Proposed Development would be seen in front of an enlarged Glenkerie group but would not be the most prominent development in views from the route, given the proximity of Whitelaw Brae, which will, when constructed, be visible nearby for the full length of the route. In this scenario, the magnitude of change would be reduced slightly but would remain low, and the effect would remain as identified in the LVIA.
Core Path/ROW Kingledores to Drumelzier	Not significant (minor)	No consented wind farms visible.	No change.
ROW Thief's Road, Dollar Law	Not significant (minor)	Glenkerie Extension will be visible from	The Proposed Development would be seen from this route in the context of a larger group of turbines at Glenkerie. The magnitude of change would be reduced slightly but would remain low. The

Route	LVIA findings (Existing Scenario)	Review of potential for significant effects (Consented scenario)	Cumulative change and effect compared with the Existing Scenario in the LVIA
		high sections of this route.	cumulative effect in this scenario is judged to remain as identified in the LVIA.
Wider network path over Culter Fell	Not significant (minor)	Glenkerie Extension will enlarge the Glenkerie group seen from high sections of these routes.	The Proposed Development would be seen from these routes in the context of an enlarged Glenkerie group. The magnitude of change would be reduced slightly but would remain low. The cumulative effect in this scenario is judged to remain as identified in the LVIA.

4.0 Summary of Assessment of Additional Cumulative Effects

As identified in Table 1 and shown on Figure 7.9, there are wind energy proposals that would increase wind farm development in the wider landscape through the enlargement of existing turbine groups and introduction of new turbine groups. Proposals for larger numbers of turbines tend to be further west within the Southern Uplands, and there are no wind farms proposed to the east at present. Most proposals are for larger turbines than those existing.

The existing scenario is considered throughout the LVIA. The existing scenario includes existing wind farms and Whitelaw Brae which is under construction and will therefore be present prior to the Proposed Development.

In the consented scenario, Glenkerie Extension will not alter the pattern of development except extending the Glenkerie group westwards slightly. Cumulative effects have been assessed as:

- effects on landscape character for the hills around the site and for the Tweed Valley would reduce slightly in the consented scenario, but without alterations to the findings of significance; and
- effects on visual amenity around the sites would be unaltered or slightly reduced in the consented scenario, but without alterations to the findings of significance, except for:
 - the Core Path route section over Chapelgill Hill : reduced to not significant (**minor**).

There are no instances in which the effects of the Proposed Development in the context of those wind farms are judged to be increased above the LVIA finding.

The application scenario was not considered further as developments at application stage would not alter the pattern of development beyond the consented scenario.

The scoping scenario was not considered further as developments at scoping stage are distant from the site, beyond existing wind farms, and of a speculative nature.

5.0 References

NatureScot (2020) Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments.