APPENDIX 1 – STRATHY SOUTH AND STRATHY WOOD GRID CONENCTIONS – SOUTHERN SECTION: COMPARATIVE APPRAISAL OF ALIGNMENT OPTIONS

Table 1 below summarises environmental constraints for Alignment Option 1, opportunities and constraints for the variants and an environmental alignment preference.

Table 1: Environmental Constraints

Category	Sub-Topic	Summary of Constraints for Alignment Option 1	Opportunities and Constraints for Variants	Alignment Preference
Natural Heritage	Designations	Alignment Option 1 (OHL), and part of Alignment Option 1 (UGC), run through the Caithness and Sutherland Peatlands Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site, along with the West Halladale Site of Special Scientific Interest (SSSI) which is a component of the SPA and SAC. The qualifying features of the designated sites include a range of upland breeding bird species, marsh saxifrage, otter, freshwater habitats and numerous upland habitats including blanket bog. At the closest point, Alignment Option 1 (UGC) is also located approximately 0.5 km east of Strathy Bogs SSSI, which is designated for blanket bog habitat, and 0.7 km west of Forsinard Flows National Nature Reserve (NNR). Signs of otter, which is a qualifying interest of the Caithness and Sutherland Peatland SAC, have been recorded along the River Strathy. Additionally, breeding territories of several qualifying features of the SPA, including hen harrier, merlin, red-throated diver and golden plover, have been recorded in close proximity to Alignment Option 1 (OHL or UGC). The UGC section of Alignment Option 1 that is outwith forestry, falls within the Caithness and Sutherland Flows Country Candidate WHS. The	As per Alignment Option 1 (OHL), Alignment Variant 2 runs through the Caithness and Sutherland Peatlands SAC, SPA and Ramsar site, and the West Halladale SSSI. The area to the east of the access track where Alignment Variant 2 is located comprises sloping ground and is dominated by purple moor-grass and deergrass on shallow peats, while the area to the west of the track (Alignment Option 1 (OHL)) is likely to include higher quality bog habitats and areas of deeper peat. Additionally, Alignment Variant 2 is further away from good quality otter habitat along the River Strathy, although it is closer to some SPA breeding bird territories, notable hen harrier and golden plover (see below). Alignment Variant 2 crosses a longer stretch (approxiamtely 600 m) of the Candidate WHS on the eastern side of the existing track, compared to Alignment Option 1. Alignment Variant 1 does not overlap with any statutory sites (or Candidate WHS), it is located in closer proximity to the River Strathy than the relevant section of Alignment Option 1 (UGC) that it would replace. Since the River Strathy borders the Caithness and Sutherland Peatland designations and West Halladale SSSI, Alignment Variant 1 (UGC) may have	Overall, Alignment Variant 2 OHL is considered optimal to Alignment Option 1 (OHL) due to the poorer quality habitats compared with Alignment Option 1 (OHL). As such, effects from construction are likely to be less if construction takes place on the sloping ground rather than flat areas. Moving the construction away from the River Strathy (i.e., Alignment Variants 2 and 3) would have the additional benefits of reducing potential disturbance to the riparian corridor and any otters using it, and providing a larger buffer to the watercourse in case of potential pollution events. Alignment Variant 1 does not overlap with any designated sites; nor does the relevant section of Alignment Option 1 (UGC) that it would replace. However, since Alignment Variant 1 could have greater connectivity to designated sites via the River Strathy, Alignment Option 1 (UGC) would be optimal in this regard.

Category	Sub-Topic	Summary of Constraints for Alignment Option 1	Opportunities and Constraints for Variants	Alignment Preference
		OHL section of Alignment Option 1 would cross back into the Candidate WHS as it traverses the eastern side of the River Strathy for a stretch of 2.4 km, but would be outwith the site for the final 700 m stretch. Mitigation measures would be required to avoid and reduce potential effects on the qualifying features of the statutory designated sites, including freshwater and upland habitats, otter and several breeding bird species.	greater connectivity with these designated sites. Alignment Variant 3 does not overlap with any statutory sites (or Candidate WHS). However, as per the corresponding section of Alignment Option 1 (OHL), it involves a watercourse crossing of the River Strathy. Due to this there could be hydrological connectivity between the River Strathy and Caithness and Sutherland Peatland designations and West Halladale SSSI. However, it is further away from the River Strathy than the corresponding section of Alignment Option 1 (OHL). As per Alignment Option 1 (OHL and UGC), mitigation measures would be required to avoid and reduce potential impacts of both alignment variants on the qualifying features of the designated sites.	
	Protected Species	Signs of otter (a qualifying interest of the Caithness and Sutherland Peatland SAC), including couches, have been recorded along the River Strathy. Bat species, common lizard, pine marten signs and possible badger signs have also been recorded in proximity to Alignment Option 1, but these have generally been transient signs such as scats and spraints. Without appropriate mitigation, it is possible that there could be an effect on terrestrial protected species due to accidental mortality or injury, damage or destruction of habitat features, and/or disturbance to breeding animals. Additionally, habitat loss could adversely affect protected species, while pollution could adversely affect otter foraging habitat.	Alignment Variant 2 crosses the River Strathy twice, similar to Alignment Option 1 (OHL), but would be positioned at a greater distance from the river, on the eastern side of the track, on the approach to Optimal 'northern section' Alignment. Alignment Variant 3 also involves a watercourse crossing of the River Strathy. Alignment Variant 1 would be in closer proximity to the River Strathy channel compared to the corresponding section of Alignment Option 1 (UGC). As per Alignment Option 1 (OHL and UGC), mitigation measures would be required to avoid and reduce potential impacts of both alignment variants on protected species.	Alignment Option 1 (UGC) and Alignment Variants 2 and 3 are considered optimal due to the greater separation distance from the River Strathy and and, in the case of Alignment Variant 2, woodland edge.

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		Fish species including Atlantic salmon and brown / sea trout are known to be present within the catchment and the associated watercourses which flow in proximity to Alignment Option 1 (OHL and UGC). Working in proximity to these watercourses, and in particular the requirement to cross these, carries the risk of pollution related events both from oil spills or sedimentation during the construction and operational phase of the grid connection which have the potential to affect fish species present. Therefore, limiting the number of watercourse crossings is advantageous in this respect. Alignment Option 1 crosses the main River Strathy twice.		

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	Habitats	The habitats crossed by Alignment Option 1 (OHL and UGC) include blanket bog, wet dwarf shrub heath, acid grassland, marshy grassland and flushes. Habitats of greatest conservation value include those which have greater reliance on hydrological influences including bog, wet heath and flush habitats. The location of Alignment Option 1 alongside the existing track keeps infrastructure adjacent to an area of previously disturbed ground at the periphery of the SAC. However, the alignment crosses a high proportion of blanket bog and wet heath habitat, as well as marshy grassland. Additionally, the alignment crosses flushes, which have the highest potential to be reliant on groundwater influences, and therefore classified as GWDTEs. Mitigation measures would need to be applied to reduce potential effects on sensitive habitats such as transition mires and quaking bogs. This would include micrositing during the construction process wherever possible.	All alignment variants would cross a similar habitat mosaic to Alignment Option 1, with sensitive habitats present along all alignment options. Overall, however, there is more evidence of habitat modification along Alignment Variant 2. Alignment Variant 3 involves a watercourse crossing of the River Strathy. However, it is located further west to the river after this crossing compared with Alignment Variant 1 or Alignment Variant 2. As per Alignment Option 1, mitigation measures, such as micrositing during construction, would be required to reduce potential effects on sensitive habitats.	Overall, Alignment Variant 2 is considered optimal due to the greater evidence of habitat modification compared with Alignment Option 1 (OHL). Habitat loss would be less with lower hydrological impacts. The habitats would be slightly less sensitive to disturbance at Alignment Variant 2 also.
	Biodiversity	All alignment options pass through habitats of varying Distinctiveness, as determined from the Biodiversity Site Optioneering Toolkit v1.1, with areas of blanket bog habitat designated as Very High Distinctiveness, while areas of heathland, flush / mire habitats are of High Distinctiveness. All alignment options contain comparable Biodiversity Units per Hectare, with the total Biodiversity Units of each alignment option governed by its length, and therefore the total area of habitats present, rather than the potential sensitivity of the individual alignment.	As per Alignment Option 1.	Given the similarity of the Biodiversity Units per Hectare between different alignment options, all alignment options are considered to be broadly comparable with no preferred option.

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	Ornithology	Alignment Option 1 (OHL and UGC) pass through the Caithness and Sutherland Peatland SPA and, as such, a number of qualifying species are breeding in proximity. Of particular note are the locations of hen harrier and merlin nests in proximity to Alignment Option 1 (OHL) to the east of Dallangwell and south of Rèidhean - a - bhainne, as well as the breeding red-throated diver territories at the Loch nan Caorach loch complex approximately 500 m to the southeast of Alignment Option 1 (UGC). The nearby Loch na Main has also been used by black-throated diver, although breeding was not confirmed. Several golden plover breeding territories have also been recorded within 500 m of Alignment Option 1 (OHL and UGC). Other notable breeding territories in the wider area include the red-throated and black-throated diver breeding lochs to the west of Alignment Option 1 (OHL) (Caol-Loch and the nearby Loch nam Bo Uidhre). Given the lochans' proximity (greater than 1 km) to Alignment Option 1, it is considered that disturbance to these lochans during construction can be avoided through implementation of appropriate mitigation. Based on pre-existing survey data, nesting greenshank are also present in proximity to Alignment Option 1.	Ornithological sensitivities are generally similar between alignment options. Alignment Variant 2 would pass through the SPA as per Alignment Option 1 (OHL and UGC), although Alignment Variants 1 and 3 would not. Similar to Alignment Option 1 (OHL), Alignment Variant 2 is in close proximity to the locations of hen harrier and merlin nests near Dallangwell and Rèidhean - a - bhainne. The majority of breeding territories of SPA species recorded in the area are within open ground away from woodland edges. Alignment Variant 2 is within 500 m of a greater number of territories than Alignment Option 1 (OHL).	Alignment Option 1 (OHL) would be the optimal option since it is closer to the woodland edge than Alignment Variant 2 and further away from the majority of breeding hen harrier and golden plover territories, thus reducing the potential for disturbance and displacement. Overall, the habitat to the east of the access track may be more suitable for breeding hen harrier than the habitat to the west, while golden plover are also likely to nest preferentially further away from the woodland edge. However, the differences in terms of construction disturbance are likely to be marginal, and in terms of the risk of mortality due to collision with or electrocution from the OHL, no clear differences are apparent.
	Hydrology Hydrogeology and Geology	With the exception of peat, the superficial and solid geology beneath the optimal route, and beneath all of the alignment options, is not rare. With the exception of peat, which is discussed in further detail below, no alignment option or variant is preferred, and geology is not considered to pose a development constraint.	Alignment Variant 1 would be located closer to the River Strathy channel than Alignment Option 1 and is in an area where the river is shown to meander (e.g. more laterally).	Alignment Variant 1 is considered slightly less optimal to Alignment Option 1 given its closer proximity to the River Strathy. Alignment Variants 2 and 3 are considered comparable to Alignment

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		The superficial and solid geology do not contain large quantities of groundwater and do not form significant or regionally important aquifers. It is considered, therefore, that groundwater does not pose a development constraint, and subject to best practice construction techniques to ensure any shallow groundwater is not impaired, no alignment or variant is preferred. Existing peat probing data within 50 m of Alignment Option 1 records peat depths of between 0 and 3.1 m. A number of watercourse crossings would be required within the River Strathy catchment, including two crossings over the River Strathy itself, and permanent structures would need to be set back from watercourse channels to protect against natural geomorphological processes / lateral river migration. The alignment would cross areas of medium likelihood of flooding floodplain (1 in 200 year probability) associated within the River Strathy, particularly between the two crossing points of the river.	Alignment Variant 2 and Alignment Variant 3 would cross less of the River Strathy floodplain than Alignment Option 1.	Option 1 and there is no clear preference. Overall, with appropriate controls to mitigate effects on soils, geology and water, Alignment Option 1 in combination with any of the proposed variants are considered acceptable.
Cultural Heritage	Designations	Designated sites are distant from the Optimal Route and indirect visual impacts would be limited, where these can be seen at all. As such, any new OHL within the Optimal Route would be viewed only as a minor addition to the pre-existing group of wind turbines and potential impacts are likely to be limited to be insignificant for Alignment Option 1.	As per Alignment Option 1.	All alignment options are considered to be broadly comparable with no optimal option.
	Cultural Heritage Assets	Alignment Option 1 has the potential for direct impact on three cultural heritage assets of Regional Significance: the southernmost group of buildings associated with the depopulated Early Modern township of Braerathy (6810), located on a terrace above the west bank of the River Strathy; the farmstead and hut circle at Reidhean	Alignment Variant 1 would be as per Alignment Option 1. The relatively small variation would encroach closer to the boundary of the Braerathy settlement but would not intersect with any of the remaining features. Both Alignment Option 1 and	Both Alignment Option 1 and Alignment Variant 1 are considered comparable. Alignment Variant 2 is considered to be optimal over Alignment Option 1 or Alignment Variant 3.

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		A'Bhainne (6812), located immediately west of the existing access track and Bowside hut circles and associated field system east of Dallangwell (see **Figure 7**). The standing features of these sites could both be avoided with sensitive placement of towers and mitigation measures, such as asset marking, employed during construction to ensure no accidental damage. There is some potential for damage to contemporary sub-surface archaeological features which cannot be predicted.	Alignment Variant 1 are considered comparable. Alignment Variant 2, by taking a more easterly route, would avoid any direct impact on Reidhean a'Bhainne farmstead and hut circle, or any potential sub-surface archaeological deposits and features associated with this site. There are only features of local interest and low sensitivity along this alignment variant and it is therefore preferable to Alignment Option 1. Alignment Variant 3 would bring development in closer proximity to visible structures of Brarathy Township, which is considered to be a regionally significant heritage asset. However, with careful siting of towers, these structures could be avoided.	
People	Proximity to Dwellings	The property at Braerathy Lodge, in proximity to Alignment Option 1, is unoccupied and likely to be demolished for construction of the Strathy Wood substation. The property at Dallangwell, which is located approxiamtely 335 m to the west of Alignment Option 1, is no longer in SSE Renewables ownership and the future use is unknown at present.	As per Alignment Option 1, albeit Alignmetn Variant 2 is located further from the property at Dallangwell.	All alignment options are considered to be broadly comparable with no optimal option.
Landscape and Visual	Designations	Alignment Option 1 does not pass through any designated landscapes.	As per Alignment Option 1.	All alignment options are comparable with no optimal option.
	Landscape Character	All of the alignment options fall entirely within LCT 134: Sweeping Moorlands and Flows which is considered to be of generally medium sensitivity to steel lattice towers. However, the alignment route is slightly atypical of the LCT, being through a glen and sensitivity is also reduced in the local area by the presence of the Strathy North substation and existing wood pole OHLs. The key sensitivity for the LCT is the openness of	Alignment Variant 2 would be broadly similar to Alignment Option 1 in terms of landscape effect. It would be located on slightly higher ground and further from the forestry edge and therefore would move infrastructure slightly further into the undeveloped moorland landscape. However, it would still be set within the glen and would be predominantly backclothed and would lead to a reduced	All alignment options are comparable with no optimal option from a landscape character perspective.

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		moorland. A new OHL within this LCT would need to maintain the open expansive nature of the landscape. Alignment Option 1 would help to maintain the sense of openness across the wider landscaoe given that it follows the hill track along the edge of the existing and proposed wind farm sites hugging the line of coniferous forestry, is unlikely to compromise the key characteristics of this LCT.	prominence of infrastructure through the centre of the glen. Alignment Variant 3 would take a more direct route when leaving Strathy Wood substation, being further set back from the Scottish Hill Track and would sit on slightly higher ground, but the two variants would be broadly similar.	
	Visual	Alignment Option 1 would result in some temporary visual effects on Scottish Hill Track 344: Strath Halladale (Trantlebeg) to Strathy during construction. However, the underground cable section are very unlikely to result in any long-term compromise to the visual amenity of the hill track. The northern OHL part of Alignment Option 1 would closely follow the the western side of the hill track which would help reduce potential effects on views eastward. However, proximity to the hill track may compromise the visual amenity of this stretch of the track, particularly during construction.	Alignment Variant 2 would lead to infrastructure being present on both sides of Scottish Hill Track 344: Strath Halladale (Trantlebeg) to Strathy. It would be required to cross the track twice and would sit slightly higher in the landscape. However, much of it would be further from the track, and partially backclothed in the view, likely to have less interruption in views down the glen. Alignment Variant 3 would take a more direct route when leaving Strathy Wood substation, being further set back from the Scottish Hill Track, although it would sit on slightly higher ground, but would be broadly similar to Alignment Option 1.	All alignment options are comparable in terms of visual effects with no optimal option.
Land Use	Agriculture	The majority of agricultural land within Alignment Option 1 is identified as being of Class 5.3 with a short bridge of Class 6.3 between the northern and southern blocks of Strathy Forest. As such, this is not a particularly sensitive or fertile category and any impacts on agriculture as a result of the alignment is considered to be low.	As per Alignment Option 1	All alignment options are considered to be broadly comparable with no preferred option.

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	Forestry	Alignment Option 1 has limited interaction with conifer forestry plantation. The area of Strathy Forest includes felled conifer plantation which has been replaced with planted native broadleaved woodland and open land which is part of the consented Strathy Wood Wind Farm Habitat Management Plan. A section of Alignment Option 1 as it approaches Strathy Wood substation passes through an area of native woodland that would require removal to enable a working corridor for laying the underground cable.	Alignment Variant 1 follows alongside the existing track and would not interact with native woodland, unlike Alignment Option 1 and is therefore preferred. Alignment Variant 2 would interact with no additional forestry or native woodland. Alignment Variant 3 traverses the edge of Strathy Forest, although thisis classed as open land. It would not interact with an areas of native woodland.	Alignment Variant 1 is considered preferable in combination with Alignment Option 1 or Alignment Variant 2.
	Recreation	Recreational activities that could be affected by Alignment Option 1 is largely restricted to users of Scottish Hill Track 344 and fishing interests on the River Strathy. Disruption to fishing activities would be limited to the construction phase, and opportunities exist to manage construction activities to limit disturbance. Alignment Option 1 runs parallel on the western extent of Scottish Hill Track 344 and while an OHL may be intrusive and result in some compromise to the recreational amenity, particularly during construction, these are not considered to be constraints to development and measures could be put in place to ensure no severance of the public rights of way.	Alignment Variant 1 is in closer proximity to the Scottish Hill Track and River Strathy and therefore has potential for greater interaction with these recreational receptors. Alignment Variant 2 being on the eastern side of the Scottish Hill Track has the potential for recreational users to feel surrounded by development, with the potential for views to the east being interupted. Alignment Variant 3 would take a more direct route when leaving Strathy Wood substation, being further set back from the Scottish Hill Track, but sitting on slightly higher ground. It would be broadly similar to Alignment Option 1.	All alignment options are considered comparable with appropriate measures in place to ensure no severance of the public rights of way and appropriate controls to mitigate effects on the water environment to protect fishing interests.
Planning	Policy	Based on the approach adopted in consideration of policy constraints, i.e. avoidance or minimisation of constraints and associated environmental impacts, a section of all alignment options pass through or are surrounded by the Caithness and Sutherland Peatlands SAC, SPA, Ramsar site and associated SSSI's. There is potential for impact on qualifying species of these designated sites, including freshwater and upland	As per Alignment Option 1.	All alignment options are considered to be broadly comparable with no preferred option.

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		habitats, otter and several breeding bird species, for all alignment options, should appropriate mitigation measures not be in place. However, it should be acknowledged that this development would be recognised in NPF4 as a National development under ND3 'Strategic Renewable Electricity Generation and Transmission infrastructure'. It therefore forms a vital element to deliver network and grid infrastructure required to deliver the Government's legally binding targets for net zero emissions and renewable energy electricity generation objectives.		
	Proposals	The underground section of Alignment Option 1 would pass through both the consented Strathy South and Strathy Wood wind farm site boundaries but would not interact with wind turbines and associated infrastructure.	As per Alignment Option 1 with no further notable planning applications identified within the vicinity of either Alignment Variant 1 or 2.	All alignment options are considered to be broadly comparable with no preferred option.