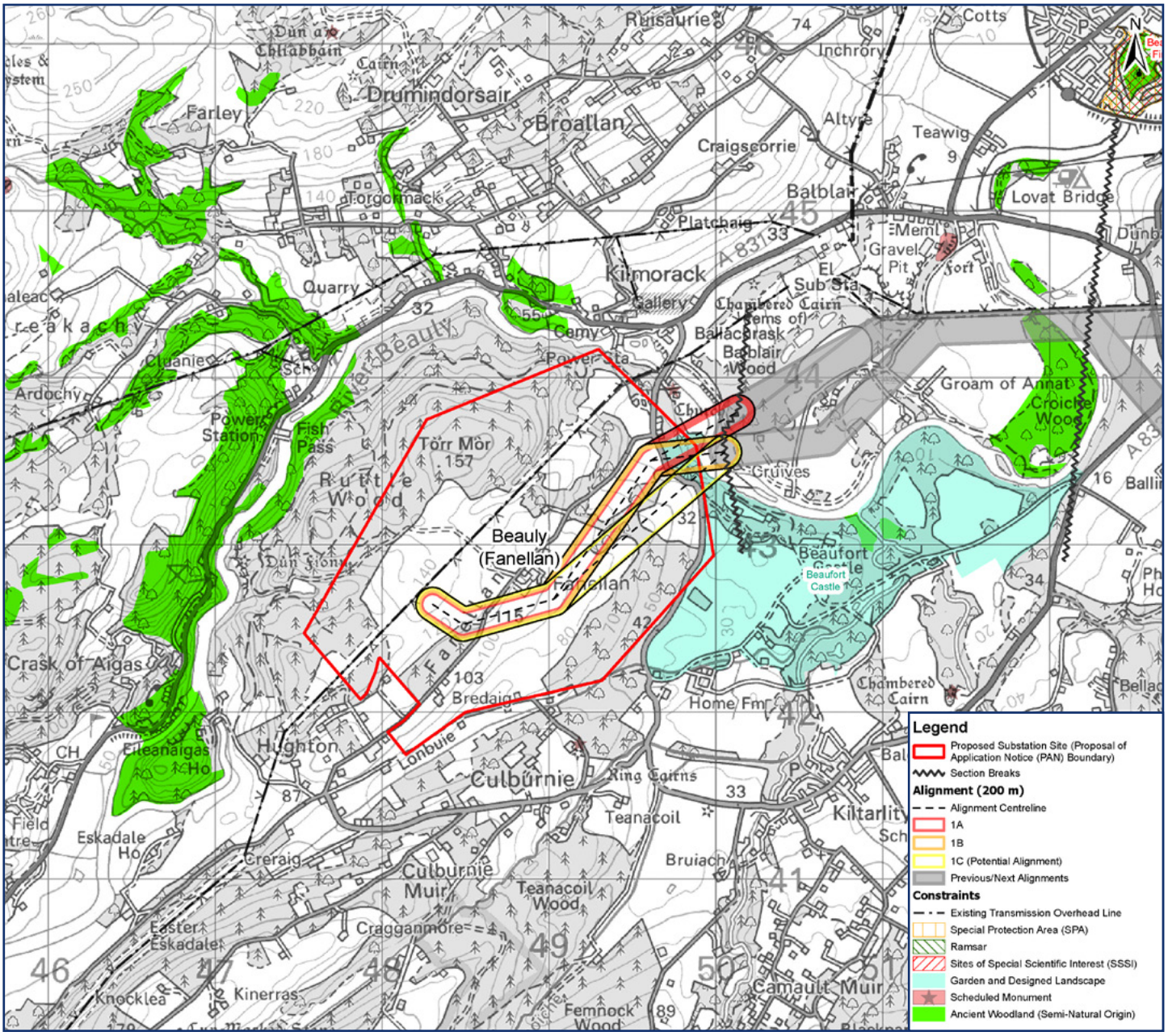
Scottish & Southern Electricity Networks

TRANSMISSION

Section 1 – Fanellan substation to River Beauly at Cruives



Scottish & Southern Electricity Networks

TRANSMISSION

Section 1 – Fanellan substation to River Beauly at Cruives

The key environmental, engineering and cost considerations which differentiate between alignment options 1A, 1B and 1C include:

Environmental

- Alignment 1C impacts less woodland and therefore has less potential habitat for bat species, pine marten and red squirrel. Alignment 1C is also the only option where it may be possible to completely avoid sensitive Annex 1 woodlands (listed in the Habitats Directive).
- Alignment 1C has the shortest crossing of the Beaufort Castle Garden and Designed Landscape, with potential to avoid placing a tower within the designated area and therefore avoid direct physical impacts. Alignment 1C is also furthest from Kiltarlity Old Parish Church scheduled monument (SM5570).
- From a landscape and visual perspective, Alignments 1B and 1C cross the River Beauly in a marginally more discreet location compared with Alignment 1A. From a visual perspective, Alignment 1C avoids an angle tower at the river and is therefore slightly favoured over Alignment 1B.

Engineering

- Alignment 1B requires the longest crossing span over the River Beauly and Alignment 1C has the shortest crossing span, however all crossing distances are constructable.
- Alignment 1C features some steeper slopes, of less than a single span length, on the east side of the River Beauly. Tower placement adjacent to the river crossing would require careful consideration to avoid the steeper areas.
- Alignment 1C requires one fewer angle tower position than the other options.
- Alignments 1A and 1C pass within 170m of one residential property, whereas Alignment 1B is located within 170m of two residential properties.

Cost

- All alignment options are estimated to be within 120% of the lowest capital cost option, so all options are considered acceptable from a capital cost perspective.
- Alignments 1B and 1C have similar estimated operational costs. Alignment 1A has the highest estimated operational cost and is greater than 140% of the lowest cost option, due to a requirement for an additional low voltage crossing which will require additional inspections.

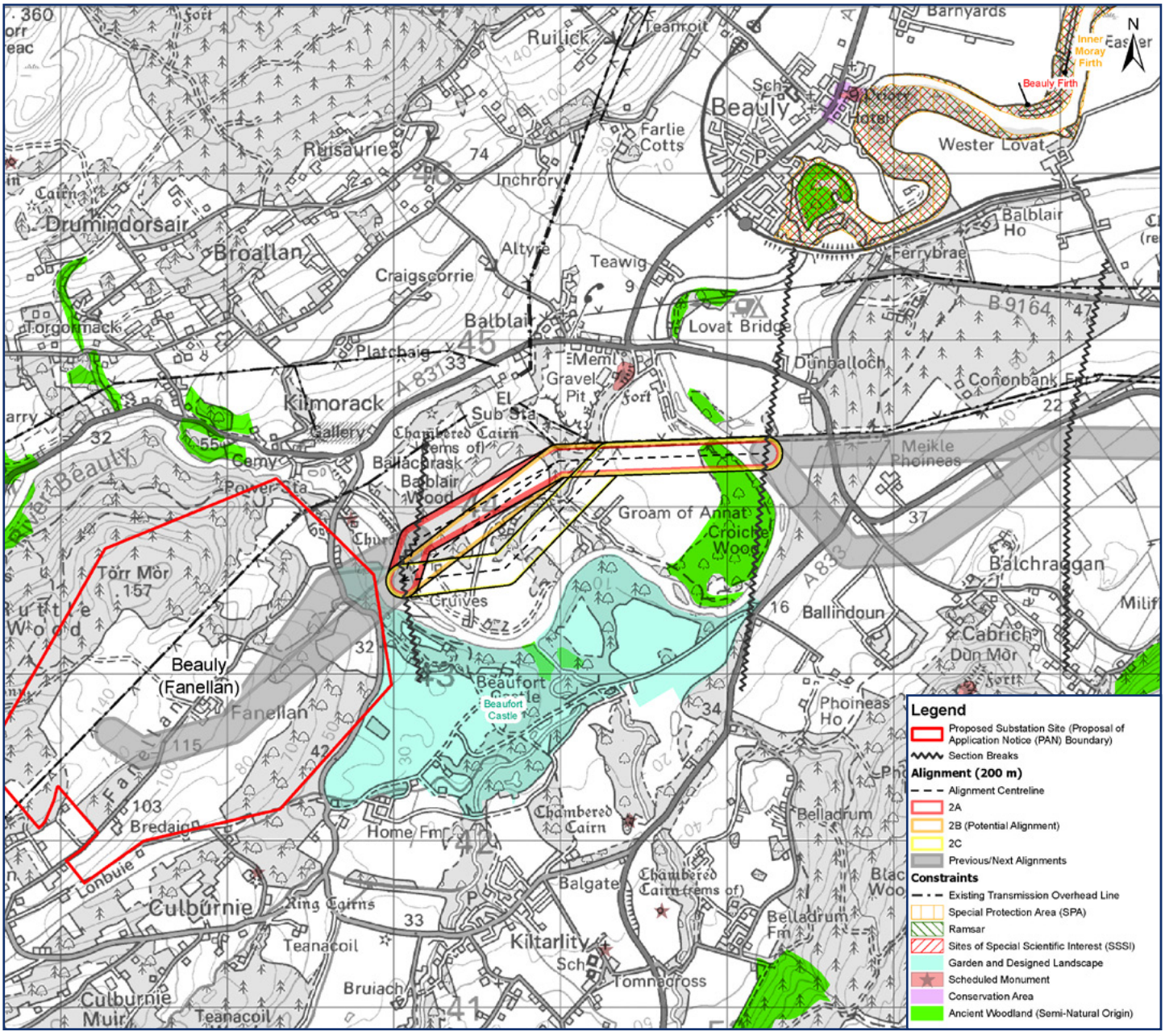
Conclusion

Alignment 1C has been selected as the Potential Alignment in Section 1, as it is least constrained from both an environmental and engineering perspective and is one of the lower cost options.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 2 – River Beauly at Cruives to River Beauly at Croiche Wood



Scottish & Southern Electricity Networks

TRANSMISSION

Section 2 – River Beauly at Cruives to River Beauly at Croiche Wood

The key environmental, engineering and cost considerations which differentiate between alignment options 2A, 2B and 2C include:

Environmental

- Alignment 2C impacts on less woodland than the other options and therefore also has less potential habitat for protected species such as bats, red squirrel and pine marten.
- Alignment 2C is least constrained from a landscape perspective, as woodland is a characteristic of the Landscape Character Type of the area and this option would require the least removal of woodland.
- From a visual perspective, Alignment 2A is further from sensitive receptors around Cruives, and more visually contained within woodland. However, it would require more visually intrusive angle towers adjacent to the river, if progressed in combination with Alignment 1B or 1C in the preceding section. Alignment 2C is located closer to visual receptors within the meanders of the river bends compared with the other options. Alignment 2B is therefore considered to be least constrained overall from a visual perspective.
- Alignment 2B has the greatest potential to avoid effects to the setting of Kiltarlity Old Parish Church scheduled monument (SM5570), due to avoiding the requirement for an angle tower adjacent to the river crossing, if progressed in combination with Alignment 1C in the preceding section.
- Alignment 2A is least constrained from a cultural heritage assets perspective, due to the increased distance from Listed Buildings to the north and south.
- All options pass through the edge of Croiche Wood which is designated as ancient woodland of semi-natural origin, at a location adjacent to an existing overhead line to minimise tree loss in this area.

Engineering

- Alignments 2A and 2B cross a single restricted local access road, while Alignment 2C crosses two additional restricted local access roads.
- Alignment 2B requires one fewer angle tower position that the other options, and also allows for a straighter crossing of the River Beauly from Alignment 1C in the preceding section. Alignment 2C requires two larger angle changes which are less favourable from an engineering perspective.
- There are two residential properties within 170m of Alignment 2B, whereas there is one residential property within 170m of Alignments 2A and 2C. However, Alignments 2A and 2B maintain a larger minimum distance from residential properties than Alignment 2C.

Cost

- All alignment options are estimated to be within 120% of the lowest capital cost option, so all options are considered acceptable from a capital cost perspective.
- Operational costs are also estimated to be similar for all options, with similar lengths and number of crossings for all options.

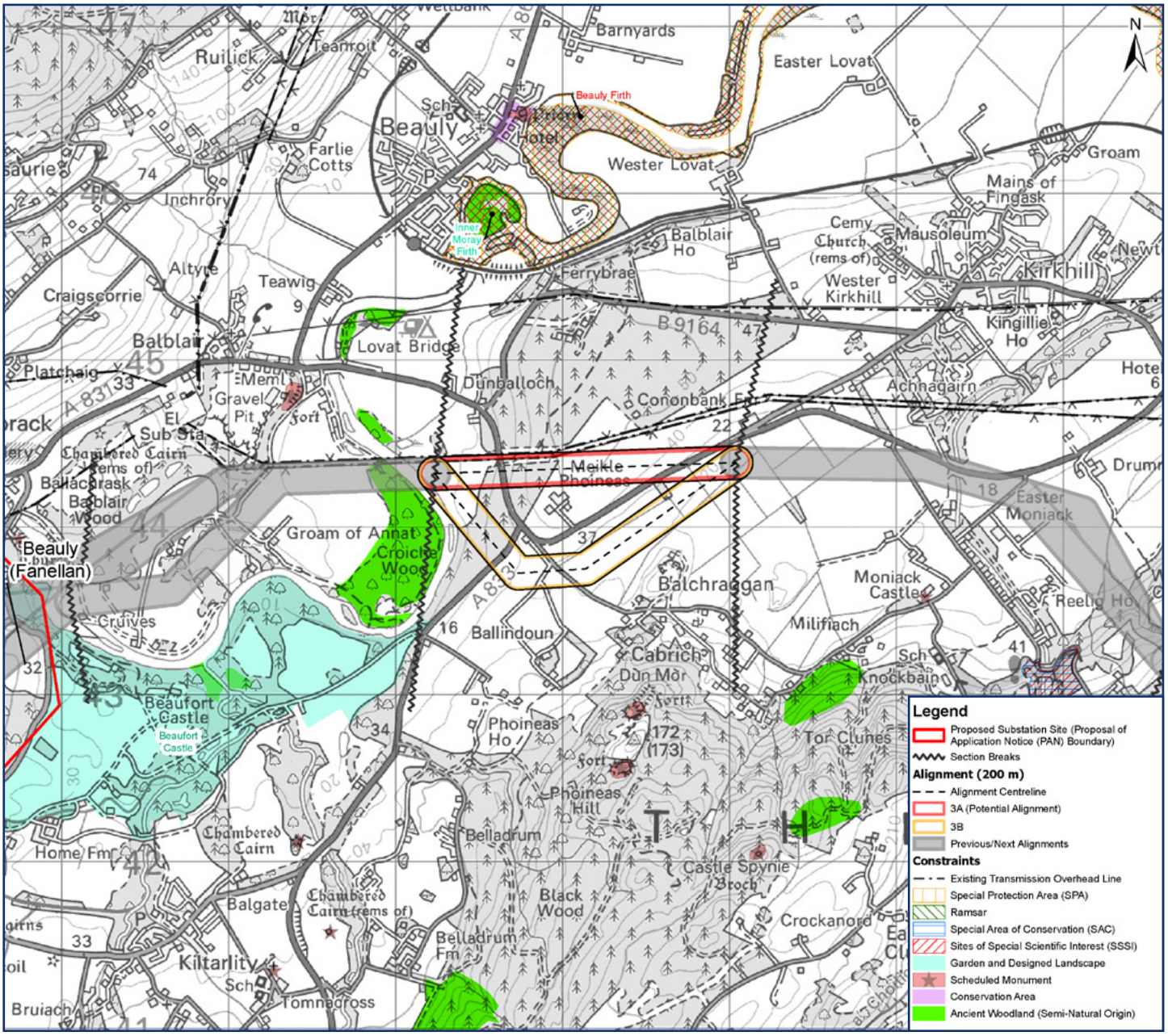
Conclusion

Alignment 2B has been selected as the Potential Alignment in Section 2, as it is one of the least constrained options from an environmental perspective and has the least engineering constraints. All options were considered equally acceptable from a cost perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 3 – River Beauly at Croiche Wood to Cononbank



Scottish & Southern Electricity Networks

TRANSMISSION

Section 3 – River Beauly at Croiche Wood to Cononbank

The key environmental, engineering and cost considerations which differentiate between alignment options 3A and 3B include:

Environmental

- Alignment 3B contains no unavoidable Annex 1 habitats (listed in the Habitats Directive), whereas Alignment 3A would potentially impact on an area of sensitive alluvial forest Annex 1 habitat.
- Alignment 3A contains less woodland overall, and therefore has less potential habitat for protected species such as bats, red squirrel and pine marten. Alignment 3A also parallels the existing overhead lines in this area, reducing the potential for collision risk impacts for birds.
- Alignment 3A is least constrained from a landscape and visual perspective, as containing all overhead line infrastructure in one area is preferable for minimising impacts to landscape character. Alignment 3A also avoids 'boxing in' of properties between overhead lines at Meikle Phoineas, and maintains a greater distance from properties at Balchraggan, Cabrich and Ballindoun.
- Alignment 3A is least constrained for cultural heritage designations and assets, as it is further from Beaufort Castle Garden and Designed Landscape and additional Listed Buildings to the south.
- Alignment 3A avoids a permitted planning application east of Croiche Wood and the River Beauly for new visitor accommodation, whereas Alignment 3B passes through the middle of the permitted application boundary.

Engineering

- Alignment 3A crosses the A862 twice, whilst Alignment 3B crosses the A833 once. Alignment 3A also crosses a single restricted local access road, and Alignment 3B crosses one minor road and one restricted local access road.
- Alignment 3A requires no angle tower positions, whereas Alignment 3B requires two large angle changes to the south of the A862.
- Alignment 3A passes within 170m of two residential properties. There are no existing residential properties located within 170m of Alignment 3B however, as noted above, there is a permitted planning application for new visitor accommodation located within 100m of Alignment 3B.

Cost

- Alignment 3A is the lowest estimated capital cost option. Alignment 3B is over 120% of the lowest cost option.
- Alignment 3A is also the lowest estimated operational cost option. Alignment 3B requires one additional low voltage crossing and is over 140% of the lowest cost option.

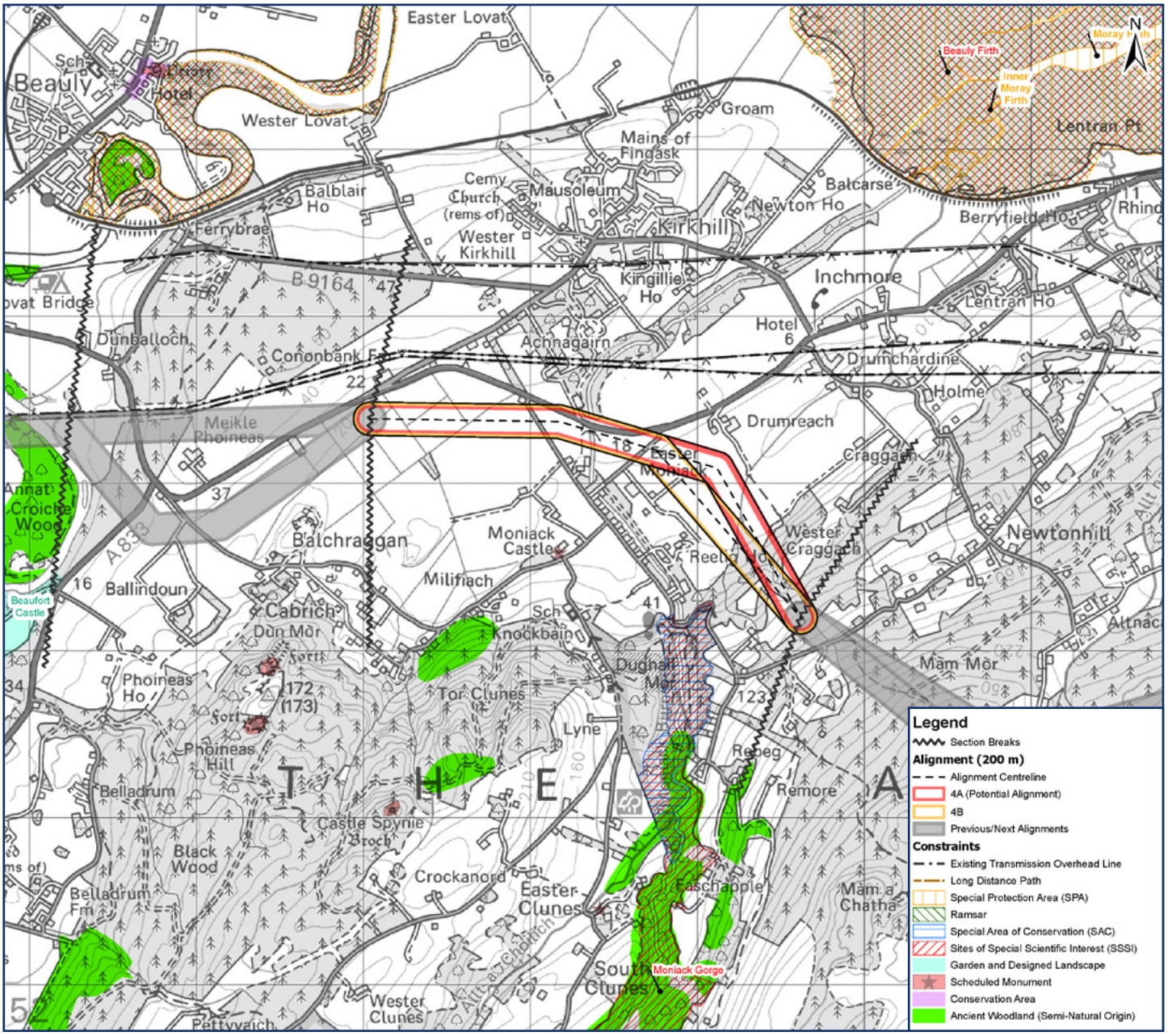
Conclusion

Alignment 3A has been selected as the Potential Alignment in Section 3, as it is least constrained from both an environmental and engineering perspective and is the lowest cost option.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 4 – Cononbank to Reelig



Scottish & Southern Electricity Networks

TRANSMISSION

Section 4 – Cononbank to Reelig

The key environmental, engineering and cost considerations which differentiate between alignment options 4A and 4B include:

Environmental

- Alignment 4A is slightly less constrained for cultural heritage designations, as the two Sites and Monument Record entries (a cottage and an enclosure) in close proximity to both options are likely to be more easily avoided through design.
- Alignment 4A is also slightly less constrained for cultural heritage assets, as it is further from Listed Buildings to the west than Alignment 4B.
- Alignment 4A is slightly less constrained from a visual perspective, as it is further from a greater number of properties at Easter Moniack and Reelig, although closer to Wester Craggach.
- In all other environmental topics, both alignments are likely to be very similar in their impacts.

Engineering

- No major crossings are required for either alignment option and both options cross two minor roads.
- Both alignment options cross areas identified within the SEPA flood maps as being within the 1 in 10 year flood zone, surrounding the Conan Water and Moniack Burn. These flood risk areas are unavoidable and towers will be required within the flood zone.
- Both alignment options pass through a wetland area (Conan Bank wetland), and tower placement will require careful consideration in this area.
- There are six residential properties located within 170m of Alignment 4A and five properties within 170m of Alignment 4B.
- Alignment 3A passes within 170m of two residential properties. There are no existing residential properties located within 170m of Alignment 3B however, as noted above, there is a permitted planning application for new visitor accommodation located within 100m of Alignment 3B.

Cost

- Both alignment options are estimated to be within 120% of the lowest capital cost option, so both options are considered acceptable from a capital cost perspective.
- Alignment 4A has the lowest estimated operational cost. Alignment 4B requires one additional low voltage crossing and is over 140% of the lowest cost option.

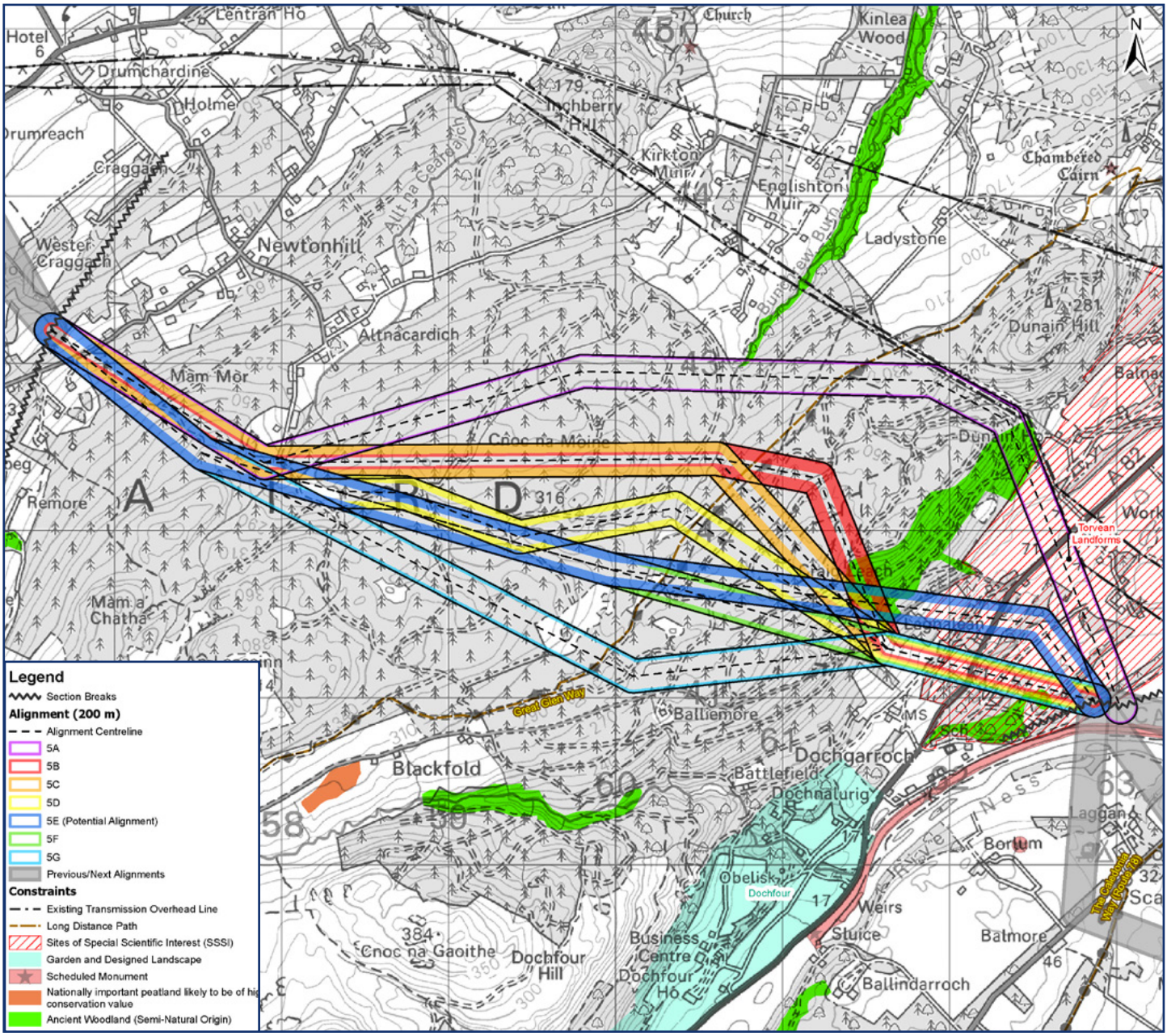
Conclusion

Alignment 4A has been selected as the Potential Alignment in Section 4, as it is least constrained from an environmental perspective and has the lowest estimated operational cost. Both options were considered to be equally acceptable from an engineering perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 5 – Reelig to Caledonian Canal



Scottish & Southern Electricity Networks

TRANSMISSION

Section 5 – Reelig to Caledonian Canal

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 5 include:

Environmental

- Alignment 5D and 5E are least constrained for cultural heritage assets, as they are further from Listed Buildings to the east and west than the other options.
- Alignment 5E is however most constrained for cultural heritage designations, as it crosses on the southern slopes of Cnoc na Moine and has more potential for impacts through changes to the setting of Dochfour Garden and Designed Landscape.
- From a landscape and visual perspective, Alignment 5F utilises the natural 'notch' in the landscape to parallel the existing overhead line infrastructure into the Great Glen. This alignment avoids an angle tower at the top of the hill slope into the Great Glen, and concentrates infrastructure in the same location, as well as being located on lower ground than the other alignment options. Alignment 5D also avoids the requirement for a prominent angle tower crossing the Great Glen, and is considered to be the second most favourable option from a visual perspective.
- Alignment 5A passes through a section of ancient woodland of semi-natural origin (Ancient Woodland Inventory (AWI) Category 1a), currently in favourable condition with mixed broadleaves and numerous healthy veteran trees throughout, making this alignment least favoured from a forestry and irreplaceable habitats perspective.
- Alignment 5F impacts the least amount of commercial forestry overall, closely followed by Alignment 5E. Alignment 5E passes through a small area of ancient woodland of semi-natural origin (Ancient Woodland Inventory (AWI) Category 1a) on the eastern slopes of Craig Leach, however this is currently a commercial woodland and young restock plantation. To the east of Craig Leach, Alignment 5E also follows gaps between trees leading across the A82 into a much smaller strip of veteran broadleaves and avoiding ancient Caledonian pine trees. Overall, Alignment 5E would greatly reduce the impact to native woodland, ancient woodland and veteran trees that are present through the eastern extent of Section 5.
- All options pass through the Torvean Landforms geological Site of Special Scientific Interest.

Engineering

- Areas of steeply sloping ground are present across the Aird, especially on the eastern slopes of Creag Leach. Alignments 5C and 5E have a maximum gradient exceeding 35 degrees for greater than a span length, which could pose challenges with tower placement. These alignments do however have good existing access throughout the areas of steeper slopes, which may make them constructable.
- Alignment 5F requires two angle tower positions, whereas the other alignment options all require between one and four additional angle towers.
- Alignment 5E allows for the straightest crossing of the Caledonian Canal if progressed in combination with Alignment 6B in the following section, with a suspension tower required on either side of the crossing which would be favourable from an engineering perspective.
- There are no residential properties located within 170m of Alignments 5D, 5F and 5G. There are two residential properties located within 170m of Alignments 5A, 5B and 5C and three residential properties located within 170m of Alignment 5E.

Cost

- Alignment 5A is over 120% of the lowest estimated capital cost option and is therefore least favoured from this perspective. All other alignment options are within 120% of the lowest estimated cost option and are therefore considered acceptable.
- Operational costs are estimated to be similar for all options, with similar line lengths and number of crossings for all options.

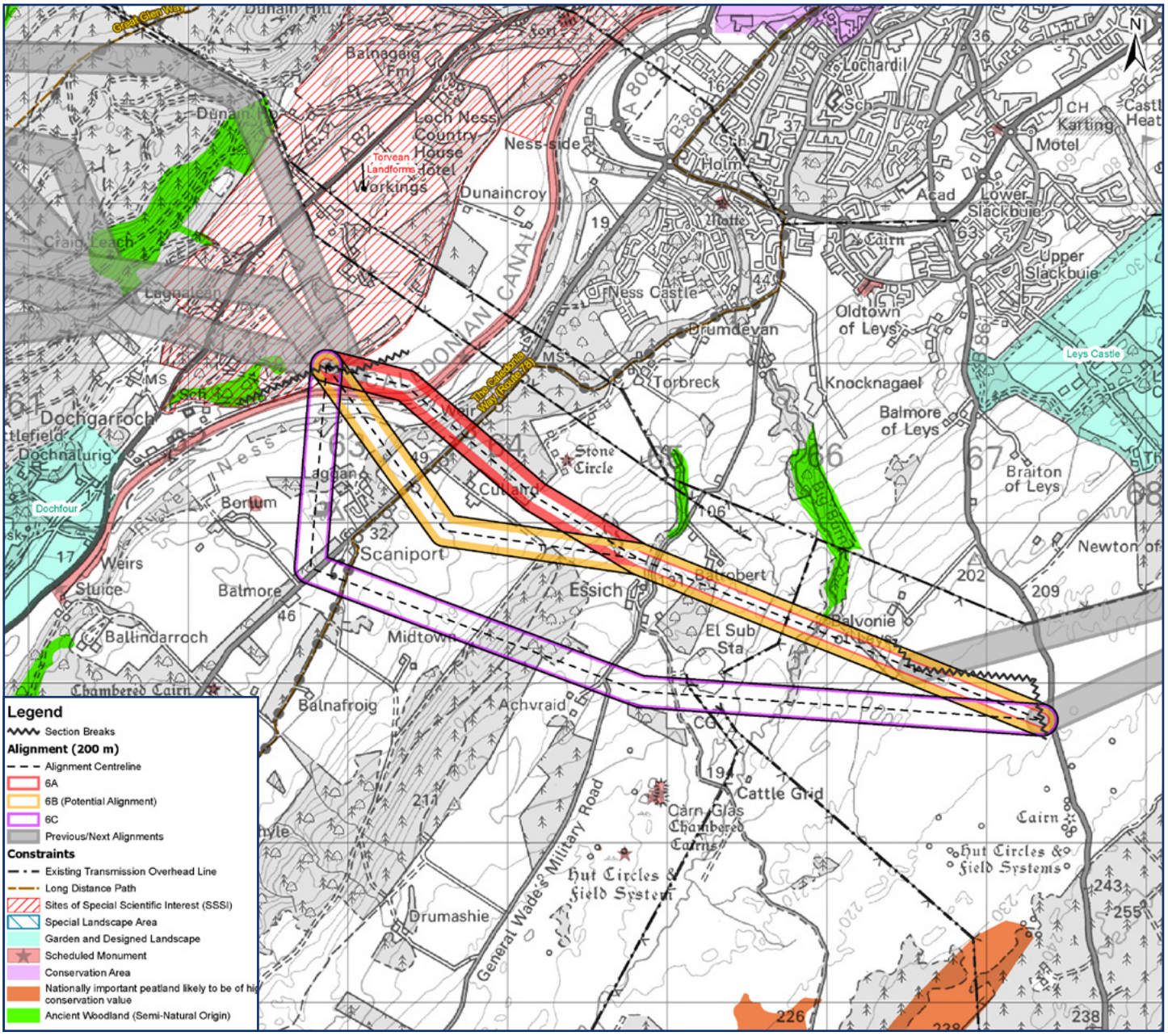
Conclusion

Alignment 5E has been selected as the Potential Alignment in Section 5, primarily due to the reduced impacts on forestry, ancient woodland and ancient and veteran trees. Alignment 5E also provides the opportunity for a straight crossing of the Caledonian Canal, if progressed in combination with Alignment 6B in the following section. All options apart from Alignment 5A were considered equally acceptable from a cost perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 6 – Caledonian Canal to Black Wood of Leys



Scottish & Southern Electricity Networks

TRANSMISSION

Section 6 – Caledonian Canal to Black Wood of Leys

The key environmental, engineering and cost considerations which differentiate between alignment options 6A, 6B and 6C include:

Environmental

- Alignment 6A is considered to be least constrained from an ornithology perspective, due to its closer proximity to the existing overhead lines in this area.
- In terms of cultural heritage assets, Alignment 6A is further away from Listed Buildings than the other options.
- Visually, Alignment 6A is most densely screened by vegetation and sits on slightly lower ground across Drumashie Moor. Whilst this alignment would result in the 'boxing in' of a number of scattered properties, it is better screened overall, both by woodland and topography, as well as sitting 'behind' properties at Cullaird.
- Alignment 6D has a wider extent of influence from a landscape character perspective and more visibility from the lochs and Caledonian Canal.
- Alignment 6A passes through Ancient Woodland Inventory (AWI) Category 2b Long Established Woodland of Plantation Origin in favourable condition, with numerous veteran broadleaved trees present throughout which would be difficult to avoid. Alignment 6C also passes through a significant area of undesignated broadleaved woodlands, with numerous veteran trees throughout, making it difficult to avoid or reduce impacts on native woodland and veteran trees. Alignment 6B has the greatest potential to avoid or reduce impacts to native broadleaved woodland and veteran trees compared with the other alignment options.

Engineering

- All alignment options in Section 6 cross the Caledonian Canal and River Ness. The canal is navigable and can accommodate vessels with a maximum mast height of 35m. Special crossing towers in the region of 90m height will be required in this location to maintain the required electrical clearances.
- Alignments 6A and 6B cross two 132kV underground cables, one 275kV underground cable and one 275kV overhead line. Alignment 6C crosses one 275kV underground cable, one 275kV overhead line and passes very close to the existing Knocknagael substation. The constraints imposed by the existing overhead line entering the substation, and the substation site itself, make Alignment 6C potentially unviable from an engineering perspective.
- Alignment 6A requires three angle tower positions, whereas Alignments 6B and 6C require only two angle tower positions. The angle changes required for Alignment 6C are significantly larger and therefore least favourable.
- Alignment 6B allows for the straightest crossing of the Caledonian Canal if progressed in combination with Alignment 5E in the preceding section, with a suspension tower required on either side of the crossing which would be favourable from an engineering perspective.
- There are no existing residential properties located within 170m of Alignment 6B. There is one residential property located with 170m of Alignment 6A and three residential properties within 170m of Alignment 6C.

Cost

- All alignment options are estimated to be within 120% of the lowest capital cost option, so all options are considered acceptable from a capital cost perspective.
- Alignment 6C has the lowest estimated operational cost. The estimated operational cost of Alignments 6A and 6B is greater than 140% of the least cost option, due to the requirement for an additional low voltage crossing.

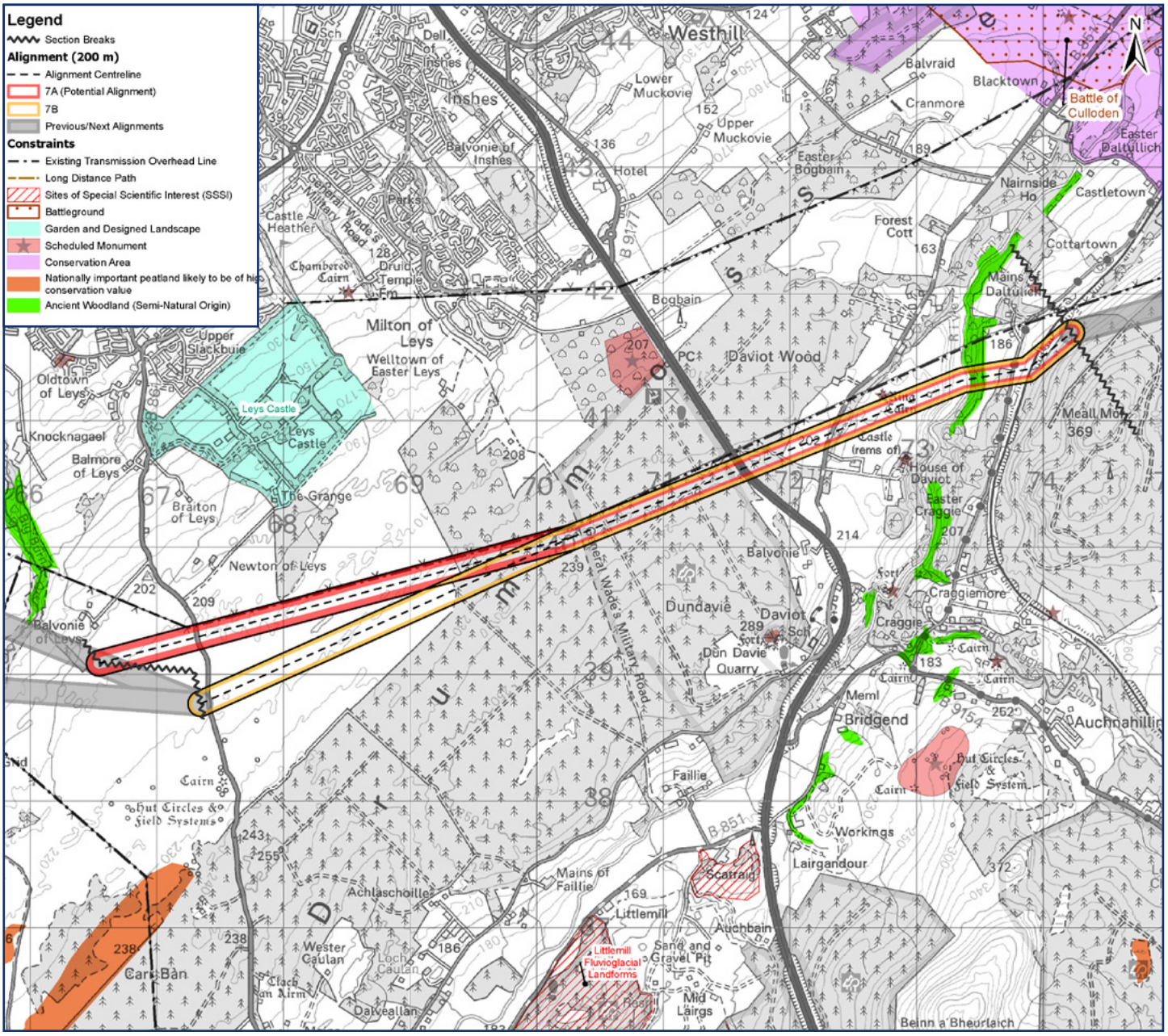
Conclusion

Alignment 6B has been selected as the Potential Alignment in Section 6, as it is the least constrained option from both an environmental and engineering perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 7 – Black Wood of Leys to Meall Mor



Scottish & Southern Electricity Networks

TRANSMISSION

Section 7 – Black Wood of Leys to Meall Mor

The key environmental, engineering and cost considerations which differentiate between alignment options 7A and 7B include:

Environmental

- Alignment 7B has reduced habitat suitability for great crested newts than Alignment 7A, due to fewer waterbodies present within the alignment option.
- Alignment 7B is further from Leys Castle Listed Building (LB8053) and The Grange, Leys Castle Listed Building (LB8055), reducing the potential for settings impacts on these cultural heritage assets.
- Both alignment options are in close proximity to a scheduled monument (Mains of Daviot Farm, ring cairn and stone circle (SM3085)), with the potential for impacts to the setting of this scheduled monument.
- The residential receptors in this section are concentrated along the valley of the River Nairn. Alignment 7B is slightly further from Balvonie of Leys than Alignment 7A, such that at any angle tower would be more distant and better backdropped by woodland at Drummossie than for Alignment 7A.
- Alignment 7A is however slightly less constrained for ornithology, landscape character and forestry, due to the ability to run in close parallel with the existing overhead line for a longer distance.
- Both options pass through an area of Ancient Woodland Inventory (AWI) Category 1a ancient woodland of semi-natural origin, however as the woodland is in a gorge, the trees would be over-sailed as per the existing overhead line and no tree removal would be required.

Engineering

- Both alignment options cross the A9 dual carriageway in the same location, as well as the Perth to Inverness railway line, two B roads and three minor roads.
- There are some areas of moderate slopes on both alignment options, however these are likely be spanned across with appropriate tower placement.
- Both alignment options require three angle tower positions.
- There are no residential properties located within 170m of either alignment option.
- Alignment 7A runs parallel with the existing overhead, which would allow for shared access for operation and maintenance.

Cost

- Both alignment options are estimated to be within 120% of the lowest capital cost option, so both options are considered acceptable from a capital cost perspective.
- Operational costs are estimated to be similar for both options.

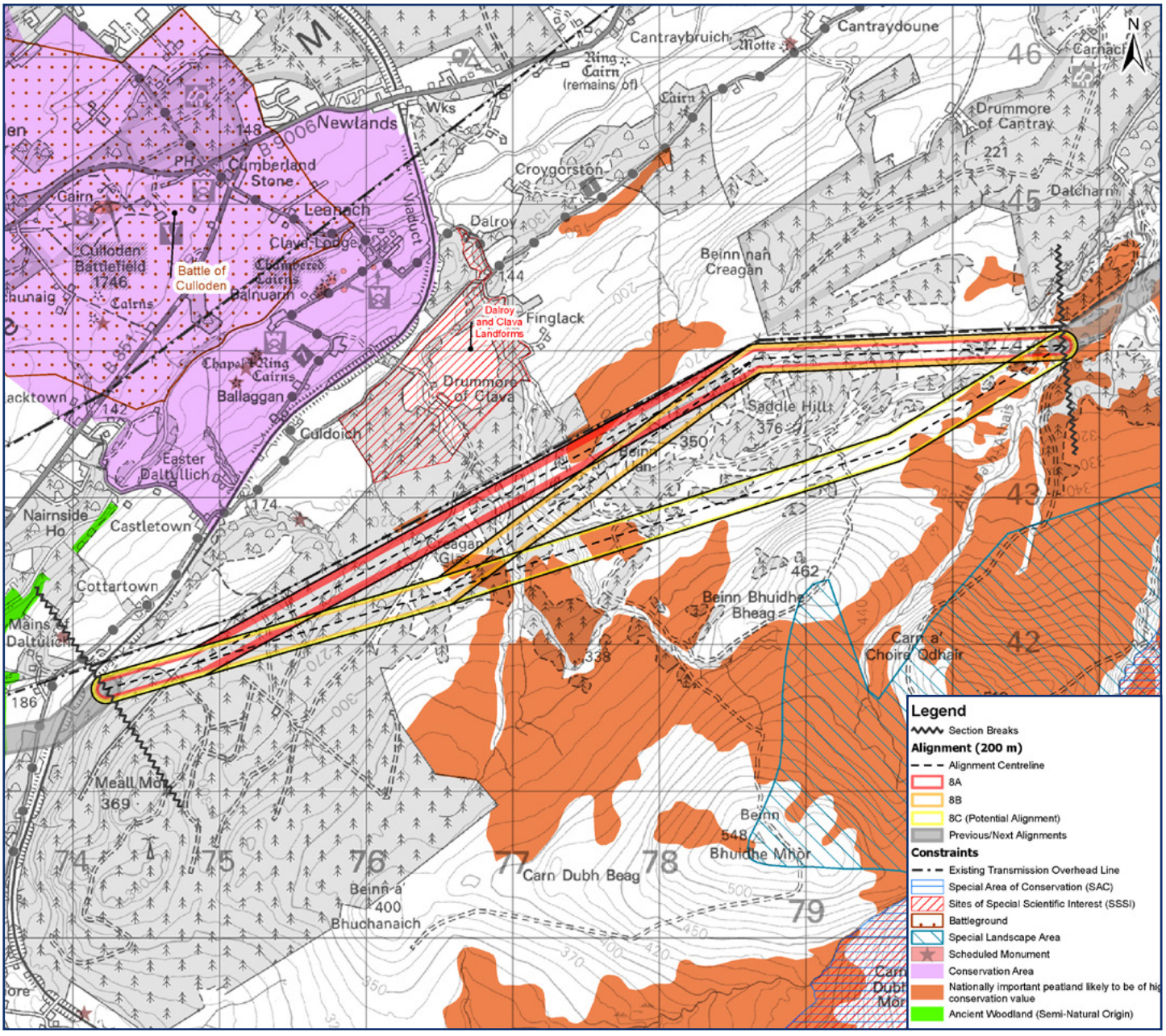
Conclusion

Alignment 7A has been selected as the Potential Alignment in Section 7, as it is least constrained from an engineering perspective and from an ornithology, landscape character and forestry perspective. It is slightly more constrained than Alignment 7B from a protected species, cultural heritage assets and visual effects perspective, but on balance Alignment 7A is considered to be the least constrained option.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 8 – Meall Mor to Dalcharn



Scottish & Southern Electricity Networks

TRANSMISSION

Section 8 – Meall Mor to Dalcharn

The key environmental, engineering and cost considerations which differentiate between alignment options 8A, 8B and 8C include:

Environmental

- Alignment 8C is furthest from the Battle of Culloden (BTL69) and Culloden Muir Conservation Area and is therefore least constrained from a cultural heritage perspective. This is because it is located to the south of Saddle Hill, which provides some screening, although careful micro siting of tower locations would be necessary to avoid direct impacts on the cairnfields.
- Alignment 8C passes through the least woodland and is therefore also least constrained for protected species.
- Alignment 8C is least favourable from a landscape designations perspective, as it passes closest to Dava Moors Special Landscape Area. In addition, Alignment 8C is least favourable from a landscape character perspective, as the area of influence of overhead line infrastructure would be spread over a slightly wider area than with the other options.
- Alignment 8C is however most favourable for visual amenity, as it is located further away from residential properties south of the B851 in the valley of the River Nairn and Culloden, and the lower portions of the towers would be screened behind Saddle Hill.
- Alignment 8A parallels the existing overhead line and is therefore more favourable from an ornithology perspective.
- Alignment 8B passes through the least blanket bog habitat.

Engineering

- All alignment options feature some steeply sloping ground, meaning tower heights in this section are likely to be variable to maintain ground clearances.
- Alignment 8C crosses more extensive areas of peatland than Alignments 8A and 8B.
- Alignments 8A and 8C are equally accessible, with an existing network of roads and tracks within 1km. Alignment 8B is further from existing access and may require more permanent access tracks to facilitate construction and maintenance access.
- All alignment options require two angle tower positions.
- There are no residential properties located within 170m of any alignment option.

Cost

- All alignment options are estimated to be within 120% of the lowest capital cost option, so all options are considered acceptable from a capital cost perspective.
- Operational costs are estimated to be similar for all options.

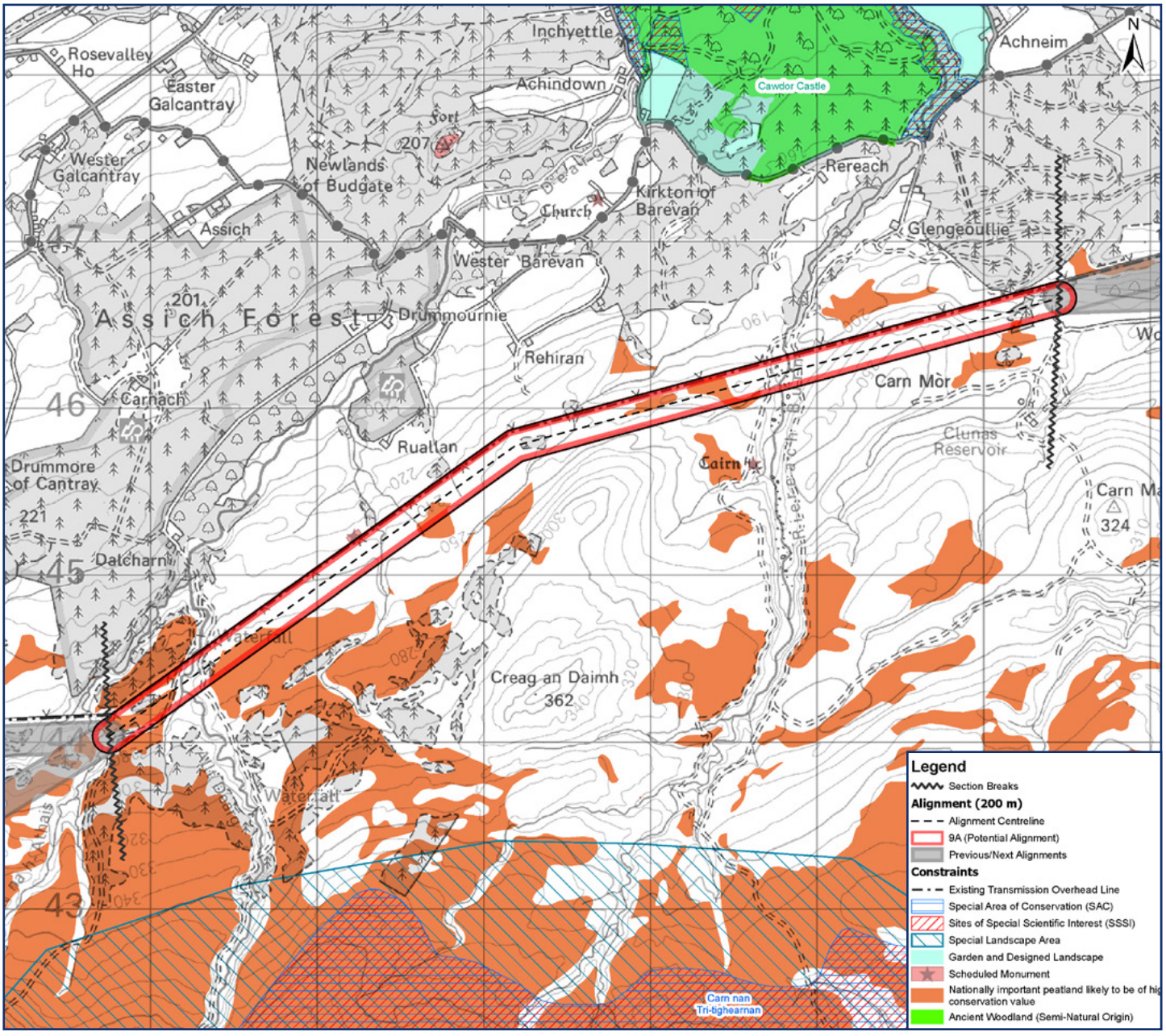
Conclusion

Alignment 8C has been selected as the Potential Alignment in Section 8, as it is the least constrained option from both an environmental and engineering perspective. All options were considered equally acceptable from a cost perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 9 – Dalcharn to Clunas Reservoir



Scottish & Southern Electricity Networks

TRANSMISSION

Section 9 – Dalcharn to Clunas Reservoir

There is only one option in Section 9, therefore a comparative appraisal is not necessary. The key environmental and engineering considerations for this section include:

Environmental

- The Carbon and Peatland Map of Scotland indicates the presence of Class 1 and Class 2 peatland, including irreplaceable blanket bog habitat. Further alignment design will seek to minimise impacts on peatland as far as possible.
- There is a scheduled monument (Easter Rattich, depopulated settlement (SM11876)) located in close proximity to the alignment option. There will be careful consideration of tower placement in this section to minimise impacts on the setting of the scheduled monument.

Engineering

- The alignment passes through extensive areas of peatland, estimated to be less than 1m in depth in most locations. Peat depth surveys will be undertaken at the next stage of the design process to inform micrositing of tower locations and access tracks to avoid the areas of deepest peat.
- The alignment is within 300m of a radio communications mast. Further consultation will be undertaken with the mast operators to confirm if any interference could occur and if mitigation would be required.

Cost

- As there is only one option, a comparative cost appraisal is not necessary.

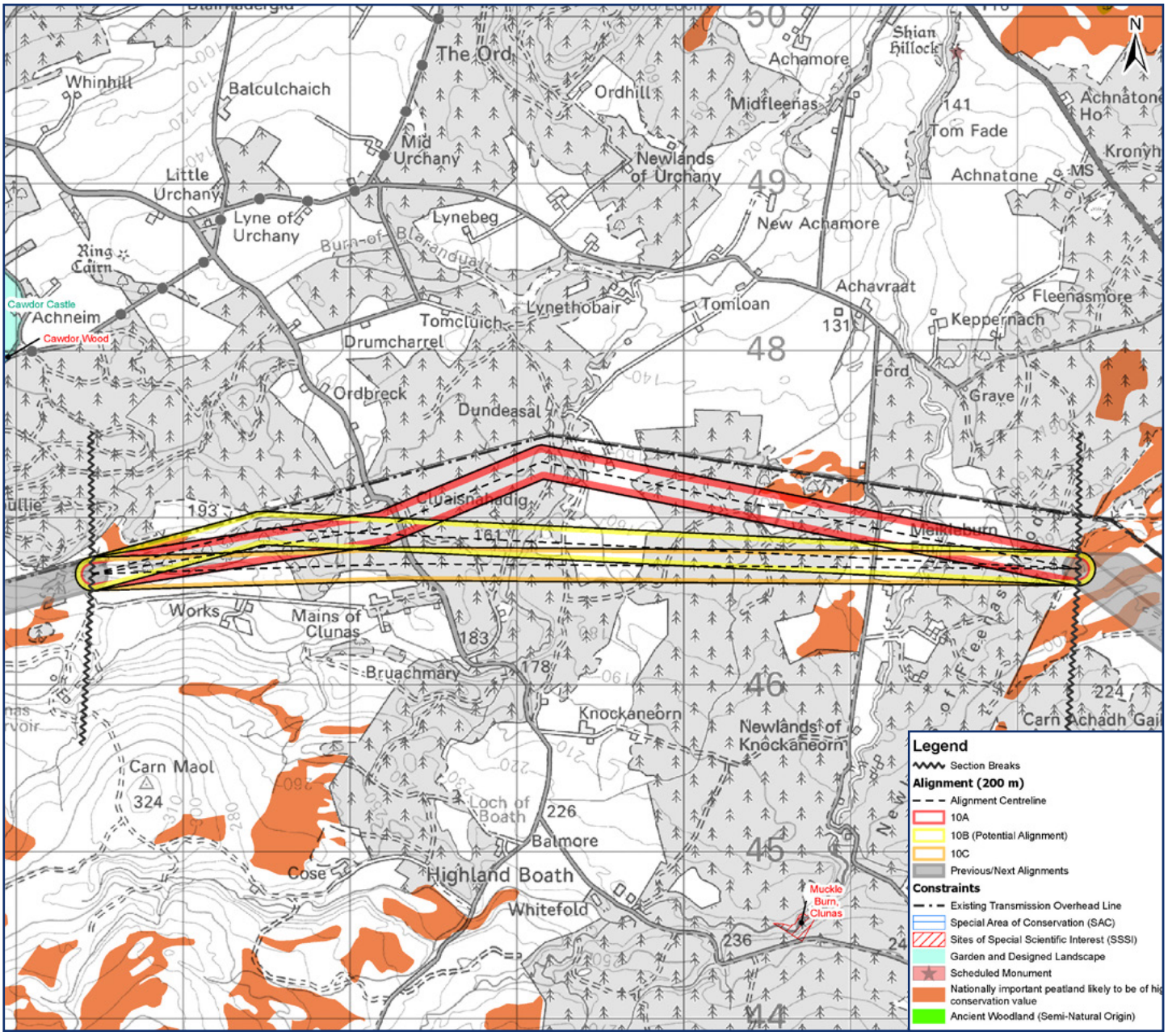
Conclusion

As there is only one option, Alignment 9A has been selected as the Potential Alignment in Section 9.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 10 – Clunas Reservoir to Newlands of Fleenas Wood



Scottish & Southern Electricity Networks

TRANSMISSION

Section 10 – Clunas Reservoir to Newlands of Fleenas Wood

The key environmental, engineering and cost considerations which differentiate between alignment options 10A, 10B and 10C include:

Environmental

- Alignment 10B is least constrained from a visual perspective, as it runs in close parallel with the existing overhead line for the longest distance at the western end, then cuts a straight line more distant from Mains of Clunas than Alignment 10C, and with less tight 'boxing in' of the property west of Cluaisnahadig and at Meikleburn Farm compared to Alignment 10A.
- In all other environmental topics, all alignment options are likely to be very similar in their impacts.

Engineering

- Alignment 10C requires six crossing of minor roads of various categories, whereas Alignments 10A and 10B require five minor road crossings.
- Alignment 10A features some areas of steeply sloping ground, some of which may be too long to span across, meaning that tower heights are likely to be variable to maintain ground clearances.
- All alignment options pass through a small pocket of peatland east of Meikleburn Farm, however it may be possible to avoid the areas of peat through micrositing of tower locations in this area.
- Alignment 10A requires two angle tower positions, whereas Alignments 10B and 10C require one angle tower position.
- There are two residential properties located within 170m of Alignment 10A and one property within 170m of Alignments 10B and 10C.

Cost

- All alignment options are estimated to be within 120% of the lowest capital cost option, so all options are considered acceptable from a capital cost perspective.
- Alignments 10B and 10C are estimated to have similar operational costs. The estimated operational cost for Alignment 10A is greater than 140% of the lowest cost option, due to the requirement for one additional low voltage crossing.

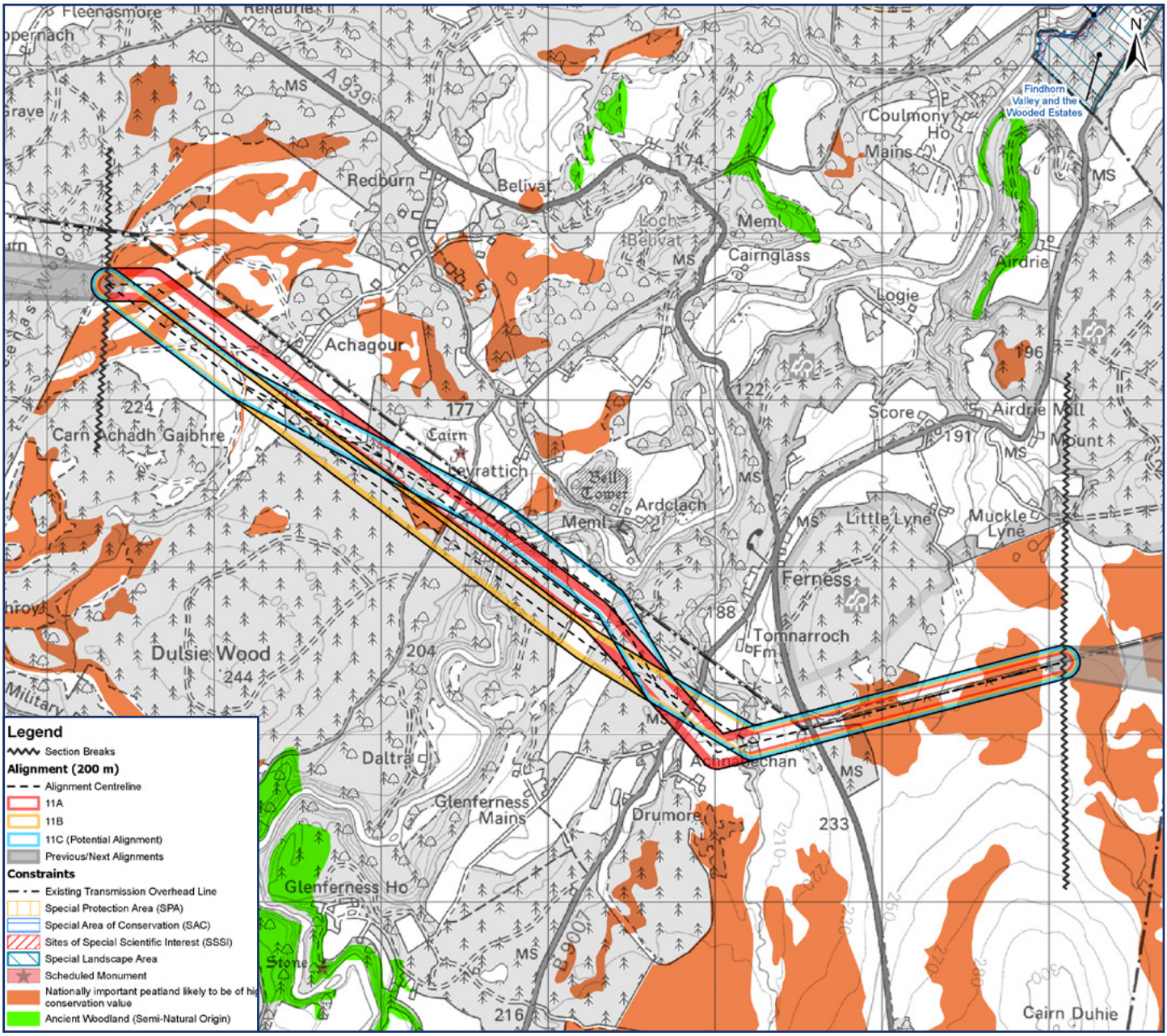
Conclusion

Alignment 10B has been selected as the Potential Alignment in Section 10, as it is the least constrained option from an environmental perspective and is considered to be acceptable from an engineering and cost perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 11 – Newlands of Fleenas Wood to Cairn Duhie



Scottish & Southern Electricity Networks

TRANSMISSION

Section 11 – Newlands of Fleenas Wood to Cairn Duhie

The key environmental, engineering and cost considerations which differentiate between alignment options 11A, 11B and 11C include:

Environmental

- Alignment 11C is slightly less constrained from a visual perspective, due to its potential to run in close parallel with the existing overhead line across the River Findhorn, which would slightly reduce visual impacts in this area.
- The potential for close parallel would also be beneficial for landscape character, through the more intimate valley landscape of the River Findhorn, and would help contain the extent of influence of overhead line infrastructure within the landscape.
- Alignment 11C is also least constrained for ornithology due to the close parallel with the existing overhead line.
- In all other environmental topics, all alignment options are likely to be very similar in their impacts.

Engineering

- Alignment 11A crosses within 30m of recreational fishing lakes at Achagour. Alignments 11B and 11C maintain a greater distance from the fishing lakes and are therefore less constrained from this perspective.
- All alignment options cross the River Findhorn. Whilst the river itself is relatively narrow, there are steep banks on each side which may require a longer span to reach suitable tower locations on either side of the crossing.
- The eastern end of all of the alignment options follows the alignment of the existing 275kV overhead line, which will need to be realigned slightly further to the north. This realignment is required in order to avoid the consented Cairn Duhie Wind Farm turbine locations, to the south of the existing overhead line.
- Alignment 11A requires three angle tower positions, Alignment 11B requires two angle tower positions and Alignment 11C requires five angle tower positions.
- There are no residential properties within 170m of Alignments 11B and 11C. There is one residential property within 170m of Alignment 11A.

Cost

- All alignment options are estimated to be within 120% of the lowest capital cost option, so all options are considered acceptable from a capital cost perspective.
- Operational costs are estimated to be similar for all alignment options.

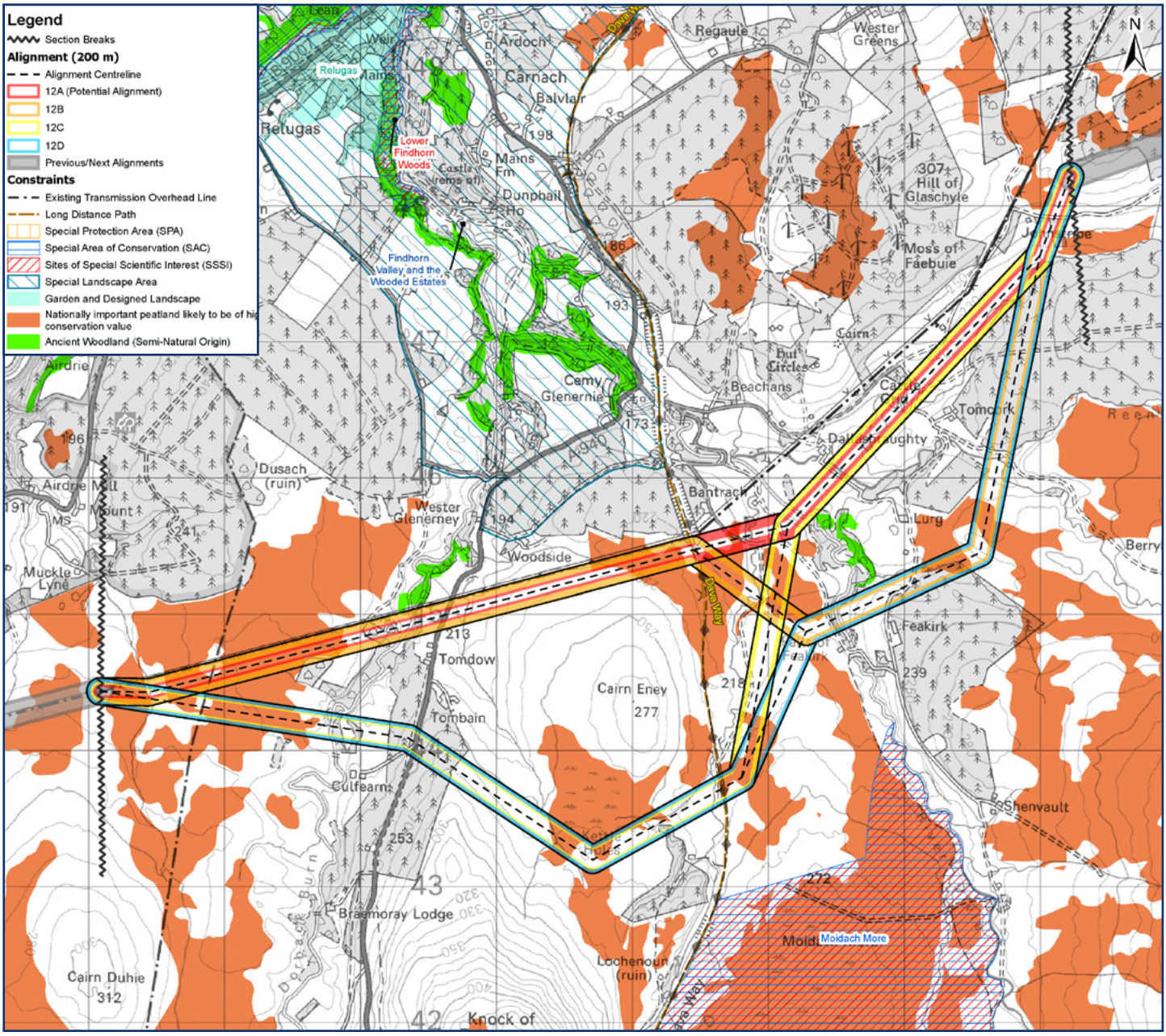
Conclusion

Alignment 11C has been selected as the Potential Alignment in Section 11, as it is the least constrained option from both an environmental and engineering perspective. All options were considered equally acceptable from a cost perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 12 – Cairn Duhie to Johnstripe



Scottish & Southern Electricity Networks

TRANSMISSION

Section 12 – Cairn Duhie to Johnstripe

The key environmental, engineering and cost considerations which differentiate between alignment options 12A, 12B, 12C and 12D include:

Environmental

- Alignment 12A requires significantly less forestry removal than the other options, which is also beneficial for protected species.
- Alignment 12A contains the least amount of irreplaceable ancient woodland of semi-natural woodland and blanket bog habitat.
- Alignment 12A is least constrained from an ornithology perspective, as it is located furthest from ornithologically sensitive features (nest sites and lek sites) and is in closer proximity to the existing overhead line.
- Alignment 12B is least constrained from a landscape character perspective, as it runs on slightly lower ground north of Cairn Eney in close parallel to existing overhead line infrastructure (the same as Alignment 12A), but avoids the more intimate landscape northwest of Lurg, where there is more obvious 'boxing in' of a small number of properties by Alignments 12A and 12C.

Engineering

- Alignment 12A features a shorter length at higher elevations compared to the alternative options.
- All alignments cross through areas of peatland. Peat depth surveys would be required at the next stage of the design process to inform micro siting of tower locations and access tracks to avoid the areas of deepest peat.
- Alignments 12C and 12D are further from existing suitable access than Alignments 12A and 12B, and would therefore require construction of more extensive access tracks to facilitate construction and maintenance.
- Alignment 12A requires thee angle tower positions, Alignments 12B and 12C require five angle tower positions and Alignment 12D requires six angle tower positions.
- There is one residential property located within 170m of all alignment options.
- All alignment options are in close proximity to the consented Clash Gour Wind Farm development. Based on the current wind turbine locations and proposed substation location, there is space for the overhead line to pass through, but there is no flexibility for micrositing the alignment in this area.

Cost

- Alignments 12A and 12B have the lowest estimated capital costs. Alignments 12C and 12D are greater than 120% of the lowest cost option and are therefore less favourable.
- Operational costs are estimated to be similar for Alignments 12C and 12D. The estimated operational costs for Alignments 12A and 12B are greater than 140% of the lowest cost option, due to the requirement for one additional low voltage crossing.

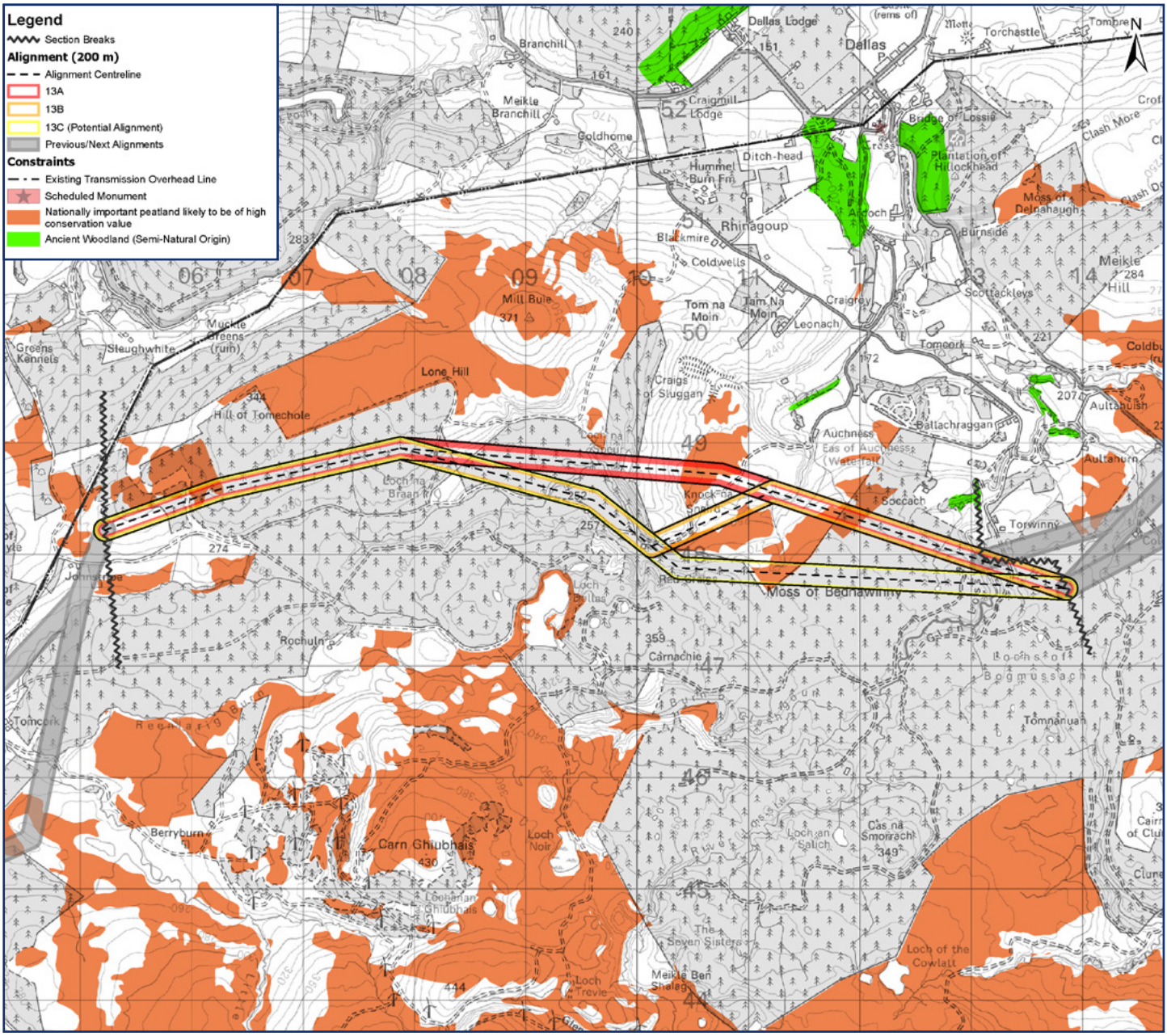
Conclusion

Alignment 12A has been selected as the Potential Alignment in Section 12, as it is the least constrained option from both an environmental and engineering perspective and is also the lowest estimated capital cost option. Alignment 12A has a higher estimated operational cost, but on balance it is considered to be the least constrained option.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 13 – Johnstripe to Moss of Bednawinny



Scottish & Southern Electricity Networks

TRANSMISSION

Section 13 – Johnstripe to Moss of Bednawinny

The key environmental, engineering and cost considerations which differentiate between alignment options 13A, 13B and 13C include:

Environmental

- Alignment 13A is least constrained for protected species, due to the smaller area of woodland that is crossed and its shorter route length compared with the other options.
- All alignment options are dominated by coniferous plantation woodland, but contain pockets of irreplaceable peatland habitat and Annex 1 woodland (listed on the Habitats Directive). Alignment 13C contains the least sensitive habitats of all the options.
- Alignment 13C is least constrained for ornithology, as it passes almost entirely through coniferous plantation woodland which is typically of low importance to bird species of conservation concern.
- Alignment 13A is least constrained for cultural heritage designations, as it avoids interaction with any recorded cultural heritage features. Alignments 13B and 13C have potential to impact on a Sites and Monuments Record site (Redcraig, farmstead (Canmore ID 156024), although direct physical impacts can likely be avoided through micrositing of the tower locations.
- From a visual amenity perspective, all three options would be backdropped by forestry in views from the north, with forestry providing a good degree of visual screening. Alignment 13C is located slightly further from the majority of scattered properties.

Engineering

- Alignment 13A crosses Loch na Speur, a small loch on the slopes of Knock na Snaird. Alignments 13B and 13B avoid the requirement for any crossings.
- All alignment options pass through areas of peatland north of Johnstripe and also to the north of Moss of Bednawinny. Alignment 13A passes through a slightly longer length of peatland than the other options.
- The area to the south of Auchness has a limited network of existing tracks or roads within 1km, making access to this section of all of the alignment options more challenging.
- Alignment 13A requires three angle towers, Alignment 13B requires five angle towers and Alignment 13C requires four angle towers.
- There are no residential properties located within 170m of any of the alignment options.

Cost

- All alignment options are within 120% of the lowest estimated capital cost option, so all options are considered acceptable from a capital cost perspective.
- Operational costs are estimated to be similar for all alignment options.

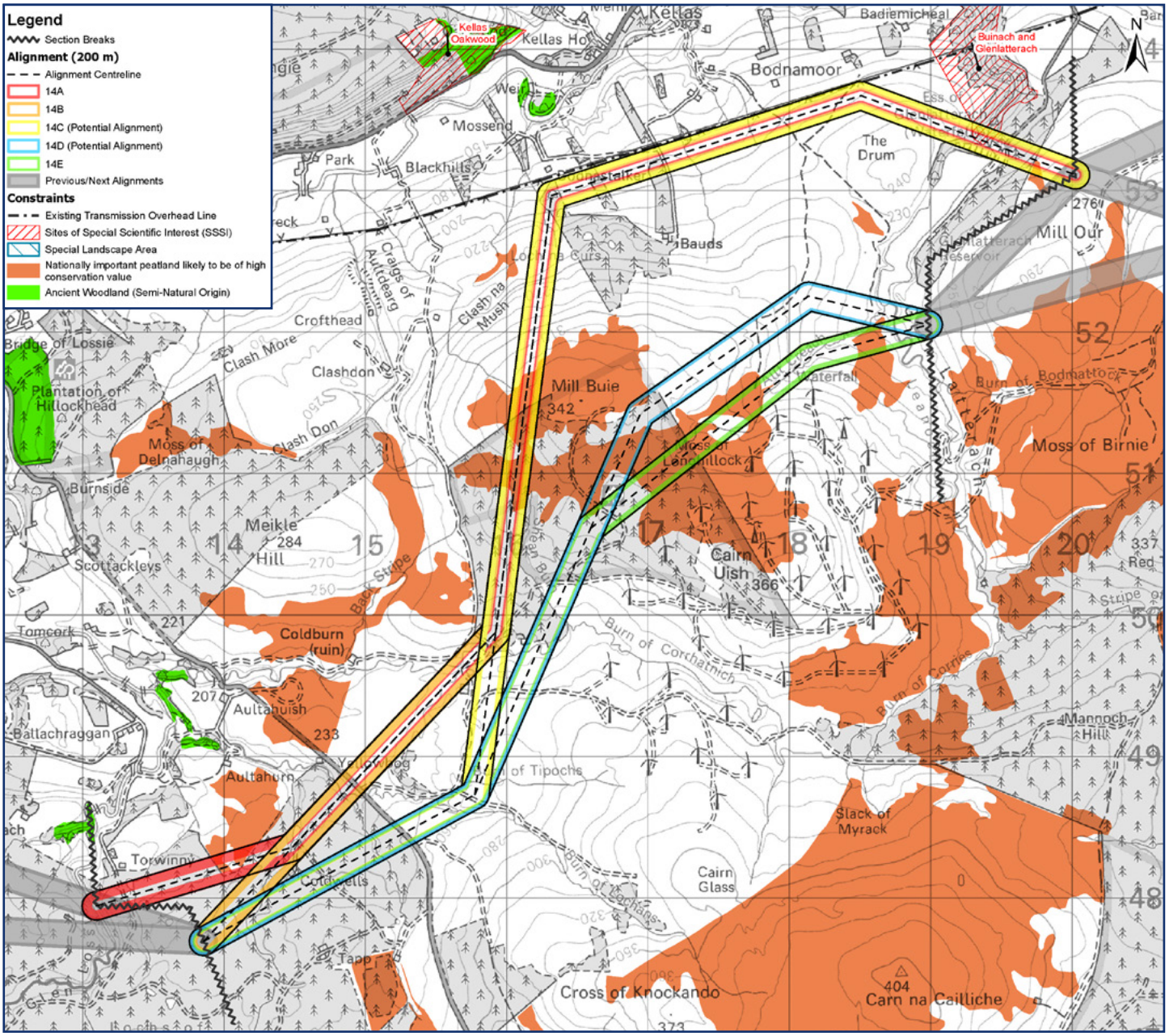
Conclusion

Alignment 13C has been selected as the Potential Alignment in Section 13, as it is the least constrained option from an engineering perspective and there is little to distinguish from an environmental perspective. All options were considered equally acceptable from a cost perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 14 – Moss of Bednawinny to Glenlatterach Reservoir



Scottish & Southern Electricity Networks

TRANSMISSION

Section 14 – Moss of Bednawinny to Glenlatterach Reservoir

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 14 include:

Environmental

- Alignments 14D and 14E are least constrained from a natural heritage designations perspective, as they are further from Buinach and Glenlatterach Site of Special Scientific Interest (SSSI).
- Alignment 14E (followed by Alignment 14D) is least constrained for protected species and forestry due to the smaller area of woodland that is crossed, which makes for a smaller amount of suitable habitat for red squirrels, pine marten and bat species than in the other options.
- Alignment 14E does not encounter any known cultural heritage designations or assets in comparison to the other alignment options.
- Visually, Alignment 14E is least constrained as it pushes the overhead line slightly further away from properties, does not cross over Mill Buie, and hugs Cairn Uish so that the existing wind farm acts as a backdrop to contain infrastructure in this area. For this reason, Alignment 14E is also marginally favoured for landscape character.
- Glenlatterach Reservoir is a part of a drinking water protected area which extends to the south. Alignment 14D is therefore most constrained from this perspective as it is upgradient of the reservoir and in close proximity.

Engineering

- Alignments 14A and 14B cross three minor roads, while Alignments 14C, 14D and 14E all cross between six and eight minor roads in total.
- Alignments 14D and 14E pass through a long section of peatland to the north of Cairn Uish. It is unlikely that it will be possible to microsite towers to avoid the peatland completely. The other alignment options also pass through areas of peatland, but for slightly shorter distances or through shallower peat depths.
- Alignments 14B, 14C, 14D and 14E all require three angle tower positions, whereas Alignment 14A requires four angle tower positions.
- There are no residential properties located within 170m of Alignment 14A. There is one residential property within 170m of all of the other alignment options.
- Section 14 skirts the boundary of a large existing wind farm (Rothes Wind Farm) and all alignment options are near the consented Kellas Wind Farm (Moray Council planning application reference: 13/00615/EIA) and the proposed Kellas Drum Wind Farm (ECU application reference: ECU00005054). Alignments 14A, 14B and 14C would maintain the required distance from both the proposed and the consented wind farm turbine locations. Alignment 14E would impact on two of the proposed Kellas Drum Wind Farm turbine locations, and would also impact on four of the consented Kellas Wind Farm turbine locations. Alignment 14D would impact on four of the proposed Kellas Drum Wind Farm turbine locations, but would avoid impacting on the consented turbine locations.
- Alignments 14C, 14D and 14E also pass within 80m of a communications mast. Further consultation with the mast operators would be required to confirm if any interference could occur and if mitigation is required.

Cost

- Alignments 14D and 14E have the lowest estimated capital costs. All of the other alignment options are greater than 140% of the lowest capital cost option, due to the significant additional length of these options.
- Operational costs are estimated to be similar for all alignment options.

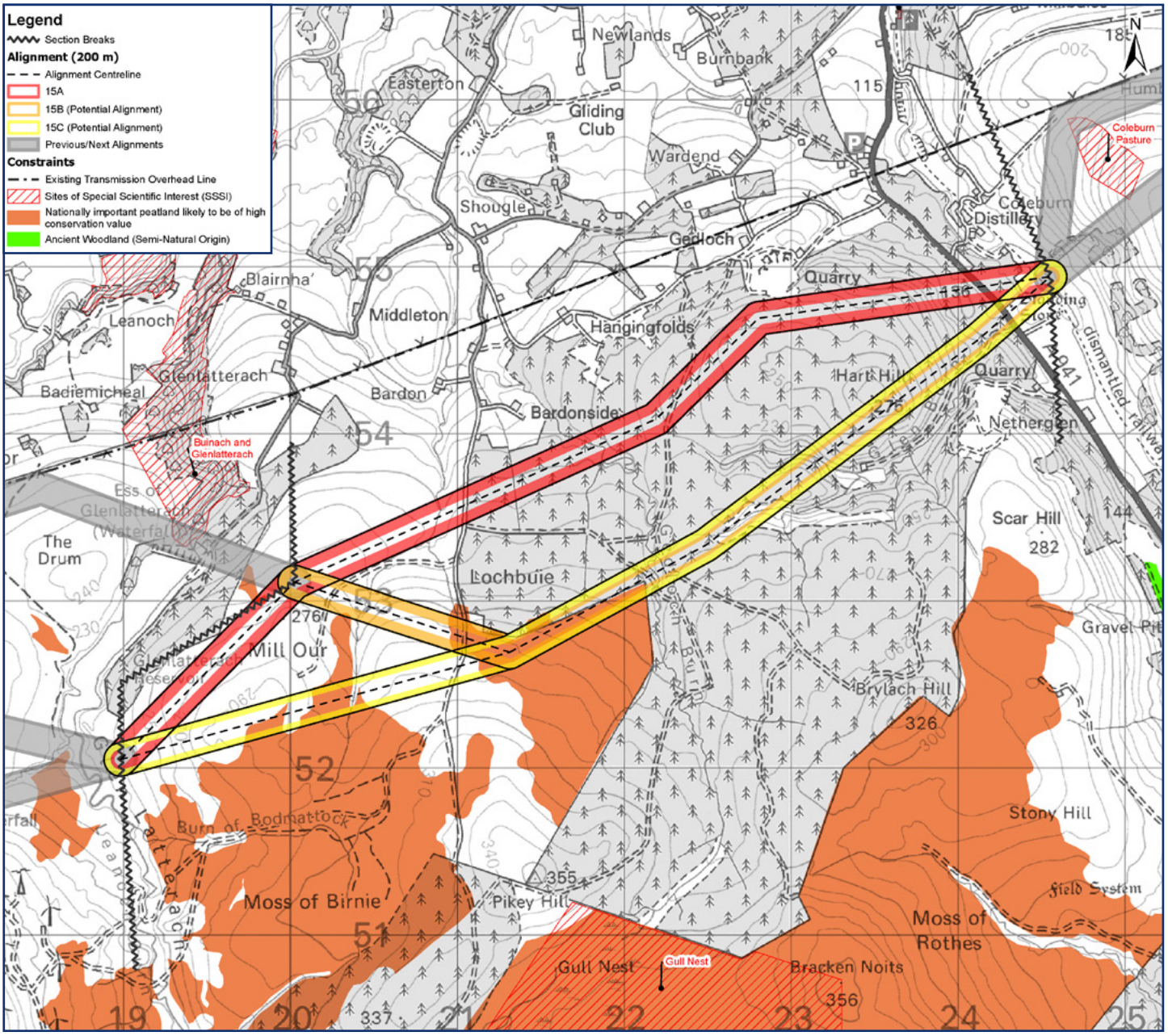
Conclusion

Alignments 14C or 14D have been selected as the Potential Alignment in Section 14. Alignment 14D would be progressed if the proposed Kellas Drum Wind Farm does not obtain planning consent, as this alignment is least constrained for all other aspects and avoids interaction with the currently consented Kellas Wind Farm development. Alignment 14C would be progressed if the proposed Kellas Drum Wind Farm does obtain planning consent.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 15 – Glenlatterach Reservoir to Glen of Rothes



Scottish & Southern Electricity Networks

TRANSMISSION

Section 15 – Glenlatterach Reservoir to Glen of Rothes

The key environmental, engineering and cost considerations which differentiate between alignment options 15A, 15B and 15C include:

Environmental

- Alignments 15B and 15C are least constrained with regards to protected species and forestry, due to the smaller area of woodland that is crossed.
- Alignment 15A has no unavoidable Class 1 peatland habitat (according to the Carbon and Peatland Map of Scotland) and is therefore least constrained from a habitats perspective.
- Alignment 15B is not located within a SEPA surface water Drinking Water Protected Area (DWPA) and Scottish Water DWPA, whereas the other alignment options are.
- Alignment 15A avoids Netherglen standing stone, which is a Sites and Monuments Record entry of higher significance. However, Alignments 15B and 15C are furthest from Listed Buildings in the area.
- Alignment 15A is least constrained for landscape character, due to it crossing lower slopes, and its location closer to existing overhead line infrastructure.
- Visually, Alignment 15B is slightly less constrained, as there are fewer properties in close proximity compared with Alignment 15A, and it is located on slightly lower ground around Mill Our when compared to Alignment 15C.
- Alignment 15A avoids passing through the Habitat Management Plan area for Rothes III Wind Farm.

Engineering

- Alignments 15B and 15C pass through areas of peatland, whereas Alignment 15A avoids any areas of known peatland.
- All alignment options require three angle tower positions.
- There are seven residential properties located within 170m of Alignment 15A and one property located within 100m. There are no residential properties located within 170m of Alignments 15B and 15C.
- Alignment 15A is in close proximity to an active quarry on the northern slopes of Hart Hill. This alignment option could constrain further expansion of the quarry.

Cost

- Alignment 15B is the lowest estimated capital cost option and Alignment 15C is also acceptable from a capital costs perspective. Alignment 15A is over 120% of the lowest cost option, due to increased forestry costs.
- Operational costs are estimated to be similar for all alignment options.

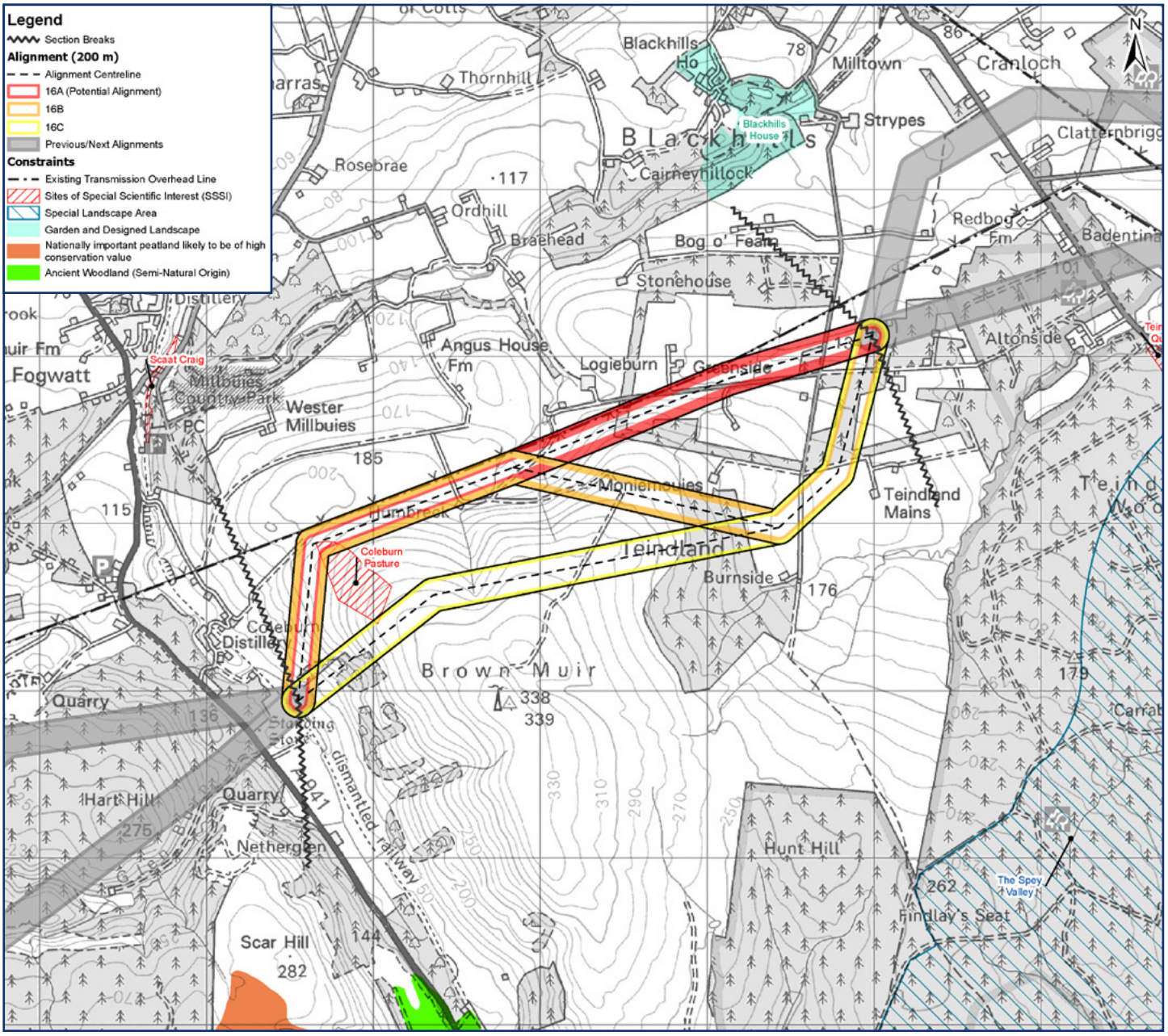
Conclusion

Alignments 15B or 15C have been selected as the Potential Alignment in Section 15. Alignment 15C would be progressed in combination with Alignment 14D in the preceding section, if the proposed Kellas Drum Wind Farm does not obtain planning consent. Alignment 15B would be progressed in combination with Alignment 14C in the preceding section, if the proposed Kellas Drum Wind Farm does obtain planning consent.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 16 – Glen of Rothes to Teindland



Scottish & Southern Electricity Networks

TRANSMISSION

Section 16 – Glen of Rothes to Teindland

The key environmental, engineering and cost considerations which differentiate between alignment options 16A, 16B and 16C include:

Environmental

- Alignment 16C is marginally further from Coleburn Pasture Site of Special Scientific Interest (SSSI) than the other options. All options are adjacent to it and have the potential to avoid it.
- Alignment 16A is least constrained for protected species and forestry, due to crossing a smaller area of woodland that decreases the habitat suitability for bat species.
- Alignment 16A is also least constrained for ornithology due to its closer proximity to existing overhead line infrastructure.
- Alignment 16C has more potential to avoid sensitive Annex 1 habitats (listed in the Habitats Directive) than the other alignment options.
- Alignments 16B and 16C avoid all cultural heritage designations. Alignment 16C also avoids the potential for significant effects on the setting of Listed Buildings within 1km.
- Alignment 16A is least constrained for landscape character as it parallels the existing overhead line most closely and remains on lower slopes.
- Visually, Alignment 16C is potentially least favourable because of its visibility in the wider landscape due to being located on higher ground, but there is little to distinguish between Alignment 16A and 16B is visual terms.

Engineering

- Alignments 16A and 16B pass through areas of steeper slopes greater than a span length. Alignment 16C does not exceed a span length over 20 degrees, however it does pass through a short area with steeper slopes of up to 31 degrees. This could pose challenges for tower placement and access, but due to being less than a typical span length may be avoidable.
- Alignments 16A and 16B are considered equally accessible, with an existing network of roads and tracks located within 1km. Alignment 16C passes through an area on the northern slopes of Brown Muir with no existing access within 1km, making access to this section more challenging.
- Alignments 16A and 16C require three angle towers and Alignment 16B requires four angle towers.
- Alignments 16A and 16B are located within 170m of one residential property. There are no residential properties located within 170m of Alignment 16C.

Cost

- Alignment 16A is the lowest estimated capital cost option and Alignment 16C is also acceptable from a capital costs perspective. Alignment 16B is over 120% of the lowest cost option, due to a greater length, additional angle tower and increased forestry costs.
- Operational costs are estimated to be similar for all alignment options.

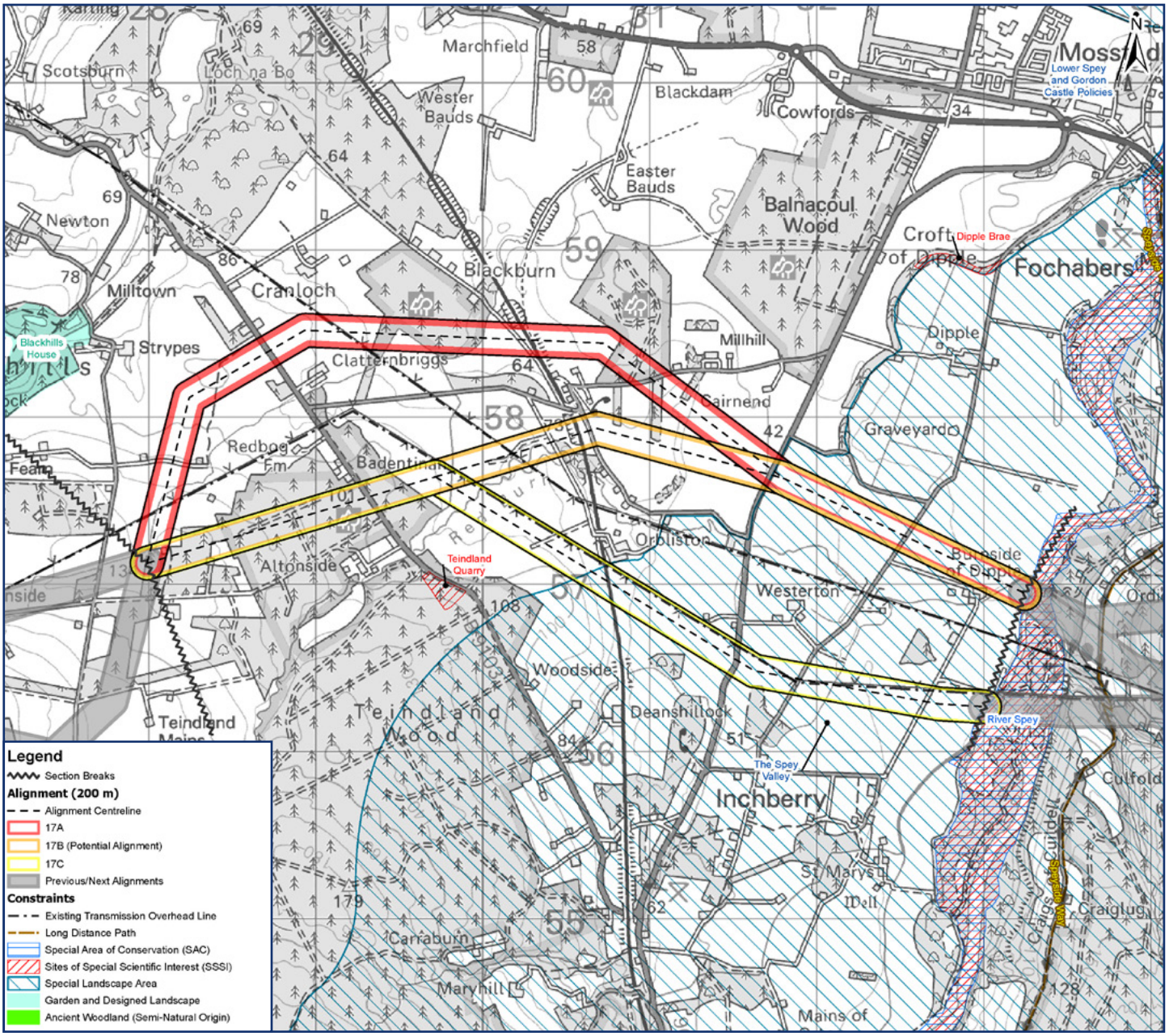
Conclusion

Alignment 16A has been selected as the Potential Alignment in Section 16, as it is the least constrained option from an environmental, engineering and cost perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 17 – Teindland to River Spey



Scottish & Southern Electricity Networks

TRANSMISSION

Section 17 – Teindland to River Spey

The key environmental, engineering and cost considerations which differentiate between alignment options 17A, 17B and 17C include:

Environmental

- All alignment options would intensify the effects of infrastructure and increase the extent of influence on the Spey Valley Special Landscape Area (SLA) designation.
- Alignment 17C would contain the influence of overhead lines adjacent to the existing 275kV overhead line, making this potentially favourable from both a landscape and visual perspective, but the requirement for additional terminal towers and sealing end compounds to cross the existing overhead line would largely offset this benefit.
- Alignments 17A and 17B would maintain greater separation from the existing overhead lines and remove the requirement for additional terminal towers and sealing end compounds.
- From a visual perspective, Alignments 17B and 17C are more direct than Alignment 17A and 'box in' slightly fewer properties. Alignment 17C would intensify effects of existing infrastructure on properties at Orbliston, Westerton and to the south, whilst Alignment 17B would intensify the visual influence for receptors further north.
- All alignment options would compromise the view from the Ordiequish viewpoint.
- All alignment options pass through the drinking water protection area (DWPA) for Spey boreholes, Dipple and the Ordiequish Collecting Chambers, with the borehole abstractions located to the north of the alignment options and closest to Alignments 17A and 17B. Mitigation measures for construction would be put in place in this area to reduce any potential impacts.
- Alignment 17C is least constrained for cultural heritage assets, as it would have the least setting impact on listed buildings.

Engineering

- All alignment options cross a single track railway line, the B9103 and the B9815. Alignment 17A crosses four minor roads, Alignment 17B crosses three minor roads and Alignment 17C crosses two minor roads.
- Alignments 17A and 17B cross an existing 132kV overhead line and an existing 275kV overhead line. Alignment 17C crosses an existing 275kV overhead line. Due to the proximity of properties, approximately three spans of the existing 275kV overhead line would either need to be realigned or undergrounded to provide sufficient space for the new overhead line along this alignment option.
- According to SEPA flood maps, more than 5% of each alignment option is located within the 1 in 10 year flood zone, associated with the River Spey. This flood risk area is unavoidable and towers will be required within the flood zone.
- Alignment 17B requires two angle tower positions, whereas Alignment 17A requires four angle tower positions and Alignment 17C requires three angle tower positions.
- There are nine residential properties located within 170m of Alignment 17A, five within 170m of Alignment 17B and four within 170m of Alignment 17C.
- Alignments 17A and 17B cross a Scottish Gas Networks (SGN) high pressure gas pipeline. Alignment 17C also crosses the pipeline and runs parallel with the pipeline for approximately 2.5 km, introducing a risk of electrical interference.

Cost

- Alignment 17C is the lowest estimated capital cost option and Alignment 17B is also acceptable from a capital costs perspective. Alignment 17A is over 120% of the lowest cost option, due to additional length and additional crossings of existing infrastructure.
- Alignment 17C has the lowest estimated operational cost. Alignments 17A and 17B have significantly higher operational costs due to the high number of low voltage crossings.

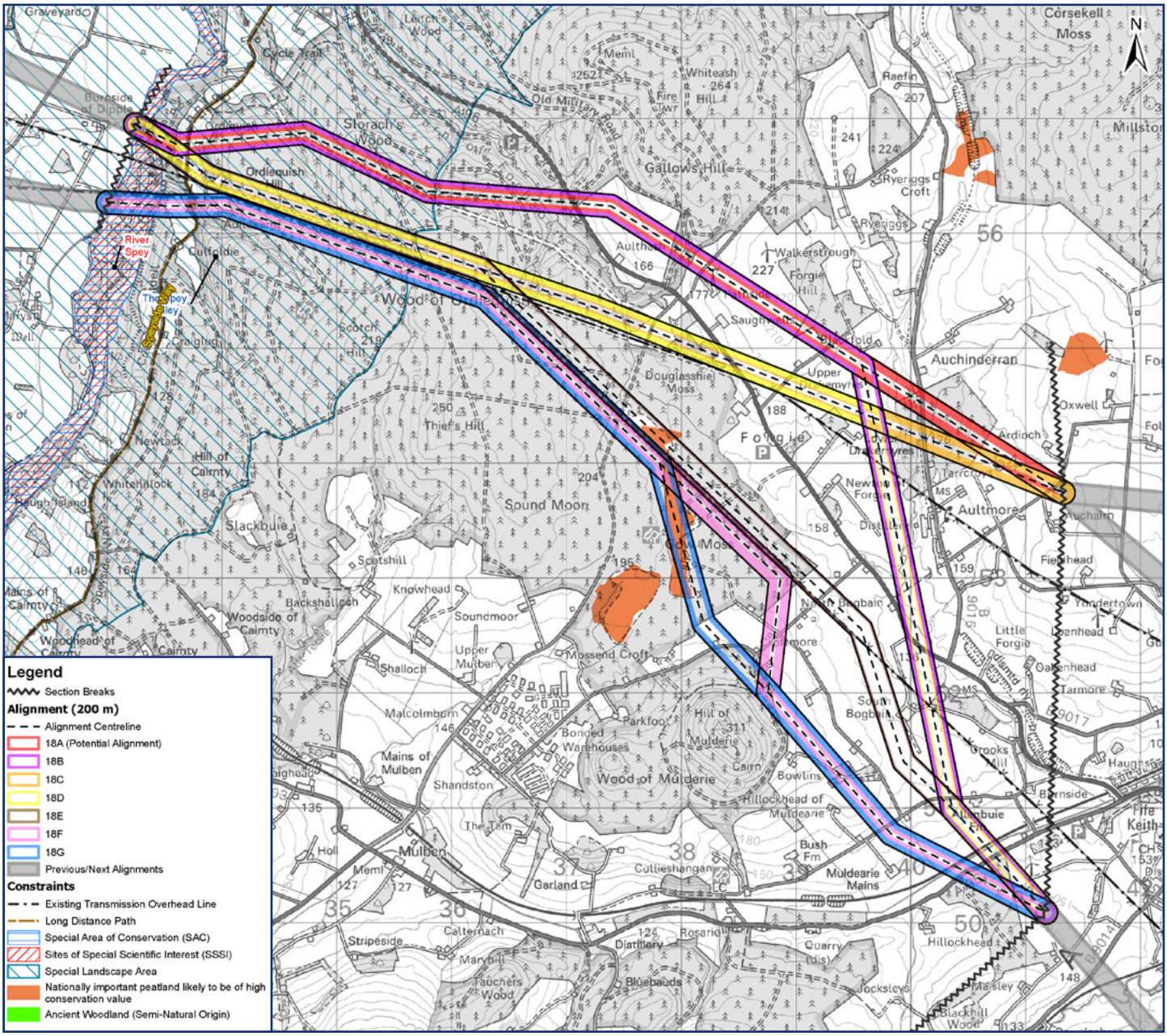
Conclusion

Alignment 17B has been selected as the Potential Alignment in Section 17, as it is the least constrained from an environmental and engineering perspective and considered acceptable from a capital costs perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 18 – River Spey to west of Keith



Scottish & Southern Electricity Networks

TRANSMISSION

Section 18 – River Spey to west of Keith

The key environmental, engineering and cost considerations which differentiate between alignment options 17A, 17B and 17C include:

Environmental

- Of the two options that end to the east of Aultmore, Alignment 18C is favoured over Alignment 18A from an ornithology, landscape character and visual perspective, as it is shorter in length, parallels the existing overhead lines and runs across lower ground in woodland.
- Alignment 18C is also favoured for cultural heritage designations, as it only comes close to one Sites and Monuments Record entry, Tor Castle, which is thought to be a natural feature of no heritage value.
- Alignment 18A is least constrained from a habitats perspective as there are no Annex 1 habitats (listed on the Habitats Directive), whereas Alignment 18C passes through Annex 1 habitat at Douglasshiel Moss.
- The total area of forestry loss for Alignment 18A is slightly less than for Alignment 18C.
- Of the alternative alignment options which end to the west of Keith, Alignments 18E, 18F and 18G all pass through an area of Class 1 peatland at Gow Moss, which is part of a national peat restoration project. Alignments 18D also passes through an area of peatland habitat and Annex 1 habitats at Douglasshiel Moss
- From a landscape character perspective, Alignment 18D is favoured over Alignment 18B, as it parallels the existing OHL for the longest length, then remains on lower ground south of Bogbain, helping to slightly contain the spread of overhead line influence in the area.
- Visually, Alignment 18D is also favoured as it remains in woodland with less severe 'boxing in' of properties than Alignment 18B.
- From a forestry perspective, Alignment 18B requires less forestry removal than the other options that end to the west of Keith.

Engineering

- All alignment options cross the River Spey, with the crossing point going from largely flat ground on the west bank across to raised ground on the east bank of the river. All crossing points are considered to be spannable.
- Alignments 18A, 18C, 18F and 18G all avoid crossing any existing overhead line transmission infrastructure. Alignments 18B, 18D and 18E all require crossings of an existing 132kV overhead line and an existing 275kV overhead line.
- Alignments 18A and 18C cross the A96 trunk road and the B9016. Alignments 18E, 18F and 18G cross the A95 trunk road once. Alignments 18B and 18D cross the A96 trunk road twice and the A95 trunk road once, and are therefore most constrained from this perspective. All alignment options except for Alignments 18A and 18C also cross a single-track heritage railway line.
- Alignment 18C requires the lowest number of angle tower positions (two), followed by Alignment 18A and 18D which require four angle towers. Alignment 18G requires a total of seven angle tower positions.
- There are no residential properties location within 170m of Alignment 18E, and between one and three residential properties located within 170m of Alignments 18A, 18B, 18C and 18D. There is one residential property located within 100m of Alignments 18F and 18G.
- A communications mast has been identified within 100m of alignment options 18C, 18D and 18E that is owned and operated by Airwave Solutions, who are responsible for communications related to emergency services and government organisations. Further consultation would be required with the mast operator to confirm if any interference could occur and if mitigation is required.

Cost

- Alignment 18C is the lowest estimated capital cost option and Alignment 18A is also acceptable from a capital costs perspective. All other alignment options are greater than 120% of the lowest estimated capital cost option.
- Alignments 18A and 18C have the lowest estimated operational costs. All other alignment options are greater than 120% of the lowest estimated operational cost option.

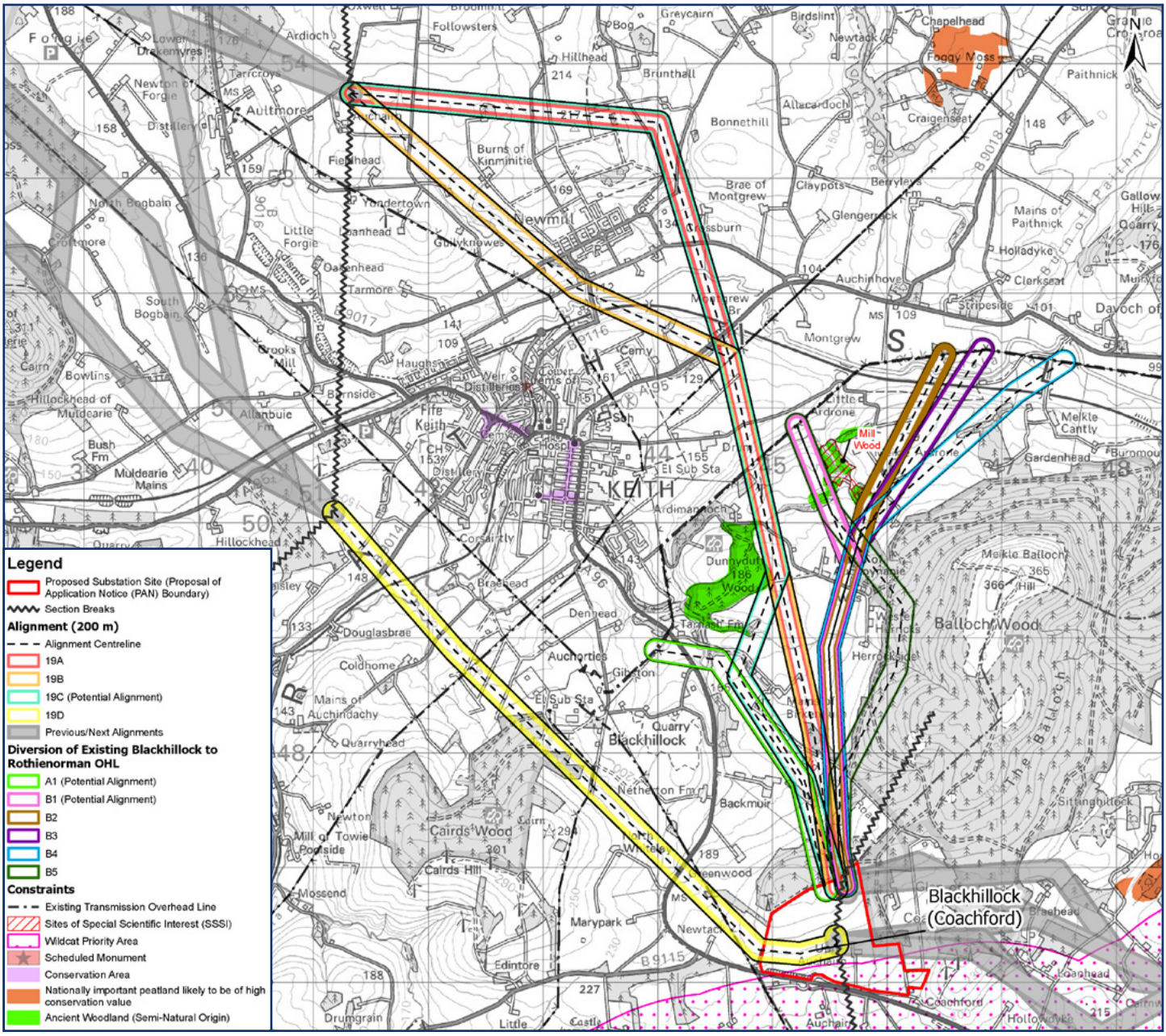
Conclusion

Alignment 18A has been selected as the Potential Alignment in Section 18, as it is the least constrained option from an engineering perspective and environmentally for peatland, habitats and forestry loss. It is more constrained than alternative alignment options for other environmental topics, but on balance Alignment 18A is considered to be the least constrained option. Alignment 18A is also acceptable from a capital cost perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 19 – West of Keith to Coachford substation



Scottish & Southern Electricity Networks

TRANSMISSION

Section 19 – West of Keith to Coachford substation

Section 19 includes alignment options for the Beauly to Blackhillock 400kV overhead line (Alignments 19A, 19B, 19C and 19D) and alignment options for the Coachford 400kV overhead line diversion (Alignments A1, B1, B2, B3, B4 and B5). The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 19 include:

Environmental

Beauly to Blackhillock 400kV Overhead Line

- Alignments 19A, 19B and 19C cross the more open and exposed landscape to the northwest of Newmill, whilst Alignment 19D sits slightly lower in the landscape, particularly on the approach to Keith, and is therefore less constrained in terms of landscape character.
- From a visual perspective, Alignments 19A, 19B and 19C around Keith and Newmill would be widely visible in the broad open valley of the River Isla, crossing the line of the existing overhead lines and adding to the existing 'wirescape'. They also cross the steep sides of Burn of Drum and Dunnyduff Wood and, whilst backdropped by Balloch Wood, the elevation potentially increases visibility from Keith. Alignment 19B crosses the River Isla where the valley is directly overlooked by the south side of Newmill, making it most constrained from a visual perspective. Alignment 19D is least constrained from a visual perspective, as it crosses on lower ground below Keith, with the more complex terrain restricting wider visibility.
- From a recreational perspective, Alignment 19D crosses fewer core paths than the other alignment options.
- There is little difference between the alignment options in terms of other environmental factors.

Coachford 400kV Overhead Line Diversions

- There is only one option (A1) for the diversion to connect from the existing Blackhillock substation to the proposed Coachford substation, therefore a comparative appraisal is not necessary. There is the potential for the presence of protected species and water abstractions in the area. From a landscape character perspective, the alignment runs across a landscape already characterised by overhead line infrastructure so would result in a slight increase in the effects on the local landscape. Visually, there would be local impacts on individual properties, but the undulating landscape and rising hills of the Balloch would limit wider visual influence.
- For the diversion of the existing overhead line from Rothienorman into the proposed Coachford substation, Alignment B1 follows a much less steep, flatter path across the landscape by maintaining the existing alignment for longest, but it then cuts through Mill Wood onto the higher slopes around Mains of Auchoynanie. Alignment B5 has the same benefits as Alignment B1 initially, but then deviates across the lower slopes of Balloch Wood, against the grain of the landscape. Alignment B4 crosses the landscape more sympathetically than Alignments B2 or B3.
- From a visual perspective, Alignment B1 is slightly less constrained as it remains on lower ground and still removes a reasonable length of existing 400kV overhead line around Keith. Alignment B5 is similar to Alignment B1, however it passes to the rear of properties beneath Balloch Wood, such that their key views to the front are less disrupted by infrastructure. However, the line sits higher in the landscape, with a risk of being skylined in views further west. Of the alignments crossing Hill of Ardrone, B4 is least constrained as it is set back off the summit of the hill, sitting into the hillside of Balloch Wood more sympathetically. However, should Alignments 19A, 19B or 19C be taken forward along with the Coachford 400 kV OHL Diversion Alignments, the visual preference would alter. In this instance Alignment B5 would be preferred, as it allows greater separation from the Beauly to Blackhillock 400kV overhead line.
- From a hydrological perspective Alignment B5 passes in close proximity to public and private water supplies and is therefore more constrained.
- With regards to natural heritage, Alignments B3 and B4 do not pass over or close to Mill Wood Site of Special Scientific Interest (SSSI). These alignment options also avoid sensitive Annex 1 habitats (listed on the Habitats Directive).
- Alignments B1 and B5 pass directly through an area of ancient woodland of semi-natural origin, however it is anticipated that this woodland could be oversailed without any requirement for removal of trees.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 19 – West of Keith to Coachford substation

Engineering

Beauly to Blackhillock 400kV Overhead Line

- Alignment 19A and 19C cross the River Isla, the Burn of Drum, the A95 trunk road, the B9017 and a single track railway line. Alignment 19B requires all the same major crossings as 19A and 19C, as well as a crossing of the B9116. Alignment 19D crosses the River Isla, the A96 trunk road, the B9014 and a single track railway.
- Alignment 19D crosses two 132kV overhead lines, one 275kV overhead line and the Moray West underground cable route. Alignments 19A, 19B and 19C cross one 132kV overhead line, one 400kV overhead line and the Moray West underground cable route. The existing 400kV overhead line is however proposed to be diverted into the Coachford 400 kV substation site as part of this project, which would remove the requirement for a 400kV overhead line crossing on any of these alignment options.
- Alignment 19D is situated at a higher elevation for a longer proportion of its length compared with the other alignment options.
- With regards to contaminated land, Alignment 19D passes within 100m of a historical rifle range that was in use between at least 1886 and 1945. There is a high unexploded ordnance risk associated with this site.
- There are two residential properties located within 170m of Alignment 19A and 19C, and one property within 170m of Alignment 19D. There are eleven properties located within 170m of Alignment 19B and one property within 100m.
- There is one small wind turbine located approximately 45 m from Alignments 19A, 19B and 19C. Depending on final tower locations, it might be necessary to remove or relocate this wind turbine to progress with any of these alignment options.
- Alignment 19B crosses two gas pipelines and Alignment 19D crosses three gas pipelines. Alignment 19D also parallels within 65m of the pipeline for approximately 1.5km which could result in electrical interference.

Coachford 400kV Overhead Line Diversions

- There is only one option (A1) for the diversion to connect from the existing Blackhillock substation to the proposed Coachford substation, therefore a comparative appraisal is not necessary. Alignment A1 crosses the A96 trunk road, a medium pressure gas pipeline and the Moray West underground cable route. The alignment also crosses three restricted local access roads. Alignment A1 requires two angle towers and there is one residential property located within 170m.
- For the diversion of the existing overhead line from Rothienorman into the proposed Coachford substation, Alignment B1 is the least constrained from an engineering perspective.
- Alignments B2, B3 and B4 cross the Aberdeen to Inverness single track railway line, whereas Alignments B1 and B5 avoid this crossing. All alignment options cross a number of minor roads of various categories and also the Moray West underground cable route. Alignment B3 crosses the Moray West cable route three times and Alignment B4 crosses it four times, making these options most constrained from this perspective.
- Alignment B2 features more than 5% of its length within a high-risk flood area next to the River Isla, and it is likely that a tower would be required within the flood area.
- Alignment B5 traverses across a significant side slope, which could pose challenges with construction and tower placement
- Alignments B1, B2 and B3 require three angle tower positions, Alignment B4 requires four angle tower positions and Alignment B5 requires five angle tower positions.
- There are no residential properties located within 170m of Alignments B1, B2, B3 and B5 and two within 170m of Alignment B4.
- There is one Telefonica fixed link between Millstone Hill and Hill of Ardrone. Alignments B2 and B3 are within approximately 300m of the mast and Alignment B4 is within 75m of the mast, therefore additional checks may be required to ensure there is no risk of impacts to the link.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 19 – West of Keith to Coachford substation

Cost

Beauly to Blackhillock 400kV Overhead Line

- Alignment 19D has the lowest estimated capital cost. Alignment 19A is greater than 140% of the lowest cost option, largely due to increased length compared with the other options.
- Alignment 19A has the lowest estimated operational cost. Alignment 19C is over 120% of the lowest cost option. Alignments 19B and 19D have substantially higher operational costs than Alignment 19A, due to the higher number of low voltage crossings.

Coachford 400kV Overhead Line Diversions

- Alignment A1 is the only option available for the diversion between the existing Blackhillock substation and the proposed Coachford substation so is the lowest cost.
- Alignment B1 has the lowest estimated capital cost for the diversion of the existing overhead line from Rothienorman into the proposed Coachford substation. Alignments B2 and B3 are both within 120% of the lowest cost option and are also considered to be acceptable from a capital cost perspective. Alignments B4 and B5 are over 120% of the lowest capital cost option. For Alignment B4 this is due to costs associated with increased length and additional low voltage crossings. For Alignment B5 this is due to increased forestry costs.
- Alignment B1 has the lowest estimated operational cost. Alignments B2 and B3 are over 120% of the lowest cost option. Alignments B4 and B5 are greater than 140% of the lowest operational cost option.

Conclusion

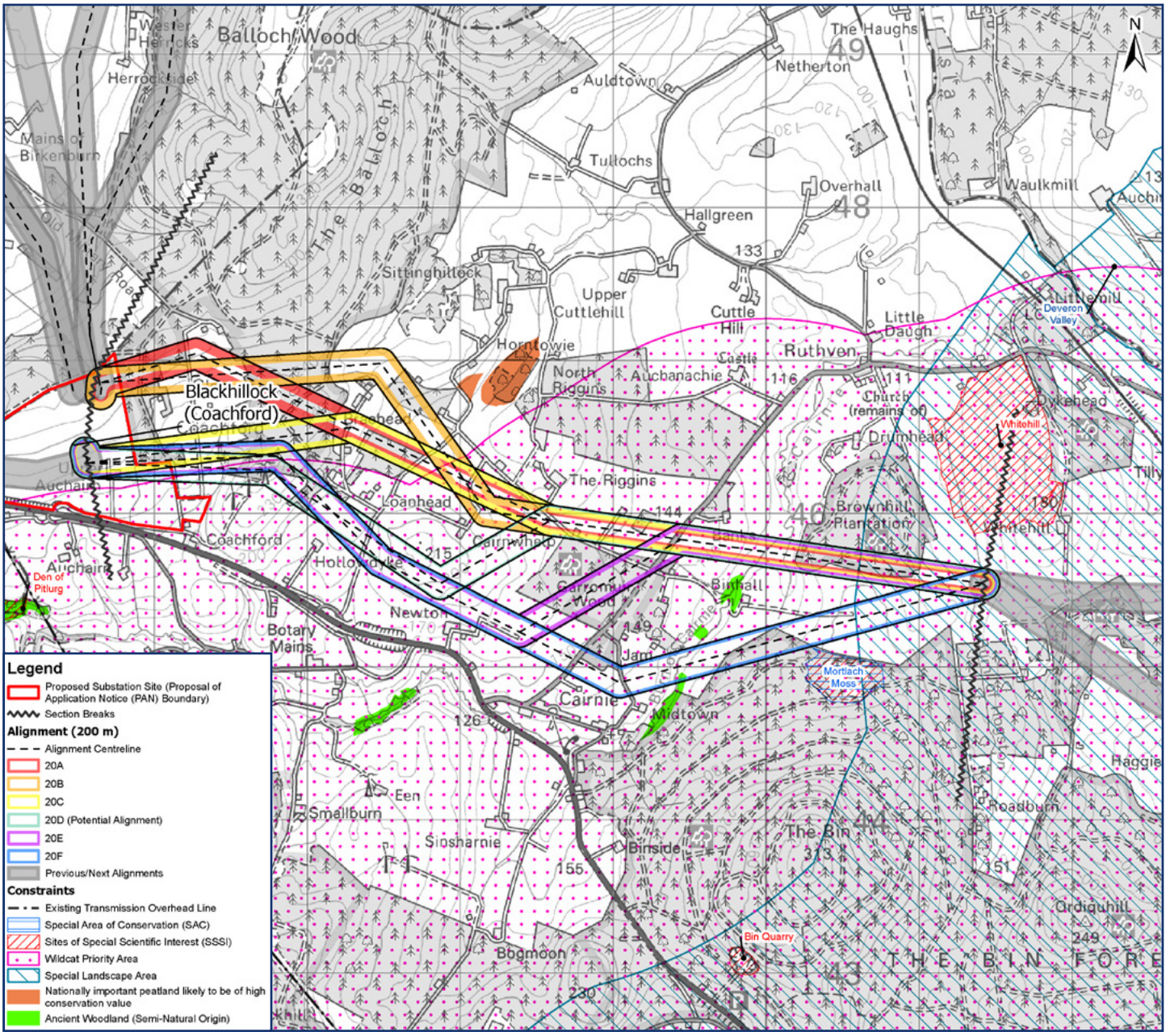
Alignment 19A has been selected as the Potential Alignment in Section 19, as it is the least constrained option from an engineering perspective. Whilst Alignment 19D is least constrained from an environmental perspective, the engineering constraints associated with the number of electricity infrastructure crossings required are considered to be too significant to take forward this option.

Alignments A1 and B1 have been selected as the Potential Alignments for the Coachford 400kV OHL diversions. Alignment A1 is the only option for the diversion between Blackhillock and Coachford substations. Alignment B1 is the least constrained option from both an environmental and engineering perspective and is also the lowest cost option.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 20 – Coachford substation to Whitehill



Scottish & Southern Electricity Networks

TRANSMISSION

Section 20 – Coachford substation to Whitehill

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 20 include:

Environmental

- Alignment 20B is least likely to impact on ecologically valuable habitats.
- From a cultural heritage designations perspective, Alignments 20B and 20C are least constrained as they only encounter one Sites and Monument Record entry.
- Alignments 20A, 20B and 20C are least constrained for cultural heritage assets, as there are no assets within 1km.
- Alignments 20A, 20B or 20C are also least constrained for landscape character as they sit slightly lower and less prominently in the landscape.
- Alignment 20D is marginally less constrained visually as it passes fewer properties in close proximity in comparison to other alignment options, despite its exposure across Cairn Hill.
- Alignment 20F is most constrained for natural heritage designations due to proximity to Mortlach Moss Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI). It is also most constrained for cultural heritage designations, cultural heritage assets and visual impacts. From a visual perspective this is due to its proximity to Cairnie, where it would be highly visible for residents of the village, users of the primary school and from the wider landscape.
- Alignment 20F requires less forestry removal than the other options, closely followed by Alignment 20E.

Engineering

- Alignment 20C requires the greatest number of minor road crossings (ten), whilst Alignments 20D, 20E and 20F require the fewest number (five).
- Alignments 20B and 20C require two angle tower positions, Alignments 20A and 20F require three angle tower positions and Alignments 20D and 20E require four angle tower positions.
- There are four residential properties located within 170m of Alignments 20D, 20E and 20F, six within 170m of Alignment 20C, seven within 170m of Alignment 20A and nine within 170m of Alignment 20B.
- There is one communications mast located in close proximity to the proposed Coachford substation site, operated by MBNL. This mast provides coverage for emergency services so has to be safeguarded. Alignments 20D, 20E and 20F are within 300m of an additional communications mast on Coachford Hill, however this is not registered with Ofcom.

Cost

- All alignment options are within 120% of the lowest estimated capital cost option, so all options are considered acceptable from a capital cost perspective.
- Alignments 20D, 20E and 20F have the lowest estimated operational costs. Alignments 20A and 20C are over 120% of the lowest cost option, and Alignment 20B is over 140% of the lowest cost option and therefore least favoured from this perspective.

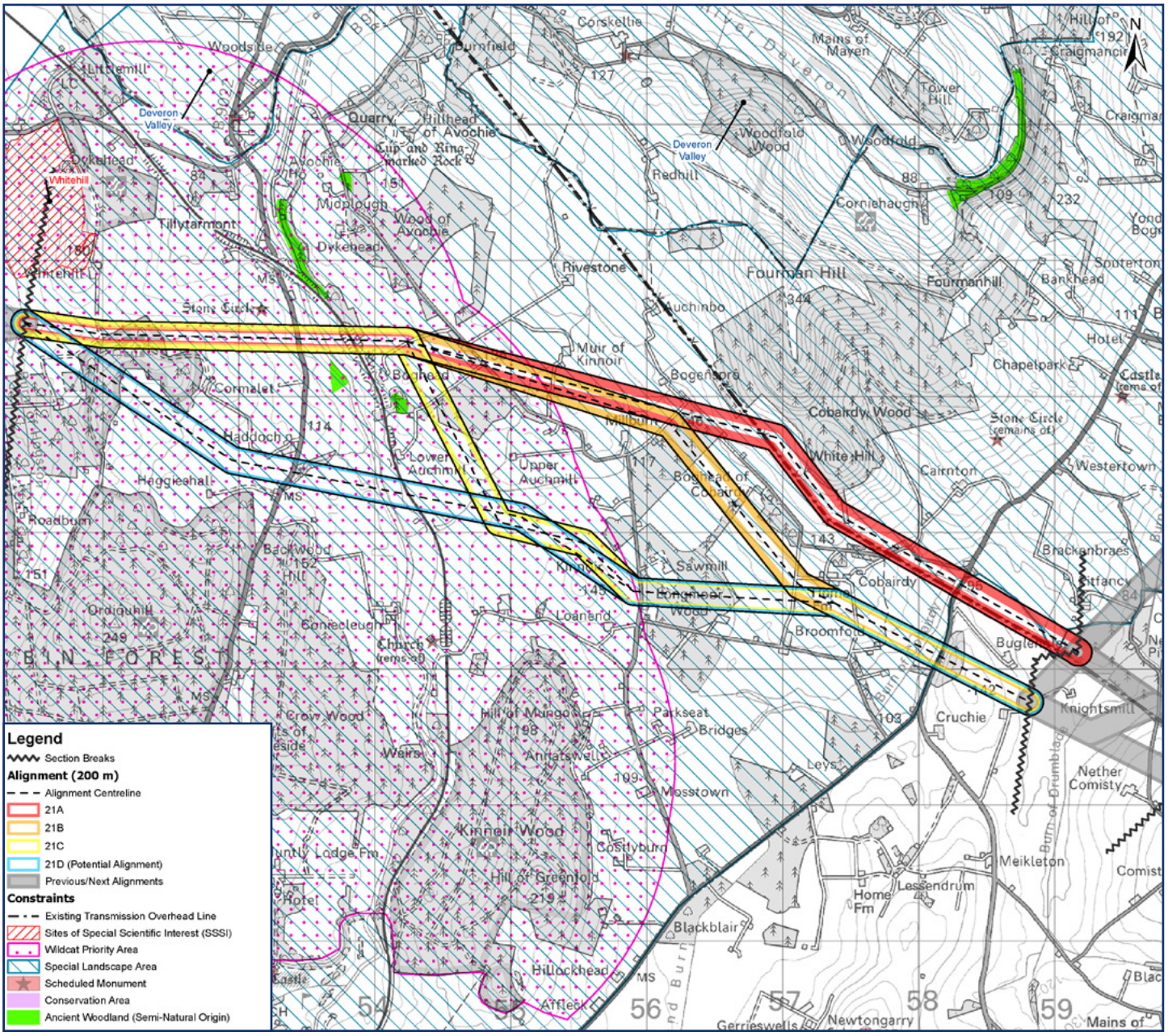
Conclusion

Alignment 20D has been selected as the Potential Alignment in Section 20, as it is favoured from an environmental perspective, predominantly due to visual impact; and has the lowest operational cost. All options were equally acceptable from an engineering perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 21 – Whitehill to Knightsmill



Scottish & Southern Electricity Networks

TRANSMISSION

Section 21 – Whitehill to Knightsmill

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 21 include:

Environmental

- Alignment 21D is least constrained for cultural heritage designations, as it is not expected to cause impacts to Arn Hill, stone circle (SM4), through changes within the setting of the scheduled monument, unlike the other alignment options in Section 21.
- Alignments 21C and 21D are least constrained for landscape character, as they would result in less 'wirescaping' around White Hill by maintaining a greater distance from the existing 400kV overhead line for longer.
- Alignment 21D is also least constrained visually, as it avoids the densest grouping of residential properties.
- From a habitats perspective, Alignment 21A is the only alignment option which entirely avoids sensitive Annex 1 habitats (listed in the Habitats Directive), although the other alignments options have the potential to avoid it depending on the detailed design.
- Alignment 21A is least constrained for forestry due to the amount of woodland removal, however Alignment 21D would also be acceptable.

Engineering

- All alignment options cross the Aberdeen to Inverness railway line, the River Deveron, the A97 trunk road and the B9022. Alignment 21D requires one minor road crossing, compared to between three and five minor road crossings for the other options.
- Alignments 21A and 21C cross a slightly wider area at risk of flooding than the other options. The flood zone at Burn of Cobairdy along Alignment 21A is approximately 290m wide, but it may be possible to span this depending on tower positions.
- Alignment 21A passes through an area of steeper slopes at Cobairdy Hill, which could pose challenges during construction due to its proximity to the existing 400kV overhead line.
- Alignments 21B and 21D require four angle tower positions, Alignment 21A requires five angle tower positions and Alignment 21C requires six angle tower positions, including two larger angle changes to the east of the River Deveron.
- There is one residential property located with 170m of Alignment 21B, four within 170m of Alignments 21C and 21D and six within 170m of Alignment 21A. Alignments 21B, 21C and 21D would result in several households being located between the existing 400kV overhead line and the new overhead line, although Alignment 21D maximises the distance between the two overhead lines, whilst also remaining furthest from the surrounding properties.

Cost

- Alignments 21B, 21C and 21D are similar in capital costs. Alignment 21A is over 140% of the lowest cost option due to the requirement for a crossing of the existing 400kV overhead line. However, all alignment options will need to cross the existing 400 kV overhead line at one location, so this is not considered to be a significant differentiator.
- Operational costs are relatively high for Section 21, with several infrastructure crossings for all options. Alignment 21A is the lowest estimated operational cost option, with Alignments 21C and 21D over 140% of the lowest cost option.

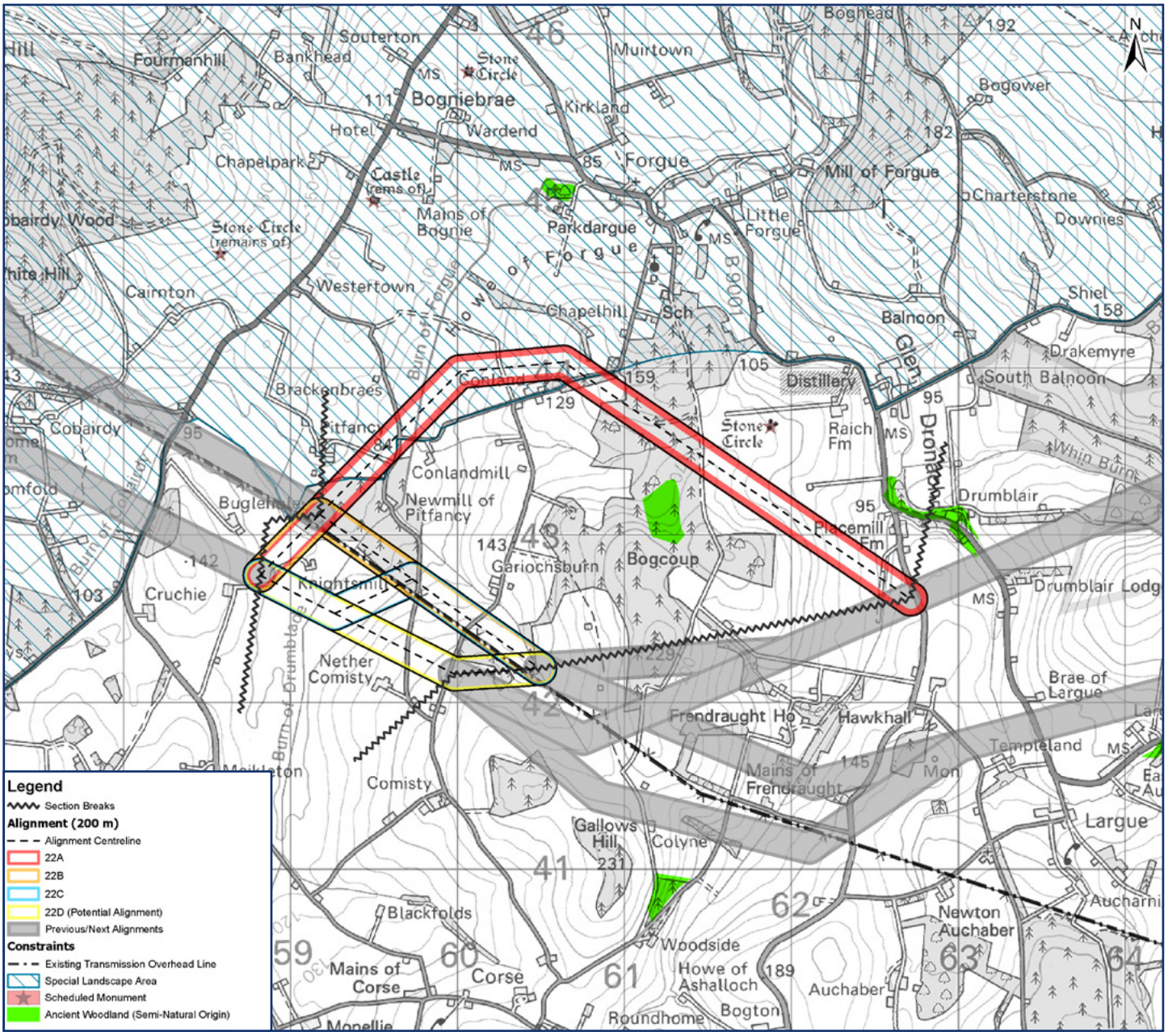
Conclusion

Alignment 21D has been selected as the Potential Alignment in Section 21, as it is the least constrained option from an environmental, engineering and capital cost perspective. It is least favoured from an operational cost perspective, but on balance is considered to be the least constrained overall.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 22 – Knightsmill to Frendraught



Scottish & Southern Electricity Networks

TRANSMISSION

Section 22 – Knightsmill to Frendraught

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 22 include:

Environmental

- Alignment 22D is least constrained for protected species due to crossing a smaller area of woodland, decreasing the habitat suitability for red squirrels, pine marten and bat species.
- Alignment 22B is least constrained for ornithology as it has the closest proximity to the existing overhead line, keeping the overhead line infrastructure in one place.
- Alignment 22B is also least constrained for cultural heritage designations and assets. Alignment 22A is most constrained for cultural heritage designation due to likely significant effects on Raich stone circle scheduled monument.
- Alignment 22B is slightly favoured for landscape designations, as the section of close parallel to the existing 400kV overhead line slightly reduces the additional extent of effects on the adjacent Deveron Valley Special Landscape Area (SLA). Alignment 22A is located partially within the SLA boundary, thereby directly impacting it.
- From a forestry perspective, Alignments 22A and 22B pass through areas of mixed age commercial forestry, with Alignment 22A least favourable as it impacts the most broadleaved woodland. Alignment 22C and 22D impact on the least woodland.
- From a visual perspective, Alignment 22B parallels the existing 400kV overhead line, containing the influence of overhead line infrastructure, although the crossing of the existing 400 kV overhead line would be locally intrusive.

Engineering

- Alignment 22A crosses two minor roads and one restricted local access road. Alignments 22B, 22C and 22D cross two minor roads.
- According to SEPA flood maps, all alignment options feature greater than 5% of their length within the 1 in 10 year flood zone. Alignment 22B is least preferred from this perspective, as the location of the 400kV overhead line crossing is within the flood zone.
- Alignments 22A and 22C require two angle tower positions, whereas Alignments 22B and 22D only require one angle tower position.
- There are no residential properties located within 170m of any of the alignment options.

Cost

- Alignment 22D is the lowest estimated capital cost option and Alignments 22B and 22C are also acceptable from a capital cost perspective. Alignment 22A is greater than 140% of the lowest cost option, due to the substantially higher costs associated with its additional length.
- Alignment 22D is the lowest operational cost option. All other alignment options are over 140% of the lowest cost option.

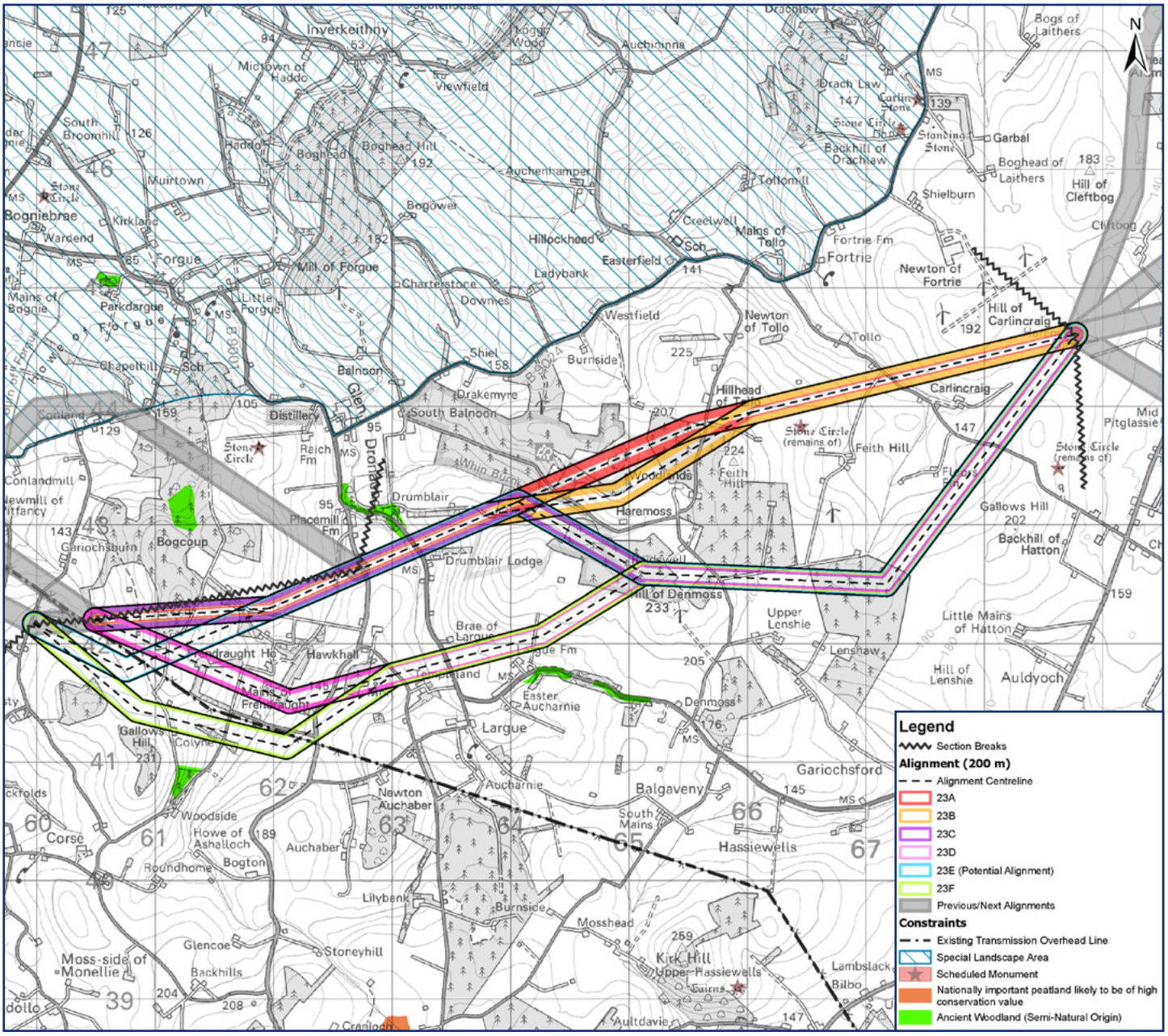
Conclusion

Alignment 22D has been selected as the Potential Alignment in Section 22, as it is the least constrained option from an engineering and cost perspective and connects to the Potential Alignments in Sections 21 and 23. Environmentally there was no clear preference, with the exception of Alignment 22A being the most constrained.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 23 – Frendraught to Hill of Carlincraig



Scottish & Southern Electricity Networks

TRANSMISSION

Section 23 – Frendraught to Hill of Carlincraig

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 23 include:

Environmental

- Alignment 23C and 23E would have the least setting impacts on stone circle scheduled monuments in the area, as these alignment options are further away and may sit lower in the landscape and therefore be less visible between stone circles, for which there is a visual relationship between them.
- Alignments 23C and 23E also avoid potential significant effects on a Category A Listed Building (Frendraught House) as they are located to the north of it, which is not an important view from the house.
- From a forestry perspective Alignment 23F requires the least forestry removal, although Alignments 23A and 23B are similar. Significantly more forestry removal would be required for Alignments 23C, 23D and 23E, however Alignment 23E has slightly less removal than Alignment 23C.
- Alignments 23D and 23E have no sensitive Annex 1 habitats (listed in the Habitats Directive) present, although the other alignments options have the potential to avoid these habitats depending on the detailed design.
- Recreationally, Alignment 23F is least affected in terms of highland commercial sports when compared to the other options.

Engineering

- Alignment 23F requires the highest number of minor road crossings (nine). Alignments 23C and 23E require the fewest minor road crossings (six).
- Alignments 23A, 23B, 23C and 23E pass through an area of sloped terrain, mostly north of Drumblair Wood where the slopes reach 30 degrees. This could pose construction challenges and may limit where towers can be positioned and constructed. Alignments 23D and 23F are in flatter terrain and do not pose the same challenges.
- Alignment 23A requires two angle tower positions, Alignments 23B, 23C, 23D and 23E require four angle tower positions and Alignment 23F requires six angle tower positions.
- There is one residential property located within 170m of Alignment 23E, two residential properties located within 170m of Alignments 23A, 23B, 23C and 23D and five residential properties within 170m of Alignment 23F. Alignments 23C, 23D and 23E maximise the separation distance from residential properties compared with the other options.

Cost

- Alignment 23A has the lowest estimated capital cost for this section. Alignments 23B, 23C and 23D are within 120% of the lowest estimated capital cost option and are also considered acceptable. Alignments 23E and 23F are over 120% of the lowest cost option, due to the increased length and additional angle towers compared with the other options.
- Alignments 23C and 23D are the lowest estimated operational cost options. Alignments 23A, 23B, 23E and 23F are over 120% of the lowest cost option.

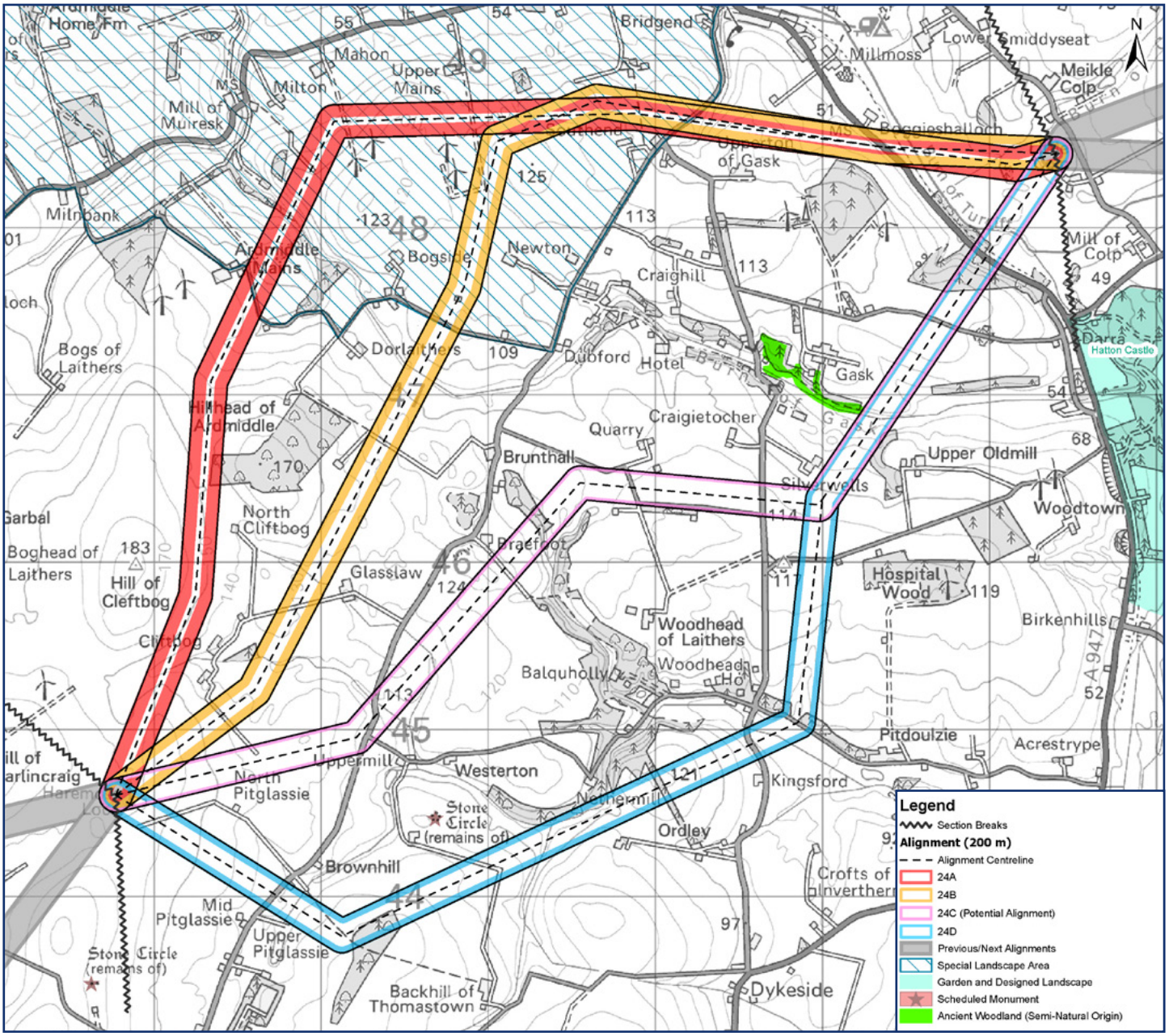
Conclusion

Alignment 23E has been selected as the Potential Alignment in Section 23, as it is one of the least constrained options from an engineering perspective, and is also less constrained for habitats, cultural heritage designations and assets.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 24 – Hill of Carlincraig to Burn of Turriff



Scottish & Southern Electricity Networks

TRANSMISSION

Section 24 – Hill of Carlincraig to Burn of Turriff

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 24 include:

Environmental

- Alignments 24A and 24B are both in close proximity to Turriff and would be highly visible from a large number of close receptors, and directly cross the Deveron Valley Special Landscape Area (SLA), introducing overhead line infrastructure into a portion of the SLA that is currently unaffected by such.
- Alignment 24D has the potential for significant setting impacts on a stone circle Scheduled Monument.
- Alignment 24D would impact sensitive Annex I habitats (listed in the Habitats Directive) and also requires the greatest area of forestry removal.
- Alignment 24C is therefore least constrained overall from an environmental perspective.

Engineering

- Alignments 24A, 24B and 24D all feature greater than 5% of their length within the 1 in 10 year flood zone according to SEPA flood maps. Alignments 24A and 24B run close to the Burn of Turriff and Idoch Water, which have considerable flood risk areas around them. Alignment 24D is also exposed to this area but also the Burn of Kingsford. Alignment 24C is least constrained for flood risk.
- Alignments 24C and 24D cross an area of steeper slopes where they cross the A947 in the Wood of Darra. However, due to the change in elevation across the A947, it may be possible to avoid siting a tower on the steeper slopes in this area.
- All alignment options have an existing network of roads and tracks located within 1km. However Alignment 24C has a slightly closer existing road network than the other options.
- Alignments 24A and 24B require five angle towers, whereas Alignments 24C and 24D require three angle towers.
- There are two residential properties located within 170m of Alignment 24B, three within 170m of Alignments 24A and 24D and five within 170m of Alignment 24C.
- There are two wind turbines close to the eastern end of the alignment options, closest to Alignment 24A.
- Alignment 24B crosses the largest number of fixed communications links, and could potentially create interference issues on the Braehad to Turriff fixed link.

Cost

- All alignment options are within 120% of the lowest estimated capital cost option, so all options are considered acceptable from a capital cost perspective.
- Alignment 24A has the lowest estimated operational cost. Alignments 24C and 24D are over 140% of the lowest cost option.

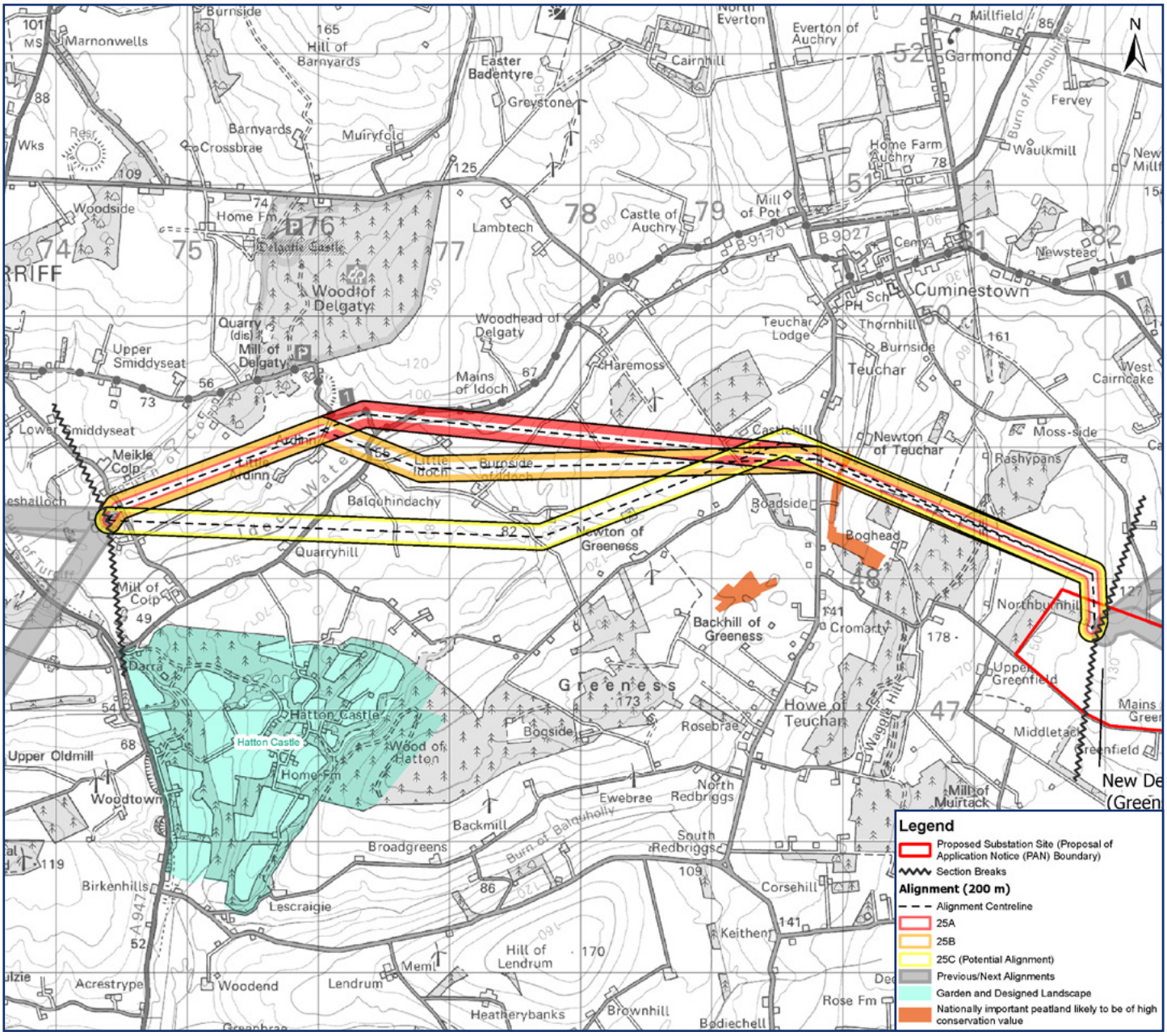
Conclusion

Alignment 24C has been selected as the Potential Alignment in Section 24, as it is the least constrained option from an environmental, engineering and capital cost perspective. It is least favoured from an operational cost perspective, but on balance is considered to be least constrained overall.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 25 – Burn of Turriff to Greens substation



Scottish & Southern Electricity Networks

TRANSMISSION

Section 25 – Burn of Turriff to Greens substation

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 25 include:

Environmental

- Alignment 25C is least constrained for protected species, as it has the smallest length of tree and hedge lines to cross, decreasing the habitat suitability for bat species.
- Alignment 25C is also least constrained for ornithology, based on its reduced interaction with the Idoch Water (which birds may use to commute along), compared with the other two options.
- For cultural heritage assets, Alignment 25C is located furthest from the Dovecot, Idoch Castle (LB16430, Category B Listed Building) and is unlikely to have any impacts that could lead to significant effects.
- From a landscape and visual perspective, Alignment 25C is a slightly better fit to the form of the landscape and is also slightly less visible from Turriff.
- Alignment 25C is least constrained for recreation as it is furthest from core paths in the area.

Engineering

- Alignments 25A and 25B cross five minor roads of various categories and Alignment 25C crosses four minor roads.
- Alignment 25A has greater than 5% of its length within the 1 in 10 year flood zone according to SEPA flood maps. This occurs around the Idoch Water which it crosses three times. Alignments 25B and 25B have a smaller portion of their length within the 1 in 10 year flood zone.
- All alignments have an existing network of roads and tracks located within 1km, however Alignment 25A has closer existing access compared to Alignments 25B and 25C and may therefore require fewer new access roads for construction.
- Alignment 25C requires four angle tower positions, Alignment 25A requires five angle tower positions and Alignment 25B requires six angle tower positions.
- There are three residential properties located within 170m of Alignment 25B, five within 170m of Alignment 25C and seven within 170m of Alignment 25A.

Cost

- All alignment options are within 120% of the lowest estimated capital cost option, so all options are considered acceptable from a capital cost perspective.
- All alignment options are within 120% of the lowest estimated operational cost option, so all options are considered acceptable from an operational cost perspective.

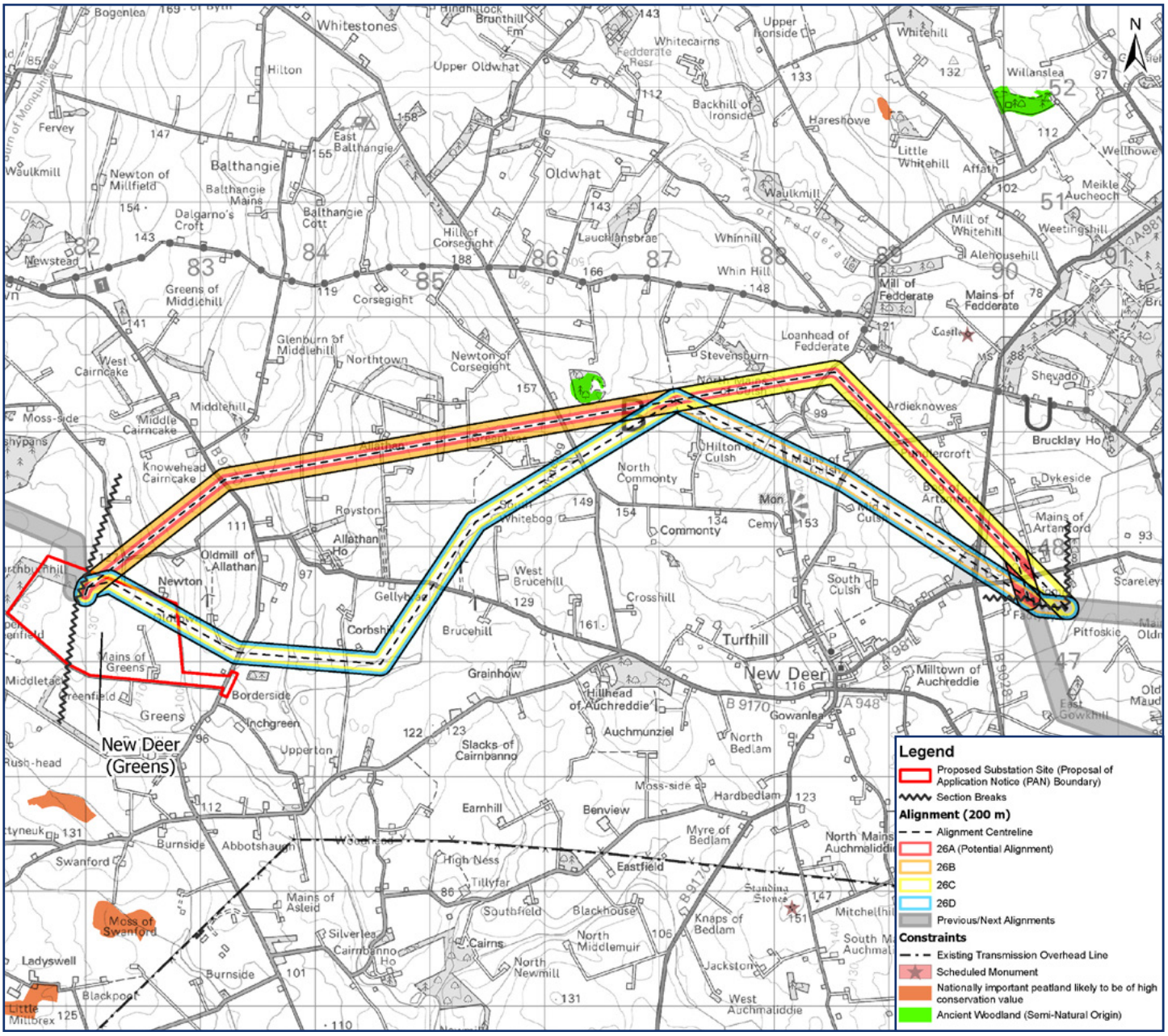
Conclusion

Alignment 25C has been selected as the Potential Alignment in Section 25, as it is the least constrained option from both an environmental and engineering perspective. All options are considered equally acceptable from a cost perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 26 – Greens substation to east of New Deer



Scottish & Southern Electricity Networks

TRANSMISSION

Section 26 – Greens substation to east of New Deer

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 26 include:

Environmental

- Alignments 26A and 26C are located on slightly lower ground and further from the Culsh Monument, which is a Category B Listed Building and a viewpoint. Alignments 26A and 26C are therefore least likely to impact on the setting of the monument and are marginally less intrusive in the panoramic views from the monument. Of the two options, Alignment 26A is slightly preferred from a visual perspective as there are marginally fewer direct views onto the alignment at the western end.
- Alignments 26A and 26C are also least constrained for landscape character as they fit better with the local topography.
- Commercial forestry loss is also lower for Alignments 26A and 26C.

Engineering

- All alignment options cross the A981, B9170 and B9029. Alignment 26D crosses the lowest number of minor roads (five in total), while Alignment 26A crosses the most (nine in total).
- Alignment 26A requires four angle tower positions, Alignment 26B requires five angle tower positions, Alignment 26C requires seven angle tower positions and Alignment 26D requires eight angle tower positions.
- There is one residential property located within 170m of Alignment 26A, three within 170m of Alignment 26B, six within 170m of Alignment 26C and eight within 170m of Alignment 26D.
- Alignment 26A is least constrained overall from an engineering perspective due to the lowest number of angle tower positions and fewest residential receptors within 170m.

Cost

- All alignment options are within 120% of the lowest estimated capital cost option, so all options are considered acceptable from a capital cost perspective.
- Alignment 26C is the lowest operational cost option. Alignment 26D is within 120% of the lowest cost option so is also considered acceptable from an operational cost perspective. Alignment 26D has the highest operational cost, at more than 140% of the lowest cost option.

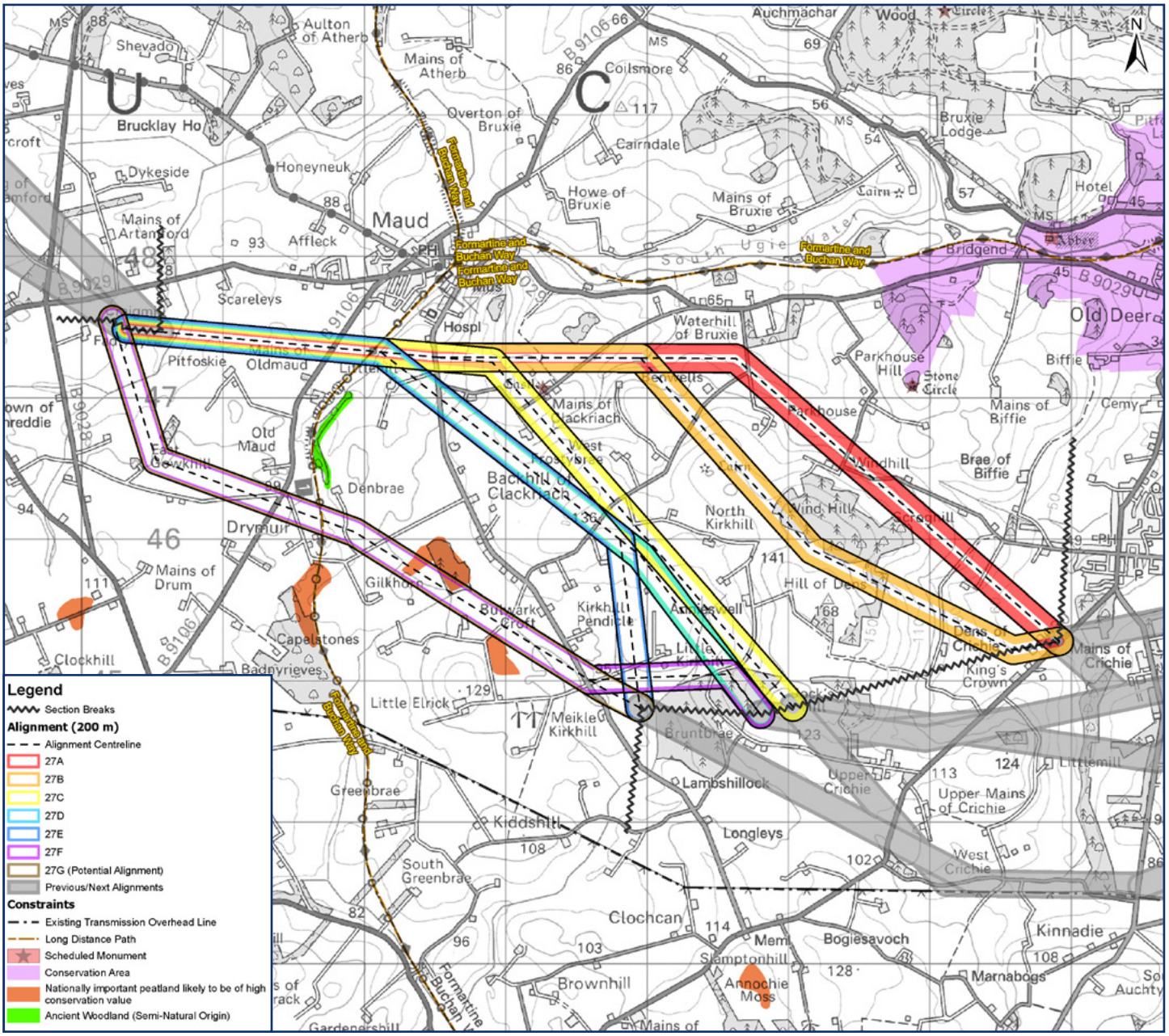
Conclusion

Alignment 26A has been selected as the Potential Alignment in Section 26, as it is the least constrained option from both an environmental, engineering and capital cost perspective. Alignment 26A is not favourable from a operational cost perspective, but on balance Alignment 26A is considered to be least constrained overall.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 27 – East of New Deer to Hill of Dens



Scottish & Southern Electricity Networks

TRANSMISSION

Section 27 – East of New Deer to Hill of Dens

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 27 include:

Environmental

- Alignment 27G is least constrained for protected species as it crosses a smaller length of tree and hedge lines, reducing the habitat suitability for red squirrels, pine marten and bat species.
- Alignment 27G is least constrained for ornithology as it has a greater distance of separation from South Ugie Water and Hill of Dens, where a large number of overwintering geese are understood to forage and pass over, based on consultation with local residents.
- Alignment 27G is not anticipated to impact any cultural heritage designations or assets and is therefore also least constrained for these categories.
- For landscape character, Alignments 27F and 27G cross a slightly more uniform landscape character, with less undulations, and are therefore marginally less constrained than the more northerly options.
- Visually, Alignments 27F and 27G are located on lower ground along their alignment, to maintain slightly lower visibility and reduce prominence around Hill of Dens. They are also less prominent from the edge of Maud and are therefore least constrained in visual terms.

Engineering

- Alignment 27C requires the lowest number of minor road crossings (three), compared with between four and seven minor road crossings for the other options.
- All alignment options also cross two National Grid Transmission gas pipelines and an electrical interference study may be required in these locations. Alignments 27F and 27G cross the pipelines at the best angle compared with the other options, reducing the likelihood of interference.
- Alignments 27A and 27B pass through some sections with intermediate slopes (maximum 21 degrees) compared with the other alignment options (maximum 14 degrees).
- Alignments 27F and 27G cross a small pocket of peatland, but it should be possible to microsite tower locations out of this area.
- From a construction and maintenance perspective, all alignment options have an existing network of roads and tracks located within 1km. However, Alignments 27A and 27G have closer existing access compared to the other options and may therefore require fewer new access roads for construction.
- Alignment 27C requires one angle tower position, Alignments 27A, 27D and 27E require two angle tower positions, Alignment 27G requires three angle tower positions and Alignments 27B and 27F require four angle tower positions.
- There are two residential properties located within 170m of Alignments 27B and 27D, three within 170m of Alignment 27C, four within 170m of Alignments 27E, 27F and 27G and five within 170m of Alignment 27A.

Cost

- Alignment 27G is the lowest estimated capital cost option. Alignments 27C, 27D and 27E are within 120% of the lowest estimated capital cost option, so are also considered acceptable from a capital cost perspective. Alignments 27A and 27B are greater than 140% of the lowest costs option and are least preferred from this perspective.
- Alignment 27G is the lowest estimated operational cost option. All other alignment options are greater than 140% of the lowest cost option and are therefore least favourable from this perspective.

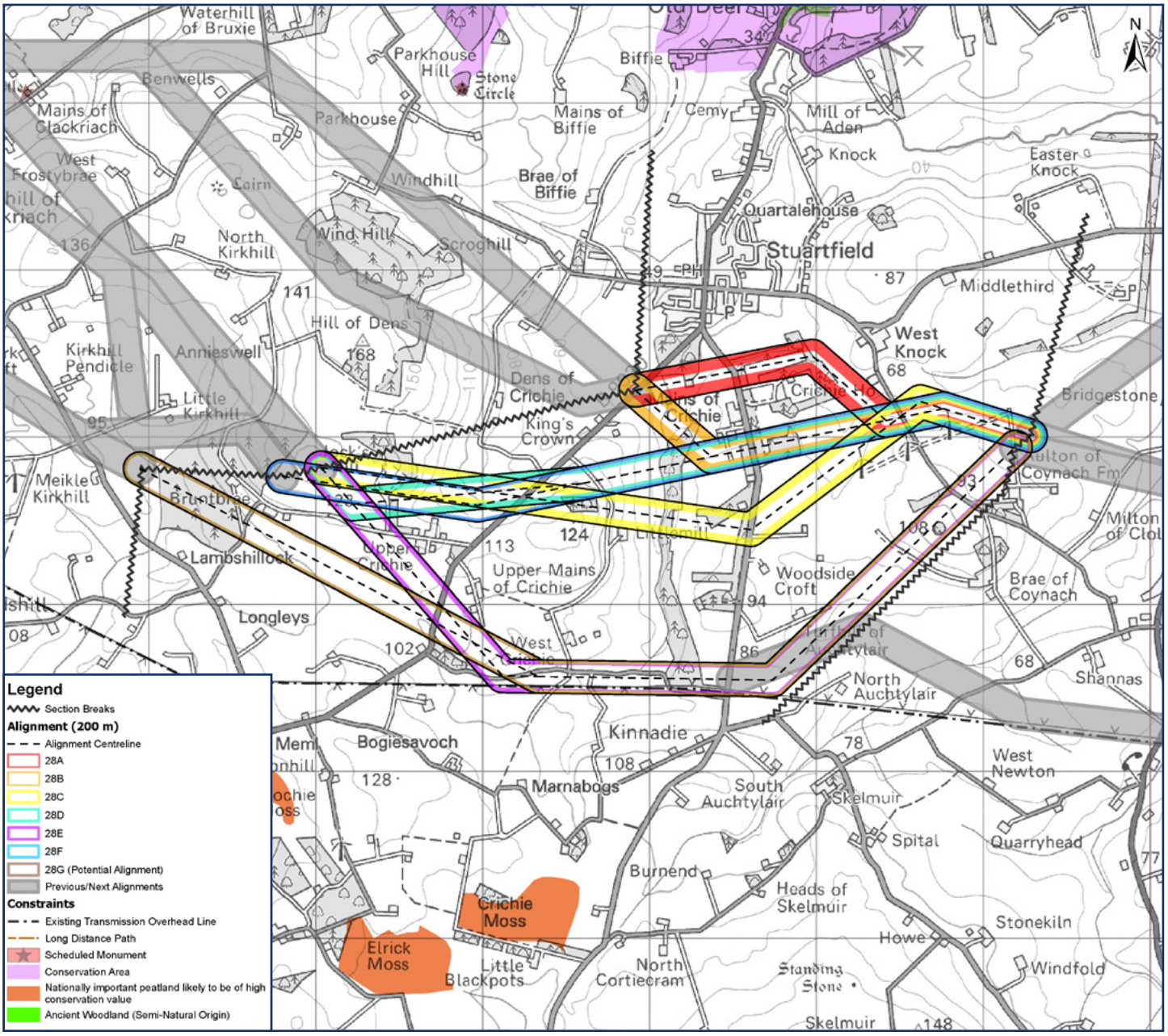
Conclusion

Alignment 27G has been selected as the Potential Alignment in Section 27, as it is the least constrained option from an environmental, engineering and cost perspective.

Scottish & Southern Electricity Networks

TRANSMISSION

Section 28 – Hill of Dens to southeast of Stuartfield



Scottish & Southern Electricity Networks

TRANSMISSION

Section 28 – Hill of Dens to southeast of Stuartfield

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 28 include:

Environmental

- Alignment 28E and 28G are least constrained for protected species as they have the least amount of conifer woodland, reducing the habitat suitability for red squirrels, pine marten and bat species.
- Alignment 28G is least constrained for ornithology as it is further from South Ugie Water and Hill of Dens, where a large number of overwintering geese are understood to forage and pass over, based on consultation with local residents.
- Alignment 28G is also least constrained for cultural heritage designations, as there are no anticipated impacts to designations.
- For landscape character and visual amenity, Alignment 28G, followed closely by 28E, is least constrained; it is on lower, flatter terrain more in line with the landscape grain, and through a slightly less attractive landscape. It also parallels the existing 400kV overhead line for the longest distance, helping to reduce the spread of overhead line influence across the wider landscape. Visually, Alignment 28G contains overhead line infrastructure into the same area and is further from Stuartfield, although a number of properties around Upper Smithy Croft and North Auchtylair would become 'boxed in' between overhead lines.

Engineering

- Alignments 28A, 28B, 28C, 28D and 28F each cross two minor roads. Alignment 28E crosses six minor roads and Alignment 28G crosses eight minor roads.
- All alignment options cross one National Grid Transmission gas pipeline. Alignment 28E has a shallow crossing angle of approximately 28 degrees and is therefore least favoured, whereas Alignment 28G has the best crossing angle at 56 degrees. An electrical interference study may be required where the alignments cross the pipeline.
- The majority of alignment options require two angle tower positions. Alignments 28A and 28D require three angle tower positions.
- There are no residential properties located within 170m of Alignments 28B, 28D and 28F. There are two residential properties located within 170m of Alignment 28C, three within 170m of Alignment 28A, six within 170m of Alignment 28E and eight within 170m of Alignment 28G. Alignments 28A, 28B, 28C, 28D and 28F are in close proximity to the settlement of Stuartfield.
- There are between one and three existing operational wind turbines located within 300m of all alignment options. For Alignments 28A, 28B, 28C, 28D and 28F, the closest turbine is only just far enough away from the alignment options. Further consideration would be required to ensure these alignment options are not micro-sited any closer to the turbine location.

Cost

- Alignment 28B is the lowest estimated capital cost option and Alignment 28A is also within 120% of the lowest cost option. The other alignment options are greater than 140% of the lowest cost option, largely due to increased length.
- Alignment 28B has the lowest estimated operational cost. Alignments 28D and 28F have slightly higher costs due to increased length, but as still within 120% of the lowest cost option. All other alignment options are greater than 140% of the lowest cost option.

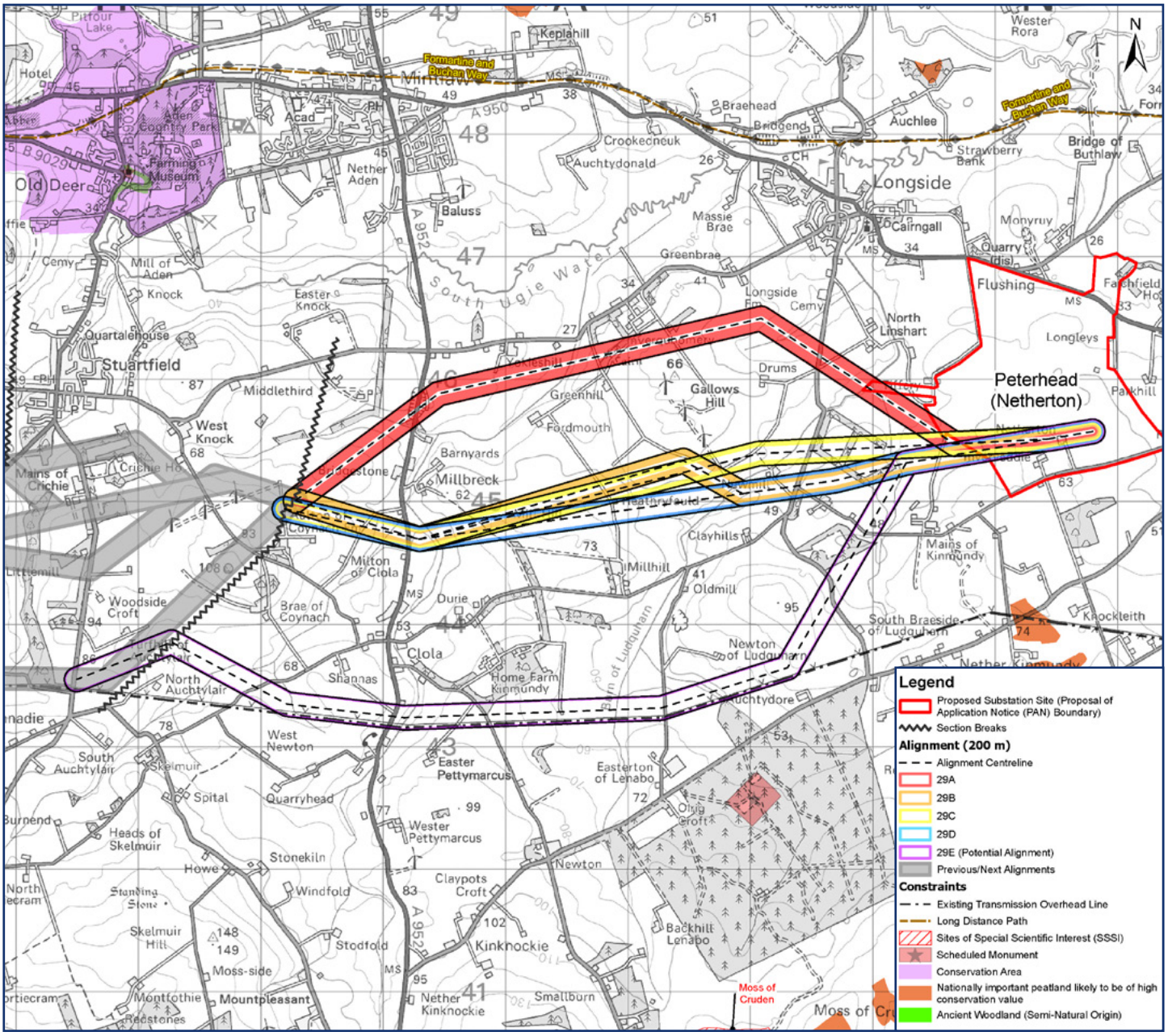
Conclusion

Alignment 28G has been selected as the Potential Alignment in Section 28, as it is the least constrained option from an environmental perspective and from an engineering perspective there is no clear preference. Despite the cost factors being unfavourable, it is considered that the environmental benefits outweigh the cost factors, specifically in relation to maintaining a distance from the settlement of Stuartfield and Hill of Dens and seeking to keep new and existing infrastructure together where possible

Scottish & Southern Electricity Networks

TRANSMISSION

Section 29 – South east of Stuartfield to Netherton Hub



Scottish & Southern Electricity Networks

TRANSMISSION

Section 29 – South east of Stuartfield to Netherton Hub

The key environmental, engineering and cost considerations which differentiate between the alignment options in Section 29 include:

Environmental

- Alignment 29E would contain new overhead line infrastructure into the existing 400kV overhead line corridor and, whilst running against the grain of the landscape, particularly across Hill of Ludquharn, it is least constrained overall in landscape character terms.
- Visually, Alignment 29E is prominent locally where it diverges from the existing overhead line infrastructure and crosses the Hill of Ludquharn. However, it visually contains overhead line infrastructure into an existing corridor and is therefore slightly favoured over the other options, although it is noted that this alignment results in the 'boxing in' of properties at North Auchtylair. Careful tower placement would be required where the alignment crosses Hill of Ludquharn, along with careful placement of the angle tower opposite Auchtydore.
- Alignment 29E is also least constrained for ornithology, also due to its close parallel alignment with the existing overhead line, and largest distance of separation from the South Ugie Water where large number of overwintering geese are understood to forage, based on consultation with local residents.
- Alignment 29E passes through a larger area of forestry than the other options, although the difference is marginal.

Engineering

- Alignments 29B, 29C and 29D cross one National Grid Transmission gas pipeline, Alignment 29E cross two pipelines and Alignment 29A crosses three pipelines. Alignment 29A crosses at the worst angle (10 degrees) and Alignment 29E crosses at the best angle (80 degrees). Alignment 29A has a higher risk of electrical interference on one pipeline, due to running parallel with it for a longer distance (0.8 km).
- Alignments 29C and 29D require three angle tower positions, Alignment 29A requires four angle tower positions, Alignment 29B requires five angle tower positions and Alignment 29E requires six angle tower positions.
- There is one residential property located within 100m of all of the alignment options, however this property will be acquired as part of the proposed Netherton Hub substation project and is therefore not a constraint. There is a second residential property located just within 100m of Alignment 29E, to the south of Clola. It may be possible to microsite the alignment to maintain 100m from this property. There is one residential property located within 170 m of Alignment 29A and two within 170m of Alignments 29B, 29C and 29D.
- Alignment 29A passes closest to the settlements of Stuartfield, Mintlaw and Longside. Alignment 29E stays further from the larger settlement areas.

Cost

- Alignment 29C is the lowest estimated capital cost option and Alignments 29A, 29B and 29D are within 120% and considered acceptable. Alignment 29E is greater than 140% of the lowest cost option due to its increased length.
- Alignment 29C has the lowest estimated operational cost. All other alignment options are greater than 140% of the lowest cost option, although Alignment 29E has a significantly higher cost than Alignments 29A, 29B and 29D due to the high number of low voltage crossings required.

Conclusion

Alignment 29E has been selected as the Potential Alignment in Section 29, as it is the least constrained option from both an environmental and engineering perspective. Despite the cost factors being unfavourable, it is considered that the environmental benefits outweigh the cost factors, specifically in relation to maintaining a distance from the settlements of Stuartfield, Mintlaw and Longside and seeking to keep new and existing infrastructure together where possible.