

SKYE REINFORCEMENT PROJECT

Additional Information

**Peat Depth and Occurrence
Sections 4 and 5**

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1.0 Introduction

This report presents the findings of additional peat probing and characterisation undertaken in Sections 4 and 5 of the proposed Skye Reinforcement Project (the Proposed Development) and has been prepared to address an objection to the Section 37 application made by the Scottish Environment Protection Agency (SEPA). This report should be read in conjunction with Volume 2: Chapter 6 (Water Environment) and Volume 2: Chapter 7 (Geology and Soils) of the Environmental Impact Assessment Report (EIA Report) which accompanied the application.

Specifically, the objection raised by SEPA was made by letter dated 10th January 2023¹, and states:

*“ We **object** to this application due to a lack of information on impacts on peat and carbon. We will withdraw this objection if the issues outlined in section 1 below are adequately addressed.*

*1.1 We note that detailed peat probing work has been carried out for pole and tower locations and surrounding infrastructure for sections 0-3 and 6, but not for sections 4 and 5. This is disappointing as other information provided (habitat survey, peat slide risk assessment and the Carbon and Peatland Map) all indicate that much of the area is peatland. We would suggest that the lack of presentation of comprehensive peat probing information and it not being clear that impacts on peat has been taken into consideration in the overall layout does not follow the principles outlined in the soon to be adopted National Planning Framework 4. We **object** to the development until sections 4 and 5 have been fully assessed in relation to peat, and the layout is demonstrated to avoid deep peat where possible. This includes moving poles and tracks from their currently mapped position where this is shown to be on deep peat.*

1.2 We brought the above issue to the attention of the developer early on in the formal consultation period and we welcome the positive engagement we have had with them leading up to this response. We have agreed a proportionate approach to peat survey with them and we look forward to receiving the further information (and if required amendments to layout) once the probing has been carried out.”

1.1 Scope of Work Undertaken

Following receipt of SEPA’s objection at the request of SSEN Transmission SLR geologists agreed with SEPA^{2,3} the areas in Section 4 and 5 of the project where additional peat probing would be undertaken and the methodology that would be adopted.

In summary the agreed survey extent focussed peat probing where deposits of peat could be more likely to occur and was informed by a review of:

- ground slope (e.g. shallower slopes, less than 12°);
- the results of drilling investigations at the proposed tower locations and which recorded the presence of peat; and
- the Phase I habitat survey and where peat forming habitats were recorded.

¹ Letter dated 10 January 2023 from SEPA to Energy Consents Unit, ref.: 7040.

² Email of 13 December 2022: 12:13 from Joanne Nicholson (SSEN-T) to Susan Haslam (SEPA)

³ Email of 10 January 2023: 10:01 from Susan Haslam (SEPA) to Joanne Nicholson (SSEN-T)

Using this data areas of where peat probing should be focussed were agreed³ and in these areas the following peat probing methodology was to be adopted:

- probe proposed tower locations and then at 20m N, S, E and W of tower (e.g. a crosshair);
- probing at 50m intervals between towers as surveyors walk between proposed tower locations; and
- new permanent tracks probed at 25m intervals along proposed track centre line.

It was agreed not to probe adjacent to existing tracks that are proposed to be upgraded.

At the request of SEPA, peat probing at an offset to the proposed alignment of permanent tracks was undertaken where deep peat (>1m) was recorded.

The survey works were undertaken week commencing 23 January 2023 by experienced SLR surveyors.

The survey methodology adopted was the same that was adopted in other Sections of the project where peat probing was conducted and was as reported in the Peat and Carbon Management Plan which accompanied the EIA Report (see Volume 5: Appendix V2-7.3 – Peat and Carbon Management Plan).

2.0 Peat Probing Results

The areas which were probed, and the depth of peat proven, are shown on Figures 1.1 – 1.8.

Peat probing was undertaken in all the areas agreed with SEPA. A total of 4,082 peat probes were advanced.

2.1 Tower Locations

The average peat depth at all the probed tower locations was calculated using the peat depth data collected within 30 m of each proposed tower centre (the proposed micro siting distance is up to 40 m). Of the 134 tower locations probed only 7 proposed tower locations recorded an average peat depth >1 m, as shown in Table 2-1.

Table 2-1
Towers where Average Peat Depth Recorded Greater than 1 m

Tower Number	No. of Peat Probes within 30m of Tower Centre	Average Peat Depth (m)
BF83	15	1.37
BF113	14	1.29
BF114	15	1.26
BF165	12	1.13
BF185	10	1.57
BF252	10	1.10
BF283	11	1.75

Table 2-1 confirms that no tower location recorded an average peat depth of >2 m, and only towers BF185 and BF283 recorded peat depths >1.5 m.

It is evident, therefore, that there are no large or extensive areas of peat intercepted by the Proposed Development which reflects the site inspections, ground truthing and design undertaken as part of the scheme development and which formed part of the embedded site mitigation.

Part 3 of this report discusses further the towers identified in Table 2-1.

2.2 Permanent Access Tracks

With reference to proposed new permanent access tracks Figures 1.1 – 1.8 shows:

- Map 1. The proposed access track to tower BF83 is typically located on shallow soils / peat and that with micro-siting (up to 25 m either side is proposed) the discrete area of proven deep peat can be avoided.
- Map 1. The proposed access track between towers BF90 and BF98 avoids areas of deeper peat.
- Map 1 / Map 2. The proposed access track between BF104 and BF122, and to BF 124 and BF125 avoids deep (>1 m) peat or can be micro sited to avoid deep peat.
- Map 2. The proposed access track from the north from Brora Chnoc also avoids deep peat or can be micro sited to avoid deep peat.

- Map 3 / Map 4. All proposed access tracks avoid deep (>1 m) peat or can be micro sited to avoid deep peat.
- Map 5, 6, 7 or 8. No peat probing required beneath access tracks.



The presence of peat, therefore, is not considered to pose a constraint to the development of proposed permanent access tracks subject to the soils and peat safeguarding and management proposals presented in the Peat and Carbon Management Plan which accompanied the EIA Report.

3.0 Proposed Towers with Confirmed Presence of Peat

As discussed in Part 2 of this report, only 7 tower locations in Sections 4 and 5 have been confirmed to have an average peat depth of >1 m. Each of these is discussed in further detail in Table 3-1. Mitigation measures to reduce potential effects on areas of peat / carbon rich soils are also presented.

Appendix 01 presents a summary of collated data at tower locations within Sections 4 and 5, and a commentary of the potential to micro-site these proposed tower locations.

Table 3-1
Discussion of Towers where Peat is >1 m

Tower BF83	
	<p>This tower is situated at the top of a steep slope. Proposed position is to assist with the inclination from BF82 upslope to BF83, moving this tower back will result in insufficient ground clearance between conductors.</p> <p>Moving the tower forward will result in a health and safety issue for proximity to the edge of the slope.</p> <p>Mitigation: Location heavily constrained by topography. No movement possible beyond limited micro siting distance. Soils / peat safeguarding specified in EIA Report to be adopted.</p>
Towers BF113 and BF114	
	<p>Towers between BF112 to BF115 were chosen to reflect the constraint posed by proximity to the existing overhead line (OHL) forcing the alignment north.</p> <p>This alignment is routed through a valley with hilly terrain either side making it difficult to relocate the alignment. Potential for micro-siting towers 10-20 m to best suited location in terms of peatland habitat, but not further.</p> <p>Mitigation: Micro-siting at time of construction to avoid valuable habitat and greatest peat depth. Soils / peat safeguarding specified in EIA Report to be adopted.</p>

Tower BF165



The OHL alignment follows the existing estate track, minimising effects on peatland as far as practicable.

Mitigation: Micro siting at time of construction to avoid valuable habitat and greatest peat depth. Soils / peat safeguarding specified in EIA Report to be adopted.

Tower BF185



This area is particularly challenging to relocate towers due to the difficult terrain, span lengths and tower positions are already sited in locations at the maximum span lengths. These come directly through KLH valley with rock outcrops to each side. Towers are located just off the existing track with small spurs.

Mitigation: Location heavily constrained by topography. No movement possible beyond limited micro siting distance. Soils / peat safeguarding specified in EIA Report to be adopted.

Tower BF252



Alignment here was chosen to follow the existing alignment and therefore form a less noticeable change in landscape and visual terms. The alignment is away from the settlement of Kingie and is located near the surge charge chamber of Loch Quoich Dam therefore existing access up to this location is proposed and can be used.

Not possible to move tower BF252 without having 'knock on' effect on adjoining towers resulting in their movement.

Mitigation: No movement possible beyond limited micro siting distance. Soils / peat safeguarding specified in EIA Report to be adopted.

Tower BF283



Tower sited here to maximise similarities between the existing line and to make use of the existing tree swathe where possible.

Forestry to the south of proposed line and existing OHL to the north, as well as topography, constrain the route / tower.

Mitigation: Micro-site linearly along the route by 10 – 20 m east to avoid deepest peat. Soils / peat safeguarding specified in EIA Report to be adopted.

Review of Table 3-1 confirms that the design of the Proposed Development has taken consideration of existing ground conditions and constraints, and that measures have been taken as part of the design to mitigate potential impacts on peat, habitats and visual amenity as far as practicable.

At a number of locations, technical and topographical constraints restrict the movement of towers out with the proposed micro-siting limits.

It has also been shown that the proposed towers have been located where possible where there are existing access routes in order to minimise potential effects on peatland and existing habitats.

4.0 Safeguarding of Peat and Carbon Rich Soils

4.1 Committed Mitigation and Controls

The disturbance of peat and carbon rich soils was considered in detail in the EIA Report, and specifically in Volume 2: Chapter 7 (Geology and Soils) and the Peat and Carbon Management Plan which accompanied the assessment (Volume 5: Appendix V2-7.3 – Peat and Carbon Management Plan). Controls were specified to minimise disturbance, to store and manage, and ensure beneficial re-use of disturbed soils and peat in order that their integrity and their entrained carbon can be maintained.

As detailed in the EIA Report the Applicant has committed to the deployment of a full-time Ecological Clerk of Works (ECoW) who would ensure the mitigation and safeguards detailed in the EIA Report and in the Construction and Environmental Management Plan (CEMP) would be adhered to.

4.2 Compliance with National Planning Framework

4.2.1 Intent of the Framework

The intent of Policy 5 (Soils) of National Planning Policy 4 (NPF4)⁴ is “to protect carbon rich soils, restore peatlands and minimise the disturbance of soils from development”.

The Policy states [5(a)] that development proposals should only be supported if they are designed and constructed:

- i. in accordance with the mitigation hierarchy by first avoiding and then minimising the amount of disturbance to soils on undeveloped land;
- ii. in a manner that protects soils from damage including from compaction and erosion, and that minimises soils sealing.

Further [5(c)] states development proposals on peatland, carbon rich soils, and priority peatland will only be supported if:

- i. essential infrastructure and there is a specific locational need and no other suitable site;
- ii. the generation of energy from renewable sources that optimises the contribution of the area to greenhouse gas emissions reductions targets;
- iii. small-scale development directly linked to a rural business, farm or croft;
- iv. supporting a fragile community in a rural or island area; or
- v. restoration of peatland habitats.

And [5(d)] confirms that where development on peatland, carbon-rich soils or priority peatland habitat is proposed, a detailed site specific assessment will be required to identify:

- i. the baseline depth, habitat condition quality and stability of carbon rich soils;
- ii. the likely effects of the development on peatland, including on soil disturbance; and
- iii. the likely net effects of the development on climate emissions and loss of carbon.

Policy 5 also confirms that this assessment [5(d)] “should inform careful project design and ensure, in accordance with relevant guidance and the mitigation hierarchy, that adverse impacts are first avoided and then minimised through best practice. A peat management plan will be required to demonstrate that this approach has been

⁴ Scottish Government (2023). [National Planning Framework 4 - gov.scot \(www.gov.scot\)](https://www.gov.scot/national-planning-framework-4) [accessed 13th February 2023]

followed, alongside other appropriate plans required for restoring and/ or enhancing the site into a functioning peatland system capable of achieving carbon sequestration”.

4.2.2 Compliance with the Framework

With reference to NPF4 it has been shown that:

Policy 5(a).

- Through the iterative design the Proposed Development has avoided deposits of peat and in the limited locations where development (e.g. towers) are proposed where peat deposits are >1 m in depth a review of potential alternative locations has been completed, and measures proposed to minimise the disturbance of peat.
- That wherever possible existing tracks have been proposed and included in the development proposals. As detailed in the Peat and Carbon Management Plan (Appendix V2-7 of the EIA-R) mitigation has been proposed to protect soils from damage, including compaction, erosion, and soils sealing.

Policy 5(c):

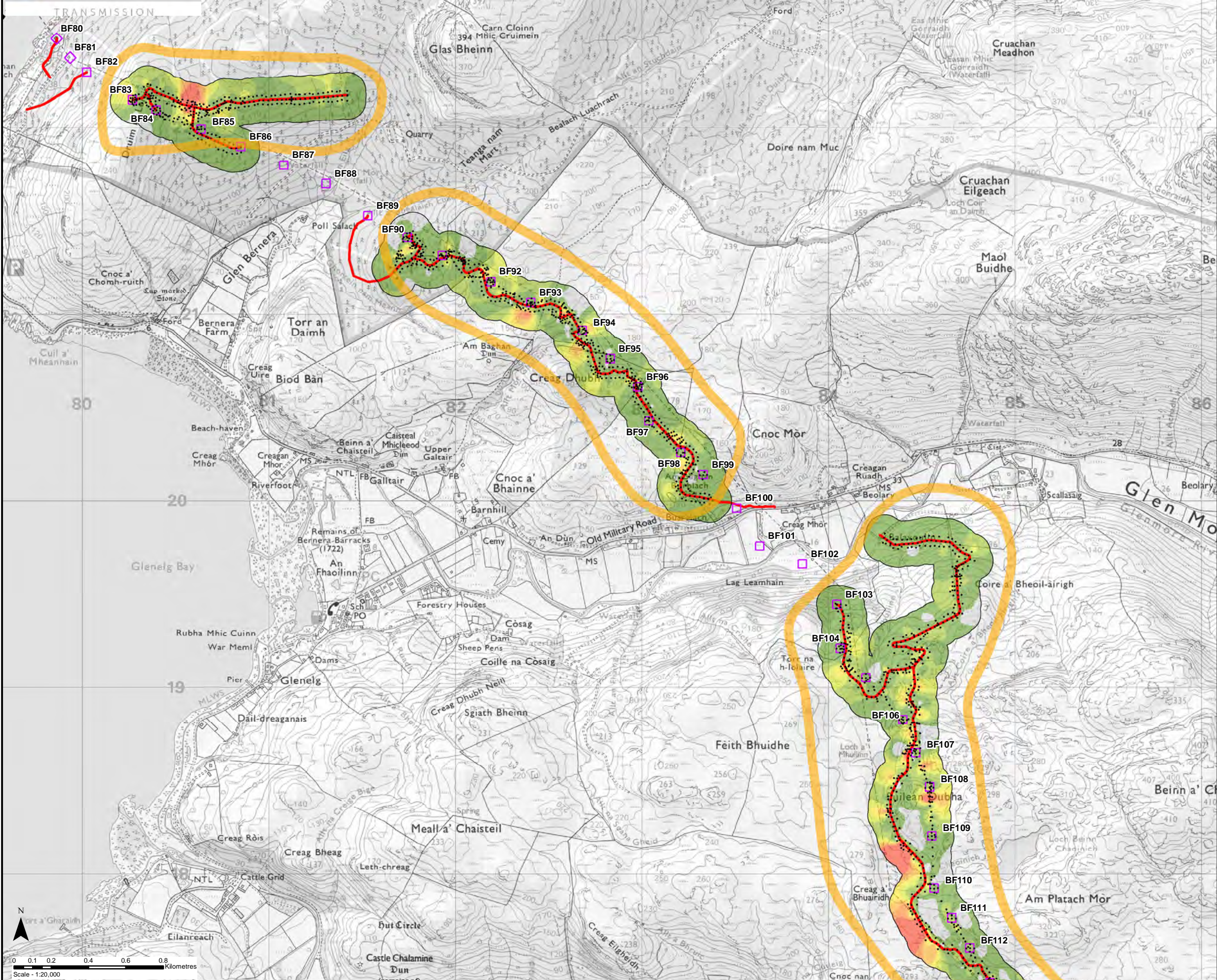
- That that there is specific locational need for the limited number of towers where peat depths have been recorded >1 m.
- That the limited quantity of peat / carbon rich soils which would be disturbed at the few tower locations where peat is >1 m in depth can be beneficially reused in restoration and habitat improvement.

Policy 5(d):

- A detailed specific assessment has been completed as part of the EIA-R to characterise the extent and depth of peat and carbon rich soils, including its depth, habitat condition and stability.
- An assessment of the likely effects of the Proposed Development on peatland has been completed and the net likely effects of climate emissions considered.

In summary, therefore, it is concluded, with regard to peatland and carbon rich soils, that the Proposed Development (including within Sections 4 and 5) complies with the intent and requirements of NFF4.

FIGURES

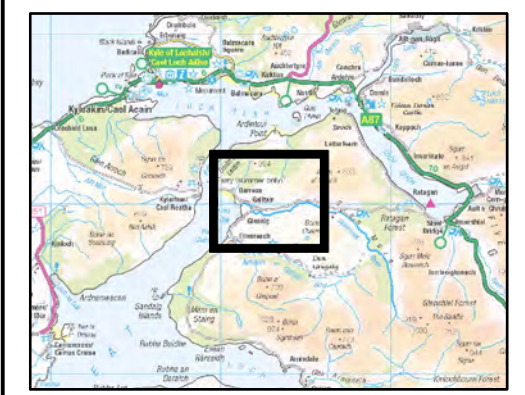


Key

- Proposed Steel Lattice Tower Section 4
- ◇ Existing Steel Lattice Tower to be Retained Section 4
- New Permanent Access Track (construction type to be determined)
- Areas of Peat Probing Agreed with SEPA January 2023
- Peat Probe Location

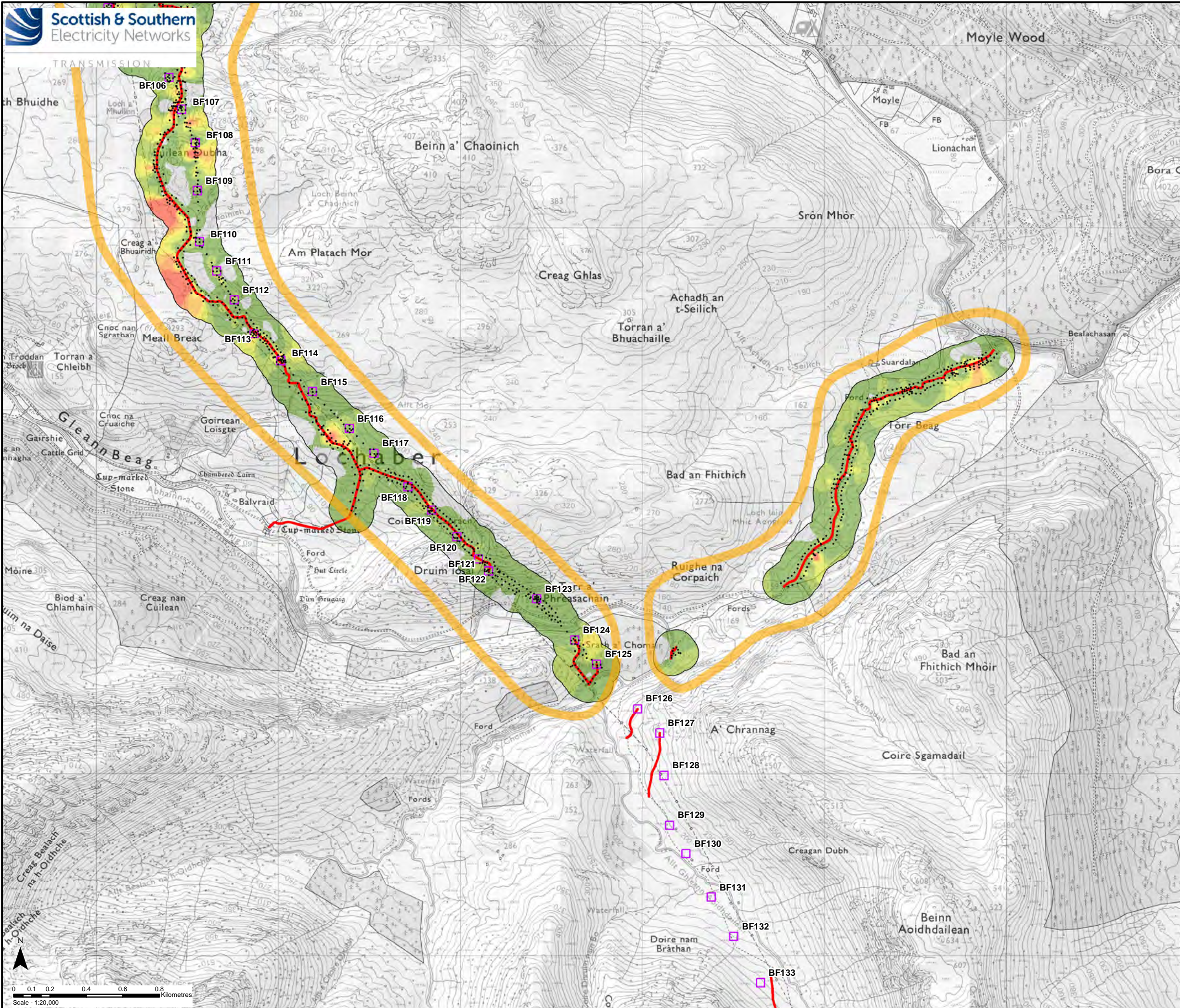
Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- >3



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Project:	Skye Reinforcement Project Additional Information
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Date:	17/02/2023
Drawing:	04707.00020.0151.0

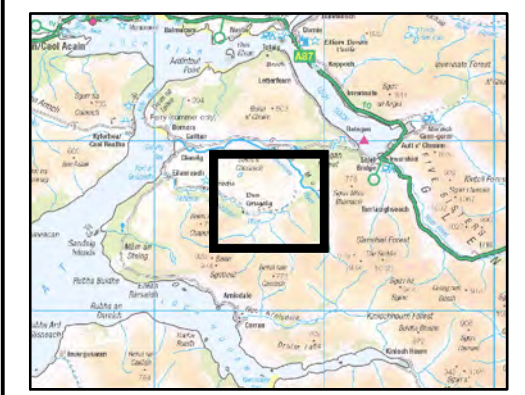


Key

- Proposed Steel Lattice Tower Section 4
- New Permanent Access Track (construction type to be determined)
- Areas of Peat Probing Agreed with SEPA January 2023
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- >3



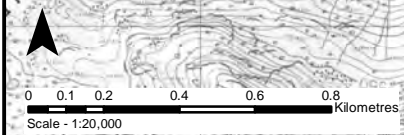
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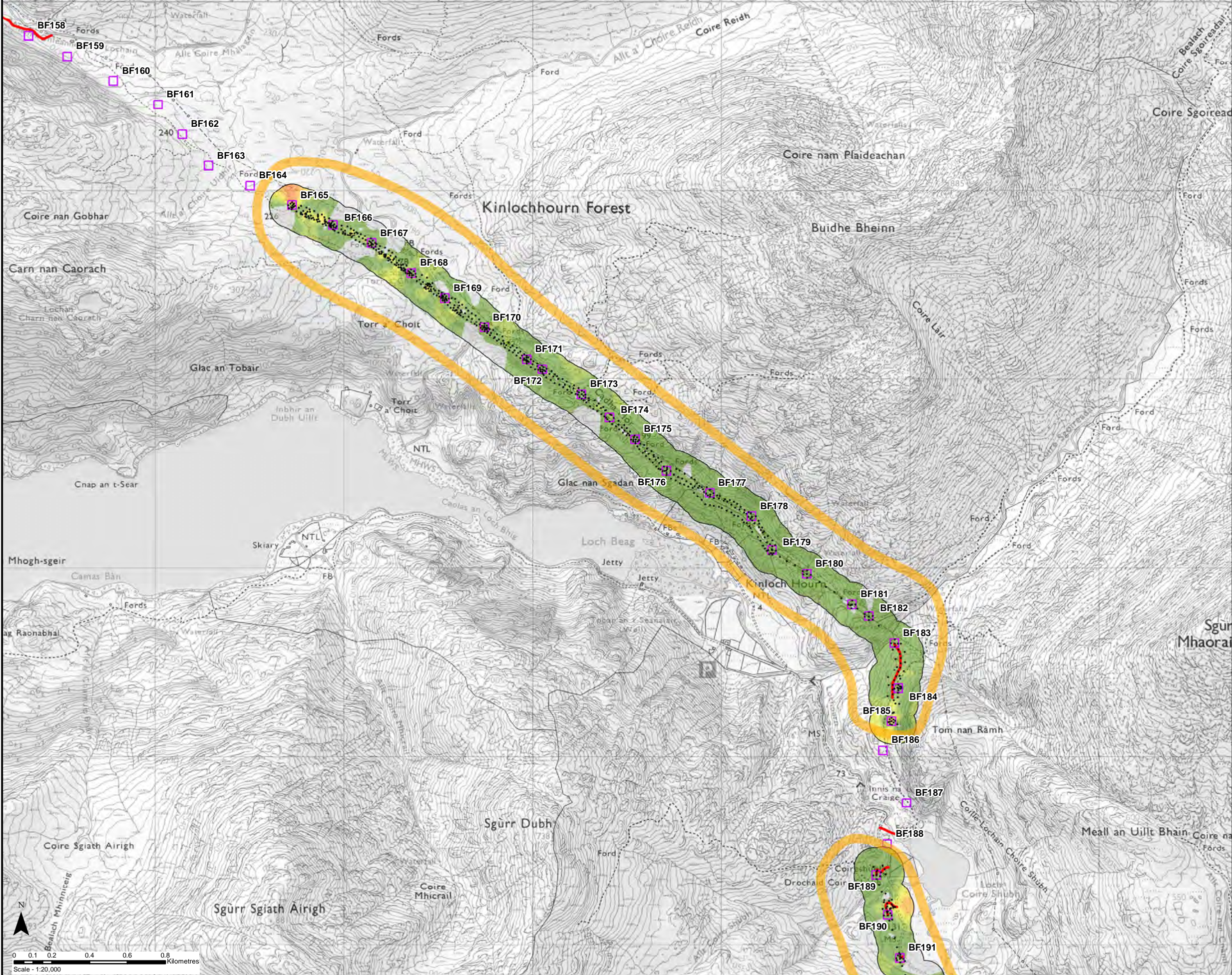
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Sections 4 and 5 Peat Probing Results
Map 2

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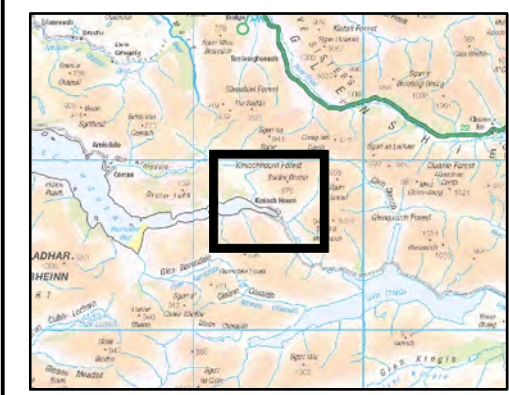


Key

- Proposed Steel Lattice Tower Section 4
- New Permanent Access Track (construction type to be determined)
- Areas of Peat Probing Agreed with SEPA January 2023
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- >3



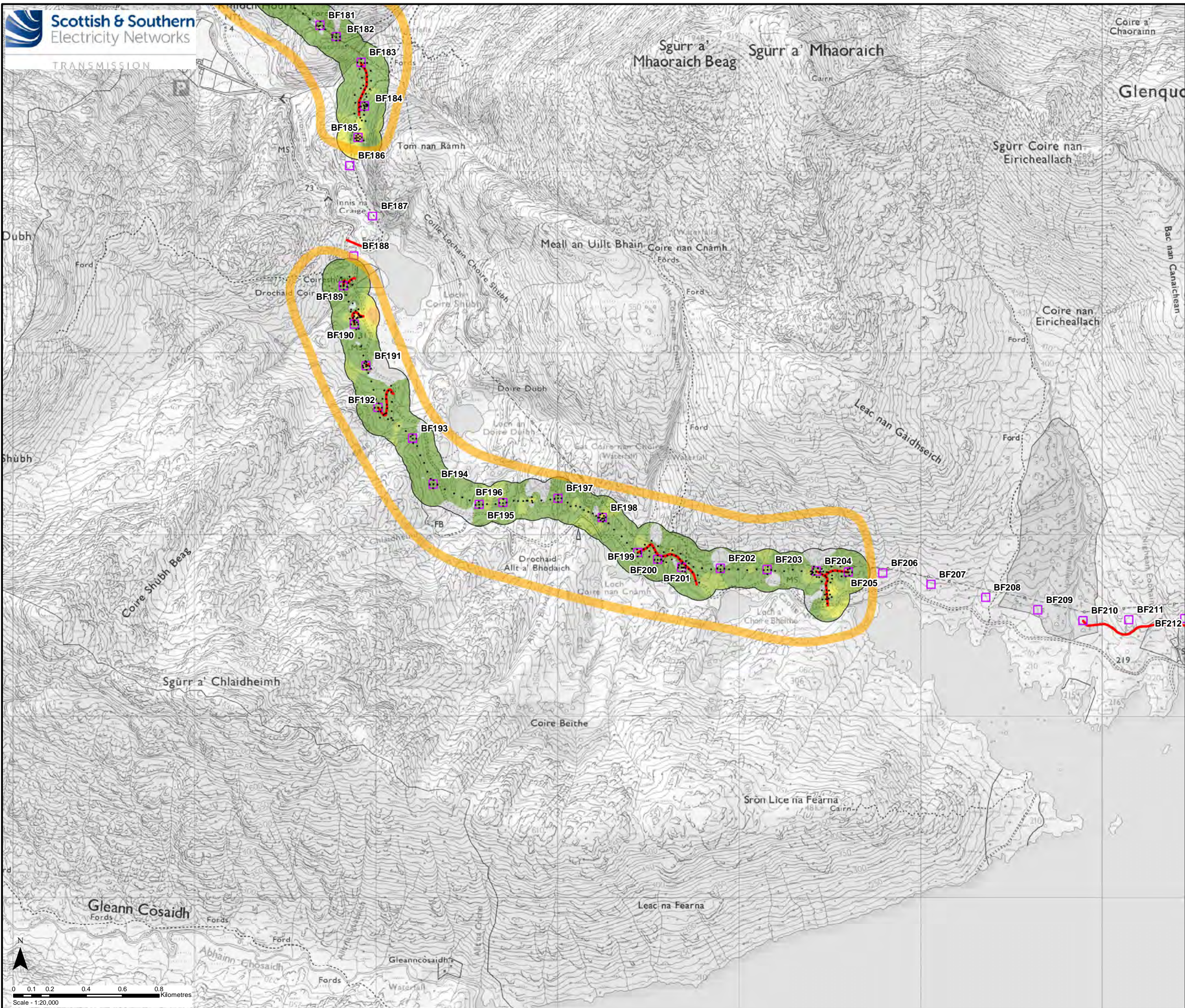
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Title: Figure 1.3
Sections 4 and 5 Peat Probing Results
Map 3

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Key

- Proposed Steel Lattice Tower Section 4
- New Permanent Access Track (construction type to be determined)
- Areas of Peat Probing Agreed with SEPA January 2023
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- >3



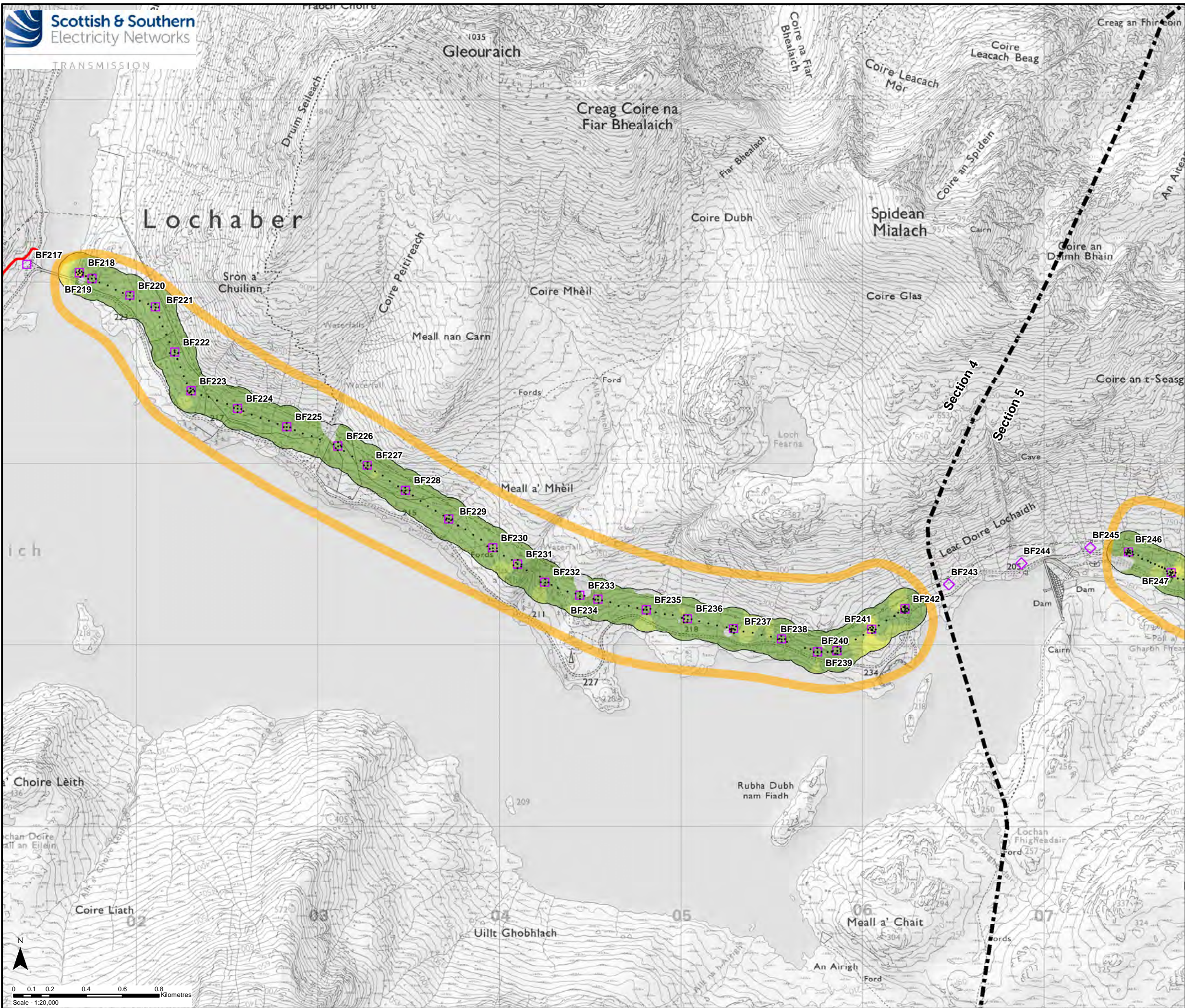
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Sections 4 and 5 Peat Probing Results
Map 4

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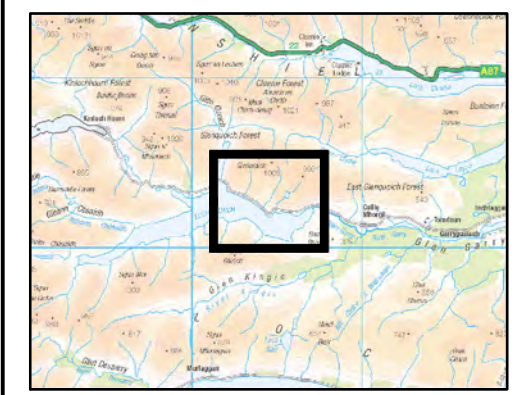


Key

- Proposed Steel Lattice Tower Section 4
- Proposed Steel Lattice Tower Section 5
- ◇ Existing NeSTS Tower to be Retained Section 5
- New Permanent Access Track (construction type to be determined)
- Areas of Peat Probing Agreed with SEPA January 2023
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3



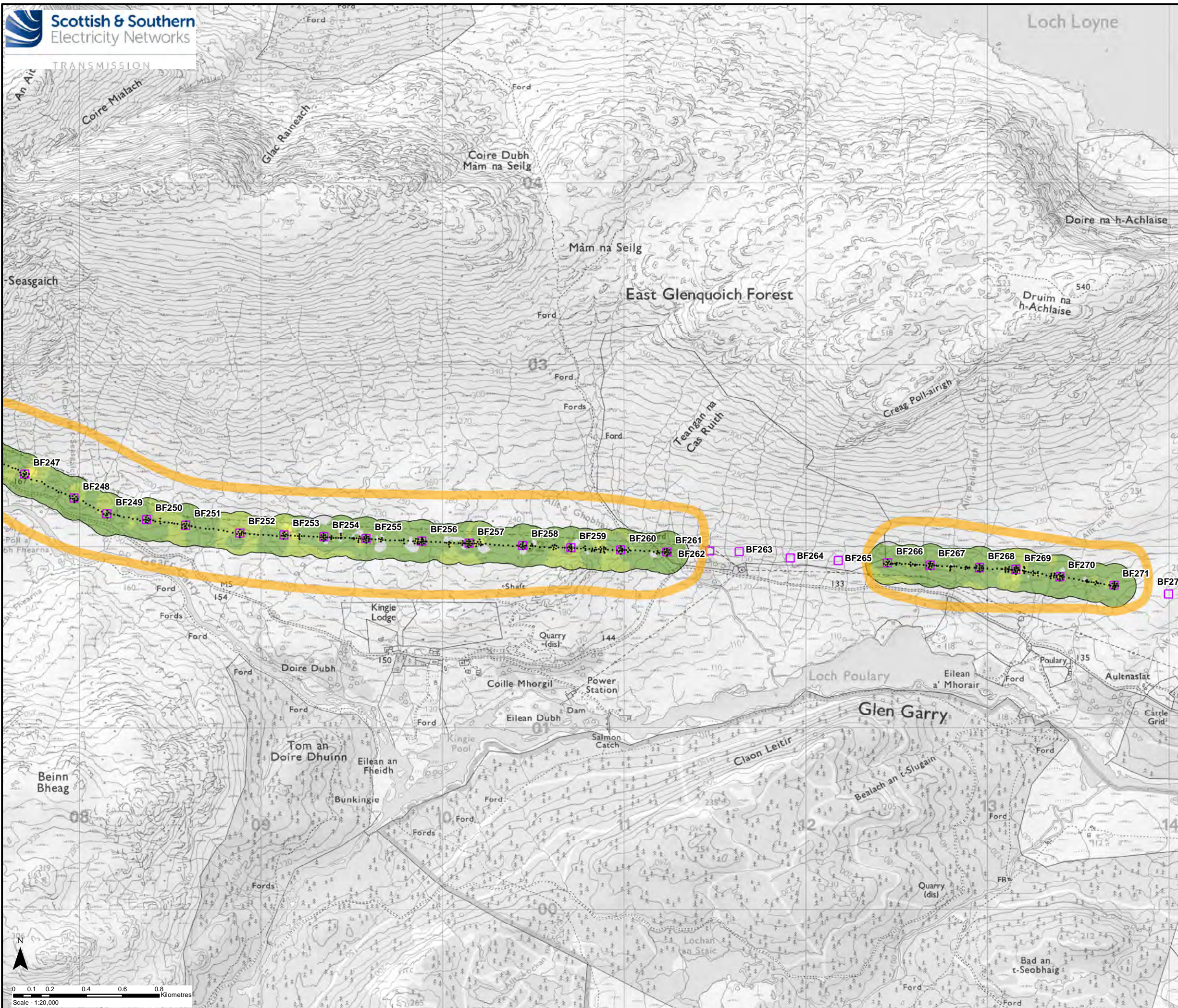
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Title: Figure 1.5
Sections 4 and 5 Peat Probing Results
Map 5

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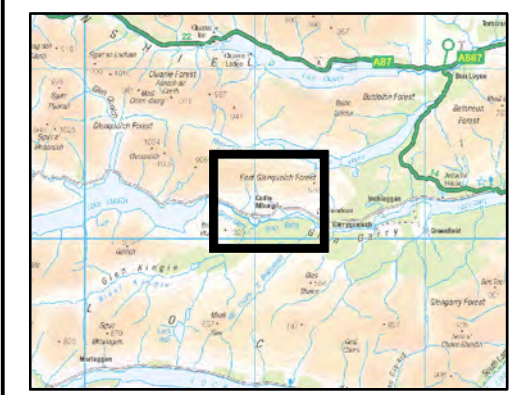


Key

- Proposed Steel Lattice Tower Section 5
- Areas of Peat Probing Agreed with SEPA January 2023
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5



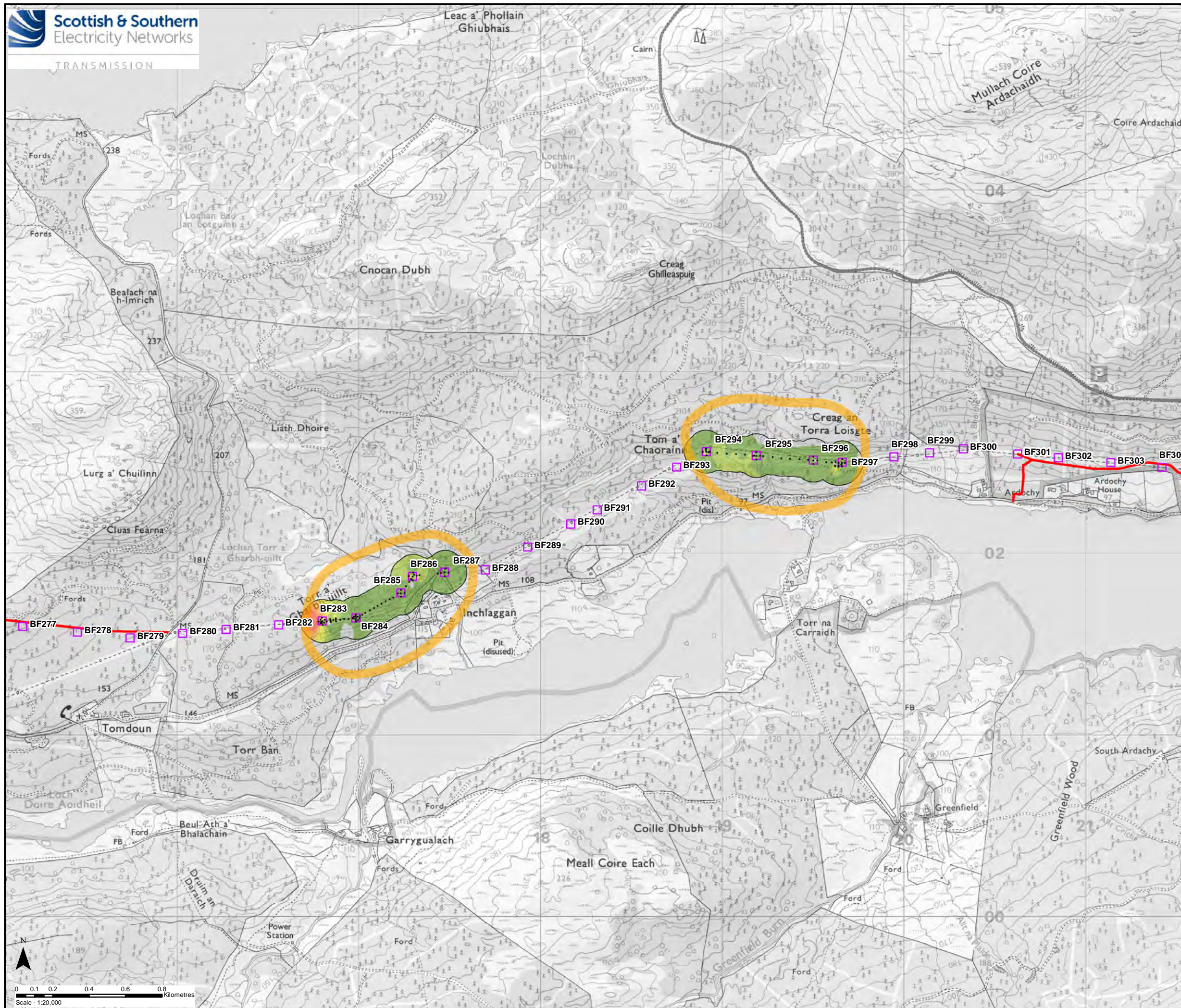
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Sections 4 and 5 Peat Probing Results
Map 6

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Key

- Proposed Steel Lattice Tower Section 5
- New Permanent Access Track (construction type to be determined)
- Areas of Peat Probing Agreed with SEPA January 2023
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- >3



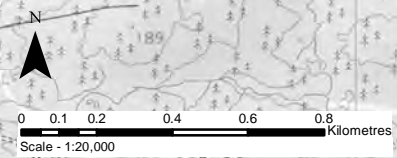
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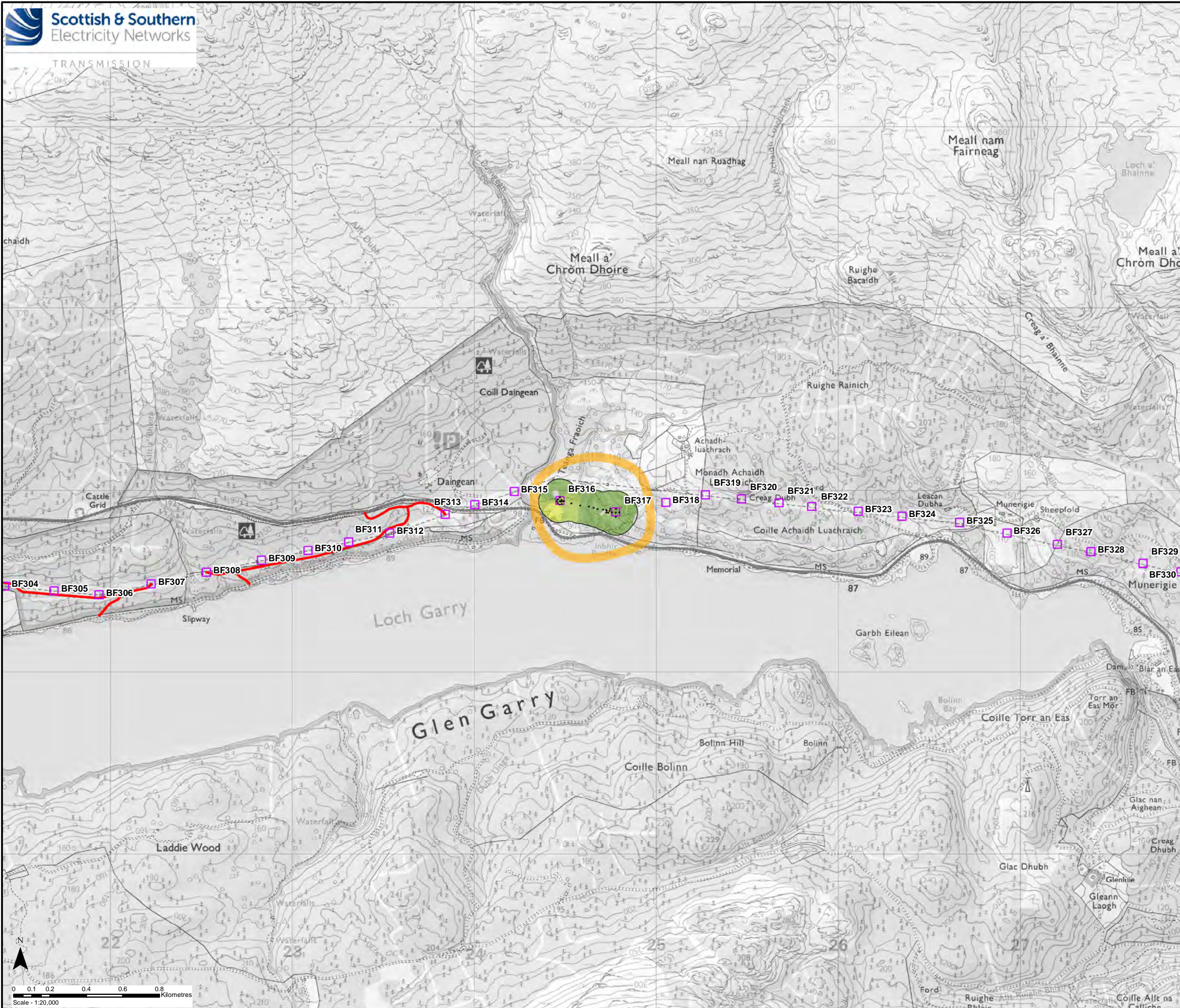
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Project: Skye Reinforcement Project
Additional Information

Title: Figure 1.7
Sections 4 and 5 Peat Probing Results
Map 7

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Drawing: 04707.00020.0151.0





Key

- Proposed Steel Lattice Tower Section 5
- New Permanent Access Track (construction type to be determined)
- Areas of Peat Probing Agreed with SEPA January 2023
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2



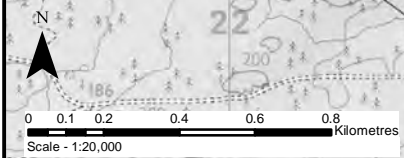
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Project No: LT91
Project: Skye Reinforcement Project
Additional Information

Title: Figure 1.8
Sections 4 and 5 Peat Probing Results
Map 8

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APPENDIX 01

Summary of Information for Tower Locations

Tower Location no.	Depth of Peat on Drawing	Depth of Peat from Borehole	Depth of Peat from Trial Pit 1	Depth of Peat from Trial Pit 2	Can the Tower be micro-sited	Can The Track Utilise Peat Probing	Proposed Foundation	Challenges with Moving Towers
BF83	3.5	2.4	NA	NA	No	Yes	Pad + Column	<p>Tower Alignment - This tower is situated at the top of a steep slope, the borehole was conducted on the flatter terrain, proposed position is to assist with the inclination from BF82. upslope to BF83, moving this tower back will result in difficulty on ground clearance with conductors. Moving the tower forward will result in a health and safety issue for proximity to the edge of the slope, <i>See Image attached for approx location.</i></p> <p>Access Track - Peat Probing would be beneficial for the access tracks, known to be some wet areas in this section. Therefore peat probing would be used to determine track type and routing within the proposed LOD</p> <p>Tower Alignment - BF94 is a D30 angle tower, changing this location at this stage will impact on the spans from BF90 to BF94 and BF94 to BF97. This will lead a redesign of 6 span and 6 designs shown in the blue link. On Attached Drawing</p> <p>After Review of the GI logs the depth of peat varies for between Boreholes and Trial Pits for BF91 - BF94. Potential areas for micro siting by 5- 10m to accommodate less peat disturbance at these locations.</p> <p>the Proximity the existing line to BF94 makes it difficult to relocate in terms of construction for health and safety purposes.</p> <p>BF94 is located where it is due to topographical challenges, this towers location means that the alignment between BF90 and BF94 is straight with limited disturbance longitudinally. It also ensures that the towers after can navigate through the hills and rocky terrain.</p> <p>Access Track - Track from BF90 to BF98 additional peat probing would be useful to relocate within the LOD where required, Rock faces are shallow nearby and difficult to navigate round. Potential proposed Borrow Pit located near BF97 which indicates that peat should be shallow as rock is situated close to the surface.</p>
BF90 BF91 BF92 BF93 BF94	2 2 1.5 1 1	1.65 1.9 1.3 0.9 0.9	NA 1.5 0.45 0.4 NA	NA 1.8 0.6 0.8 NA	No	Yes	Pad & Chimney Rock Anchors Pad & Chimney Pad & Chimney Pad & Chimney	<p>Tower Alignment - BF96 to BF98, sited locations were due to the proximity to the existing OHL (40m from BF96) and undulating terrain, forcing the OHL alignment downslope to accommodate topography. Images as seen on Excel sheet, showing Proximity to stream and Rocky outcrop to avoid.</p> <p>ArcGIS image shows the alternative options looked at during the optioneering stage, due to terrain and the existing OHL this route was deemed more favourable. ALternive option to route through the hills would have to follow more streams and increase the chance of siting towers on watercourses, <i>See ArcGIS image</i></p> <p>Access Track - From the Road an existing Farmers access will be used to the top of the hillside, this area is used for grazing purposes as shown. <i>See Images</i></p> <p>Tower Alignment -</p> <p>ArcGIS image shows the terrain in which the alignment is navigating on the top of the hill, these towers could potentially move locally 10-20m anything more would require more design and further GI.</p> <p>Image 2 and 3 shows the terrain and rocky outcrops the alignment has to navigate. the flatter more constructable areas were slected, presence of peat is localised with rock outcrops evident and expected shallow rock in most locations.</p> <p>Access Track - Existing estate track was followed for the Northern section of the alignment 10 4 to 106 however routed over to the East side due to the presence of the existing line and challenging terrain to navigate in terms of clearances and constructability</p>
BF94 BF95 BF96 BF97 BF98	1 1 1.5 1 1	0.9 1 1.1 0.8 0.9	NA 0.6 0.5 0.7 1	NA 0.4 0.6 0.6 0.8 0.65	No	Yes	Pad & Chimney Rock Anchors Rock Anchors Pad & Chimney Rock Anchors	<p>Tower Alignment - BF104 to BF107, sited locations were due to the proximity to the existing OHL (40m from BF104) and undulating terrain, forcing the OHL alignment downslope to accommodate topography. Images as seen on Excel sheet, showing Proximity to stream and Rocky outcrop to avoid.</p> <p>ArcGIS image shows the terrain in which the alignment is navigating on the top of the hill, these towers could potentially move locally 10-20m anything more would require more design and further GI.</p> <p>Image 2 and 3 shows the terrain and rocky outcrops the alignment has to navigate. the flatter more constructable areas were slected, presence of peat is localised with rock outcrops evident and expected shallow rock in most locations.</p> <p>Access Track - Existing estate track was followed for the Northern section of the alignment 10 4 to 106 however routed over to the East side due to the presence of the existing line and challenging terrain to navigate in terms of clearances and constructability</p>
BF104 BF105 BF106 BF107	1.5 1 3 1	1.8 1.2 2 1.1	0.7 0.2 NA NA	0.4 0.6 NA 0.9	Possible but further engineering work required	Yes	Rock Anchors Pad & Chimney Pad & Chimney Rock Anchors	<p>Tower Alignment - BF107 to BF110 is aligned to accommodate the BF111 and beyond, primarily due to terrain and existng OHL obstructing alternative methods. The route after BF110 routes through a shallow gradient valley.</p> <p>BF110 is sited to avoid the watercourse which feeds into the loch (This loch is known for being Glenegls water Supply) therefore construction further away from the loch is more beneficial as it allows greater distances to allow for mitigation to be put in place.</p> <p>Access Track - There was areas of identified ATVs nearby, possibly from Deer stalking, the alignment primarily followed these and any access proposal will do too, therefore have confidence that the deeper peat is not evident here.</p> <p>Tower Alignment - BF112 to BF115, sited locations were due to the proximity to the existing OHL forcing the alignment over to the North, (Highlighted area shown on image 1), this alignment is routed through a valley with hilly terrain either side, making it difficult to relocate the route alignment, possible for microsting towers 10-20m to best suited location in terms of peatland habitat.</p> <p>Access Track - From Bavraid to Scallisag, the new OHL will use the existing access track between these locations as much as possible. due to the towers being located within the valley their will be a need for floating roads, this will continue downhill towards BF116 before crossing the river onto more suitable ground conditions. <i>See Images</i></p>
BF107 to BF110	1- 1.5	1.1 0.1 0.9 0.25	NA 0.9 NA 0.3	0.9 0.8 NA 0.25	Possible but further engineering work required	Yes	Rock Anchors	<p>Tower Alignment - BF112 to BF115, sited locations were due to the proximity to the existing OHL forcing the alignment over to the North, (Highlighted area shown on image 1), this alignment is routed through a valley with hilly terrain either side, making it difficult to relocate the route alignment, possible for microsting towers 10-20m to best suited location in terms of peatland habitat.</p> <p>Access Track - From Bavraid to Scallisag, the new OHL will use the existing access track between these locations as much as possible. due to the towers being located within the valley their will be a need for floating roads, this will continue downhill towards BF116 before crossing the river onto more suitable ground conditions. <i>See Images</i></p>
BF111 BF112 BF113 BF114 BF115	2.5 2 2.5 2.5 1	1.7 1.4 2.3 2.1 0	1.4 1 NA NA 0	NA NA NA NA 0.2	Locally online only No angles	Yes	Pad & Chimney Rock Anchors Pad & Chimney Pad & Chimney Rock Anchors	<p>Tower Alignment - BF116 to BF122 is situated extremely close to the existing OHL, making it challenging to relocate towers to the North or South. The alignment here prepares for the pinch point between BF120 and BF122. <i>ArcGIS image</i> shows the original LOD (Yellow Highlights) and topgrahical features (Red Circles) these areas meant that there is only one route through, which is directly along the existing route.</p> <p>Second image shows the alignment the route follows. Yellow Highlighted area shows the pinch point in which the new alignment coincides with the existing alignment.</p> <p>Access Track - From Balvraid the access track routes along the existing farmers access, Area is used for sheep grazing, Rock is deemed fairly shallow along this point where the access track will avoid locations of peat as much as possible. Back Towards BF116 is extremely wet on site, this area is deemed greater peat than others. But construction access will use the farmers access as <i>shown on images</i></p>
BF116 BF117 BF118 BF119 BF120 BF121 BF122	1 1 1.5 2.5 1 1.5 1	0.9 1 1.2 2.4 0.8 NA 0.9	NA NA NA NA NA NA NA	NA NA NA NA NA NA NA	No	Yes	Pad & Chimney Pad & Chimney Piles Pad & Chimney Pad & Chimney Pad & Chimney Pad & Chimney	<p>Tower Alignment - BF116 to BF122 is situated extremely close to the existing OHL, making it challenging to relocate towers to the North or South. The alignment here prepares for the pinch point between BF120 and BF122. <i>ArcGIS image</i> shows the original LOD (Yellow Highlights) and topgrahical features (Red Circles) these areas meant that there is only one route through, which is directly along the existing route.</p> <p>Second image shows the alignment the route follows. Yellow Highlighted area shows the pinch point in which the new alignment coincides with the existing alignment.</p> <p>Access Track - From Balvraid the access track routes along the existing farmers access, Area is used for sheep grazing, Rock is deemed fairly shallow along this point where the access track will avoid locations of peat as much as possible. Back Towards BF116 is extremely wet on site, this area is deemed greater peat than others. But construction access will use the farmers access as <i>shown on images</i></p>

Images



BF123	1	0.6	0.45	0.45			
BF125	1	0.6	NA	NA			
BF129	1	0.9	0.8	0	No	Yes at Spur Locations	
BF131	1.5	1.1	NA	NA			

Pad & Chimney
Pad & Chimney
Rock Anchors
Pad & Chimney

Tower Alignment -
BF123 - Situated here due to the pinch point before. This will allow for more offline construction. This position allows for effective spans from the pinch point and directs the alignment away for the alignment afterwards.

BF125 - Sited currently in trees, away from the river but allows for a span onto the next location. Tower could potentially move 10- 20m but is already in a long span therefore this might pose clearance issues.

BF129 - Sited here due to the Proposed New OHL spanning over the current 132kV circuit. This is situated just North of the river with.

BF131 - Sited here to assist the existing OHL 132kV circuit. This is situated just South of the river with considerations in place for proximity to the river. Slope stability issues would be an issue if this was situated further upslope

Access Tracks - Access tracks to these locations are primarily along the existing OHL and estate Access. Access from Ratagan is on existing tracks as shown in the images. Spurs to each tower location may be over peatland depending on location.



BF137	1.5	1.3	NA	NA			
BF140	1	0.9	NA	NA			
BF146	1	0.9	NA	NA	No	Yes at Spur Locations	
BF150	1.5	1.2	NA	NA			

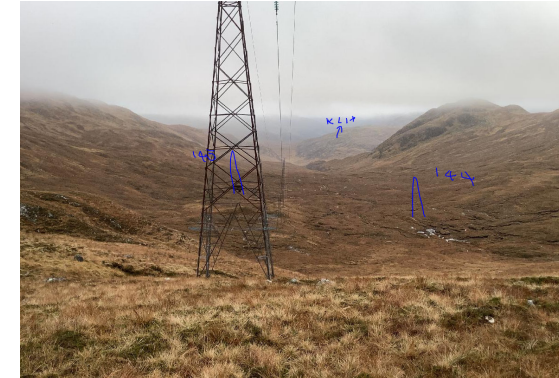
Pad & Chimney
Pad & Chimney
Pad & Chimney
Pad & Chimney

Tower Alignment -
BF137 - Situated here for preparing the alignment up the Bealach summit, this tower will be particularly challenging to move due to its proximity to the nearby streams and hill run off. This was looked at during the optioneering stage and GI phase for its engineering difficulties but due to the tower type and route alignment there is currently no better location for it. See image 1

BF140 - Sited at the top of the Bealach summit (465m AOD) highest point of the line this tower is difficult to move due to the strengthening works already required in its current position. Sited on the South side of the existing due to the constraint from the top of site. See image 2

BF146 and BF150 - Sited due to the alignment mainly avoiding streams and hill water run off. These towers could potentially move up and down the line about 10-20m or so to accommodate deep areas of peat.

Access Tracks - Access tracks to these locations are primarily along the existing OHL and estate Access. Spurs to each tower location may be over peatland depending on location.



BF152	1	0.8	NA	NA			
BF155	2.5	2.5	NA	NA			
BF156	1	0.9	0.9	NA	No this will be extremely challenging	Yes at Spur Locations	
BF157	1	0.8	NA	NA			
BF158	1	0.7	0.6	NA			
BF160	1.5	1.2	NA	NA			

Pad & Chimney
Pad & Chimney
Rock Anchors
Pad & Chimney
Pad & Chimney
Pad & Chimney

Tower Alignment -
This area is particularly challenging to relocate towers due to the difficult terrain, span lengths and tower positions are already sited in locations at the maximum. The topography will not allow for movement and during the Optioneering works made it challenging to relocate towers to accommodate behind spans and Forward spans.

This is also made particularly challenging due to the Arnisdale river in the centre of the valley and hillwater run off.

Access Tracks - Access tracks to these locations are primarily along the existing OHL and estate Access. Spurs to each tower location may be over peatland depending on location.



BF165	1.5	1.15	NA	NA			
BF166	1	0.7	NA	NA			
BF168	1	0.8	NA	NA			
BF169	1	0.7	NA	NA			
BF170	1.5	1.3	NA	NA			
BF171	1	1	NA	NA			
BF173	2.5	2.5	NA	NA			

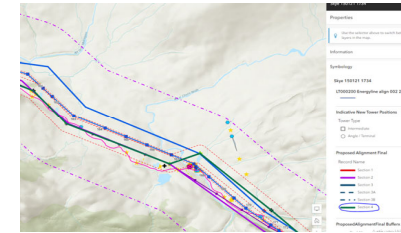
Pad & Chimney
Pad & Chimney
Pad & Chimney
Pad & Chimney
Pad & Chimney
Pad & Chimney

Tower Alignment -
The route at these locations primarily aligns along the existing estate track, the thought of using this track is practical during construction and was therefore proposed as the upgraded track, making limited disturbance to peatland elsewhere. The Alignment originally went through an area of peatland, this was raised by the environmental team and relocated to suit (see Green alignment on ArcGIS image 2, highlighted section 4)

This alignment was chosen as it means the alignment is better placed for going through KLH valley.

BF165 and BF166 could potentially move 10-20m along the route alignment avoiding deeper areas of peat.

Access Tracks - Access tracks to these locations are primarily along the existing OHL and estate Access. Spurs to each tower location may be over peatland depending on location.



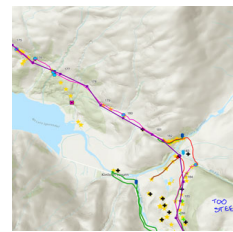
BF178	1	0	NA	NA			
BF180	3.5	2.7	NA	NA			
BF181	2.5	2.5	NA	NA			
BF184	1	0.7	0.55	0.4	No	Yes	
BF185	3.5	3.2	NA	NA			

Pad & Chimney/Rock Anchors
Pad & Chimney
Pad & Chimney
Rock Anchors
Pad & Chimney

Tower Alignment -
This area is particularly challenging to relocate towers due to the difficult terrain, span lengths and tower positions are already sited in locations at the maximum span lengths. These come directly through KLH valley with rock outcrops to each side. ArcGIS image 1 shows the terrain.

The existing alignment routes up the top where on ArcGIS image 1 says too steep, this will be unsafe to construct anything up here with H+S concerns forcing the alignment downhill along a shelf on the existing rock face.

Access Tracks - Access tracks to these locations are routed along the old construction line, areas of pulling positions etc. can be identified. Towers are located just off the track with small spurs. peat is expected to be concentrated in areas as the terrain is mainly rock.



BF189	1	BF189	BF189	BF189			
BF191	1	0.8	0.7	0.8			
BF193	1	0.7	0.1	0.25			
BF194	1	0.75	NA	NA			
BF196	1	0.9	NA	NA			
BF198	2.5	2.3	NA	NA			
BF199	1	0.6	NA	NA	No	No	
BF200	1	0.8	NA	NA			
BF202	1	0.65	NA	NA			
BF203	2.5	2.25	NA	NA			
BF205	1	NA	NA	0.1			

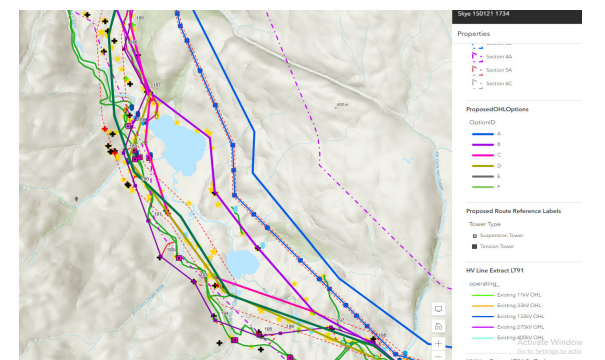
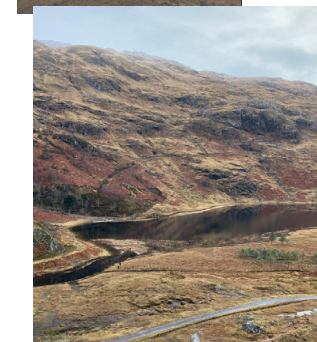
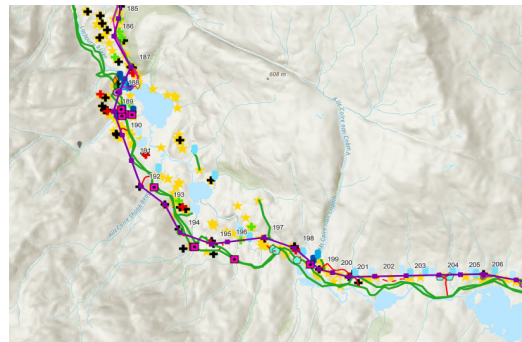
Pad & Chimney
Pad & Chimney
Rock Anchors
Pad & Chimney
Pad & Chimney
Pad & Chimney/Rock Anchors
Rock Anchors
Pad & Chimney
Pad & Chimney
Pad & Chimney
Rock Anchors

Tower Alignment -
ArcGIS image 1 shows the extents of the data capture within this area. The contractor involved in the routing option had serious concerns about locating the alignment where the existing one is. this forced the solution down to flatter more constructable land. (image 2 shows the slope), there was also other concerns about construction activity taking place on the slope and its proximity to the loch in at the bottom of the hill. By routing round the alternative (proposed solution) it would avoid these concerns.

The second ArcGIS image shows the extents of the alternative safe routing options proposed. This area is particularly difficult due to the terrain and environmental, visual aspects with the new proposed alignment. Originally it was proposed down by the loch on flatter terrain (Green alignment) but this was seen to have more peat and be extremely wet, therefore after environmental discussion was moved to the opposite side of the road (Purple alignment)

Within this range of towers there are a lot of proposed angle positions and due to the terrain each tower is sited strategically so the clearances work.

Access Tracks - Access tracks to these locations will spur off the existing road, due to the rocky terrain it is expected peat will be located locally.



BF209	1	0.65	NA	NA	Possible in line towers by 10-20m, not at angle positions	Yes	Pad & Chimney Rock Anchors Rock Anchors
BF210	1	0.7	0.35	0.15			
BF211	1	0.65	NA	NA			
BF218	1	1.1	NA	NA	No	Yes	
BF221	1	1.2	NA	NA			
BF223	2	1.6	NA	NA			
BF224	1	0.6	1.1	0.8			
BF225	3	2.5	NA	NA			
BF226	2	1.7	NA	NA			
BF228	1	0.7	NA	NA			
BF229	1	0.6	0.9	0.7			
BF230	1	0.6	0.3	0.3			
BF234	1	0.6	NA	NA			
BF235	1	0.8	0.55	0.8			
BF236	1	0.8	NA	NA			
BF239	1.5	1.1	NA	NA			
BF241	1.5	1.05	0.7	0.7			
BF246	1	0.7	NA	NA	Yes	Yes	
BF247	1	0.85	NA	NA			
BF252	2.5	2.4	NA	NA			
BF253	1	0.95	NA	NA			
BF254	1	0.9	NA	NA			
BF255	1	0.75	NA	NA			
BF257	1.5	1.1	NA	NA			
BF258	1	0.65	NA	NA			
BF259	1	0.65	NA	NA			
BF260	2	1.85	NA	NA			
BF261	1.5	1.4	NA	NA			
BF266	1	0.6	NA	NA	Yes	Yes	
BF269	2	1.6	NA	NA			
BF270	2	0.5	NA	NA			
BF271	2	1.3	NA	NA			
BF294	1.5	1.2	NA	NA	Yes	Yes	
BF295	1	0.9	NA	NA			
BF296	2	0	0	0			
BF316	1.5	1.3	NA	NA	Yes	Yes	
BF317	1.5	1.3	NA	NA			

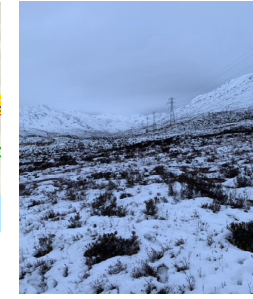
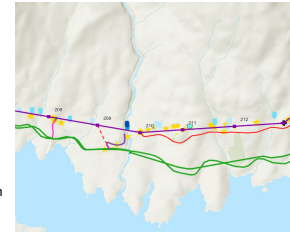
Tower Alignment -

Image 1 shows the extents of this area, the main aim was to locate towers close to the existing Hydroscheme access (purple line next to BF209). Image 4, this track is known locally to extend to a borrow pit which minimises traffic movement along this road and CO2 output.

Image 2 is facing 211 from the West, Going North of the existing line would lead to constraints due to terrain and rock, therefore the proposal to come downhill and follow a like for like alignment was considered,

Image 3 is facing 209 from the east. If BF210 moved all the alignment would shift from BF210 to BF206 and BF210 to BF213, this could be looked at locally to avoid peat concerns but would require more engineering analysis at this stage. BF211 and BF209 could potentially be located 10-20m along the route avoiding deep areas of peat.

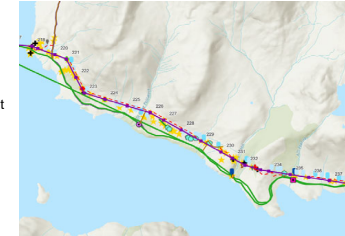
Access Tracks - Access tracks to these locations are primarily along the existing OHL and estate Access. Spurs to each tower location may be over peatland depending on location.



Tower Alignment -

This area is particularly challenging to relocate towers due to the slope. The current OHL alignment is sited on the North side (further uphill) than the proposed, alternative areas routing along the loch side are challenging. Keeping to the North off the road allows for similar to the existing and possible catchment of the road as a last resort contingency for possible construction works (worst case Pollution the Loch)

Access Tracks - Access tracks to these locations are primarily along the existing road and spurring up to the locations on the existing tracks

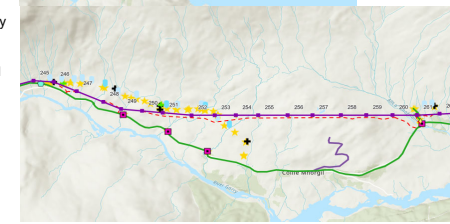


Tower Alignment -

Alignment was chosen here to mainly follow the existing alignment, therefore visually less intrusive. The alignment is away from the settlement of Coire Mhorgill and is located near the surge charge chamber of Loch Quoich Dam, therefore existing access up to this location is proposed, less intrusive for disturbance on new peat land areas.

Most direct route through here to avoid unnecessary angles and more damage to nearby land. The Line towers here ALL apart from BF246 and BF252 could move within 20m for micro-siting, any more than this will need further engineering works to assess the situation.

Access Tracks - Access tracks to these locations are primarily along the existing OHL and estate Access. Spurs to each tower location may be over peatland depending on location.

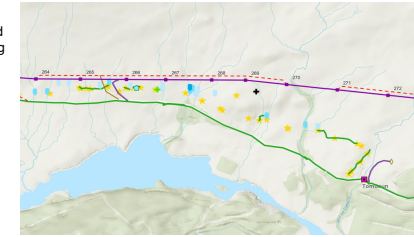


Tower Alignment -

The original alignment followed the Data shown in the ArcGIS tool, however this had to be relocated to the proposed alignment due to Land Concerns and future planting agreements in the existing swathe.

This pushed the Alignment back closer to the hillside routing through the back of Tomdoun and a failed area of tree growth. Each tower is currently located so the alignment successfully spans over streams. Each of the locations could potentially move locally on the current alignment. 10-20m to avoid areas of concentrated peat.

Access Tracks - Access tracks in this location will likely be floating roads due to the area and terrain. Peat probing can be complete to minimise construction over the deep pockets, these tracks will be reinstated to suit the existing terrain.



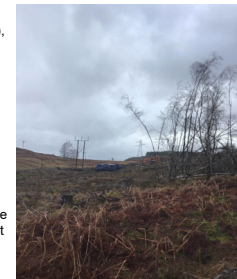
Tower Alignment -

These towers are sited here to maximise similarities between the old (Existing line), Making use of the existing tree swathe where possible. BF296 is situated just off the track for Ardochy Forest. Currently the area is highly vegetated with ferns.

BF294 is sited as the angle position and therefore if this moved would move towers BF288 to BF294 and BF294 to BF297, which would lead to further engineering and possible more disturbance of peat.

There is also presence of a 33kV line within the vicinity which makes it difficult to construct the OHL further south in this location.

Access Tracks - Access tracks to these locations are along the existing tracks where possible. The main Access track to BF295 and BF294 will accommodate for any peat within the LOD reducing the impact where possible



Tower Alignment -

Towers sited in these locations due to proximity to the property just North of BF316, The old alignment ran directly through the property land.

Tower location BF316 was selected to span over both Rivers. Between BF315 and BF317, area is flat and easier for construction, no trees to cut while screening can be maintained to the North (Property) and the South (A87)

Both Towers can potentially be moved locally 20m or so to accommodate the shallower peat depths.

Access Tracks - Existing Access will be used for BF317 with a spur off, this will take the best route in the spur avoiding peat as far as possible. BF316 access bellmouth is located off the A87 within the trees.

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