Scottish & Southern Electricity Networks

TRANSMISSION

Beauly to Blackhillock to New Deer to Peterhead 400 kV Project

Environmental Impact Assessment Report

Volume 5 | Appendices

Appendix 10.1 – Peat Depth Survey Report

APPENDIX 10.1 – PEAT DEPTH SURVEY REPORT

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1 Introduction

1.1.1 Scottish and Southern Energy Networks (SSEN) Transmission commissioned Fluid Environmental Consulting Ltd (Fluid) to complete depth of penetration probing and coring for the Beauly to Blackhillock to New Deer to Peterhead 400 kV Project (the Proposed Development). This Appendix (and its associated Figures and Annexes) is not intended to be read as a standalone assessment, and reference should be made to the introductory chapters of this EIA Report (**Chapters 1-6**).

1.1.2 Peat depth data for the Proposed Development was obtained using a combination of methods as follows:

- Stage 1: the James Hutton Institute (JHI) was commissioned by SSEN Transmission to provide high resolution peat extent and peat depth mapping for the Proposed Development.

  The rationale of the work was to provide cost-effective peat mapping of an area of interest for route optioneering, and to allow determination of whether the number of peat depth sampling points could be reduced while still providing peat depth mapping of sufficient accuracy for site planning.

  To verify the JHI model, a set of sample locations for the field team (Fluid) was provided and survey data used to generate a bespoke peat depth map for the study area. The stage 1 probing and coring is not reported here as it is part of the model verification, and the data is not within the Proposed Development extents. The detailed JHI approach is presented in **Annex A: Peat Depth Mapping and Survey Area Approach.**
- Stage 2: the data from the JHI model was subsequently interpreted and used to inform the Stage 2 peat probing survey area for the Proposed Development. UKHab data was also used to identify any areas with the potential for peat. Depth of penetration probing was completed at all required infrastructure locations to assist in layout improvements to avoid areas of peat and determine the peat depth at infrastructure locations in sufficient detail for peat excavation calculations to be completed.

1.1.3 This Appendix is accompanied by the following Annexes and Figures:

- **Annex A: Peat Depth Mapping and Survey Area Approach**
- **Annex B: Example Photographs of Typical Ground Conditions**
- **Annex C: Peat Core Data and Von Post Measurements**
- **Annex D: Peat Coring Logs**
- **Figure 10.1.1: Depth of Penetration**
- **Figure 10.1.2: Estimated Peat Depth**

2 Peat Definition

2.1.1 Peat is an accumulation of partially decomposed plant material that forms in waterlogged conditions. Organic material less than 0.5 m depth is not defined as peat in Scotland. This is in accordance with guidance from:

- Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland states that *'Peat soil is an organic soil which contains more than 60 per cent of organic matter and exceeds 50 centimetres (cm) in thickness*[1];
- The James Hutton Institute define peat as having a depth of organic matter of 50 cm or greater[2]; and

[1] Scottish Natural Heritage, SEPA (2017). Guidance on Developments on Peatland, Peatland Survey. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2018/12/peatland-survey-guidance/documents/peatland-survey-guidance-2017/peatland-survey-guidance-2017/govscot%3Adocument/Guidance%2Bon%2Bdevelopments%2Bon%2Bpeatland%2B-%2Bpeatland%2Bsurvey%2B-%2B2017.pdf

[2] James Hutton Institute (2023). Origins of the Soil Survey of Scotland 50 cm threshold to define a Peat soil. Available at: https://sefari.scot/sites/default/files/documents/Origin%20of%2050%20cm%20Threshold%20for%20Defining%20Peat%20on%20Soil%20Maps%20of%20Scotland.pdf

- The Forestry Commission use 45 cm as the critical depth for peat to occur (*Understanding the GHG implications of Forestry on Peat Soils in Scotland,* 2010[3]).

2.1.2 Peat can therefore be classified as organic material over 0.5 m in depth.

2.1.3 Peat can be separated into three main layers: acrotelmic (the upper living layer), catotelmic (the middle to lower layer) and occasionally amorphous (lower layer) peat:

- Acrotelmic peat is the living layer of the peat including the peat turf being a thin, floating vegetation mat layer. The acrotelm is generally found within the top layer of peat (often less than 0.5 m) depending on the degree of decomposition and fibrous nature of the peat (approximately H1 to H5 on the Von Post classification scale[10], see Table 6.3). The acrotelm is generally of high permeability, decreasing with depth. The water table fluctuates in this layer and conditions vary from aerobic to anaerobic. Material may be fibrous or pseudofibrous (plant remains recognisable), spongy, and when excavated strength is lost but retains integral structure and can stand unsupported when stockpiled up to 1 m.
- Catotelmic peat is the dead layer of peat found deeper than acrotelmic peat which has some remnant plant structures. Material has high water content and is permanently below the water table (saturated) therefore organic matter decomposes anaerobically. Some plant structures may be recognisable but are highly humified losing most of their characteristics (approximately H6 to H8 on the Von Post classification scale) and strength. Water flow through the catotelm is slow unless peat structures such as sink holes or peat pipes are present. These deposits can generally stand unsupported when stockpiled up to 1 m however as the catotelm grades to amorphous peat the integrity decreases.
- Amorphous peat is highly decomposed organic material where all recognisable plant remains are absent (approximately H9 to H10 in the Von Post classification scale). These deposits are dark brown to black in colour, plastic, are low tensile strength and are unable to stand unsupported up to 1 m when stockpiled.

2.1.4 Consideration is given to the physical condition of the peat, including fibre content, degree of decomposition, and moisture content, when determining potential for reuse. Increasingly amorphous and plastic material (typically associated with higher Von Post scores) may have limited reuse potential.

3 Stage 1: JHI Model

3.1.1 In order to demonstrate that the presence, and to some extent the depth, of peat across Scotland can be predicted, SSEN Transmission commissioned the JHI to develop appropriate models for use on the Proposed Development. The objectives of the modelling were to develop a tool that would confirm the absence or presence of peat in an area and to predict peat depth in particular locations.

3.1.2 The detailed JHI approach is presented in Annex A: Peat Depth Mapping and Survey Area Approach; the key points are as follows.

3.1.3 The model used a number of data sources including:

- Soil mapped:
  - at 1:250,000 using the Scottish Soil Classification System[4], which comprises 13 Major Soil Groups (only nine of which were present in the study area); and
  - at 1:25,000 across the majority of the study area (this dataset does not provide full national coverage, instead covering low-lying and agriculturally productive land)[5].

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3 Forestry Commission (2010). Understanding the GHG implications of Forestry on Peat Soils in Scotland. Available at: https://cdn.forestresearch.gov.uk/2022/02/fcs_forestry_peat_ghg_final_oct13_2010-7.pdf

4 The Macaulay Institute for Soil Research (1984).Organisation and methods of the 1:250 000 Soil Survey of Scotland. Available at: https://www.hutton.ac.uk/sites/default/files/files/soils/46%20-%20SOIL%20SURVEY%20OF%20SCOTLAND%20HANDBOOK%208.PDF

5 1:25,000 Scotland Soils map (partial cover). Available at: https://www.hutton.ac.uk/soil-maps/

- Land Capability for Agriculture[6] (mapped at 1:250k and 1:25k) with coverages matching the soil maps listed above. While the LCA dataset does not explicitly provide information on peat cover, it does indicate where prime agricultural land lies within the study area. This was considered useful additional information in relation to planning and positioning of infrastructure.
- Modelled peat depth maps:
  - at 100 m grid resolution, from 2019 by Aitkenhead & Coull at JHI[7]. This dataset was generated using machine learning models trained with the Peatland Action data available at the time, and the Scottish Soil Database (a set of full-profile descriptions from a 10 km grid across Scotland, and additional surveys); and
  - at 10 m grid resolution, from 2024 by Robb & Aitkenhead at JHI[8]. This work is not yet published and was carried out using more sophisticated machine learning than the 2019 work. It relied solely on the Scottish Soil Database data as the Peatland Action depth measurements were found to be problematic in developing a model with 10 m resolution.
- Peat probe depth measurements. This dataset comprises 352 depth measurements spread across the area of interest, and including two areas of 'dense sampling' (10 m grid). The survey work was carried out by Fluid. Measured depths range from 0 to 340 cm. Sample locations were identified by JHI using a Conditioned Latin Hypercube stratification approach, which allowed the full range of values to be represented across the following environmental factors:
  - topography (slope, elevation, aspect, flow accumulation);
  - land use / land cover;
  - soil type (as mapped in the 1:250,000 soil map listed above); and
  - climate (rainfall and temperature).
- A number of cores were also undertaken to verify probing and assess peat characteristics.

3.1.4 The peat probe depth measurements were used to produce an additional high-resolution spatial dataset of peat depth. This was completed using the same approach and underlying datasets as for the national level peat depth mapping but targeted the study area only. Because of the denser distribution of sample points than that used for the national mapping (and because the peat depth measurements were made by only one team of operators, rather than multiple teams operating independently), it was anticipated that this local peat depth mapping would be more accurate than the national level effort.

3.1.5 The data sources listed above can be used to predict the presence or absence of peat in a specific area. Where none of the sources predict peat then the confidence in the area containing no peat is high. The greater the number of sources predicting peat (up to 5 when considering the two peat depth maps separately) the higher the likelihood of peat. This is hereafter referred to as the 'Peat Presence Score'.

3.1.6 The data collected for this verification process are not presented here as they are part of the JHI verification process, and the probing locations are not located within the Proposed Development corridor.

4 Stage 2: Peat Probing Survey Requirements

4.1.1 The JHI dataset predicts peat depth but has not been used for the actual peat inputs to the Proposed Development. Instead, depth of penetration probing was completed at proposed infrastructure locations based on the results of the model, in accordance with the following table.

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[6] National scale land capability for agriculture | Scotland's soils. Available at: https://soils.environment.gov.scot/maps/capability-maps/national-scale-land-capability-for-agriculture/

[7] Robb & Aitkenhead (2024), Mapping soil profile depth, bulk density and carbon stock in Scotland using remote sensing and spatial covariates - Aitkenhead - 2020 - European Journal of Soil Science - Wiley Online Library. Available at: Mapping soil profile depth, bulk density and carbon stock in Scotland using remote sensing and spatial covariates - Aitkenhead - 2020 - European Journal of Soil Science - Wiley Online Library

[8] Robb, C. et al. (2025). Soil property, carbon stock and peat extent mapping at 10 m resolution in Scotland using Digital Soil Mapping techniques. European Journal of Soil Science e70123. Available at: https://bsssjournals.onlinelibrary.wiley.com/doi/10.1111/ejss.70123

Table 4.1: Peat Probing Requirements

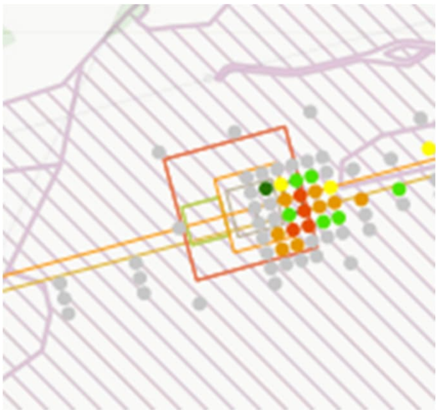
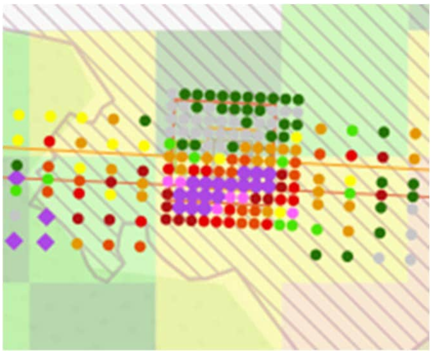
JHI Peat Presence Score	Probing Requirements	Tower Locations	Access Track	Compounds or Other Hardstanding Areas
0	No probing necessary			
1	Probing on reduced grid with increased frequency if peat is located	50 m grid over a 100 m x 100 m area centred on the tower (nine probes)	Probing at centre of the track with offsets at 10 m every 50 m	50 m grid over area of hardstanding
2	Probing on reduced grid with increased frequency if peat is located	50 m grid over a 100 m x 100 m area centred on the tower (nine probes)	Probing at centre of the track with offsets at 10 m every 50 m	50 m grid over area of hardstanding
3	Probing in accordance with peat survey guidance[9]	10 m grid over a 100 m x 100 m area centred on the tower (121 probes)	Probing at centre of the track with offsets at 10 m, 30 m and 50 m either side every 25 m	10 m grid over area of hardstanding
4	Probing in accordance with peat survey guidance[9]	10 m grid over a 100 m x 100 m area centred on the tower (121 probes)	Probing at centre of the track with offsets at 10 m, 30 m and 50 m either side every 25 m	10 m grid over area of hardstanding
5	Probing in accordance with guidance[9]	10 m grid over a 100 m x 100 m area centred on the tower (121 probes)	Probing at centre of the track with offsets at 10 m, 30 m and 50 m either side every 25 m	10 m grid over area of hardstanding

4.1.2 In addition, NatureScot (consultation meeting on 19 August 2024) requested that depth of penetration probing was also completed at all infrastructure locations where priority peatland habitat had been mapped, regardless of the JHI model Peat Presence Score. Priority peatland habitat refers to areas of peatland considered to be of high conservation importance due to their ecological value, carbon storage capacity, and biodiversity. The extent of priority peatland habitat within the study area was based on the UKHab survey data, produced in July 2024.

4.1.3 Probing locations were therefore plotted up on the basis of Table 4.1 and priority peatland habitat, with areas where the coarser grid was used being increased to the more detailed grid if peat was encountered as per the examples in Table 4.2:

[9] Scottish Government, Scottish Natural Heritage, SEPA (2017). Peatland Survey: Guidance on Developments on Peatland – Site Surveys. Scottish Environment Protection Agency. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2018/12/peatland-survey-guidance/documents/peatland-survey-guidance-2017/peatland-survey-guidance-2017/govscot:document/Guidance+on+developments+on+peatland+-+peatland+survey+-+2017.pdf

Table 4.2: Probing Examples

Probing Results	Probing Strategy
	Example 1 Probing initially completed on a 50 m grid (nine probes across the red square) due to a JHI Peat Presence Score of zero but the presence of priority peatland habitat (purple stripes). Peat was encountered in the probe on the east (coloured dots represent peat of different depths >0.5 m) and therefore a denser grid (10 m spacing) was probed until no peat (probe depths of <0.5 m – depicted by grey dots) was encountered.
	Example 2 The JHI Peat Presence Score is two for the light green square and one for the dark green square. These require the coarser grid, as does the priority peatland habitat presence (purple stripes). No peat was encountered (all probe depths were <0.5 m – grey dots) and therefore no additional probing was required.
	Example 3 The JHI Peat Presence Score for the lower part of the infrastructure is three and therefore the detailed grid is required to be probed both within the tower footprint and the track alignments. As peat continued to be located in the northern area the detailed grid was maintained.

5 Survey Methodology

5.1 Survey Approach

5.1.1 A depth of penetration survey, considered to be equivalent to peat depth, was completed between July 2024 and August 2025 for the Proposed Development. This was undertaken in accordance with the 2017 Peatland Survey Guidance on Developments on Peatland[1] issued by the Scottish Government, Scottish Natural Heritage, and SEPA, and followed the strategy outlined in Section 3.

5.1.2 The survey strategy was submitted to SEPA in April 2024 following a meeting on 22 April 2024, during which both the model development and peat survey strategy were discussed.

5.1.3 The survey strategy was also presented and agreed with NatureScot during a meeting on 19 August 2024. At this meeting, the proposed method, the survey area, and core sampling method were discussed. NatureScot was broadly supportive of the approach, as later reflected in their written response dated 12 March 2025, which welcomed the intention to adopt methods aligned with the Peatland ACTION Technical Compendium and confirmed support for the strategy to reuse peat and identify wider restoration opportunities.

5.1.4 The survey included completion of the following:

- record the depth of penetration at each probe location along with an estimate of the geology at the limit of penetration;
- collect data from 40 cores (coring was completed to obtain some preliminary data on peat characteristics in advance of specific ground investigations and to verify probing) on total peat depth, Von Post[10] measurements every metre, the thickness of the acrotelm, catotelm, and peat (if present) and comments on water table if possible;
- record the underlying geology at all probe locations: e.g. bedrock, clay, silt, sand;
- record the vegetation at all probe locations: bare ground, grass, heather, cotton grass, mixed mosses or sphagnum moss;
- record the ground firmness at all probe locations: 0 – too soft to walk on, 1 – surface just passable, 2 – surface fairly firm, and 3 – surface firm;
- record location comments at all probe locations: (e.g. D - drain, DD - diffuse drainage, ET - existing track, EG - erosional gully, PC - peat cutting, PH - peat hag, PS - potential peat slide, W - water course, P – pool / pond, SP - sphagnum pool);
- take a photographic record of all cores;
- present all data in tables with appropriate labelling of locations according to the specification document; and
- provide a factual report detailing the work completed and the data collected.

5.2 Survey Method

5.2.1 Depth of penetration probing was completed using narrow diameter fibre glass probes of up to 10 m length that do not allow a sample to be obtained. The probes are pushed into the ground until there is sufficient resistance to prevent further penetration, and the depth recorded as the depth of penetration. A description of the resistant substrate below is made based on the feel of the resistance (e.g. grit, bedrock, clay, sand, rock or resistance where unable to differentiate).

5.2.2 This probe provides the depth of penetration in soft formations and, if peat is present, is often representative of the actual peat depth when the formation underlying the peat is sands and gravels or bedrock. However, the depth of penetration can be an overestimate of the depth of peat where the substrate below is soft and penetrable, such as soft clay or silt. In some cases, peat may not be present and the whole of the probe penetrates through silt or clay sediments. Coring is therefore necessary to verify some of the probe results by extracting a core of the deposits for examination.

5.2.3 A total of 40 cores were obtained using a gouge auger to determine the actual depth of the peat and obtain a sample of the underlying formation. Observations on the soil and peat characteristics were determined from the cores using recognised criteria (Von Post test[10]). The acrotelm, catotelm and amorphous layers (if present) within the peat were also identified within the peat where possible. Observations on underlying geology, nearby water features, ground conditions and habitat were also noted.

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10 Von Post, L. (1922). *Sveriges geologiska undersöknings torvinventering och några av dess hittills vunna resultat.* In: *Proceedings of the International Peat Society.* (English summaries are commonly adapted in peat survey guidance such as SEPA, 2017).

5.2.4 Probe locations were located and recorded using a handheld global position system (GPS) device, with Birdseye aerial imagery, to a six-figure grid reference (to 1 m) and georeferenced photographic records were obtained for all cores. The probes and gouge auger used at this site are of the types shown in Annex B.

5.2.5 The data obtained from the current site investigation was verified with the coring data.

5.2.6 The Von Post Humification Scale[10] is a method used to classify the degree of decomposition (or humification) of peat. It ranges from H1 (completely undecomposed, with clear water squeezed from the sample) to H10 (highly decomposed, where the peat is amorphous, and no plant structure remains). The scale helps assess peat condition, water retention, and carbon content, and is commonly used in peat surveys to inform land use planning, restoration, or development on peatlands.

5.3 Survey Area

5.3.1 Chapter 3: Project Description of the EIA Report describes all elements of the Proposed Development. For the purpose of this Appendix, probing was undertaken across the following infrastructure elements:

- tower location working areas (100 m x 100 m or 80 m x 80 m area) which encompass tower foundations, hardstanding areas for use as construction compounds, laydown areas, and crane / piling pads as illustrated in Figure 3.9a-b: Tower Working Area Arrangement of the EIA Report;
- conductor pulling areas (EPZs);
- existing tracks where widening will be required, which comprised those in poor and very poor condition; and
- along proposed new access tracks both temporary and permanent.

5.3.2 Probing was not required where existing track upgrades only require surface improvements, where trackways do not require excavation or access with ATV vehicles is required, or where floated roads will be constructed.

5.4 Limitations

5.4.1 It should be noted that the peat depth probes were undertaken at up to 50 m spacing and there may therefore be more localised peat depth variations between each probing point. It is also possible that some overestimation of peat depth can occur if soft silty clay is present underlying the peat that is indistinguishable from peat using just a peat probe.

6 Results

6.1 Peat Survey Data Summary and Annex References

6.1.1 The data collected by Fluid are presented in detail in the attached annexes:

- typical peat equipment and characteristics are presented in Annex B Example Photographs of Typical Ground Conditions;
- the data collected from each of the 40 cores is presented in Annex C Peat Core Data and Von Post Measurements[6] and
- a photographic record and log of the peat for each core is presented in Annex D Peat Coring Logs.

6.2 Depth of Penetration Probing

6.2.1 A total of 21,203 probes and 40 cores were completed by Fluid. A total of 213 proposed locations were not suitable for probing due to:

- 150 were located on an existing track or in a built-up area;

- 39 were inaccessible due to dense vegetation;
- 12 were located in a watercourse, flooded area or a pond;
- five locations were inaccessible due to fallen trees;
- five locations were too close to overhead powerlines; and
- two locations were in an active quarry.

6.2.2 Alternative depth of penetration probing was completed where it was possible to probe reasonably close to the original points.

6.2.3 Of the 21,203 peat probes a total of 11,662 probes (55.00 %) recorded depths of 0.5 m or less (no peat), 3,724 probes (17.56%) recorded depths of penetration between 0.5 m and 1.0 m and 5,817 probes (27.44%) recorded depths of penetration >1.0 m, as shown in **Table 6.1**.

Table 6.1: Depth of Penetration Distribution

Depth Range (m)	Number of Probes	Percentage of Probes
0 to 0.5 (no peat)	11,662	55.00
>0.5 – 1.0	3,724	17.56
>1.0 – 1.5	1,485	7.00
>1.5 – 2.0	1,222	5.76
>2.0 – 3.0	1,574	7.42
>3.0 - 4.0	921	4.34
>4.0 - 5.0	416	1.96
>5.0 - 6.0	135	0.64
>6.0 - 7.0	43	0.20
>7.0 - 8.0	19	0.09
>8.0	2	0.01
Total	**21,203**	**100.0**

6.2.4 The depth of penetration at each probe location is presented in **Annex C** and on **Figure 10.1.1** which also includes the JHI Peat Presence Score and the areas of priority peatland habitat.

6.3 Coring

6.3.1 A total of 40 locations have been cored during the peat survey and the data collected included Von Post[10] test results, acrotelm and catotelm thickness, observations on the peat structure and any observations on water features nearby as presented in **Annex C**. Comparison of the probe depth of penetration and the peat depth verified from the core is also presented in **Annex C** and full logs of each core including photographic record are presented in **Annex D**.

6.3.2 Of the 40 locations cored, a total of 38 identified peat greater than 0.5 m depth. Comparison of the depth of peat in the cores to the depth of penetration probes validated the probing results in 38 of the 40 locations where peat depths were recorded the same. It is assumed that if the difference between the peat depth from coring and from probing is 0.1 m or less, then it is an acceptable variation due to the accuracy of the measurements.

6.3.3 In two locations the probe overestimated peat depth.

- in core C_23 the probe overestimated the peat depth by 0.70 m, where the probe recorded 0.70 m compared to 0.00 m observed in the core. This difference was due to degraded peat / peaty soil mixed with sandy silt down to 0.45 m and silty clay below 0.45 m that was indistinguishable from peat using the probe;

- in core C_26 the probe overestimated the peat depth by 0.55 m, where the probe recorded 0.55 m compared to 0.00 m observed in the core. This difference was due to soft and penetrable degraded peat / peaty soil down to 0.25 m and traces of peat mixed with sandy silt below 0.25 m that was indistinguishable from peat using the probe.

6.3.4 This would indicate that there may be some areas of the site where the depth of peat is over estimated.

6.3.5 The cores identified a distinctive acrotelm layer in 35 of the 40 coring locations that ranged between 0.05 m and 0.20 m thick and averaged 0.11 m where present.

6.3.6 The catotelm thickness ranged from 0.25 m to 1.75 m in the 38 cores where peat was present.

6.3.7 The variations in the results of coring and probing typically occur when silty clay deposits are present underlying the peat. These are not usually very thick (a few tens of centimeters) and although they do reduce the overall peat thickness this tends to only make a significant difference at shallower peat depths.

6.4 Substrate

6.4.1 A total of 21,203 probes were undertaken across the site with each recording the potential substrate at the limit of penetration.

6.4.2 The probes recorded substrate information based on feel as the probe made contact with the formation underlying the peat as follows:

Table 6.2: Substrate across all probe locations

Substrate	Number of Probes	Percentage of Probes
Rock	9,097	42.9%
Silt	6,473	30.54%
Gritty silt	3,163	14.92%
Grit	2,165	10.21%
Sand	117	0.55%
Clay	68	0.32%
Sandy silt	28	0.13%
Clayey silt	26	0.12%
Sandy grit	20	0.09%
Resistance	16	0.08%
Gritty clay	12	0.06%
Gritty sand	7	0.03%
Clayey grit	6	0.03%
Silty clay	5	0.02%
Total	21,203	100.0%

6.4.3 The majority of the site is therefore underlain by bedrock, silt or grit; or some combination of the latter two.

6.5 Sampling Results

6.5.1 Samples of peat were observed in the field as part of the peat depth probing programmes and descriptions noted with respect to its characteristics, including fibre content, decomposition and moisture content.

6.5.2 The Von Post[10] test was also carried out at core locations with category descriptions presented in Table 6.3.

Table 6.3: Summary of Von Post Humification Scores

Von Post Score	Description
H1	Completely undecomposed peat which, when squeezed, releases almost clear water. Plant remains easily identifiable. No amorphous material present.
H2	Almost entirely undecomposed peat which, when squeezed, releases clear or yellowish water. Plant remains still easily identifiable. No amorphous material present.
H3	Very slightly decomposed peat which, when squeezed, releases muddy brown water, but from which no peat passes between fingers. Plant remains still identifiable, and no amorphous material present.
H4	Slightly decomposed peat which, when squeezed, releases very muddy brown water. No peat is passed between the fingers, but plant remains are slightly pasty and have lost some of their identifiable features.
H5	Moderately decomposed peat containing a fair amount of amorphous material. Plant structure recognisable though somewhat vague. On squeezing, some peat but mainly muddy water issues. Residue is strongly pasty.
H6	Moderately highly decomposed peat with a very distinct plant structure. When squeezed, about one-third of the peat escapes between the fingers. The residue is very pasty but shows the plant structure more distinctly than before squeezing.
H7	Highly decomposed peat. Contains a lot of amorphous material with very faintly recognizable plant structure. When squeezed, about one-half of the peat escapes between the fingers. The water, if any is released, is very dark and almost pasty.
H8	Strongly decomposed peat with much amorphous material and very indistinct plant structure. On squeezing, two thirds of the peat and some water passes between the fingers. Residue consists of plant tissues capable of resisting decomposition (roots, fibres, wood, etc.).
H9	Practically fully decomposed peat in which there is hardly any recognisable plant structure. When squeezed, it is a fairly uniform paste.
H10	Completely decomposed peat with no discernible plant structure. When squeezed, all the wet peat escapes between the fingers.

6.5.3 This means that there is no amorphous peat in category H1, H2 and H3. H scores of 5 or more begin to have amorphous material, with significant amorphous material occurring at scores of H9 and above.

6.5.4 Von Post H scores within the acrotelm range from H2 to H5, and within the catotelmfrom H4 and H8. Category descriptions can be found in **Table 5.3** with all results presented in **Annexes C** and **D**.

6.5.5 While several Von Post categories (H5 and above) indicate the presence of amorphous material, this refers to partially decomposed content within otherwise structured peat. In this context, amorphous peat refers specifically to peat that is entirely structureless and fully amorphous, represented by H9 and H10, which was not observed.

6.5.6 In terms of reuse, consideration has to be given to the increasingly amorphous and plastic nature of that catotelm with scores of H7 and above.

6.5.7 For the purposes of this study, Von Post B scores refer to a field-based qualitative classification of peat moisture content, ranging from B1 to B5, as follows:

- B1 – Dry: Peat is firm, crumbly, and dry to the touch;
- B2 – Moist: Peat feels slightly damp but does not release water when squeezed;
- B3 – Wet: Peat is clearly moist and releases some water when squeezed;
- B4 – Very Wet: Peat is saturated and releases a moderate amount of water when squeezed; and
- B5 – Extremely Wet: Peat is waterlogged, releases substantial water, and may be semi-liquid in consistency.

6.5.8 These scores complement the Von Post H scores (H1–H10), which describe the degree of peat decomposition, by providing insight into the peats hydrological condition at the time of sampling.

6.5.9 The Von Post B scores recorded at coring locations range from B2 to B5, with no instances of B1 (dry) peat observed. These scores indicate that the peat is generally moist to very wet throughout the profile, consistent with expectations for undrained or minimally disturbed peatland. The acrotelm shows scores predominantly between B2 and B4, with occasional B5 values, suggesting good moisture retention and limited drying. In the upper catotelm (0–1 m), most samples returned a B3 score, indicating stable wet conditions below the surface. Where deeper catotelm samples were taken (1–2 m), the scores remained in the B2 to B4 range, with B3 again being the most common. These results suggest that the peat body is consistently saturated, particularly in the lower layers, and supports the assumption that hydrological conditions remain favourable for peatland function in many of the cored locations.

6.6 Peat Depth Model

6.6.1 The peat depth point results were used to develop a peat depth contour model across the area of the peat survey using a natural neighbour analysis. The peat depth contour model is presented in Figure 10.1.2.

6.6.2 The peat study area totals 16,734,631 m^2 and the peat depth is distributed as presented in Table 6.4 based on the peat probing results and interpolated depth model.

Table 6.4: Depth of Penetration Distribution

Depth Range (m)	Area (m^2)	Percentage
0 to 0.5 (no peat)	13,933,645	83.26
>0.5 – 1.0	1,279,374	7.65
>1.0 – 1.5	501,121	2.99
>1.5 – 2.0	323,109	1.93
>2.0 – 3.0	373,773	2.23
>3.0 - 4.0	198,852	1.19
>4.0 - 5.0	89,491	0.53
>5.0 - 6.0	25,775	0.15
>6.0 - 7.0	9,095	0.05
>7.0 - 8.0	395	0.01
>8.0	1	0.01
Total	**16,734,631**	**100%**

6.6.3 The peat depth across the 16,734,631 m^2 survey area is comprised of 83.26% with no peat, 7.65% of the area with peat up to 1 m depth and 9.09% of the area with peat >1 m depth.

6.6.4 Peat is almost entirely absent for the section of the Proposed Development from Beauly to about 7 km east of Inverness and from south of Elgin to Peterhead. From approximately 7 km east of Inverness to directly south of Elgin, peat occurrence and depth is variable along with peat generally present in pockets which can extend up to 8 m in depth.

6.6.5 Peat depth does not always correspond to areas mapped as priority peatland habitat as peat is also present in forestry and open moorland, and there is also an absence of peat in some of the areas mapped as priority peatland habitat.

6.6.6 The peat depth model has been used to calculate the volume of peat that will be excavated for the construction of the Proposed Development within Appendix 10.2 Peat Management Plan.

7 Summary

7.1.1 The following summarises the results of the peat survey campaign:

- depth of penetration probing, considered equivalent to peat depth, has been completed across the Proposed Development where either the JHI model Peat Presence Scores indicated peat or where priority peatland habitats have been mapped;
- probing was completed at 50 m intervals with 10 m offsets along proposed access tracks and on a 50 m grid at other infrastructure where the JHI model recorded Peat Presence Scores of 1 or 2, and / or priority peatland was present;
- probing was competed at 25 m intervals with 10 m, 30 m and 50 m offsets along proposed access tracks and on a 10 m grid at other infrastructure where the JHI model recorded Peat Presence Scores of between 2 and 5, or where peat was encountered in the coarser grid and therefore probing on the denser grid was required;
- no probing was completed where the JHI model Peat Presence Scores were 0 or where no priority peatland habitat was mapped;
- peat has been determined to be present up to a depth of 8.1 m based on 21,203 depth of penetration probes and 40 cores;
- a peat depth contour model has been developed across the survey area based on the probing results, which indicates that there is no peat across 83.26 % of the survey area, peat up to 1 m depth across 7.65 % of the survey area and peat >1 m depth across 9.09 % of the survey area;
- peat is almost entirely absent for the section of the Proposed Development from Beauly to about 7 km east of Inverness and from south of Elgin to Peterhead. From approximately 7 km east of Inverness to directly south of Elgin, peat occurrence and depth is variable along with peat generally present in pockets which can extend up to 8 m in depth;
- peat depth does not always correspond to areas mapped as priority peatland habitat as peat is also present in forestry and open moorland, and there is also an absence of peat in some of the areas mapped as priority peatland habitat;
- a distinct acrotelm layer was identified in 35 of the 40 coring locations that ranged between 0.05 m and 0.20 m thick and averaged 0.11 m where present;
- coring for peat depth verification and assessment of peat characteristics was completed at 40 locations. The coring verified the peat probing depths in 38 of the 40 locations where the probe depths were the same or within 0.1 m of difference. Two of the cores overestimated the peat depth by between 0.55 m and 0.70 m. This difference was due to soft and penetrable layers consisting of silty topsoil, clayey silt and degraded peat / peaty soils that were indistinguishable from peat using the probe and would indicate that there may be some areas of the site where the depth of peat is over estimated;
- no amorphous peat was identified at any of the 40 core locations; and
- the survey strategy, including the probing and coring approach described above, was discussed with NatureScot during a meeting on 19 August 2024. NatureScot was supportive of the overall method, including the proposed survey intensity (grids and offsets), survey locations, and the rationale for targeting areas based on JHI Peat Presence Scores and mapped priority peatland habitat.

APPENDIX 10.1 – ANNEX A: PEAT DEPTH MAPPING AND SURVEY AREA APPROACH

Figures

1 Introduction

1.1.1 Scottish and Southern Energy Networks (SSEN) Transmission commissioned the James Hutton Institute (JHI) to provide high resolution peat extent and peat depth mapping for the Beauly to Blackhillock to New Deer to Peterhead 400 kV Project. The study area extended from the coast near Peterhead to west of Inverness, with a north-south range of approximately 40 km (see Figure 1).

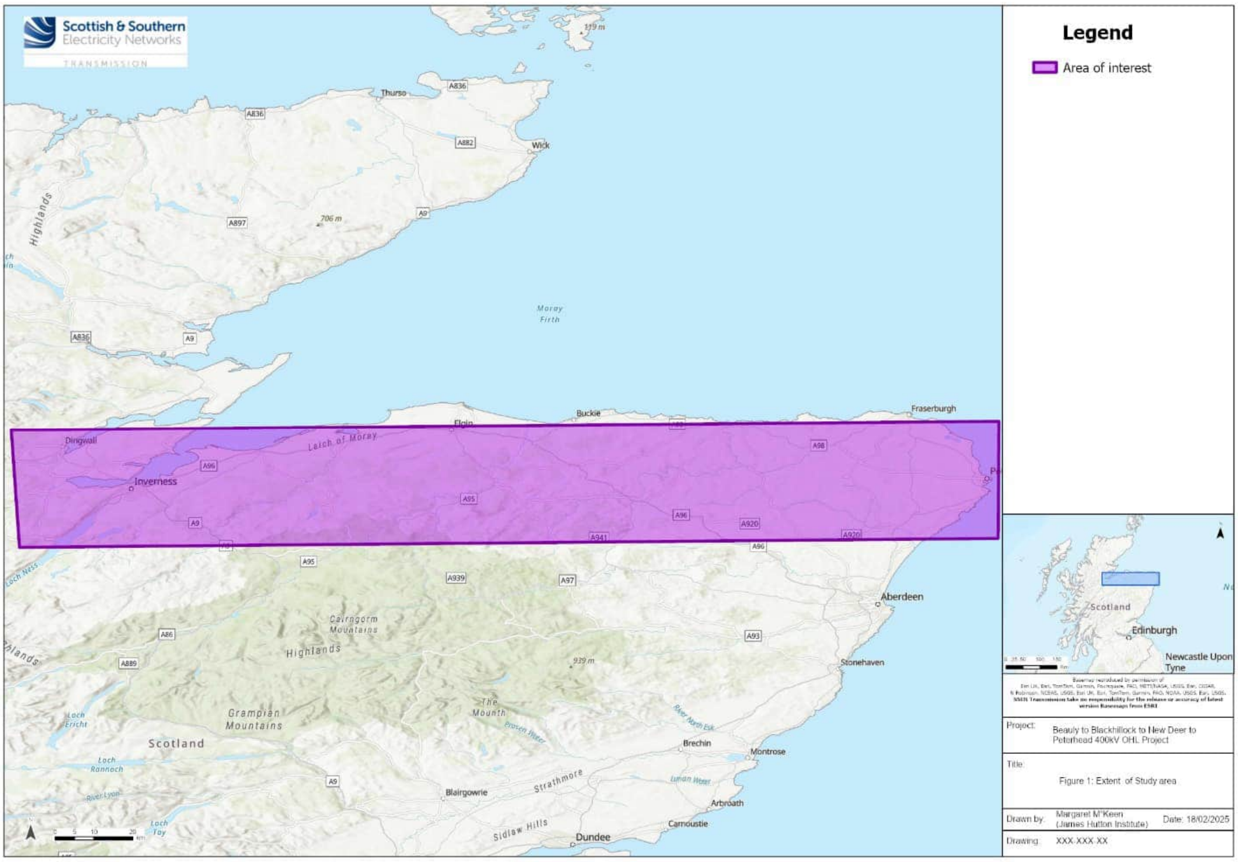


Figure 1: Extent of the study area.

1.1.2 The rationale of the work was to provide cost-effective peat mapping of an area of interest for route optioneering, and to allow determination of whether the number of peat depth sampling points could be reduced while still providing peat depth mapping of sufficient accuracy for site planning.

1.1.3 Following initial discussions, it was agreed that JHI would provide a set of sample locations for the field team (Fluid) and would use this data to generate a bespoke peat depth map for the study area. Additional analysis using existing spatial datasets was agreed. The style of data interpretation and presentation was left open and subject to the dataset analysis.

1.1.4 The data was subsequently interpreted and used to inform the Phase 2 peat probing survey area for the project. Habitat data was also used to identify additional small areas with the potential for peat.

2 Datasets used

2.1 Soil datasets

- Soil mapped:
  - at 1:250,000 using the Scottish Soil Classification System[1], which comprises 13 Major Soil Groups (only nine of which were present in the study area); and
  - at 1:25,000 across the majority of the study area (this dataset does not provide full national coverage, instead covering low-lying and agriculturally productive land)[2].
- Land Capability for Agriculture[3] (mapped at 1:250k and 1:25k) with coverages matching the soil maps listed above. While the LCA dataset does not explicitly provide information on peat cover, it does indicate where prime agricultural land lies within the study area. This was considered useful additional information in relation to planning and positioning of infrastructure.
- Peat depth maps:
  - at 100 m grid resolution, from 2019 by Aitkenhead & Coull at JHI[4]. This dataset was generated using machine learning models trained with the Peatland Action data available at the time, and the Scottish Soil Database (a set of full-profile descriptions from a 10 km grid across Scotland, and additional surveys); and
  - at 10 m grid resolution, from 2025 by Robb, Aitkenhead and others at JHI[5]. This work is not yet published, and was carried out using more sophisticated machine learning than the 2019 work. It relied solely on the Scottish Soil Database data as the Peatland Action depth measurements were found to be problematic in developing a model with 10 m resolution.
- Peat probe depth measurements. This dataset comprises 352 depth measurements spread across the area of interest, and including two areas of 'dense sampling'. The survey work was carried out by Fluid . Measured depths range from 0 to 340 cm. Sample locations were identified by JHI using a Conditioned Latin Hypercube stratification approach, which allowed the full range of values to be represented across the following environmental factors:
  - topography (slope, elevation, aspect, flow accumulation);
  - land use / land cover;
  - soil type (as mapped in the 1:250k soil map listed above); and
  - climate (rainfall and temperature).

2.1.1 The output dataset was provided at approximately 100 m grid resolution, with finer-resolution datasets being smoothed to this resolution by taking mean depth values. The peat probe depth measurements were used to produce an additional high-resolution spatial dataset of peat depth. This was done using the same approach and underlying datasets as for the national level peat depth mapping but targeted the study area only. Because of the denser distribution of sample points than that used for the national mapping (and because the peat depth measurements were made by only one team of operators, rather than multiple teams operating independently), it was anticipated that this local peat depth mapping would be more accurate than the national level effort.

[1] The Macaulay Institute for Soil Research (1984). Organisation and methods of the 1:250 000 Soil Survey of Scotland. Available at: https://www.hutton.ac.uk/sites/default/files/files/soils/46%20-%20SOIL%20SURVEY%20OF%20SCOTLAND%20HANDBOOK%208.PDF
[2] Soil Survey of Scotland Staff (1970-1987). Soil maps of Scotland (partial coverage). Available at: https://www.hutton.ac.uk/soil-maps/
[3] Scotland's Soils (2024). National scale land capability for agriculture. Available at: https://soils.environment.gov.scot/maps/capability-maps/national-scale-land-capability-for-agriculture/
[4] Aitkenhead, M. and Coull, M. (2019). 'Mapping soil profile depth, bulk density and carbon stock in Scotland using remote sensing and spatial covariates', *European Journal of Soil Science*, 71(4), pp. 553-567. Available at: https://bsssjournals.onlinelibrary.wiley.com/doi/10.1111/ejss.12916
[5] Robb, C. *et al.* (2025). 'Soil Property, Carbon Stock and Peat Extent Mapping at 10m Resolution in Scotland Using Digital Soil Mapping Techniques', European Journal of Soil Science, 76(3). Available at: https://bsssjournals.onlinelibrary.wiley.com/doi/full/10.1111/ejss.70123

2.2 Environmental datasets

2.2.1 The approach used to generate the peat depth map for the study area falls loosely into the practice called Digital Soil Mapping (DSM). This is an umbrella term for the use of localised soil property measurements to create regional or national soil property maps using a range of possible mathematical and computational approaches. The theory underpinning DSM is that soil properties are influenced by a set of Soil Forming Factors, specifically:

- Climate: normally taken to include the average and seasonal distribution of rainfall and temperature throughout the year. For the study area, mean annual rainfall decreases significantly from west to east, and both temperature and rainfall change significantly with elevation and distance from the coast. The datasets used for this factor were mean monthly temperature and rainfall over the period 1960-2000, as provided by the Met Office[6]. The data is provided in 1 km square grid cells, which can cause some blocky artefacts to be generated in the final mapping. Measures were taken to smooth the data but this is not always entirely effective.
- Organisms (vegetation): loosely taken as a combination of land cover and land use, we have incorporated two datasets to provide this data. The first is the Macaulay Institute Land Cover of Scotland 1988[7], which was extremely accurate when developed but is over 30 years old and is therefore out of date. The second is the UKCEH Land Cover Map from 2021[8], which is more recent and is considered accurate when mapping lowland and agricultural land cover classes, but which tends to confuse upland classes. Additionally, remote sensing data (Sentinel 2 imagery from 2021[9]) was used to provide information on ground cover reflectance. This information is often useful in terms of vegetation type and density.
- Relief (topography): Ordnance Survey 5 m digital elevation map[10], coarsened to 10 m resolution and translated into multiple topographic metrics (slope, aspect, curvature, flow accumulation, surface roughness etc.) was used.
- Parent material (geology): the OneGeology UK surface geology map[11] was used. This was translated into 12 broad geological classes. This dataset is considered only somewhat useful as the boundaries between geologically distinct areas are drawn based on above-ground observations and so are likely to be often incorrect at the scale at which our mapping is being carried out.
- Time: the time period over which a soil has been formed, and the historical impact of the above factors, will have an impact on soil properties (e.g. the thickness of peat will depend on how long conditions have been favourable for peat-forming at any location). Due to the absence of historical land use mapping it has been assumed that all soil forming conditions present have been the same over the entire study area. Ongoing work to develop historical land use maps from the 1800s would help inform this but that work is not complete.

2.2.2 For each peat depth sample location, the above series of soil forming factor maps were interrogated to produce a site-specific dataset at each point. The combined site descriptions were then used to train a machine learning model that predicts peat thickness for each 10 m pixel based on that pixel's site characterisation.

[6] Met Office (n.d.). UK climate maps and data. Available at: https://www.metoffice.gov.uk/research/climate/maps-and-data
[7] Scottish Government (1992). Land Cover Scotland (LCS) 1988. Available at: https://spatialdata.gov.scot/geonetwork/srv/api/records/7dfaf8ce-2123-4eec-8a16-2e85fab7077d
[8] UK Centre for Ecology & Hydrology (2022). The UKCEH Land Cover Map for 2021. Available at: https://www.ceh.ac.uk/sites/default/files/2022-08/LCM2021ProductDocumentation.pdf
[9] Copernicus Data Space Ecosystem (n.d.). Sentinel-2. Available at: https://dataspace.copernicus.eu/data-collections/copernicus-sentinel-data/sentinel-2
[10] Ordnance Survey (2025). OS Terrain 5. Available at: https://www.ordnancesurvey.co.uk/products/os-terrain-5
[11] OneGeology (n.d.) OneGeology Portal. Available at: https://portal.onegeology.org/OnegeologyGlobal/

3 Analysis & Results

3.1 Combining maps of peat

3.1.1 For the 2019 and 2024 peat depth modelling, all areas where organic thickness was modelled as being more than 0.5 m were identified. For the two legacy soil maps at 1:250k and 1:25k, all areas mapped as peat were identified. This resulted in five spatial datasets with values of 0 (no peat) and 1 (peat). Adding these five maps together gave a score of 0 to 5, where 0 meant all maps indicated 'no peat' and 5 meant all maps indicated 'peat'.

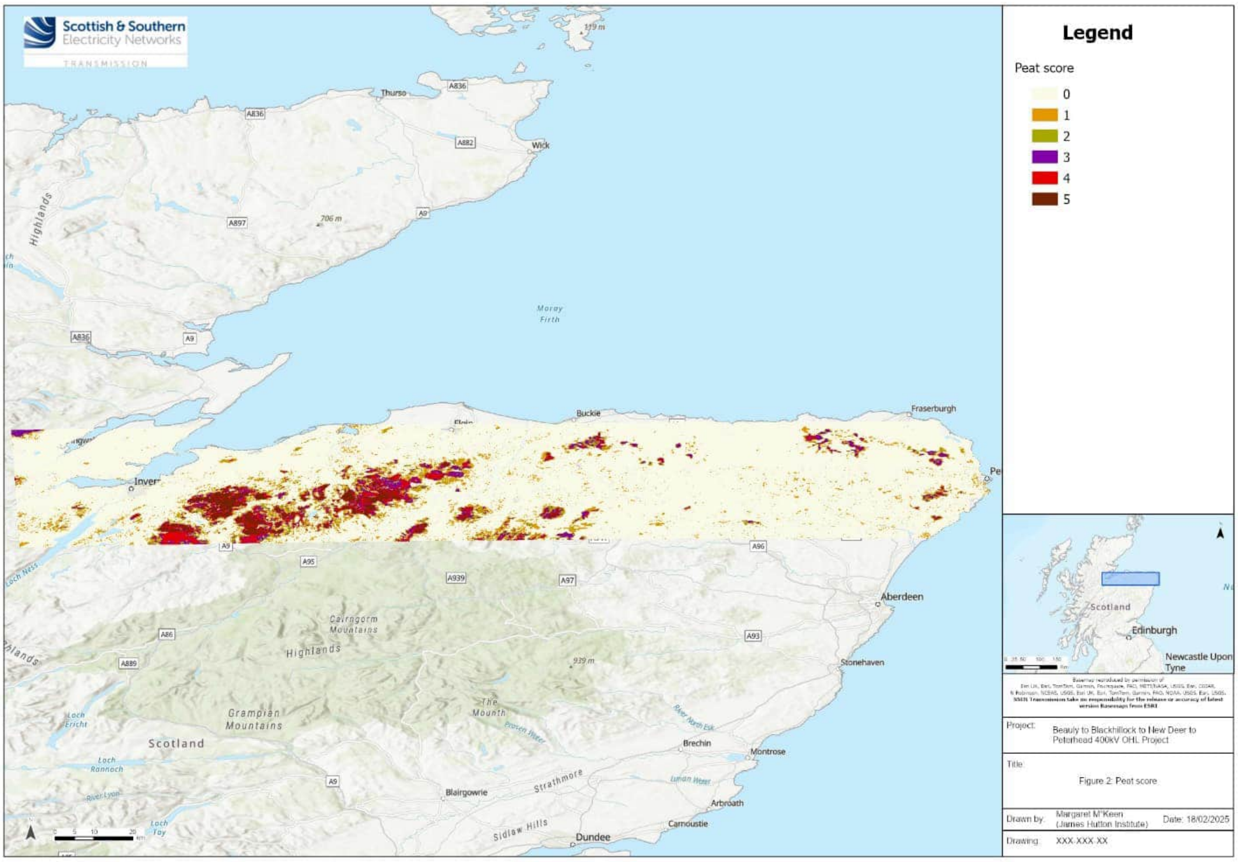


Figure 2: Peat score from combining different maps of peat.

3.1.2 As expected, most of the study area has a score of 0 where none of the maps have peat. There are several large areas where the score is 4 or 5, which provides confidence that there is peat at these locations. For the large areas with a score of 3 and 4 just to the left of image centre (north and northwest of Knockando), it is noted that these are almost all areas of current or previous forestry. Also that the 2024 peat depth map tends to underestimate peat depth under forestry and so these areas are also likely to be peat. The same is true of the smaller areas with a score of 4 near the eastern end of the study area, just west of St Fergus and between Strichen and New Pitsligo; these patches are peat under woodland or areas of industrial peat extraction and will have been reduced in thickness, but are likely still to be thicker than 0.5 m. The spatial dataset 'Peatscore' that has been supplied with this report contains the data from the above figure.

3.2 Comparing peat depth models with one another

3.2.1 As mentioned above, the peat depth maps from 2019 (100 m resolution) and 2024 (10 m resolution) disagree in some areas, with the more recent map underestimating peat depth under commercial forestry. The figure below shows this, with the values for 2019 subtracted from the values for 2024 (values are given in centimetres). This also reveals areas of high values where the more recent map estimates deeper peat than the older map (brown). Visual examination of these areas in aerial photography indicates that these areas are indeed peat, usually with drainage channels and / or erosion features. In the peat score figure above, these areas have scores of only 1-3, meaning that the legacy soil maps as well as the 2019 study did not identify them as peat. This indicates that the new, high resolution peat depth map is a more accurate estimate of peat depth except where there is forestry.

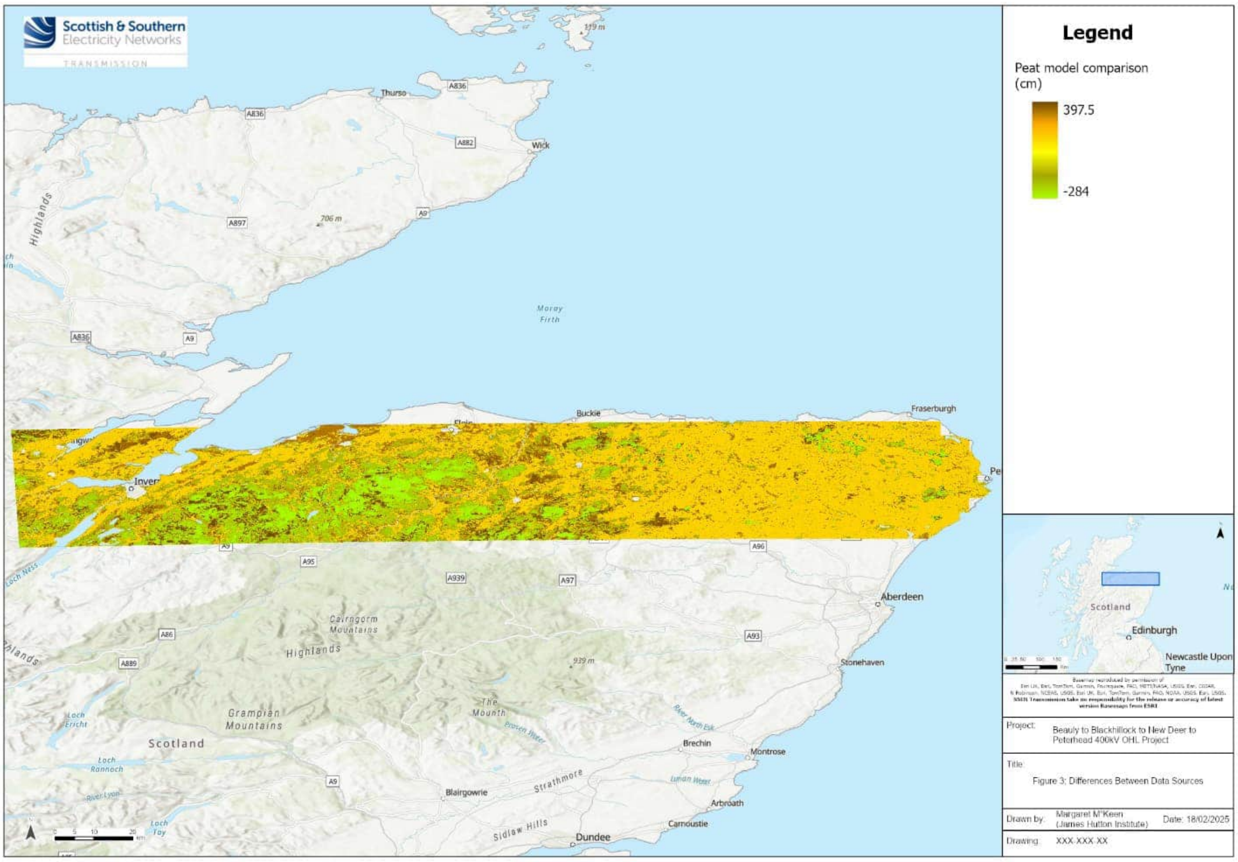


Figure 3: Differences between 2019 and 2014 national peat depth maps.

3.3 Comparing peat depth models with peat rod measurements

3.3.1 Both peat depth maps (2019 and 2024) have moderate correlation (R^2 = 0.52 and 0.56 respectively) with the peat depth measurements made with peat rods. While these values may seem low, it has been noted that the Peatland Action dataset with several thousand depth measurements has a significantly lower correlation (R^2 = 0.12) with both peat depth maps. There has been discussion between JHI staff and NatureScot staff working on Peatland Action about this Scotland-wide problem since 2022 and there are indications that the peat rod method may be prone to operator bias (e.g. people with different physical strength are measuring significantly different peat depth).

3.3.2 We also found when developing the more recent peat depth model that Peatland Action data, when used to train a model of peat depth, did not correlate to environmental variables (topography, climate, land cover etc.) nearly as well as the Scottish Soil Database data. Therefore it appears that there is a combination of modelling and measurement inaccuracy that makes it difficult to compare the two types of depth estimate. A comparison of mapped depth at 10 m resolution versus the overestimate in mapped depth (assuming the depth rod measure is correct) shows no real trend with measured depth (see graph below).

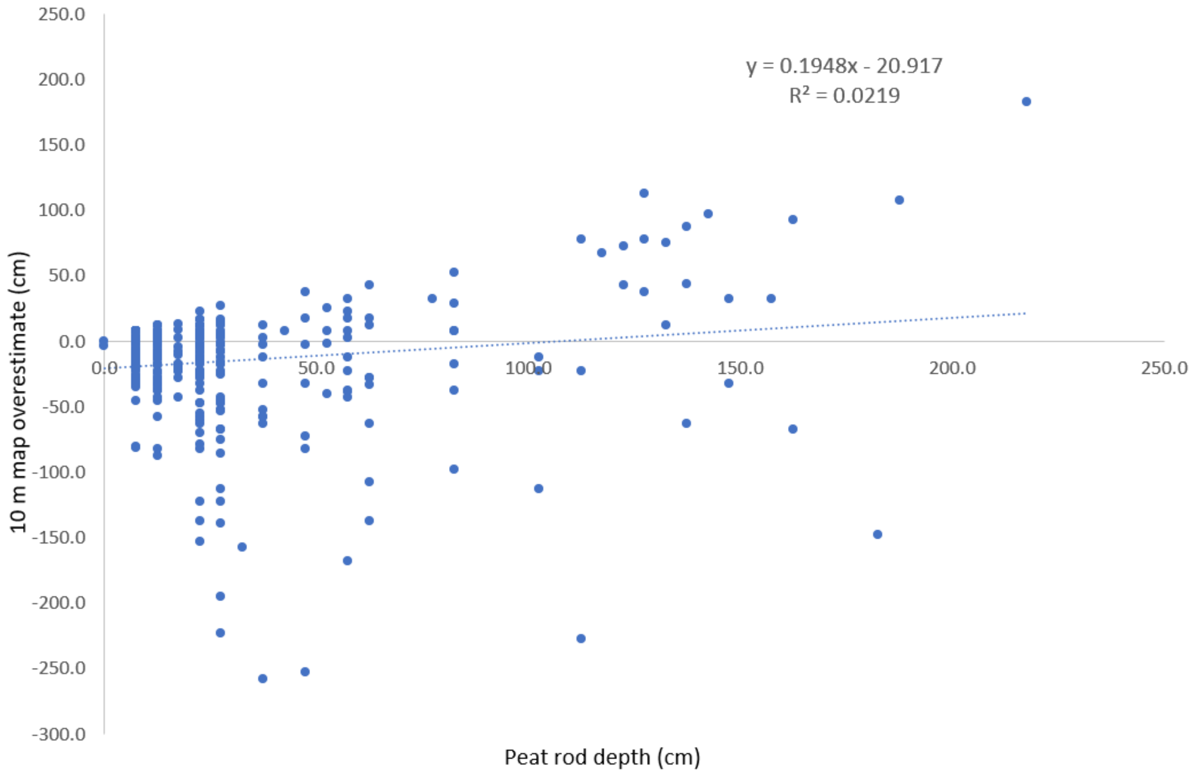


Figure 4: Comparison of mapped peat depth and overestimate in peat depth.

4 Peat drainage and erosion

4.1.1 Recent work funded by the Scottish Government's Strategic Research Programme has allowed JHI to produce national level maps of peatland drainage and erosion features. The methodology for identifying and mapping these features was based on a similar machine learning approach to that used for mapping peat thickness, but instead used aerial photography at 25 cm resolution from GetMapping (now BlueSky, with imagery from Airbus) from a rolling programme covering Scotland every five years. Training data for drainage and erosion features was generated for several peatland sites by hand and used to train models capable of identifying drainage or erosion features. The two figures below provide imagery for these features within the study area.

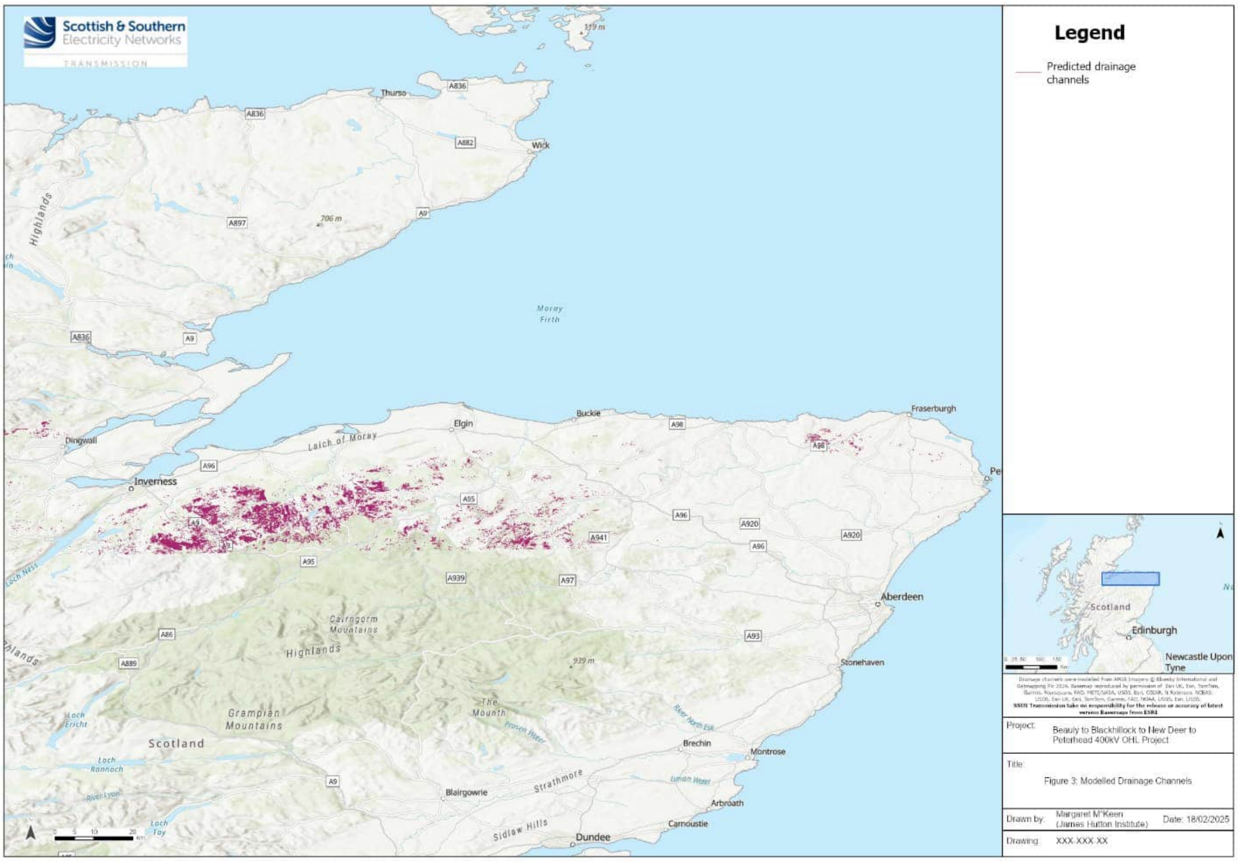


Figure 5: Drainage channel mapping using remote sensing.

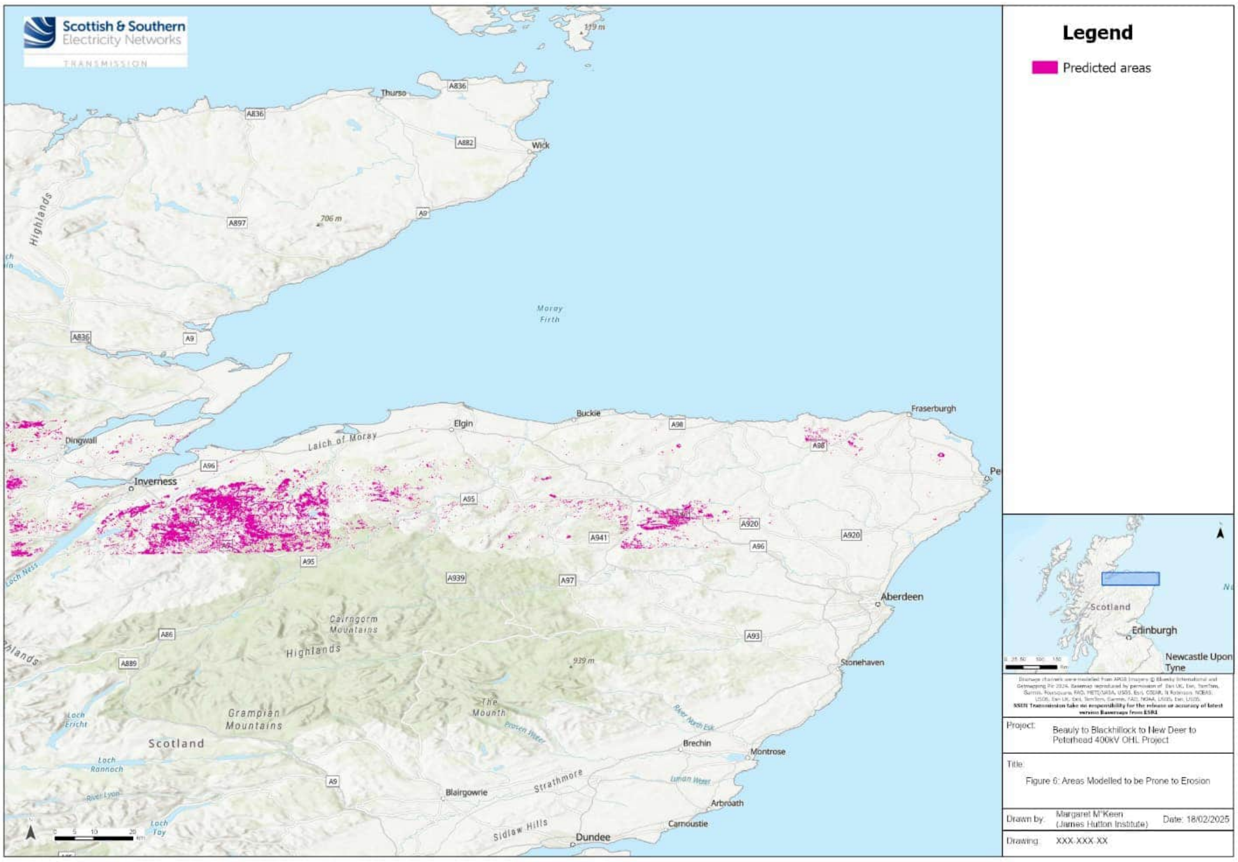


Figure 6: Erosion feature mapping using remote sensing.

5 JHI Peat Depth Mapping Summary

5.1.1 Where the peat score map gives a score of 3 or 4, we are confident that peat is present. In areas where the 10 m resolution map created specifically for the study area indicates peat, but the peat score map values are 1 or 2, we are still confident that peat is present. We have included this dataset (peatconf1) where values greater than 0 indicate the presence of peat. Where the score is 0 in this map we are assuming that peat is not present, but if above-ground evidence of peat is seen (e.g. sphagnum) then further depth measurements should be taken.

5.1.2 Peatland drainage and erosion mapping has been provided as polygon shapefiles. This additional data will provide an opportunity to further discriminate between areas of near natural bog in good condition, and drained / eroded peatland where greenhouse gas (GHG) emissions will already be significant. This information could be used in any planning process to identify opportunities to avoid near natural bog, and thus reduce the overall GHG emission 'additional' impact of any work carried out on-site. It could also provide an opportunity for reducing ongoing GHG emissions if work carried out on-site blocks existing peat drains.

5.1.3 Further analysis of Land Capability for Agriculture values and their interaction with peat depth has shown that LCA values on peatland in the study area lie across the full range from 2 (land capable of producing a wide range of crops) to 7 (land of very limited agricultural value). However, the areas where LCA values of 2 or 3 intersect with peatland are very small and could possibly be due to boundary errors with the original LCA mapping. Most peatland areas lie on LCA values of 5, 6 and 7 (almost all LCA values of 7 occur on peatland, with some on bare ground).

6 Additional Figures

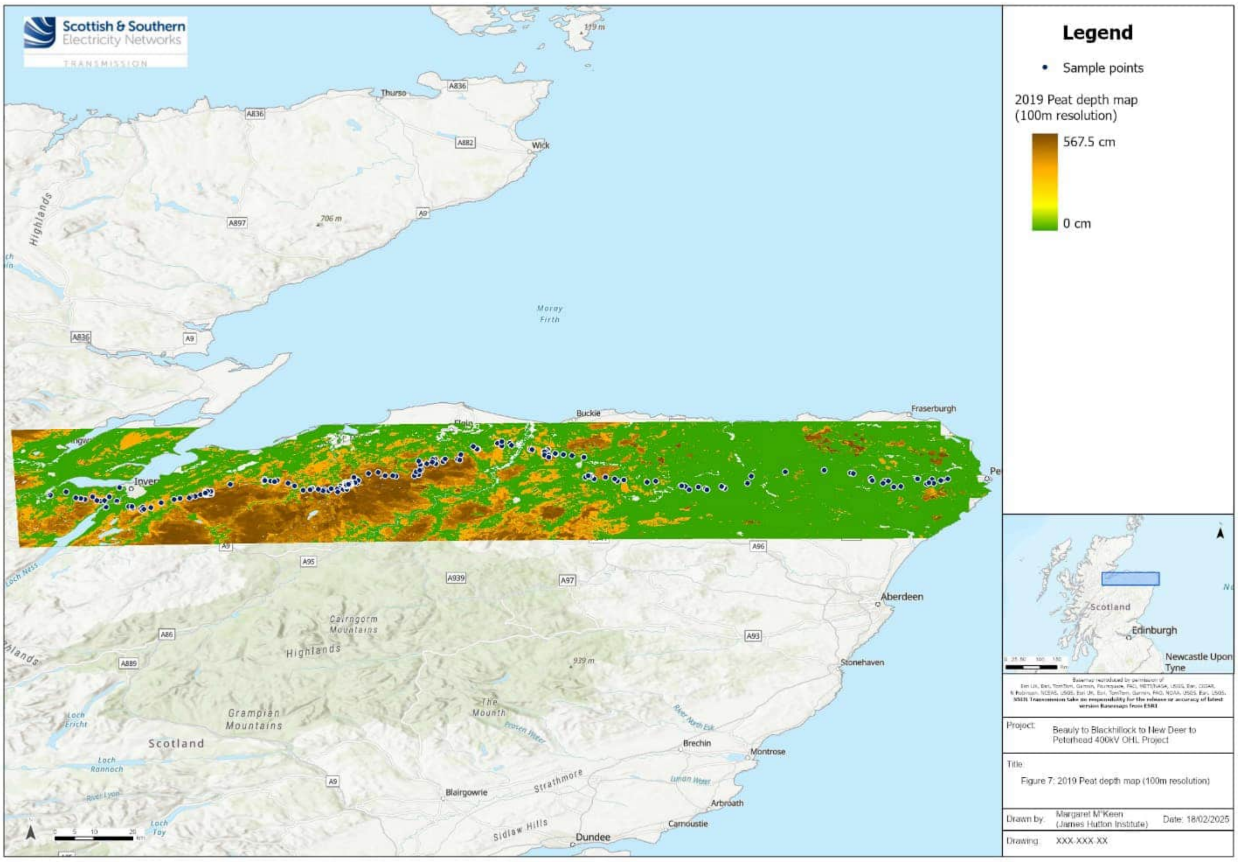


Figure 7: Peat depth map for area of interest, from 2019 mapping.

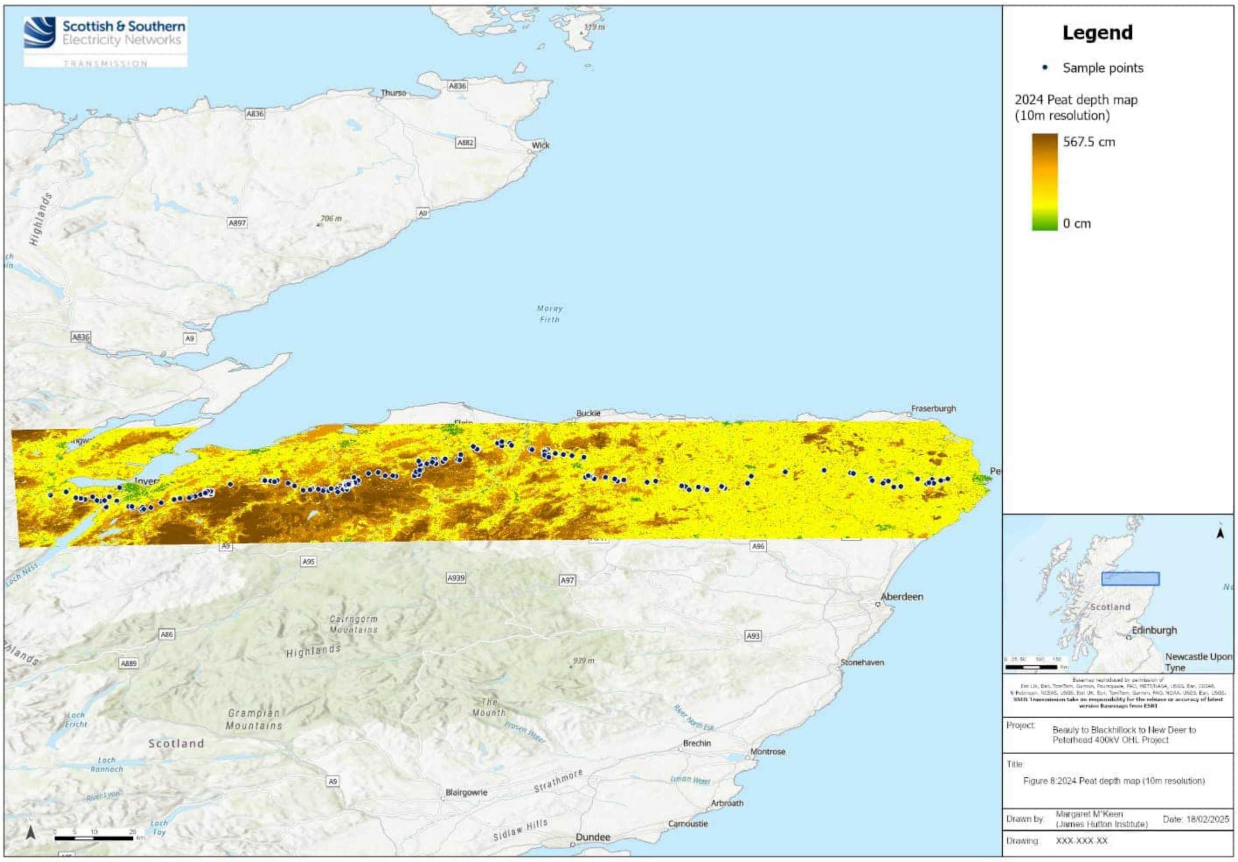


Figure 8: Peat depth map for area of interest, from 2024 mapping.

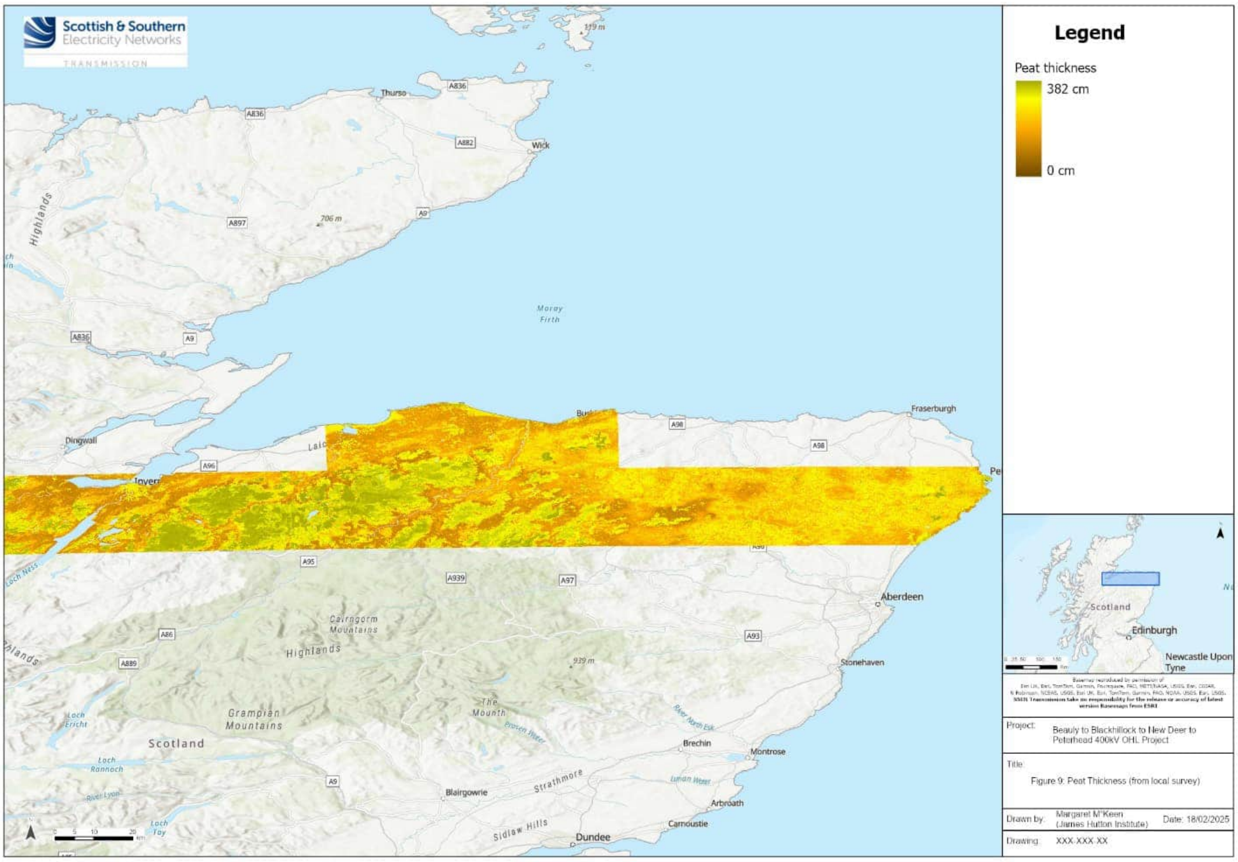


Figure 9: Peat depth mapped using local survey data gathered by Fluid Environmental Consulting Ltd.

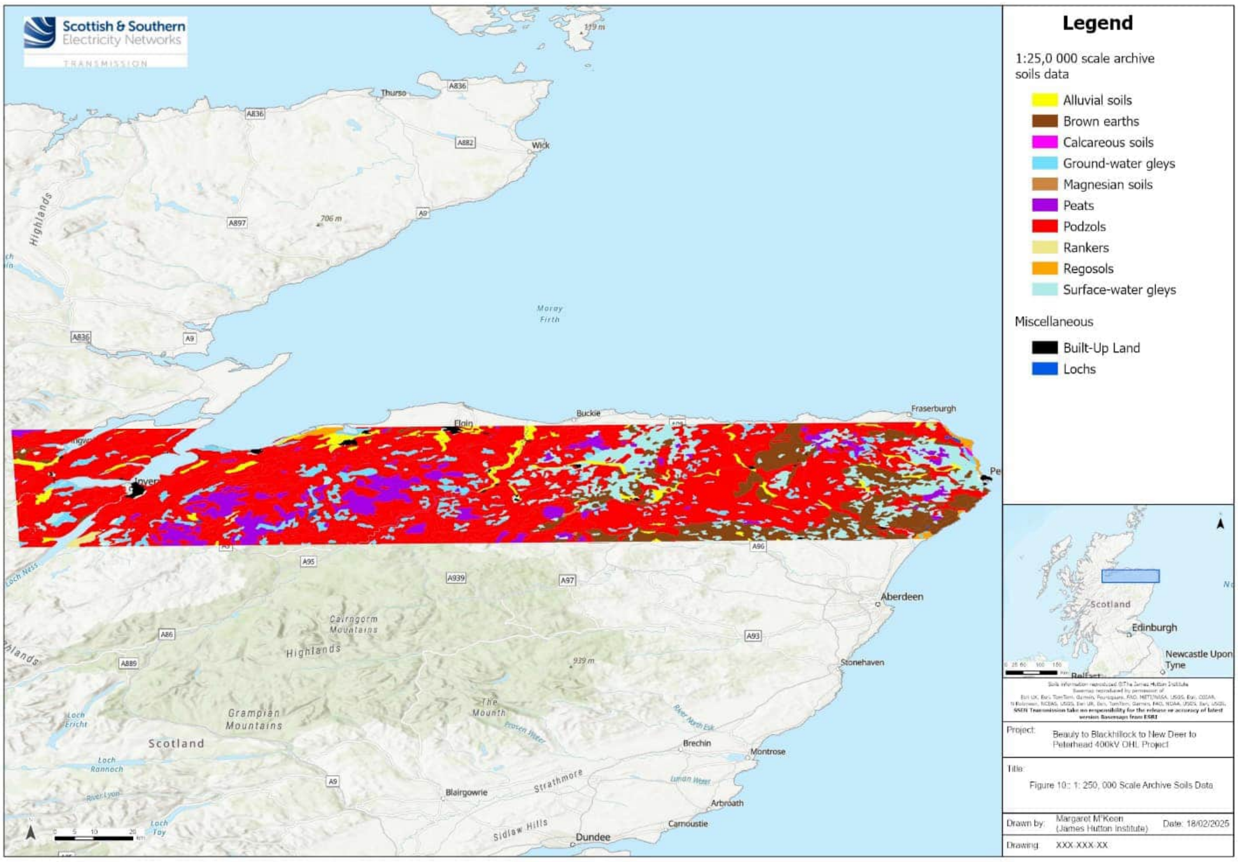


Figure 10: 1:250,000 soils mapping from national soil map.

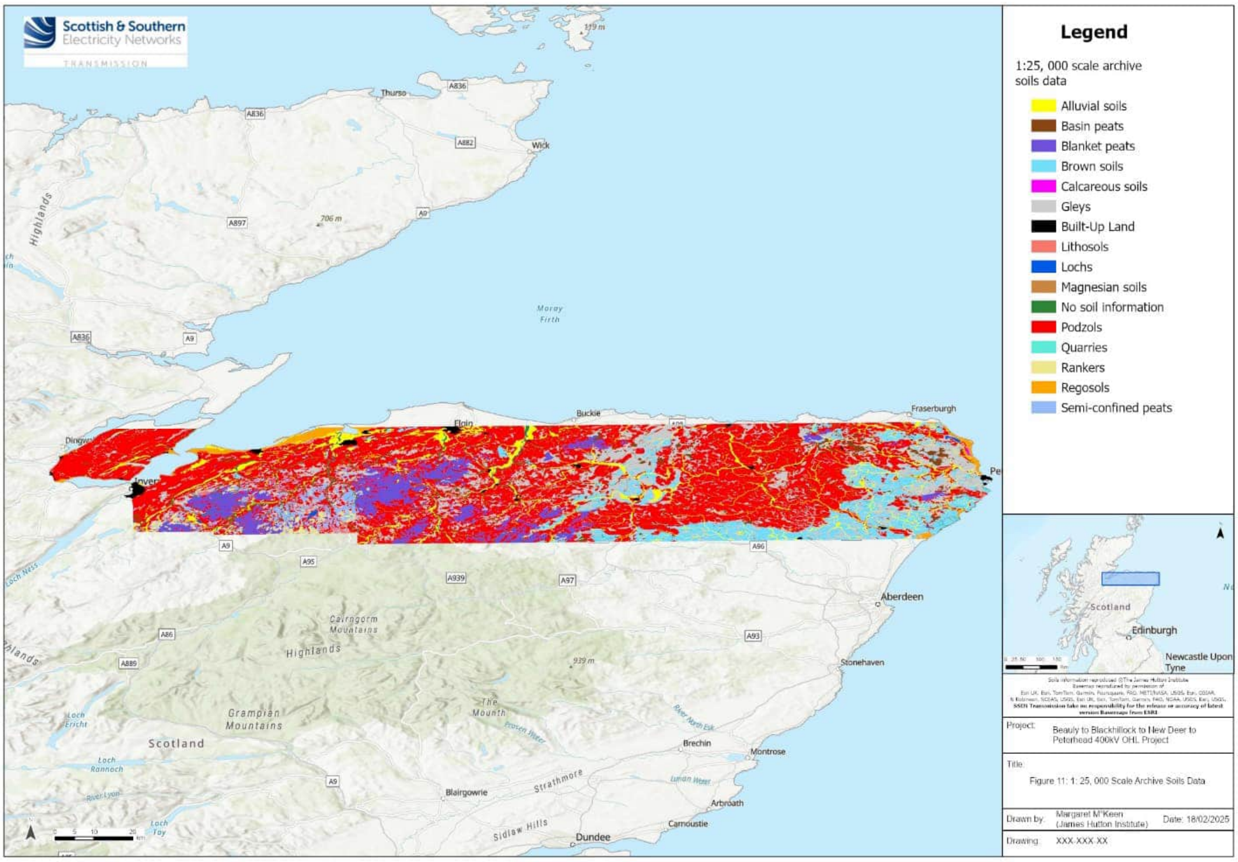


Figure 11: 1:25,000 soils mapping from partial national soil map.

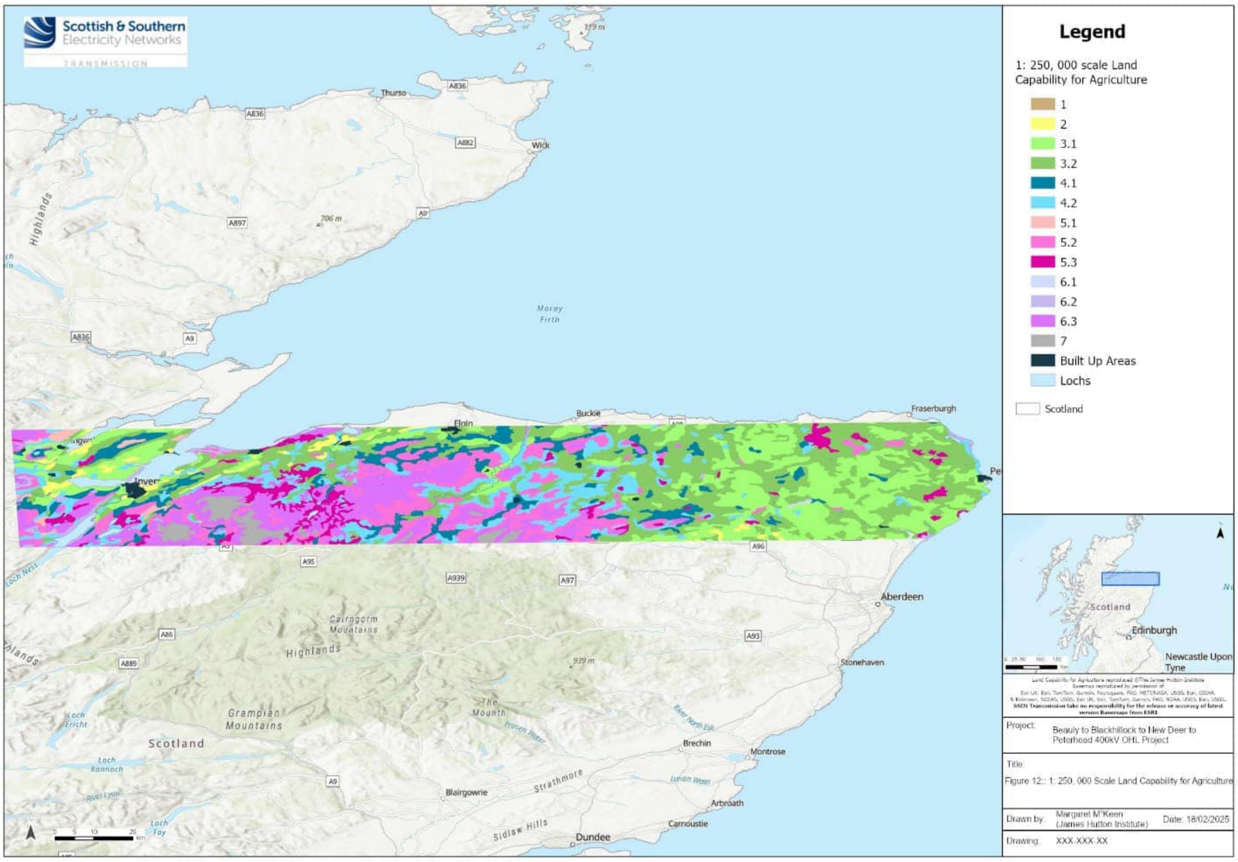


Figure 12: 1:250,000 Land Capability for Agriculture map.

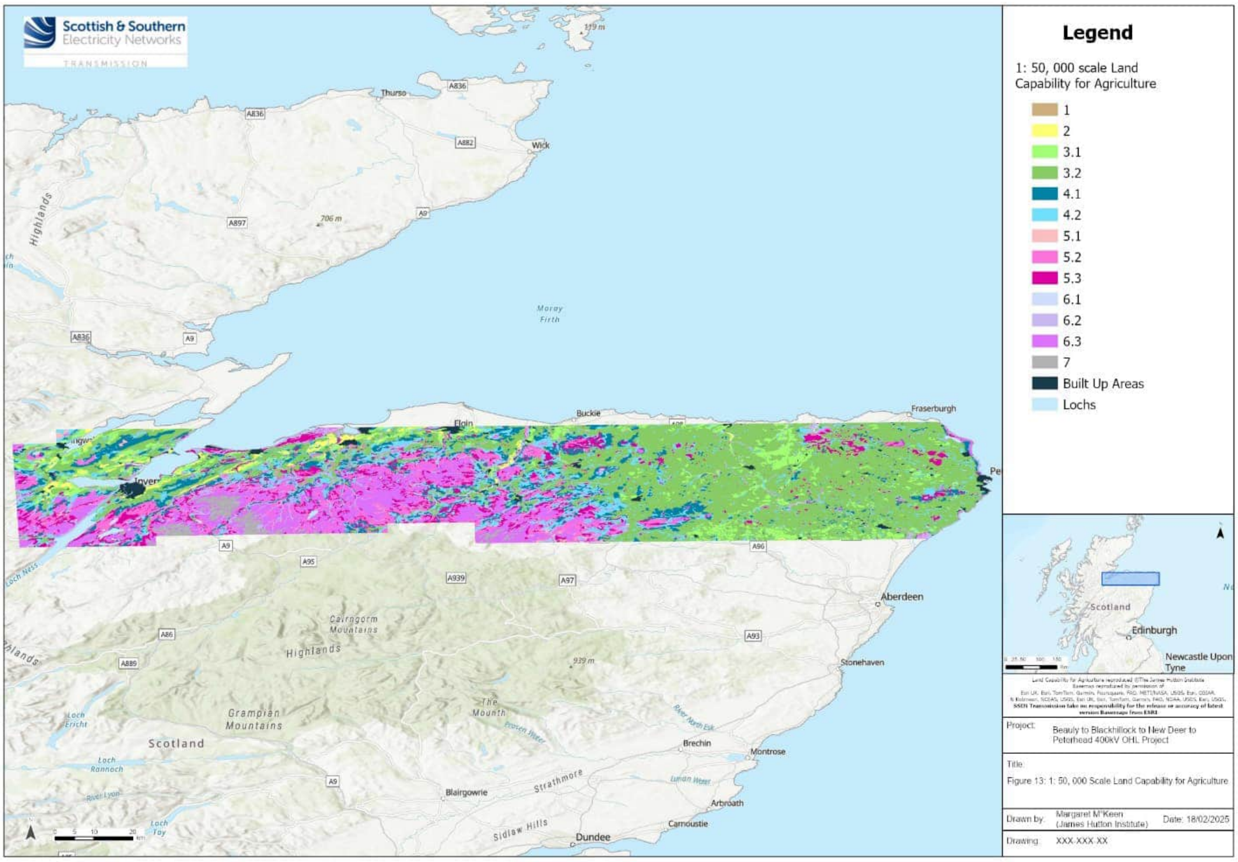


Figure 13: 1:50,000 Land Capability for Agriculture map.

APPENDIX 10.1 – ANNEX A: REPORT FIGURES

Figures

Figure 1: Extent of the study area.

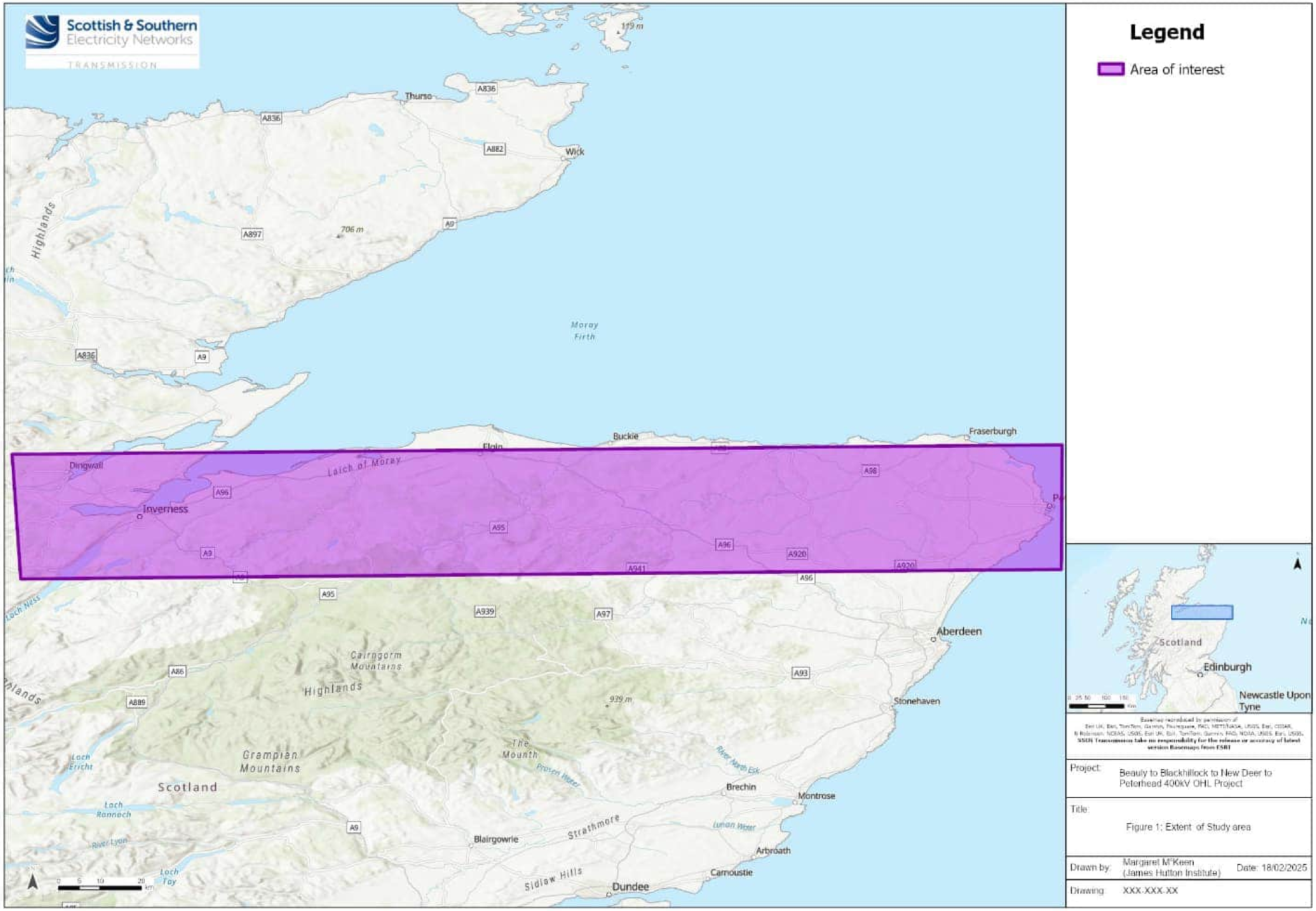


Figure 2: Peat score from combining different maps of peat.

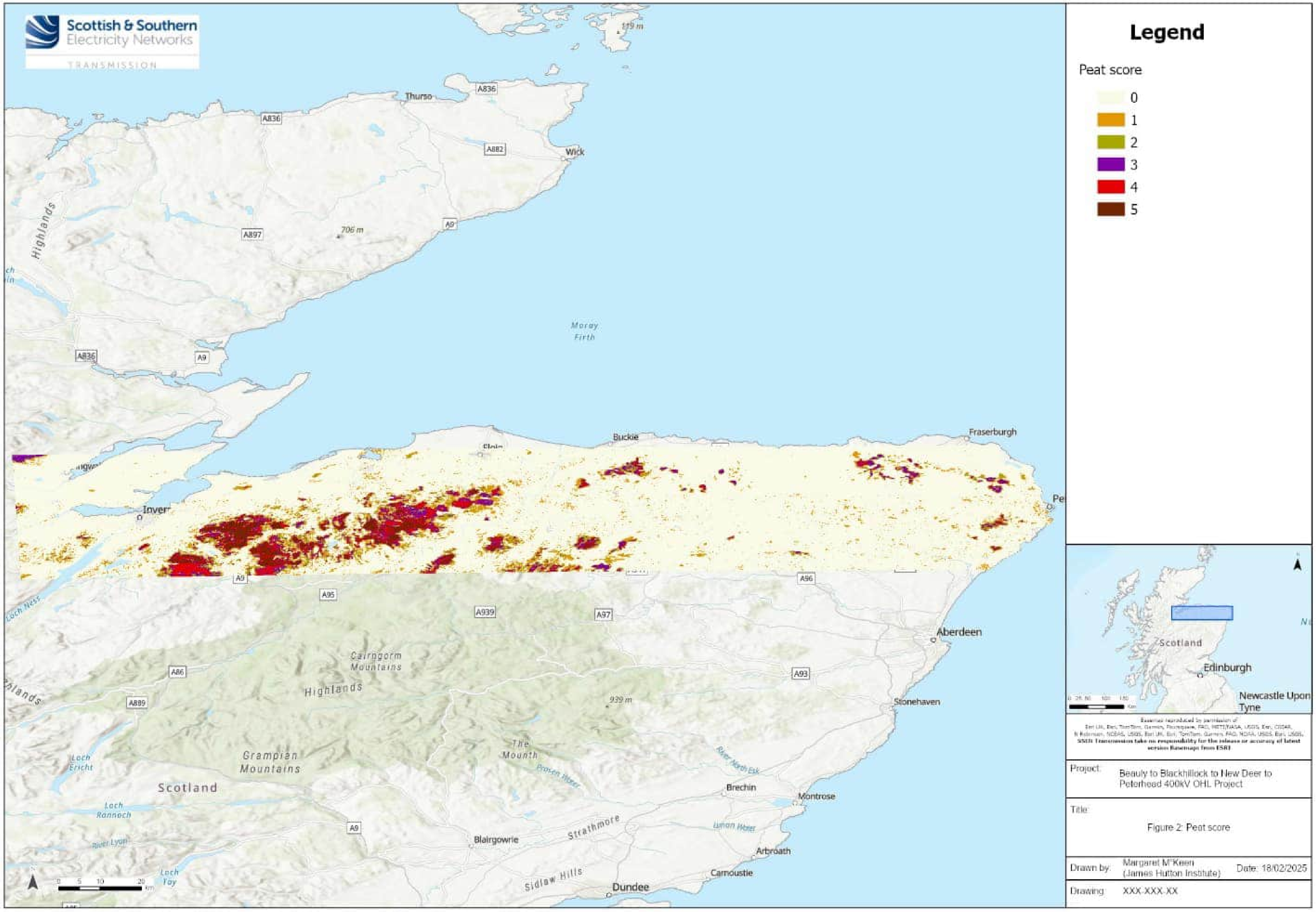


Figure 3: Differences between 2019 and 2014 national peat depth maps.

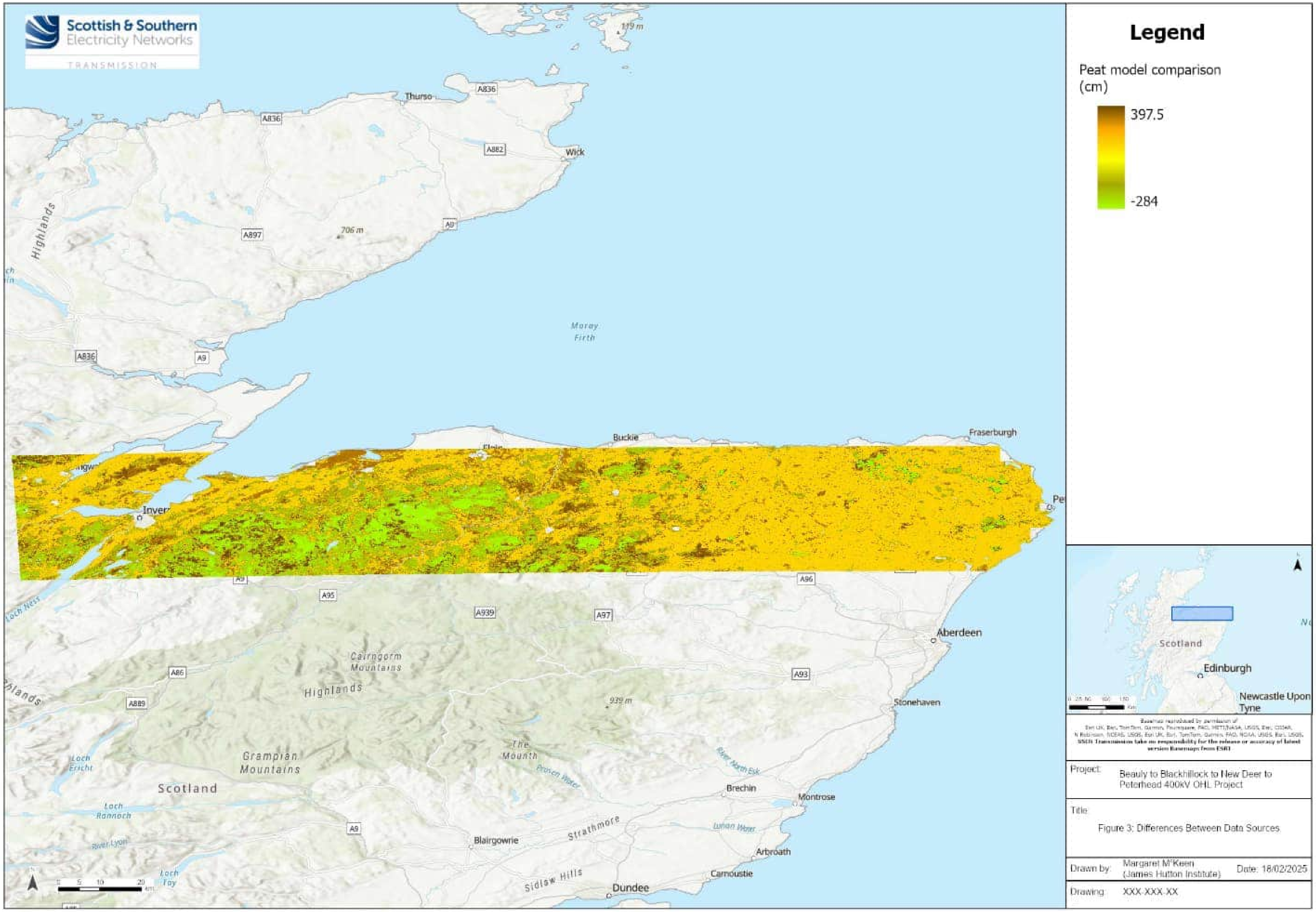


Figure 4: Comparison of mapped peat depth and overestimate in peat depth.

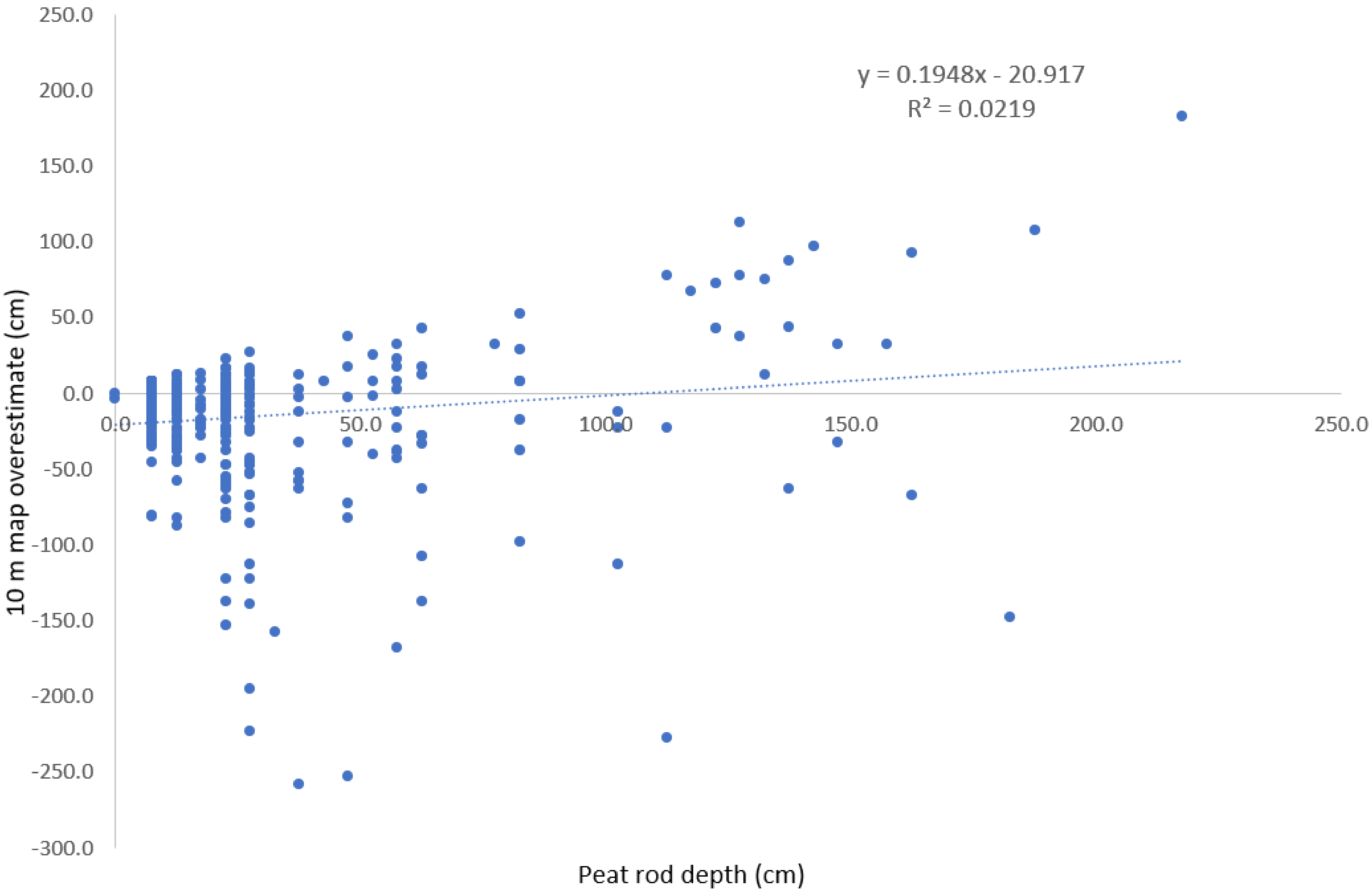


Figure 5: Drainage channel mapping using remote sensing.

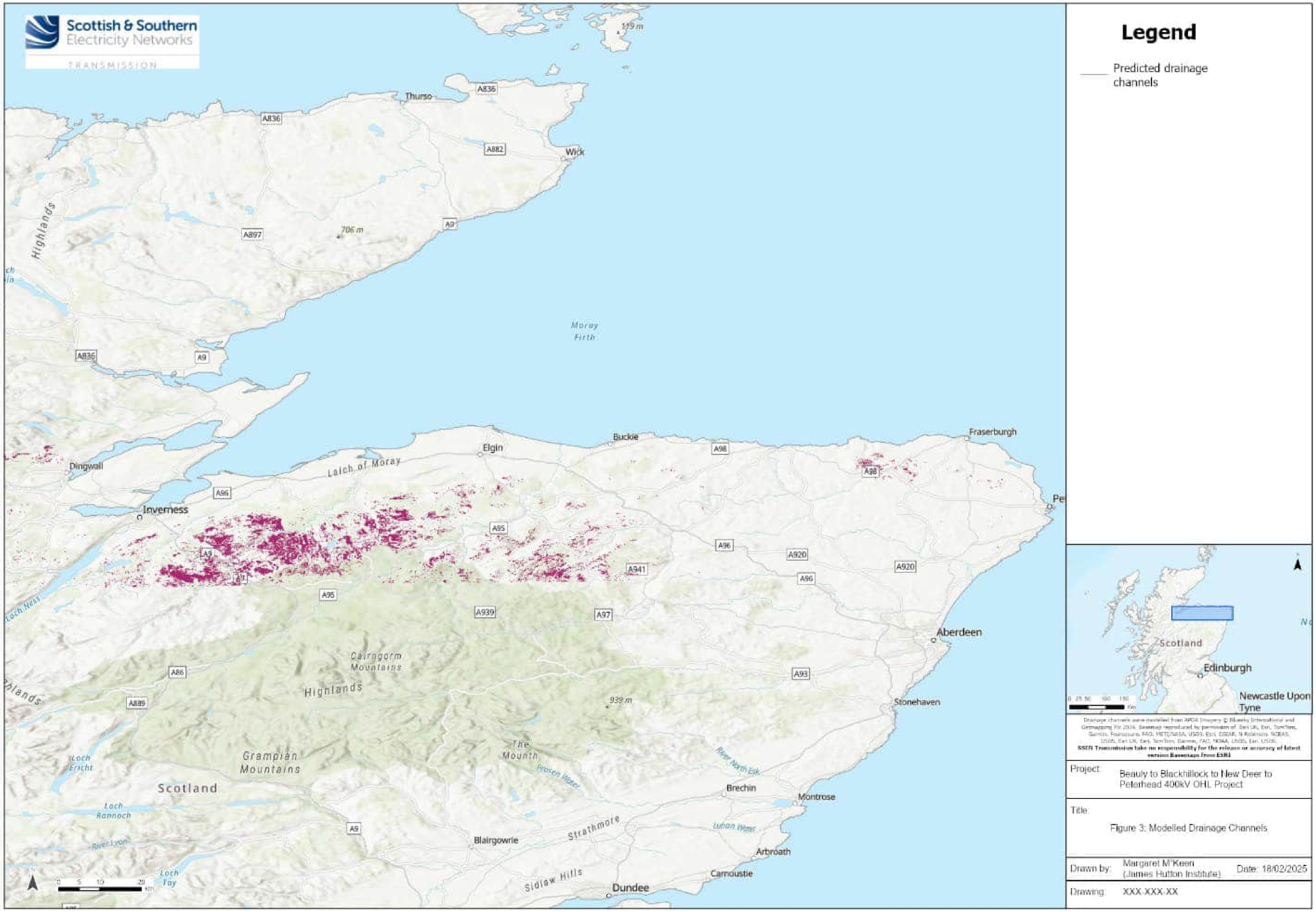


Figure 6: Erosion feature mapping using remote sensing.

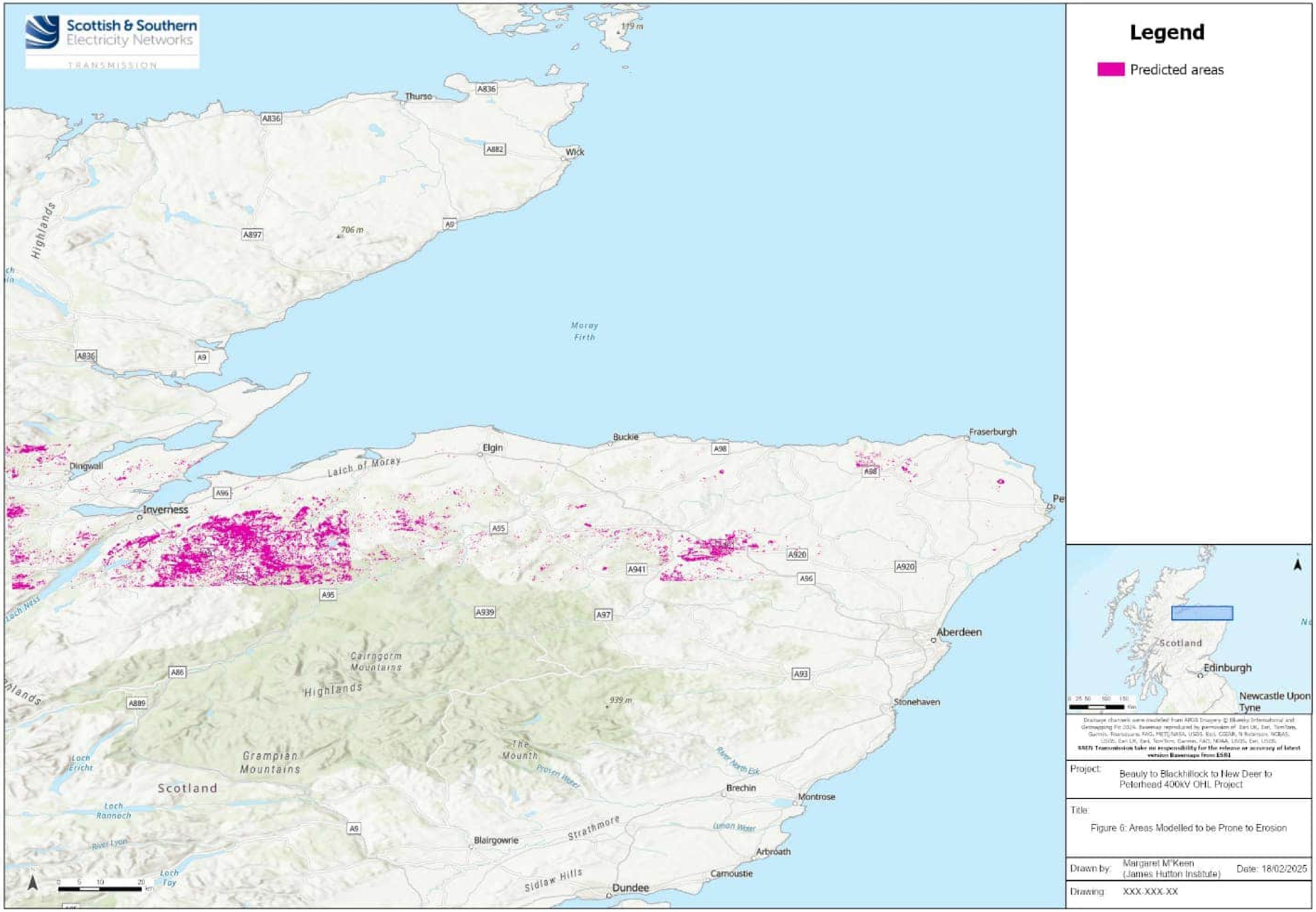


Figure 7: Peat depth map for area of interest, from 2019 mapping.

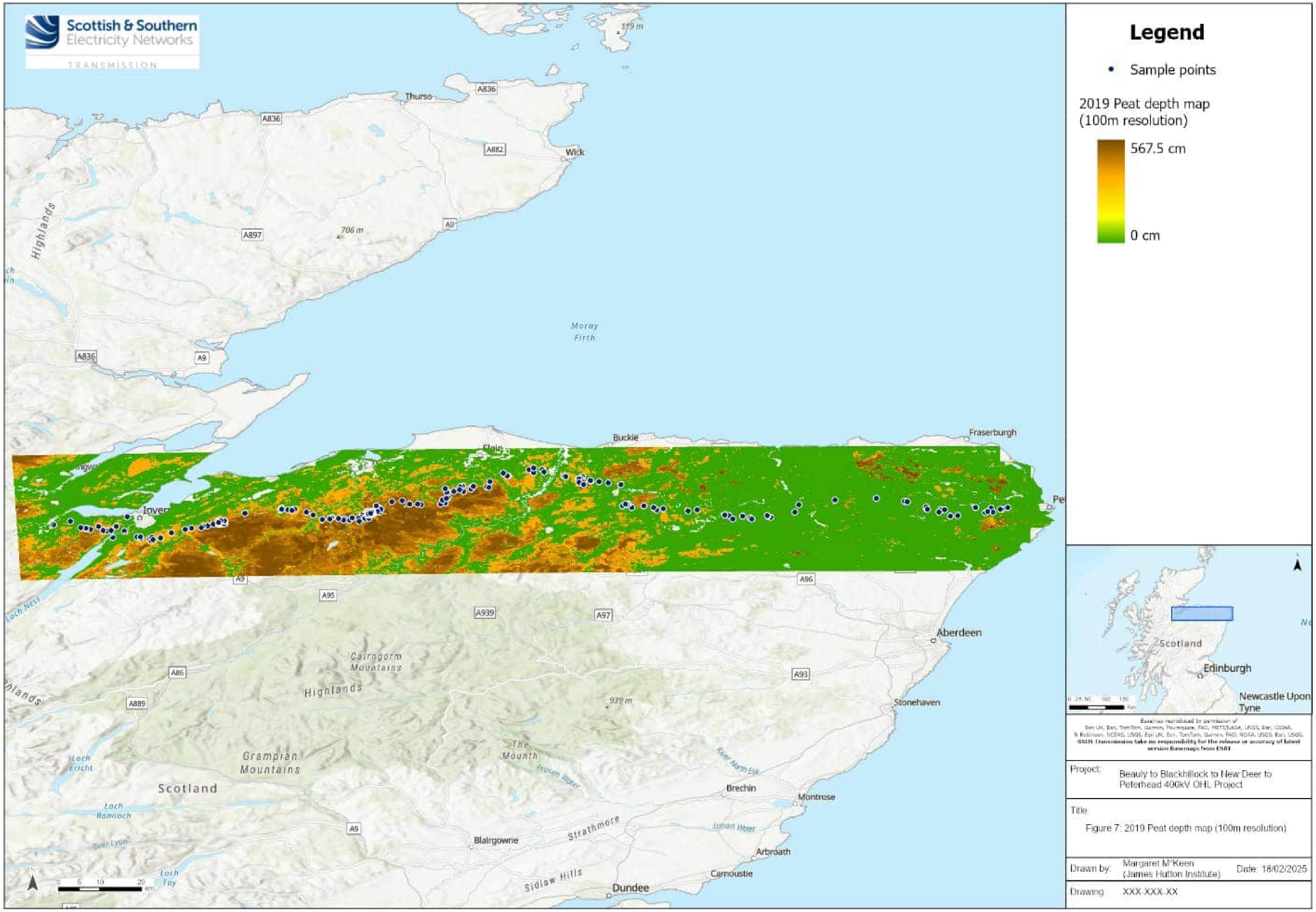


Figure 8: Peat depth map for area of interest, from 2024 mapping.

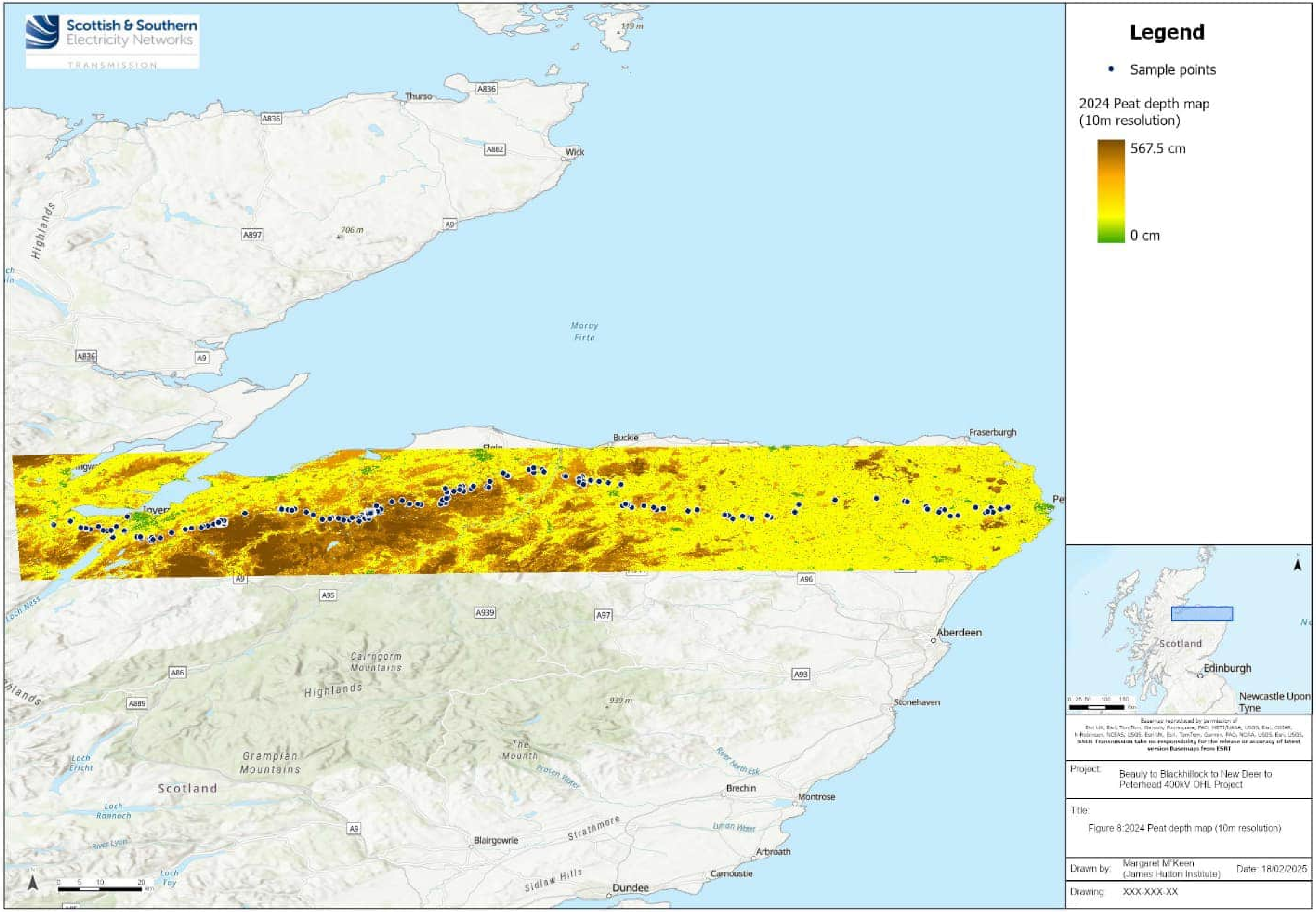
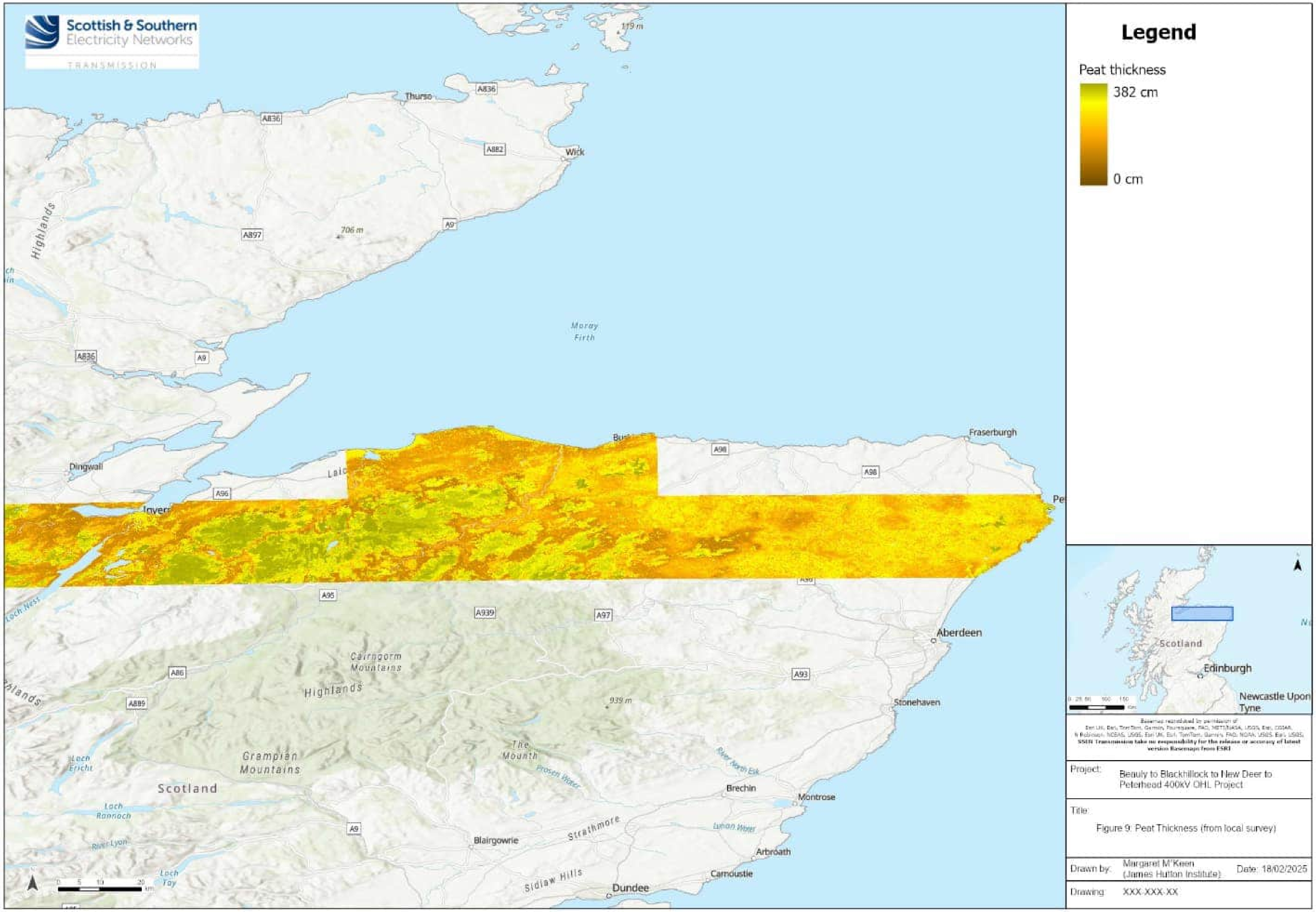


Figure 9: Peat depth mapped using local survey data gathered by Fluid Environmental Consulting Ltd.



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TRANSMISSION

Figure 10: 1:250,000 soils mapping from national soil map.

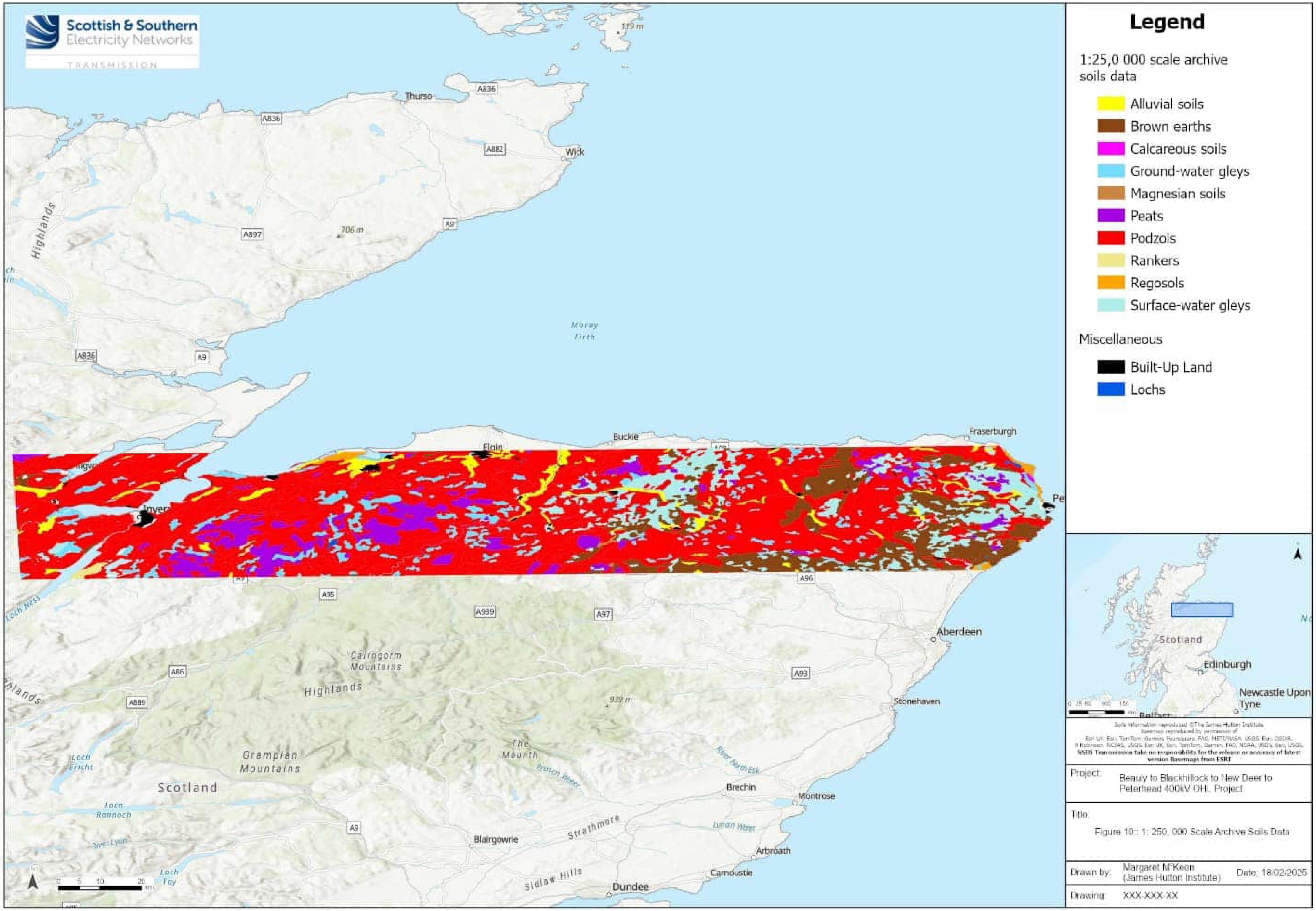


Figure 11: 1:25,000 soils mapping from partial national soil map.

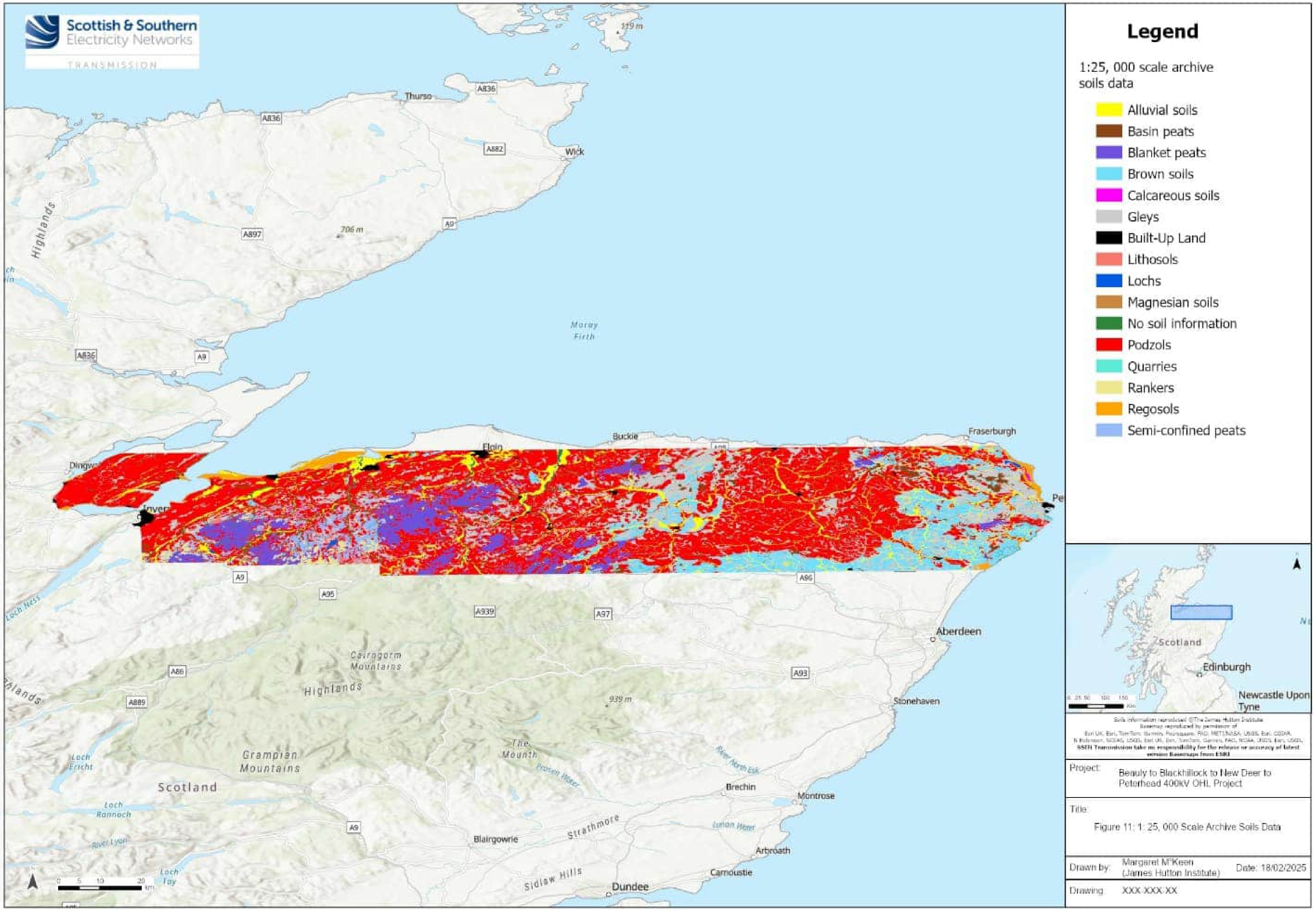


Figure 12: 1:250,000 Land Capability for Agriculture map.

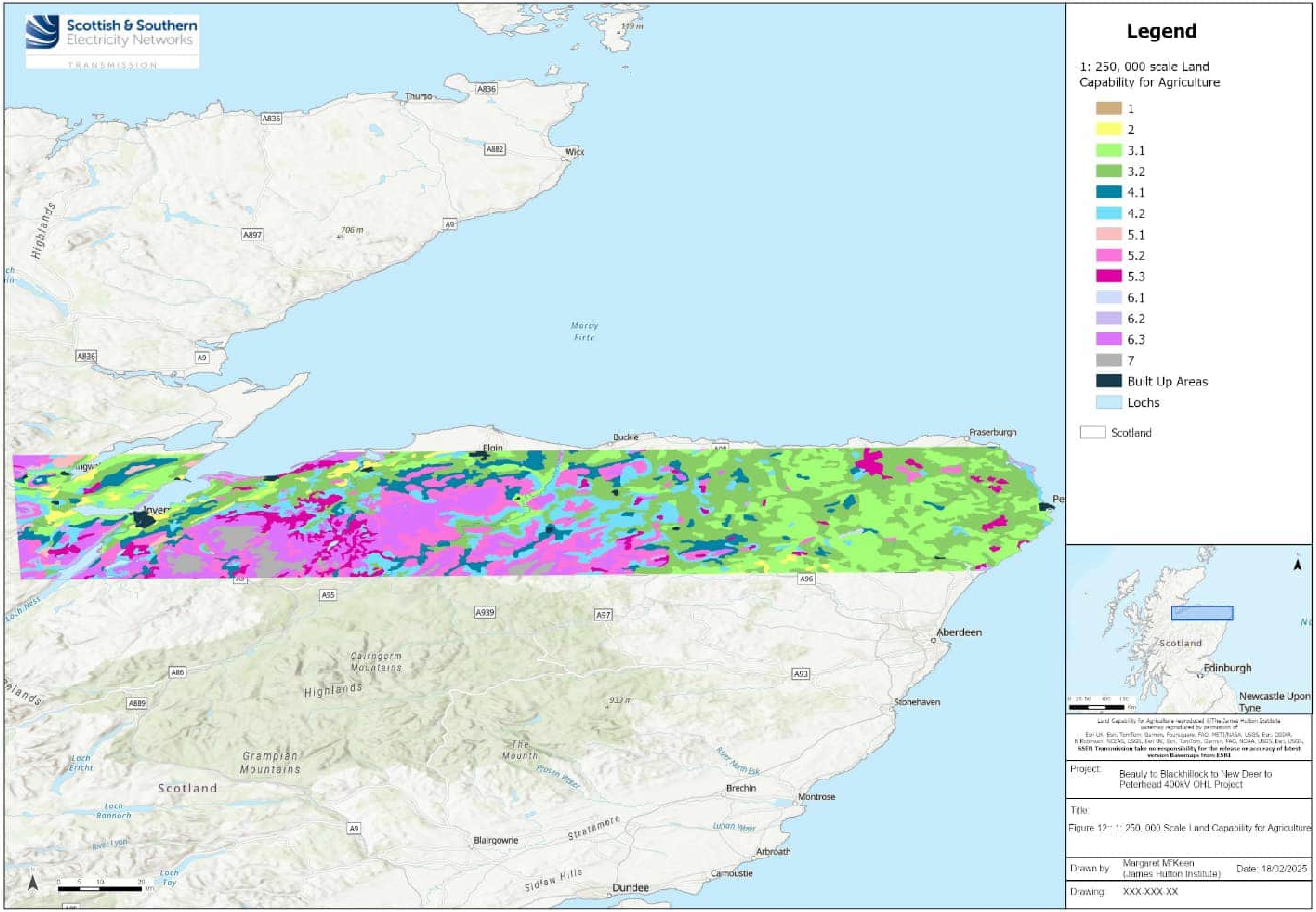
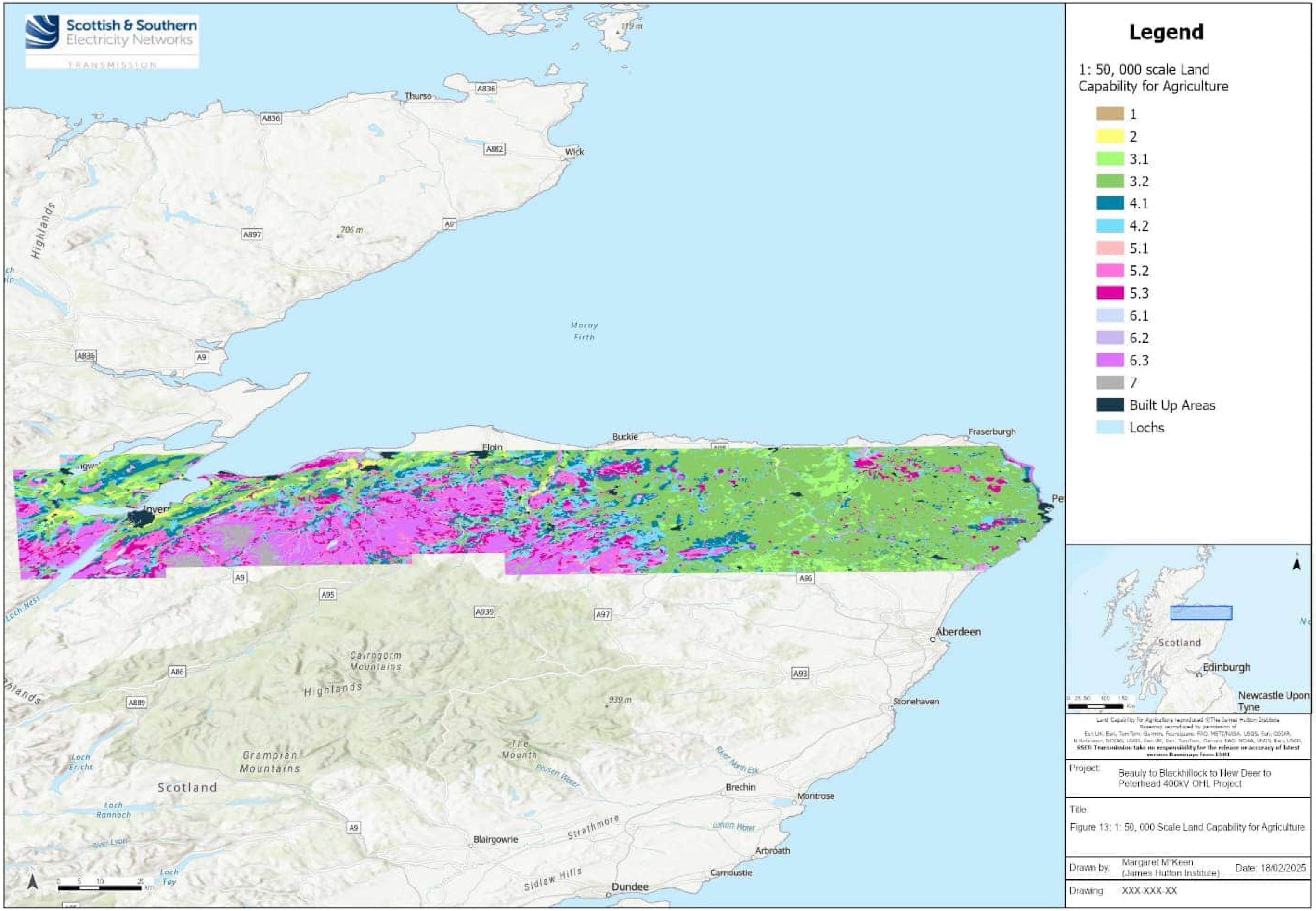


Figure 13: 1:50,000 Land Capability for Agriculture map.



APPENDIX 10.1 – ANNEX B: EXAMPLE PHOTOGRAPHS OF TYPICAL GROUND CONDITIONS

Figures

1 Example Photographs of Typical Ground Conditions

Figure 1: Example of a layer of peat in a core.

Figure 2: Example of a layer of silty soil in a core.

Figure 3: Example of ground conditions on-site.

Figure 4: Example of ground conditions on-site (2).

Figure 5: Example of ground conditions on-site (3).

Figure 6: Example of ground conditions on-site (4).

Annex C

PEAT CORE DATA AND VON POST MEASUREMENTS	
SITE:	Beauly to Peterhead 400 kV OHL
CLIENT:	SSEN Transmission
SURVEY DATES:	July 2024 to February 2025

					Peat depths and characteristics				Von Post H scores			Von Post B scores				
Ref ID	Easting	Northing	Peat Probe Depth (m)	Depth with Auger (m)	Actual Peat Depth (m)	Actual Peat Thickness (m)	Acrotelm Thickness (m)	Catotelm Thickness (m)	Acrotelm Von Post	Catotelm Von Post 0-1m	Catotelm Von Post 1-2m	Acrotelm Von Post	Catotelm Von Post 0-1m	Catotelm Von Post 1-2m	Comments on Core	Comments on Location
C_1	315409	848937	0.95	0.95	0.95	0.95	0.05	0.90	H4	H8		B3	B4		Thin layer of gritty silt on top of rock at 0.95m	Cleared forestry, disturbed ground, gentle slope
C_2	279867	843483	0.70	0.70	0.65	0.65	0.10	0.55	H4	H6		B2	B3		Wood fragments at 0.63m, gritty silt at 0.65m	Grassy moorland, gente slope
C_3	281542	844596	0.65	0.70	0.70	0.70	0.05	0.65	H4	H6		B3	B3		Rock at 0.70m	Open moorland, rocky outcrops, gentle slope
C_4	287890	846934	1.65	1.65	1.65	1.65	0.10	1.55	H3	H8	H8	B2	B3	B3	Wood fragments at 1.25m, rock at 1.65m	Forestry, gentle slope
C_5	281307	844370	0.65	0.65	0.60	0.60	0.15	0.45	H3	H5		B2	B3		Silt at 0.60m	Open moorland, fairly flat
C_6	288296	846883	1.50	1.50	1.50	1.30	0.00	1.30	-	H6	H7	-	B3	B3	Degraded peaty soil down to 0.20m, wood fragments at 1.30m, rock at 1.50m	Grassy woodland, fairly flat
C_7	279623	843345	1.15	1.15	1.05	1.05	0.10	0.95	H4	H5	H8	B3	B3	B3	Wood fragments at 0.70m and 0.90m, degraded peaty soil at 1.05m, rock at 1.15m	Open moorland, gentle slope
C_8	279103	843179	0.60	0.60	0.60	0.60	0.15	0.45	H2	H6		B3	B3		Rock at 0.60m	Open moorland, gentle slope
C_9	278489	842984	0.75	0.80	0.75	0.75	0.05	0.70	H4	H8		B2	B3		Wood fragments at 0.20m, sandy grit at 0.75m	Moorland, forestry nearby, gentle slope
C_10	280426	843803	0.80	0.90	0.80	0.80	0.15	0.65	H3	H5		B4	B3		Gritty sand mixed with peat at 0.80m, rock at 0.90m	Open moorland, gentle slope
C_11	280167	843643	0.50	0.55	0.40	0.40	0.10	0.30	H4	H7		B3	B3		Silty clay at 0.40m, grit at 0.50m	Open moorland, gentle slope
C_12	289308	846895	0.95	0.95	0.95	0.95	0.05	0.90	H2	H7		B5	B4		Rock at 0.95m	Boggy woodland, fairly flat
C_13	289751	846827	0.75	0.75	0.75	0.75	0.10	0.65	H4	H6		B3	B3		Wood fragments at 0.25m, rock at 0.75m	Open moorland, fairly flat

					Peat depths and characteristics				Von Post H scores			Von Post B scores				
C_14	316152	851628	0.95	0.95	0.95	0.95	0.10	0.85	H4	H6		B4	B3		Rock at 0.95m	Open moorland, moderate slope
C_15	308416	848792	0.90	0.90	0.90	0.90	0.10	0.80	H5	H7		B5	B3		Rock at 0.90m	Open moorland, gentle slope.
C_16	299491	844731	1.00	1.00	1.00	1.00	0.20	0.80	H3	H6		B5	B3		Rock at 1.00m	Open moorland, gentle slope.
C_17	299860	844785	1.35	1.35	1.35	1.35	0.20	1.15	H2	H5	H7	B4	B3	B3	Rock at 1.35m	Open moorland, gentle slope.
C_18	299780	844774	1.35	1.35	1.35	1.35	0.20	1.15	H5	H7	H8	B4	B3	B3	Rock at 1.35m	Open moorland, gentle slope.
C_20	302196	845415	1.05	1.10	1.05	1.05	0.10	0.95	H3	H5	H8	B3	B2	B2	Clayey silt at 1.05m, rock at 1.10m	Open moorland, gentle slope.
C_21	292918	846258	1.90	2.00	1.90	1.90	0.15	1.75	H3	H5	H6	B4	B3	B3	Wood fragments at 1.50m, gritty silt at 1.90m	Moorland, some trees, gentle slope
C_22	316204	851964	0.50	0.50	0.50	0.50	0.10	0.40	H5	H7		B3	B2		Gritty silt at 0.50m	Open moorland, moderate slope
C_23	316255	852290	0.70	0.70	0.00	0.00	0.00	0.00	-	-		-	-		Degraded peat/peaty soil mixed with sandy silt down to 0.45m, silty clay below 0.45m, rock at 0.70m	Open moorland, moderate slope
C_24	316283	852809	1.25	1.25	1.25	1.25	0.20	1.05	H3	H5	H7	B5	B4	B3	Rock at 1.25m	Grassy moorland, moderate slope
C_25	296464	844051	0.90	0.90	0.90	0.90	0.10	0.80	H5	H8		B4	B3		Rock at 0.90m	Forestry, gentle slope
C_26	310034	848071	0.55	0.55	0.00	0.00	0.00	0.00	-	-		-	-		Degraded peat/peaty soil down to 0.25m, traces of peat mixed with sandy silt below 0.25m, rock at 0.55m	Forestry, gentle slope
C_27	307686	848926	0.75	0.75	0.75	0.75	0.00	0.75	-	H8		-	B3		Needles mixed with degraded peaty soil down to 0.10m, wood fragments at 0.15m and 0.60m, Rock at 0.85m	Forestry, gentle slope
C_28	308617	848714	1.15	1.15	1.15	1.15	0.10	1.05	H4	H5	H7	B3	B3	B3	Rock at 1.15m	Cleared forestry, disturbed ground, gentle slope

					Peat depths and characteristics				Von Post H scores			Von Post B scores				
C_31	315602	849550	0.80	0.80	0.75	0.75	0.05	0.70	H4	H6		B3	B3		Silty sand 0.75m	Cleared forestry, disturbed ground, moderate slope
C_32	292337	846699	0.70	0.75	0.70	0.70	0.05	0.65	H4	H7		B3	B3		Grit mixed with peat at 0.70m, rock at 0.75m	Boggy forestry, fairly flat
C_33	268548	839629	1.00	1.00	1.00	1.00	0.10	0.90	H4	H6		B3	B3		Rock at 1.00m	Open moorland, fairly flat
C_34	312591	847729	0.85	0.85	0.75	0.75	0.05	0.70	H4	H8		B4	B4		Grit mixed with peat at 0.75m	Disturbed ground, forestry, fairly flat
C_35	312583	847779	0.75	0.80	0.70	0.70	0.10	0.60	H3	H7		B3	B2		Peaty clay at 0.70m, rock at 0.80m	Disturbed ground, forestry, fairly flat
C_36	292616	846438	0.65	0.75	0.70	0.70	0.10	0.60	H4	H6		B4	B3		Gritty Silt at 0.70m	Moorland, some trees, gentle slope
C_37	259309	841912	0.80	0.80	0.80	0.80	0.15	0.65	H4	H7		B4	B3		Bed Rock at 0.80m	Fairly Flat, next to drain, forestry
C_38	259042	841998	1.65	1.75	1.60	1.60	0.00	1.60	-	H7	H8	-	B3	B3	Wood fragments at 1.40m, clay at 1.60m, sandy silt at 1.65m	Mossy forestry, fairly flat
C_40	267621	839321	0.65	0.65	0.65	0.65	0.10	0.55	H3	H7		B3	B3		Rock at 0.65m	Grassy field, fairly flat
C_41	268382	839544	0.50	0.50	0.50	0.30	0.05	0.25	H4	H7		B3	B3		Grit mixed with peat below 0.30m, rock at 0.50m	Grassy field, fairly flat
C_42	277901	842794	0.75	0.75	0.75	0.75	0.10	0.65	H2	H7		B3	B3		Thin layer of gritty silt on top of rock at 0.75m	Open moorland, moderate slope
C_43	278189	842848	1.90	1.90	1.90	1.90	0.15	1.75	H2	H5	H6	B3	B3	B3	Rock at 1.90m	Open moorland, gentle slope
C_44	277565	842708	1.05	1.15	1.15	1.15	0.10	1.05	H2	H6	H8	B3	B3	B4	Wood fragments below 1.00m, rock at 1.15m	Open moorland, gentle slope

Ref ID	Actual Peat Depth (m)	Fine Fibre (F0 = nil, Fl = low content, F2 = moderate content, F3 = high content)			Coarse fibre (R0 = nil, R1 = low content, R2 = moderate content, R3 = high content)			Wood remains (W0= nil, W1 = low content, W2 = moderate content, W3 = high content)		
		Acrotelm	0-1m	1-2m	Acrotelm	0-1m	1-2m	Acrotelm	0-1m	1-2m
C_1	0.95	F1	F1		R2	R0		W0	W0	
C_2	0.65	F2	F2		R2	R1		W0	W1	
C_3	0.70	F2	F2		R2	R1		W0	W0	
C_4	1.65	F2	F0	F0	R2	R1	R1	W0	W0	W1
C_5	0.60	F2	F1		R3	R2		W0	W0	
C_6	1.50	-	F2	F1	-	R1	R1	-	W0	W1
C_7	1.05	F2	F2	F0	R2	R2	R1	W0	W2	W0
C_8	0.60	F3	F2		R2	R2		W0	W0	
C_9	0.75	F2	F1		R2	R0		W0	W1	
C_10	0.80	F3	F2		R2	R2		W0	W0	
C_11	0.40	F2	F1		R1	R1		W0	W0	
C_12	0.95	F3	F1		R2	R1		W0	W0	
C_13	0.75	F2	F1		R2	R2		W0	W1	
C_14	0.95	F2	F1		R2	R2		W0	W0	
C_15	0.90	F2	F1		R1	R1		W0	W0	
C_16	1.00	F2	F1		R2	R2		W0	W0	
C_17	1.35	F3	F2	F1	R2	R2	R1	W0	W0	W0
C_18	1.35	F2	F2	F0	R1	R1	R1	W0	W0	W0
C_20	1.05	F1	F1	F1	R3	R2	R1	W0	W0	W0
C_21	1.90	F3	F2	F2	R2	R2	R2	W0	W0	W1
C_22	0.50	F2	F1		R3	R1		W0	W0	
C_23	0.00									
C_24	1.25	F2	F2	F1	R2	R1	R0	W0	W0	W0
C_25	0.90	F1	F1		R1	R0		W0	W0	
C_26	0.00									
C_27	0.75	-	F1		-	R1		-	W1	
C_28	1.15	F1	F1	F2	R1	R3	R1	W0	W0	W1
C_31	0.75	F2	F2		R1	R2		W0	W0	

C_32	0.70	F2	F1		R1	R1		W0	W0	
C_33	1.00	F2	F1		R2	R2		W0	W0	
C_34	0.75	F2	F0		R1	R1		W0	W0	
C_35	0.70	F2	F1		R2	R0		W0	W0	
C_36	0.70	F2	F2		R2	R2		W0	W0	
C_37	0.80	F2	F1		R1	R1		W0	W0	
C_38	1.60	-	F1	F1	-	R1	R1	-	W0	W1
C_40	0.65	F2	F1		R2	R1		W0	W0	
C_41	0.50	F2	F1		R2	R1		W0	W0	
C_42	0.75	F3	F1		R2	R1		W0	W0	
C_43	1.90	F3	F2	F2	R2	R1	R1	W0	W0	W0
C_44	1.15	F2	F2	F0	R3	R1	R1	W0	W0	W3