Appendix 7 – Peatland Restoration Analysis

Two areas are proposed for peatland restoration within the bounds of the Achnashellach LTP in the first five years of the Plan period. These are management coupes 09012 and 09052 (see **Map 5**) and also illustrated on GIS map extracts below. The rationale behind each proposal is outlined here following the decision-making process contained in *FCS Practice Guide 104 – Deciding future management for afforested deep peatland (2015)*. The proposals are also considered in **Appendix 3** *EIA Screening Opinion Request* as the majority of ground is currently afforested (first rotation non-native conifers) and peatland restoration therefore constitutes deforestation.

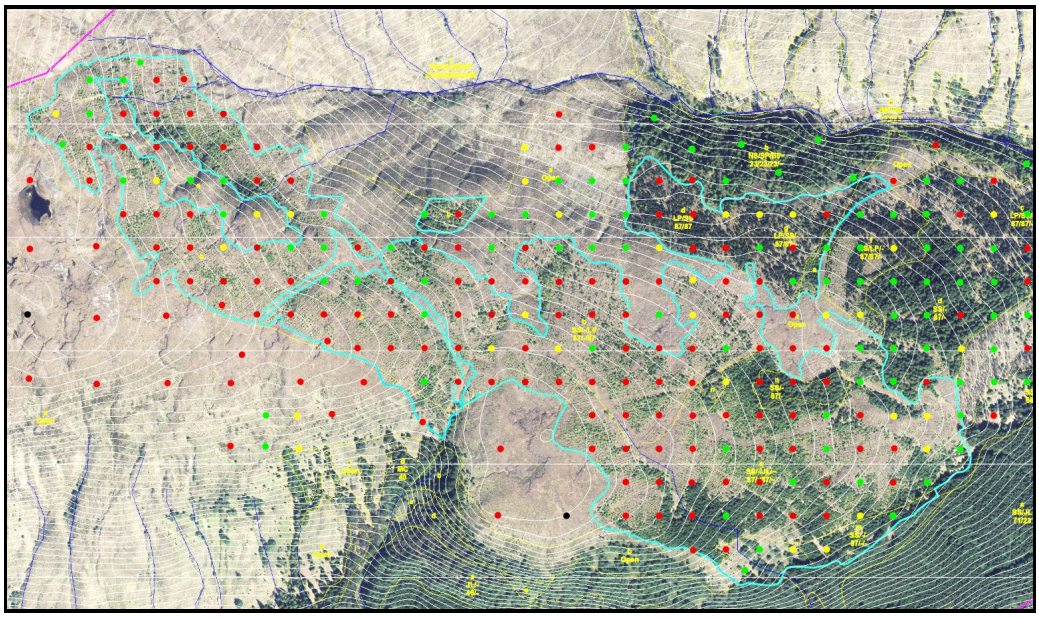
Decision-making process and rationale

Initial GIS-based analysis of soils (James Hutton Institute 1:250k classification data in these instances) identified significant presence of 11b Calluna-Eriophorum vaginatum blanket bog across these upland areas. Forest inventory data of tree yields/growth performance were checked for planted non-native conifers and peat depth surveys undertaken to assess extent and distribution of peat across this terrain and to consider slope and artificial drainage pattern for restoration potential and methodology.

A combination of map data and site assessment was therefore used to define final proposed restoration areas as well as to consider whether any constituent areas might be expected to support restocked or naturally regenerated native woodland after restoration of the deep peat component(s).

Both sites are therefore "assessed peatlands" i.e. their restoration potential has been arrived at by assessment of inherent features and hydrology, as opposed to "presumption to restore" sites where identified component peat/habitat types – or proximity to designated peatland – automatically merits restoration.

Area 1: Sgurr a' Gharraidh plateau *{gross area: 38.5 ha}*



Proposed Restoration area in Blue with 5 m contour intervals. Peat Depths: <40 cm: GREEN; 40-50 cm: Yellow; >50 cm: RED

This upland plateau was first ploughed and afforested in 1987 (*SS/JL+LP/OG = 54/9/37*). Trees are likely to have had rock phosphate fertiliser application at planting (and possibly subsequently) as was conventional Forestry Commission practice on low fertility afforestation sites at that time. However no records now exist to evidence this.

Yield Class *(field-based)*: Lodgepole pine: 0 - 2 Sitka spruce: 0 – 4 Japanese Larch: 0 - 2.

DAMS (exposure score): 13 - 17. *(16-18 = Highly Exposed).*

Baseline knowledge of underlying soils is James Hutton Institute's (JHI) 1:250k soil classification dataset which gives a general soil mosaic of *Peaty Surface Water Gley* (6p)/*Calluna-Eriophorum Blanket Bog* (11b)/*Indurated, peaty, podzolic Ironpan* (4zpx) (composition: 35/35/30). The Soil Moisture Regime (SMR) is "Wet" and Soil Nutrient Regime (SNR) is "Very Poor 3".

Peat depth survey (50 x 50 m resolution) was undertaken (2024) to determine the extent and continuity of accumulated peat and is shown colour-coded on the aerial photograph (above). Over 80% of the site has peat in excess of 50 cm deep with the remaining 10% 40-50 cm depth and 10% < 40 cm depth located either where gentle undulations in plateau summit topography affords better localised drainage or at the margins of the coupe/plateau where terrain slopes with increasing gradient to steeper, afforested mid-slope contours where no peat accumulation is evident.

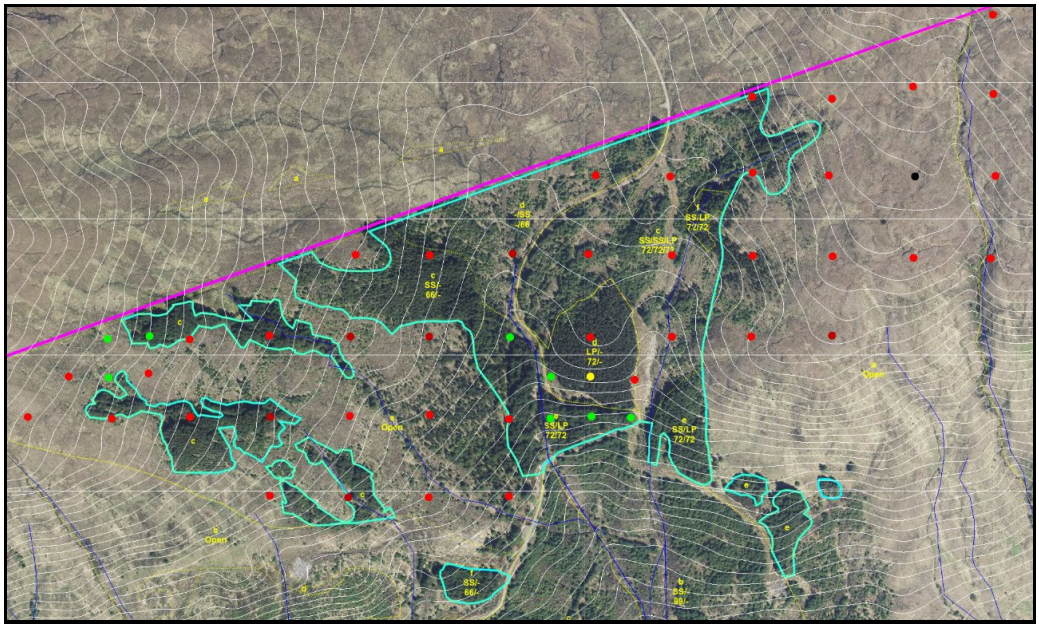
Restoration Consideration:

FCS Practice Guide 104 describes 11b peat types as Scenario C and "*should grow SS if planted 50:50 with ALP on maintained drained sites, with PK added, in order to achieve a growth rate of the SS that allows a positive greenhouse gas balance. Note, though, that these peat types may face climatic constraints if the site is not AT5 > 1000.*". Although not originally planted as a SS/ALP mix, and so not benefiting from the nurse effect of the intermixed pine, Sitka spruce has completely failed or is checked at < 1 metre height across over 90% of the site (< 3 ha of SS has a maximum YC 4). The site's accumulated temperature is at worst 962 but more typically 1000 to 1020 day-degrees above 5°C. With the UKFS advocating artificial fertiliser use to be "*generally a last resort in practicing sustainable forest management*" and so advocating minimising its application, a further rotation of one or both (marginally suitable) conifer species here is not considered appropriate. Any supplementary fertiliser also has the potential to leach into (and enrich) adjacent undisturbed 11b habitats. The condition of existing deep peats would also remain under threat of further deterioration with new, or reinstated, drainage undertaken to ameliorate rooting conditions for any follow-on timber crop.

With climate change predictions anticipating increased annual rainfall and incidence of storm events, growing shallow rooting conifers for viable timber production on this exposed, peaty plateau – if not already proven to be unrealistic - will become even more so over time.

Finally, the potential for successful peatland restoration i.e. the reinstatement of natural drainage character leading to re-wetted peats and restored functionality, is considered to be good. The predominantly checked or failed afforestation has had no modifying effect on residual semi-natural ground flora - from any shading or increased evapo-transpiration that woodland establishment would typically cause - and consequently still supports an albeit fragmented representative mosaic of upland heath plant communities that will recolonise the restored site. Topographically, there is little marked variation or variability of slope across the area which should mean drain blocking and plough ridge/furrow smoothing will have the desired effect over the vast majority (85⁺%) of the site. At the margins of this coupe (SE and NW and along northern boundary) and at isolated locations within the coupe, there are some areas of < 50 cm peat. However these areas are likely to become wetter - potentially permanently waterlogged (and thus anaerobic) – as result of adjacent restoration. Consequently the restoration (deforestation) area includes the wider hydrological unit where future tree establishment is unlikely by either regeneration or restocking (without supplementary fertiliser and artificial drainage). FC Practice Guide 104 states if less than 20% of the site is suited for such peat-edge woodland then it need not be undertaken but instead be restored to peatland.

Area 2: Coulin Road *{gross area: 17.7 ha with 3.2 ha NBL restocking}*



Proposed Restoration area in Blue with 5 m contour intervals. Peat Depths: <40 cm: GREEN; 40-50 cm: Yellow; >50 cm: RED

South-facing upland heath site ploughed and afforested in two separate phases: 1966 and 1972 (SS/LP/OG: 76/12/12).

As with Area 1, trees are likely to have had rock phosphate fertiliser application at planting (and possibly subsequently). However no records now exist to evidence this.

Yield Class *(field-based)*: Lodgepole pine: 2 (upland) – 4 (lower margins); Sitka spruce: 2 (upland) – 6 (lower margins)

DAMS (exposure score): 14 – 16 (Moderately Exposed).

The soil classification is identical to Area 1 (within same JHI classification polygon) - part of an expansive upland area consisting of *Peaty Surface Water Gley* (6p)/*Calluna-Eriophorum Blanket Bog* (11b)/*Indurated, peaty, podzolic Ironpan* (4zpx) (composition: 35/35/30). The Soil Moisture Regime (SMR) is "Wet" and Soil Nutrient Regime (SNR) is "Very Poor 3".

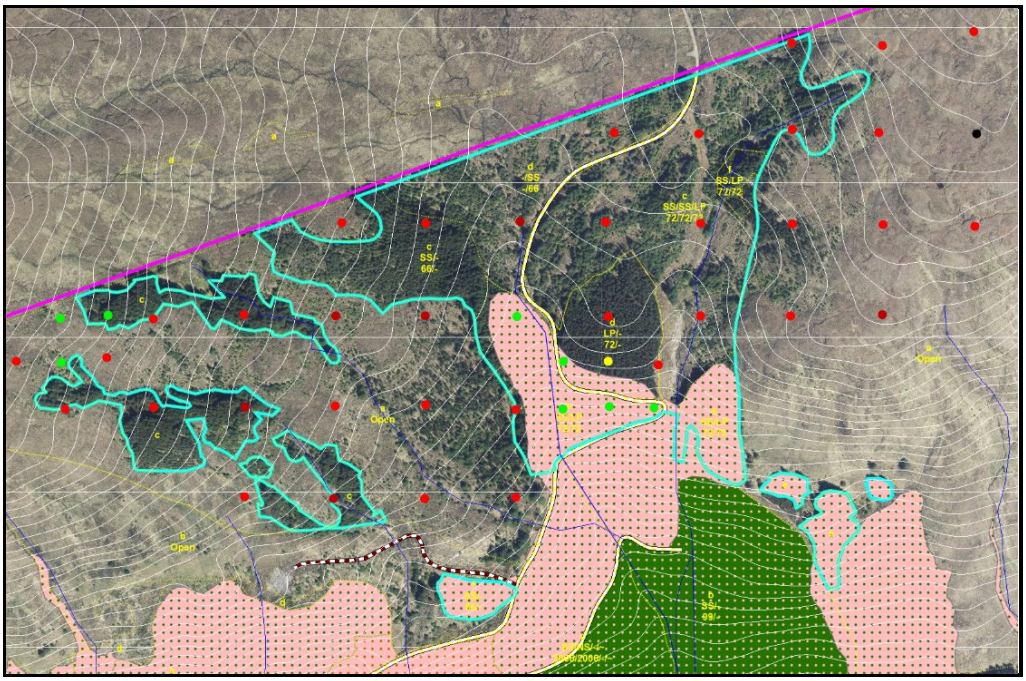
Peat depth survey (100 x 100 m resolution) was undertaken (2025) to determine the extent and continuity of accumulated peat and is shown colour-coded on the aerial photograph (above). Over 85% of the site has peat in excess of 50 cm deep with the remaining 15% located on moderately steep slopes at the southern margins of the coupe.

Restoration Consideration

(As with Area 1) FCS Practice Guide 104 describes 11b peat types as Scenario C and "*should grow SS if planted 50:50 with ALP on maintained drained sites, with PK added, in order to achieve a growth rate of the SS that allows a positive greenhouse gas balance. Note, though, that these peat types may face climatic constraints if the site is not AT5 > 1000.*". Although not originally planted as a SS/ALP mix, and so not benefiting from the nurse effect of the intermixed pine, Sitka spruce has grown poorly (all below YC 8) despite (probable) fertiliser application at or during early establishment. The site's generalised accumulated temperature is in the range 940 – 980 (i.e. cool) but reaching 1020 day-degrees above 5°C only at the most southerly edge/lowest altitudes. With the UKFS advocating artificial fertiliser use to be "*generally a last resort in practicing sustainable forest management*" and so advocating minimising its application, a further rotation of one or both (marginally suitable) conifer species here is not considered appropriate. Any supplementary fertiliser also has the potential to leach into (and enrich) adjacent undisturbed 11b habitats. The condition of existing deep peats would also remain under threat of further deterioration with new, or reinstated, drainage undertaken to ameliorate rooting conditions for any follow-on timber crop.

With climate change predictions anticipating increased annual rainfall and incidence of storm events, growing shallow rooting conifers for viable timber production on this exposed, peaty plateau – if not already proven to be unrealistic - will become more so over time.

The presence of some moderate slopes with better drainage character, surveyed peat depths of less than 40 cm depth, and local mineralised soils with gleyed character (e.g. 6l and 4zpx component soils) indicates that 3.2 ha of the site will support future woodland (ESC: NVC W4). This will be established by restocking (downy birch, eared and grey willows, alder and rowan).



3.2 ha NBL restocking prescribed at southern margins of peatland restoration coupe

Note: This coupe has adjacent open terrain with evidence of historic ploughing and predominantly failed afforestation. These areas are recorded within FLS forest inventory as Open Ground. Restoration proposals also intend to mulch any residual checked conifers here and smooth/block all drains and furrows on account of the 100% coverage of peat of greater than 50 cm depth.