

Leadburn Woodland Peatland Assessment



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Introduction

Tweed Forum were commissioned to carry out a peat depth survey and peat assessment of a 9ha conifer woodland site near the village of Leadburn. Two days were spent surveying the site and subsequent mapping was carried out using ArcGIS.

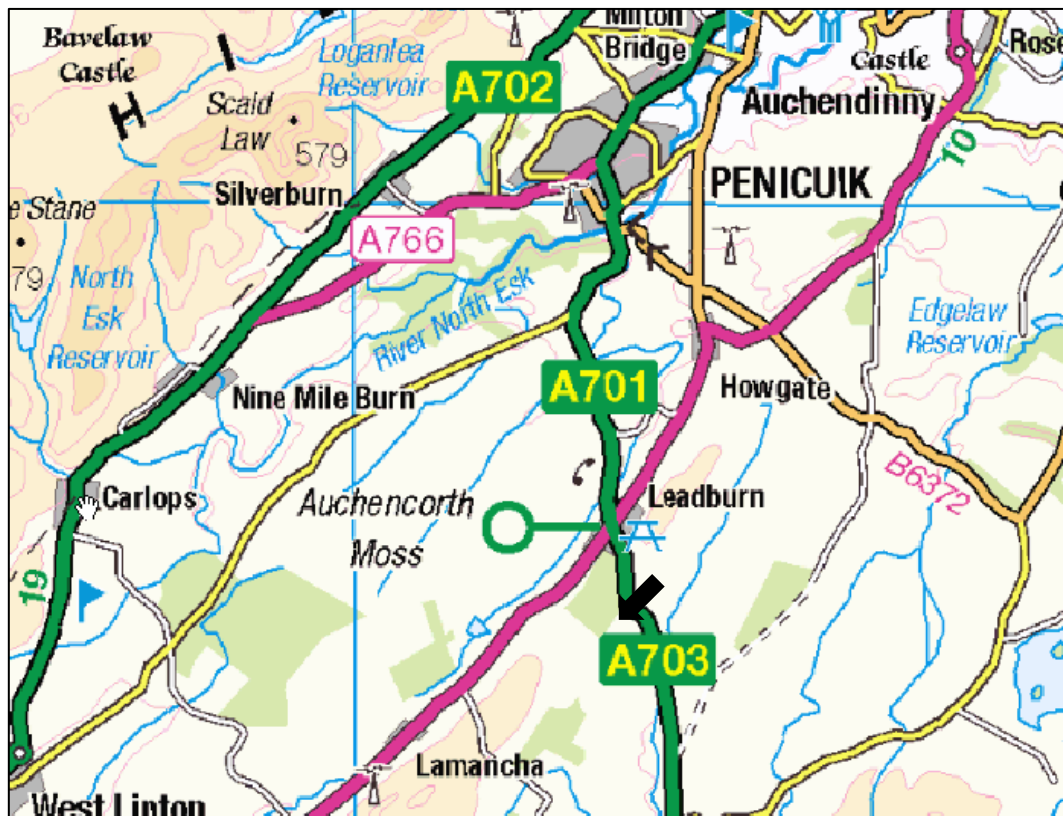


Figure 1: Location of the proposed peatland restoration site.

Methods

A peat depth survey was carried out over a 9ha area within the conifer block. Measurements were taken every 50m to give a more accurate understanding of the peat's profile. 38 separate sites were measured using an industry standard peat probe and recorded on a Garmin GPS with a precision of $\pm 5m$. One site could not be reached due to windblow and was estimated based on the surrounding measurements. Geo-referenced photographs were taken to give an overview of the site's vegetation and hydrological condition.

Results

The survey revealed a maximum peat depth of 630cm and an average across the site of 365cm. Windblown trees are extensive throughout the site and made access difficult in places. There are a number of drains which pass through the site (Figure 2). These vary in depth and some appear to have been blocked using plastic piling (Figure 3). The majority of planting has been done using furrows which vary between 20 and 60cm in height. Alongside the drains these are decreasing the site's water retention capability. The results of the survey are shown below in Figures 4 and 5.



Figure 2: Drain cutting through the site. Although not wide the majority of drains are over 50cm deep.

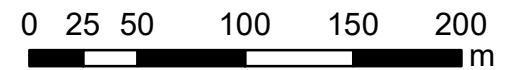


Figure 3: Plastic piling successfully blocking a ditch on site and encouraging sphagnum regeneration.



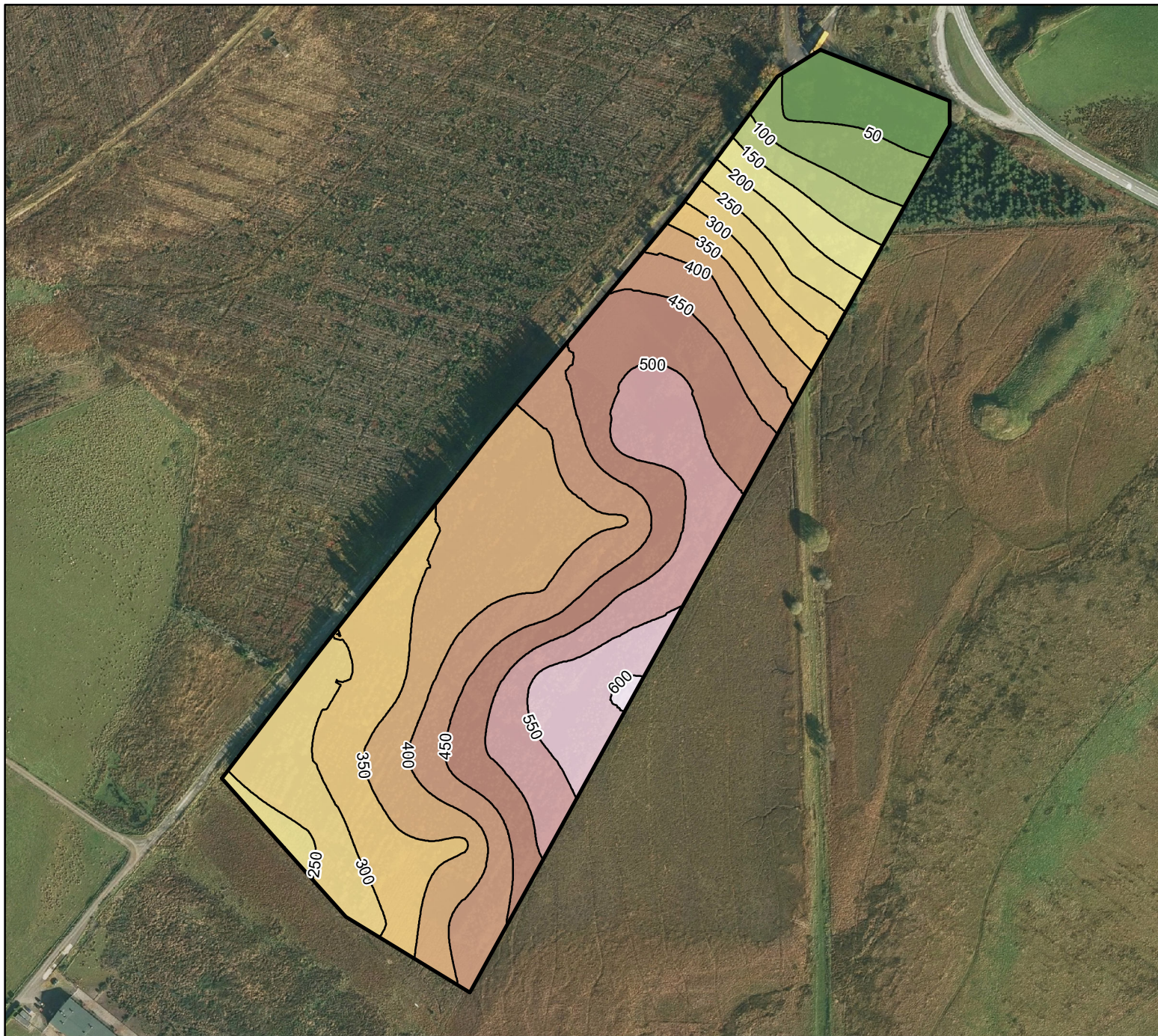
Leadburn Woodland Peat Depth

- Surveyed Points
- Unable to Access
- Restoration Area



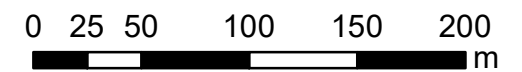
1 : 3,500

Figure 4: Survey sites at 50m spacing



Leadburn Woodland Peat Depth

Peat Depth



1 : 3,500

Figure 5: Estimated peat depth based on measurements taken at each survey site.

Discussion

The report by Anderson (2013) clearly demonstrates the rich botanical biodiversity present on the site in areas that have not been planted. This suggests that with appropriate restoration techniques the site could be returned to a lowland raised bog habitat. Any restoration carried out should focus on raising the water table and eliminating conifer regeneration (Figure 6).



Figure 6: Sitka regeneration along the eastern boundary. Regeneration must be managed post restoration to ensure that the water table remains high enough to support a raised bog habitat.

Restoration Techniques

The suggested restoration technique would be to mulch the trees to chips and brash using a front mounted mulcher head on an excavator. The chips and brash are then used to block the furrows and thereby raise the water table. This technique can be viewed as a video on the SNH Peatland Action video page: <http://www.snh.gov.uk/climate-change/taking-action/carbon-management/peatland-action/peatland-action-videos/> under the title “Surface Smoothing.”

Alongside this, ditch blocking would need to be carried out using either plastic piling or peat dams as the drains are too wide and deep to be blocked by brash. In order to qualify for Peatland Action funding both ditch blocking and mulching would need to be carried out simultaneously as ditch blocking is not eligible as a standalone item.

Ideally, mulching should be carried out across the site to prevent any unnecessary sources of conifer regeneration and provide a smooth surface for bog plants to take hold. There is a danger that leaving trees to fell naturally by wind will leave a scene similar to Figure 7 in which the surface is severely distorted and the water table reduced. Mulching, in essence, is an attempt to speed up the natural process of decay whilst using the tree matter as an agent to block the furrows and raise the water table.

If successful in applying for a Peatland Action grant the owner must agree to maintain the site in its restored state for 10 years. This would entail controlling conifer regeneration over this timescale. If the wood is to be felled commercially it should be noted that Peatland Action funding cannot be used to aid extraction.



Figure 7: Areas of windblown trees are prevalent throughout the site.

Summary

The experimental woodland block near Leadburn is located on deep peat that would qualify to receive a Peatland Action grant to cover capital expenses for undertaking restoration activities. It is suggested that two restoration techniques are employed:

1. Mulching of the current tree crop. The resulting mulch and brash can be used to block the furrows and create a smooth surface for bog plants to regenerate.
2. Ditch blocking. In many cases the ditches cross cutting the site are too deep and wide for brash and mulch to be used to block and therefore plastic piling or peat dams should be used.

Both of these techniques can be viewed under “Videos and Guidance” section of the Peatland Action webpage.