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NB it was decided that another proposal received that same day from this author than this one would be presented as a poster (see poster # P2 at the end of this document). Thus, #26 is not attributed for communications.

Rehabilitation of Lowland Raised Mires in Cumbria, North West England. Rehabilitation of Lagg fen.

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The South Solway Mosses National Nature comprises three large lowland raised mires on the South side of the Solway Firth in North West England, mostly owned and managed by Natural England. Drumburgh Moss National Nature is the fourth, substantially owned and managed by the Cumbria Wildlife Trust. A number of other Landowners also own parts of the ‘mosses’ and these areas are mostly managed under Management Agreements with Natural England. On Bowness Common a key land owner and partner with Natural England is the RSPB, Royal Society for the Protection of Birds.

All of these sites have been affected by peat cutting for at least three centuries. During the nineteenth and early 20th century much of the peat cutting was carried out by local people for domestic fuel. For this purpose the mires were divided into large and small ownerships to ensure that the resource could be shared. The peat was cut from the edge of the mire with the result that several kilometre of edge was left as a steep face from 1 metre to 3 metres high. The peat was cleared down to the mineral soil. In some areas this land was converted to agricultural land and in others it turned into heath, scrub and woodland. The lagg fen was completely removed and drained.

Commercial peat exploitation commenced in the early 20th century. On Drumburgh Moss and Glasson Moss the peat was used to extract ‘Paraffin’ wax and oils. Whilst on Wedholme Flow the peat was seemingly exploited for horticultural and agricultural uses.

The commercial exploitation occurred mostly on the deeper, intact peat and further reduced the rand and lagg. All four sites were cut commercially but the least affected was Bowness Common and this 762 hectare mire is still the one of the best geomorphologically intact mires in the UK (Ratcliffe 1976), notwithstanding that a railway line was constructed across the deepest peat in the 1870’s.

Agricultural improvement has and continues to have a considerable impact on the lagg area. Round most of the perimeter of the mires this was carried out in the 20th century following the removal of peat for domestic use. Much of this land is now highly productive grassland. The boundary between the mire and the farmland is usually a deep, well maintained drain. However, in some areas, notably around Bowness Common, over 300 hectares of deep peat was drained and converted to pasture. This land is well maintained by regular drain maintenance. In some area the drainage is not effective and several hectares have reverted to rush pasture. On Bowness Common the partnership between English Nature (now Natural England) and the RSPB resulted in the acquisition of two farms with a substantial areas of rush pasture that could be reverted to lagg fen.

A substantial injection of money into English Nature Peatlands for People project in 2000 enabled the first attempts to restore lagg fen and projects were carried out on Bowness Common, Glasson Moss and Drumburgh Moss. Project investigations and preliminary work also commenced on Wedholme Flow and work is now ongoing on all of these mosses.

The problems to resolve are quite complex. A key issue involves adjacent landowners because making the lagg wet again invariably means water storage and they are hugely concerned that their agricultural fields will be made wetter. A full hydrological assessment is necessary and indeed a hydro-geological assessment to provide some assurance that water stored on the lagg will not move through the substrate and reappear as wet areas on farmland. Another reason for investigating the hydrology of the mineral soil is to establish exactly what it is happening to the water in the mineral soil. The geology and geomorphology was created by the last ice-age and the sea. The mineral substrate at lowest part of the mosses can be a range of estuarine sediments whilst the glacial deposits range from heavy impervious clays to sands and gravels.

Water quality is another key issue; because the land has been improved there is a nutrient load that needs to be considered. Will raising the water table cause the nutrients to seep into the good bog and impact on the bog vegetation? How can this be managed?

Over most of the perimeter of these sites the water drains away from the mire but being a glacial landscape there are areas where agricultural water drains down to the mire edge drain. How can this be managed?

The old vertical domestic cuttings 'faces' present several problems. Invariably the drying out on the rand has caused the peat to crack. These cracks usually run parallel to the face and go the full depth of the peat column. On most sites the rand has turned to dry heath and scrub. Frequently the water disappears into these cracks and flows at the interface between the mineral soil and the shallow peat. Finding these water routes can be a challenge. A key question is should we re-engineer these old cut faces to restore the rand and lagg?

Most of these factors were taken into consideration when planning the first lagg rehabilitation projects or were discovered whilst the work was in progress. The RSPB/English Nature partnership ensured the acquisition of two key area of farmland to secure the lagg restoration involving farmland. It is hoped that the agri-environment schemes may help to secure further areas of key farmland on shallow peat. Nevertheless several landowners are apprehensive about having wetland next to their farmland.