



PEATLAND CODE



PROJECT DESIGN DOCUMENT (PDD)

Compilation of Evidence for Validation

Version 1.1, March 2017

Project Name:	Fleet Moss
Registry ID:	
Location:	Bainbridge, N. Yorkshire, England
Grid Reference:	SD867836
Gross Area (ha):	102.5
Project Developer:	Yorkshire Peat Partnership
PDD Completed by:	Jenny Sharman, Project Officer
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All statements made in this document are correct to the best of my knowledge at the time of completion. **I agree**

NOTE:

1. When completing each section of this document please refer to the requirements set out in the relevant section of the Peatland Code. Boxes for text can be expanded if not large enough.
2. Your Project Design Document will be made available on the publically available Peatland Code Registry upon achievement of validation.

3. Additional evidence to support the statements made within this document will be required by the certification body.

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1. Eligibility and Governance

1.1 Eligible Activities

1) Please provide a short summary of the project including as a minimum reference to peatland type, peatland condition and restoration and management activities which shall be implemented.

The site comprises actively eroding gullies and hags with flat bare peat and dendritically eroded areas. There are a number of grips that are actively feeding larger gullies, creating erosion and substantial run off from the site. It will be restored using a combination of techniques including reprofiling and revegetating of gullies and hags; blocking eroding gullies and grips using peat dams, timber and stone sediment traps; using coir logs to slow the flow and trap sediment in shallower gullies and on bare peat; revegetating all bare peat areas (including reprofiled gully and hag sides) using heather brash, a moorland seed mix, lime, phosphate based fertiliser, cotton grass plugs, crowberry plugs and sphagnum. There will be a comprehensive management and maintenance plan to ensure the restoration is effective.

2) Is a minimum peat depth of 50cm present within the project area? Yes

2) Please provide details of any current land management agreements, including any statutory designations, in existence within the project area .

The site is in a Higher Level Stewardship scheme but there are no current funds for capital works on peatland restoration.
The site lies within the Yorkshire Dales National Park

3) Please state any identified conflicts between planned restoration and management activities and existing land management agreements and how these shall be mitigated.

none

1.2 Project Duration

1) Please state the project duration (years).

30

2) If the project duration exceeds 55 years please state the peat depth within the project area.

1.3 Eligible Land

1a) Please state the owner(s) and if applicable, the tenant(s), of the land within the project area

Owners: Malcolm & Ian Sunter (J. Sunter & Sons)

1b) Please state the land registry number, if known

2) Has any new activity to drain and/or remove vegetation taken place on the peatland within the project area since November 2015? **No**

1.4 Consultation

1) Please state all identified stakeholders (or their representatives), the consultation method and the consultation period.

Stakeholder	Consultation Method	Consultation Period
Malcolm and Ian Sunter	Verbal	8 weeks
Yorkshire Dales National Park	Written and Verbal	4 weeks (written)
Clifford White	Written and Verbal	4 weeks (written)

3) Please state all negative impacts of the project identified by stakeholder(s) and the action taken to mitigate, where feasible and/or relevant

Negative Impact Identified	Action taken to mitigate? (Yes/No - If No, provide details)
No negative impacts identified from any stakeholders	

1.5 Additionality

1) Is there a legal requirement specifying that peatland within the project area must be restored? **No**

2) Please state the proportion of the project restoration and management costs that Carbon Finance will be required to fund.

38.99%

3) Please describe the economic alternatives for the peatland within the project area and describe the influence of Carbon Finance on the project's economic viability over its duration (Internal Rate of Return (IRR) or Net Present Value (NPV) should be used to demonstrate comparison).

As the majority of the site is actively draining and/or eroding, there are no possible economic alternatives for the land other than the small benefits currently obtained from grouse shooting (sheep are excluded from the area through the HLS scheme). However, post peatland restoration, the site would perform significant ecosystem services over the 30 year duration of the project. In addition to the carbon saved from the current intense erosion, restoration will reduce the amount of sediment and help slow the flow of water into the area's catchments. Biodiversity will also benefit as will the protection of the site's archaeological records. The Net Present Value of the project is -719,547 including carbon finance and -1 263 829 excluding carbon

4) If applicable, please describe how barriers that prevent the implementation of the project (legal, practical, social, economic or environmental) have been overcome.

There are no known barriers.

1.6 Avoidance of Double Counting

1) Please state all parties with a legal right to make statements about the emissions reduction benefits of the project (the 'owner(s)') and the amount/proportion of units (tCO₂e) for which they have a right.

Owner	Contact Email	Units (tCO ₂ e or %)
Malcolm & Ian Sunter	raydalegrange@gmail.com	100%

1.7 GHG Statements

1) If applicable, please state where any statements about the predicted emission reduction benefits of the project have been made to date.

Signage onsite	No
Websites	No
Publicity leaflets etc.	No
Other media (<i>provide details</i>)	No

2) Please state how buyers were/will be informed of Peatland Code requirements regarding GHG statements

Buyers will be made aware of Peatland Code requirement 1.7 (V1.1) at the time of sale with a clause within the sales contract committing the buyer to compliance.

2. Project Design

2.1 Management Plan

1) Does the project have a restoration management plan for the duration of the project? **Yes**

2) Please provide a short overview of the project objectives and activities to be implemented.

The restoration objectives for Fleet Moss are:

1. To improve the **5.59ha** of *Actively Eroding Flat Bare peat* (AU1) to a *Drained Revegetated* status by:-
 - Brashing, reseeding, planting of cotton grass and crowberry plugs, and inoculating with micro-propagated *Sphagnum spp.* clumps all bare peat and mineral areas.
2. To improve the **5.28ha** of *Actively Eroding Hagg/Gully* (AU2) to a *Drained Revegetated* status by:-
 - Reprofilling and revegetating (as above) **13,839** m of eroding hag and gully sides
 - Planting **39,096** cotton grass plugs on suitably wet bare peat, the base of gullies & dendritic areas
 - Planting **39,096** crowberry plugs on gully and hag edges, and drier areas of bare peat
3. To improve the **87.79ha** of *Drained Hagg/Gully* (AU3) to *Modified* by:-
 - Reprofilling and blocking **5964m** drainage channels (grips or gullies) with peat dams
 - Blocking all existing vegetated gullies that are draining the moor with **1036** timber sediment traps
 - Blocking all existing bare peat gullies with **357** stone sediment traps
 - Using **4962 coir logs** bunds in bare peat, mineral soil & dendritic areas to slow the flow and trap sediment
 - Revegetating all bare peat areas in the Drained Hagg/Gully system to slow the flow and increase water absorption
4. To ensure the elevated status in each category is achieved, and potential for the whole site to realise a *Modified/Near natural* is maximised, a follow-up management programme will supplement seed, cotton grass, crowberry plugs, and sphagnum to areas still vulnerable to erosion; add geotextiles and baffles to areas still vulnerable to erosion; and continue work on the site's hydrology to optimise water retention and sediment capture enabling eroded gullies to refill to the level of the surrounding landscape.

3) Were legal compliance and best practice guidance considered in the preparation of the restoration management plan? **Yes**

4) Please provide a short overview of the expected environmental and social impact of the project.

Environmental:

1. There will be substantial environmental and social benefits through the prevention of erosion through revegetation, dams and sediment traps. This will not only decrease the amount of carbon being released from the site, and its subsequent contribution to global warming, but is also expected to decrease the amount of sediment reaching watercourses further down the catchment. Runoff from the site feeds into Bardale beck before flowing into the SSSI site of Semer Water, one of Yorkshire's precious glacial lime-rich lakes that provides high value habitat for tufted duck, great crested grebe, lapwing, curlew and redshank. The grasslands adjacent to Semer Water are species rich including flowering plants such as devils bit scabious and species such as sand martin, willow warbler and reed bunting. In autumn, migrant bird species depend on the site. In winter birds using the catchment include wigeon, teal, mallard and snipe. This is important habitat that needs to be protected from floodwaters filled with high concentrations of sediment, rocks and dissolved organic carbon.
2. Yorkshire Wildlife Trust manages three sites that comprise of fen, marsh, hay meadow and willow carr along the catchments that stretch out from Fleet Moss. Following restoration, the species rich habitat of Marsett Meadows is one of these sites that will benefit from a reduction in flash floods and the consequent sediment load that comes down from the surrounding degraded moorland.
3. Yorkshire Wildlife Trust has established a belt of mixed ash wood specifically to slow run off into the lake. Work on Fleet Moss will help this project achieve its goals to protect the unique biodiversity in the area.
4. Biodiversity on Fleet Moss is also expected to benefit from the restoration as currently degraded and eroded land will be revegetated with cotton grasses, dwarf shrubs and sphagnums. Similarly, as erosion declines, and the restoration techniques initiate the process of rewetting the moor, the water retaining capabilities of the peat will improve as will the vegetation, insect life and the many species that depend on these invertebrates.
5. Currently Fleet Moss and the adjacent grasslands provide an ideal habitat for short eared owls. Restoration will increase the capacity of this land to support the species on which the owls forage, as well as provide essential cover for nesting birds.
6. As a result of the above, the land will become much more valuable as a feeding and resting place for migrant birds, and help in the creation of a corridor across the area to support these migrations. This will contribute to the overall aims of the Yorkshire Dales National Park, helping to retain and enrich all the unique and biodiverse qualities of the area.
7. Rewetting the site and raising the water table will also help to make the site more resistant to climate change, helping to preserve the unique environmental characteristics of the area and the survival of all biodiversity dependent on this ecosystem.

Social:

1. The landowner is currently trying to develop this land for grouse shooting and it is expected that there will be modest benefits in this regard following restoration. It is expected that restoration of the habitat will mean an increased capacity for the land to support healthy grouse populations. Blocked grips will mean a decrease in the loss of chicks from falling in these drains and becoming fatally trapped. They will benefit from increased insect availability and increased water in times of drought through the increased moisture and variety of habitat following restoration. Shooting clientele will also benefit from the improved topography, aesthetics and biodiversity of the land.
2. There is a look out point from the main road between Oughtershaw and Hawes that provide a direct view of the site. Restoration will enhance the aesthetics and biodiversity of the site, making it a more significant attraction to passing motorists and walkers.
3. As the land lies within the Yorkshire Dales National Park, it will be contributing to the park's overall allure, helping to maintain its status and be of financial benefit to the wider community through tourism.
4. Given the location of the site alongside a main road, it provides a prime location to educate the public on the benefits of peatland restoration (and the peatland code) through the use of an interpretation board at the look-out point. If funds are forthcoming, this will be one of the aims of the project.
5. The project will also contribute to the lowering of DOC and POC content of the water which will influence the colour and quality of water. This will ultimately be of benefit to the water companies (namely Yorkshire Water) extracting from this catchment, particularly in times of peak flow when particulate matter and DOC is normally high.
6. The site restoration will contribute to the increased lag time of runoff during storm conditions due to the water travelling slower over vegetated, rougher ground. The dams will also work to hold more water up on the moors. Ultimately this will benefit communities living within the catchment who are subject to flooding under these conditions, allowing them greater preparation time to prevent damage to their properties and evacuate the area.
7. Currently a huge amount of sediment and detritus is washed down Bardale Beck following high rainfall events, damaging lowland farmland, walls and farm tracks. Bardale Beck originates, and is directly fed, from tributaries leading off from Fleet Moss. Also, a great deal of sediment ends up in Semer Water, North Yorkshire's second largest natural lake and a regional tourist attraction. It is hoped that by slowing the flow from Fleet Moss, and decreasing the amount of sediment washing into the Beck, Semer Water will be protected thereby benefiting the lake's resources that provide people with a place of recreation, including fishing, canoeing, sailing and windsurfing. Similarly, the rocks and detritus washed down the Beck should also be reduced following restoration.
8. The higher water table and lower fuel load will also increase the site's ability to resist wildfire, avoiding the terrible social and environmental costs that fire across the site could bring.

2.2 Monitoring Plan

1) Does the project have a monitoring plan for the duration of the project? **Yes**

2.3 Management of risks and permanence

1) Has a Risk Assessment been undertaken to identify potential risks to the maintenance of improved condition category and appropriate mitigation strategies?
Yes

3. GHG emission reduction

3.1 Establishment of Baseline Emissions

1) Please insert a completed *Table 2* from the *Peatland Code Emissions Calculator*.

Assessment Unit	Area (ha)	Pre-Restoration (Baseline) Condition Category	Post-Restoration Condition Category
AU1	5.59	Actively Eroding: Flat Bare	Drained: Re-Vegetated AE
AU2	5.28	Actively Eroding: Hagg/Gully	Drained: Re-Vegetated AE
AU3	87.79	Drained: Hagg/Gully	Modified
AU4	3.62	Modified	Modified
AU5	0.53	Non-Peatland	Non-Peatland
AU6			
AU7			
AU8			
AU9			
AU10			
102.81			
Total			

3.2 Leakage

1a) Please state the current land use or management and describe how it will be affected by the project.

There is very limited grouse shooting on this land. This will not be affected by restoration which will take place through the winter months.

In the long term it is desirable that the restored land should be free from any management which involves burning as this will be detrimental to the restoration and to the health of the peat. This is in accordance with recent Natural England policies and has been agreed by the landowner. The Land management plan takes these issues into account and have all been agreed by the landowner.

1b) Will the project lead to change of land use or management elsewhere within the same agricultural/land holding (e.g. peatland degradation or intensification of land use in another area)? *No*

1c) If Yes, Is the change in land use or management significant (i.e. will GHG emissions $\geq$ 5% of project emissions reductions over the duration)? *N/A*

2) If significant, please state the emissions (tCO₂e) of the displaced activity for the duration of the project. (If no leakage or not significant, leakage =0).

0

3.3 Net Project GHG emission reduction

2) Please insert a completed *Table 5* from the *Peatland Code Emissions Calculator*.

Period (Year)	Total Emissions Reduction (tCO ₂ e)	Total Emissions Reduction less 10% model precision (tCO ₂ e)	Total Emissions Reduction adjusted for Leakage (tCO ₂ e)	Cumulative Risk Buffer Contribution (tCO ₂ e)	Cumulative Total Claimable Emissions Reduction (tCO ₂ e)
0-5	1927	1734	1734	260	1474
5-10	3854	3468	3468	520	2948
10-15	5781	5203	5203	780	4422
15-20	7707	6937	6937	1041	5896
20-25	9634	8671	8671	1301	7370
25-30	11561	10405	10405	1561	8844
30-35	0	0	0	0	0
35-40	0	0	0	0	0
40-45	0	0	0	0	0
45-50	0	0	0	0	0
50-55	0	0	0	0	0
55-60	0	0	0	0	0
60-65	0	0	0	0	0

65-70	0	0	0	0	0
70-75	0	0	0	0	0
75-80	0	0	0	0	0
80-85	0	0	0	0	0
85-90	0	0	0	0	0
90-95	0	0	0	0	0
95-100	0	0	0	0	0

3) If necessary, use this space to clarify any details of your calculation

Input Data Bare Peat – UAV Image classification Grips – Digitised (UAV reference data) Hagged Gullies – Digitised (centreline) (UAV reference data) Peat Hags - Digitised (UAV reference data) Non Peatland – Digitised (UAV reference data) Near Natural – Digitised (UAV reference data)
Actively Eroding Bare peat calculated from image classification of UAV data (3-3.5cm resolution). If gullies are present, they are buffered by 2.5m and any bare peat within the gullies is assigned to Actively Eroding Gully Bare Peat. If peat hags are present, a 1m buffer is applied and any bare peat falling within the buffer is assigned to Actively Eroding Hag Bare Peat. The remaining bare peat is assigned to the Actively Eroding Flat Bare Peat.
Drained Grips, Hagged Gullies, Peat Hags are merged together and buffered by 30m. Bare peat and non-peatland areas are erased from the buffered output. The buffered output is clipped to the site boundary and the area (ha) is calculated.
Modified Any areas outside of actively eroding, drained, near natural, and non-peatland that are within the site boundary are assigned to the modified dataset.