PROJECT DESIGN DOCUMENT (PDD)

Compilation of Evidence for Validation

Version 1.1, March 2017

Project Name:	Killhope Head
Registry ID:	104000000027214
Location:	North Pennines AONB
Grid Reference:	NY800439
Gross Area (ha):	29.17
Project Developer:	North Pennines AONB Partnership
PDD Completed by:	Andrew Stimson, Field 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.

Contents

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 restoration site is composed of areas of actively eroding flat bare peat alongside areas of hagg and gully erosion. The project will utilise well-established peatland restoration techniques including hagg reprofiling; blocking eroding gullies using stone dams, coir rolls to slow the flow in shallower gullies and on bare peat; revegetating all bare peat areas (including reprofiled gully and hagg sides) using heather brash. A moorland seed mix, lime & phosphate-based fertiliser will be spread over all brashed areas to encourage revegetation. There will be a comprehensive management plan to ensure the restoration is effective.

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

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

Entry and Higher Level Stewardship (not including capital works for peatland restoration) Within the North Pennines Area of Outstanding Natural Beauty.

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

Currently there are no identified conflicts. However, the existing land management agreements (Countryside Stewardship) are for a maximum of 10 years which is shorter than the project duration. The landowner is advised to check for conflicts with the Peatland Code if they decide to enter into any future land management agreement. (currently roll over of HLS, no detail on ELM but plan to roll over scheme until further details on E.L.M are released)

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.

N/A

1.3 Eligible Land

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

Owner: Weardale Estates Ltd

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

DU115099

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
North Pennines AONB Partnership	**Email**	**July - August 2021**
Environment Agency	**Email**	**July - August 2021**
Natural England	**Email**	**July - August 2021**
Wear Rivers Trust	**Email**	**July - August 2021**
Moorland Association	**Email**	**July - August 2021**

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)*
Cutting of Heather (Natural England)	Yes – In consultation with Natural England ensure heather cutting is in line with estate Moorland Management plan for heather cutting. Heather under 30cm tall or in areas where sphagnum coverage is commonly over 50% will not be cut.

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.

15%

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 most of this restoration site is actively draining and eroding, there are no possible economic alternatives for the land other than the benefits currently obtained from grouse shooting and seasonal sheep grazing. However, post restoration a range of ecosystem services are expected to improve including carbon storage, biodiversity & water quality over the 30 year duration of the project. In additional to the carbon saved from the current erosion, restoration will reduce the sediment loading downstream 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.

Although some public finance has been secured, this does not cover the full cost of the restoration works needed and additional private carbon finance is required to allow all recommended works to take place.

Without carbon finance the project would not be economically viable with a shortfall in excess of £30,000. When anticipated carbon finance is taken into account the net present value (NPV) of the project passes break even point and the project becomes viable.

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

N/A

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 (tCO_2e) for which they have a right.

Owner	Contact Email	Units (tCO_2e or %)
Weardale Estates Ltd	sebastian@greens-cs.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	None
Websites	None
Publicity leaflets etc.	None
Other media (*provide details)*	None

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 and a clause within the sales contract will commit the buyer to compliance. Requirement 1.7 states that any claims regarding the GHG benefit of the project shall state the timescale over which the emissions reduction will take place and that any claims of ‘use’ shall not be made until the emission reductions have occurred and have been verified.

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 works recommended at Killhope Head are as follows:

- Re-profile and brash 5602m of hagg edges.
- Bare peat to be covered with 1425 bags of heather brash. The brash will stabilise eroding bare peat and act as a mulch layer and seed source to stimulate re-vegetation.
- Bare peat will be treated with lime, seed and fertiliser to promote vegetation growth.
- Eroding gullies and channels will have hydrological interventions installed, there will be 160 stone dams and 236 coir rolls installed to slow the flow and trap sediment.

For more detailed description please see works specification. The work involves the use of helicopters to lift stone and brash. This adds to the monetary and carbon cost of the project but is necessary as these materials could not be transported over land without causing substantial damage to the site.

The effect of the works will be to restore **4.57ha** of Actively Eroding Peat (Flat Bare and Hagg / Gully to a Drained Revegetated status and **24.6ha** of Drained Hagg / Gully to a Modified Bog status.

An additional amount has been set aside for remediation works (at Year 1 and Year 5) should the initial works not be sufficient to result in the predicted category shifts across the site. The estate will carry out additional checks between verification surveys to check for any damage to the dams and revegetated bare peat areas.

The project developer will hire a contractor to carry out the initial works and year one remediation (if required). The landowner will be responsible for hiring a contractor to carry out year 5 remediation (if required) although they could ask the project developer if they are able to carry out this role. As provided for in the Additionality calculator, the cost of the remediation works in year 1 will be limited to £5,000 and year 5 will be limited to £23,097.

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 significant environmental benefits through erosion prevention encouraged by revegetation and blocking drainage channels with stone dams and coir rolls. This will decrease the amount of carbon being released from the site, and its subsequent contribution to global warming, and decrease the amount of sediment reaching watercourses further down the catchment.
2. Biodiversity on Killhope Head is expected to benefit from the restoration as currently degraded and eroded land will become revegetated with native species including cotton grasses, dwarf shrubs, sphagnum species which in turn offer the correct conditions for natural regeneration of other native plant species. Similarly, as erosion declines, and the restoration techniques initiate the process of rewetting the moor by raising the water table, the water retaining capabilities of the peat will improve in tandem with the stabilising effect of the vegetative growth. These positive impacts, along with the stone dams and coir rolls will enhance insect life and many other species that depend on these invertebrates.
3. As a result of the above, the land will become much more valuable as a feeding and resting place for birds, including red grouse, golden plover, curlew and skylark.
4. Rewetting the site, and raising the water table, will also help to make the site more resistant to climate change, enabling the preservation of the unique environmental characteristics of the area and the survival of all biodiversity dependent on this ecosystem.
5. Runoff from the site feeds into Killhope Burn before flowing down to the River Wear. It has been demonstrated by the Making Space for Water project that revegetation of bare peat areas reduces flood peaks, and it is expected that revegetation of the site, combined with the strategic positioning of stone dams and coir rolls, will further serve to slow the flow of water into the wider catchment and be of benefit to the habitats within and surrounding the catchment.
6. Killhope Burn and the River Wear are key spawning streams for salmonid species and brown trout and will receive some benefit from the reduced quantity of sediment and flood water. Other riverine habitats along these watercourses are also expected to receive some benefit as water quality improves and human-exacerbated sediment loads decrease.

Social:

1. Restoration works will bring in approximately £225,000 worth of work to the local area, supporting local contractors, national helicopter companies and suppliers of stone, coir rolls, lime, seed and fertiliser. The works will also benefit the landowner and jobs in the rural economy through maintaining the capacity of the land to support grouse populations and livestock.
2. As the land lies within the North Pennines AONB this restoration project will enhance the overall appeal of this designated protected area, helping to maintain its status and financial benefits to the wider community through tourism.
3. The project will also contribute to the lowering of Dissolved Organic Carbon and Particulate Organic Carbon content of headwater streams which will influence the colour and quality of larger watercourses including Killhope Burn down to the River Wear. This will ultimately be of benefit to Northumbrian Water Ltd. that extract from further down this catchment, and to a variety of recreational users including anglers, canoeists and ecotourists.
4. The site restoration will contribute to the increased lag time of runoff during storm conditions due to surface and shallow sub-surface water travelling slower over well-vegetated, rougher ground. The dams will work to hold more water up on the moors. This work along with complimentary schemes such as the Weardale Natural Flood Management (NFM) project, will smooth out downstream hydrographs and lower peak flows benefitting communities at risk of flooding.
5. The higher water table and lower fuel load will also increase the site's ability to resist wildfire, avoiding the 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*

2022 – Site validated by OF&G Organics
2023 – Project start date

2024 – Year 1 restoration validation survey
The surveyor will check a selection of the works, including brash coverage, stone dams quality and quality of coir roll installation. Fixed point photos will be re-taken. A Unmanned Aerial Vehicle flight will be carried out across the site to gain full, aerial images of the completed works. A report will be completed with geo-referenced evidence photos, fixed point photos and the UAV images.

2028 – Year 5 verification survey to be completed
2038 – Year 15 verification survey to be completed
2048 – Year 25 verification survey to be completed
2053 – Year 30 verification survey to be completed
2053 – End of project

Site verifications surveys will be carried out at years 5,15 and 25 and 30. The surveyor will visit each survey point along the baseline transect, take a photo facing north as per the baseline survey and carry out an assessment of PC condition at each point. Fixed point photos will be re-taken. A report will be completed with geo-referenced evidence photos, the peatland code categories for each survey point and fixed point photos.
It is estimated that the ground truthing survey will take two person days and the verification report one person day.

All surveys will be carried out by an experienced surveyor (yet to be appointed) and reports / data sent to validation / verification body OF&G.

The estate will also carry out additional checks between verification surveys to check for any damage to the dams and revegetated bare peat areas

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	0	Actively Eroding: Flat Bare	Drained: Re-Vegetated AE
AU2	4.57	Actively Eroding: Hagg/Gully	Drained: Re-Vegetated AE
AU3	24.6	Drained: Hagg/Gully	Modified
AU4			
AU5			
AU6			
AU7			
AU8			
AU9			
AU10			
Total	**29.17**		

3.2 Leakage

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

There is seasonal sheep grazing and grouse shooting on site. Sheep are off wintered and graze the site between April and October each year. Management for grouse shooting does occur however is limited within the restoration site to grit boxes and predator control. Neither of these activities will be affected by the restoration work which will take place through the winter months, once grouse shooting has finished and before the bird breeding season.
As sheep grazing is currently limited through an agri-environment scheme and no increase in sheep numbers is envisaged at present grazing impacts on the restoration work will be minimal. As such, this is not considered an issue in terms of re-vegetation success.

The project area is currently included in a Higher-Level Stewardship Agreement which was entered into in collaboration with Natural England and will expire in September 2022.

Once the current HLS scheme expires Weardale Estate will consider (but will not commit to) a new agri-environment scheme and moorland management plan on their merits at the time providing such scheme or plan do not impact on the estates long term core priorities which are driven grouse shooting, hill farming and preserving the estates natural capital assets.

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 ≥ 5% of project emissions reductions over the duration)? ***N/A***

2) *If significant*, please state the emissions (tCO_2e) 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*.

Cumulative Emissions Reduction over project duration (tCo2e)					
Period (Year)	Gross Emissions Reduction (tCO2e)	Emissions Reduction less 10% model precision (tCO2e)	Net Emissions Reduction adjusted for Leakage (tCO2e)	Cumulative Risk Buffer Contribution (tCO2e)	Cumulative Claimable Emissions Reduction (tCO2e)
0-5	687	618	618	93	**525**
5-10	1374	1237	1237	186	**1051**
10-15	2061	1855	1855	278	**1577**
15-20	2748	2473	2473	371	**2102**
20-25	3435	3092	3092	464	**2628**
25-30	4122	3710	3710	557	**3153**

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