

# YORKSHIRE PEAT PARTNERSHIP RESTORATION WORKS MONITORING PROTOCOL

Version Two written June 2024

## Introduction

Yorkshire Peat Partnership is committed to updating and improving restoration techniques through a programme of ongoing monitoring of completed capital works. Assessing the effectiveness of restoration after capital works improves understanding and refinement of techniques for subsequent restoration projects. Natural England also requires monitoring data as evidence of restoration works they have funded. Sites that have undergone restoration should be assessed in the first year post-restoration and ideally yearly afterwards.

## Monitoring setup

### First year setup

Monitoring transects should be set up across the site to intersect with as many restored areas/features as possible. Using the contractor data and restoration plan maps, design a survey that will allow the collection of at least 20 data points per restoration feature to allow for sufficiently robust analysis.

Depending on what capital works have been conducted this may include assessing:

- **Grip / gully blocking with peat dams**
- **Grip / gully blocking with sediment traps**
- **Reprofiling of hags / gullies with either turves or brash**
- **Bare peat treated areas with brash / plugs**

### Restoration monitoring survey

Ensure that your project has the restoration monitoring layer as well as layers with contractor data points from the works.

### Monitoring equipment

- Project and tablet
- Compass
- Quadrat marker

Conduct the works monitoring survey in accordance with the below specification (see section 'Survey')

A breakdown of the steps are summarised below:

1. Walk along the transect line, stop at the first restored feature you come across (Figure 1). If the feature intersects exactly with the transect, conduct a survey. If the feature is slightly away from the transect line (e.g. peat dam/sediment trap), stray no more than 5m away

from your transect line and conduct the survey there. Return to the transect and continue along it until the next feature is reached.

2. If the feature is reprofiling and you have to stray from the transect, take a random number of steps along the feature (still within 5m) to avoid introducing bias into the survey.
3. When marking the quadrat on a reprofiled hag it needs to span the full height of the feature (Figure 3), from the flat top to the flat ground at the bottom, to take into account the whole side.
4. When assessing a gully, there could be a marked difference in effectiveness on one side compared to the other, this is most likely due to differences in exposure so it is important to record this. Gullies should be assessed on a paired sampling basis, assessing one side first, then the other (Figure 2). Note that a paired sample of two points per gully intersection constitutes one feature data point (so for gullies you should effectively be conducting 40 surveys).
5. When monitoring sediment traps the vegetation quadrat should be upstream of the intervention, starting at the base of the intervention. It should be a 2x2m quadrat (Figure 4)
6. If assessing a previously monitored site, conduct the survey along the same transect as before. You do not need to re-survey the exact same features as before as long as you follow the transect and survey any features you come across as described.



Figure 1: Transect across restoration features.

# Partnership

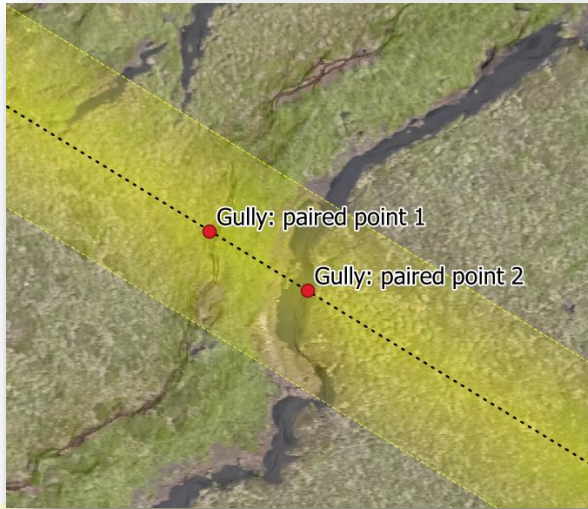


Figure 2: Transect line showing where to conduct gully survey with 5m buffer added.

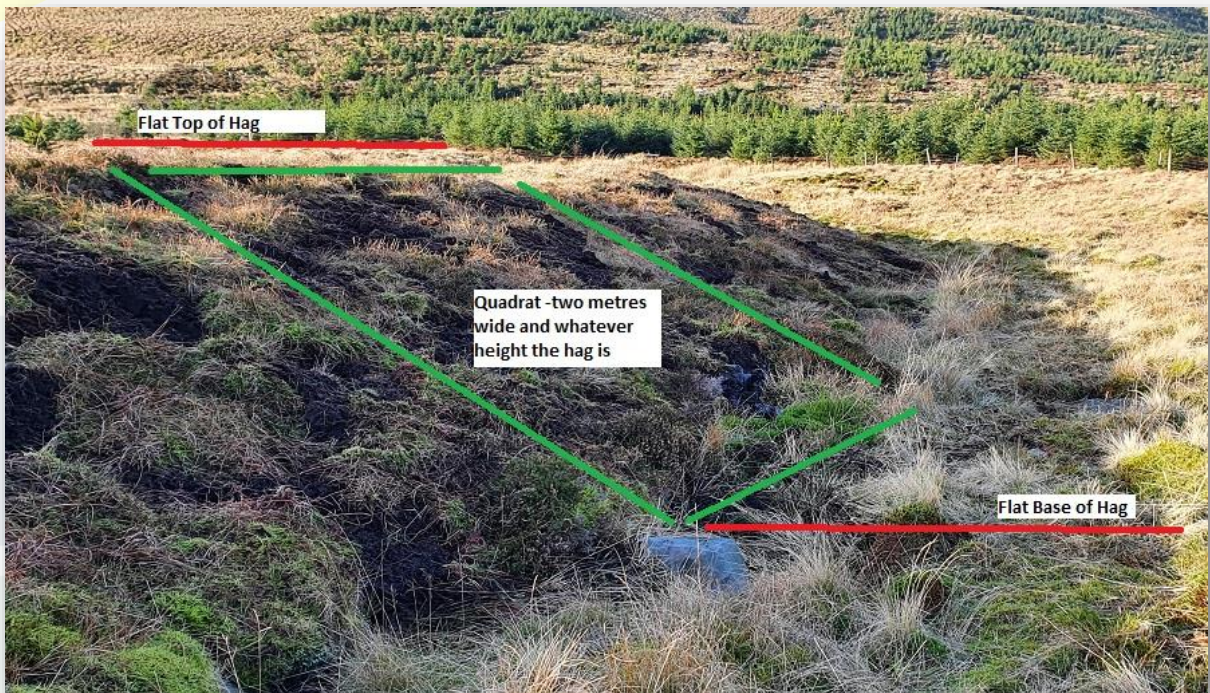


Figure 3: Quadrat on reprofiled hag

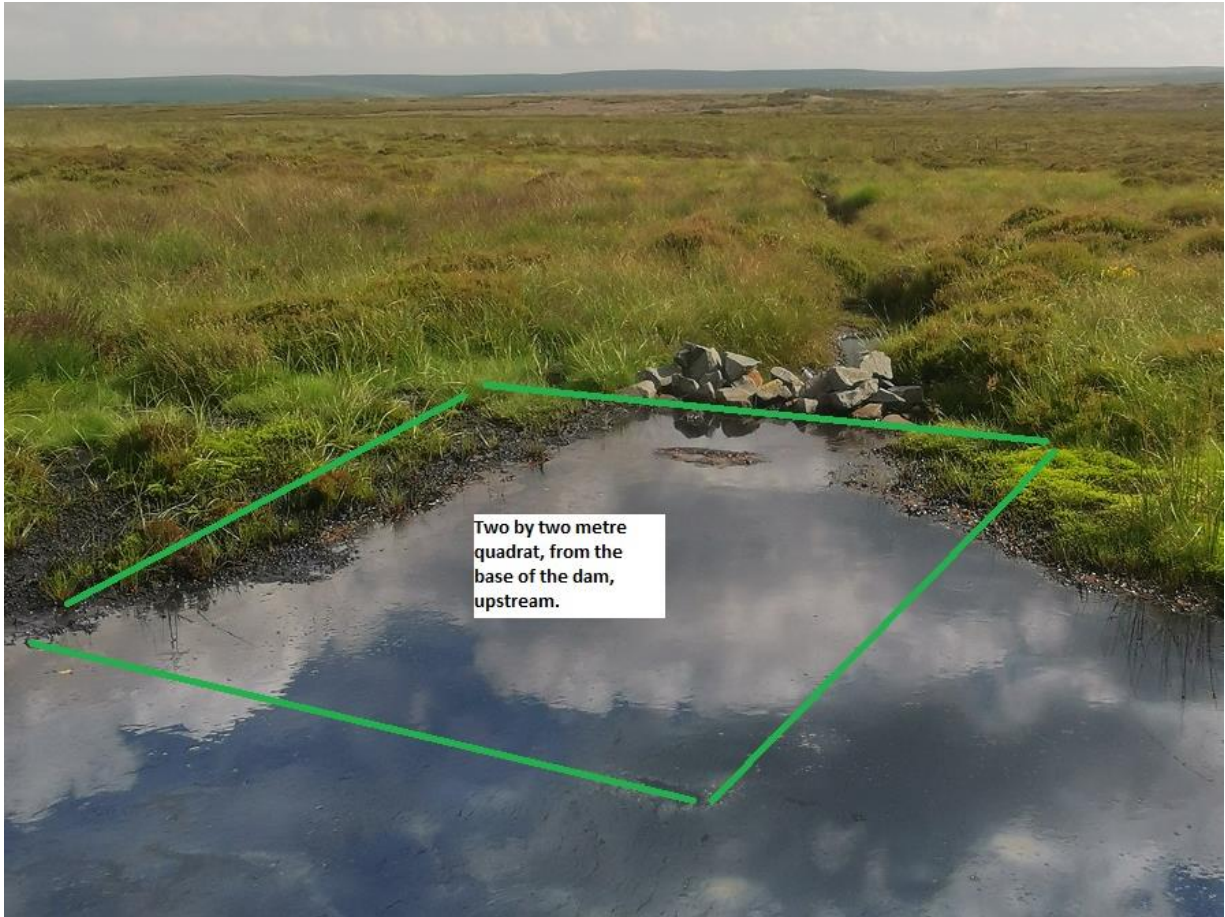


Figure 4: Quadrat upstream of a dam.

NB. Historically YPP also monitored the success of works on bare peat with this protocol, however random sampling of bare peat areas is not possible as a surveyor does not know what the historic vegetation cover of a bare peat area was, therefore will bias non-revegetating areas when looking to sample a 'bare peat area'. All monitoring of the impact of interventions in bare peat areas must be done separately to this spec with fixed point quadrats.

## Survey

For each feature you come across record the following information-

- **Grip blocking with dams or sediment traps**
  - Dam type- Peat, Timber, Stone, Timber Baffle, Stone Baffle, Heather Bale or Coir
  - Dam intact- TRUE/FALSE (Does the dam generally look like it is functioning/constructed to spec?)
  - Signs of erosion around dam- TRUE/FALSE (Is the dam being eroded around the edges? Note: water may be dispersing but not causing erosion)
  - Water retained behind dam- indicate None, Some, Full. (Is the dam holding water? This may not be evident depending on recent rainfall)

- **OR Reprofiling**

Record in 2m x 2m quadrats for reprofiled areas on the transect or within 5m (take random number of steps to avoid bias). If the area is too small then record the entire feature.

- Reprofile type- Brush, Turves or unknown. (Use turves if there is evidence of turves being used (may be brushed as well) and brush is there is no evidence of turves being used, unknown if you are unsure.)
- Area surveyed- Quadrat, entire feature. (At the intersection of your transect and the gully, stand at the base and assess one side of the gully).
- Aspect- record cardinal direction. (What direction is the gully/hag side facing?)
- Reprofiling too steep? TRUE/FALSE (Has the gully been reprofiled to the correct angle or not?)
- Erosion type- Flow, Grazing, Trampling, Burrowing, Weather, Burning, Vehicle, slippage, unknown/other.

- **For everything; record vegetation**

Vegetation is assessed for all features. Ideally a 2x2 metre quadrat, for which your hand is approximately 1%.

For dams take a 2x2 metre quadrat upstream of the feature, to see the impact it has had slowing the flow and stopping sediment. The quadrat should start from the back base of the dam and spread a metre in each direction from the centre point, with a 1m dam this will take in the sides of the feature, on larger dams it may only encompass the channel base.

For reprofiled slopes your quadrat should be 2m wide and start from the bottom of the feature where it flattens out and rise to the top of the feature, to where it flattens again. This may make your quadrat more or less than 2x2 metres squared but means you are taking in the whole feature.

- Vegetation - % cover (Indicate the total vegetation cover in your quadrat)
- Calluna Vulgaris- % cover range (Domin)
- All other dwarf shrubs- % cover range (Domin)
- Molinia caerulea- % cover range (Domin)
- All other grasses- % cover range (Domin)
- Cotton sedges/grasses- % cover range (Domin)
- Other sedges- % cover range (Domin)
- All rushes- % cover range (Domin)
- All sphagnum species- % cover range (Domin)
- All other mosses- % cover range (Domin)
- Bare peat- % cover range (Domin)
- Other ground cover (mineral etc.)- % cover range (Domin)

- **For everything also record the following general information-**

- Survey comments- Text, String
- Surveyor- Text, String

- Date + Time
- 



**Yorkshire**

**Peat**

**Partnership**