



Grassington Moor

Yorkshire Dales National Park

PEATLAND RESTORATION PLAN

Produced by:

Manon Pue
Peat Project Manager

Yorkshire Peat Partnership

Revised by:

Sophie Pyne
Peat Project Assistant

Yorkshire Peat Partnership

April 2023

Contents

Introduction to Grassington Moor.....	4
1 PART 1: BACKGROUND.....	5
1.1 GENERAL SITE LOCATION.....	5
1.2 DESIGNATIONS.....	5
1.2.1 National.....	5
1.3 OWNERSHIP & TENANCY	5
1.4 Management history.....	5
1.5 Key contacts	5
2 PART 2: SURVEY.....	6
2.1 PRE-SURVEY	6
2.2 FIELD SURVEY.....	6
2.3 POST-SURVEY.....	6
3 PART 3: PEATLAND RESTORATION PLAN.....	7
3.1 OBJECTIVES	7
3.2 DAMMING, SEDIMENT TRAPPING & SLOWING THE FLOW ON GRIPS AND GULLIES	8
3.2.1 Peat dams.....	10
3.3 RE-PROFILING.....	10
3.3.1 Grips & gullies	10
3.3.2 Hags.....	11
3.6 BUNDING ON BARE PEAT TO REDUCE WIND AND WATER-BORNE EROSION	11
3.7 BARE PEAT RE-VEGETATION	11
3.8 VEGETATION ESTABLISHMENT SUMMARY TABLES	12
3.8.1 Vascular plants	12
3.8.2 Fertiliser & lime.....	12
3.8 HABITAT CONDITION ASSESSMENT	13
3.9 GPS RECORDING OF WORK	15
3.10 ACCESS	15
3.11 ARCHAEOLOGY.....	15
3.12 MONITORING	15
3.13 TIMETABLE	16
3.14 CONSENTS & UTILITIES.....	16

4	PART 4: MANAGEMENT AND MAINTENANCE.....	17
4.1	FERTILISER.....	17
4.2	VEGETATION ESTABLISHMENT	17
4.3	GEO-TEXTILES.....	17
4.4	BUNDING IN DENDRITIC AREAS TO SLOW THE FLOW	17
4.5	BUNDING ON BARE PEAT TO REDUCE WIND AND WATER-BORNE EROSION	17
4.6	SEDIMENT TRAPS AND DAMS	18
4.7	PROTECTING THE TOE OF 45 ° RE-PROFILED GULLIES/HAGS	18
4.8	BAFFLES.....	18
4.9	<i>SPHAGNUM</i> ESTABLISHMENT.....	18
5	PART 5: MAPS.....	19

Introduction to Grassington Moor

Part 1 summarises the site and gives details on its location, designations, ownership & tenancy, recent management history, current management, agri-environment scheme details and key contacts.

Part 2 summarises the method used by the Yorkshire Peat Partnership on behalf of the Our Common Cause project to assess the extent of grips, gullies and bare or eroding peat on the moor.

Part 3 is a detailed Peatland Restoration Plan for Grassington Moor. This plan is primarily focused on the restoration of grips, gullies and revegetation of areas of bare peat but also touches on any other issues that may affect the success of the proposed restoration works. The Peatland Restoration Plan sets out in full the restoration works needed and a timetable for completing the works. It is intended that the Peatland Restoration Plan will be used, without significant editing, as a detailed specification attached to contract documentation that will be used to seek tenders for carrying out the peatland restoration works described.

Part 4 focuses on methods of maintaining the restoration trajectory including suggestions for further works should funding become available.

Part 5 is a section of detailed maps that go alongside the restoration plan.

1 PART 1: BACKGROUND

1.1 General site location

Grassington Moor is situated within the parish of Grassington, North Yorkshire. In total the site covers an area of approximately 683Ha. The central OS Grid Reference for the site is SE034681 (See map 5.1).

1.2 Designations

1.2.1 National

1.2.1.1 Sites of Special Scientific Interest (SSSI)

Grassington Moor encompasses Black Keld Catchment SSSI (favourable).

1.2.1.2 National Park

Grassington Moor is within Yorkshire Dales National Park.

1.3 Ownership & tenancy

Grassington Moor is common land.

1.4 Management history

Grassington Moor is not currently in an agri-environment scheme. It is grazed by grassiers and managed as a grouse moor by a team of gamekeepers.

1.5 Key contacts

PROJECT LEAD

Name: Claire Hodgson

Mob: 07890 028022

Email: claire@foundationforcommonland.org.uk

YORKSHIRE PEAT PARTNERSHIP OFFICER

Contact Name & Job Title: Beth Thomas Peat Project Manager

Address: Yorkshire Peat Partnership, c/o Yorkshire Wildlife Trust, Unit 23, Skipton Auction Mart, Gargrave Road, Skipton, BD23 1UD

Tel: 01904 916257/ 07557154212

Email: beth.thomas@yppartnership.org.uk

2 PART 2: SURVEY

Grassington Moor was most recently surveyed by Yorkshire Peat Partnership between February - March 2022 using a standard survey protocol which was broken down into 3 parts as follows:

2.1 Pre-survey

The Pre-Survey is the initial desk-based survey of aerial photographs.

Grips, gullies, hags and bare peat are mapped using QGIS to assist with the location of features during the Field Survey. The mapping also enables us to make an initial assessment of the type of work that may need to be carried out.

2.2 Field Survey

Information is recorded onto a hand-held mapper about the grips, gullies, hags and bare peat in the area, along with the vegetation communities and peat depth.

The data gathered is used in the final stage of the survey to determine the type of work required to restore the area.

2.3 Post-Survey

The Post-Survey is the final desk-based survey of the area during which we use QGIS and a combination of aerial photography and the walkover survey data to classify erosion features according to their type and size.

Using this information, we calculate the amount of material that will be needed for restoration of the area and we can draw up the Restoration Plan.

3 PART 3: PEATLAND RESTORATION PLAN

Restoration work is necessary over the whole site which covers approximately 684 hectares with a central grid reference of SE034681.

However, constraints are in place due to archaeological sensitivity, so work is not permitted over the whole site. There are also areas which require an additional archaeology survey before works may be permitted (see Figure 5.2). The size and central grid reference for each work area is as follows:

- **Area 1 (no archaeological survey required)** - 292 hectares (central grid reference: SE036691)
- **Area 2 (subject to results of archaeological survey)** - 152 hectares (central grid reference: SE032677)

3.1 Objectives

The restoration objectives for Grassington Moor are as follows:

WN1: Grip blocking drainage channels

- Block and reprofile 91760m of drainage channels (grips or gullies) with peat dams

FM2: Major preparatory works for priority habitats

- To reprofile both sides of 91523m of grips/gullies
- To reprofile 3792m of eroding hags
- To revegetate 0.15 hectares of bare peat on reprofiled slopes (0.1 hectares of which will require additional revegetation treatment)
- To install 17 bunds in areas of erosion
- To re-establish vascular plants on 0.1 hectares of bare peat on reprofiled slopes

3.2 Damming, sediment trapping & slowing the flow on grips and gullies

Grips and gullies are categorised according to their width, depth, and base substrate type:

- i. Depth in metres in 5 categories (from top of sloping edge to base of grip or gully)
 - $\leq 1\text{m}$
 - $>1\text{m} \leq 2\text{m}$
 - $>2\text{m} \leq 3\text{m}$
 - $>3\text{m} \leq 4\text{m}$
 - $>4\text{m}$

- ii. Width in metres in 5 categories (from top of sloping edge on one side to top of sloping edge on other side).
 - $\leq 1\text{m}$
 - $>1\text{m} \leq 2\text{m}$
 - $>2\text{m} \leq 3\text{m}$
 - $>3\text{m} \leq 4\text{m}$
 - $>4\text{m}$

- iii. Angle of sloping side in 4 categories.
 - Vertical ($>75^\circ$)
 - Severe ($>45^\circ \leq 75^\circ$)
 - Moderate ($>33^\circ \leq 45^\circ$)
 - Stable ($\leq 33^\circ$)

- iv. Base substrate in 6 categories.
 - Bare deep peat ($\leq 0.3\text{m}$)
 - Bare shallow peat ($\leq 0.3\text{m}$)
 - Bare mineral
 - Vegetated deep peat ($\leq 0.3\text{m}$)
 - Vegetated shallow peat ($\leq 0.3\text{m}$)
 - Vegetated mineral

This information is then used to code the restoration prescriptions for each grip and gully based on the following table.

Code	Dam/sediment trap (see sections 3 & 4)	Side treatment (see Technical Specification 2)
P1	Peat dams $\leq 1-3\text{m}$ wide, $< 1\text{m}$ deep (see section 3.2)	Reprofile
P2	Peat dams $> 1 \leq 2\text{m}$ wide (see section 3.2)	Reprofile
P3	Peat dams $> 2 \leq 3\text{m}$ wide (see section 3.2)	Reprofile

3.2.1 Peat dams

Grips and gullies that are $\leq 1\text{m}$ deep, up to 3m wide with a bare deep peat ($\geq 0.3\text{m}$) substrate can be blocked with peat dams.

The estimated lengths of these grips and gullies are shown in the table below.

Works area	Width (m)	Restoration category on maps	Estimated length (m)	Maximum number of dams (n) at 7.5m spacing
1	<1m	P1	81,532	10,851
	1 - 2m	P2	571	71
	2 - 3m	P3	65	9
2	<1m	P1	9,319	1,238
	1 - 2m	P2	239	31
	2 - 3m	P3	34	0
Total			91,760	12,200

All peat dams should be constructed in accordance with the YPP specification outlined in **section 3.2 of Technical Specification 1**.

3.3 Re-profiling

3.3.1 Grips & gullies

YPP's post-restoration monitoring and analysis of eroding gully dimensions shows that only certain types of gullies and larger grips can be successfully re-profiled as listed in the table below.¹

Works area	Width (m)	Restoration category on maps	Prescription	Estimated length (m)
1	<1m	P1, P2, P3	Reprofile	82,029
2	<1m	P1, P2	Reprofile	9,494

All gullies should be reprofiled in accordance with the specification outlined in **Technical Specification 2**.

¹ Note: the figures for grips and gullies are the length of the channel, all hags and both sides of the grip must be re-profiled.

3.3.2 Hags

All eroding hags $\leq 3\text{m}$ high should be re-profiled to a stable $33^\circ\text{--}35^\circ$ slope angle. For larger hags there may be insufficient material to re-profile to a $33^\circ\text{--}35^\circ$ slope angle and these should be re-profiled to a moderate 45° slope angle if possible otherwise they should not be re-profiled.

The estimated lengths of these hags is shown in the table below.

Works area	Height (m)	Prescription	Estimated length (m)
1	<3m	Reprofile to 33 degrees	2,916
2	<3m	Reprofile to 33 degrees	851
	>3m	Reprofile to 45 degrees	25

3.6 Bunding on bare peat to reduce wind and water-borne erosion

Water flow and wind erosion across exposed bare peat will be reduced by breaking the area of bare peat or micro-erosion into smaller cells using bundsas per **section 2.2.1 of Technical Specification 3**.

Works area	Bund type	Number of units (n)
1	Peat	11
2	Peat	6

The nominated officer will indicate the exact locations of these bunds on site during the works.

3.7 Bare peat re-vegetation

Areas of bare peat and re-profiled sides of grips, gullies and hags that cannot be re-vegetated using turves will be treated with brought in materials as follows (see **Technical Specifications 2 & 3**):

- Spreading of treated dwarf shrub and upland grass seed.
- Spreading of phosphate fertilizer after germination.
- The spreading of granulated lime before seed spreading.

The prescriptions below apply to peat and mineral soil. The site has been identified as having sufficient peat depths for plug planting, however cotton grass plugs should *only* be applied to areas where the peat is deep enough to accommodate its roots. Gullies and grips $>1\text{m}$ deep and hags that have been re-profiled will be re-vegetated using turves where possible. The estimated areas once re-profiled is shown in the table below. The percentage of re-profiled area that cannot be turfed and needs treating with imported materials is estimated at **62.35%**.

Works area	Feature	Estimated length of feature (m)	Estimated length of reprofiled slope	Estimated area when reprofiled (Ha)	Area to be treated (Ha) [reprofiled areas reduced to 62.35% of total]
1	Hag <3m high	141	3.67	0.05	0.032
	Hag <3m high	257	3.67	0.09	0.059
	Hag >3m	25	5.66	0.01	0.009
Total			N/A	N/A	0.1

The nominated officer will indicate the exact locations of these bunds on site during the works.

3.8 Vegetation establishment summary tables

3.8.1 Vascular plants

Dwarf shrub and grass cover will be achieved using treated heather and upland grass seed which will be of local provenance. This shall be completed in accordance with **Technical Specifications 2 & 3**.

The amounts required for this site are shown in the table below.

Works area	Erosion feature	Estimated area (Ha)	Dwarf shrub seed (kg) @ 1.5kg/ha	Upland grass seed (kg) @ 10kg/ha
1	Hag <3m high	0.032	0.05	0.32
2	Hag <3m high	0.059	0.09	0.59
	Hag >3m	0.009	0.01	0.09
Total		0.1	0.15	1

3.8.2 Fertiliser & lime

Phosphate fertiliser and granulated lime will be added to all areas of bare peat to help initiate the growth of the re-vegetation materials.

The amounts required for this site are given in the table below.

Works area	Erosion feature	Estimated area (Ha)	Phosphate fertiliser (kg) @ 20kg/ha	Granulated lime (tonnes) @ 1 tonne/ha
1	Hag <3m high	0.032	0.64	0.03
2	Hag <3m high	0.059	1.18	0.06
	Hag >3m	0.009	0.18	0.01
Total		0.1	2	0.1

3.8 Habitat condition assessment

3.8.1 Peat depth

The field survey data shows that most of Grassington Moor has deep peat. 75% of the site had a depth of 40cm or more, with 20% on shallower peat (<40cm) and the remaining 5% had no peat at all. The deepest peat recorded was over 440cm. An accurate measurement for these deepest points was not possible due to the limitations of the survey equipment. All points which measured 400cm or more were in the north of the site. The shallower peat was mostly along the western boundary of the site. The peat depths can be seen on the map in Part 5 below (Figure 5.10).

3.8.2 Vegetation communities

Grassington Moor is predominantly covered in Blanket Bog with 65% of the site recorded as having a vegetation community which indicates this habitat type. Of this area the vegetation community which was recorded most often (215 of 412 Blanket bog survey points) is M20 *Eriophorum vaginatum* blanket and raised mire. This community which is dominated by hare's tail cotton grass is indicative of peatlands that have historically been intensively burnt, grazed and/or drained.

A large proportion of the blanket bog recorded (173 of 412 survey points) was M19 *Calluna vulgaris* – *Eriophorum vaginatum* blanket mire. This community includes some Hare's Tail Cotton Grass, but is much more diverse than M20, with Common Heather *Calluna vulgaris* dominant in some areas and other shrubs such as Bilberry *Vaccinium myrtillus* and Crowberry *Empetrum nigrum* are common. Presence of some grasses and mosses are also indicative of this community, including some patches of *Sphagnum spp.* It's likely that more of the site was once covered in this community but frequent burning or heavy grazing contributes to the conversion of the M19 *Calluna vulgaris* – *Eriophorum vaginatum* blanket mire to M20 *Eriophorum vaginatum* blanket mire.

M18 *Erica tetralix* – *Sphagnum papillosum* raised & blanket mire and M17 *Scirpus cespitosus* – *Eriophorum vaginatum* blanket mire were also recorded less frequently (3 and 21 of 412 points of blanket bog respectively). These communities occur in the wetter areas across the site and are dominated by *Sphagnum* species.

Other than the areas of Blanket Bog, the majority of the rest of the site is covered in Heath (14.5% of the site) or Acid Grassland (12.5% of the site) habitat types.

The areas of Dry heath (H9 *Calluna vulgaris* – *Deschampsia flexuosa* heath and H12 *Calluna vulgaris* – *Vaccinium myrtillus* heath communities) were restricted to the north of the site, with the largest areas in the west. Both these communities are dominated by Common Heather *Calluna vulgaris* and occur where there is a long history of burning and/or intensive grazing on land that is free-draining.

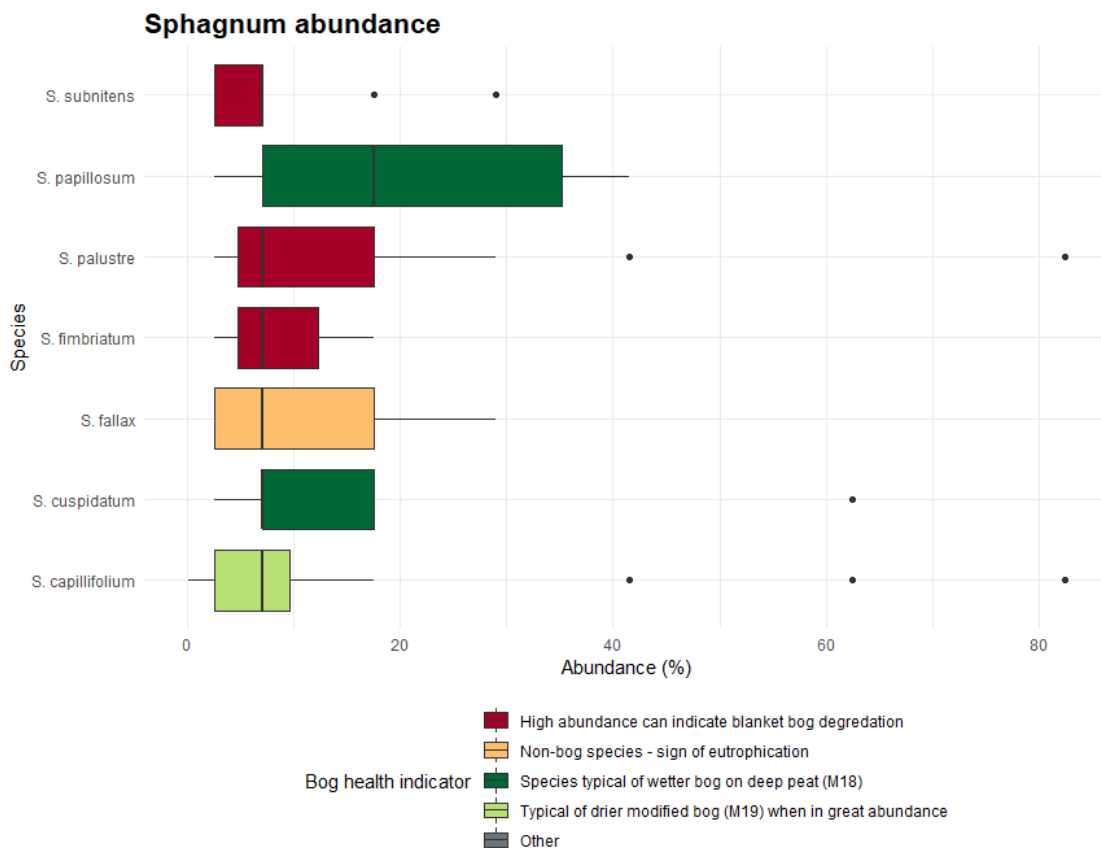
Acid Grassland habitat was recorded more frequently in the south of the site and generally correlates with the areas of shallow peat.

The distribution of vegetation communities and a list of others found less frequently can be seen in Part 5 below (Figure 5.11).

3.8.3 Sphagnum moss

A variety of Sphagnum moss species are present across the site in Blanket bog and heath habitat types (see Part 5, Figure 5.16).

Of the 7 species recorded on site, the most common were *Sphagnum capillifolium* and *Sphagnum fallax* which are both indicators of modified, drier or nutrient-enriched bogs. Overall, *Sphagnum papillosum* was the most abundant species recorded but this was restricted to wetter areas of Blanket Bog. The proportions of each species can be seen in the chart below.



3.8.4 Bog state

42% of survey points in areas which had a peat depth of 40cm or more at Grassington Moor were classed as '5 – Modified'. 20% were recorded as '4 - Grass-Sedge Dominated' and 8% were '3 – Dwarf shrub dominated'. (see Part 5, Figure 5.14).

3.8.5 Grazing

We record a field survey point as “overgrazed” to indicate where grazing to last season’s growth is greater than 33%. At Grassington Moor this mostly occurs on areas of acid grassland and heathland (see map 5.18). Grazing has the potential to reduce the effectiveness of revegetation work where seed, brash and plug plant inoculation is conducted so should ideally be avoided to support successful revegetation of bare and/or reprofiled peat.

3.9 GPS recording of work

All work must be recorded using accurate GPS technology and supplied to YPP. No invoices can be paid until evidence of the work completed has been supplied to YPP in the required format (see **Technical Specification 8**) and this has been verified by YPP in person.

3.10 Access

Access to the site will be along the gravel track from the road. (see Figure 5.9)

A full photographic survey of the access route is required and any damage caused by the contractor will be restored back to this condition.

Prior to restoration work, an on-site meeting will be held with the successful contractor, a YPP officer and a representative from the estate, graziers and other stakeholders to assess the results of the photographic survey and draw up an agreed Access Plan prior to the agreed start date.

3.11 Archaeology

Existing constraints areas due to Historic Environment Record (HER) features and Scheduled Ancient Monuments (SAM) are shown on Figure 5.19.

The Yorkshire Dales National Park Countryside Archaeological Advisor has advised that an **additional archaeological walk-over survey is required** in some areas to confirm whether the constraints area should be extended, before commencement of the works.

All existing and additional constraints locations will be shared with the contractors to assist with access planning.

3.12 Monitoring

Restoration works should be monitored on a yearly basis to record the success of the works.

3.13 Timetable

Stakeholders have agreed that works can take place on site between 1st October and 31st March. An indicative works timetable is provided below.

Activity	Month
Grip/gully/hag reprofiling	Oct - March
Grip/gully and dendritic blocking with dams, bunds and sediment traps	Oct - March
Lime application to bare peat and reprofiling	Jan - Feb (6 weeks before seed)
Lime application to dendritic area	Jan - Feb (6 weeks before seed)
Seed application on bare peat and reprofiling	March
Seed application to dendritic area	March
Fertiliser application on bare peat and reprofiling	June/July (after germination)
Fertiliser application on dendritic area	June/July (after germination)
Final Track repairs	August

3.14 Consents & Utilities

SSSI Consent will be needed from Natural England.

Works to Watercourses consent will be required from North Yorkshire County Council.

Checks for services and utilities will need to be carried out before work commences.

4 PART 4: MANAGEMENT AND MAINTENANCE

All the works outlined above will help to restore the vegetation, slow the flow and improve the water retention abilities on the site. To build on these improvements and increase the chance of a full recovery to a functioning bog, it is recommended that the following series of works be implemented after the initial restoration.

Please note this section does not form part of the 2 year capital works plan and is a suggested series of work, should further funding become available to look at a second phase of works.

4.1 Fertiliser

A year after re-vegetation has been carried out on the site, it is recommended that, subject to funding, a further dose of fertiliser be applied to all re-vegetated areas.

4.2 Vegetation establishment

For a number of reasons, vegetation may fail to establish across the whole site after the initial restoration. To ensure the full success of the project, it is recommended that all re-vegetated areas be assessed a year after restoration. The causes of any failures should, ideally, be addressed, and, if necessary and funds are available, the area be re-brushed and reseeded accordingly. This would then be followed by an additional application of fertiliser approximately 6 weeks after seeding and following germination. Additional cotton grass and crowberry plugs could also be planted in areas where deemed necessary e.g. where they have failed previously, or where the peat has stabilised following restoration.

On reprofiled slopes, where the cause of the initial failure is judged to be due to excessive exposure to the elements, geotextiles could be considered to protect the surface of the slope (see section 4.3 below). If the failure is believed to be as a result of continued high rates of water flowing across the site, a further assessment on the need for sediment traps and bunds should be considered alongside the need for protecting the toe of re-profiled sides (see section 4.4).

4.3 Geo-textiles

For eroding or re-profiled 45° sloping gully edges and hags and/or stable slopes that are exposed to the prevailing wind, geo-textiles could be applied to stabilise the peat surface (as specified in Technical Specifications 2 & 3). Following an assessment after one year of initial restoration, the following table could be used to determine the quantities of geotextiles required.

4.4 Bunding in dendritic areas to slow the flow

The bunds placed in dendritic areas should be assessed annually following restoration for a period of 3-5 years. If it is considered necessary, subject to available funding, existing bunds should be supplemented to maximise sediment retention and to slow the flow in the area. This may involve building up the original bund, and/or adding further bunds to areas with excessive flow. Additionally, any damaged bunds should be replaced.

4.5 Bunding on bare peat to reduce wind and water-borne erosion

As with point 4.4 above, the bunds used on areas of bare peat should be assessed annually following restoration for a period of 3-5 years. Any bund deemed to be incorrectly placed according to the direction

of water flow should be repositioned, and others added where appropriate. Damaged bunds should be replaced.

4.6 Sediment traps and dams

Following initial restoration, all sediment traps (timber and stone) and peat dams should be assessed annually for a period of 3-5 years. If it is considered necessary the traps/dams should be supplemented to maximise sediment retention and to slow the flow in the area. This may involve building up the original trap, and/or adding additional traps/dams. Any damaged structures should be repaired or replaced.

All stone, timber sediment traps and peat dams should be constructed in accordance with the YPP specification outlined in **Technical Specification 1**.

4.7 Protecting the toe of 45° re-profiled gullies/hags

As the initial restoration work will have influenced water flow and water retention on the site, it is important to follow-up the impacts of this across the whole site. If there is a continued impact of erosion on the toe of certain gullies or hags, an assessment of where the water is originating and potential supplementation of bunds or sediment traps to address the problem should be considered. Furthermore, the gully edge should ideally be protected from the erosive impact of the central water flow using a bund consisting of either random gritstone or a double row of coir logs or a row of 1.2m long x 0.8m high heather bales (see section 2.2.1. of **Technical Specification 2**).

4.8 Baffles

Similarly to point 4.7 above, should an assessment following the initial restoration of the hydrology of the site reveal a continued water flow in gullies that are >3m wide, in addition to a reassessment of the use of sediment traps and dams, it will be possible, subject to funding, to slow the flow of water into these gullies using “baffles” to enable natural sedimentation and re-vegetation to take place. These baffles are made from stone (where the base of the gully has eroded to mineral or shallow peat ≤30cm) or timber (where the base of the gully still contains deep peat >30cm) and are installed part way across the gully or grip in a staggered pattern down the gully and angled to 33° from the side of the gully to push flows in all but the stormiest conditions into the centre of the watercourse.

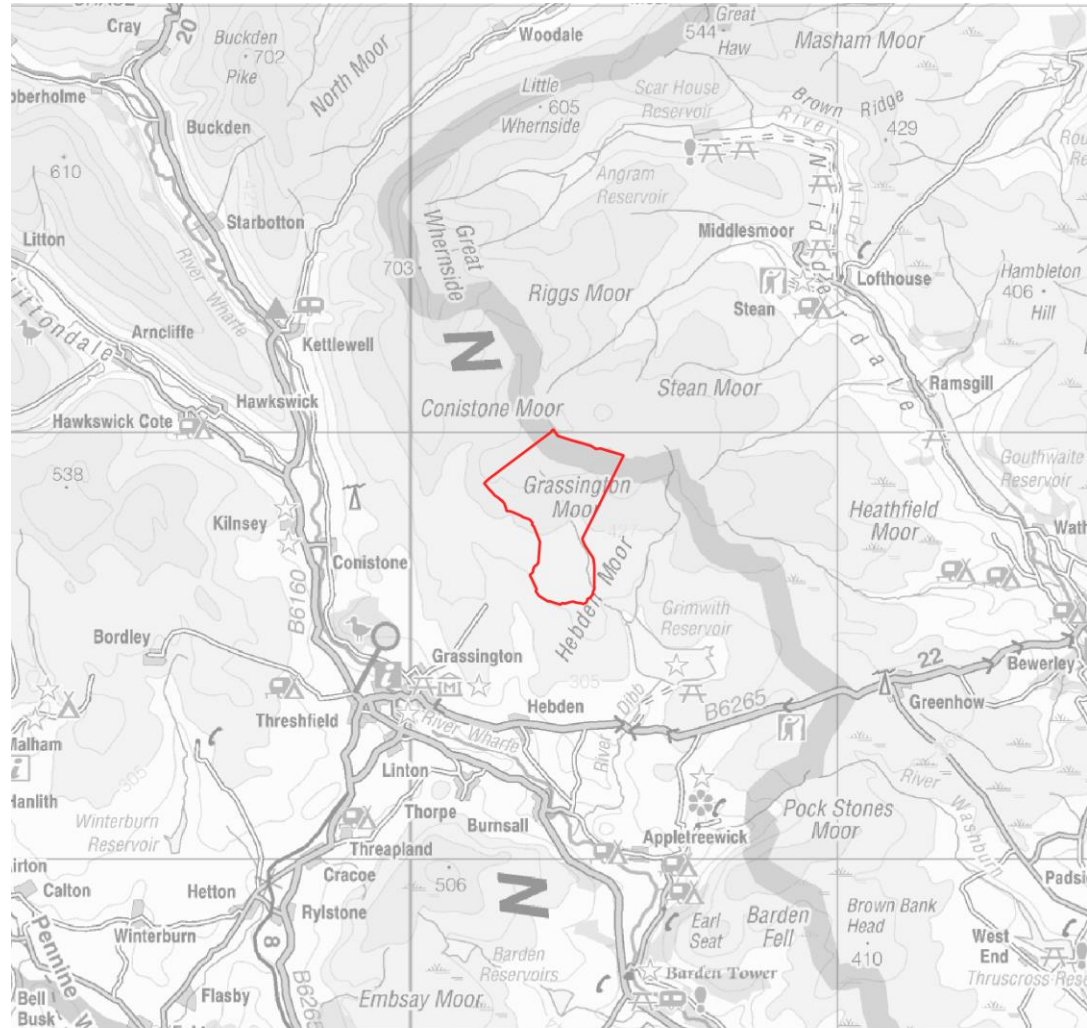
All timber baffles should be constructed in accordance with the YPP specification outlined in section 4.2 of **Technical Specification 1**).

All stone baffles should be constructed in accordance with the YPP specification outlined in section 4.3 of **Technical Specification 1**).

4.9 *Sphagnum* establishment

As sphagnum is the key building block required for a fully functioning blanket bog, it is extremely important that its potential impact be maximised. Following the change in hydrology on the site, there will be an increasing number of areas that will be suitable for sphagnum inoculation in the 10 years following the restoration works. As such, it is recommended that the area be assessed annually for the first three years after restoration, and subsequently every 2 years until the 10 year mark post initial restoration has been reached. All areas that are deemed suitable for *Sphagnum* inoculation should, subject to funding, be supplemented with the most suitable mix for the area and site. *Sphagnum* should be harvested and transplanted into stable and re-vegetated sites in accordance with section 2.3 of **Technical Specification 3**).

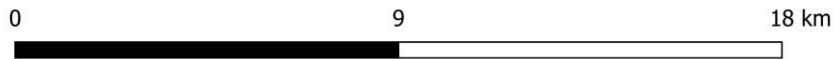
5 PART 5: MAPS



Grassington Moor Site location

 Site boundary

14/06/2022



© Crown copyright and database right 2022.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

Figure 5.1: Site location.



Grassington Moor Works Areas

- Footpath
- Gravel road
- Other
- Site boundary
- Area 1 - no archaeology survey required
- Area 2 - archaeology survey required

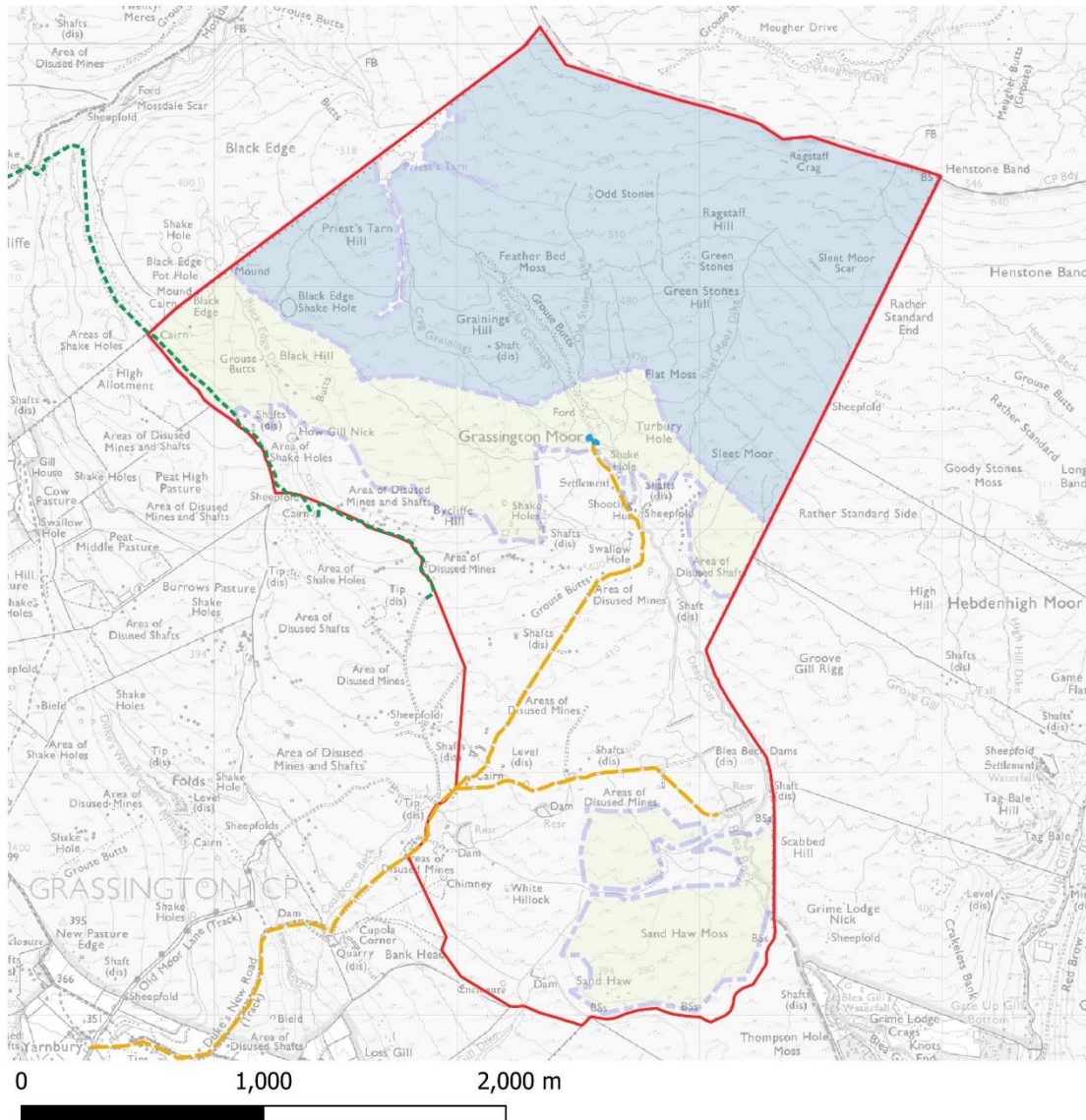
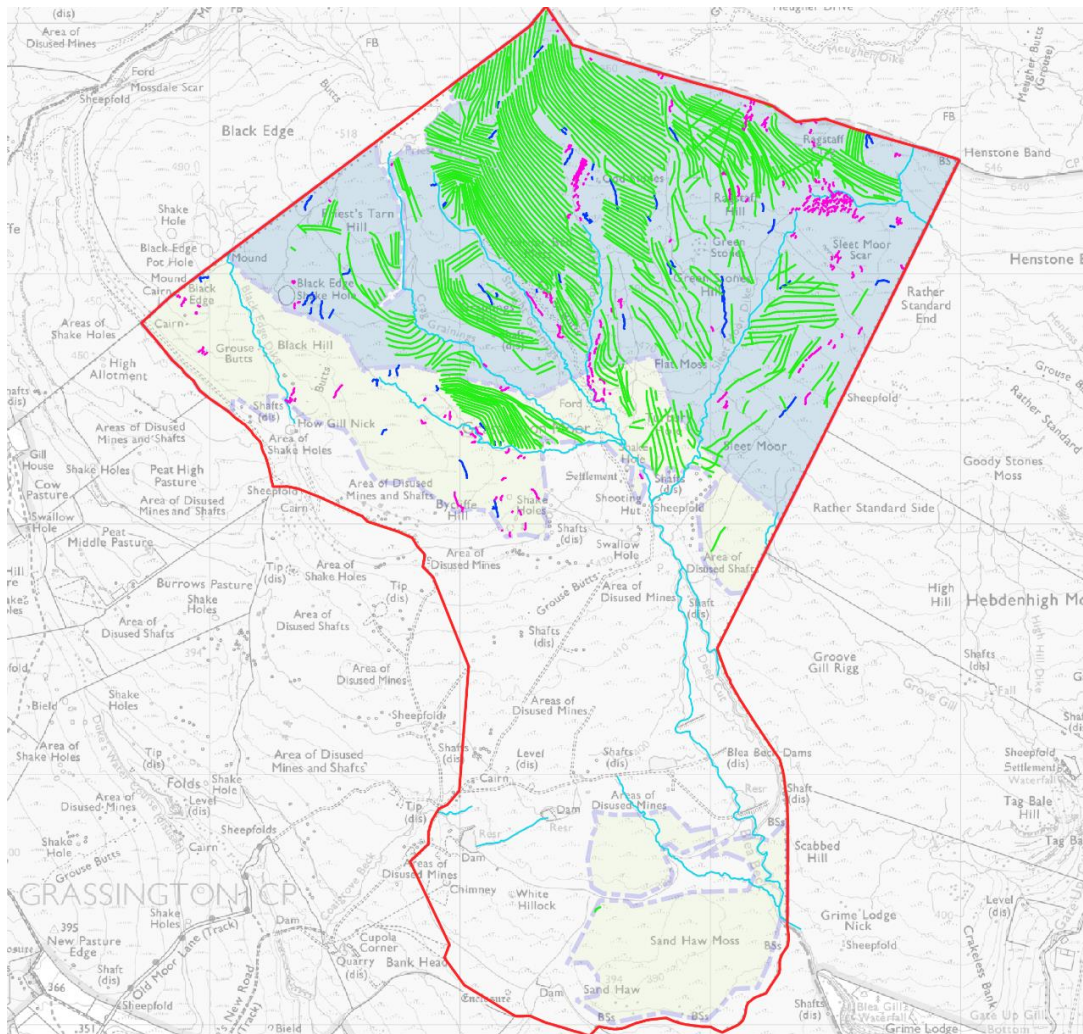


Figure 5.2: Works areas.



Grassington Moor Works Overview

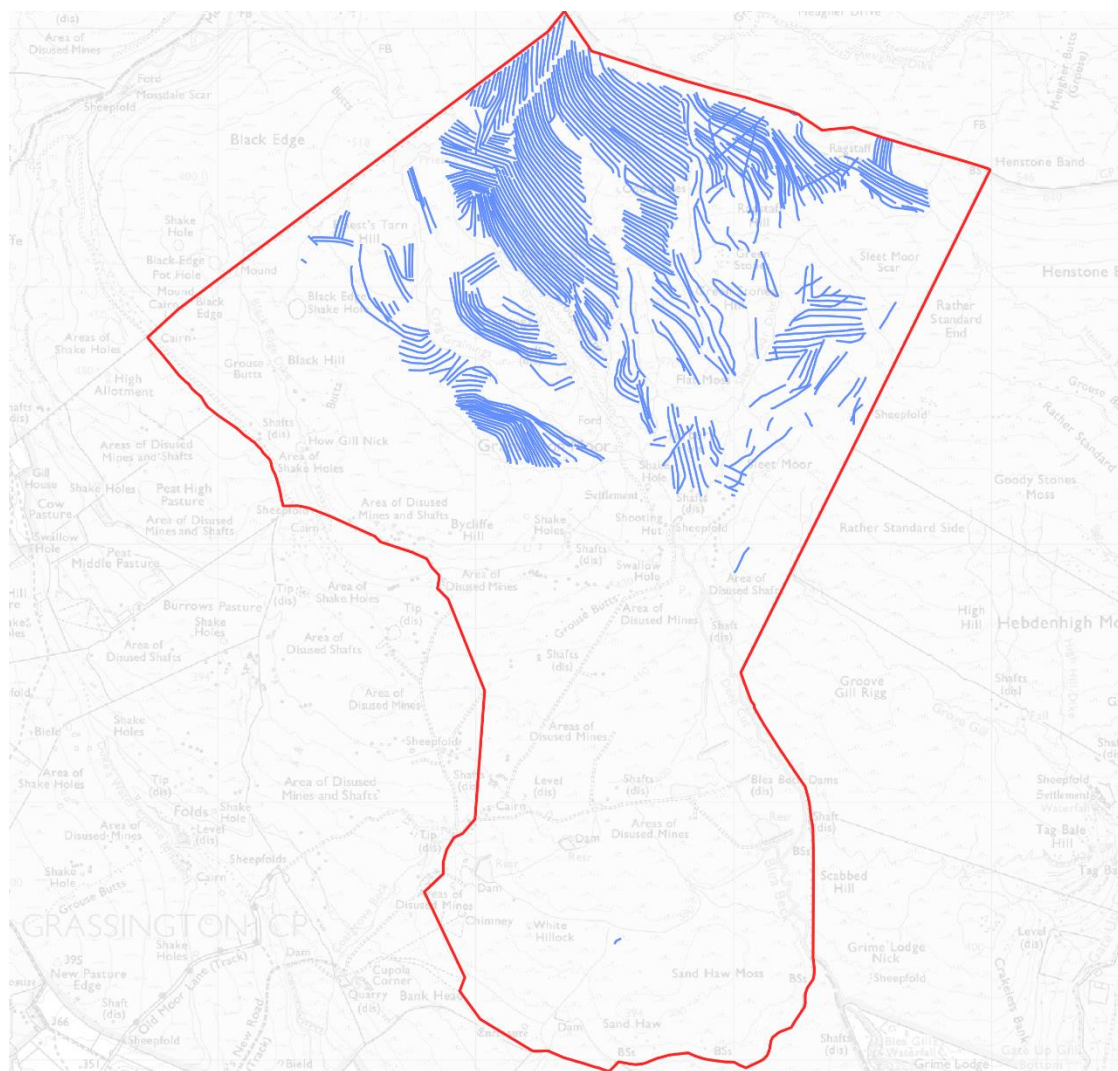
- Site boundary
- Watercourses
- Erosion features
 - Grip
 - Gully
 - Hag
- Works Areas
 -
 -



06/04/2023 0 1 2 km

© Crown copyright and database right 2023. All rights reserved. Ordnance Survey Licence number 100018777/YWT25492/60273

Figure 5.3: Overview of planned works on Grassington Moor.



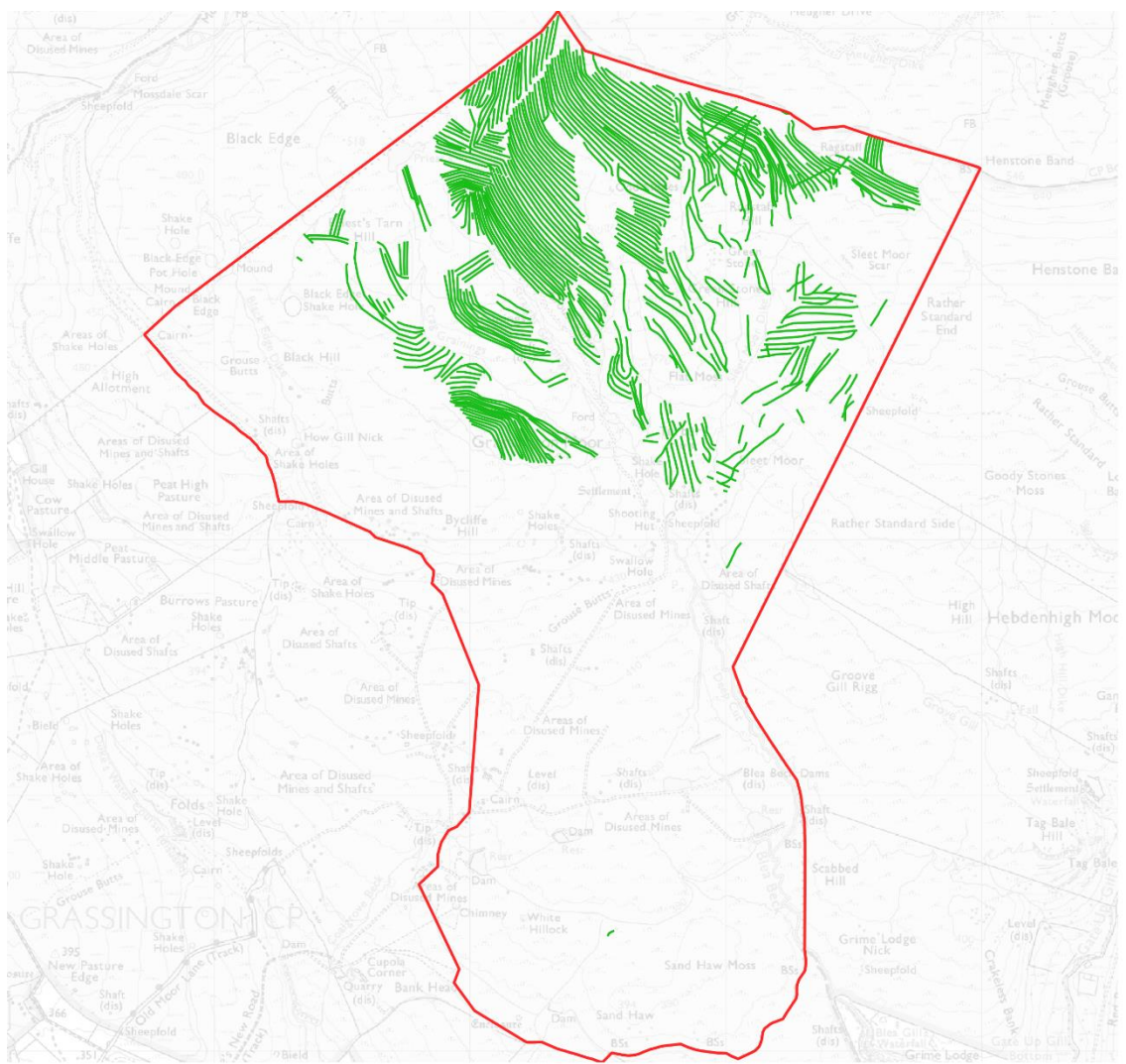
**Grassington Moor
Grips to be blocked**

— P1, P2, P3

06/04/2023 0 1 2 km

© Crown copyright and database right 2023.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

Figure 5.4: Grips to be blocked.



**Grassington Moor
Grips to be reprofiled**

— Reprofile and cover with turves only



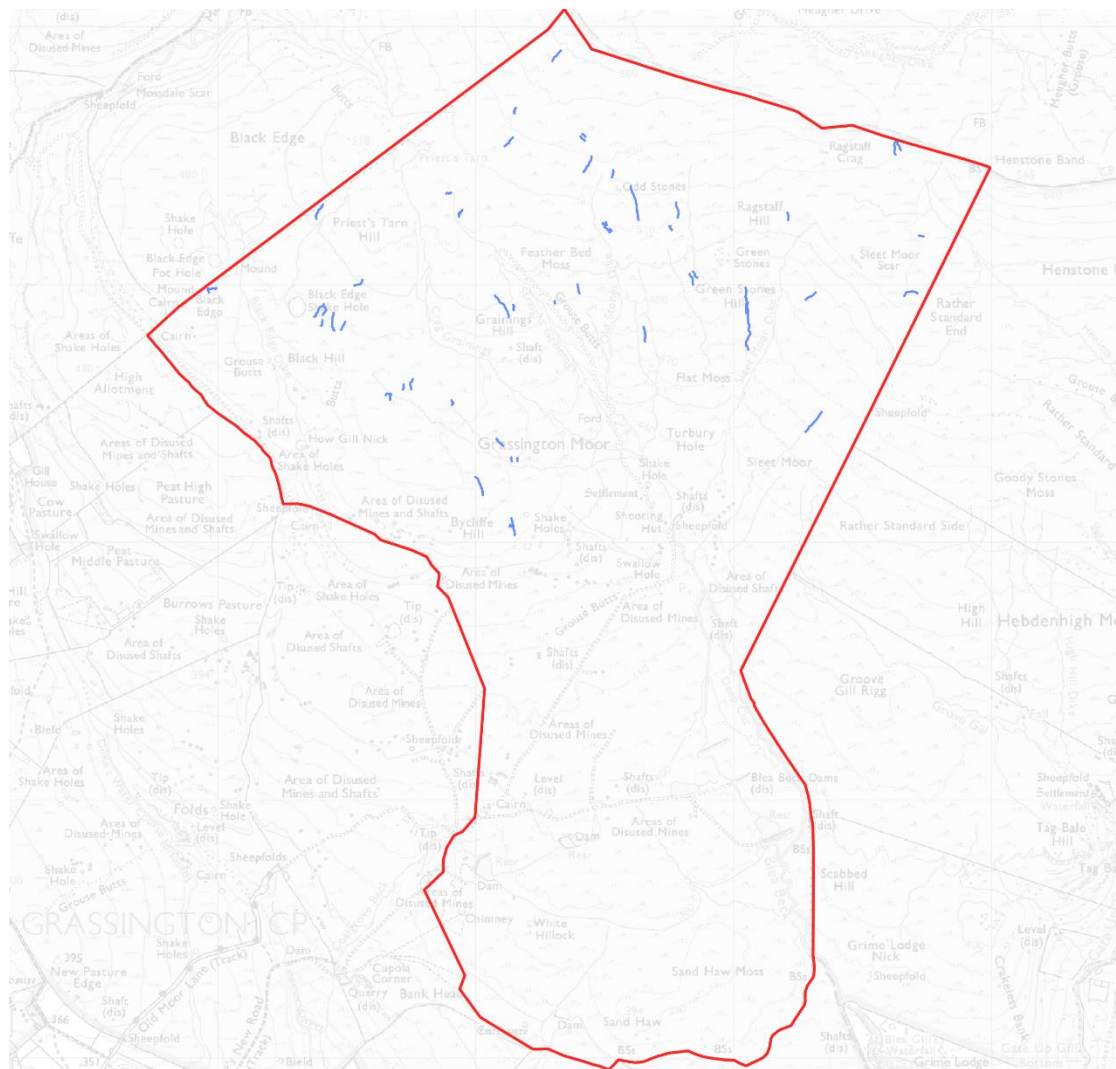
© Crown copyright and database right 2023.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

Figure 5.5: Grips to be reprofiled.



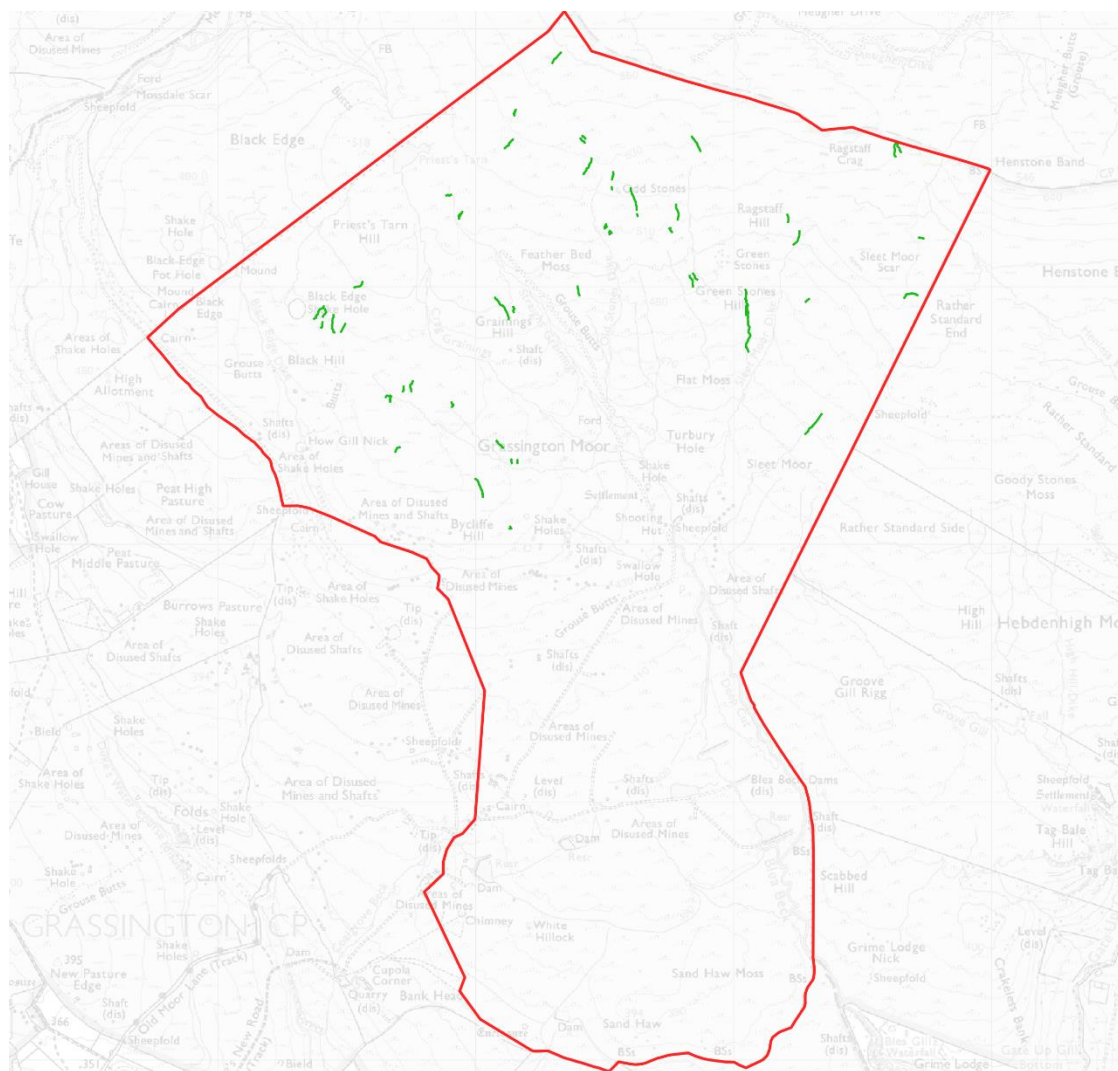
Grassington Moor Gullies to be blocked

— P1, P2, P3



© Crown copyright and database right 2023.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

Figure 5.6: Gullies to be blocked.



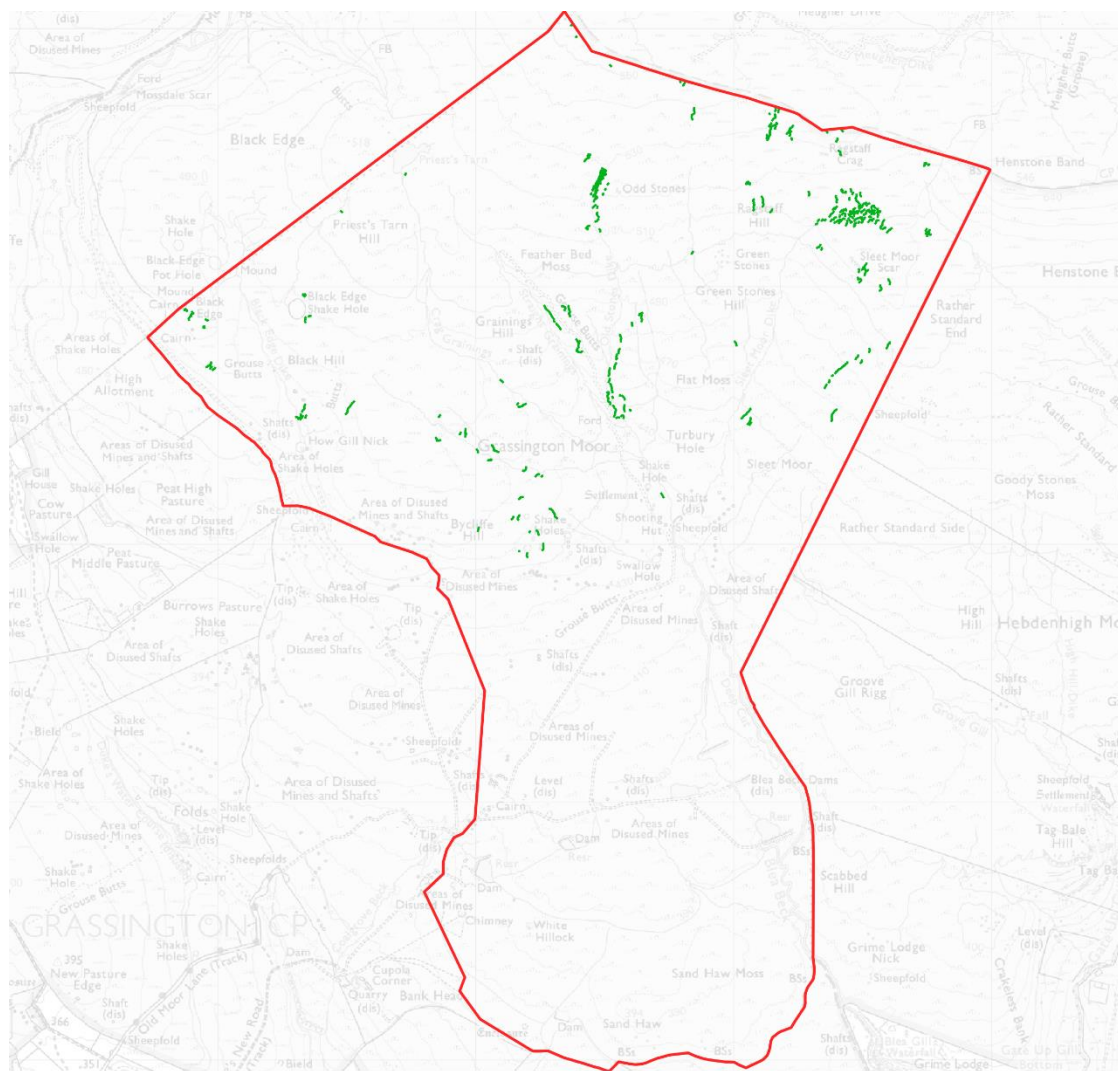
Grassington Moor Gullies to be reprofiled

— Reprofile and cover with turves only

06/04/2023 0 1 2 km

© Crown copyright and database right 2023.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

Figure 5.7: Gullies to be reprofiled.



Grassington Moor Hags to be reprofiled

— Reprofile and cover with
curves only

06/04/2023 0 1 2 km

© Crown copyright and database right 2023.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

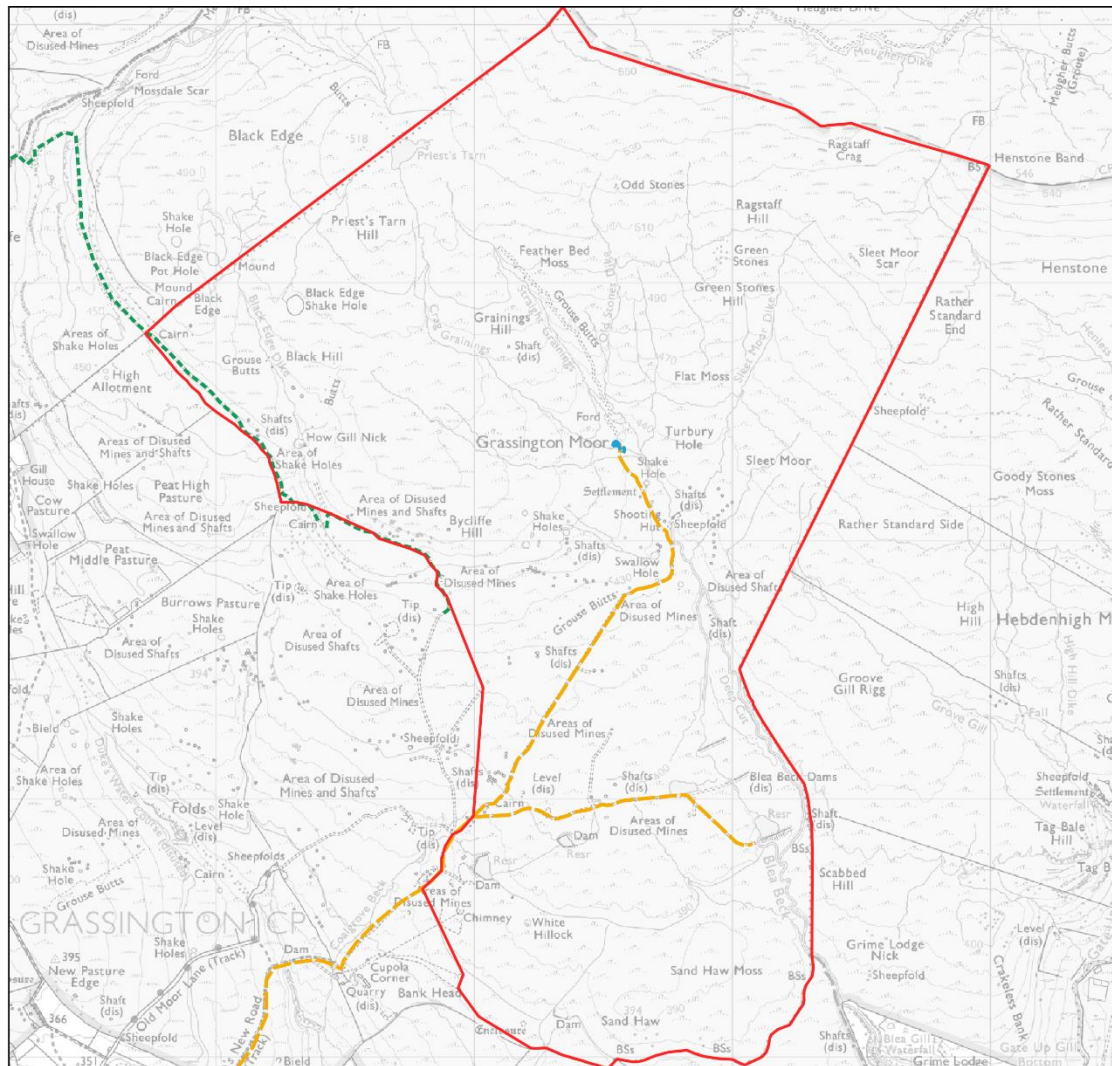
Figure 5.8: Hags to be reprofiled.



Grassington Moor Fencing and Access

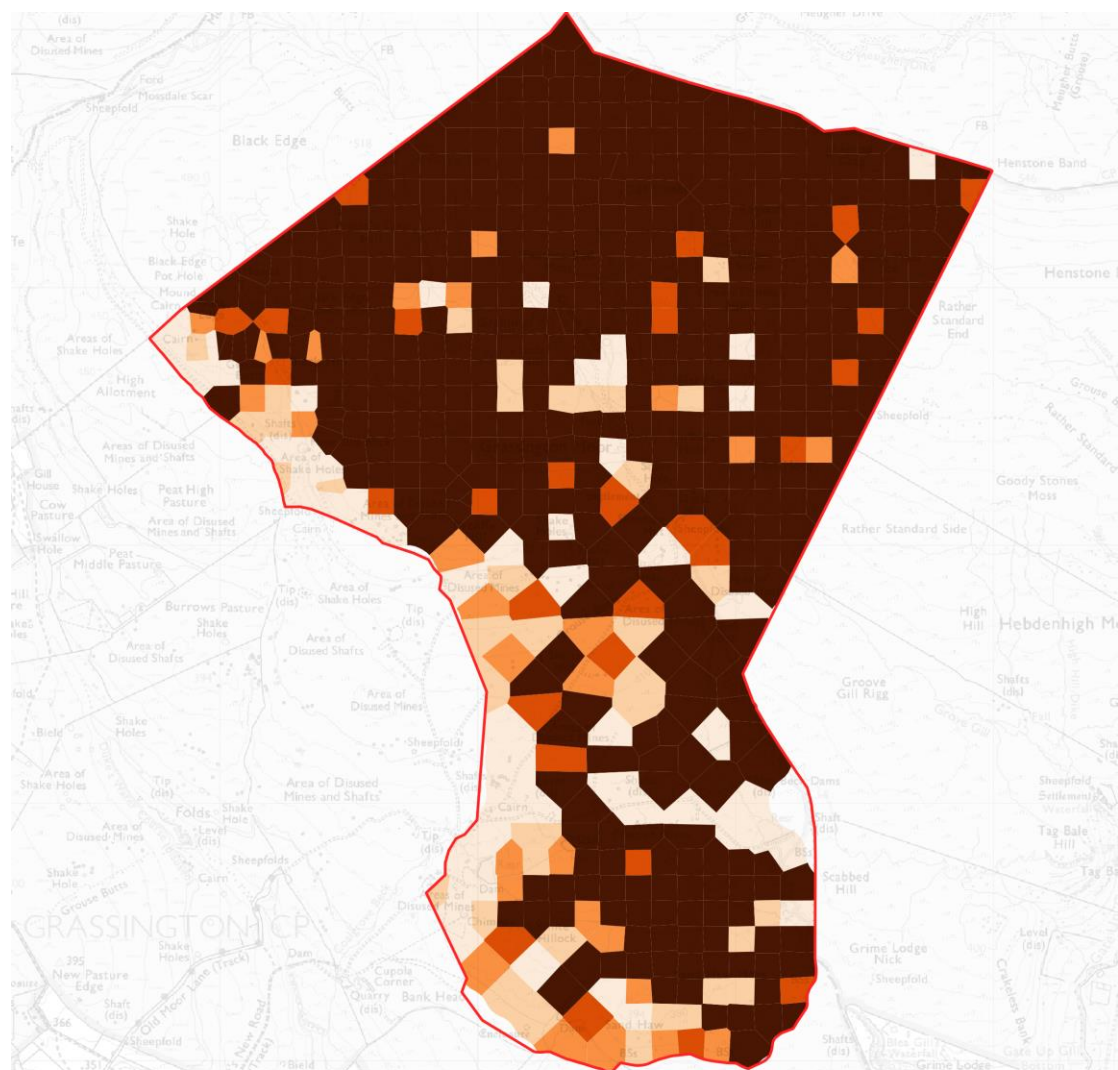
Access

- Footpath
- Gravel road
- Other
- Site boundary



© Crown copyright and database right 2023.
 All rights reserved. Ordnance Survey Licence
 number 100018777/YWT25492/60273

Figure 5.9: Site access.



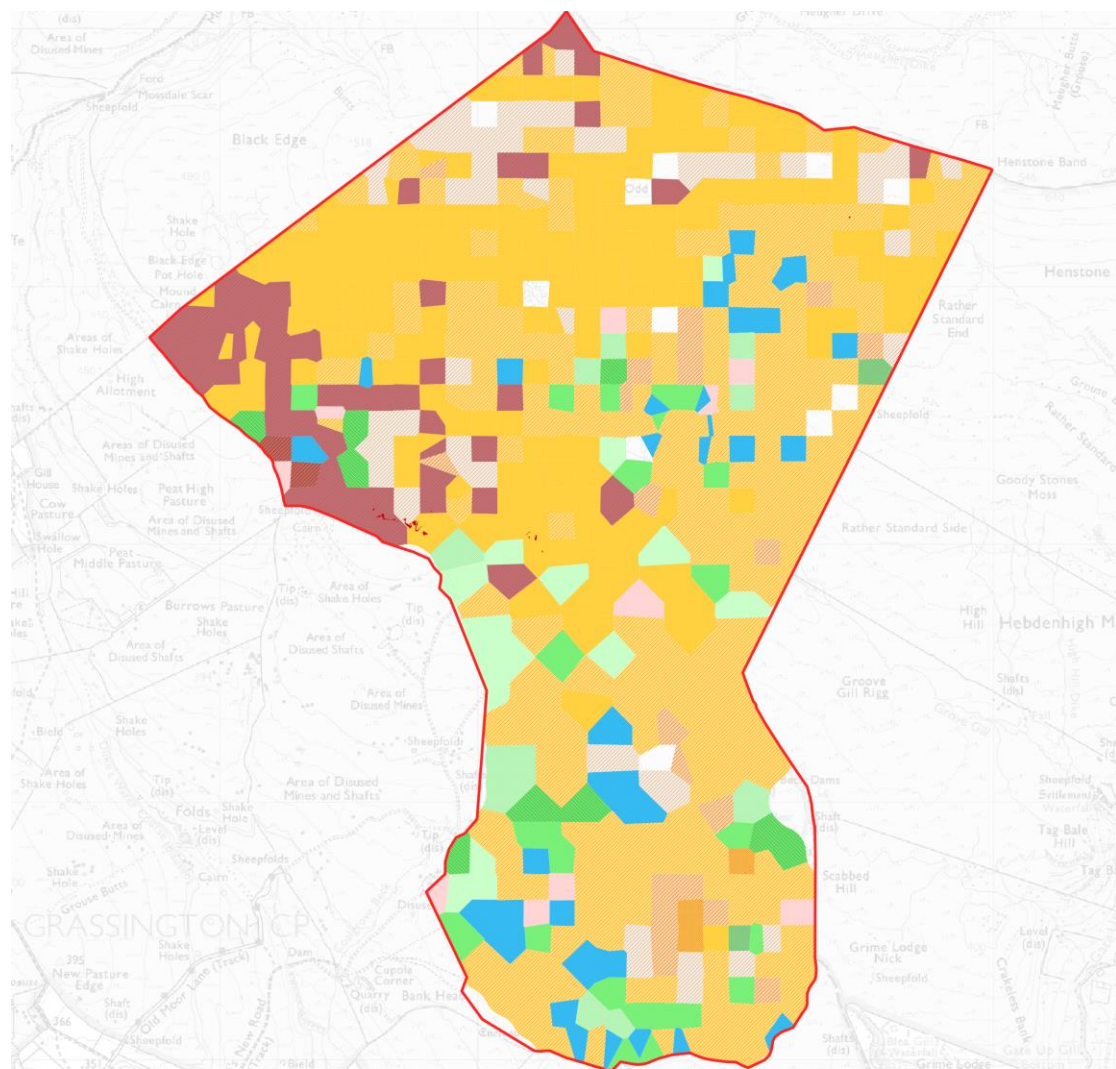
**Grassington Moor
Peat depth (cm)**

- 0 - 14
- 15 - 29
- 30 - 39
- 40 - 49
- 50 +

14/06/2022 0 1 2 km

© Crown copyright and database right 2022.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

Figure 5.10: Peat depth areas using the voronoi polygon method.



Grassington Moor NVC

- Blanket bog (M19)
- Cross leaved heath – Sphagnum papillosum mire (M18)
- Wet bog with abundant common cottongrass (M17)
- Hare's-tail cottongrass dominated blanket mire (M20)
- Wet heath (M15)
- Dry heath (H9)
- Dry heath (H12)
- Acidic flush (M6)
- Acid grassland (U4)
- Acid grassland dominated by mat-grass (U5)
- Semi-improved acid grassland (U6)
- Acid grassland dominated by purple moor grass (M25)
- Acid grassland dominated by wavy hair grass (U2)
- Juncus effusus rush pasture (M23b)
- Bare peat

14/06/2022 

© Crown copyright and database right 2022. All rights reserved. Ordnance Survey Licence number 100018777/YWT25492/60273

Figure 5.11: Vegetation community areas using the voronoi polygon method.

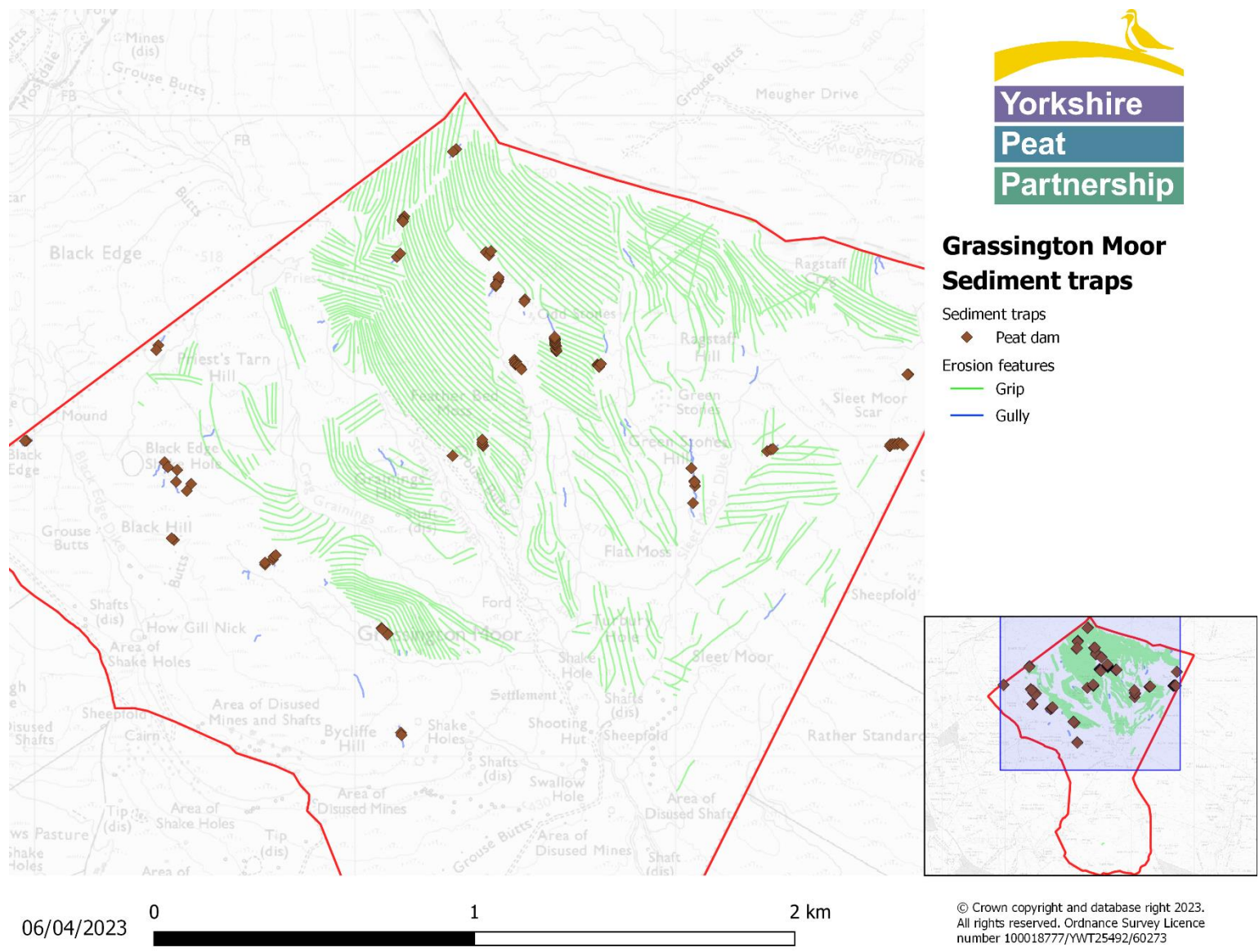
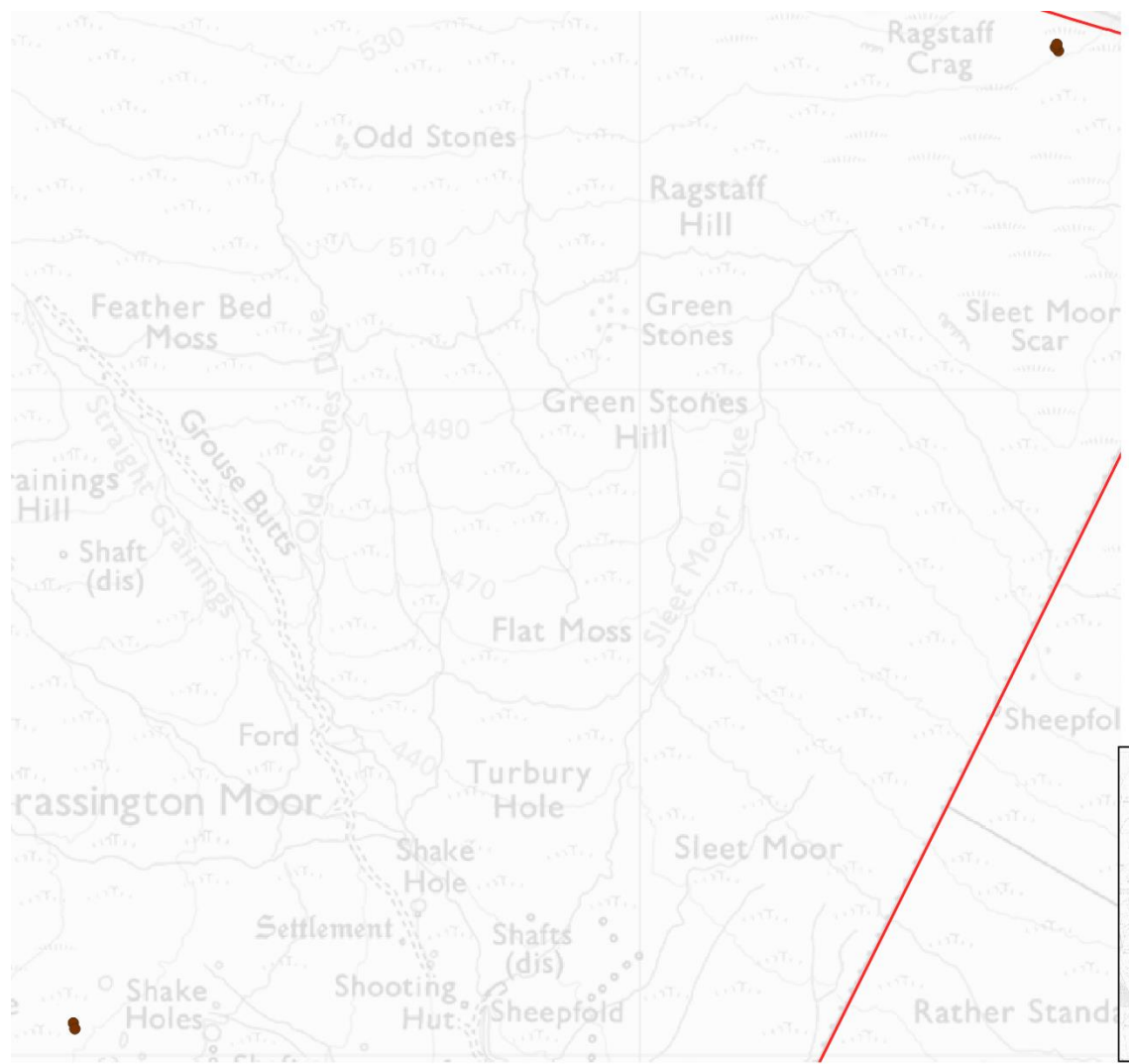
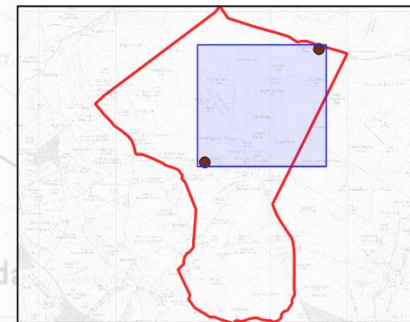


Figure 5.12: Sediment trap placements



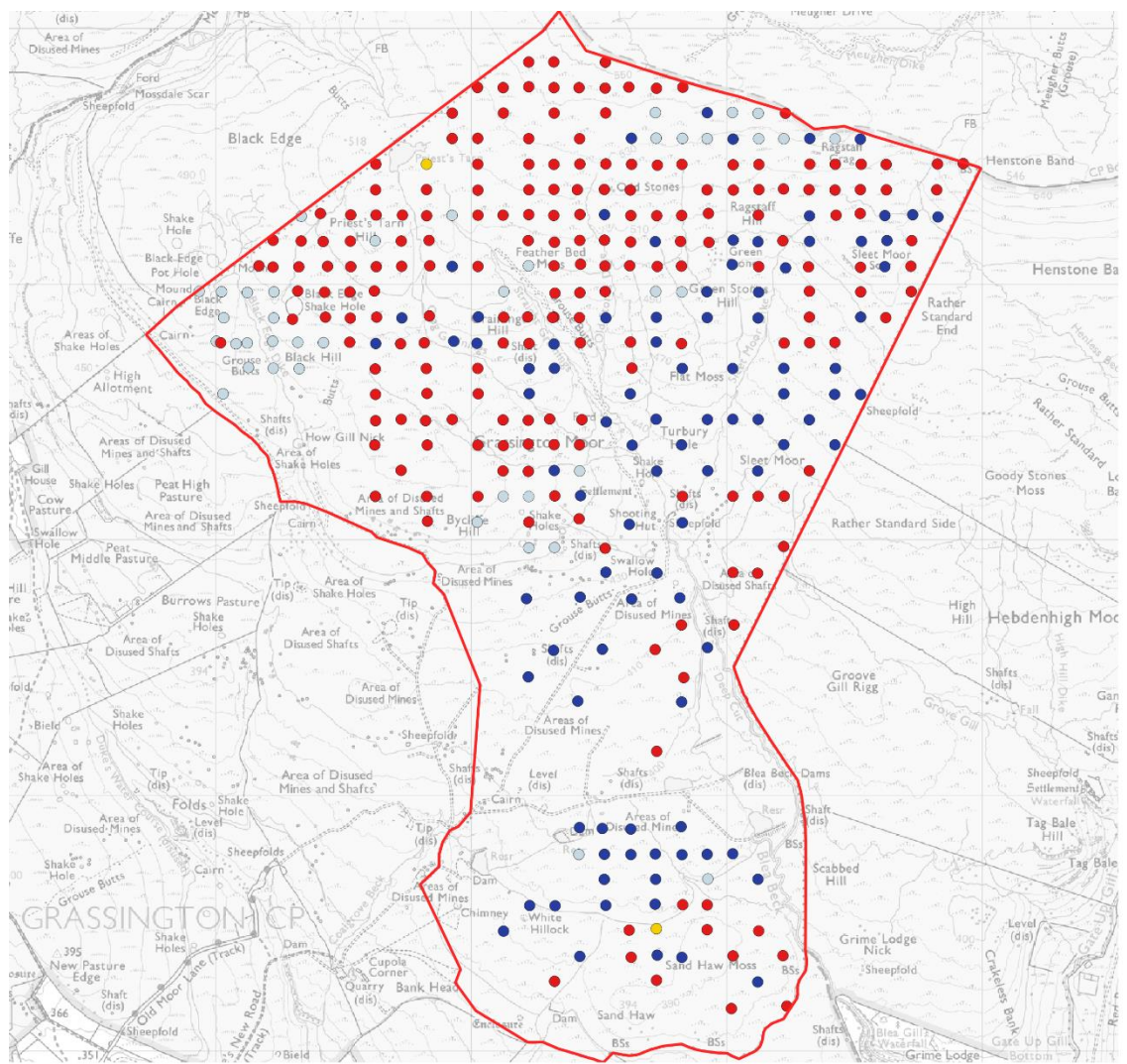
Grassington Moor Bund locations

Bund location
 ● Peat



© Crown copyright and database right 2023.
 All rights reserved. Ordnance Survey Licence
 number 100018777/YWT25492/60273

Figure 5.13: Bunding on bare peat and dendritic areas



Grassington Moor Bog State

- Dwarf shrub dom.
- Grass-sedge dom.
- Modified



© Crown copyright and database right 2022. All rights reserved. Ordnance Survey Licence number 100018777/YWT25492/60273

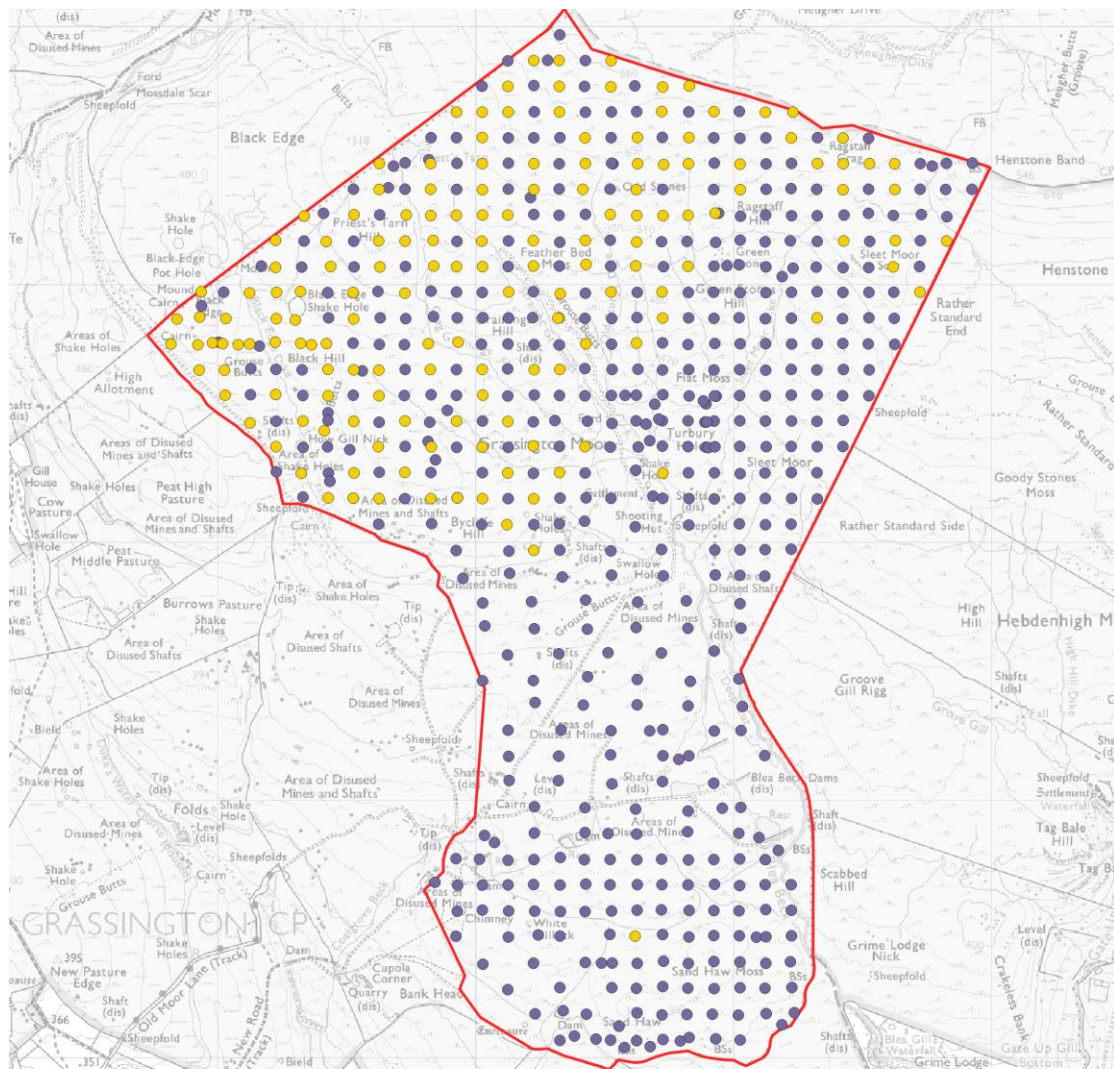
Figure 5.14: Bog state on peat ≥ 40cm



Grassington Moor *C. vulgaris*

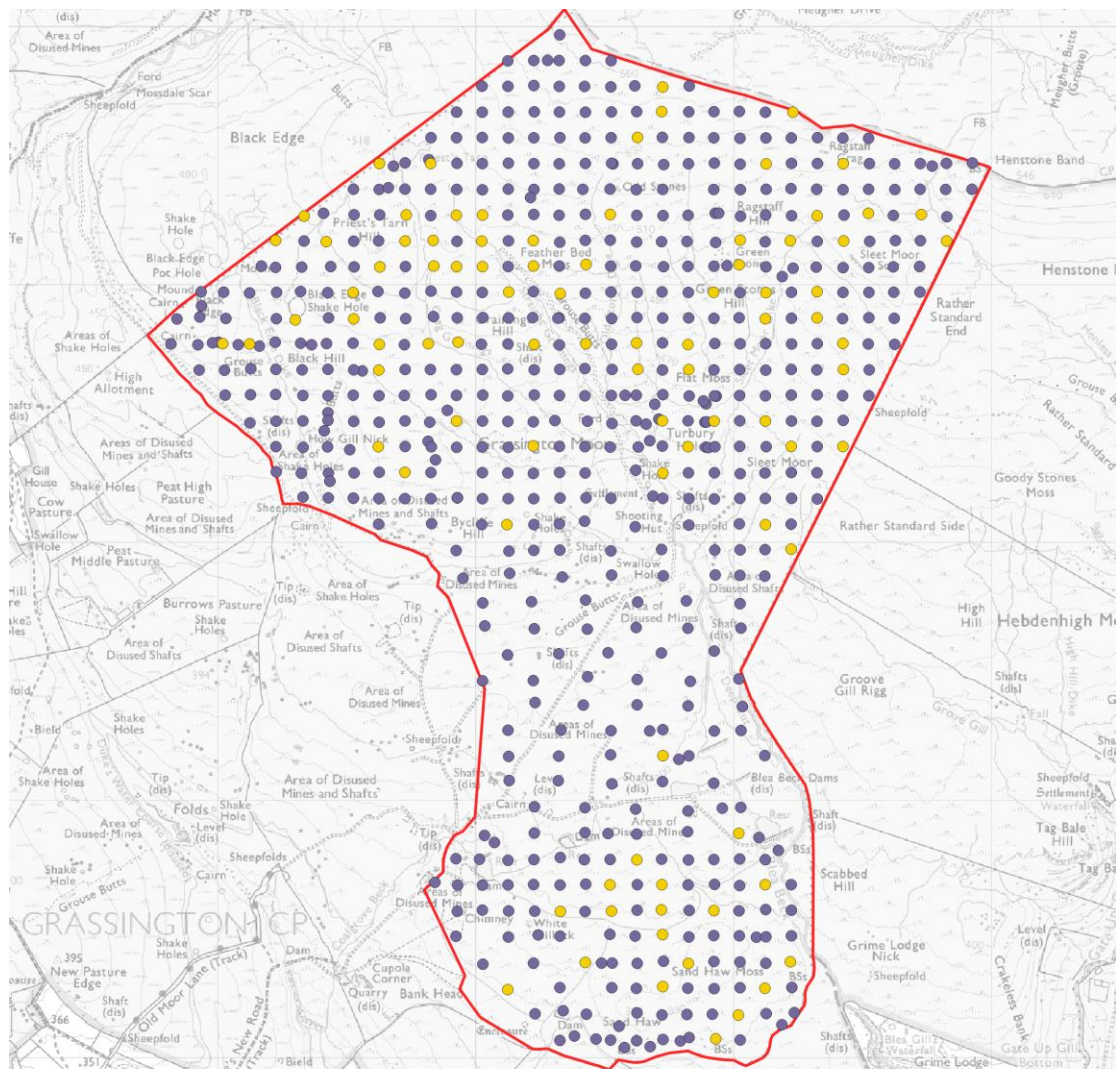
- Present
- Absent

Species	Overall presence (%)
<i>Calluna vulgaris</i>	24.8



© Crown copyright and database right 2022.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

Figure 5.15: Proportion of points with *Calluna vulgaris* present



Grassington Moor Sphagnum

- Present
- Absent

Species	Overall presence (%)
<i>Sphagnum capillifolium</i>	6.3
<i>Sphagnum fallax</i>	4.9
<i>Sphagnum palustre</i>	2.4
<i>Sphagnum subnitens</i>	1.7
<i>Sphagnum cuspidatum</i>	1.4
<i>Sphagnum papillosum</i>	1.1
<i>Sphagnum fimbriatum</i>	0.5

14/06/2022 0 1 2 km

© Crown copyright and database right 2022.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

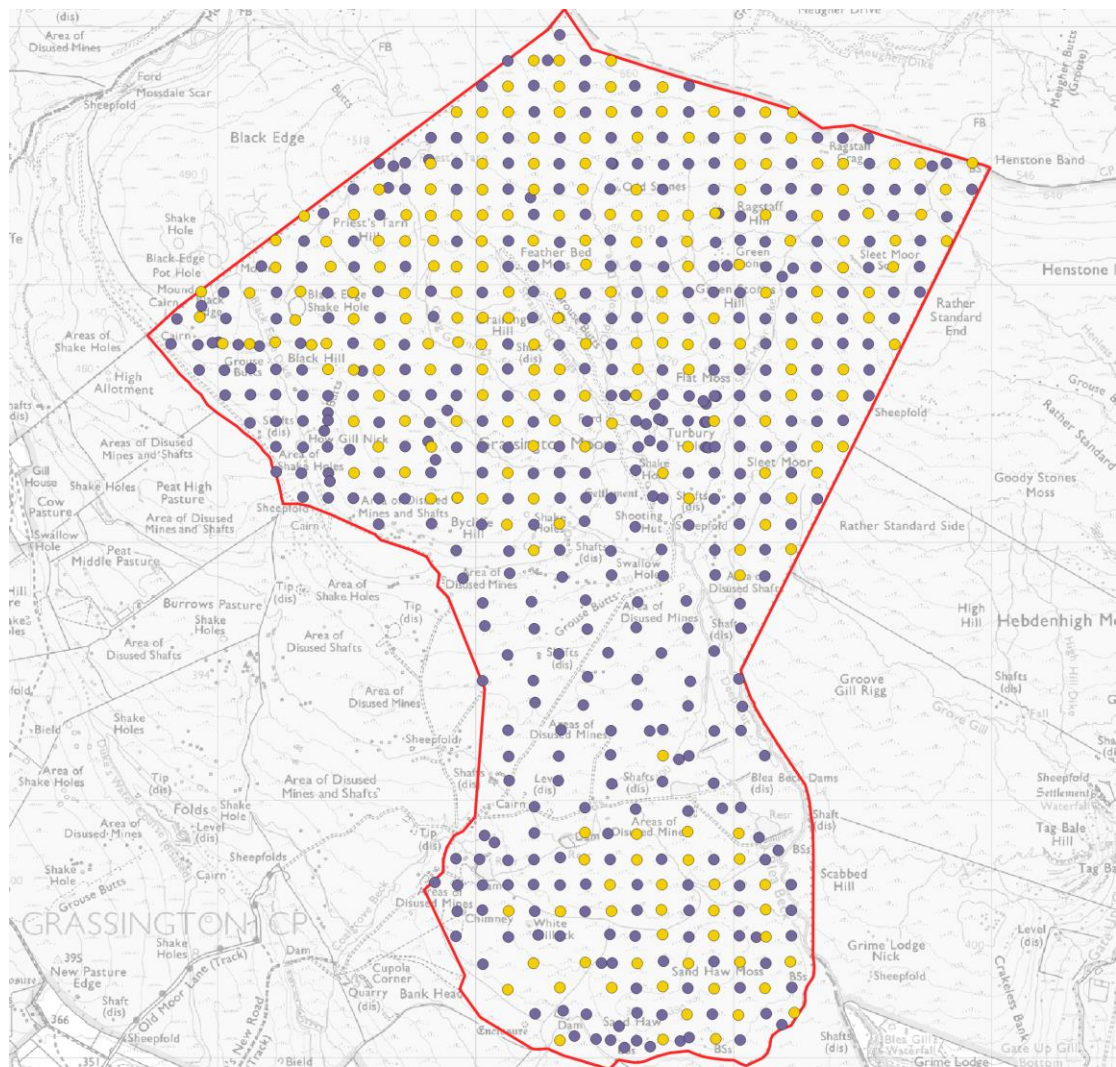
Figure 5.16: Proportion of points with *Sphagnum* present



Grassington Moor *E. vaginatum*

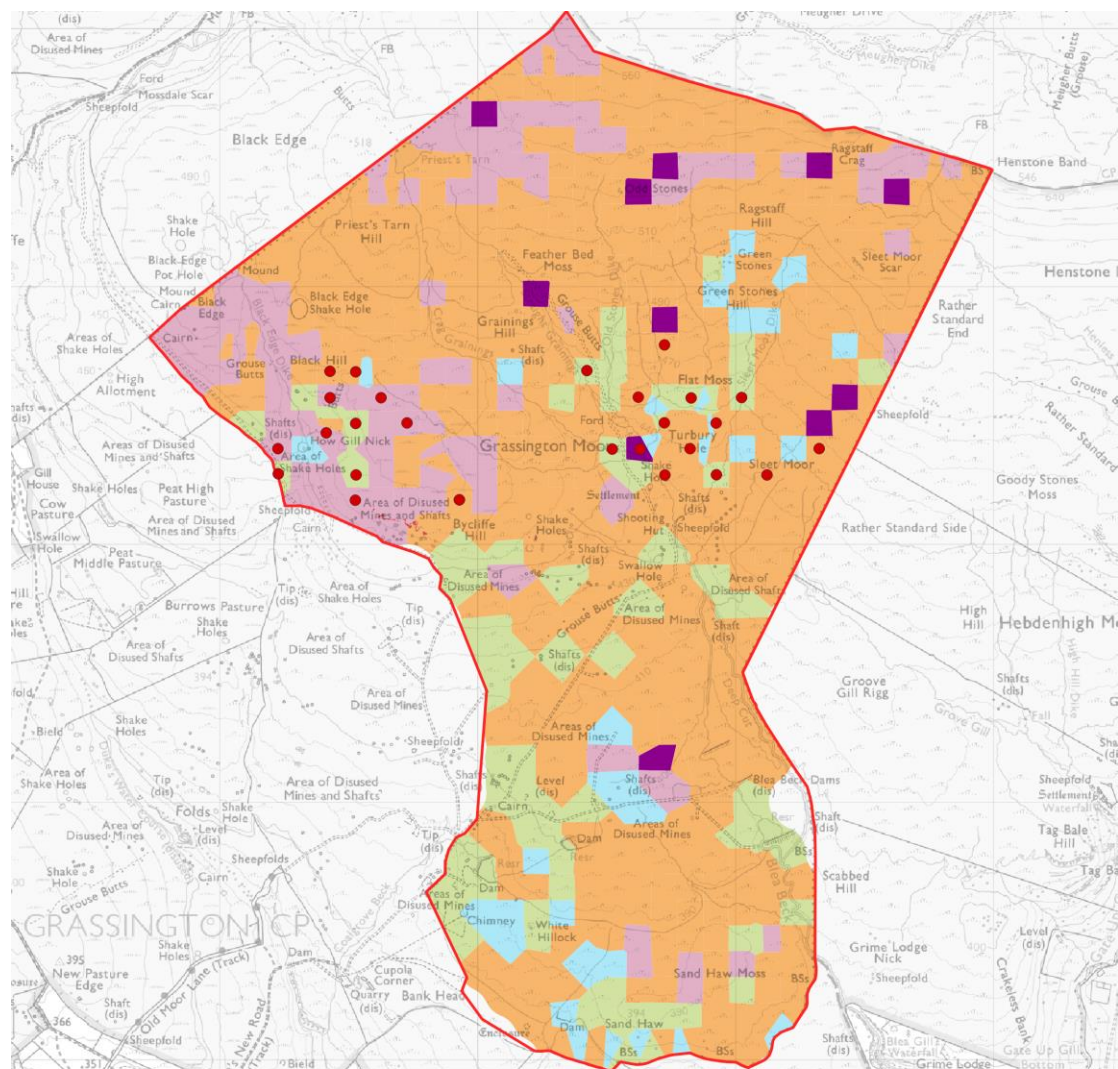
- Present
- Absent

Species	Overall presence (%)
<i>Eriophorum vaginatum</i>	34.7



© Crown copyright and database right 2022.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

Figure 5.17: Proportion of points with *Eriophorum vaginatum* present



Grassington Moor Grazing

Field survey

- Over-grazed

Vegetation

- Bare peat
- Blanket bog
- Heath
- Spring/flush
- Acid grassland
- Other/transitional

14/06/2022 0 1 2 km

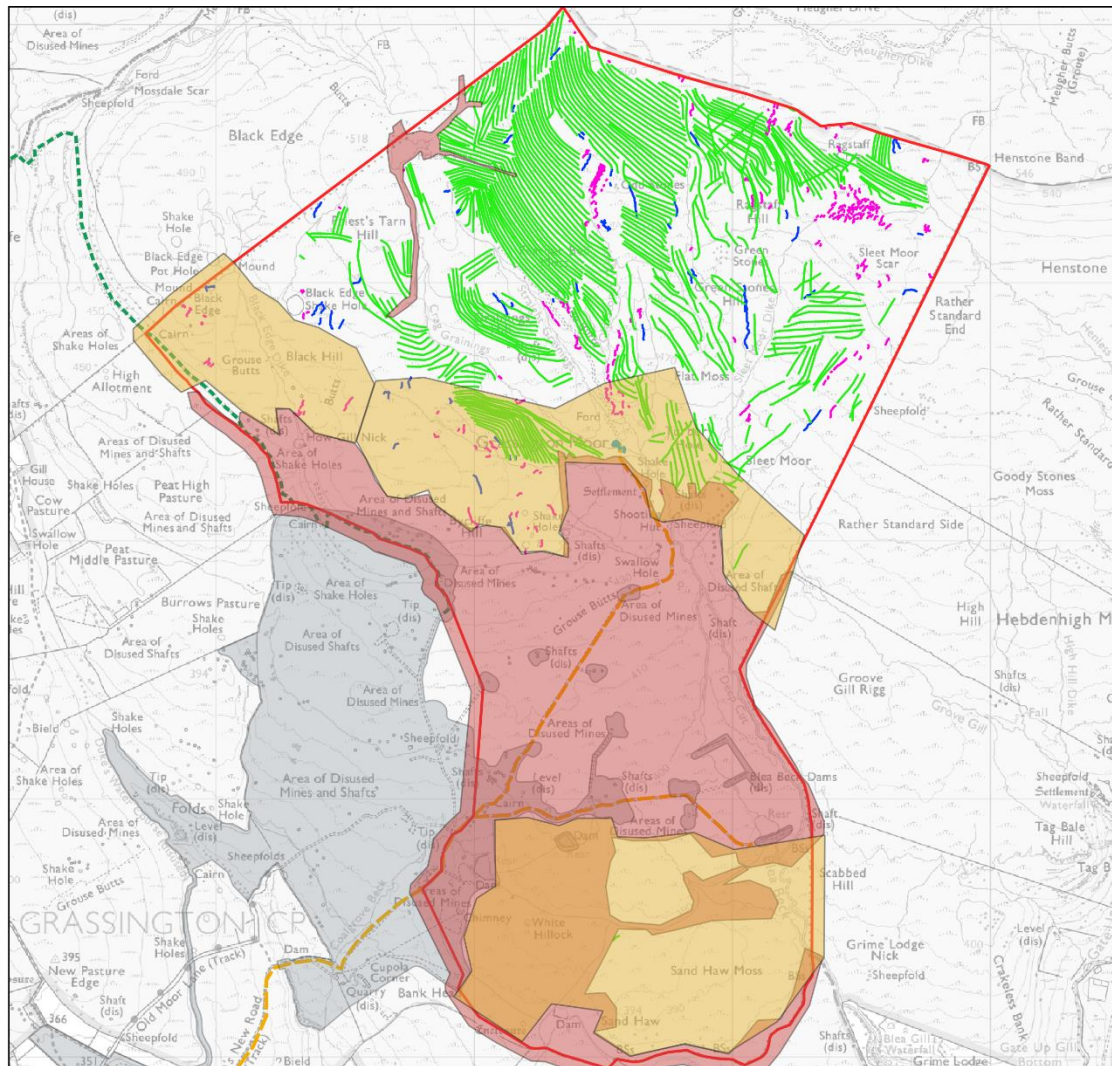
© Crown copyright and database right 2022.
All rights reserved. Ordnance Survey Licence
number 100018777/YWT25492/60273

Figure 5.18: Broad habitat overview with grazing pressure



Grassington Moor Archaeological Constraints

- Erosion features
 - Grip
 - Gully
 - Hag
- Archaeology
 - Archaeology survey required
 - Archaeology to avoid
 - Scheduled Ancient Monument
- Access
 - Footpath
 - Gravel road
 - Other
 - Site boundary



14/04/2023 0 1 2 km

© Crown copyright and database right 2023.
All rights reserved. Ordnance Survey Licence number
100018777/YWT25492/60273

Figure 5.19: Archaeological constraints and works overview.

