



Package 2 - Twizle Head Whole Site Works Package

Table of Contents

1.	Works Quantities.....	2
2.	Works Dates.....	2
2.1.	Start Date:.....	2
2.2.	End Date.....	2
2.3.	Restricted Dates.....	2
2.4.	Works Phasing.....	3
3.	Works Site Details.....	3
3.1.	Work Site Name:.....	3
3.2.	Work Site Grid Reference.....	3
3.3.	Description of location:.....	3
3.4.	Description of Site Areas.....	4
3.5.	Specified Access Points:.....	4
3.6.	Delivery and Lift Sites:.....	5
3.7.	Access Restrictions:.....	6
3.8.	Public Rights of Way / Footpaths:.....	6
3.9.	Vehicles allowed on Works Site:.....	6
3.10.	Livestock:.....	7
3.11.	Hazards associated with the Works Site:.....	7
3.12.	SSSI.....	7
3.13.	Scheduled Ancient Monuments and other Archaeology.....	7
4.	Work Techniques- Site Specific Details.....	8
4.1.	Reprofiling.....	8
4.2.	Gully Blocking- Stone dams.....	9
4.3.	Gully Blocking: Peat Dams.....	11
4.4.	Gully Blocking: Timber Dams.....	12
4.5.	Bare Peat Restoration: Heather Brash & LSF application.....	13

4.6.	Heather Donor Site.....	15
4.7.	Vascular Plug Planting.....	15
4.8.	Maintenance Lime and Fertiliser.....	16
5.	Maps.....	17

1. Works Quantities

Table 1 shows the proposed work quantities for the Twizle Head site.

Treatment	Grand Total
Brash (Bags)	443
Lime, Seed & Fertiliser (total) ha	2.17
Year 2 Lime and Fertiliser (total) ha	2.17
Re-profiling (m)	10344
Sedge/dwarf shrub Plug plants for Brash (@10,000 per ha) (ha)	2.17
Sedge/dwarf shrub Plug plants (@2,500 per ha) (ha)	2.83
Grip/Gully Blocking: Peat Dam (units)	309
Grip/Gully Blocking: Timber Dam (units)	227
Grip/Gully Blocking: Stone Dam (units)	355

Standard works specifications can be found in Appendix 9. Site specific works technique information is included in section 4.

Map 1 provides an overview of the site location.

Map 2 indicates the proposed works, machine access routes and Lift sites

Map 3 shows machine works and machine access routes

Map 4 shows works requiring airlifting and potential lift sites

Map 5 shows suggested Holme Moss Lift site

Map 6 shows all proposed restoration works

2. Works Dates

2.1. Start Date:

Monday 15 August 2022

2.2. End Date

31st March 2024

2.3. Restricted Dates

Grouse season 2022: Specific shooting dates between 12th August and 10th December 2022., Specific dates TBC. Contractor to allow for up to 30 days downtime per year associated with shoot restrictions during this period.

Nesting bird season 2023: 1st April 2023 to 15th August 2023,

Grouse season 2023: Specific shooting dates between 12th August and 10th December 2023., Specific dates TBC. Contractor to allow for up to 30 days downtime per year associated with shoot restrictions during this period.

Nesting bird season 2043: 1st April 2024 to 15th August 2024

Grouse season 2024: Specific shooting dates between 12th August and 10th December 2024., Specific dates TBC. Contractor to allow for up to 30 days downtime per year associated with shoot restrictions during this period.

2.4. Works Phasing

Table 1 below provides suggested outline phasing/timing of the different works elements. These are based on completing the works within the dates stipulated in section 2.1, 2.2 and 2.3. The Contractor is required to provide their proposed detailed programme for the works as part of the tender.

Table 1 Suggested Outline Works Phasing

Year	Period	Works element
2022-2023	April 2022 to July 2022	Contractor prepares/finalises HSSE & CDM documentation.
	August 2022 to March 2023	Supply, fly & install Timber dams and stone dams
		Machine work: Peat dams and reprofiling
	March 2023	Supply, fly and spread Brash to reprofiled slopes and other bare peat
2023-2024	April 2023– July 2023	Initial lime, seed and fertiliser application (hand)
	April 2023– July 2023	Update/prepare/finalise HSSE & CDM documentation (as required)
	August 2023 to March 2024	<i>Contingency for completing gully blocking works</i>
February 2024 to March 2024	Apply Maintenance Lime and Fertiliser (hand) Vascular Plug planting into bare peat restoration areas	

3. Works Site Details

3.1. Work Site Name:

Twizle Head

3.2. Work Site Grid Reference

Approximate site centre at OS GR SE1099903299

3.3. Description of location:

The Works Site is part of the Twizle Head stakeholder area in West Yorkshire, approximately 5.5km southwest of the town of Holmfirth and east of the summit of Holme Moss. The site comprises open moorland/blanket bog on the north and northeast side of Britland Edge Hill and Wilmer Hill, generally draining to the north east towards Yorkshire Water reservoirs in the Holme catchment and is owned by Yorkshire Water Services, and borders land to the south owned by United Utilities.

The site lies within the South Pennine Moors 'Special Area of Conservation' (SAC) and the Peak District Moors 'Special Protection Area' (SPA). The site lies almost wholly within the Dark Peak SSSI, including

all or portions of SSSI units 58, 59, 60, 61 and 64, however proposed works are predominantly within SSSI units 58, 59 and 64. The SSSI units are indicated on Figure 1 (inset below).

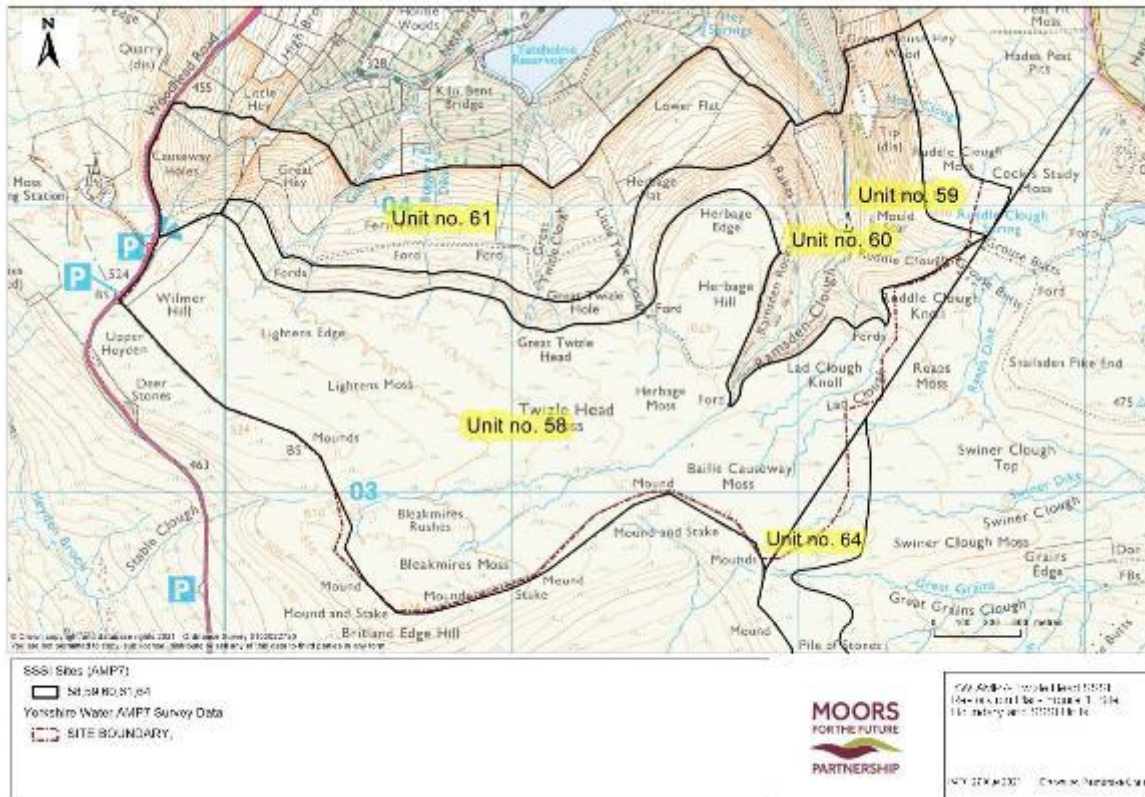


Figure 1 Inset map of SSSI units at the work site

3.4. Description of Site Areas

- Lightens Edge and the lower portions of Lightens Moss comprises deep peat with steep sided deep wide vegetated erosion gullies, typically oriented SSW-NNE.
- Upper area of Lightens Moss comprises gently sloping deep peat with generally sparse sedge and grass vegetation, transitioning into heads of gully networks of lower area of Lightens Moss.
- Bleakmires Moss area comprises deep peat with generally sparse sedge and grass vegetation with established gully systems, draining into upper reaches of Ramsden Clough.
- Bailie Causeway Moss and Lad Clough Knoll comprises deep peat with generally heather dominated vegetation, with established gully systems and some man-made grips.
- Herbage Hill, heather dominated deep peat, incised by established erosion gullies.
- Ruddle Clough Moss, heather dominated deep peat, hagged, some gullies.

See Maps in Section 5.

3.5. Specified Access Points:

The proposed access points are:

-
- Machine Access:
 - Suggested access point for low ground pressure machinery is from SE1348304153 on Linshaw Road via existing track past Cooks Study Hill, and west of Snailsden reservoir, then over open moorland on Snailsden stakeholder area, crossing into Twizle Head via existing hurdle gate in fenceline (i.e. at SE1229003337). This route has been used previously for machine access to Bleakmires Moss and Bailie Causeway Moss. Access to Lightens Moss/Lightens Edge and Herbage Hill areas via top of Bleakmires Moss.
 - The tenderer is advised to inspect the proposed machine access route in advance of tendering to assess suitability and to determine the need for ground protection/support to allow access/prevent damage.
 - The tenderer may propose additional/alternative machine access routes with their submission; other potential machine access points include from Yateholme Reservoir onto Herbage Hill or from YW Holme Moss car park east onto Lightens Edge/Lightens Moss, however it is advised that the contractor inspect and satisfy themselves of the suitability of these or any alternative routes prior to tender.
 - See Maps 2 and 3.
 - Pedestrian access:
 - As per machine access routes, or
 - From Yorkshire Water Holme Moss car park at SE0977103889, via informal paths across open moorland.
 - From Riding Wood Reservoir, via existing informal path up Ramsden Clough.
 - The contractor may propose alternative pedestrian access routes.

3.6. Delivery and Lift Sites:

- Lift Site Name: Holme Moss Car Park
 - Suggested delivery and lift site location is the Yorkshire Water owned Holme Moss car park off the A6024 Woodhead-Holme Moss road
 - Grid reference SE0977103889. This is indicated on Maps 2, 4 and 5.
 - Description and surfacing: The car park comprises an area of hardstanding around a central landscaped "island". An additional grassed area is located beyond the eastern edge of the tarmac and may also be used. Large stone blocks separate the tarmac and grass area which would need to be moved to gain access.
 - Trackway may be required on the grass area, depending on the nature of use proposed.
 - Traffic management is not envisaged to be necessary on the A6024 during operation of the lift site, however the contractor shall review this and evaluate based on their proposed methodology for airlifting and deliveries.
 - Contractor will need to consider managing public access to the lift site during works.
 - Storage of materials is allowed at the lift site. The contractor shall allow for appropriate security given the accessible and visible nature of the lift site.
 - Refuelling is allowed at the lift site.
- Potential alternative delivery and lift sites the contractor may wish to consider include adjacent to Yateholme Reservoir (included on Maps 2 & 4).
- The tenderer is advised to inspect their proposed delivery and lift sites in advance of tendering to assess suitability and to determine the need for traffic management, ground protection and security measures.

-
- The Contractor may wish to propose the use different lift sites through the programme, if beneficial for execution of the works.
 - The use of any such lift sites are subject to MFFP obtaining relevant stakeholder consents/permissions.

3.7. Access Restrictions:

Contractor access is to be restricted to daylight hours only during the Contract Period.

There is a locked gate restricting access to the Snailsden stakeholder area from Linshaw Lane. Access will be arranged for the Contractor. A number of hurdle gates in the Snailsden/Twizle Head boundary fence provide existing crossing points for machinery. Where practicable, such existing crossing points are to be used, in preference to breaking fence for new access points.

Previous works have been undertaken on the site, including construction of peat dams (Bleakmires Moss/Bailie Causeway Moss), dense sphagnum planting trial plots (Bleakmires Moss), and wider sphagnum planting. The contractor shall, so far as is practicable, avoid disturbing or damaging these completed works, although machine and pedestrian access across the wider areas previously subject to sphagnum planting is considered acceptable.

The Authority cannot confirm what rights there are (if any) to use any car parking or access routes or their suitability (whether of a safety nature or otherwise) for any use (including but not limited to in connection with the Works. Such information is for indicative purposes only and without any liability or obligation on the Authority. The Contractor agrees and confirms that it has not placed any reliance on such information and that it uses such car parking or access routes wholly at its own risk. Contractors should satisfy themselves as to the safety, suitability and rights to use such car parking and access routes.

3.8. Public Rights of Way / Footpaths:

The site and access route is located within Access Land pursuant to the CRoW Act and there are informal paths in vicinity of the access route and works site. There are, however, no formal public rights of way within the works areas.

3.9. Vehicles allowed on Works Site:

Contractors may park vehicles at the Yorkshire Water car park at Holme Moss Summit, or along Linshaw Road. The access point from Linshaw Road must remain clear at all times for emergency access. Contractors should satisfy themselves as to the safety, suitability and rights to use such car parking and access routes. Upon request, permission can be sought for parking of contractor's personnel vehicles at Cooks Study Hill.

Only suitably low ground pressure vehicles (<3psi) may be taken onto the works site for machine works, cutting, refuelling or transport of required materials associated with the works. Vehicles shall not be used for the sole purpose of personnel transport.

Access for excavators and other low ground pressure vehicles can be made at the access points and outline route as per section 3.5. Contractors should assess to their own satisfaction the exact route to be taken.

3.10. Livestock:

Sheep graze the Work Site seasonally. The contractor must ensure their works do not allow sheep to escape.

3.11. Hazards associated with the Works Site:

A summary of the main known hazards are identified to the Contractor in this section. Upon award of the Works Package further information will be provided to the Contractor in the MFFP CDM2015 Pre-Construction Information.

The Works Site is on open moorland at high altitude and include waterlogged areas, deep peat, gullies, stream channels, steep slopes and unstable ground. Previous gully/grip blocking works (peat dams) have created peat dam pools in gullies and grips in the Bleakmires Moss/Bailie Causeway Moss areas of the site.

The Work Site is on Open Access land (pursuant to the CRow Act) so the Contractor must be aware of and have due regard to members of the public, who may be present at the Site, and ensure appropriate mitigation measures are in place.

The Holme Moss TV mast is located to the west of the site. This represents a potential hazard to aerial load lifting from the proposed YW lift site. Under certain weather conditions, there is a risk of falling ice from the mast/cables in the immediate vicinity of the mast, close to the west of the site.

The site is managed, in part, as a grouse moor. Works will be undertaken during the grouse shooting season (12 August – 5 December), however there should be no working on specific shoot days (works will stand down for shoot days and there will be no contractor access to the site).

UXO hazard is considered to be LOW (from Zetica Bomb Risk Mapping).

No known belowground services/utilities at the site.

No known aboveground/overhead services at the site

3.12. SSSI

The site is located within the Dark Peak SSSI. SSSI Consent/Assent will be arranged by MFFP in co-ordination with Yorkshire Water. No works shall commence prior to confirmation from MFFP that SSSI consent/assent has been granted.

3.13. Scheduled Ancient Monuments and other Archaeology

Based on previous engagement with the PDNPA cultural heritage team, a number of features of archaeological/historical interest are considered to be present at the site. These include possible marker mounds along the historical boundary on the south/southwest boundary and also wreckage associated with an aeroplane crash (in 1944) on Twizle Head Moss. The aircraft remains and debris are covered by the legal protection of the 1986 Protection of Military Remains Act, and must not be disturbed. Such features will likely require exclusion zones/and or consideration in developing work plans.

There is also archaeological interest in the basal peat deposits based on the presence of previous Mesolithic age flint finds in proximity to the site, which are interpreted to represent the potential for a flint production site or temporary settlement. These may require amendment to standard methodologies for machine excavation works (i.e. as outlined in section 4.3 for peat dams).

Confirmation of exclusion zones and the modified methodology will be provided.

4. Work Techniques- Site Specific Details

Site specific details pertaining to the proposed works are outlined in following sections, to be read in conjunction with MFFP standard specifications.

4.1. Reprofilling

Over 10,300 m of re-profiling is proposed at Twizle Head to stabilise and facilitate re-vegetation of bare and over-steep gully sides or hagg edges.

Photo 1 shows an example of where re-profiling is needed to re-profile the bare and eroding hagg edge/gully side to aid stabilisation and allow bare peat restoration techniques to be applied. The overhanging vegetation at the top can be seen in this photo.

Where possible, existing vegetation should be used to re-vegetate/ stabilise the reprofiled slopes.

Where potential for flow along the toe of the slope is present, the turves should be placed along the toe of the slope, rather than at the crest. This will help prevent erosion of the toe of the slope.

Where existing vegetation is not sufficient to revegetate the reprofiled slopes, the reprofiling should be followed-up by standard bare peat restoration techniques (i.e. brash and application of Lime, Seed and Fertiliser); likely necessary for many of the larger re-profiling sections identified at Twizle Head. Following establishment of nurse-crop grasses, planting of native plug plants into the re-profiled areas is recommended to boost natural re-colonisation.



Photo 1 Photo showing typical bare peat gully side/hagg edge identified for re-profiling (Lightens Edge).



Photo 2 Photo showing bare peat gully side identified for re-profiling (Bleakmires Moss).

The slope should, in general, be re-profiled to an angle of 45 degrees or less, however techniques at individual locations may vary, dependent upon local conditions and constraints. Many of the areas identified for re-profiling are the steep sides of wide gullies, many of these wide gullies are vegetated with grasses and/or sedges across some or all of the gully bases. In many gullies however, micro-channels or water flow paths remain within the wider gullies, which are likely to be erosive flow pathways. Where these are present and risk undercutting or otherwise eroding re-profiled slopes, additional measures to protect the re-profiled slopes will be required. Allowance has been made for construction of stone dams to act as protection at the toe of such re-profiled slopes, either as part width baffles, full width dams, or linear protection along the slope, where appropriate (see section 4.2). The exact design of such measures will require further consideration and specification prior to the works, given some or all of the stone dams will be placed prior to completion of reprofiling works.

4.2. Gully Blocking- Stone dams

Proposed stone dams include “standard” single and multi-unit stone dam constructions in erosion gullies, as shown in Photo 3, in addition to placement of stone to act as protection at the toe of re-profiled slopes. These may comprise part-width baffles, full-width stone dams, or placed as linear protection along the toe of reprofiled slopes (see section 4.1), where appropriate. The exact design of such measures will require further consideration and specification prior to the works, given some or all of the stone dams may be placed prior to completion of reprofiling works.



Photo 3 Photograph showing typical location for Stone dam in eroding gully at Twizle Head



Photo 4 Photograph showing typical location for stone dam proposed for protection of re-profiled hagg edge/gully side at Twizle Head (Hagg edge/gully side shown prior to re-profiling).

4.3. Gully Blocking: Peat Dams

Peat dams will be constructed generally in line with MFFP standards specification. A “typical” peat dam location is shown in Photo 5 below. However, due to potential archaeological interest, minor amendment to peat dam construction methodologies may be required, in order to reduce the risk of damage to potential archaeological artefacts at the peat/mineral interface or within the lower peat deposits “basal peats”. The exact specification will be confirmed, but will likely comprise the following methodology

- The methodology used for peat dam construction will depend on the surveyed peat thickness (within the gully/grip) in the vicinity of the proposed peat dam location:
 - No peat dams shall be constructed where surveyed peat thickness is <1m.
 - Where peat thickness is between 1m and 1.5m; excavation for peat dam construction shall be limited to a maximum 0.5m depth below base of gully/grip. Additional peat/turves for peat dam construction must be obtained from borrow pits outside of the gully/grip.
 - Where peat thickness at peat dam locations is greater than 1.5m thickness, the construction methods should avoid excavating within the bottom 0.75m of peat deposits and should only excavate to the depth required for successful peat dam

construction. Additional peat or turves for peat dam construction should be taken from borrow pits outside of the gullies where practicable.

- The specification for peat dam types at each location will be confirmed.



Photo 5 Photograph showing typical location for peat dam

4.4. Gully Blocking: Timber Dams

Timber dams shall be constructed in line with standard MFFP leaky Timber Dam specification. Timber dams shall be of the “leaky” construction type; that is with gaps between 3rd and 4th planks. A typical timber dam location is included in Photo 6 below.



Photo 6 Photograph showing typical location for timber dam at Twizle Head

4.5. Bare Peat Restoration: Heather Brash & LSF application

Bare peat at the Twizle Head site predominantly relates to bare and eroding/unstable steep gully sides or hagg edges, however some small areas of bare peat exist associated with gentle gully sides/hagg edges and some isolated peat pans. These bare and/or eroding peat areas often show little or no sign of recovering fully and intervention is needed to prevent loss of peat. For steep gully sides/hagg edges, re-profiling to reduce the slope angle is considered necessary to help stabilise and revegetate such bare peat. Re-profiling work is outlined in section 4.1, however the subsequent bare peat restoration works are key to ensuring revegetation of re-profiled slopes.

Photo 7 shows a typical area of bare peat on a shallow slope/peat pan. There is limited or very sparse vegetation present with the exception of isolated clumps of cotton grass and edges are showing signs of active erosion due to exposure to freeze-thaw, wind and rain.



Photo 7 Photo showing typical bare peat on a shallow slope

The process for revegetating the bare peat should follow Moors for the Future Partnership's standard methodology:

1. Apply chopped heather brash
2. Apply lime, seed and fertiliser

Due to the typically small and/or linear nature of the areas identified for bare peat restoration, the brash locations identified on the map comprise predominantly single unit locations (i.e. One brash bag) although some "half-bag" locations, in addition to multiple bag locations, have been identified. Half-bag locations have been surveyed where areas requiring brash less than full bag size but disparate from other small areas were identified.

The 443 bags total brash requirement arises from 371 surveyed locations, including

- 13 locations for half-bags,
- 297 locations for single bags, and
- 61 locations for multiple bags (2 to 7 bags).

The contractor may arrange for airlifting of brash bags in multiple units to their own locations, however the location/shape of bare peat areas, gullied terrain of the site and consequent implications for spreading brash and moving brash bags on the ground should be considered.

Lime, Seed and Fertiliser should be applied following completion of re-profiling (where required) and brash application. Based on the small extent and/or linear nature of the identified bare peat and re-profiling areas, it is envisaged that lime seed and fertiliser application would be undertaken by hand rather than through helicopter based aerial application. The contractor should consider and specify in their tender return the proposed methodology for hand application to ensure consistent even application (i.e. pre-weighed bags of materials and use of backpack spreaders or similar). The Authority

will supply the LSF pre-weighed in small bags. It is suggested that initial LSF materials are transported on to site in sealed bags included with each brush bag, however the contractor may propose their own methodology.

Allowance should be made for 2 years of lime and fertiliser application (i.e. year one lime, seed and fertiliser applied after brush application, then maintenance lime and fertiliser in year 2). Further detail on maintenance Lime and fertiliser is included in section 4.8.

Following establishment of nurse crop vegetation on such identified bare peat areas, planting with suitable vascular plant species (such as plug plants of native dwarf shrubs and sedges) is recommended to further promote re-colonisation by native moorland species. Further information is provided in section 4.6.

4.6. Heather Donor Site

The contractor shall source all required heather brush required for these works.

On the Twizle Head site, there is not considered sufficient heather on site suitable for cutting to provide the required heather brush for these works, therefore heather brush will need to be sourced from a suitable donor site elsewhere and imported to the site.

Suitable biosecurity checks from the donor site/donor material will need to be undertaken and approved prior to importing to site. MFFP has an established protocol for this.

The tenderer shall specify in their tender return the details of the proposed heather donor site and outline the airlifting requirements (i.e. cutting location and lift site/delivery site); The Authority shall procure the required airlifting works separately, however the contractor is required to manage any airlift marshalling and/or road transport of the brush.

Heather brush is required to be harvested/stored/produced in such a manner to ensure low heather seed content; further details on this are provided in the main tender document.

4.7. Vascular Plug Planting

Where plug planting is proposed into bare peat areas to be treated initially using bare peat restoration techniques (predominantly re-profiled drip edges and gully sides), an equivalent planting density of 10,000 plugs per ha has been proposed (1 plug per 1 m²). The plug planting is proposed for approximately 12 months after brush and initial LSF application, and thus should be undertaken February-March 2024, in order to allow for any settlement of the reprofiled slopes and allow nurse crop grasses to become established increase plug plant colonisation success.

The plugs are likely to comprise 90% common cotton grass (*Eriophorum angustifolium*) and 10% Crowberry (*Empetrum nigrum*). The crowberry plugs should be planted in drier areas, typically towards tops of reprofiled slopes.

The contractor shall specify in their tender return the proposed methodology for transporting materials (i.e. plug plants) on to site and method for waste removal.

4.8. Maintenance Lime and Fertiliser

Follow-up (“maintenance”) Lime and fertiliser application will be applied approximately 12 months after initial LSF application; and thus should be undertaken February-March 2024. The contractor shall specify in their tender return the proposed methodology for transporting materials on to site and method for waste removal.

5. Maps

Map 1: Site Location Overview

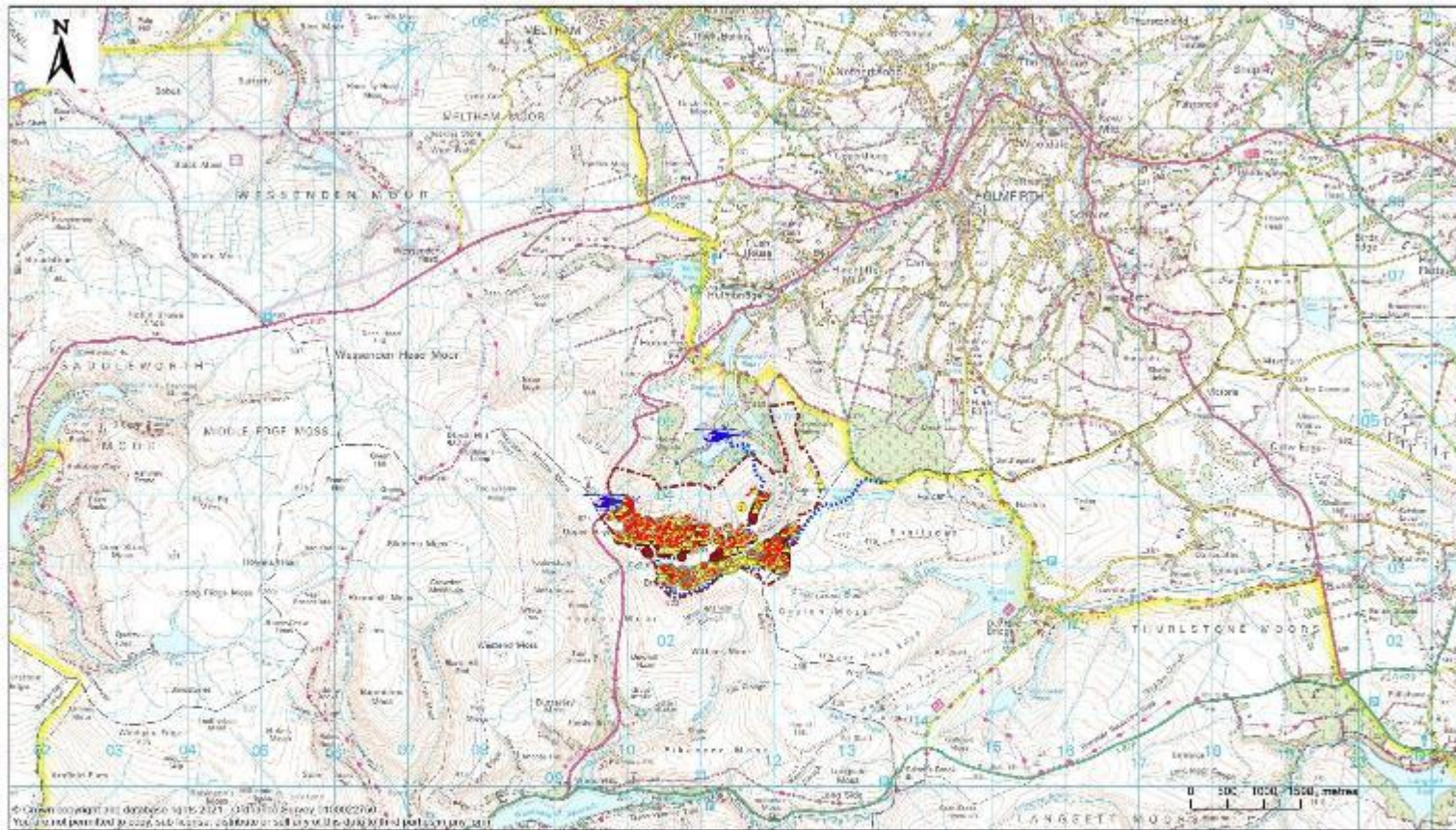
Map 2: Works, Access and Lift Site Overview.

Map 3: Machine Works and Access

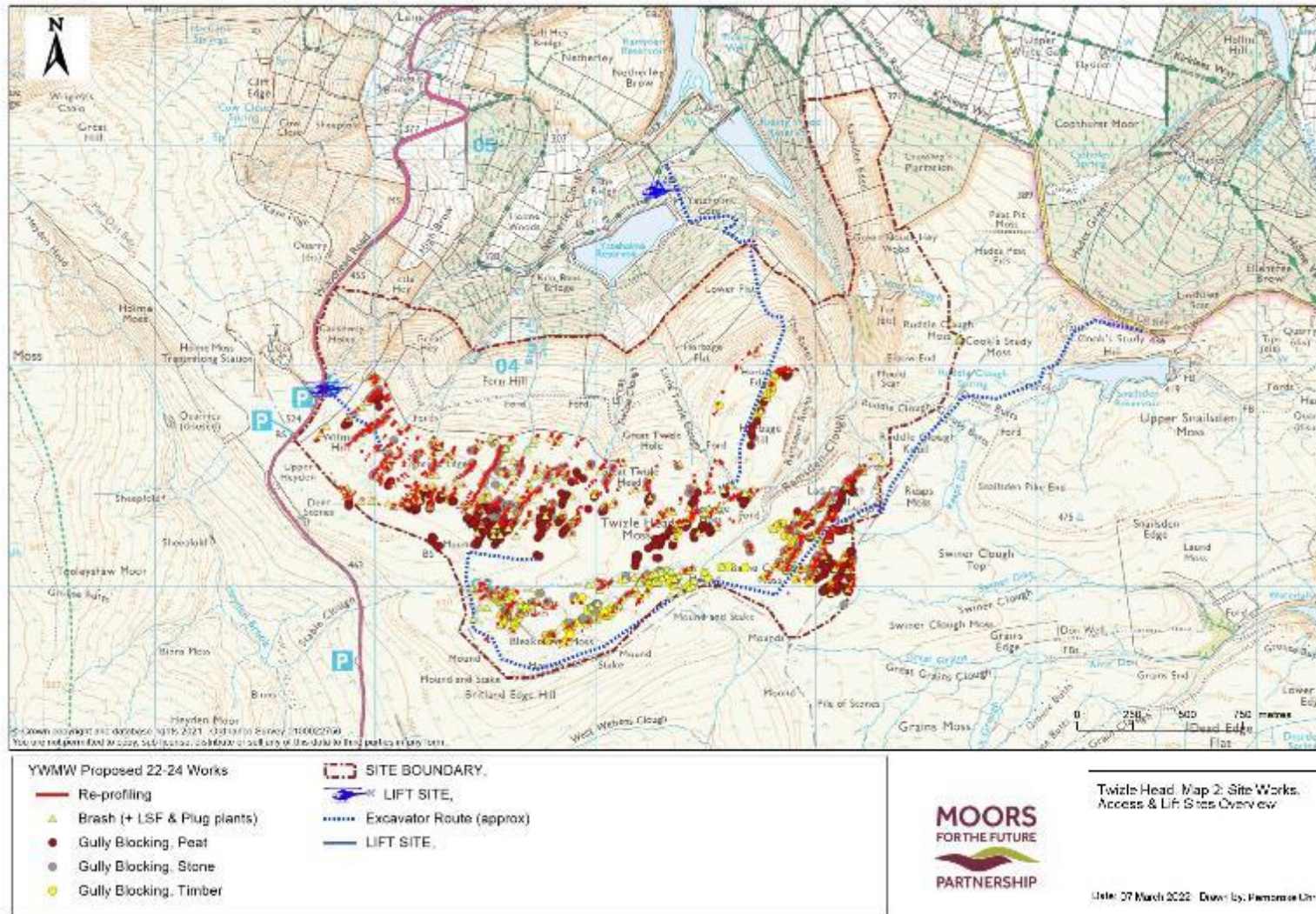
Map 4: Works Requiring Aerial Lifting & Lift Sites

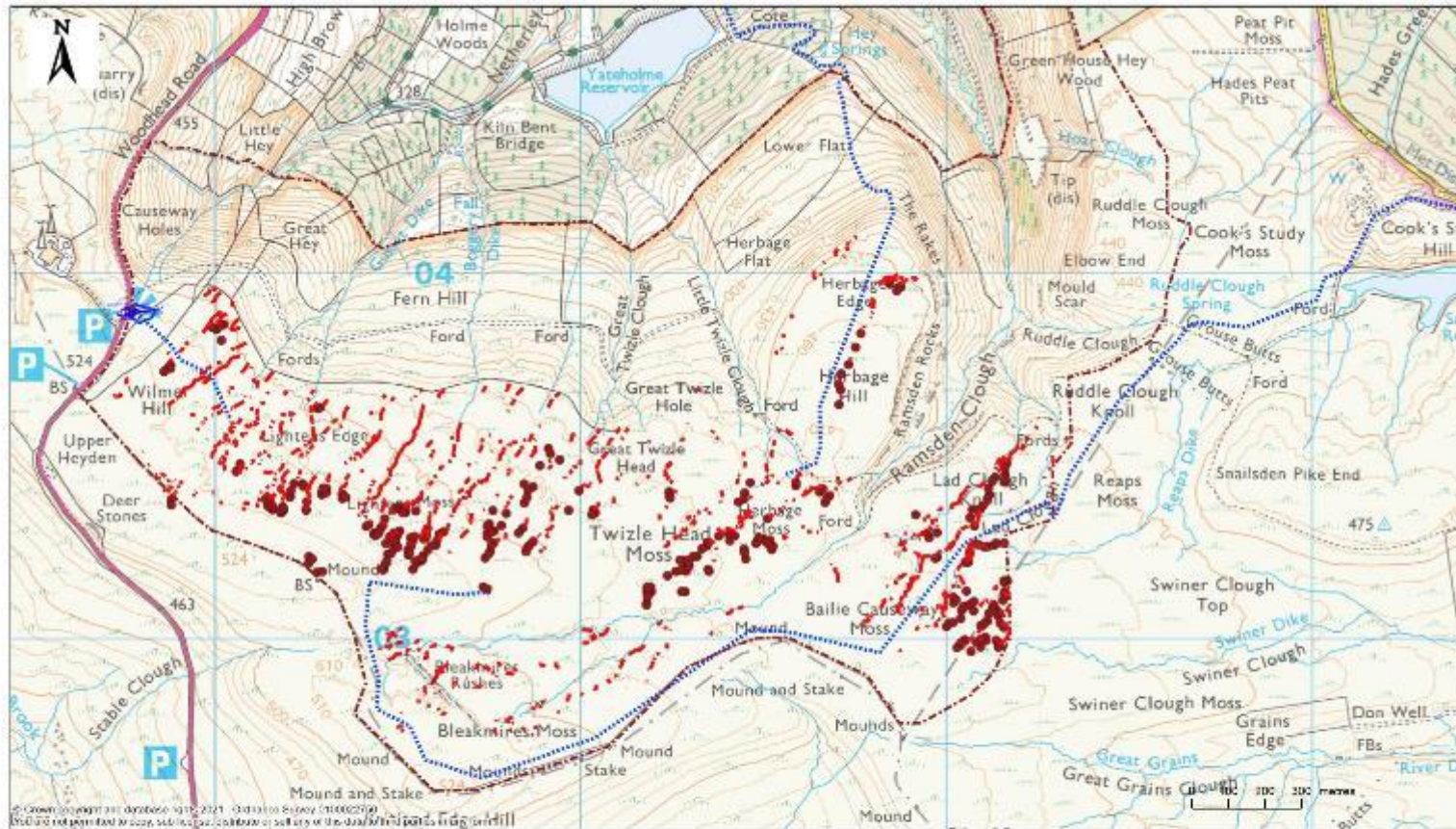
Map 5: Proposed Holme Moss Lift site

Map 6: All Proposed Restoration Works



YWMW Proposed 22-23 Works		SITE BOUNDARY	
 Re-profiling	 LIFT SITE,	 Excavator Route (approx)	 LIFT SITE,
 Brush (+ LSF & Plug plants)			
 Gully Blocking, Peat			
 Gully Blocking, Stone			
 Gully Blocking, Timber			





YWMW Proposed 22-24 Works

-  Re-profiling
-  Gully Blocking, Peat
-  SITE BOUNDARY
-  LIFT SITE
-  Excavator Route (approx)

 LIFT SITE

