Package 7 and 7a
Snailsden Whole Site Works Package

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1. Works Quantities

Table 1 shows the proposed work quantities for Packages 7 and Packages 7a for the Snailsden site. These two packages are funded by different projects and should be costed separately. Funding for package 7 is secured. Package 7a will be awarded on the condition that funding is received. It is anticipated that if both projects receive funding then the work will be delivered together.

Table 1 Package 7 and 7a: Proposed Work Quantities

Treatment (units)	Package 7	Package 7a	Package 7 Total
Brash (Bags)	-	963	963
Lime, Seed & Fertiliser (ha)	-	4.75	4.75
Year 2 Lime and Fertiliser (ha)	-	4.75	4.75
Seed into sward (ha)	-	3.35	3.35
Seed onto bare peat (ha)	-	0.02	0.02
Bunding (ha)	10.32	-	10.32
Re-profiling (m)	-	23,339	23,339
Pool mix Sphagnum into existing pools (@8000 per ha) (ha)	-	0.72	0.72
Sphagnum planting (@1250 per ha) (ha)	-	398.4	398.4
Sedge/dwarf shrub Plug plants for Brash (@10,000 per ha) (ha)	-	4.72	4.72
Sedge/dwarf shrub Plug plants (dry mix) (@2,500 per ha) (ha)	-	23.18	23.18
Sedge/dwarf shrub Plug plants (wet mix) (@2,500 per ha) (ha)	-	0.08	0.08
Grip/Gully Blocking: Coir Logs (Coir logs)	-	122	122
Grip/Gully Blocking: Peat (Dam)	1961	654	2423
Grip/Gully Blocking: Timber (Dam)	81	326	407
Grip/Gully Blocking: Stone (Dam)	362	1449	1811
Heather Cutting (ha)	-	Up to 23 ha	Up to 23 ha

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

Maps are included in section, 5, comprising the below:

- Map 1: Site Location Overview
- Map 2: Access and Lift Site Overview.
- Map 3a: Stone and timber dams- package 7
- Map 3b: Stone and timber dams- package 7a
- Map 4a: Peat Dams, and surface bunds- package 7
- Map 4b: Peat Dams, and reprofiling - package 7a
- Map 5: Bare Peat Restoration Works (total)
- Map 6: Heather Cutting (overview)

- Map 7: Coir logs and standalone seeding
- Map 8: Sphagnum Planting, Vascular Plug planting (total)
- Map 10: Windleden Lane Lift Site

2. Works Dates

2.1. Start Date:

Monday 15th August 2022

2.2. End Date

28th February 2025

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 2024: 1st April 2024 to 15th August 2023,

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 (across both package 7 and 7a). 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 2 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 stone dams Machine Work: Peat dam, and reprofiling start
2023-2024	April 2023– July 2023	Update/prepare/finalise HSSE & CDM documentation (as required)
	August 2023 to March 2024	Machine work: Peat dams and Reprofiling continues
		Heather Cutting (August for brash supply)
		Supply, fly and spread Brash to reprofiled slopes and other bare peat
		Supply, fly and install Timber Dams, and Coir Logs
	February 2024 to March 2024	Initial lime, seed and fertiliser application (hand)
		Seed into sward

Year	Period	Works element
		Seed onto bare peat
2024-2025	April 2024 to July 2024	Update/prepare/finalise HSSE & CDM documentation (as required)
	August 2024 to March 2025	Sphagnum planting (@1250 per /ha)
		Sphagnum planting (pool mix)
	February 2025 to March 2025	Apply Maintenance (year 2) Lime and Fertiliser (hand)
		Vascular Plug planting into bare peat restoration areas
		Vascular plug planting to diversify ("wet mix" and "dry mix")

3. Works Site Details

3.1. Work Site Name:

Snailsden

3.2. Work Site Grid Reference

Approximate site centre at OS GR SE1337602577

3.3. Description of location:

The Works Site is part of the Snailsden stakeholder area in South Yorkshire, located approximately 4km south of the town of Holmfirth and approximately 1km west of the hamlet of Dunford Bridge, and is located in the Metropolitan Borough of Barnsley, within South Yorkshire.

The Snailsden stakeholder area is approximately 820 ha, owned by Yorkshire Water Services. The site includes the upper headwaters of the River Don, and forms catchment of a number of Yorkshire Water owned reservoirs including Winscar Reservoir immediately east of the site; Snailsden Reservoir enclosed within the north of the site and Harden Reservoir immediately northeast of the site. The site comprises a combination of blanket bog, acid grassland and dry/dwarf shrub heath habitat. Approximately 630ha of the site is considered "deep peat" (from Natural England Status of Peat report).

The site lies within the South Pennine Moors 'Special Area of Conservation' (SAC) and the Peak District Moors 'Special Protection Area' (SPA). The site is located within the Peak District National Park. The site lies within the Dark Peak SSSI, including some or all of SSSI units 58, 59, 63, 64, 65, 66, 67, 68, 69, 70, 71 and 72. The SSSI units are indicated on Figure 1 (inset below).

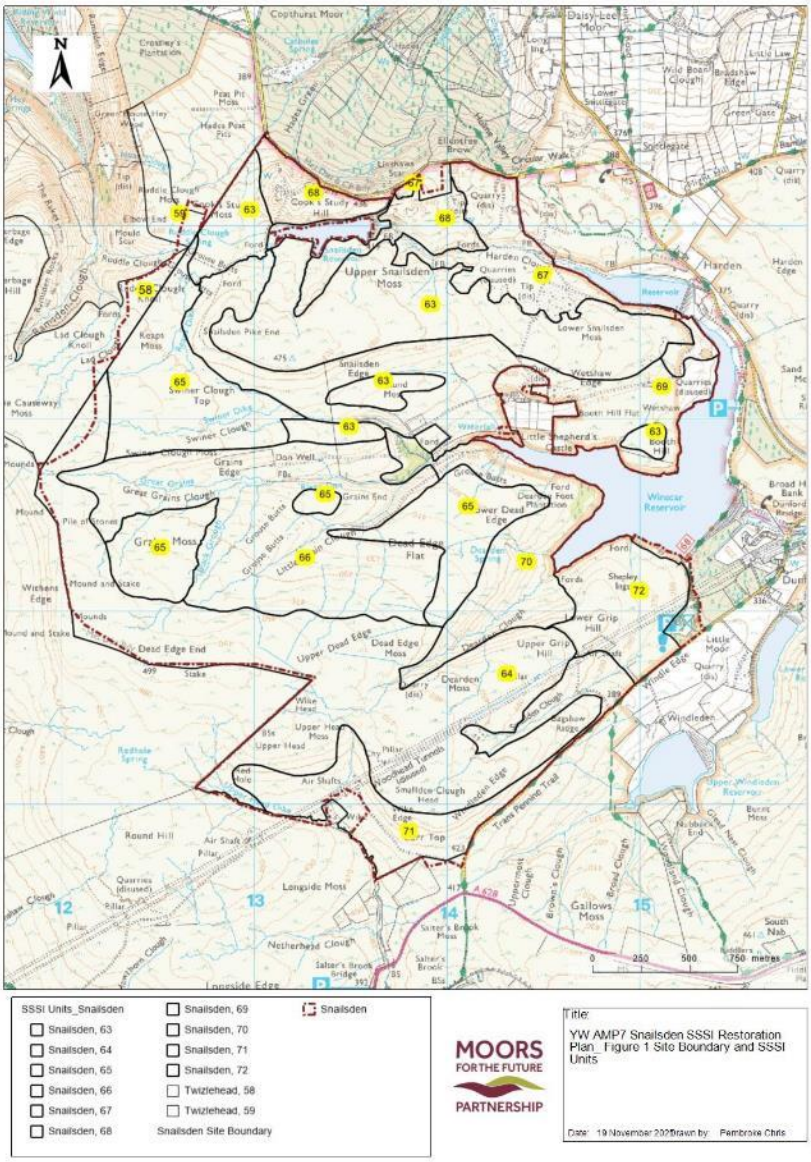


Figure 1 Inset map of SSSI units at the work site

3.4. Description of Site Areas

The site predominantly comprises areas of heather dominated vegetation on deep peat blanket bog areas, incised by erosion gullies and grips. This includes the following areas (as labelled on 1:25,000 scale OS mapping): Upper Snailsden Moss, Reaps Moss, Ruddle Clough Knoll, Swiner Clough Top, Swiner Clough Moss, Grains Moss, Grains End, Upper Dead Edge, Dead Edge Flat, Dead Edge Moss, Upper Snailsden Moss

More diverse heather, sedge and grass vegetation is present at Dearden Moss and parts of Dead Edge End, Upper Dead Edge and Lower Snailsden Moss.

There are some areas comprising sedge and/or grass (Molinia) dominated vegetation, including Grip Hill (Upper and Lower), Laund Moss, Booth Hill and Booth Hill Flat.

A number of areas are characterised by dry heath/ dwarf shrub vegetation, typically on steeper and/or rougher ground with shallow peat thickness including Cooks Study Hill, Harden Clough, Snailsden Edge,

See Maps in Section 0.

3.5. Specified Access Points:

It may be necessary to use a combination of access points for works in different locations across the site. The suggested/proposed access points are:

- Machine Access:
    - Suggested access points for low ground pressure machinery include the following:
        - from SE1348304153 on Linshaw Road via existing track past Cooks Study Hill, and west of Snailsden reservoir, then over open moorland.
        - Track leading north off Windle Edge Road, onto Upper Grip Hill. (GR: SE1483901495).
        - Track leading northwest from western end of Windle Edge road, toward Wike Edge. (GR: SE1406200683).
        - From Yorkshire Water car park off Windle Edge road by Pennine Sailing Club, east of Lower Grip Hill (SE1526102035)
    - The tenderer may propose additional/alternative machine access routes with their submission; the contractor should inspect and satisfy themselves of the suitability of these or any alternative routes prior to tender.
    - 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.
    - See Map 2.
- Pedestrian access:
    - As per machine access routes, or
    - Track off Dunford Road, over Harden Reservoir in the north east of the site, leading to Snailsden Lodge (GR: SE1521003526): Note the track across reservoir has a 7t weight limit, width restrictions and tight corners and as such is not suitable for large or heavy vehicles.
    - From Yorkshire Water car park off Windle Edge by Pennine Sailing Club, east of Lower Grip Hill (SE1526102035)
    - The contractor may propose alternative pedestrian access routes.

3.6. Delivery and Lift Site:

- Lift Site Name: Windleden Lane Car Park
    - Suggested delivery and lift site location is adjacent to the Yorkshire Water Windleden lane car park, off Windle Edge Road (near Pennine Sailing Club)
    - Grid reference SE1526102035. This is indicated on Maps 2 and 10.
    - Description and Surfacing: A flat grassed area is present beyond the tarmacadam car park.
    - Trackway is likely required, as minimum, for stockpiling and handling stone; the contractor is advised to include for a minimum of 20m x 20m area (400m2) for a duration of 12 weeks.

- Traffic management is not envisaged to be necessary.
- 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.
- Refuelling is allowed at the lift site.

- Potential alternative delivery and lift include YW car park at Holme Moss Summit (SE0977803892).
- 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 of 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 if access via this route is requested. Locks and access arrangements for other routes will be confirmed if requested.

Access over Harden Reservoir dam (i.e. track to Snailsden Lodge) has a 7t weight restriction that shall not be exceeded. Use of the track will require permission to be agreed with stakeholders and confirmation that weight restrictions will not be exceeded. It should be noted that this track is narrow with tight bends associated with the reservoir dam.

Where practicable, existing crossing points are to be used, in preference to breaking fences for new access points.

Previous works have been undertaken on the site, including construction of peat, timber, stone and plastic dams in grips and gullies. Sphagnum planting has also been undertaken across wider areas of the site. 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. It should be acknowledged that Windle Edge road (from which potential access routes to the site and potential lift and delivery sites are gained) forms part of the Trans Pennine Trail and National Cycle route 62.

3.9. Vehicles allowed on Works Site:

Contractors may park vehicles at the Yorkshire Water car park off Windle Edge road 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, Snailsden Lodge, Wike (track), Upper Grip Hill (track).

Only suitably low ground pressure vehicles (<4psi) 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 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 and in vicinity o on potential lift 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 potential lift site.

Yorkshire Water managed reservoirs (Winscar, Snailsden and Harden Reservoirs) are present within, adjacent to and/or downstream of the site, in addition to UU managed Woodhead Reservoir (and longdendale reservoir chain) downstream from parts of the southwest of the site. Additional care should be taken to minimise risk of spills, leaks or other sources of potential contamination and to avoid risk of damage to associated reservoir infrastructure.

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).
The former Woodhead Railway tunnels run below the southwest of the site, oriented NE to SW. A number of aboveground structures (including open and capped air shafts) associated with the former tunnels are present at the site.

Overhead high voltage electricity pylons and an aboveground substation managed by National Grid Electricity Transmission are present to the west of Dunford Bridge, to the east of the site. These electricity cables then run southwest belowground through the former Woodhead Railway Tunnels.

UXO hazard is considered to be LOW (from Zetica Bomb Risk Mapping).
No other 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

There are no Scheduled Monuments or Listed buildings recorded within the Snailsden site.
Based on previous engagement with the PDNPA cultural heritage team, a number of features of archaeological/historical interest are likely to be considered present at the site. These include features present near Cooks Study Hill and along the south west boundary (former boundary markers).
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).
A Historic Environment Assessment is being undertaken at time of writing and further clarification on exclusion zones or other mitigation will be provided upon completion of this assessment.

4. Work Techniques- Site Specific Details

All works to be undertaken according to MFFP standard specifications, except where amended below. See maps 3,4,5,6,7 and 8 for location of works. Site specific details pertaining to the proposed works are outlined in following sections, to be read in conjunction with the MFFP standard specifications.

4.1. Reprofiling

Approximately 23km of re-profiling is proposed at Snailsden 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 will be followed-up by standard bare peat restoration techniques (i.e. brash and application of Lime, Seed and Fertiliser); likely necessary for majority of the larger re-profiling sections identified at Snailsden. Following establishment of nurse-crop grasses, planting of native plug plants into the re-profiled areas is proposed to aid re-colonisation (see section 4.6).

Photo 1 Photo showing typical bare peat gully side identified for re-profiling, on side of wide gully, with mostly vegetated base (Grains Moss).

Photo 2 Photo showing steep eroding "grip" sides requiring re-profiling. Existing stone dams are visible within the grip in the background (looking upstream).

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. Grip and 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 (Photo 4). 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 Photo showing typical location for stone dam; here a two unit stone dam has been proposed due to the width, height and potential sediment load of the gully. The gully sides shown here will also be subject to reprofiling and subsequent bare peat revegetation techniques

Photo 4 Photograph showing typical location for stone dam proposed for protection of re-profiled gully side at Snailsden (gully side shown prior to re-profiling).

4.3. Grip and 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 Photo showing location for peat dam at Snailsden, here within a grip.

Photo 6 Photo showing typical location for peat dam at Snailsden, here within a vegetated gully.

4.4. Grip and 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 7 below.

Photo 7 Photograph showing typical location for timber dam at Snailsden

4.5. Grip and Gully Blocking- above peat pipe entrances

Where sections of peat pipe have open sections of gullies or collapsed openings upstream of the peat pipe section, the following specification shall be followed to block the upstream entrance to the peat pipes.

- Machine excavate into the peat pipe opening to confirm the location and number of peat pipes/flow paths, clear peat debris from the pipe entrance(s), and to create a recess. Place excavated peat to side for re-use.
- Place stone dam unit(s) within recess in opening to block the peat pipe/flow path(s) and form a reinforcing foundation for subsequent turves/peat
- Place and seal excavated well-humified (low permeability) peat in front and on top of the stone unit in order to seal over the placed stone and peat pipe entrance, to prevent water from entering the peat pipe.
- Cover the placed peat and face of slope with site won turves (including additional from outside of gully if required) to prevent erosion and ingress of water.

4.6. Bare Peat Restoration: Heather Brash & LSF application

Bare peat at the Snailsden 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 (i.e.

photo 1), 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 8 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 8 Photo showing gently sloping bare peat on a gully side that could be re-vegetated without re-profiling (foreground).

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 Map 5 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 963 bags total brash requirement arises from 852 surveyed locations, including

- 150 locations for less than whole bags (68 bags worth),
- 543 locations for single bags (543 bags), and
- 159 locations for multiple bags (352 bags worth).

Map 5 gives an overview of the nature of the bare peat restoration works- areas proposed for re-profiling are identified, along with surveyed brash bag locations, and bare peat areas as mapped from aerial photography. It should be noted however that some of the reprofiling will be re-vegetated with existing in-situ vegetation/overhanging turves.

The contractor may arrange for airlifting of brash bags in multiple units to their own locations, however the location/shape of bare peat areas and gullied terrain of the site and 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). It is suggested that initial LSF materials are transported on to site in pre-weighed sealed bags included with each brash bag, however the contractor may propose their own methodology.

The Authority will supply all Lime Seed and Fertiliser materials, pre-weighed in small bags.

Allowance should be made for 2 years of lime and fertiliser application (i.e. year one lime, seed and fertiliser applied after brash application, then maintenance lime and fertiliser in year 2). Further detail on maintenance Lime and fertiliser is included in section 4.9.

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 4.8.

4.7. Heather Cutting

Areas of heather dominated vegetation requiring cutting to aid diversification (sphagnum planting) is indicated on Map 6. Due to previous vegetation management at the site, heather maturity is quite variable across the heather dominated areas, with numerous areas of heather at varying ages within the "pioneer" and "building" heather growth stages but not yet mature enough for cutting.
Typically, requirement for cutting is that heather is >75% dominant and minimum of approx. 30cm in height. It is envisaged that cutting will be undertaken on approximately 10% of the areas identified on the map.
There is a requirement to retain 10% of the most mature/degenerate heather for diversity in sward structure/habitat. Suitable standoff/exclusion zones to retain such heather will be identified and communicated by MFFP.

The contractor should note the requirement for supplying heather brash and should, where practicable, source brash from on-site heather cutting areas.

4.7.1. Heather Brash Supply

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

On the Snailsden site, areas of heather dominated vegetation requiring cutting are present on site that may be suitable for harvesting for heather brash, which should be used where possible. Keighley Moor is proposed as an alternative (backup) cutting site however, if required. Further details of Snailsden donor sites is provided in following sections. Details for Keighley donor site will be provided on request.

Suitable biosecurity checks from the donor material will be needed prior to cutting and transporting to or within the site. MFFP has an established protocol for heather biosecurity checks and will undertake these checks before cutting can commence.
In line with Natural England requirements, heather brash cutting/harvesting should be undertaken in a manner to ensure it has a low heather seed content. See main tender document for further details.

4.7.2. Snailsden Donor Site

See map 6 for potential heather cutting areas on Snailsden. Key areas for collecting brash are likely to be on Snailsden Pike and Upper Snailsden Moss. The wider areas identified for heather cutting on Snailsden typically have mature heather present as smaller patches with more challenging access.

Access for heather cutting are via machine routes and/or 4x4 routes identified on Maps 2, 6; including the following to key areas Snailsden Pike and Upper Snailsden Moss:

- From Linshaws Road, via Cooks Study Hill and past west end of Snailsden reservoir and up on to western end of Snailsden Pike.
- From Snailsden Lodge, via tracks up to southern side of Upper Snailsden Moss. Note weight restriction for vehicles accessing via track over Harden reservoir.

Brash cut on Snailsden can be airlifted directly to the areas on Snailsden where brash is required. Lift sites as per those identified in section 3.6 and Maps 2 and 10.

4.8. Vascular Plug Planting

4.8.1. For bare peat revegetation

Where plug planting is proposed into areas treated 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 m^2). The plug planting is proposed to be undertaken approximately 12 months after brash and initial LSF application, 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.

4.8.2. Sward Diversification

Where Plug planting is proposed for sward diversification, planting will be undertaken at density of approximately 2500 plants per hectare. The plug pants will comprise mix of relevant moorland species, including a mix selected for “wet” areas and a mix selected for “dry” areas.

4.9. Bunding

Peat bunds are similar to peat dams in construction but are not in gullies or grips, and are constructed on the surface of vegetated peat areas in order to slow the overland flow of water and create

"hummock and hollow" macro-topography features. Areas have been identified at Snailsden where bunding could be used to:

- Help diversify Molinia dominated deep peat areas (Photo 9), or
- Restore hydrology in blanket bog areas above gully networks where the absence of a functioning acrotelm (termed "haplotelmic") causes excessively rapid overland flow after precipitation, with only a thin vegetation sward present (Photo 10).

Photo 9 Photo showing area proposed for peat bunding in Molina dominated sward.

Photo 10 Photo showing area proposed for peat bunding in thin cotton grass dominated sward.

4.10. Sphagnum planting

4.10.1. Standard planting

Sphagnum planting across suitable areas of the site will be undertaken according to standard MFFP specification. See Map 8.

4.10.2. Pool mix

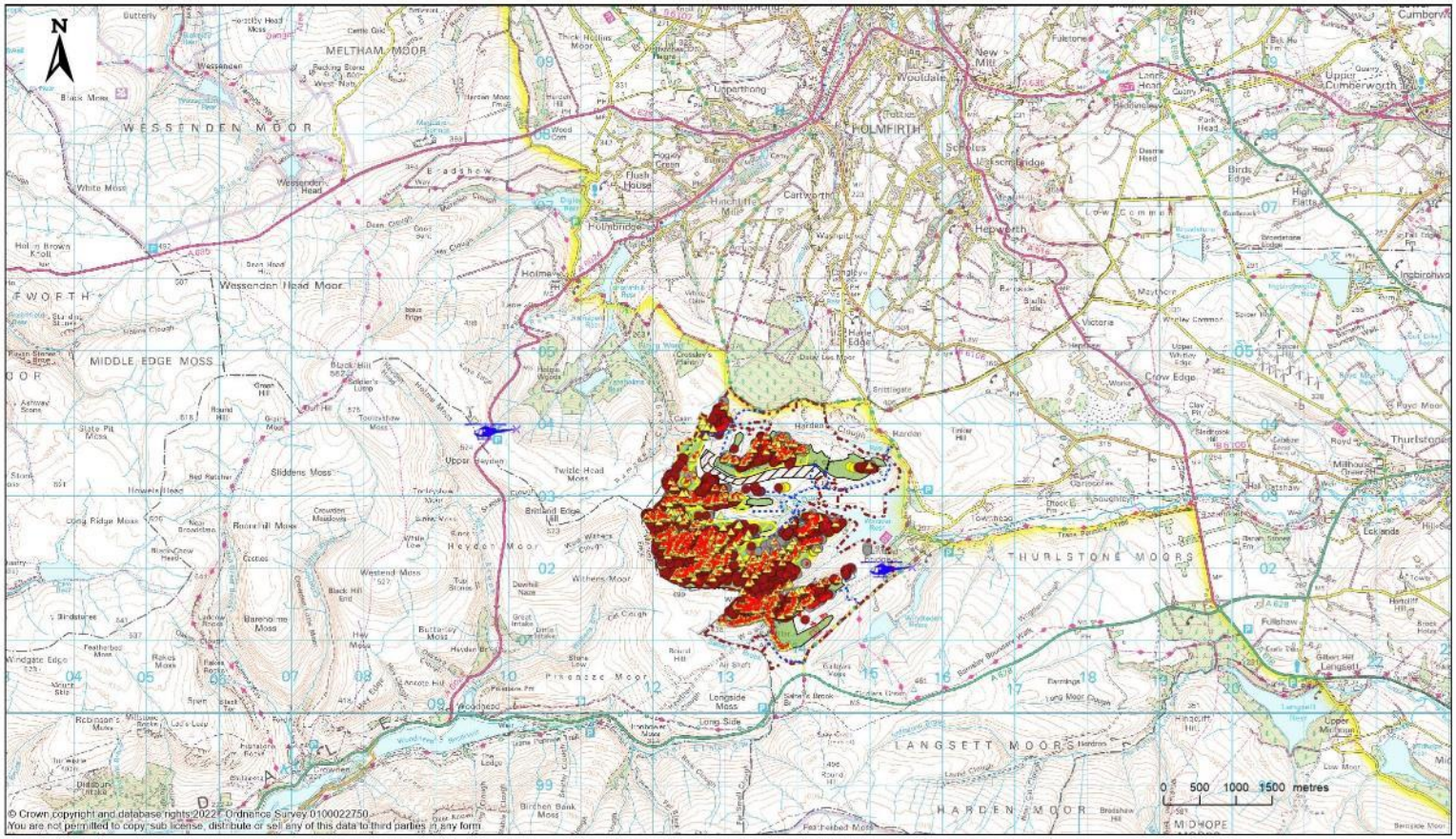
"Pool mix" sphagnum plugs will be planted around the edges of existing pools in order to introduce species of sphagnum suited for wet conditions/pools.

4.11. Maintenance Lime and Fertiliser

Follow-up ("maintenance") Lime and fertiliser application will be applied approximately 12 months after initial LSF application; and thus is anticipated for February 2025. The contractor shall specify in their tender return the proposed methodology for transporting materials on to site and method for waste removal.

Maps

- Map 1: Site Location Overview
- Map 2: Access and Lift Site Overview.
- Map 3a: Stone and timber dams- package 7
- Map 3b: Stone and timber dams- package 7a
- Map 4a: Peat Dams, and surface bunds- package 7
- Map 4b: Peat Dams, reprofiling and surface bunds- package 7a
- Map 5: Bare Peat Restoration Works - package 7a
- Map 6: Heather Cutting (overview)
- Map 7: Coir logs and standalone seeding – package 7a
- Map 8: Sphagnum Planting, Vascular Plug planting (total)
- Map 10: Windleden Lane Lift Site


N
WESSENDEN MOOR
MELTHAM MOOR
HOLMFIRTH
Wessenden Head Moor
MIDDLE EDGE MOSS
Slidens Moss
Heyden Moor
Pinnacle Moor
HURLSTONE MOORS
LANGSETT MOORS
HARDEN MOOR
0 500 1000 1500 metres
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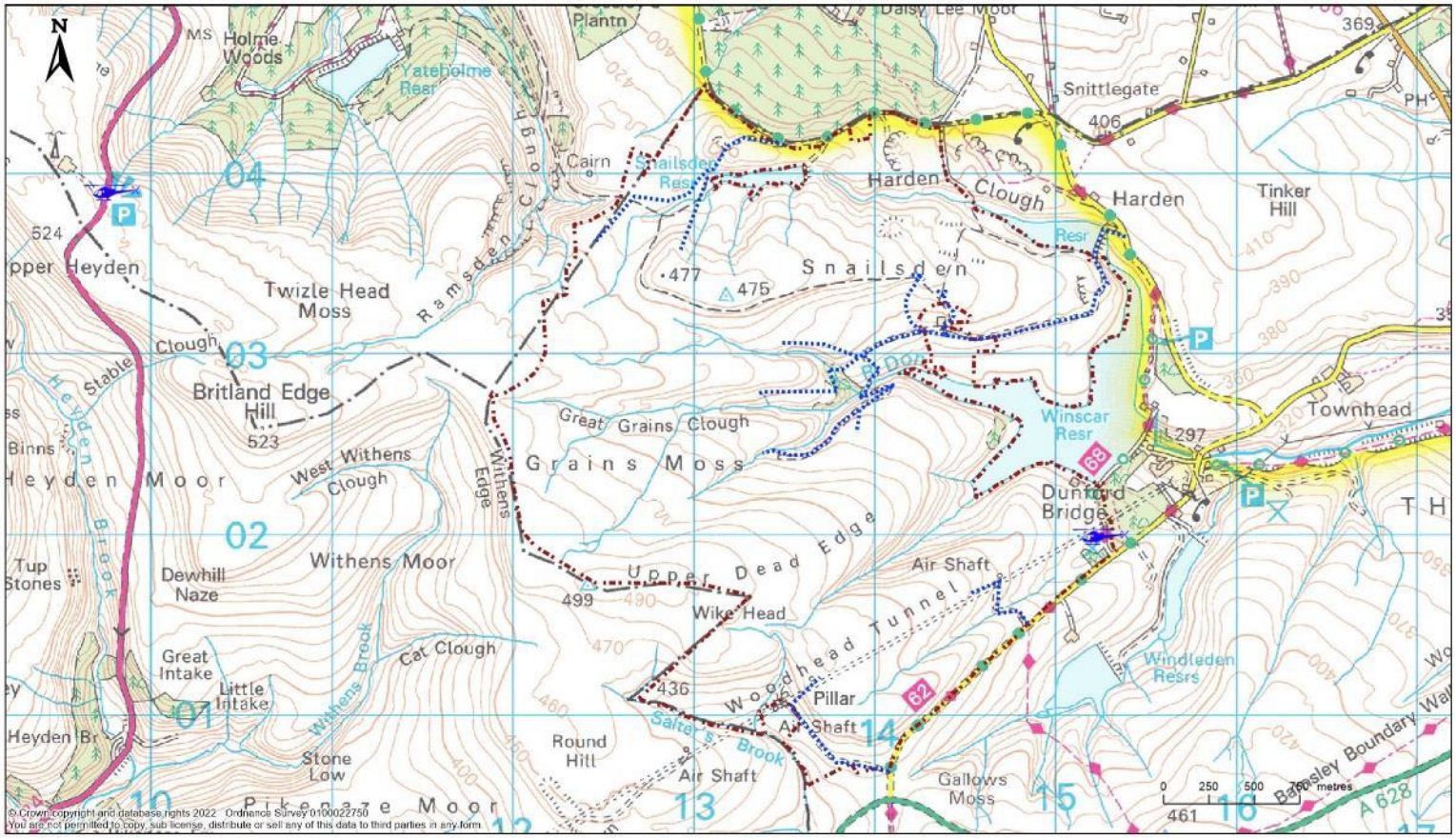
Access & Lift Sites
Machine Access
Lift Site
Proposed Works 2022-25
Re-profiling
Brash, LSF & plug plants
Gully Blocking, Peat
Gully Blocking, Stone
Gully Blocking, Heather Bale
Gully Blocking, Coir
MOORS FOR THE FUTURE PARTNERSHIP
MFF133 Snailsden- MAP 1: Site Location Overview
Date: 08 April 2022
Drawn by: Pembroke Chris


N
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Yateholme Resr
Plantn
Daisy Lee Moor
Snittlegate
406
Cairn
Snailsden Resr
Harden
Clough
Harden
Tinker Hill
524
Upper Heyden
Twizle Head Moss
Ramsden Clough
477
475
Snailsden
Clough
Stable
Britland Edge Hill
523
Heyden Moor
Binns
West Withens Clough
Withens Edge
Grains Moss
Great Grains Clough
Bridge
Winscar Resr
297
Townhead
Dunford Bridge
Tup Stones
Dewhill Naze
Withens Moor
Upper Dead Edge
499
Wike Head
Air Shaft
Woodhead Tunnel
Great Intake
Little Intake
Cat Clough
Withens Brook
436
Pillar
Air Shaft
Windleden Resrs
Heyden Br
Stone Low
Round Hill
Salter's Brook
Air Shaft
Gallows Moss
Pikenaze Moor
Barnsley Boundary
A 628
461
0 250 500 750 metres
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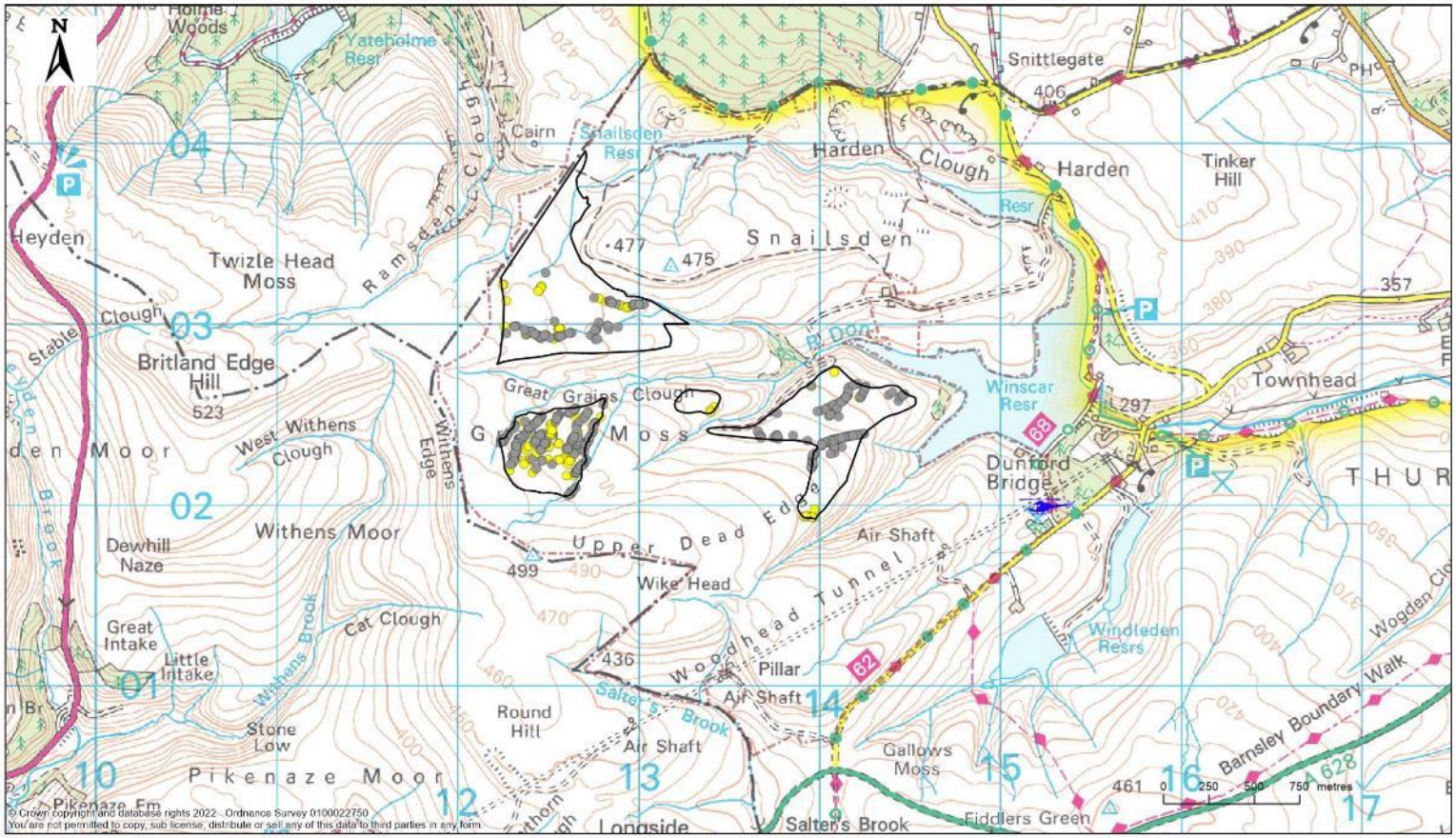
Access & Lift Sites
Machine Access
Lift Site
Stakeholder Database
Snailsden
MOORS FOR THE FUTURE PARTNERSHIP
MFF133 Snailsden- MAP 2: Access and Lift Site Overview
Date: 08 April 2022
Drawn by: Pembroke Chris


N
Holme Woods
Yateholme Resr
Cairn
Snailsden Resr
Snittlegate
406
Harden
Clough
Harden
Tinker Hill
Heyden
Twizle Head Moss
Ramsden Clough
477
475
Snailsden
357
Clough
03
Stable
Britland Edge Hill
523
R. Don
Great Grains Clough
Winscar Resr
297
Townhead
West Withens Clough
Withens Edge
Moss
Dunford Bridge
68
den Moor
02
Withens Moor
Upper Dead Edge
Air Shaft
Dewhill Naze
499
Wike Head
Woodhead Tunnel
Great Intake
Little Intake
01
Cat Clough
Withens Brook
436
Pillar
Air Shaft
14
Windleden Resrs
Wogden Clough
Round Hill
Salter's Brook
Stone Low
Air Shaft
Gallows Moss
15
16
Barnsley Boundary Walk
A628
461
0 250 500 750 metres
Pikenaze Moor
10
12
13
Pikenaze Fm
Longside
Salter's Brook
Fiddlers Green
17
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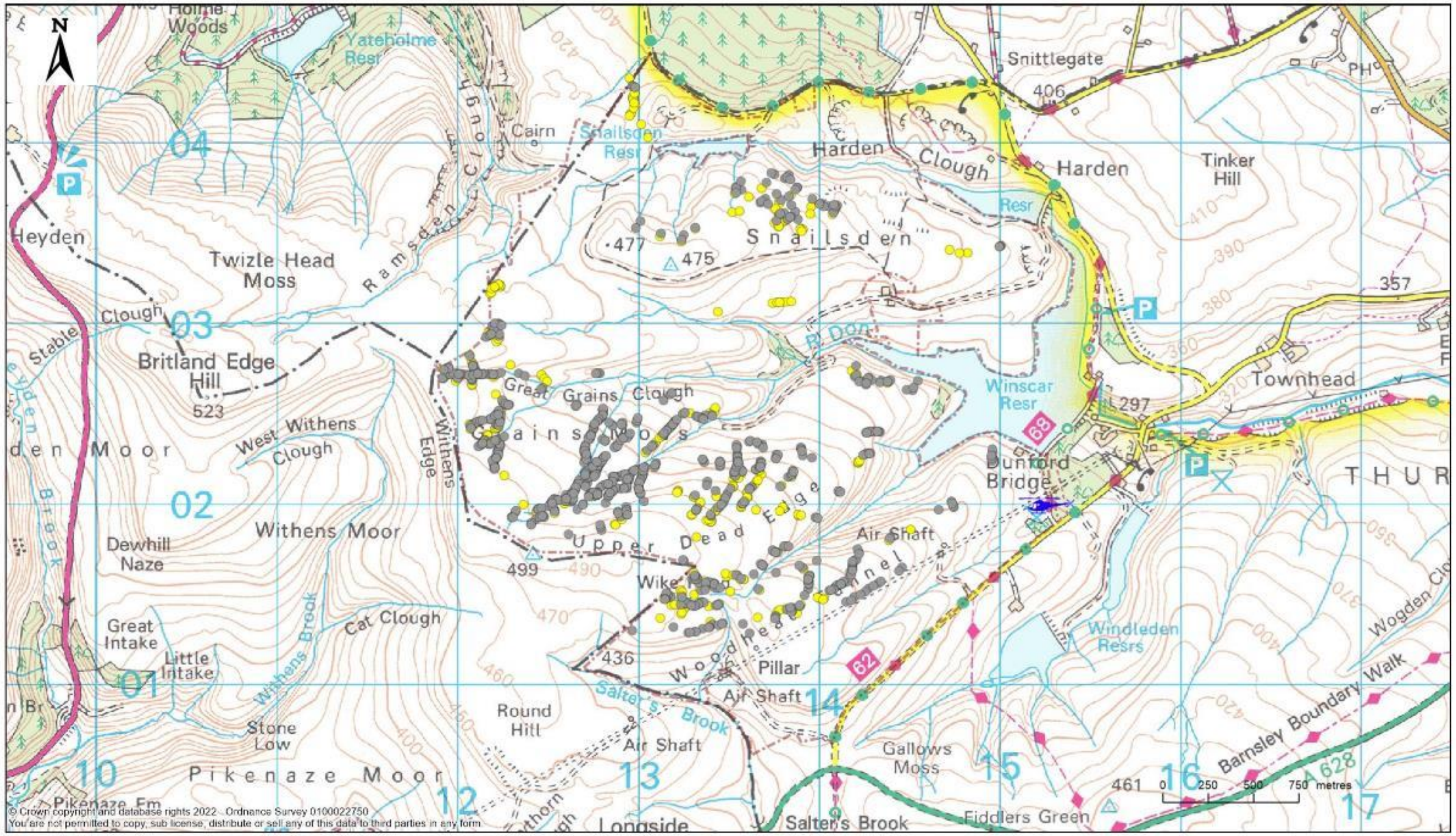
MFFP Lift Sites and Access
Lift Site
SSSI Units
Yorkshire Water Survey Data
Gully Blocking, Stone
Gully Blocking, Timber
Stakeholder Database
Snailsden
MOORS FOR THE FUTURE PARTNERSHIP
MFF 133 Snailsden Map 3a
Package 7 Stone and Timber
SSSI Unit 65
Package 7
Date: 21 April 2022
Drawn by: Thorpe Katy



MFFP Lift Sites and Access

Lift Site

Yorkshire Water Survey Data

Gully Blocking, Stone

Gully Blocking, Timber

Stakeholder Database

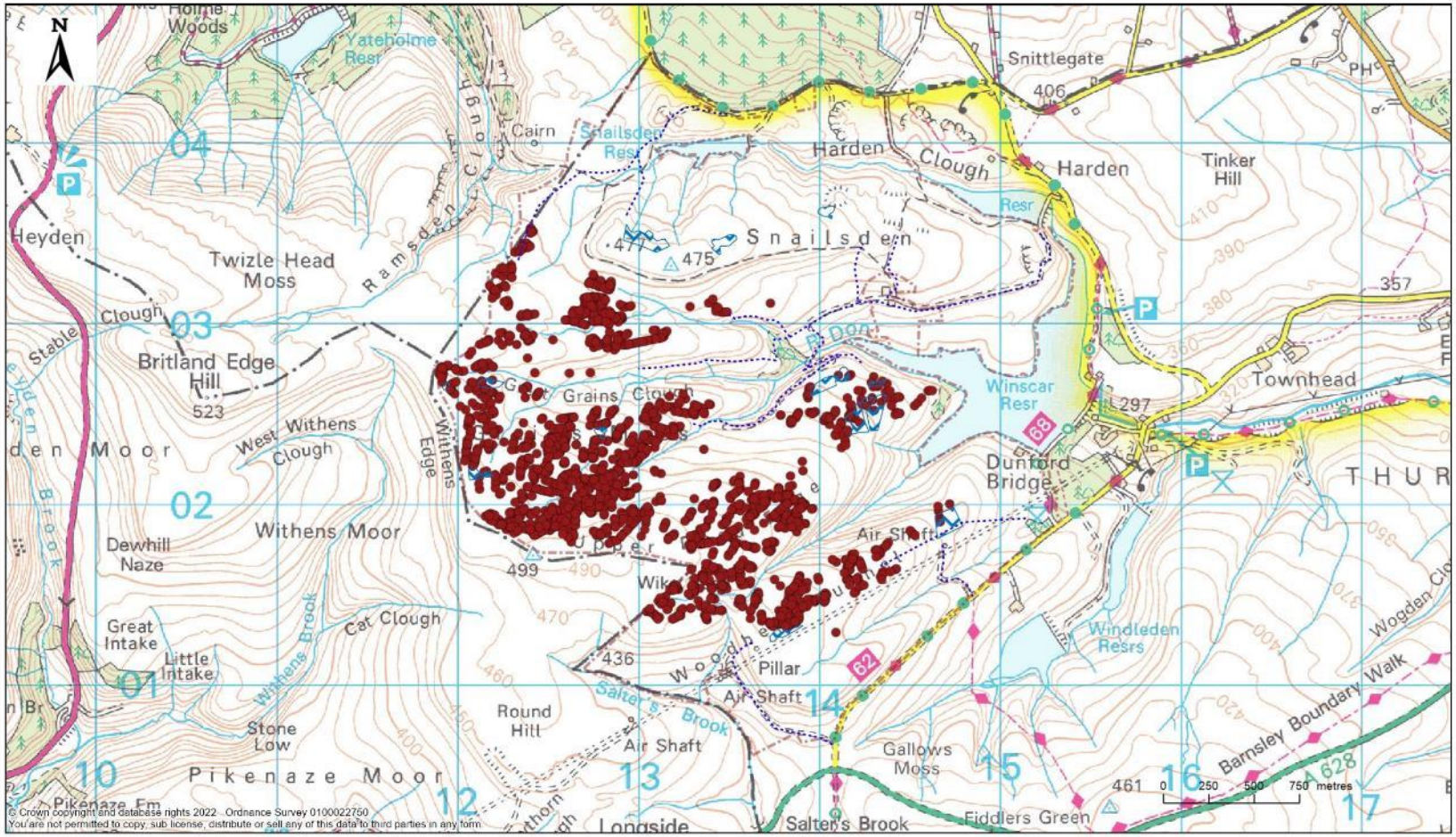
Snailsden

MOORS FOR THE FUTURE PARTNERSHIP

MFF 133 Snailsden Map 3b
Package 7a Stone and Timber

Package 7a

Date: 21 April 2022 Drawn by: Thorpe Katy



MFFP Lift Sites and Access
- Lift Site
- Machine Access

Yorkshire Water Survey Data
- Bunding
- Gully Blocking, Peat

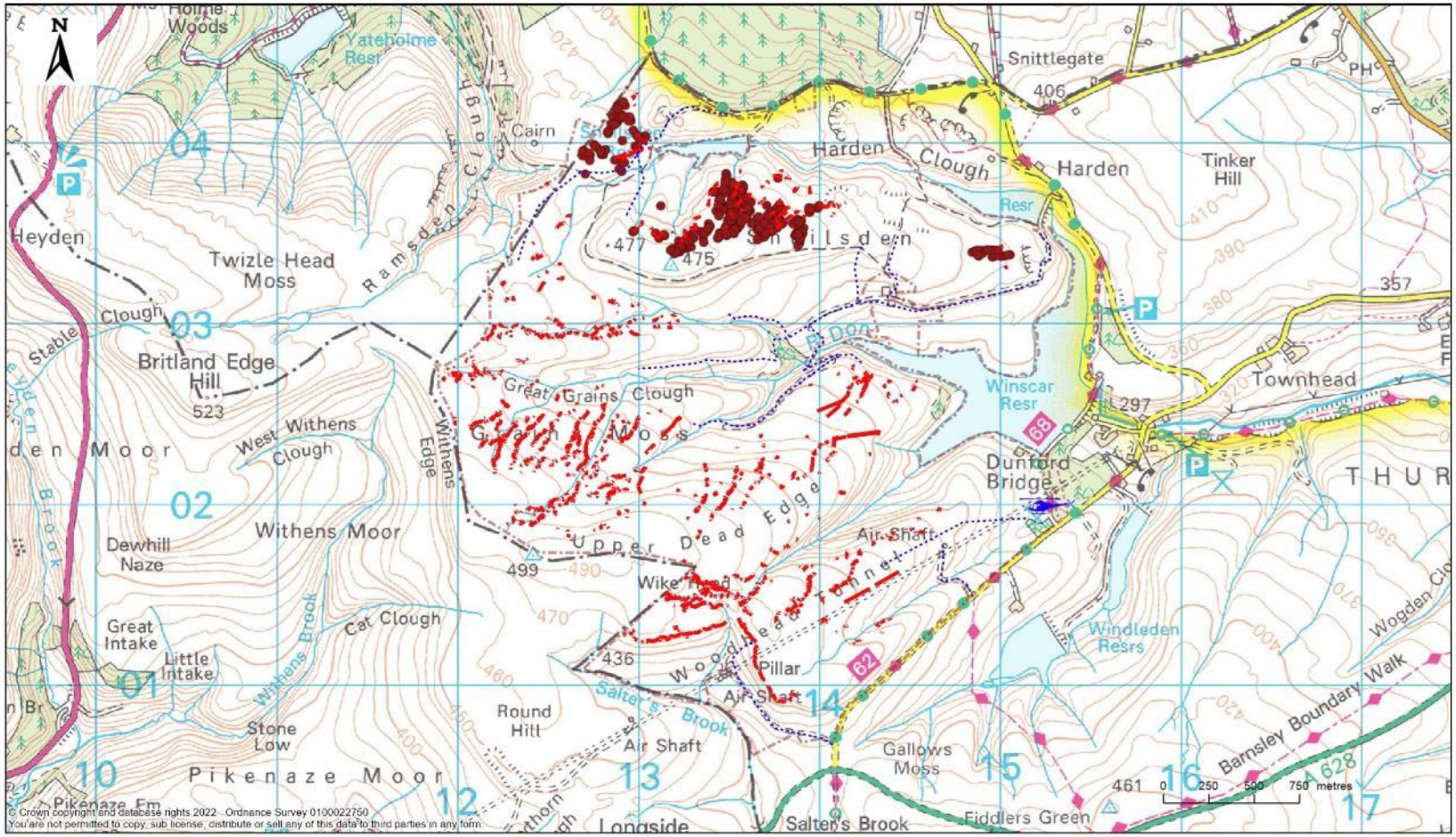
Stakeholder Database
- Snailsden

MOORS FOR THE FUTURE PARTNERSHIP

MFF 133 Snailsden Map 4a
Package 7 Peat Dams and Bunding

Package 7

Date: 21 April 2022 Drawn by: Thorpe Katy



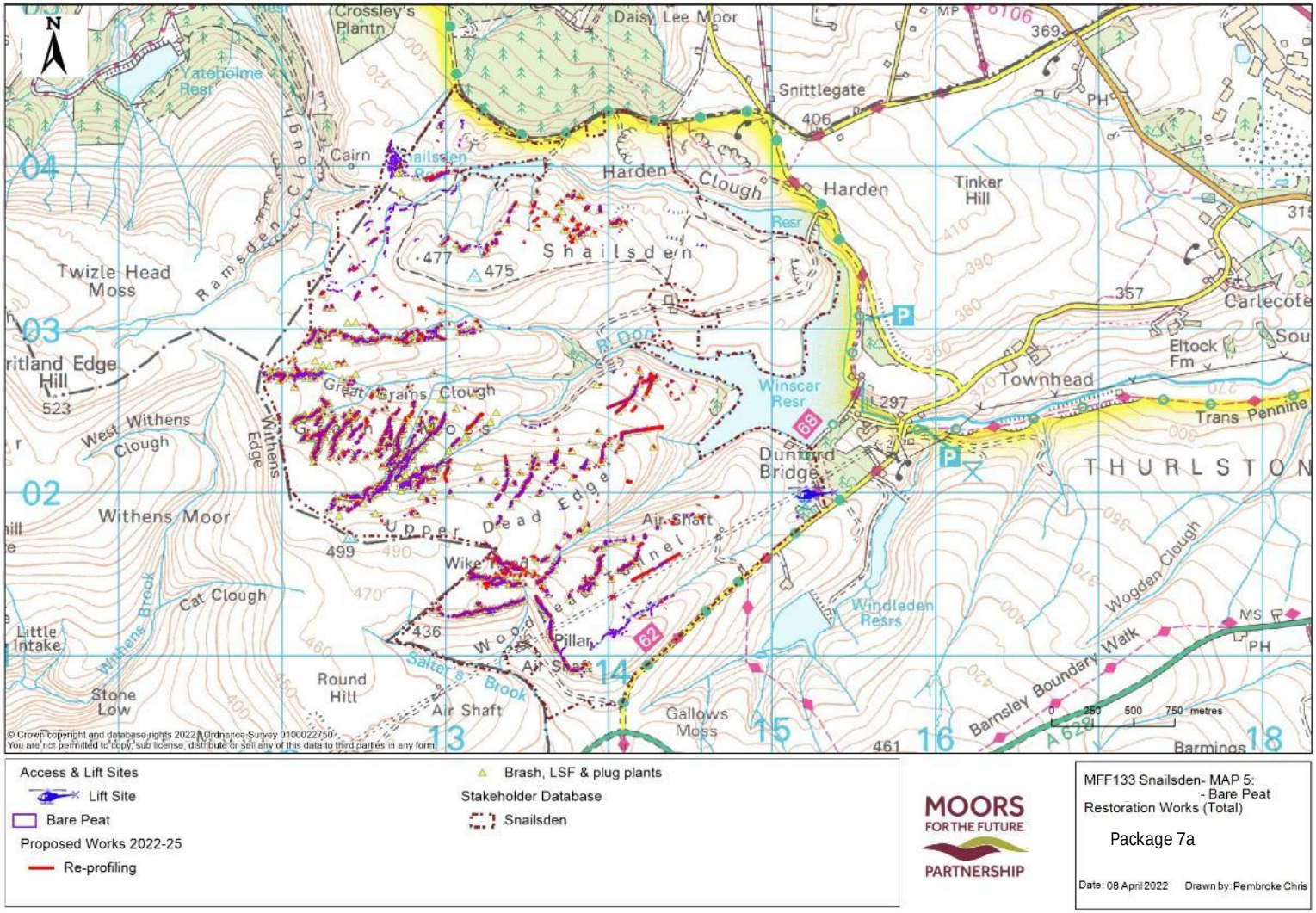
MFFP Lift Sites and Access
Lift Site
Machine Access
Yorkshire Water Survey Data
Re-profiling
Gully Blocking, Peat
Stakeholder Database
Snailsden

MOORS FOR THE FUTURE PARTNERSHIP

MFF 133 Snailsden Map 4b
Package 7a Peat Dams and Reprofiling

Package 7a

Date: 21 April 2022 Drawn by: Thorpe Katy


N
Crossley's Plantn
Daisy Lee Moor
Yateholme Resr
Snittlegate
Cairn
Harden
Clough
Harden
Tinker Hill
Shailsden
Twizle Head Moss
Ramsden Clough
Carlecote
Eltock Fm
Townhead
Trans Pennine
Winscar Resr
Dunford Bridge
THURLSTON
Great Grains Clough
West Withens Clough
Withens Edge
Withens Moor
Upper Dead Edge
Air Shaft
Wike Head
Cat Clough
Withens Brook
Little Intake
Stone Low
Round Hill
Saltersbrook
Pillar
Gallows Moss
Windleden Resrs
Wogden Clough
Barnsley Boundary Walk
Barmings
A 628
0 250 500 750 metres
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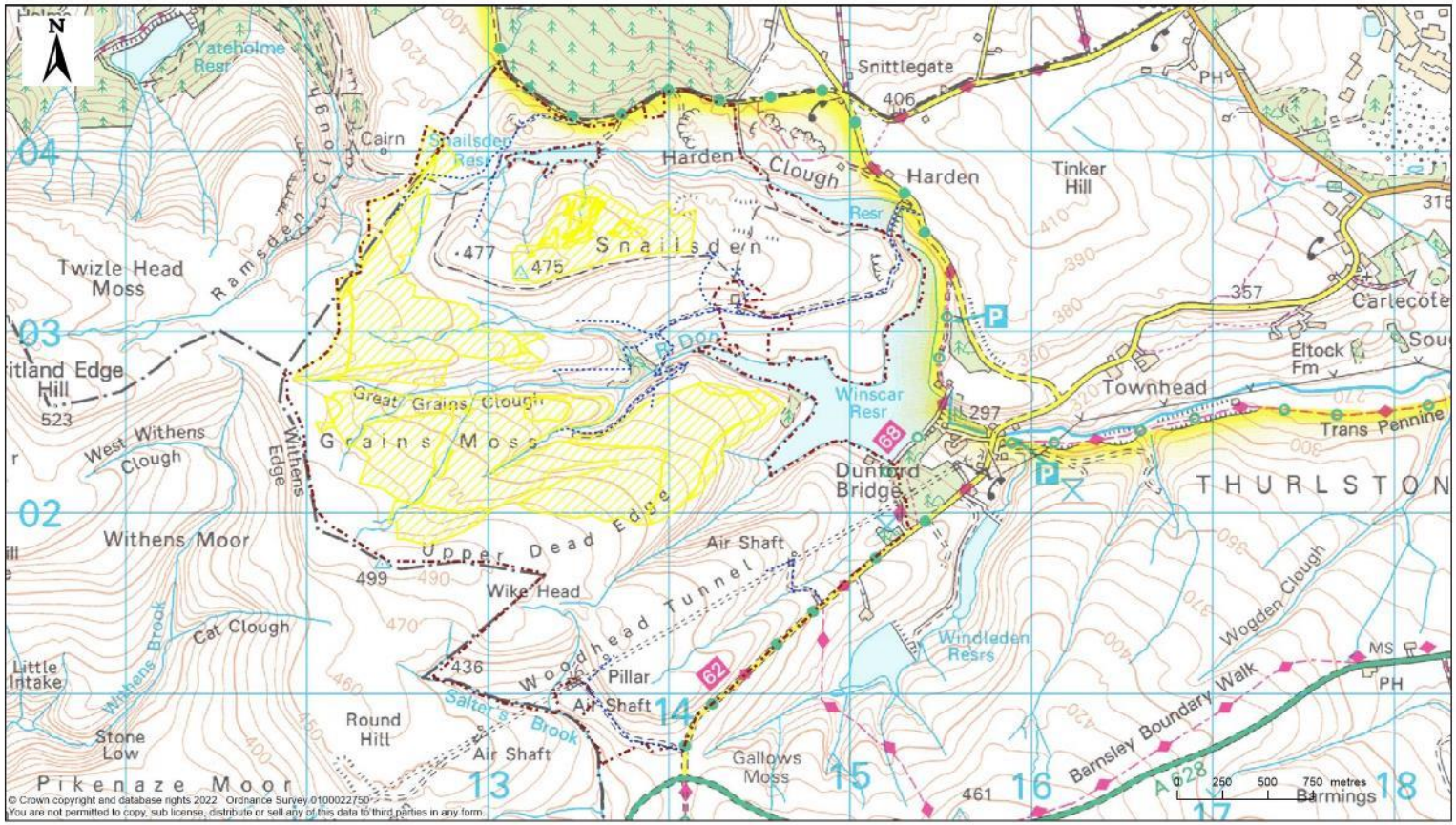
Access & Lift Sites
Lift Site
Bare Peat
Proposed Works 2022-25
Re-profiling
Brash, LSF & plug plants
Stakeholder Database
Snailsden
MOORS FOR THE FUTURE PARTNERSHIP
MFF133 Snailsden- MAP 5:
- Bare Peat
Restoration Works (Total)
Package 7a
Date: 08 April 2022
Drawn by: Pembroke Chris



Access & Lift Sites

Machine Access

Proposed Works 2022-25

Cutting - Heather

Stakeholder Database

Snailsden

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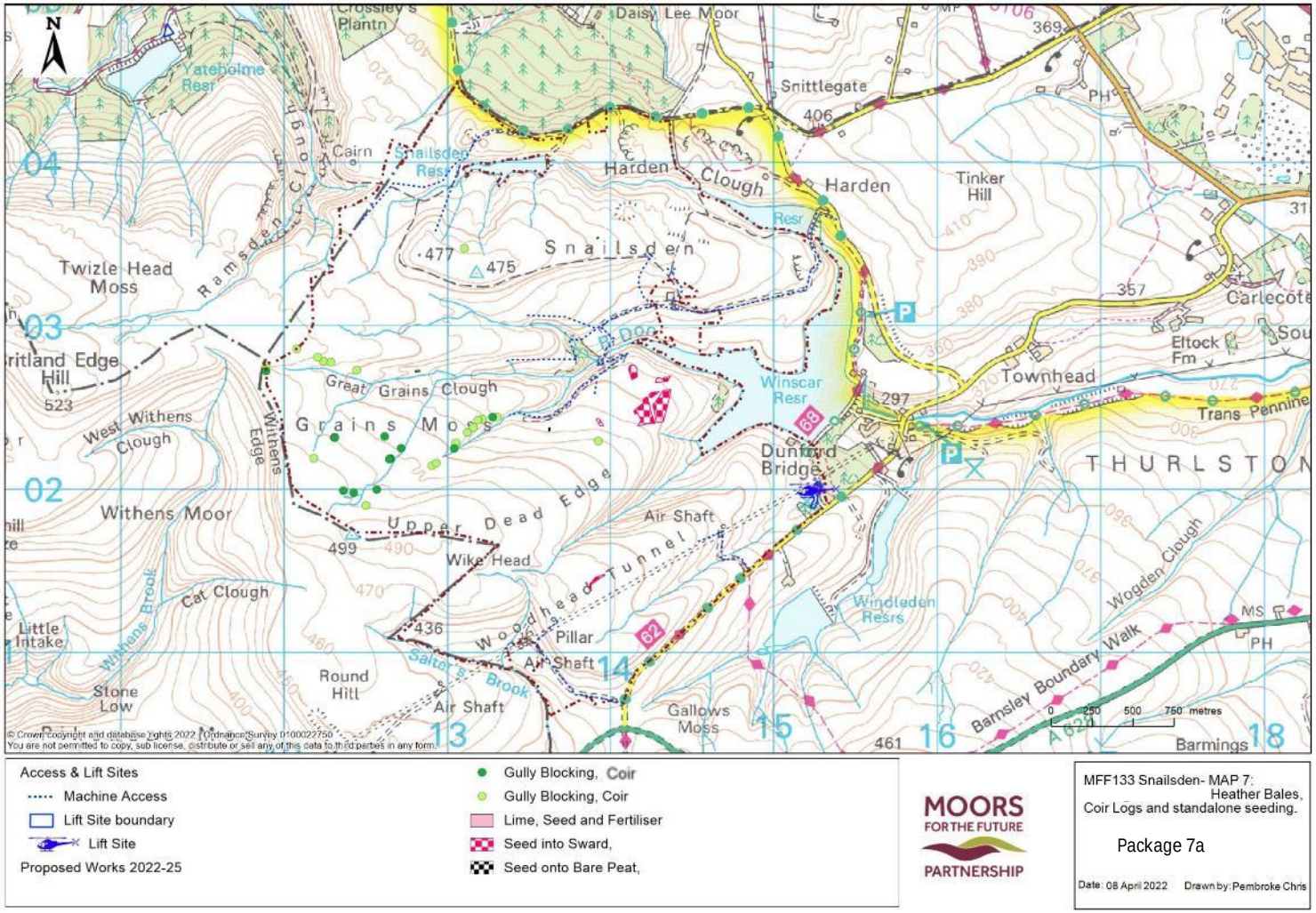
MFF133 Snailsden- Map 6. : Heather Cutting (Overview)

Package 7a

Date: 08 April 2022 Drawn by: Pembroke Chris


Yateholme Resr
Crossley's Plantn
Daisy Lee Moor
Snittlegate
406
Cairn
Snailsden Resr
Harden Clough
Harden
Tinker Hill
Twizle Head Moss
Ramsden Clough
477
475
Snailsden
Resr
357
Carlecote
Eltock Fm
Townhead
Trans Pennine
Great Grains Clough
Winscar Resr
297
Grains Moss
West Withens Clough
Withens Edge
Dunford Bridge
THURLSTON
Withens Moor
Upper Dead Edge
Air Shaft
499
Wike Head
Woodhead Tunnel
Windleden Resrs
Wogden Clough
Cat Clough
Withens Brook
Little Intake
436
Pillar
Air Shaft
Saltonstall Brook
Round Hill
Stone Low
Air Shaft
Gallows Moss
461
Barnsley Boundary Walk
Barmings
02
03
04
13
14
15
16
18
62
68
0 250 500 750 metres
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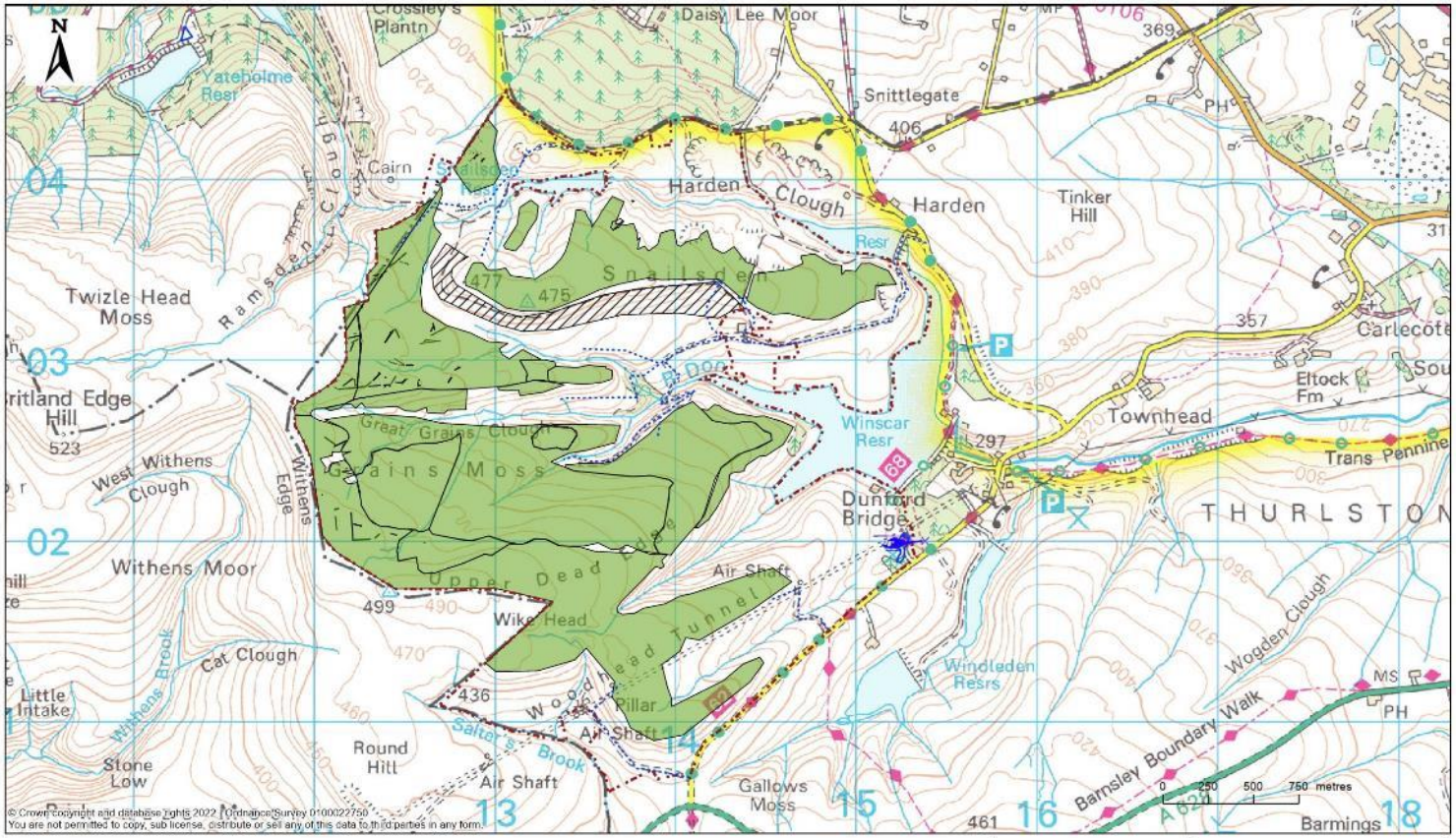
Access & Lift Sites
Machine Access
Lift Site boundary
Lift Site
Proposed Works 2022-25
Gully Blocking, Coir
Gully Blocking, Coir
Lime, Seed and Fertiliser
Seed into Sward,
Seed onto Bare Peat,
MOORS FOR THE FUTURE PARTNERSHIP
MFF133 Snailsden- MAP 7:
Heather Bales,
Coir Logs and standalone seeding.
Package 7a
Date: 08 April 2022
Drawn by: Pembroke Chris


N
Yateholme Resr
Crossley's Plantn
Daisy Lee Moor
Snittlegate
406
Cairn
Harden Clough
Harden
Tinker Hill
Twizle Head Moss
Ramsden Clough
Snailsden
Resr
Carlecote
Eltock Fm
Townhead
Trans Pennine
Winscar Resr
Dunford Bridge
THURLSTON
Great Grains Clough
Grains Moss
West Withens Clough
Withens Edge
Withens Moor
Upper Dead Tree
Air Shaft
Wike Head
Wood Head Tunnel
Pillar
Air Shaft
Windleden Resrs
Wogden Clough
Barnsley Boundary Walk
Cat Clough
Withens Brook
Little Intake
Stone Low
Round Hill
Saltons Brook
Air Shaft
Gallows Moss
Barmings
0 250 500 750 metres
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Machine Access
Lift Site boundary
Lift Site
Proposed Works 2022-25
Plug Plants
Sphagnum Inoculation
Stakeholder Database
Snailsden
MOORS FOR THE FUTURE PARTNERSHIP
MFF133 Snailsden- MAP 8: Sphagnum Plug Planting and Vascular Plug plating (Total).
Package 7a
Date: 08 April 2022
Drawn by: Pembroke Chris


N
Dearden Foot Plantation
Winscar Reservoir
Overflows
Dunford Bridge
Path
FB
Bar House
Stepping Stones
WINDLE EDGE
Car Pk
Winscar Lodge
New Railway Cottages
ESS
Sks
South View
Shepley Ings
Woodhead Tunnel (Dis)
Car Park
Smallden Clough
Windleden Path
Grip Hill Slack
Lower Grip Hill
Upper Grip Hill
Air Shaft
Pit (dis)
Track
Little Moor
Lower Windleden Reservoir
0 50 100 150 metres
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Access & Lift Sites
Machine Access
Lift Site boundary
Lift Site
Stakeholder Database
Snailsden
MOORS FOR THE FUTURE PARTNERSHIP
MFF133 Snailsden- MAP 10: Windleden
Lane Lift Site
Date: 08 April 2022
Drawn by: Pembroke Chris