

## 3. Middle Hills Hydrological Survey Brief

Written by Hazel Crowther (Peak District National Park Authority) and Kate Williams (Natural England)

### **Key Contacts**

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### **Included information:**

Map 3.1 – Location map and project area

Map 3.2 – Habitat map

Map 3.3 – Archaeological features

### **Introduction:**

Please refer to attached Map. 3.1 which shows the location of Middlehills (Leek Moors SSSI unit 183). This entire land holding is approximately 173ha in size. The area shown is owned by the Peak District National Authority. It is open access. The site is bounded on two sides by public roads. There is no vehicular access across the works site.

The habitat map (Map 3.2) shows the location of moorland habitats. Under previous ownership the moorland formed part of a wider shooting estate and a number of natural watercourses on blanket bog habitat were modified to encourage drainage of the moor, and a number of artificial grips were dug at this time. The archaeological survey map shows the location of many of these (Map 3.3). In recent years the Authority has blocked a significant number of these features. A map showing the locations of blocked features can be provided at the start of the project.

Digital LiDAR data for this area can be found here:

<https://environment.data.gov.uk/DefraDataDownload/?Mode=survey>

This project seeks to identify any remaining grips that would benefit from blocking as well as identifying any additional opportunities to slow the flow of water and enhance the hydrological function of the blanket bog and moorland block as a whole to support the habitat and species that rely upon it. For example there may be opportunities for holding and slowing the flow of water from the site through contour bunding.

### **Site conditions and scope of works**

The survey area is located within the Leek Moors SSSI and includes areas of wet and dry heath, blanket bog, mires, flushes and willow scrub. The moors are also within the Peak District Moors (South Pennine Moors Phase II) Special Protection Area (SPA) and within the South Pennine Moors Special Area of Conservation (SAC). The moors support birdlife including short eared owl and upland breeding waders such as snipe and curlew.

The majority of Middle Hills is not grazed, with the exception of the far eastern portion of the site (Boarsgrove) which is fenced and grazed with cattle during the summer months. The moor is crossed with primary and secondary watercourses. In places groundwater emerges on slopes and wetlands and flushes have developed.

Up until this date, no formal hydrological survey has been undertaken, although a good understanding of the systems has been developed through the production and ongoing revisions of Moorland Management Plans. A survey is now required to identify opportunities to restore and enhance the full hydrological function of the moor, in order to deliver favourable management in line with conservation and SSSI objectives, based on sound evidence and an understanding of the systems as a whole.

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The location of the moorland survey area within the Warslow Estate is outlined on the attached map. The overall aim will be to identify and describe the hydrological context of the survey area and identifying opportunities to restore hydrological function and water storage capabilities.

Overall aims are to:

- Restore the hydrological function of the moor, particularly blanket bog and wetland features.
- Slow the flow of water across and from the site.
- Slow the flow of water with the potential capacity to dissipate excess water across the moor and rewet adjacent ground.
- Reduce the potential for erosional pathways to develop.
- Reduce future fire risk, improve and enhance habitat resilience and condition.

The survey should include:

- **Review any existing data pertaining to drainage** - both natural and modified surface drainage. It is anticipated that existing data sets will be used (where available) e.g. LiDAR data, aerial photography, any mapped records held by the Peak District National Park Authority and Natural England (NE) and other sources such as Google Earth etc. The contractor should ideally be able to manipulate the LiDAR data to produce local relief models to identify drainage ditches and possibly levels of wetness with intensity mapping.
- **Undertake field survey of all hydrological features**, drainage, springs, outflows. This should also include survey and extent of related wet habitats – e.g. flushes.
- **Quantify peat depth across the survey area**. For example using a measuring stick or augers - peat cores.
- **Identify and describe water inputs/outputs** and related features to the site including flow sources and their direction.

The outputs should include:

- **Maps and descriptions of drainage features and key water movements across and through the site**, surface and sub-surface drainage features, showing depths, water depths and widths, direction of flow/gradient, flow rate, base substrate and whether natural or modified and/or man-made.
- **Map of the extent of existing wet habitats.**
- **Peat depth maps.**
- **An opportunity mapping document** – mapping, describing and prescribing opportunities for restoring the natural hydrological regime or otherwise managing the hydrology for environmental gain in line with existing ecological interests and SSSI designation objectives. The resulting report should identify risks and opportunities, including what benefits there will be; any risks to other ecological interests or archaeological features, and any anticipated impacts on surrounding land/flood risk. This should include a 'wetland conceptualisation plan or plans' showing possible scenarios for altering the hydrology to improve environmental condition.
- **Identify any future capital works and cost proposals**, including details of rewetting such as the amount and type of grips, waterflows or drains that may require works (length of grips or drain to block, how eroded, whether some require no intervention etc.), access routes and detailed methodologies e.g. block spacing, dispersal of water, re-profiling etc. The methodology should identify any constraints to work e.g. avoiding sensitive ecological and archaeological features, timings etc.
- **Digital data sets of identified ground features**

Proposed costings should be inclusive and include provision of all labour, materials and machinery, transport, installation and any airlifting as considered necessary to deliver the works. Where dams are

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proposed the total number of dams and the cost per dam should be included. (e.g. price per metre or block) should be given.

It should be noted that any capital works proposed will need to be undertaken outside the main breeding bird period mid- March to end of August.

The survey should be supplied in a digital format compatible with Mapinfo or ESRI software. The report should include colour survey maps with suitable keys and detail, together with maps showing recommendations and opportunities for the future sustainable management of the moors. The report will remain in the ownership of the PDNPA, who will hold all the licensing rights for said report.

The deadline for delivery of the survey work is 30th April 2021 with extension by agreement.

The quote should allow for a start up meeting.

### **COSTINGS AND TENDER EVALUATION**

The PDNPA is VAT registered so costings should exclude VAT and be fixed until end Dec 2021.

#### **Tender evaluation**

The successful tenderer will be selected based on an evaluation using the criteria set out below.

1. Price (50% of the total score value);
  - The Tenderers score for price is out a maximum score out of 50
2. Quality criteria (50% of the total score value):
  - Experience and Capability to undertake the works
  - Proposed methodology

<b>Criteria</b>	<b>Weighting</b>	<b>Evaluation Criteria</b>
Price	50%	50 x (Lowest Tender Price)/(Tenderer X's Price)
Experience and Capability to undertake the works	25%	5 x score
Proposed methodology	25%	5 x score

#### **Supporting information**

Please provide brief supporting documentation/text regarding:

**Responses to the Quality Question which reflect the Quality criteria above should be provided with the Form of Tender. Responses should address the following:**

- Demonstration of a clear understanding of the brief, what is required. Explain in detail how you will undertake this work and the equipment you will use. Please provide information to demonstrate knowledge, experience and understanding of the brief.
- Supporting information to demonstrate successful experience of working in this habitat, or similar peatland habitat, including examples of previous work.

Tenderers scores for Quality and Price will then be added together to produce an overall score and the Tenderer with the highest overall score will be awarded the contract.

Tenders should itemise their costs. The quote should allow for a start up meeting.

Costings should be inclusive and include provision of all elements considered necessary by the contractor to deliver the works.

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Rejected or eliminated tenders will not be scored.

### **Additional information:**

- Risk assessments including any lone working practices;
- Welfare facilities to be provided where applicable;
- Details of any professional & public & employer liability insurance where applicable
- Company registration number (if a limited company)
- Research protocol
- Vat registration number (if applicable)

Failure to comply with any of the foregoing requirements may render a Tender liable to disqualification.

### **Dates**

Tender return dates 8th January 2021

Tender award by 15th January 2021

Survey completion by 15th March 2021

Report completion by 30th April 2021

Potential extension by agreement.