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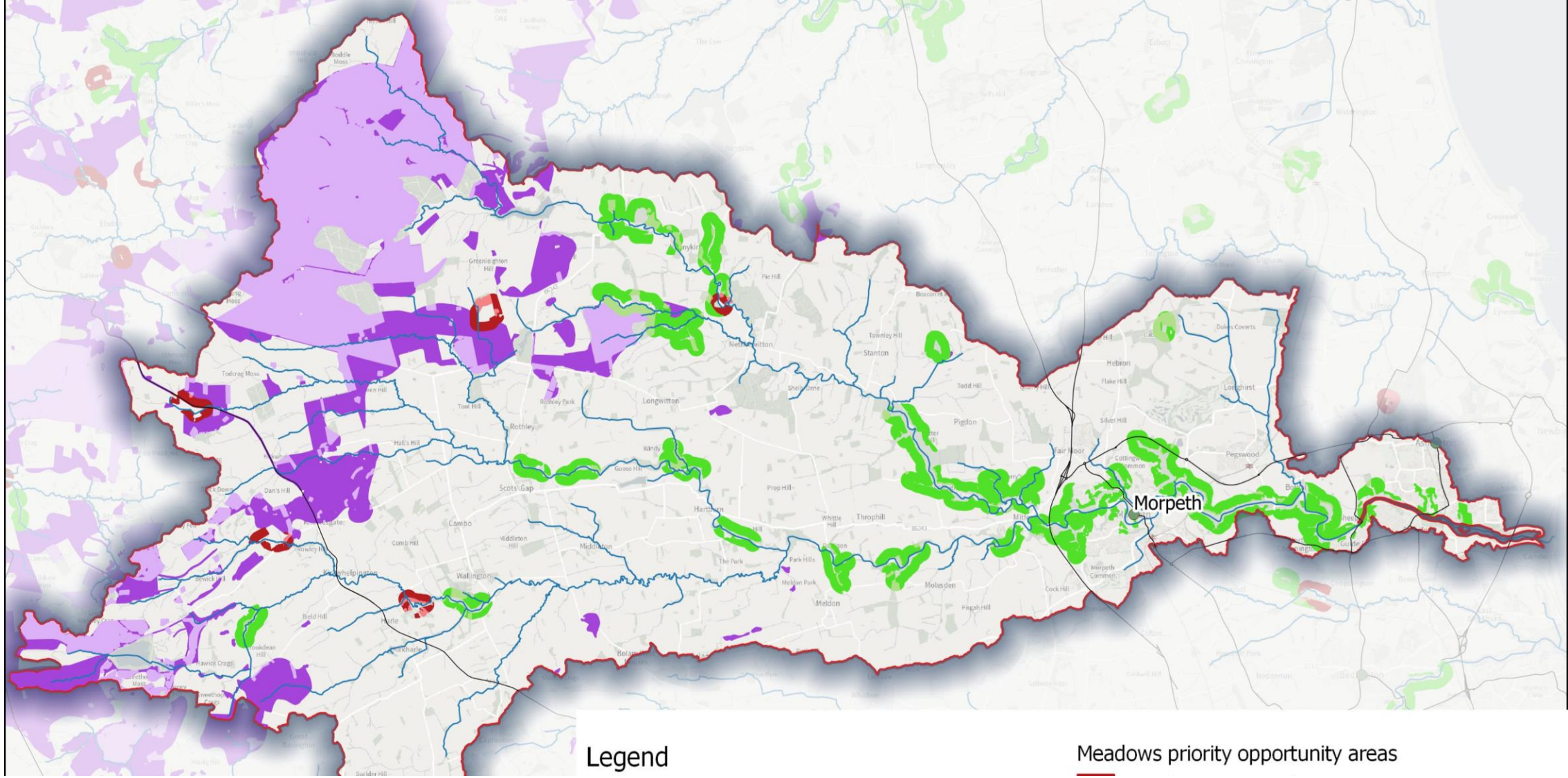

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LNRS Catchment map – a lot of white space!

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Pilot sites across three estates

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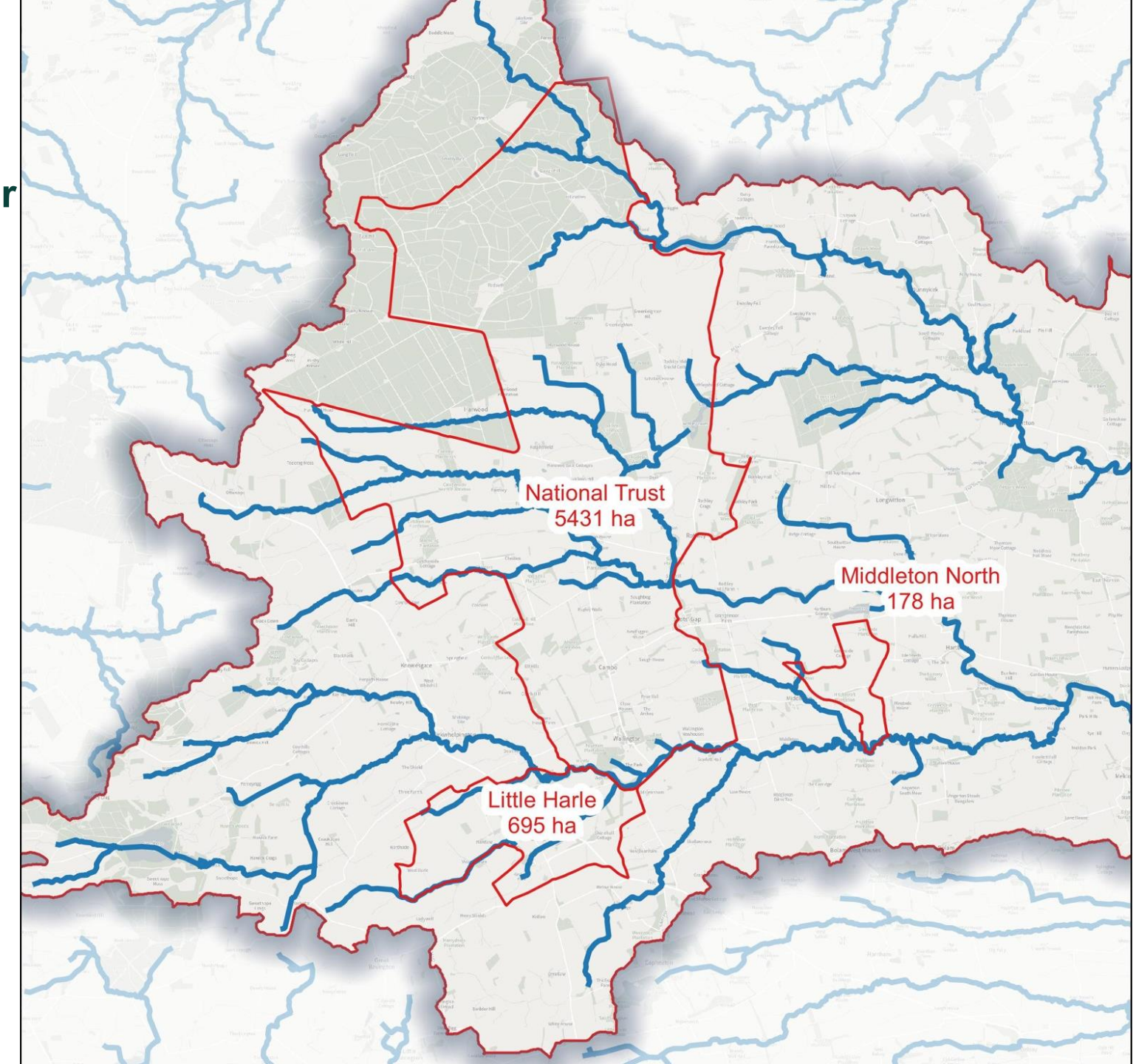

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Impacts – deep peat measurements in Harwood Forest presented a new site for peatland restoration

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Ground Levelling

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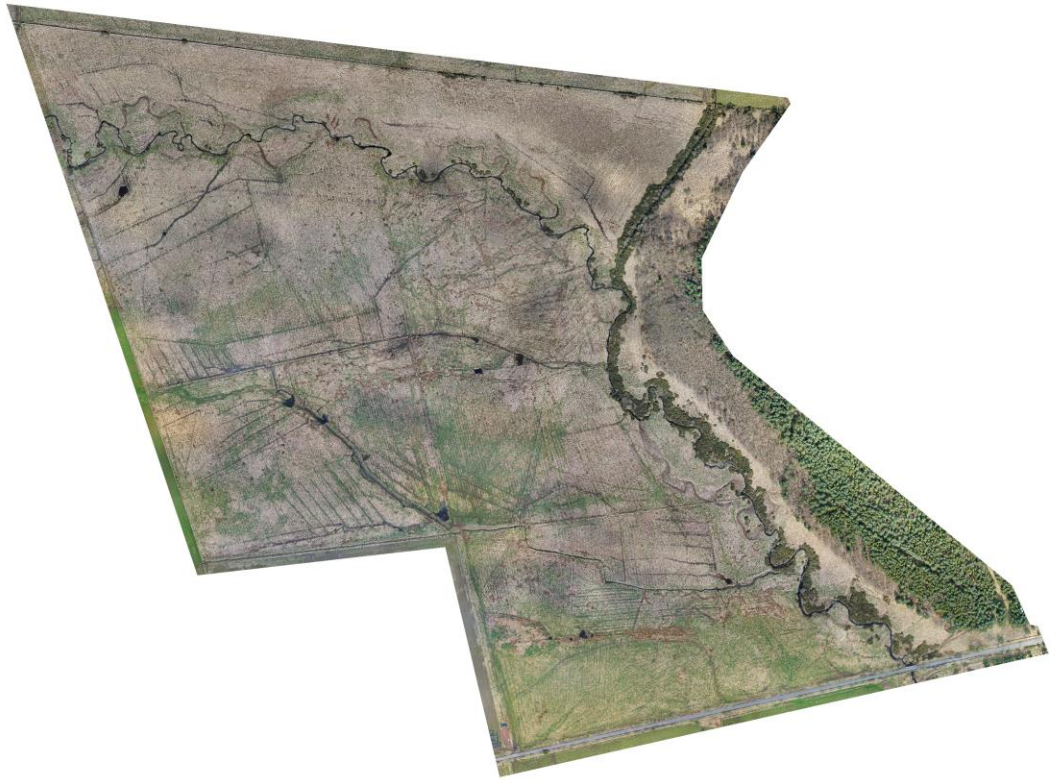

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Drone shot showing drains on Gallows Hill

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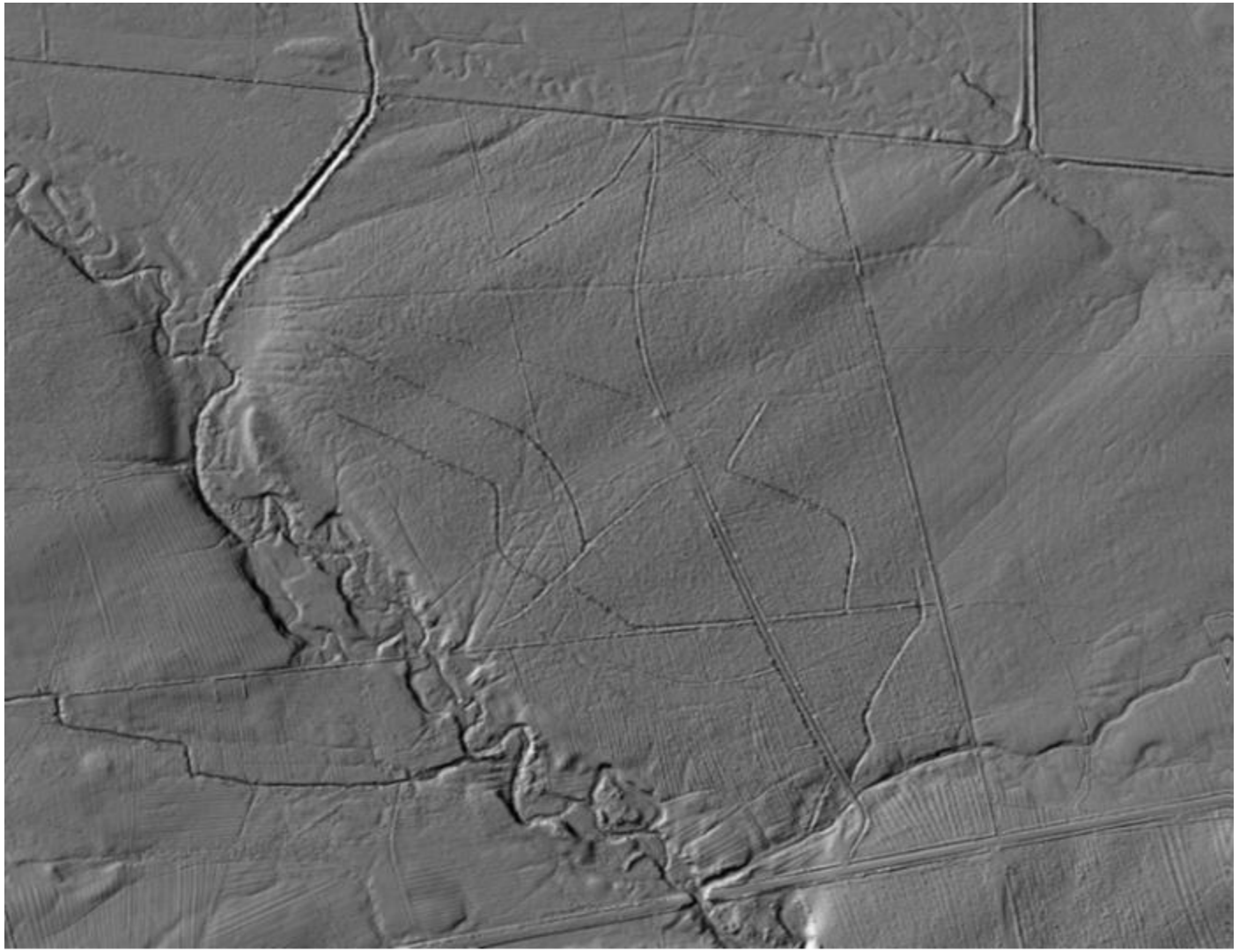

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Gallows Hill LIDAR/ National Trust

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Paleo channels

BEFORE

AFTER

This has already demonstrated surface water held back in pools and has spread the water as far as possible onto adjacent land.

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Impacts – fixed point cameras show how diverting the Harwood Burn into old channels and re-wetting the floodplain helps to address the natural hydrology.

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Time lapse photography

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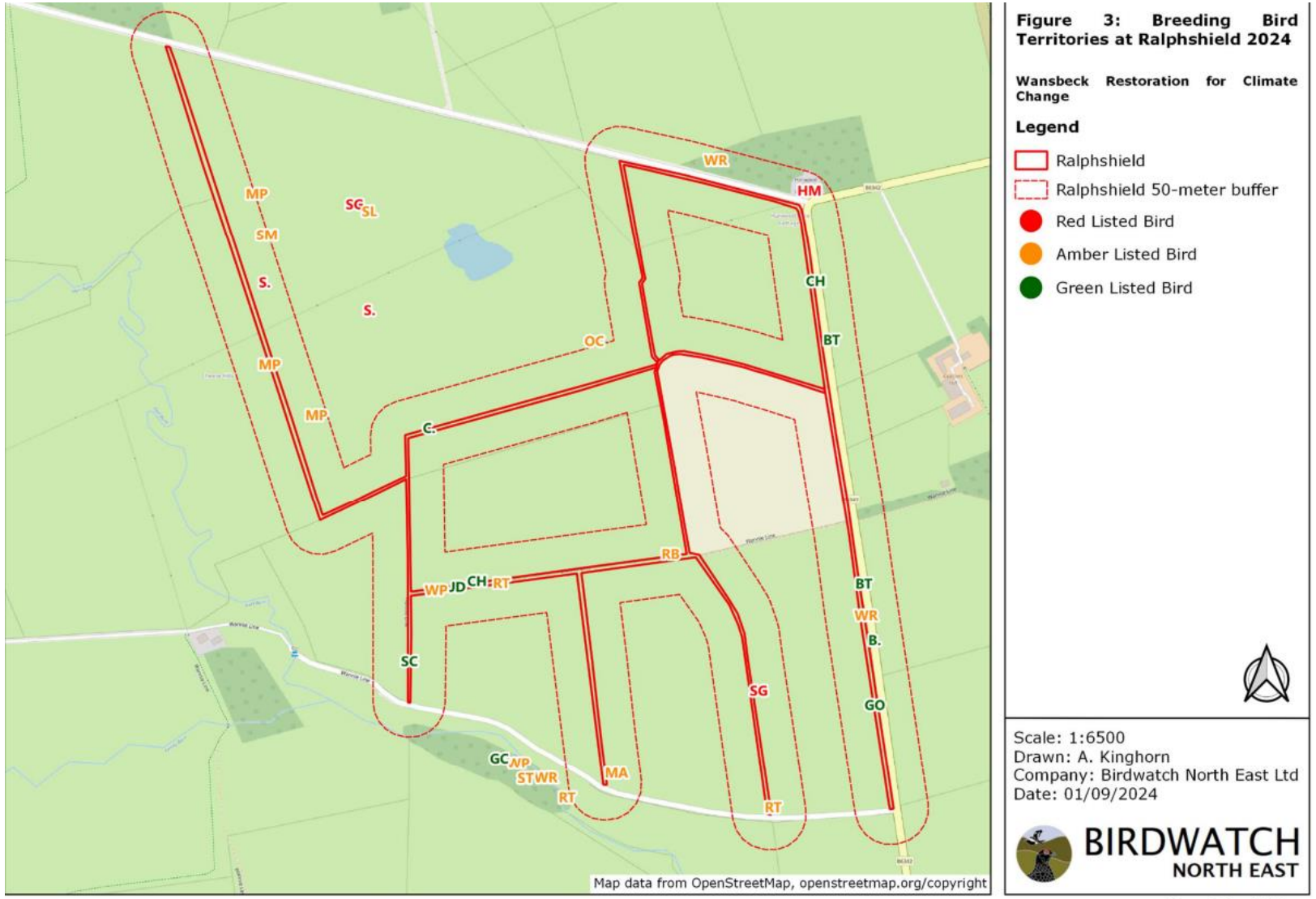

Figure 3: Breeding Bird Territories at Ralphshield 2024

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Legend

- Ralphshield
- Ralphshield 50-meter buffer
- Red Listed Bird
- Amber Listed Bird
- Green Listed Bird

Scale: 1:6500
Drawn: A. Kinghorn
Company: Birdwatch North East Ltd
Date: 01/09/2024

BIRDWATCH NORTH EAST

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Bird surveys

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(Curlew nest at Gallows Hill Farm, May 2024 - © Birdwatch North East)

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Bird surveys

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Dendrometry

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Impacts – monitoring soil and peat builds a data set that can be used by farmers to improve their primary asset

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Vegetation surveys

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Catcherside Fell

Vegetation Transects

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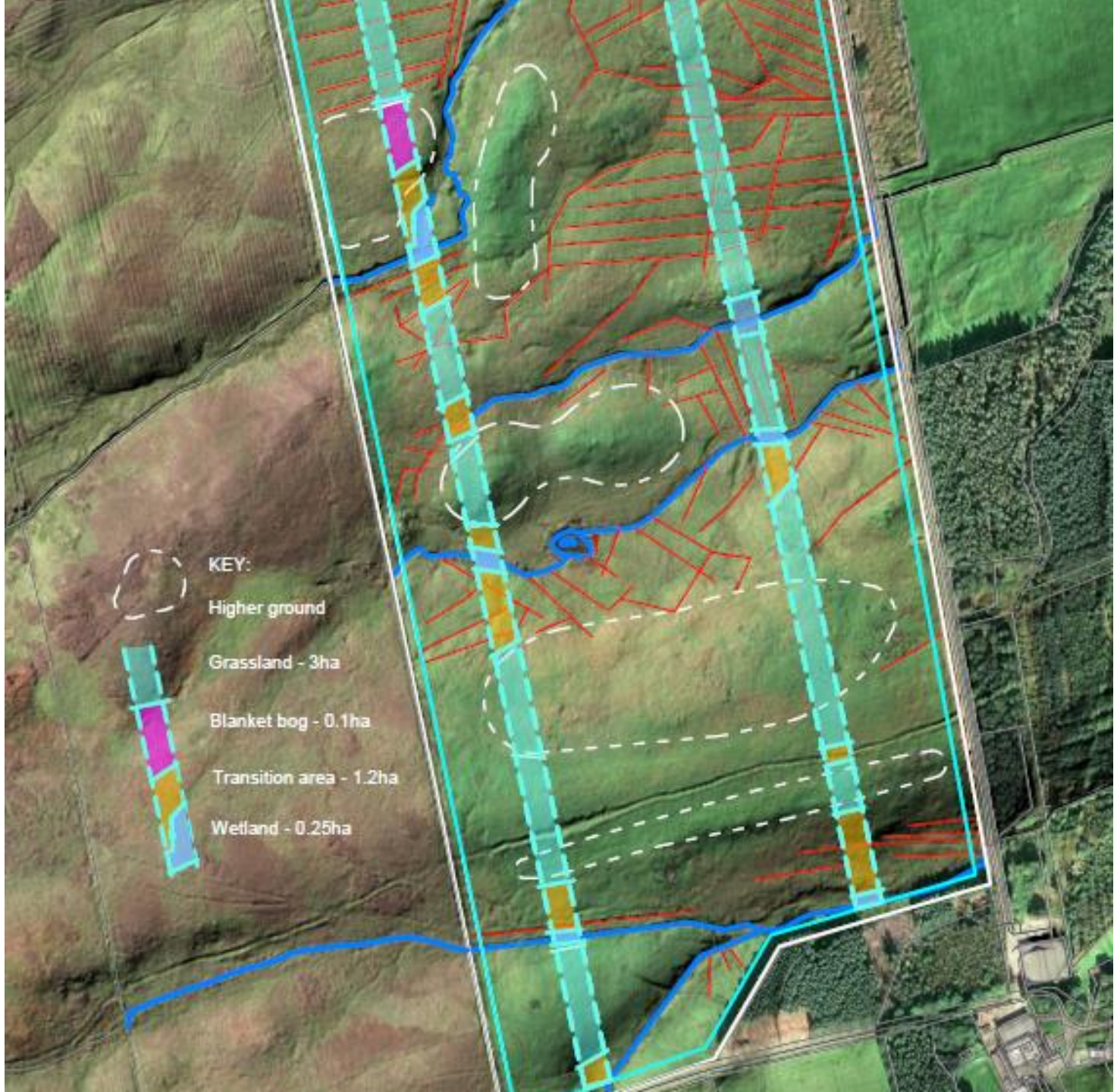

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Gas flux monitoring

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LIDAR surveys on hedgerows by Kew

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Sphagnum day at Harwood Forest

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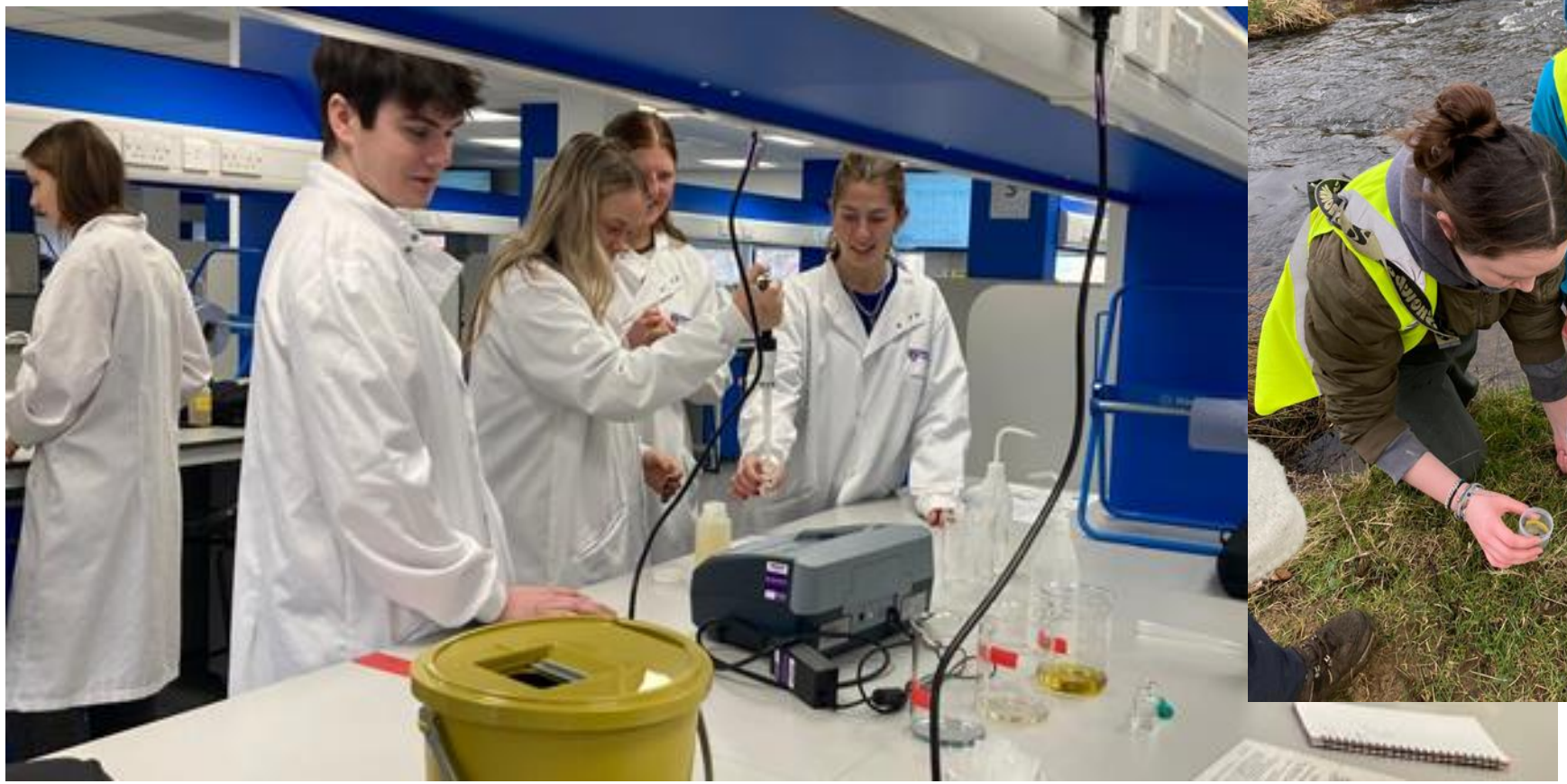

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Hands on monitoring opportunities have been created at degree level for and with Newcastle University

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Impacts – landowner engagement has been vital to the programme of changes on farms

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The carbon stock and biodiversity of each habitat will continue to be measured by soil coring, vegetation assessments, gas flux measurements, 3D scanning of scrub and hedgerow, and woodland surveys. Other monitoring efforts combined with all this data will enable us to build a detailed individual understanding of each site.

As these pilot sites undergo land-use change and habitat creation, repeated measurements and surveys will allow us to assess the net carbon losses or gains as well as differences in biodiversity over time. These methods are also being used in existing habitats of different ages, on pilot sites and elsewhere, to assess the build-up of carbon and changing gas fluxes over time.

Gas flux monitoring uses a machine to measure the amount of carbon entering the ground through plants versus the amount of carbon being released into the atmosphere from the soil. The transparent chamber allows plants to photosynthesise as well as respire. Sampling across different types of habitats such as peatland, woodland and grassland will show which of these are able to store the most amount of carbon.

We are hoping our fixed point images will show how the Uplands can hold back more water in flood events and how small changes can increase the number of native species (plant and animal). Other monitoring methods will carefully record data about changes in the soil, water courses and air. It is hoped that our accompanying images will tell a visual story about how the land is being managed now.

Core Sampling

Soil coring involves taking 3 soil cores from 5 plots in each survey field. Each core is measured in length, photographed and split into two 15cm segments. These are then sent off to a laboratory where they will be analysed for carbon, nitrogen and density. This will show which of the soil in different types of habitats such as woodland and grassland is able to store the most amount of carbon.

Grip (drain) Blocking

Many fields in the upper Wansbeck catchment have had deep drains cut through them since the 1800s to try to dry the land for increased agricultural production. This leads to rapid run-off in heavy rainfall and can cause flooding downstream. Small dams can hold back water flows for a few hours and take peak flows off the main river.

If you would like to get involved

Vegetation Sampling

A series of 2 metre and 10 metre quadrats is set up at each monitoring point. The square patch of ground is carefully checked and a record made of every type of plant present, including what percentage of the area each takes up. This helps measure species richness and diversity.

"The success of the project is dependent on high quality data collection. This will give a high level of confidence in the

Fixed Point Images

The location of the first photos is carefully noted so accurate comparison images can be taken later.

Paul Hewitt of the National Trust measures the depth of peat. The loss of peat contributes to flooding and carbon release.

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Impact – sharing the story – walks, talks and photographic exhibition brought the project to a wide audience, increasing awareness

Thank you for listening

For more information please contact:

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HM Government · Natural England · Environment Agency · Forestry Commission · Royal Botanic Gardens Kew · Derbyshire Wildlife Trust · Freshwater Habitats Trust · Gloucestershire Wildlife Trust · Groundwork Changing Places Changing Lives · National Trust · Plymouth City Council

Working together to build the evidence for nature-based solutions to climate change and biodiversity loss