Peatland ACTION

Monitoring: Past, Present and Future
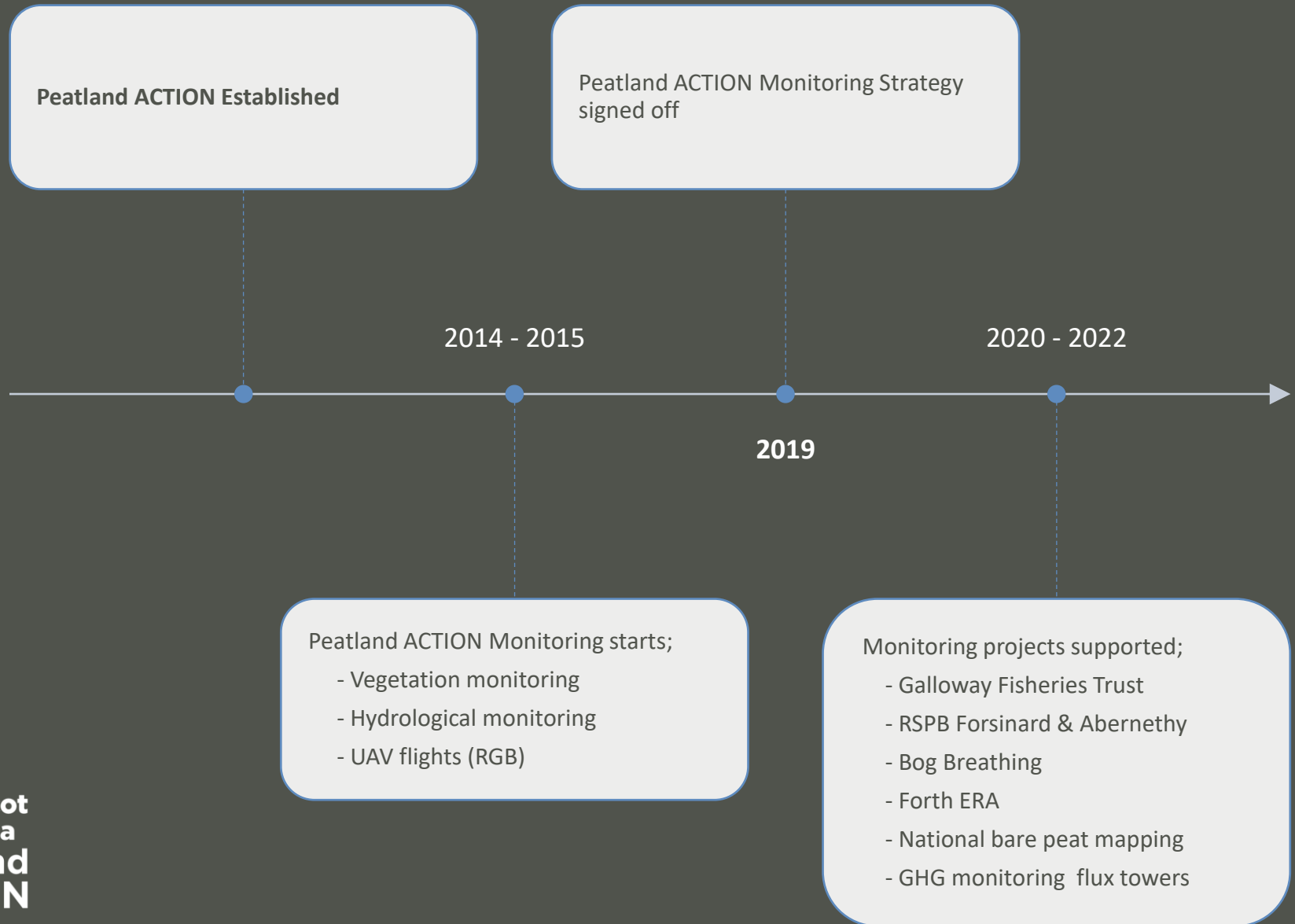

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Peatland Action Data and Evidence Team

6 October 2022

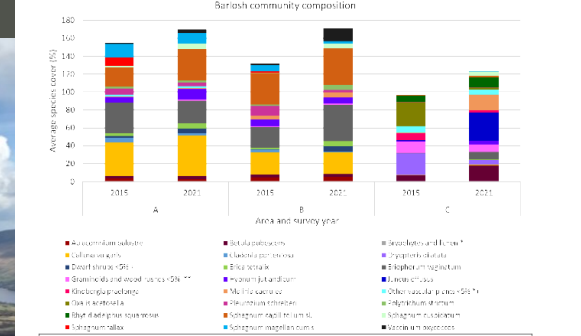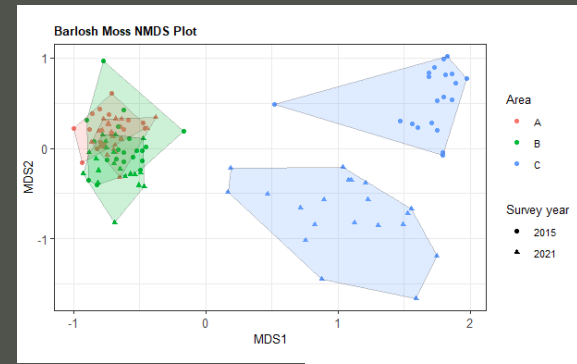# Outcome Monitoring - History

Peatland ACTION Established

Peatland ACTION Monitoring Strategy signed off

2014 - 2015

2020 - 2022

2019

Peatland ACTION Monitoring starts;
- Vegetation monitoring
- Hydrological monitoring
- UAV flights (RGB)

Monitoring projects supported;
- Galloway Fisheries Trust
- RSPB Forsinard & Abernethy
- Bog Breathing
- Forth ERA
- National bare peat mapping
- GHG monitoring flux towers

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Early projects

– Vegetation surveys
  – Baseline 2014/2015: 16 sites
  – Repeat visit 2021: 13 sites
  – Report due 2022

– Hydrological monitoring
  – Automated water level loggers
  – 35 sites, 122 loggers
  – Rain gauges at 25 sites
  – Published online

– UAV: RGB and IR
  – 2015: 16 sites

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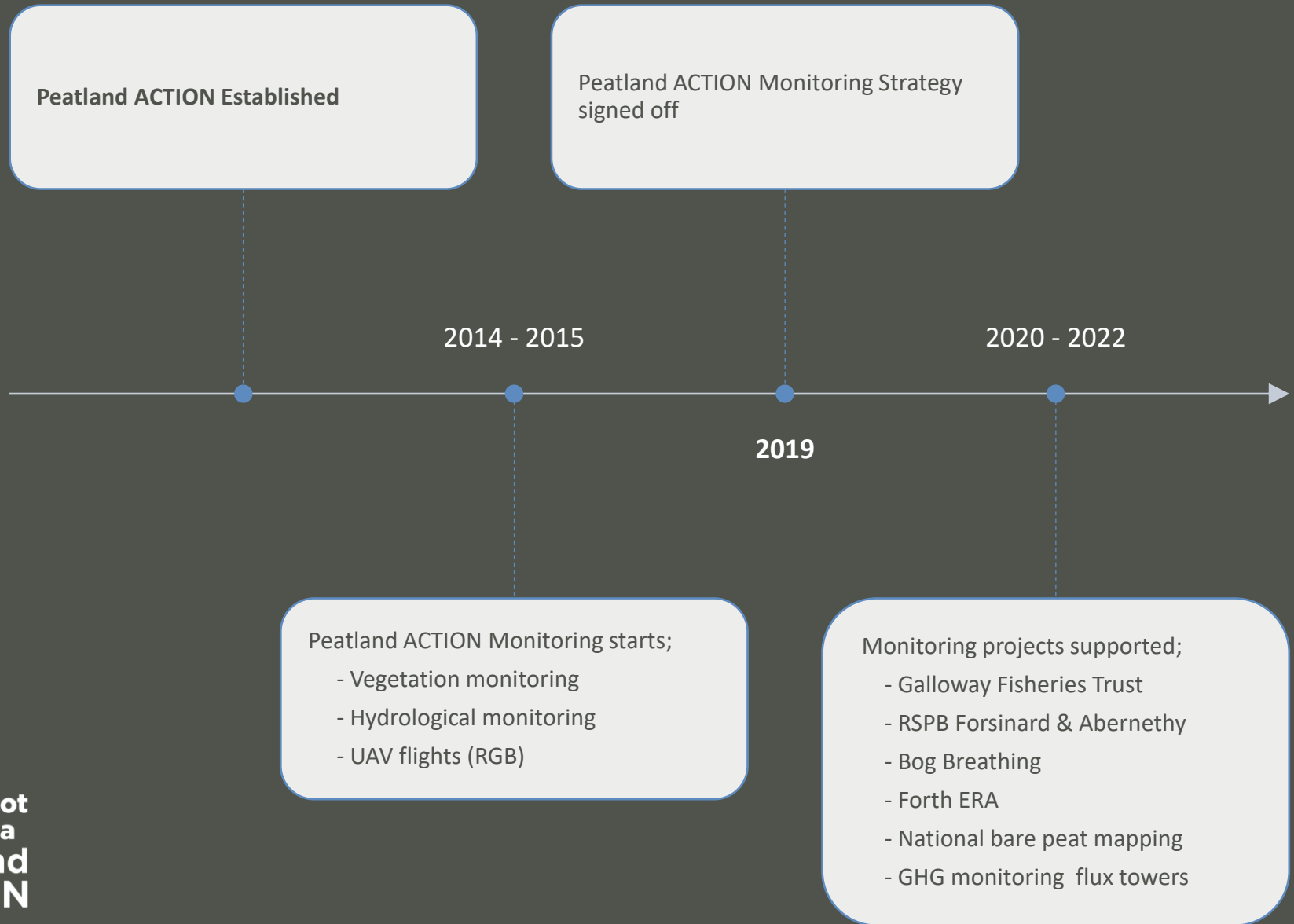
Peatland Restoration Monitoring Strategy 2019 -2029

– Objective A: To establish if the restoration works are resulting in conditions favourable to the recovery of a functioning peatland habitat.

– Objective B: Establish the effectiveness of individual techniques in specific settings.

– Objective C: Collating, summarising and contributing to the evidence base associated with the ecosystem services of peatlands.

Restoration Monitoring Strategy

External Funding Request
- Linked to restoration application
- Standalone monitoring project

Collaborative Projects
- Partnership led by third party
- Partnership led by NatureScot

In house monitoring
- Restoration Monitoring Network
- Specific projects

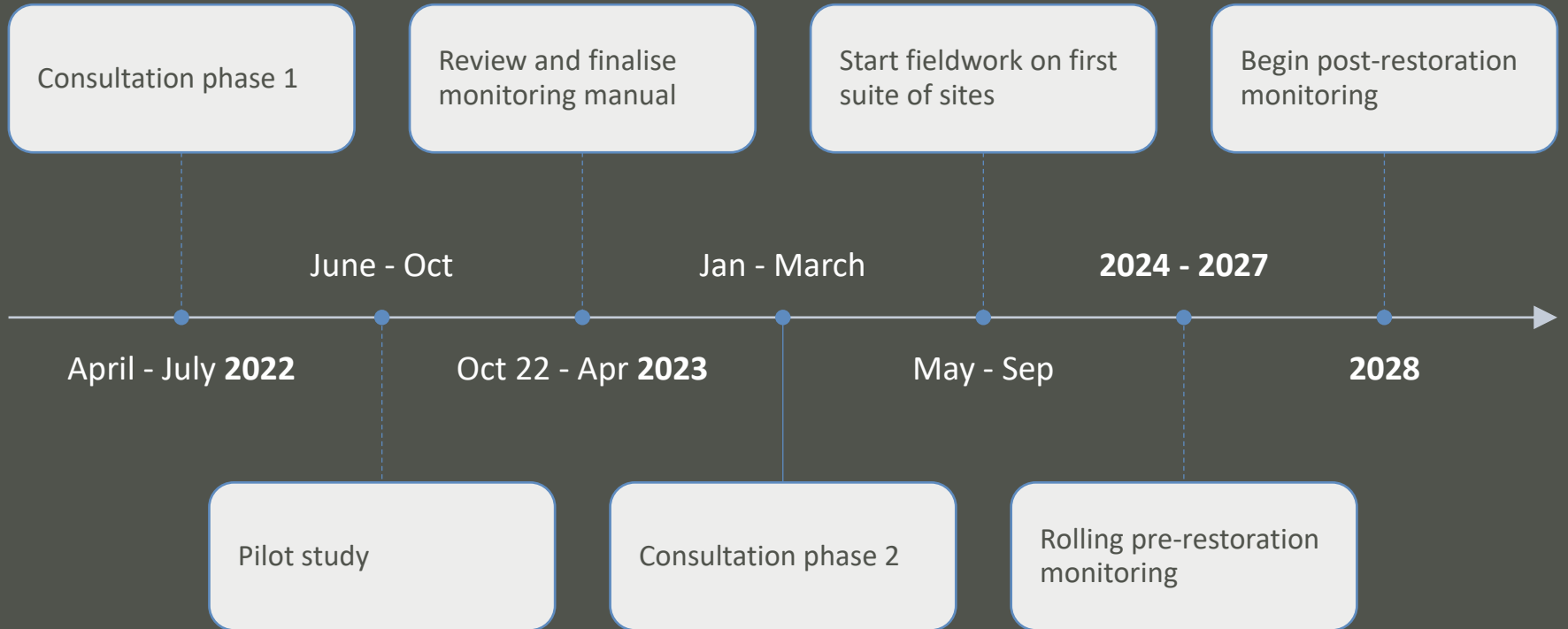NatureScot
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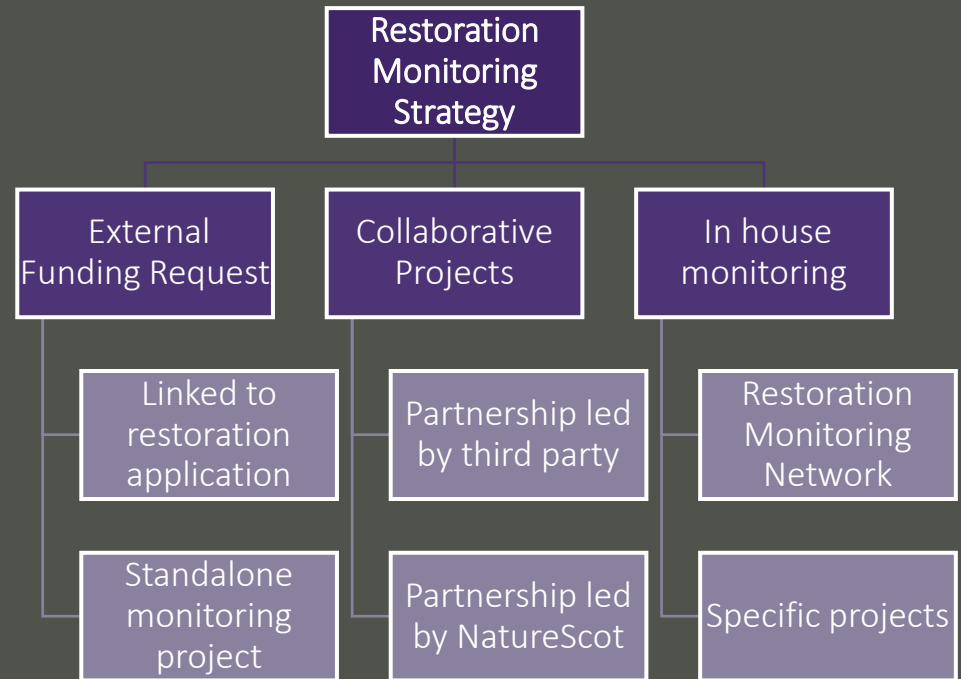
Challenge – Are monitoring in the best way? Standardised outcome monitoring methods applicable across all types of peatland restoration sites in the UK.

Developing a Peatland ACTION Restoration Monitoring Network

- Part of wider Monitoring Strategy

- Cost-effective, repeatable, long-term monitoring

- Representative sample of sites

- Overall effectiveness

- Combined suite of restoration techniques

- Four site categories

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Long-term planning

Consultation phase 1

Review and finalise monitoring manual

Start fieldwork on first suite of sites

Begin post-restoration monitoring

June - Oct

Jan - March

2024 - 2027

April - July **2022**

Oct 22 - Apr **2023**

May - Sep

2028

Pilot study

Consultation phase 2

Rolling pre-restoration monitoring

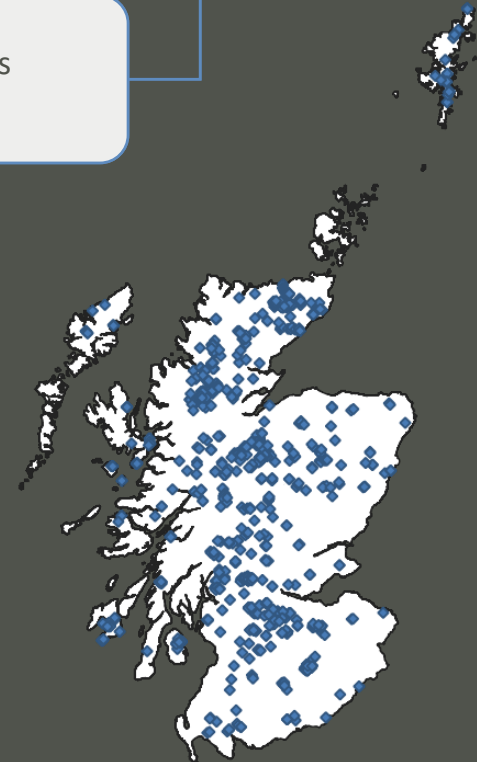NatureScot NàdarAlba Peatland ACTION

Activity monitoring

– Reporting the restoration work undertaken by Peatland Action in a given financial year

– Includes ENFOR delivery partners:
  – LLTNPA
  – CNPA
  – FLS
  – SW

Where did it take place?

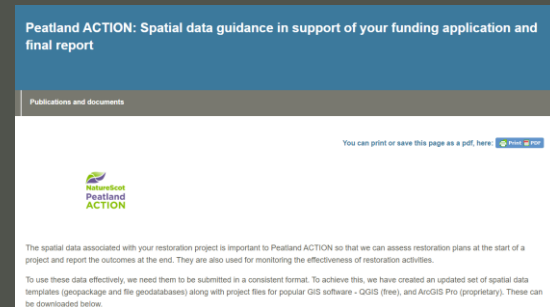**When** did it take place?

What work was undertaken?

How many hectares on the road to recovery?

Capturing peatland restoration data

– Development of spatial data
   model capturing restoration works

– Provision of consistent data across
   all project

– Requirement as part of grant

– Available on the Peatland Action
   website

Peatland ACTION: Spatial data guidance in support of your funding application and final report

Publications and documents

You can print or save this page as a pdf, here:

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The spatial data associated with your restoration project is important to Peatland ACTION so that we can assess restoration plans at the start of a project and report the outcomes at the end. They are also used for monitoring the effectiveness of restoration activities.

To use these data effectively, we need them to be submitted in a consistent format. To achieve this, we have created an updated set of spatial data templates (geopackage and file geodatabases) along with project files for popular GIS software - QGIS (free), and ArcGIS Pro (proprietary). These can be downloaded below.

Polygons – e.g. Bare peat treatment

Lines – e.g. Reprofiled drains

Points – e.g. Dam locations

Derived restoration footprint

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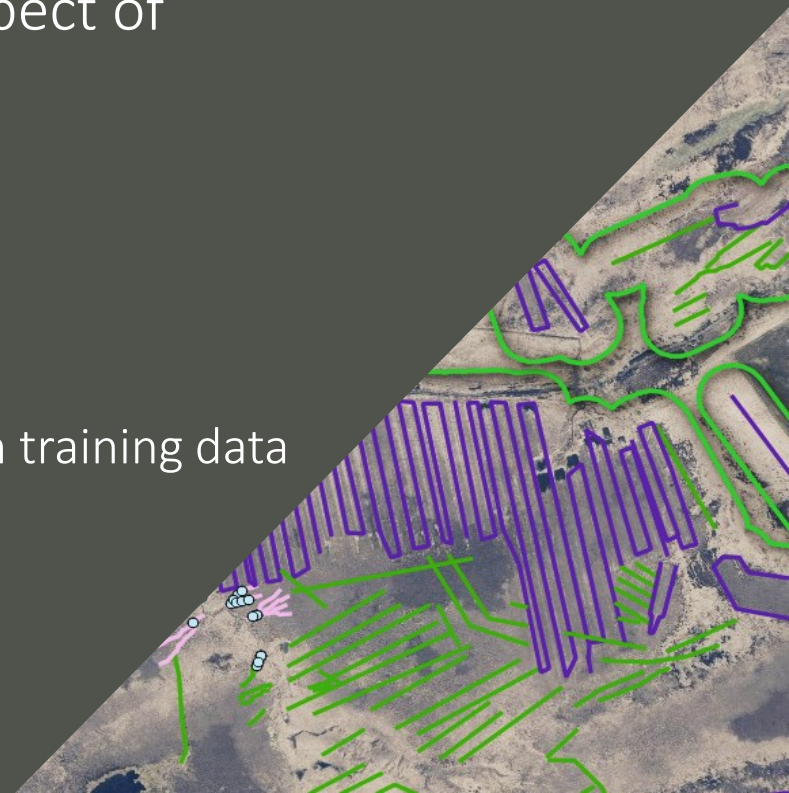ACTION
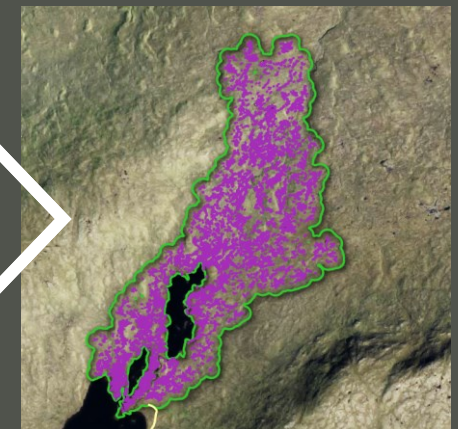
Capturing data continued.

- Complex nature of peatlands makes mapping of features challenging
  - Some features easier – e.g. drains
  - Hags, gullies much harder
- Currently an unavoidable manual aspect of mapping
- Short to medium term:
  - Drones
  - Integrated GPS units
- Long term
  - Remote sensing – but – often reliant on training data

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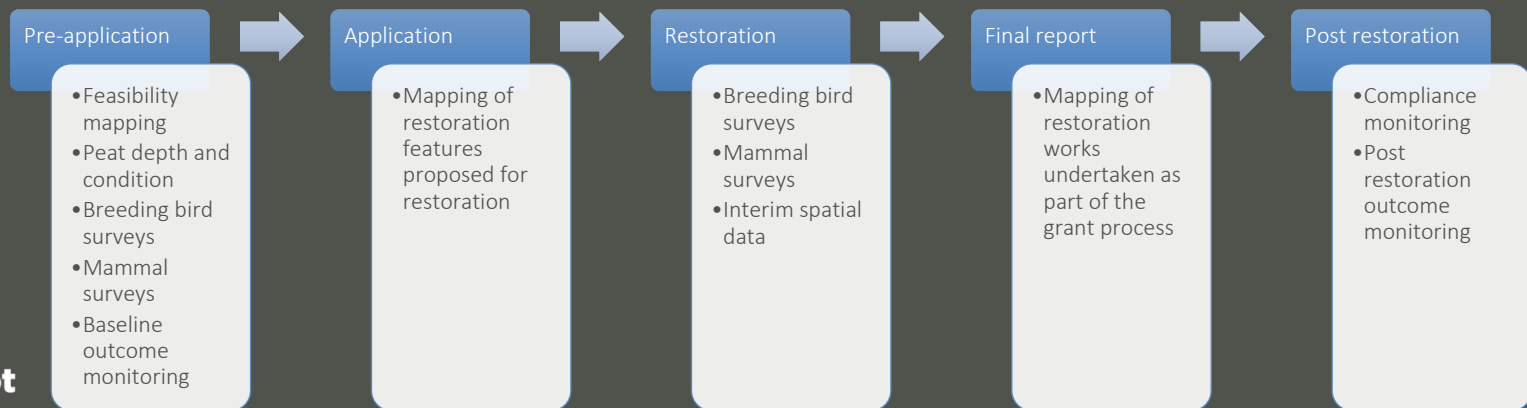
Managing the data

- Move to a relational database
  - PostgreSQL with PostGIS spatial extension
  - Can facilitate complex data models
  - Automation of tasks using spatial SQL queries

- Two step QA process

- Manual
  - Does the data "look" right?

- Database checks
  - Enforce validation checks

PostgreSQL

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Other data gathered along the way

– Landscape scale restoration projects can generate a LOT of spatial data!

  – Not just restoration features and site locations

– Move to improve and streamline capture of these data sources

  – Standardise workflows

Pre-application	Application	Restoration	Final report	Post restoration
•Feasibility mapping •Peat depth and condition •Breeding bird surveys •Mammal surveys •Baseline outcome monitoring	•Mapping of restoration features proposed for restoration	•Breeding bird surveys •Mammal surveys •Interim spatial data	•Mapping of restoration works undertaken as part of the grant process	•Compliance monitoring •Post restoration outcome monitoring

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Challenges Summary

- Common outcome monitoring methods applicable across all types of peatland restoration sites in the UK.

- Mapping peatlands is hard!
  - Spatially complex features

- Making our data more accessible
  - Key part of current work

- Developing data standards that can be aligned with Peatland Code
  - Smoothing grant process for applicants

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Please get in touch

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Thank you