

Aim

- ◆ HAU to create PIP, a paludiculture resource of national significance
- ◆ Re-wetting for paludiculture and habitat restoration as opportunities to mitigate the issues facing lowland peat
- ◆ Short-term goal - Conversion from dryland farming to paludiculture (wet-farming)
- ◆ Long-term goal - Development of a paludiculture facility

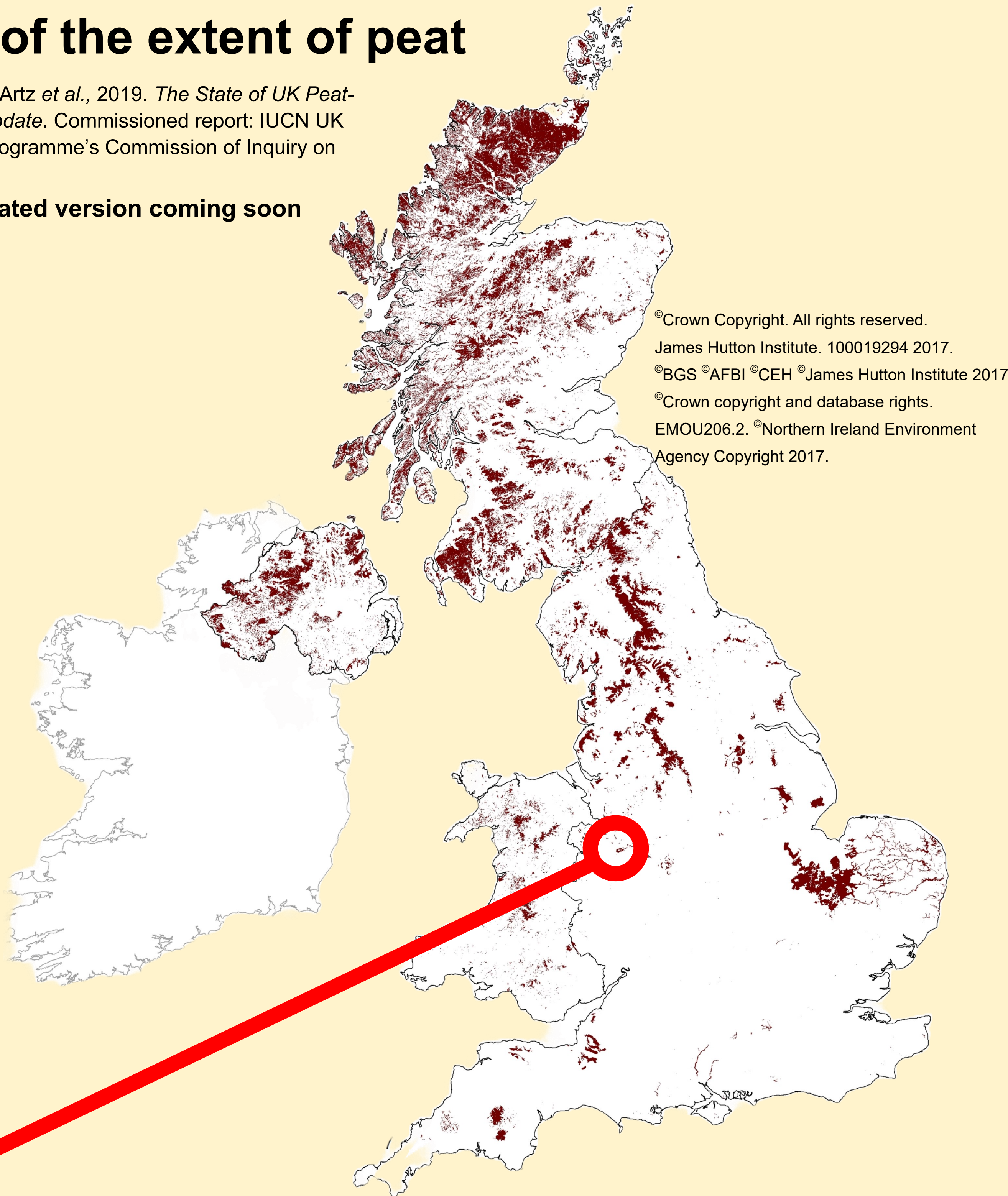
Background

- ◆ Peatland Strategy: Under restoration or in good condition by 2040
- ◆ Peatlands cover ~10% of the UK land area
- ◆ Overall in bad condition incl. the Lowlands
- ◆ Lowland peat areas: East Anglia, Somerset Levels, Northern England, and widespread in Scotland, Northern Ireland and Wales
- ◆ 74% of lowland peatlands are used for food production
- ◆ GHG inventory increased with the inclusion of peatlands. Land use changed from being a C sink to a C source
- ◆ England has the highest proportion of lowland peatland areas (~44%), ~80% of its emissions from peatlands

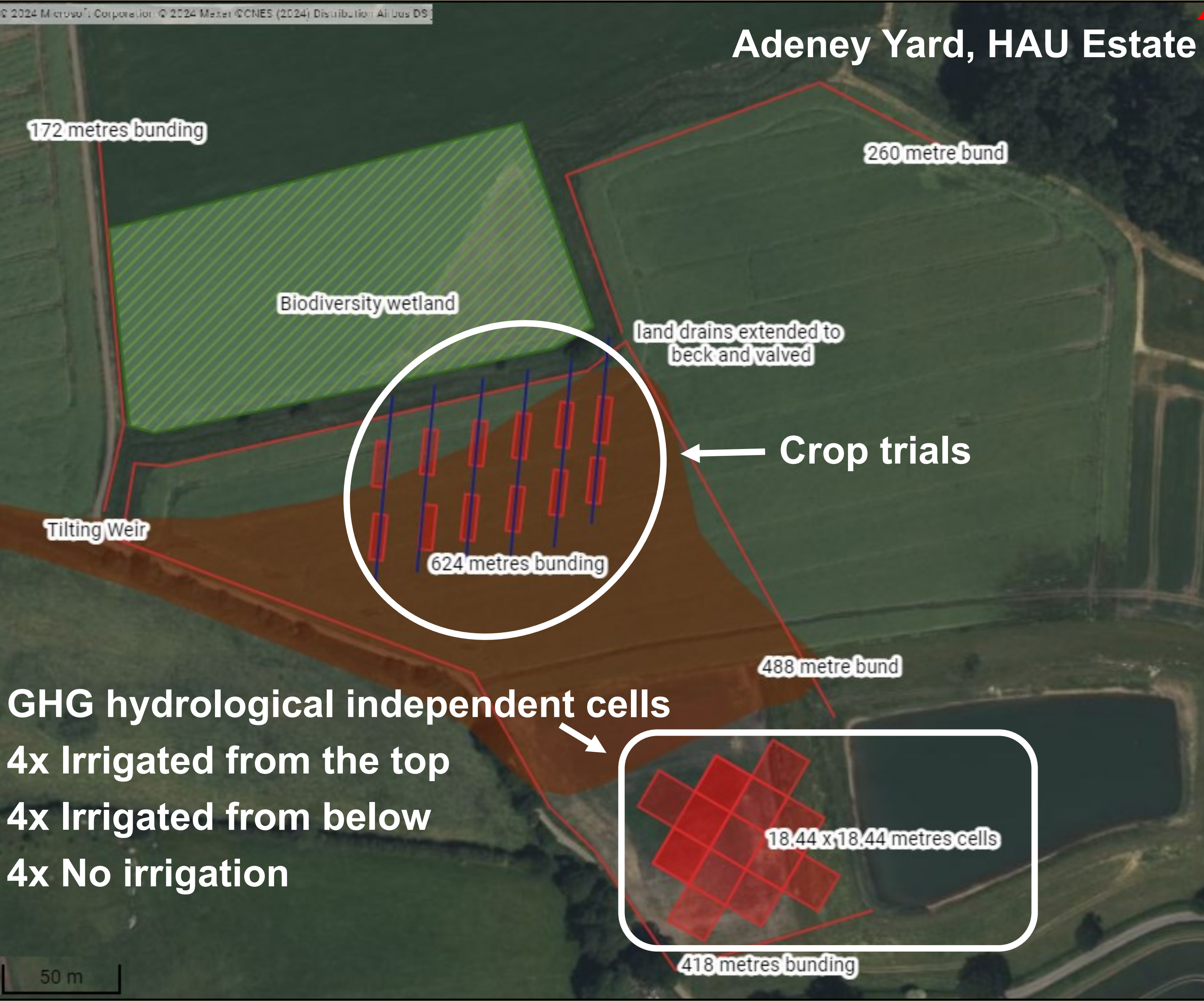
Map of the extent of peat

In Rebekka Artz *et al.*, 2019. *The State of UK Peatlands: an update*. Commissioned report: IUCN UK Peatland Programme's Commission of Inquiry on Peatlands .

Updated version coming soon



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GHG hydrological independent cells

- 4x Irrigated from the top
- 4x Irrigated from below
- 4x No irrigation

Site

- ◆ HAU Estate manages > 70 ha of peat soils
- ◆ Mixed farming system
- ◆ Degrading through drainage, cultivation and groundwater abstraction
- ◆ Peat soil of various depths, 30 ≥ 100 cm
- ◆ Histosols over a mix of alluvium deposits, laminated clay, boulder clay, glacial sand and gravel

Feasibility study

- ◆ Water flow measurements and water accounting
- ◆ Windowless sampling boreholes
- ◆ Test pits



Gauge board measuring the depth of water in Pingle Beck



Soil core from a 4m borehole



Pit close up of a histosol. Showing alluvial coal mixing and glacial sand and gravel.

Final outputs

- ◆ Bunding using a locally sourced by-product
- ◆ GHG net fluxes of CO₂, CH₄ and N₂O
- ◆ Radiocarbon dating of peat
- ◆ Crop production cycle
- ◆ Socio-economic modelling
- ◆ Monitoring of:
 - ◆ SOC stocks
 - ◆ C:N ratio
 - ◆ PKMgCaS
 - ◆ Peat motion
 - ◆ Groundwater
 - ◆ Drain-water
 - ◆ Soil mesofauna
 - ◆ Aboveground macrofauna
 - ◆ Paludiculture perception
 - ◆ Knowledge transfer

