
Water infrastructure for Lowland Peat Soils
Lowland Agricultural Peat Small Infrastructure Pilots
Ian Moodie, Technical Manager, ADA
ADA Environment Day 2025
05 February 2025
NORTH LEVEL DISTRICT I.D.B.
VOLVO
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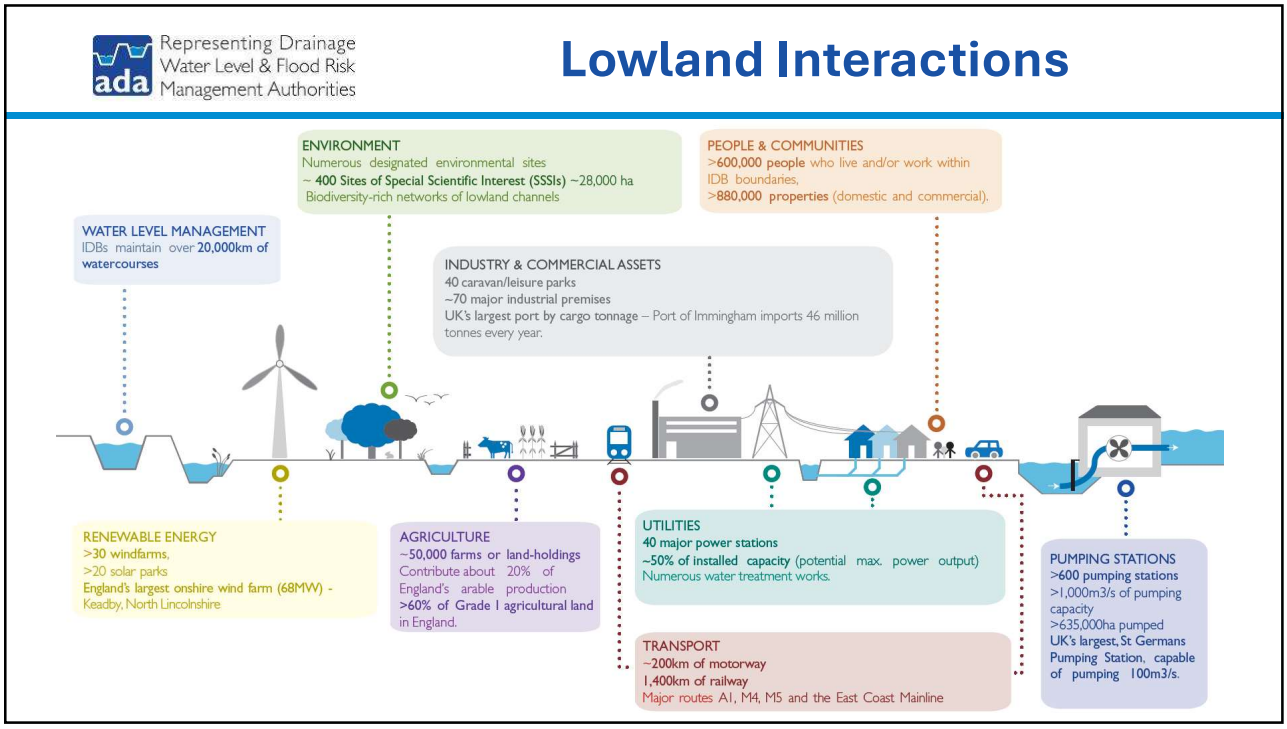
Representing Drainage Water Level & Flood Risk Management Authorities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Representing Drainage Water Level & Flood Risk Management Authorities
Lowland Interactions
ENVIRONMENT
Numerous designated environmental sites
~ 400 Sites of Special Scientific Interest (SSSIs) ~28,000 ha
Biodiversity-rich networks of lowland channels
PEOPLE & COMMUNITIES
>600,000 people who live and/or work within IDB boundaries,
>880,000 properties (domestic and commercial).
WATER LEVEL MANAGEMENT
IDBs maintain over 20,000km of watercourses
INDUSTRY & COMMERCIAL ASSETS
40 caravan/leisure parks
~70 major industrial premises
UK's largest port by cargo tonnage – Port of Immingham imports 46 million tonnes every year.
RENEWABLE ENERGY
>30 windfarms,
>20 solar parks
England's largest onshire wind farm (68MW) - Keadby, North Lincolnshire
AGRICULTURE
~50,000 farms or land-holdings
Contribute about 20% of England's arable production
>60% of Grade 1 agricultural land in England.
UTILITIES
40 major power stations
~50% of installed capacity (potential max. power output)
Numerous water treatment works.
TRANSPORT
~200km of motorway
1,400km of railway
Major routes A1, M4, M5 and the East Coast Mainline
PUMPING STATIONS
>600 pumping stations
>1,000m3/s of pumping capacity
>635,000ha pumped
UK's largest, St Germans Pumping Station, capable of pumping 100m3/s.

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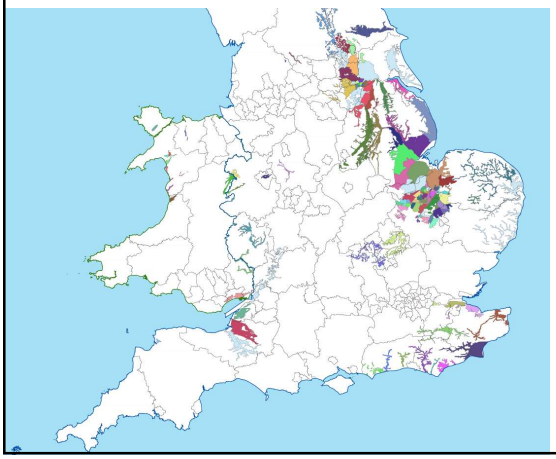
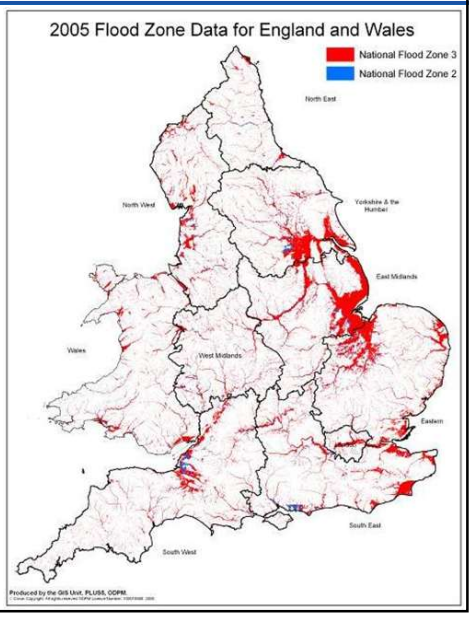
Lowland Interactions

112 Internal drainage districts
9.7% of England (1.2 million hectares)



Flood Zones 2 and 3
Land with more than 1 in 1,000 annual probability of flooding from rivers or sea



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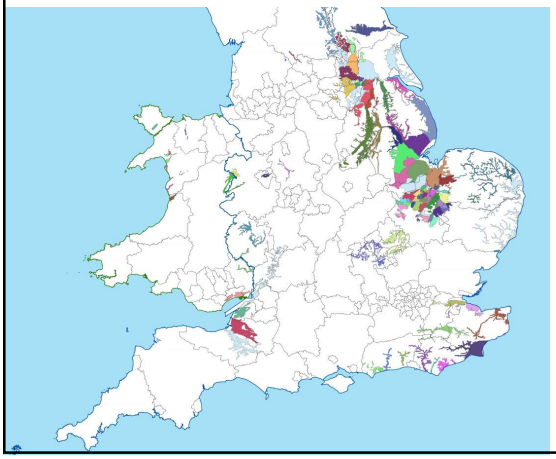
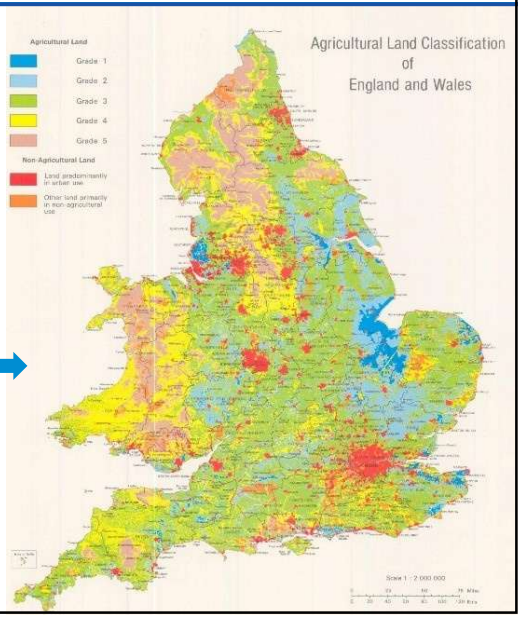


Grade 1 Agricultural Land
>60% of 'best and most versatile' agricultural land



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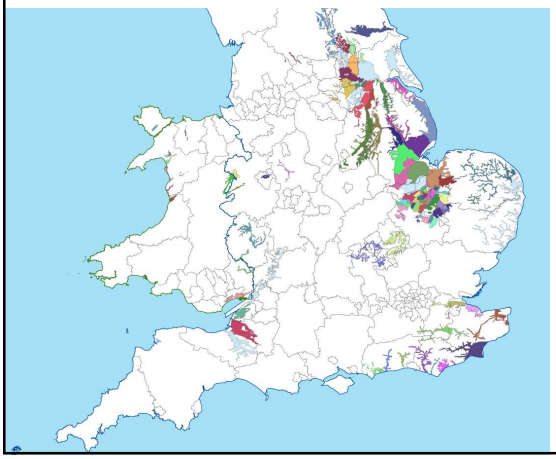
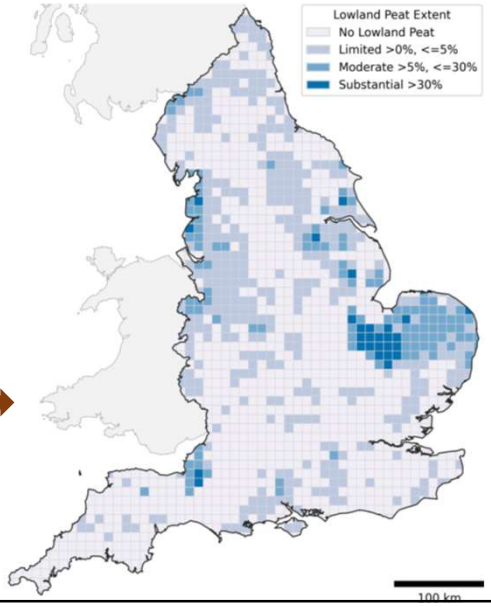


Lowland Peat



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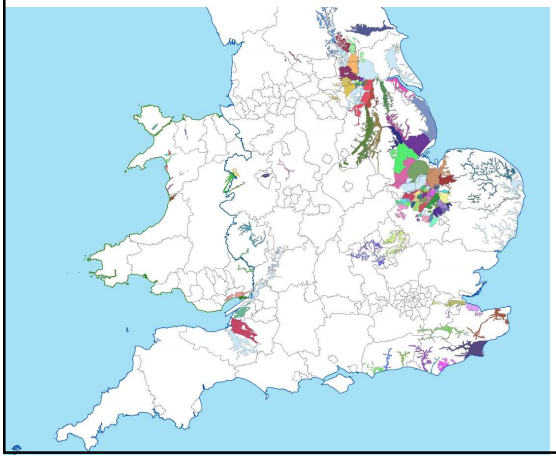
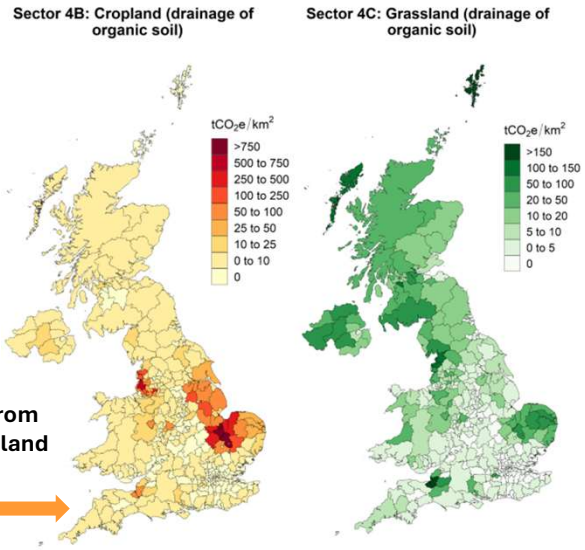


Carbon emissions from agricultural land



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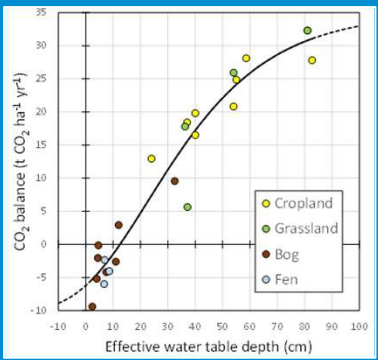
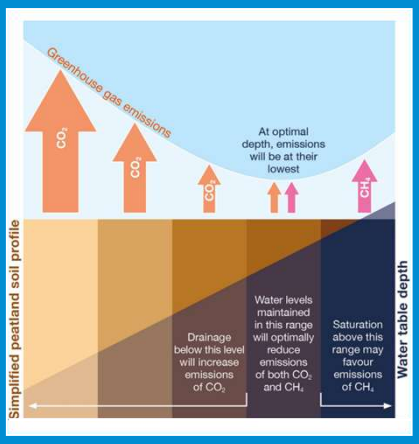
Water management for emissions reductions



For every 10cm reduction in water-table depth (up to 30cm below ground surface), we could save the equivalent of 3 tonnes of carbon dioxide per hectare.

The relationship between water table depth and carbon dioxide and methane emissions from lowland peat soils



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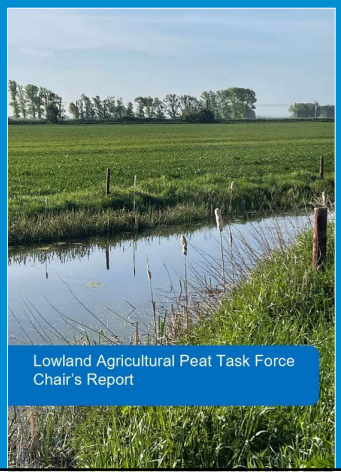
The Challenge: **Retain more water *safely*** in lowland peat landscapes

"We need to increase our capacity to store, retain and release more water in lowland peat landscapes"

"To raise water levels safely and sustainably, new storage must be distributed across lowland catchments and matched with new investment in water management infrastructure, telemetry and controls"

Robert Caudwell (2022)



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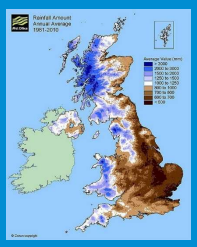
Water Level Management Challenges

for managing peat in lowland England.



Climate

Drier summers, wetter winters, more intense events. Eastern England receives 1/3 rainfall of England's average.

Technical

Suite of measures to retain more water safely within a lowland landscape.

Delivery

Planning and coordination. Maintaining and adapting legacy assets and systems.

Carbon

Conundrum. Retaining water may be more energy intensive with little and often pumping.

£

Funding

Balance between investment in new and maintaining existing assets and systems.

Legislation

Broader remit to manage water levels, not just flood risk.

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LAPSIP Objectives

1. Install water management infrastructure capable of providing more control of water levels during dry periods to assist with the preservation of peat soils in **at least 15 Internal Drainage Districts** by 31 March 2025.
2. Provide a short case study from each funded project (including the full costs of implementation) developed by 31 March 2025.

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LAPSIP Projects

TIMELINE

Dec 22 Defra/ADA first discuss project

Mar 23 ADA submits outline proposal to Defra

July 23 40 EOIs (value: £7.4 million)

Oct 23 22 Applications (value: 4.1million)

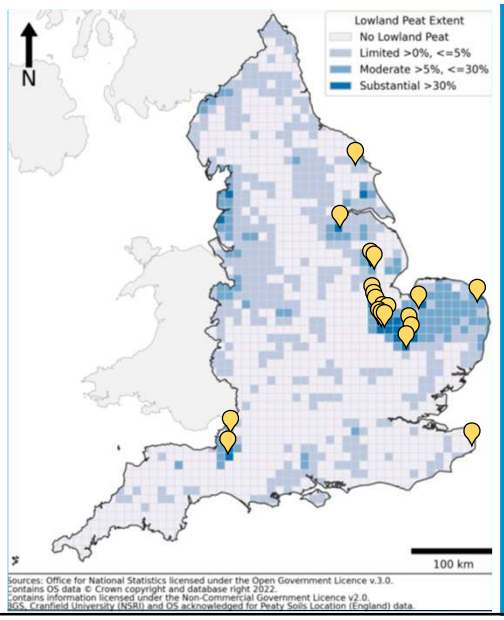
Jan 24 21 Awarded (value: £3.9million)

Mar 25 Projects due to complete

GEOGRAPHY

14 in the Fens (Cambs. Lincs. Norfolk), 2 Somerset, 2 Yorkshire, 1 Kent, 1 Broads

4 of the projects linked with Water Discovery Pilots



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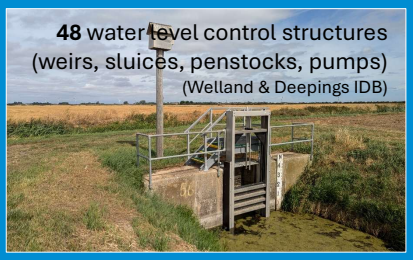
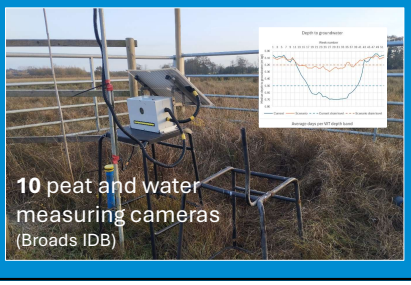
Estimated Project Outputs

28,130 ha peat soils benefiting from better water level management **assets**
41,820 ha peat soils benefiting from better water level **monitoring**





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Emerging themes

- IDBs have had a real desire to implement these projects
- Welcomed being able to make adaptations to reduce CO_2 emissions
- Delivery challenges (storm events, agricultural water demand, IDB direct workforce, availability of suitable contractors, reliance on limited no. of suppliers.)
- 12 months is too tight for the delivery phase, left little time for optioneering.
- IDBs have shown the ability to adapt to the challenges they have faced, all but one project is expected to be delivered
- There is significant scope for more projects in the future

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What next?