

Water Works

Win-wins for food security, biodiversity, soil management, water savings and carbon sequestration



Bedfordshire
Cambridgeshire
Northamptonshire

Jack Clough, University of East London



FENS
BIOSPHERE

Great Fen

The Great Fen is delivered by:



Bedfordshire
Cambridgeshire
Northamptonshire

Registered charity number: 1000412



- UK's first Living Landscape
- 50-100 year vision to create 3,700ha wetland for wildlife and people in East Anglian fens
- To - date 1700ha under conservation management
- 1200 ha of arable reversion now thriving wetland



Image © Wildlife Trust BCN

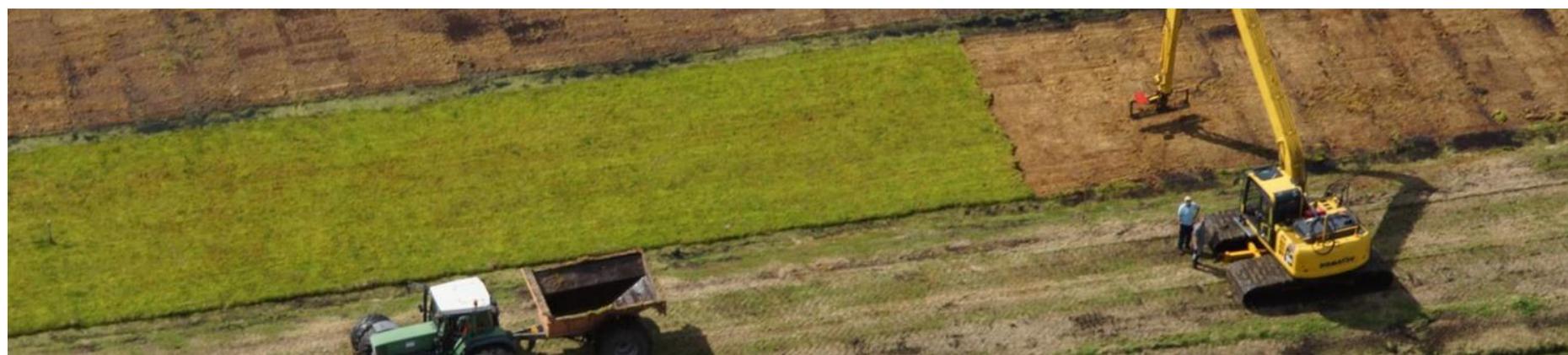


Water Works

PEAT PEOPLE SCIENCE



Developing a more sustainable system for farmers and growers trialling crops that grow in wet conditions – wet farming - and transforming how people work together for sustainable development in the fens within a UNESCO Fens Biosphere



University of East London



Bedfordshire
Cambridgeshire
Northamptonshire



UK Centre for Ecology & Hydrology



The Fens – An unsustainable loss of peat



4.5 million m³ of peat is lost each year in the Fens

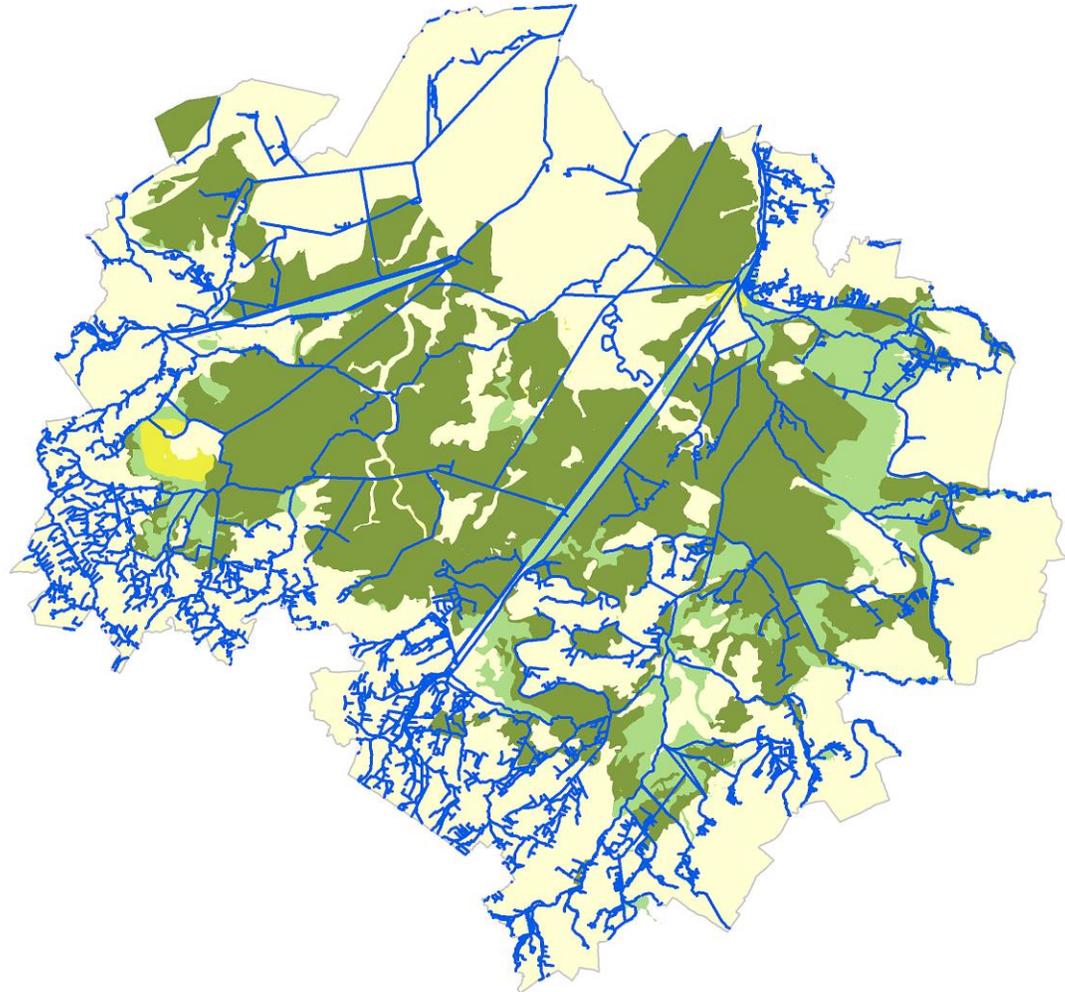
Water is polluted



52% of CO₂ emitted by farming in the UK comes from lowland peat soil

NFU goal net zero by 2040

Peat links the two elements of our Water Works project



Fens Biosphere: Peat distribution

Draft as at December 2019



FENS
BIOSPHERE

- Major rivers
- Raised bog
- Rich fens/reedbeds (deep)
- Rich fens/reedbeds (wasted)
- Transition Zone



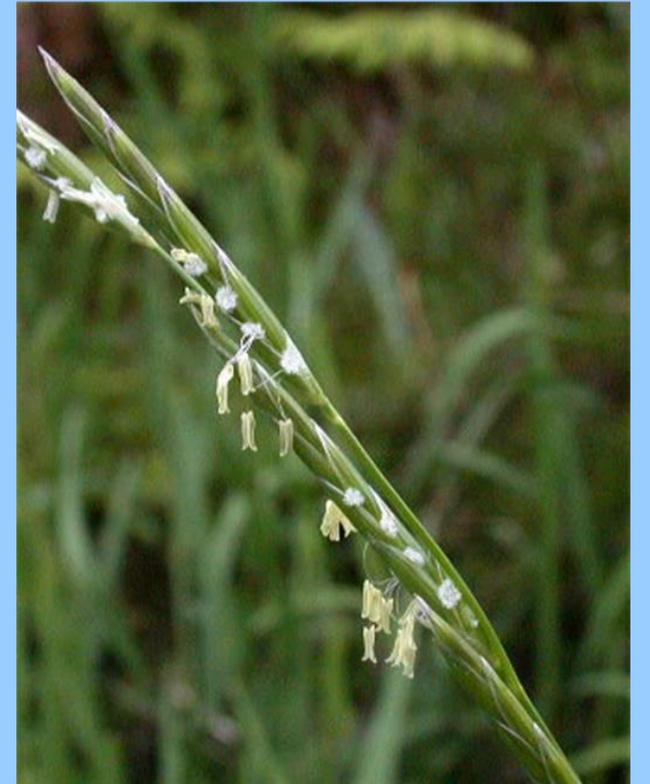
Map produced by Naomi Stevenson
West Anglia Team
Updated: 13/12/2019

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Ordnance Survey 100022021.

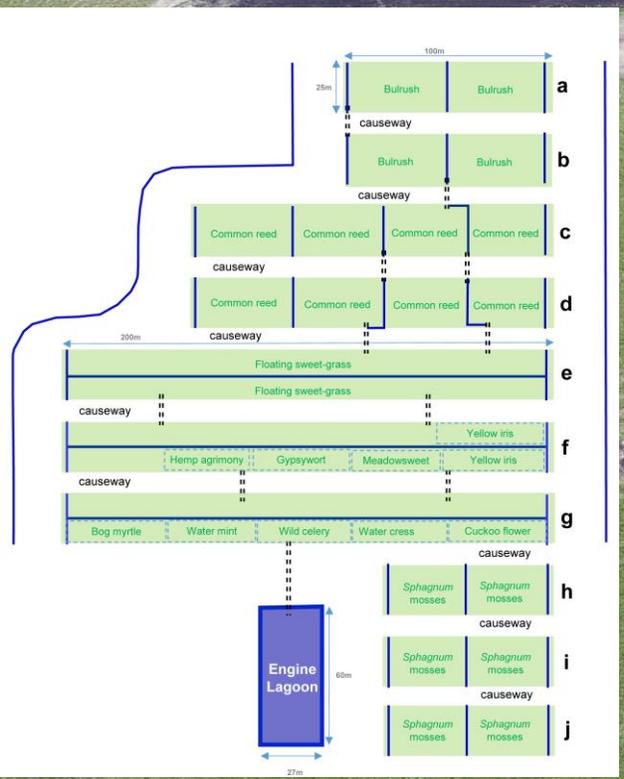
All in the Fens face the same problems:

- **Sustaining agriculture and the natural environment**
- **Water resource management**
- **Protection of peat soils**
- **Climate change**
- **Livelihoods & development**

**Paludiculture – field scale
trials of crops for food,
industry and biomedical
applications in “real life”
conditions**



Water Works site July 2020

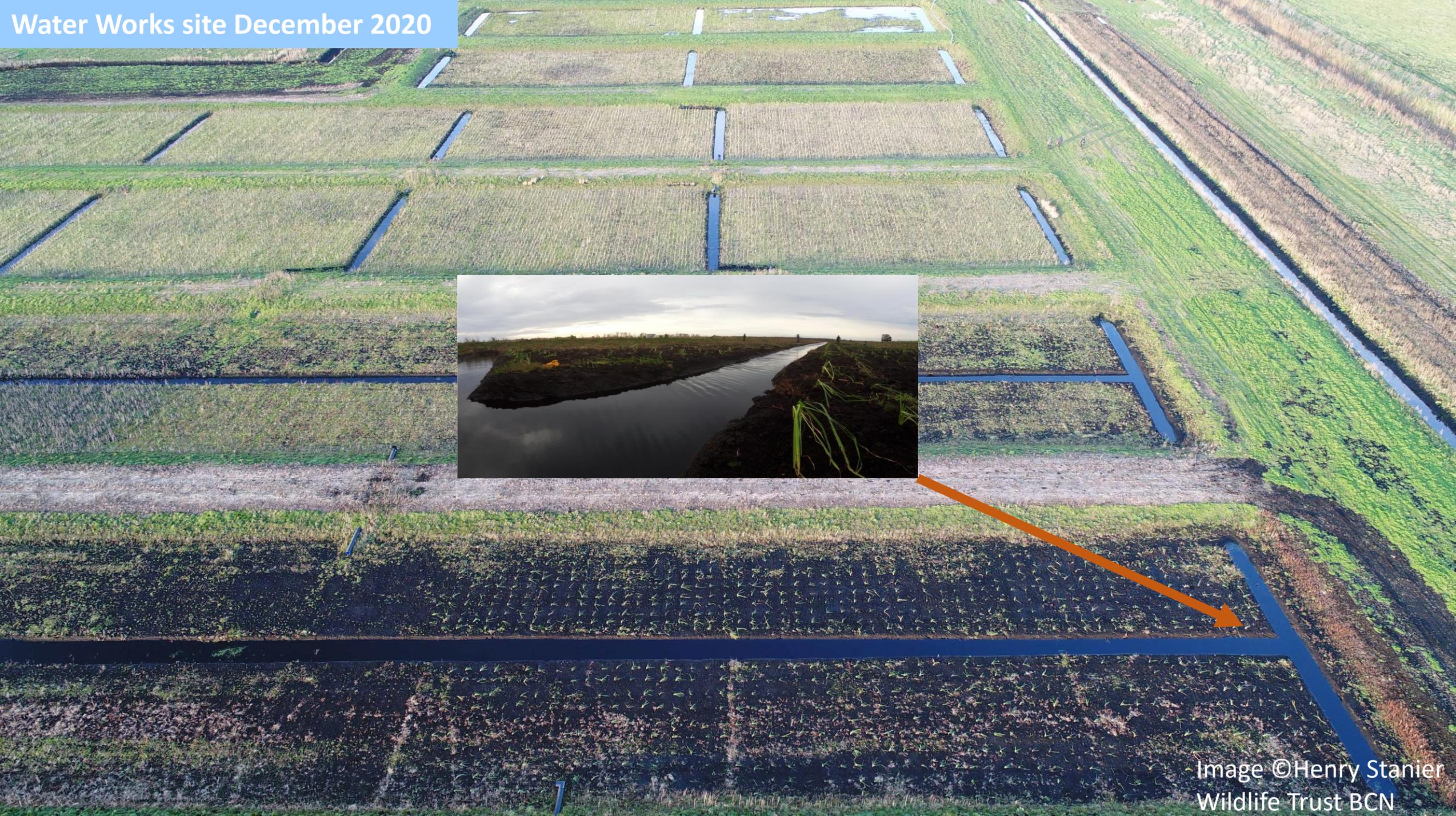


Re-wetting the site – August 2020





Planting with a lot of help.....



Site Monitoring:

[UKCEH](#) are establishing and operating a new chamber-based system to continuously monitor CO₂ and CH₄ fluxes from the range of paludiculture crops being trialled.

These new data will be used to:

1. Estimate the gaseous C balance (CO₂ and CH₄) of different paludiculture crops
2. Analyse and model the response of CO₂ and CH₄ fluxes to changing environmental conditions
3. Compare the C balance of paludiculture crops to that of conventional drainage-based agriculture
4. Future work – upscaling promising crops for monitoring using eddy covariance



UK Centre for
Ecology & Hydrology

Site Monitoring:

The University of East London are monitoring the crop aspects of the demonstration site:

We are Installing monitoring based on the Eyes on the Bog methodology

See below link for more details:

<https://www.iucn-uk-peatlandprogramme.org/get-involved/eyes-bog>



Images © IUCN UK PP

Monitoring crop yields:

Biomass: dry mass $\text{kg}^{-1} \text{ha}^{-1}$

Grains: kg of seed per ha

Medicinal: evidence of efficacy in lab

Broader use: investigate wider use through literature and collaboration.

Monitoring Sphagnum:

Monitoring yield via TLS monitoring, and CEN testing (for dry mass bulk density).

Tenisometers to assess pore water pressure.



TLS in use at Innovate UK site ©Jack Clough

Engagement:

Matt Hubbard @LBGAmbEast · Nov 18, 2020
768 Tweets

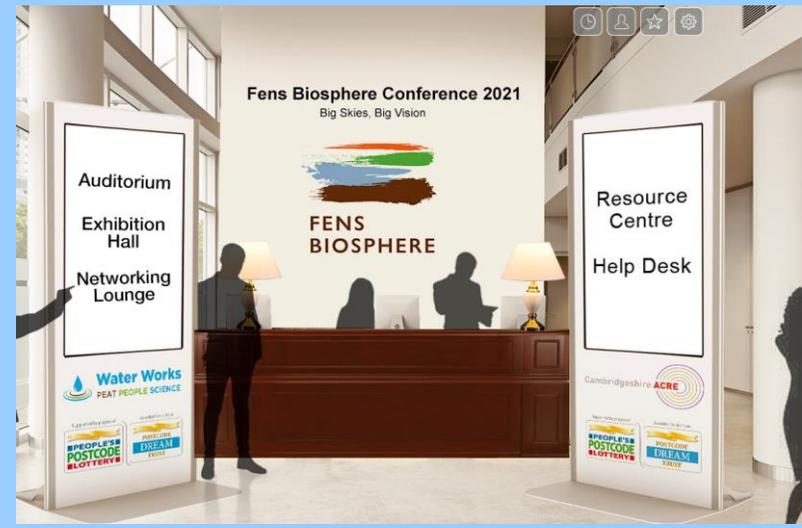
Great to see Cambridge agriculture as the testing ground for the Water Works project. Here, @wildlifebcn's experts are overseeing a scheme to test crops that could suit the UK's future climate. Excited to see where it goes bit.ly/38Pk1V2

@UEL_News @UK_CEH



Dry run: the wet farming experiment that could sow seeds for future cr...
Cambridgeshire project trials plants that thrive in more extreme weather, including sphagnum moss and bulrush
theguardian.com

5 replies 33 retweets 167 likes



The Daily Telegraph

Crops grown in peat could fuel batteries and flavour gin

Ecology · Animals · Wildlife · Agriculture · Industries
19 Oct 2020 By Daily Telegraph Reporter

CROPS that could be used to provide materials for lithium batteries and flavour gin are being planted as part of a “wet farming” trial to restore peatlands.

Drained peat soils release carbon but raising the water table and restoring the peat can reverse the process as part of efforts to tackle the climate crisis, experts say.

Bedfordshire, Cambridgeshire and Northamptonshire (BCN) Wildlife Trust is testing out alternative crops in East Anglia's Fens that can tolerate growing in a wetter landscape that stores carbon, cleans water and boosts wildlife.

The £1 million Water Works project, funded by the People's Postcode Lottery, also aims to “future-proof” the farming landscape of the Fens.

The lowland peat, drained in the past for agriculture, faces reverting to wetland again in the next 100-150 years, as sea levels rise and the dried-out peat erodes, the experts have warned.

A five-hectare (12 acre) area of the Great Fen project – a 14-square-mile scheme to restore fenland in Cambridgeshire – has been given over to trial planting beds to demonstrate the crops could be commercially viable.

The main species being planted include manna grass, a wild grain which could provide a cereal crop, and reed, which can be used for thatching and has the potential to make silicon, which could be used in lithium batteries.

Meanwhile, the scheme is trialling a series of “novel” crops for food, including watercress and wild celery, meadow sweet and bog myrtle for flavourings and plants with medicinal potential such as comfrey and yellow flag iris. Carbon levels are being measured and wildlife is being monitored, with snipe and badgers already spotted.

It is hoped the scheme is on a big enough scale that farmers can see how they could make it work on their land.

Kate Carver, Great Fen project manager, said they were also hoping to attract chefs and gin companies who might want to use the flavourings in their products.

Write a comment...

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For those asleep at 5.45am here's listen again link for @BBCFarmingToday visit to Water Works project bbc.co.uk/sounds/play/m0... starts 4.28mins @greatfen @WildlifeTrusts @CraigBennett3 @UEL_News @UK_CEH @PostcodeLottery @cambsacre @BrianE_Cambs



Farming Today - 13/11/20 Bird flu, wet peat planting, compromises in farming...
England, Wales and Scotland have been declared an Avian Influenza Prevention Zone.
bbc.co.uk

11:22 AM · Nov 13, 2020 · Twitter Web App

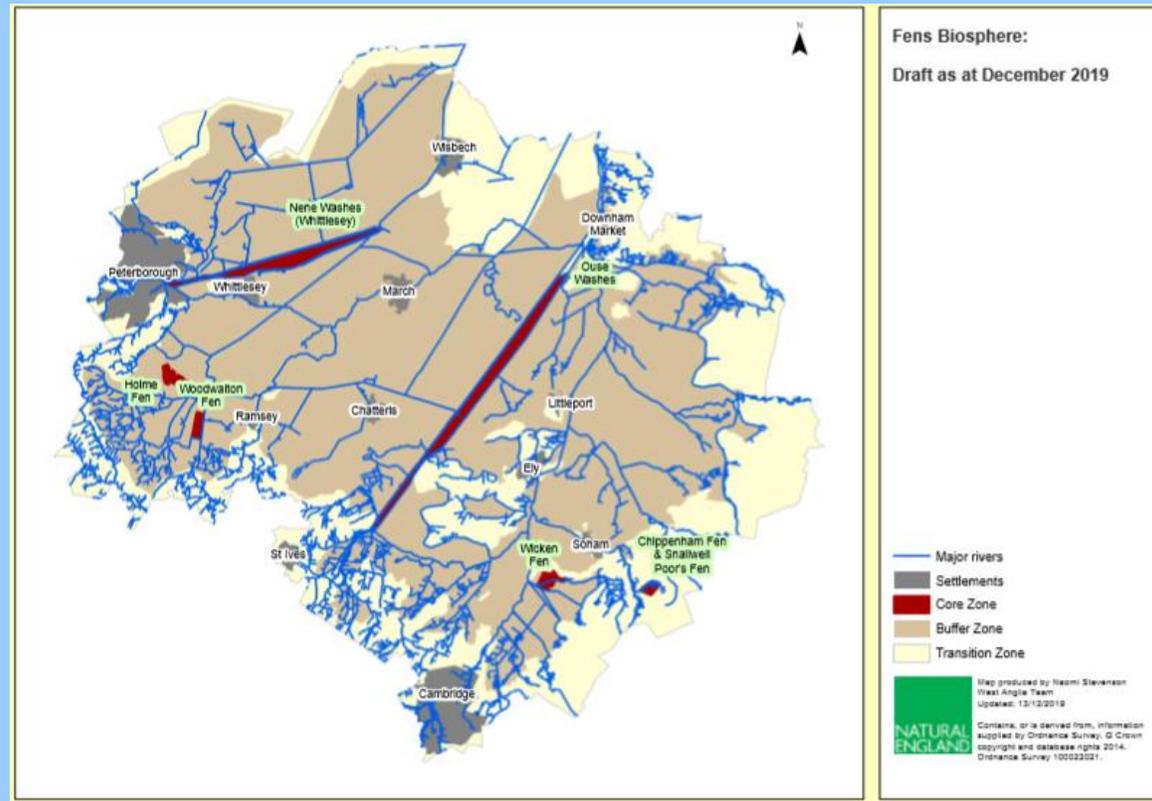
The Wildlife Trust for Beds, Cambs & Northants @... · Oct 19, 2020

Great piece by @PA @EmilyBeament re wet farming trials at @greatfen Water Works project @UEL_News @UK_CEH @PostcodeLottery @DreamFundPPL @cambsacre @CraigBennett3 @WildlifeTrusts
Saturation coverage: Shropshire Star to Telegraph! [#Wetfarming](https://shropshirestar.com/news/uk-news/2...)



3 replies 8 likes

FUTURE- PROOFING The Fens' Key Assets



**Fens
Biosphere:**
*Bringing together
the area's
exceptional
natural, cultural
and economic
assets, expertise &
cutting-edge
research*

“with further development of crops, water management systems and markets, paludiculture has the potential to become to make a valuable contribution to the development of more sustainable and resilient peatland farming systems in future, and to contribute to delivering the UK’s net zero emissions target”

Thanks for Listening!

Keep in touch to follow our paludiculture journey:

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Ross Morrison: rosrri@ceh.ac.uk

Further information:

<https://www.greatfen.org.uk/big-ideas/wet-farming>

<https://www.fensbiosphere.org.uk/>



The 'Hairy' Great Fen Landrover, Carrying Reeds for Planting at Water Works - Kate Carver



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Supported by players of



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