



# A National Perspective on Peat and it's Importance in Landscape Scale Delivery

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# Introduction



- **Peatland work and reports of the recent years.**
  - *Peatland Monitoring and review.*
  - *England Peatlands - carbon storage & greenhouse gasses*
- **Future work and developments.**
  - *Lowland Peatland and food security*
  - *UK Peatland GHG and C Flux Research Programme*  
- *JNCC Joint Working Group.*
- **Working at a Landscape scale** - The white paper - Lorton review and Other initiatives



# Peatland Monitoring Review and Toolkit



**The Environmental Change Biodiversity Network focus on biodiversity/management/ climate/ pollution**

- **What about other services – C, GHG, water? Peatland?**
- **Requirement for a peatland “toolkit” of standard restoration methods available**
- **Commissioned by Natural England from Liverpool University in early 2009.**
- **Reviewed peatland monitoring techniques & aimed to provide a set of “standard” methods**
- **Also to scope a database structure for submission, storage.**
- **Completed in Autumn 2009 – still not yet published – not a toolkit yet...**
- **Used since to inform**
  - **Moorland Restoration Handbook**
  - **UK Peatland GHG and C Flux Research Programme**
  - **Monitoring TIN - in development**

*To be published in the next six months*

# **Guidelines for Monitoring Peatland Restoration**

**Natural England Technical Information Note TINXXX**



The aim of this guidance is to provide information to enable peatland restoration projects to develop appropriate monitoring programmes. Degraded peatlands are restored for a wide range of reasons. Restoration objectives can include protecting and enhancing biodiversity, improving water quality, reducing flood risk, and protecting cultural heritage or carbon stores. Restoration projects need monitoring programmes to show whether these objectives are being met and to help them to adapt practices to respond to environmental changes.

# NE257 - England's peatlands: carbon storage and greenhouse gases



a review of the condition of England's peatlands and the vital role they play in combating climate change.



## England's peatlands

Carbon storage and greenhouse gases

[www.naturalengland.org.uk](http://www.naturalengland.org.uk)



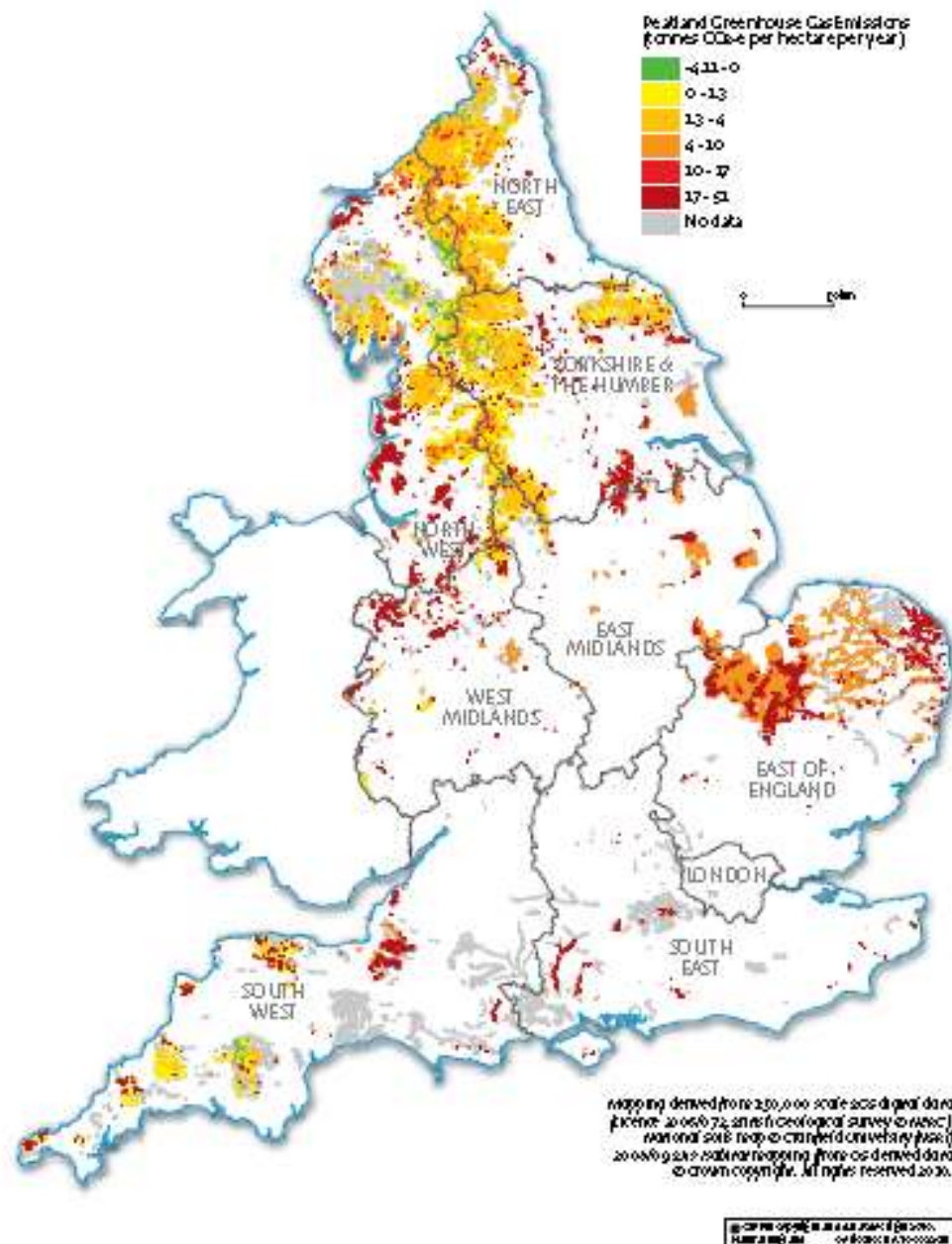


## Headline from England's Peatlands

Report highlights decline of a critical carbon store with three quarters of England's deep peatlands are damaged or degraded

'England's Peatlands – Carbon Storage and Greenhouse Gases', provides detailed mapping information on the extent and condition of England's peatlands. Alarming, the report has found that almost three quarters of the deep peat area in England is now damaged, showing physical signs of degradation or subject to inappropriate management such as drainage, regular burning or cultivation. In essence, the mechanism that would allow England's peatlands to actively store up new reserves of carbon has been turned off.

Map 9: The majority of England's peatlands are currently sources of green house gases, with notable 'hotspots' in the lowlands. Some upland peat areas are still capturing carbon, but most are also sources.



**The majority of England's peatlands are currently sources of greenhouse gases, with notable 'hotspots' in the lowlands.**

*But Aren't Our  
lowland  
Peatlands  
important for  
food security?*



**The Impact of Lowland Peatland Restoration on  
Food Production and Security**

# Peatlands for Agriculture or Environment?

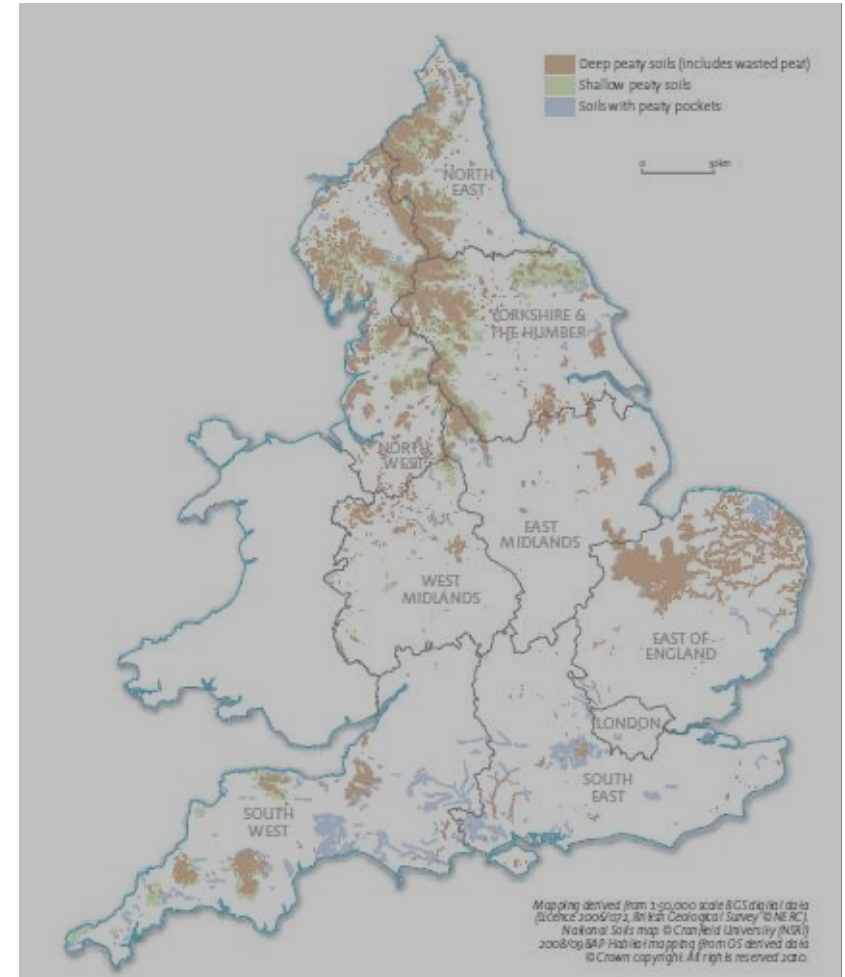
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- Our lowland Peatlands formed under valued wetland habitats, and remain important carbon stores.
- Little of the original habitat remains and almost 75% is now used for agriculture
- Agricultural peat is drained/cultivated, which causes the stored carbon to be released as CO<sub>2</sub>
- UK government aims to
  - Increase food production
  - Reduce GHG emissions and reduce environmental impacts of farming
- What is the environmental and economic balance between farming and wetlands

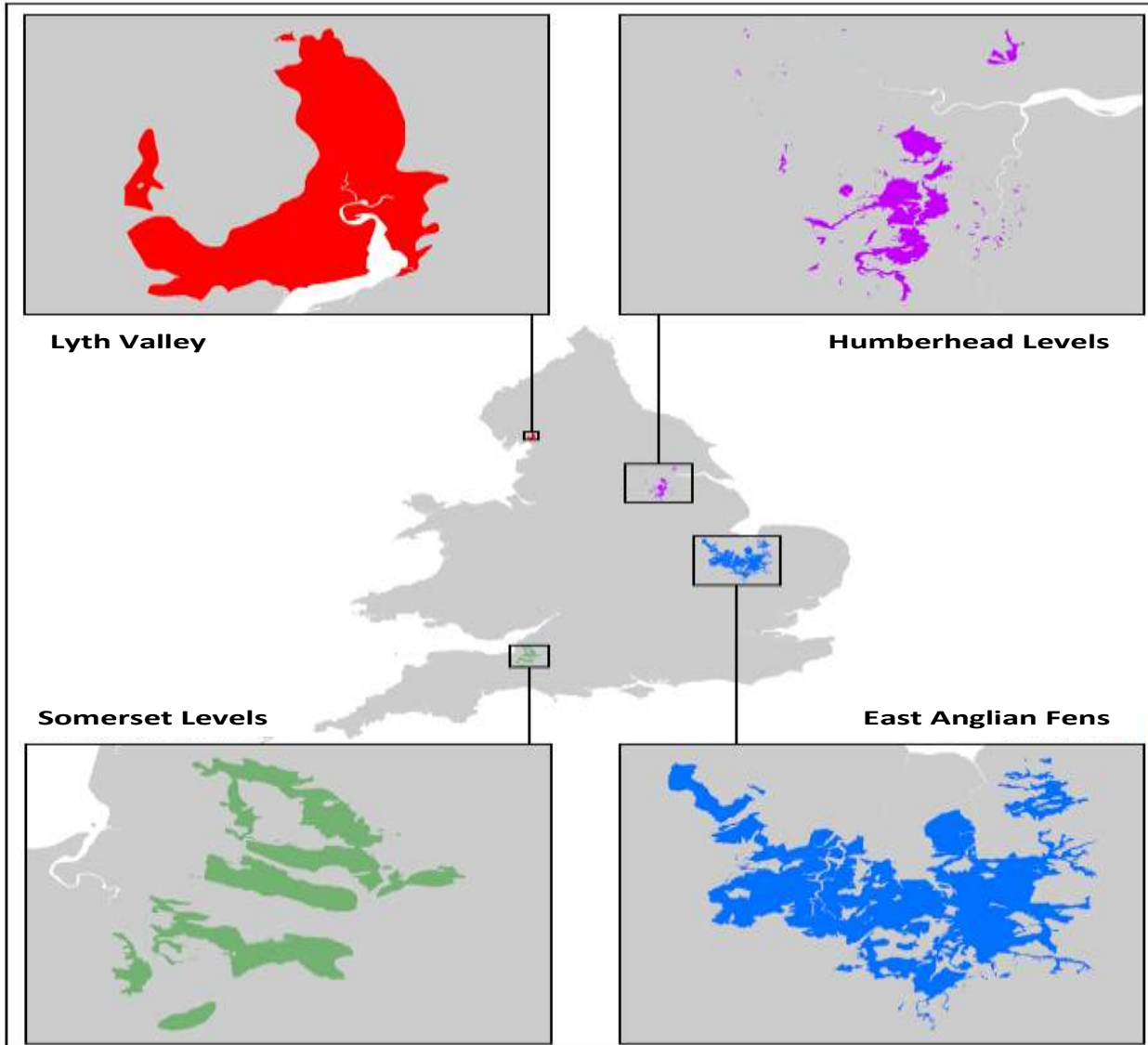
# Project Objectives and Approach



- Natural England project delivered by Prof Joe Morris and Dr Anil Graves, Cranfield University.
- Look at role of peatlands in national food production and security
- Compare costs and benefits of both agricultural and wetland restoration management under a range of management scenarios.
- Test scenarios in Wetland Vision target areas – Humberhead Levels, The Fens, Somerset Levels, Lyth Valley



# Four Areas of study used



**Lyth Valley**

**Humberhead Levels**

**Somerset Levels**

**East Anglian Fens**

# Contribution of Peatlands to Food Security



- Wetland Vision target areas, combined, comprise 0.5% of agricultural area, but 0.9% of income.
- However, re-wetting wider peatland areas will have greater impact
  - The Fens hold 10% of the current area of potatoes, sugar beet and field vegetables and produce 37% of field vegetables and 24% of potatoes.
- High value crops would be moved to other soils, probably displacing wheat – could maintain infrastructure/expertise
- Relocation of activities from target areas would displace 3% of national wheat production.
- We're currently food secure – could wetland restoration preserve valuable peat for future use?

# Lowland Peat & Food Conclusions



- Our peatlands are important sources of field veg, potatoes, salads
- Current agricultural management of peatlands will cause peat loss, dwindling agricultural returns and ongoing environmental costs.
- Peatland restoration to peat-forming vegetation will give the greatest overall environmental benefit worth almost £1000 per ha each year to society
- Taking peatlands out of agriculture would impact fairly strongly on overall UK food production – particularly field veg, potatoes
- UK food supply is now fairly secure – peatland restoration could help preserve it for an uncertain future.

# Issues raised by lowland peat & food security



- Exit strategy - who's paying?
  - No current mechanism to recoup high environmental costs of peatland agriculture.
  - Or reward farmers that avoid these costs.
  - Rewards for providing environmental services based on agricultural losses – not value of services.
- Carbon trading in the UK restricted by current policy.
- Other uses for wet peatlands – paludiculture for fuel? May be a good intermediate way forward.
  - <http://www.paludiculture.com/>

# UK Peatland GHG and C Flux Research Programme

JNCC - joint working group



## ***To work towards solving the Barrier***

- To count towards Kyoto & domestic climate targets, changes in peatland carbon stocks need to be counted in GHG inventory.

# UK Peatland GHG and C Flux Research Programme

- Much interest in role of managed peatlands in GHG emissions
- Need to produce robust “emissions factors” for peatlands under different managements (including restoration)
- Would support GHG inventory reporting, improved management, emissions trading etc.
- Partnership Project led by JNCC, funded by Natural England, Defra, DECC, FC, SNH, CCW, and supported by LWEC, WAG, SEPA.
- Aims to
  - Review potential of current data to provide emissions factors



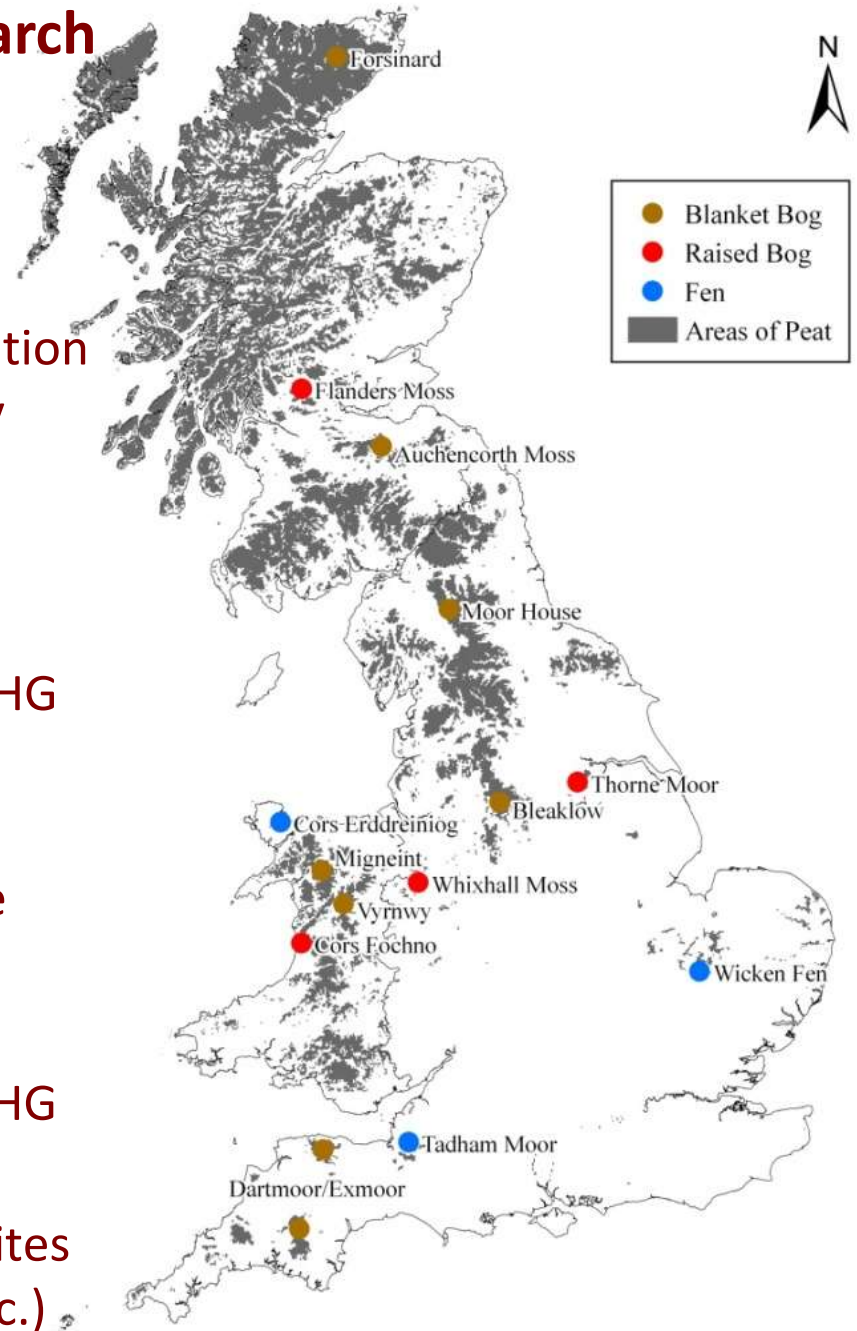
# UK Peatland GHG and C Flux Research Programme



- Delivered by Universities of Durham, Aberdeen, Leeds, CEH and Macaulay
- Almost ready to report!
- Review, meta-analysis, and modelling approaches
- Examining both “steady state” emissions and at transitions between land uses.
- Reveals little current UK evidence to develop peatland emissions factors.

# UK Peatland GHG and C Flux Research Programme

- Has developed a 3 tier approach to gathering data
  - Tier 3. Simple hydrological, vegetation and peat depth monitoring – many sites
  - Tier 2. Also includes GHG flux from chamber sampling.
  - Tier 1. Also includes continuous GHG and C flux information from flux towers, and automated samplers.
- Tiers are “nested” within each other (ie tier 1 contains tier 2 contains tier 3) – verification and up/downgradeable
- Represents the elusive “toolkit” - for GHG at least!
- Sites build on existing GHG and C flux sites (ECN, CEH C catchments, UK PopNet etc.)



## Future Challenges & Projects



- Coordination with other UK monitoring systems
- Provision of guidance – toolkit?
- What to do with the data?
- National Monitoring Database
  - for peatlands?
  - for all environmental monitoring data?
- ❖ New project on peat depth and C mapping with Peatscapes (North Pennines AONB Partnership) & contracted to Penny Anderson Associates.



## **Focus on Landscape Scale Delivery**

# **Changing Face of Natural Environment Delivery!**

Lorton Review - Natural Environment White Paper - Ecosystem assessment .

Government response to the *Making Space for Nature* review

PB13537

Date published: June 2011



**2.63 - We will undertake a significant research programme over the next four years to explore how soil degradation can affect the soil's ability to support vital ecosystem services such as flood mitigation, carbon storage and nutrient cycling; and how best to manage our lowland peatlands in a way that supports efforts to tackle climate change. We will use the results of this research to set the direction of future action.**

# The Natural Choice: securing the value of nature





## Lots on Horticultural peat -

**2.64** - In England, horticulture consumes 2.4 million cubic metres of peat each year. Formed over hundreds of thousands of years, peat is effectively a non-renewable resource. Making the transition to peat-free alternatives would put the industry on a sustainable footing, contributing to our goal of increasing food and other production sustainably and protecting our natural capital. The industry has made progress in reducing peat use in response to a previous voluntary reduction target, but the market is still only 57.5% peat-free. In order to support industry in making increased reductions, we are introducing a new voluntary partnership. The Government is working with industry to unblock barriers to change.

**2.65 The long-term aim is for peat use to be reduced to zero. This will contribute to the protection of important lowland peat habitats (both here and overseas) and significant carbon stores, and will promote a shift towards the greater use of waste-derived and by-product materials. Ambitious targets are required to drive action and provide clarity about the long-term direction of policy.**

**2.66 We want to reduce peat use to zero by 2030, setting the following milestones:**

- **a progressive phase-out target of 2015 for government and the public sector on direct procurement of peat in new contracts for plants;**
- **a voluntary phase-out target of 2020 for amateur gardeners; and**
- **a final voluntary phase-out target of 2030 for professional growers of fruit, vegetables and plants;**
- **we will establish a Task Force bringing together representatives from across the supply chain with a clear remit to advise on how best to overcome the barriers to reducing peat use, exploring all the available measures to achieve this goal;**
- **building on the advice of the Task Force, we will review progress towards these targets before the end of 2015 and consider the potential for alternative policy measures if necessary.**

## Safeguarding our soils



- **25 We will undertake a significant research programme over the next four years to explore: how soil degradation can affect the soil's ability to support vital ecosystem services such as flood mitigation, carbon storage and nutrient cycling;**
- and how to best manage our lowland peatlands in a way which supports efforts to tackle climate change. We will use the results of this research to set the direction of future action. [28]



# UK National Ecosystem Assessment

Understanding nature's value to society



## Synthesis of the Key Findings



# Regulating Services Key Findings (Chapter 14).



- Ecosystems regulate climate by:
  - providing sources or sinks of greenhouse gases (affecting global warming) and sources of aerosols (affecting temperature and cloud formation); and
  - their physical characteristics which can regulate local and regional climate. The UK has large amounts of carbon 'locked up' in its forests, peatlands and soils (114 megatonnes Carbon (Mt C) in vegetation; 9,838 – 2,463 Mt C in soils)

# *How will peat be affected by?*



## **New Initiatives in the White Paper**

- Local Nature Partnerships – strategic partnerships of organisations that work to create a shared vision for their area and deliver better, more integrated, environmental outcomes.
- Testing a new voluntary approach to biodiversity offsetting in a number of pilot areas
- Nature Improvement Areas

## Summary

- **State of English Peatlands report** - which highlights how crucial they are future carbon management.
- **Technical Information Note** - Guidelines for Monitoring Peatland Restoration. - in preparation
- **Lowland Peat & Food security** - will be released shortly.
- **UK Peatland GHG and C Flux Research Programme**
- Lorton Recommendations - White paper aspirations and National Ecosystem Assessment.
  
- Peat soils should form the basis of how we approach restoration at a Landscape Scale. Targeting within the recreation of habitat networks will be key to lock in future carbon over the next 40 years.

**Thank you**

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