Local Plan for the Broads
Peat Topic Paper

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Contents

1: Introduction

Peat is an abundant soil typology in the Broads and an important asset. The current 2019 Local Plan for the Broads introduced a peat protection policy (DM10). The emerging Local Plan for the Broads seeks to take a stronger stance of development proposals that affect peat.

Peat was once mined as a fuel and then the land was drained for grazing and agriculture, which released carbon dioxide from the peat and lowered the land levels. Peatlands are now a nationally recognised wetland home to many priority species. The peat in the Broads stores vast amounts of carbon in its fens and wetlands.

2: About peat

Peat is one of the main soil types in the Broads and an important asset with important qualities, providing many **ecosystem services**[1]. In the UK at least 80% are damaged[2].

The total amount of carbon stored in peat in the Broads National Park is estimated at 12 to 14 teragrams or 12 to 14 million metric tonnes of carbon[3]. Peat soils release stored **carbon** if they are drained and allowed to dry out. The protection of peat soils is therefore critical to help address climate change. If drained/dried out, lowland peat soils, such as those in the Broads, emit 85% of the UKs greenhouse gases from peatlands. The mismanagement of peat leads to greenhouse gas emissions that contribute around 4% to the UK's total annual greenhouse gas emissions making them an important single source of climate change[4].

Peat soils support internationally important fen, fen meadow, reedbed, wet woodland and lake **habitats**. For example, milk parsley, the food plant of the Swallowtail caterpillar, tends to grow only on peat soils in the Broads.

Historic England has identified the Broads as an area of 'exceptional waterlogged heritage'[5]. Because of the soil conditions in the Broads, there is great potential for **archaeology** to be well preserved, giving an insight into the past.

The peat has accumulated over time and incorporates a **record** of past climatic and environmental changes that can increase knowledge of the evolution of the landscape.

Peaty soils help prevent flooding by absorbing and holding **water** like a sponge as well as filtering and purifying water. But that does not mean that peat soils should be considered as a water treatment process.

[1] The diverse benefits that we derive from the natural environment are sometimes referred to as ecosystem services. Examples of these services include the supply of food, water and timber (provisioning services); the regulation of air quality, climate and flood risk (regulating services); opportunities for recreation, tourism and education (cultural services); and essential underlying functions such as soil formation and nutrient cycling (supporting services). Payments for Ecosystem Services: A Best Practice Guide

[2] Peatland_Leaflet_ONLINE_V2_1.pdf

[3] Assessing carbon stocks within the peat of the Broads National Park

[4] Human activity means UK peatlands contribute to climate change | UK Centre for Ecology & Hydrology

[5] Historic England has identified the Broads as an area of exceptional waterlogged heritage. Because of the soil conditions in the Broads, there is great potential for archaeology to be well preserved, giving an insight into the past.

3: Current Local Plan policy on peat

The current Local Plan for the Broads 2019 includes policy DM10 that seeks to reduce the amount of peat excavated as a by-product of development. If peat is excavated, it seeks an appropriate re-use. There is also an adopted Guide that seeks to expand on this policy.

4: Government's peat policies

The **England Peat Action Plan** was published in 2021. The England Peat Action Plan sets out the government's long-term vision for the management, protection and restoration of our peatlands, so that they provide a wide range of benefits to wildlife, people and the planet.

Some key parts of the action plan are:

- 'All uses of peatland should keep the peat wet and in the ground'.
- 'Some areas of peatland are potentially susceptible to development pressure and it is vital that planning policies reflect the importance of managing peatlands and avoid detrimental climate, water and biodiversity impacts from development'.

The **Lowland Agricultural Peat Task Force Chair's report** was published in 2023. This emphasises the importance of peat saying 'When peat degrades, the landscape subsides, and the carbon once stored in the soil is lost to the atmosphere primarily as carbon dioxide; so much so that the process of peat degradation places England's lowland peat soils amongst the largest sources of greenhouse gas emissions in the UK's land use sector'. The report makes 14 recommendations to ensure lowland peat soils can be managed more sustainably.

Published by the Government in January 2024, the **Protected Landscapes Targets and Outcomes Framework** (PLTOF) establishes ambitious targets for National Parks and National Landscapes. It recognises the crucial role these nationally important landscapes play in achieving positive changes for nature, climate, people and place. One of the targets is: Target 7: Restore approximately 130,000 hectares of peat in Protected Landscapes by 2050. We have locally apportioned 200ha of peat restoration in the Broads to 2050 - see Broads Nature Recovery Strategy 2024-29. Peat restoration is about protecting it in situ, which involves managing or raising the water table.

In November 2022, ahead of COP27, the UK joined the **Net Zero Government Initiative** as a partner and signatory. This Initiative is led by the United States and participants agreed to develop and publish a roadmap laying out how they would bring their government emissions to net zero by 2050. The 2008 Climate Act committed the UK to reducing its greenhouse gas emissions by 80% by 2050 compared to 1990 levels formed the Committee on Climate Change, and established UK carbon budgets. In June 2019, this was strengthened, committing the UK to bring all greenhouse gas emissions to net zero by 2050. This is referred to as the UK net zero target. A study, led by the Centre for Ecology & Hydrology (CEH) and the James Hutton Institute, found that the overall greenhouse gas

emission from peatlands could exceed the equivalent of around 20 Megatonnes of CO_2 emissions each year – around 4% of the UK's total annual greenhouse gas (GHG) emissions.

4: Broads Authority projects relating to peat

The Authority has projects that relate to the restoration of peat:

- The Peat Discovery Project was funded through the government Nature For Climate Peatland Grant Scheme.
- Two Lowland Agricultural Peatland Projects received funding in 2024/25: Water Discovery Pilot and a Small Infrastructure Pilot.
- Fibrebroads was funded through the Paludiculture[6] Exploration Fund.
- Through our Farming in Protected Landscapes (FiPL) programme, we have supported projects that support reed cutters to maintain the fen habitat that grows on peat soils, providing a viable farming system, a vibrant ecosystem, and storing carbon.

With 24 peat cameras now installed in the Broads (2024), we are tracking sub-millimetre peat movements to monitor areas for peat-water levels and surface shrinkage measurement. Our water table modelling tools provide unparalleled assessments for lowland peatlands, which will help understand peat processes for sites across the UK. The key aim is to help farmers make informed decisions that support both Net Zero and Nature Recovery goals. With the data, land managers can explore the potential effectiveness of different management practices (involving raising water tables), enabling better-informed decision-making.

This funding has been provided to the Broads Authority and its partners to develop peatland restoration and wetland farming projects, as well as working with farmers, land managers and regulators to engage about project feasibility and water management in complex drained floodplain environments. The Broads Peat Projects are funded by Defra and supported by Natural England, the Association of Drainage Authorities (ADA), and the Environment Agency. They are delivered by the Broads Authority, Cranfield University, Broadland Water Abstractors Group, the UK Centre for Ecology & Hydrology, Norfolk FWAG, Norwich University of East Anglia, Hudson Architects, and Wetland Projects. The modelling tools have been shared with about 200 land managers and farmers.

5: Risks to peat in the Broads

In the Broads, the peat is at risk of degradation and drying out. This ultimately affects its special qualities. Indeed, if peat dries out, rather than being a carbon dioxide sink, it becomes a carbon dioxide source.

[6] Paludiculture is a farming and forestry system that involves rewetting peatlands to grow wetland crops and produce biomass.

Peat is a finite resource. It takes thousands of years for peat to form.

There are many risks to peat in the Broads: drainage, conversion to arable, overgrazing and compression due to machinery or too many livestock, contamination and development.

In terms of development which the Local Plan can influence/guide, the following table shows the applications that resulted in the excavation of peat as a by-product of development. This information is from May 2019 to end of March 2024.

Application number	Description	Volume of peat excavated
BA/2021/0456/FUL	Extend mooring basin, replace existing buildings	10,160 m^3
BA/2023/0180/FUL	Slipway	85m^3
BA/2021/0074/COND	Erection of boathouse in alternative location on site, variation of condition 2 of permission BA/2020/0078/HOUSEH	13 m^3
BA/2021/0105/FUL	Replace quayheading, widen wet dock and install finger jetty.	35 m^3
BA/2021/0444/FUL	New pontoon and access ramp	6.8 m^3
BA/2021/0235/FUL	Installation of ground source collector & 90 solar panels	1m^3
BA/2020/0378/HOUSEH	Replacement quay heading and boat house, installation of half-slip.	2m^3
BA/2020/0321/HOUSEH	Creation of a domestic slipway	1m^3
BA/2020/0309/FUL	Excavation of 3mx10m mooring cut	32.54m^3
BA/2020/0404/HOUSEH	Extension to mooring cut (retention)	60m^3
BA/2020/0055/FUL	2 plots Quay heading, mooring cut and replacement day hut	Not confirmed.
BA/2018/0514/FUL	Extension to mooring basin	1,595 m^3
BA/2020/0266/HOUSEH	Replace 14.6 metre of timber quayheading with steel piling and timber capping and whaling. Enlarge dock by 5m x1m	No exact figures. If any peat is found it will be sent to a receptor site in Brundall.
BA/2019/0384/HOUSEH	Mooring cut in quay heading	21.8m^3
BA/2020/0078/HOUSEH	Proposed erection of boathouse including the installation of quayheading and restoration of reed bed.	100.7m^3
BA/2019/0294/FUL	Replacement dwelling	97.2m^3
BA/19/0105/OUT	Erection of a Dairy and milking parlour building	Details were resolved as part of the REM application
Total	**-**	**Around 12,211.04 m^3**

Over the past 5 years, permitted schemes that result in peat excavated as a by-product of development are set out in the above tables. This amounts to around 12,200m^3 of peat that has been or will be excavated.

The UK government has land use emissions factors for peat that the Broads Authority has used to calculate the overall emission from the area of drained peat in the Broads.

In terms of calculating the rate and emissions from peat that is excavated as part of development, it is difficult to precisely calculate how much carbon dioxide could be emitted from 12,200m^3 of peat being allowed to dry out. The amount of organic matter in peat can be variable, although peats are usually defined as having over 75% organic matter.

In the CANAPE project, the Broads Authority used an emissions figure of approximately 47kg of Carbon per cubic metre when material is excavated and left to dry out, which amounts to 174kg of CO2 if fully oxidised (see CANAPE).

If we used that 174kg figure on the ~12,000m^3 of peat excavated, this could result in 2,088 tonnes of CO2 emissions. This is an estimate as to have a reliable figure a soil sample from each site would be needed and the moisture and carbon content calculated and that has not been done.

For the schemes set out in the previous table, the current Local Plan policy would have been followed and so it is expected that not all of that volume of peat would have dried out and thus become a source of carbon dioxide. 12,200m^3 does however present a large volume of peat excavated and the aim is to restore peat, leaving it in situ.

The following application relates to habitat restoration and because of the environmental benefits it brings, was deemed to be acceptable. The proposed policy would likely still approve such a scheme.

Application number	Description	Volume of peat excavated
BA/2020/0238/FUL	Habitat restoration - Crassula Helmsii eradication	2,700 m^3

6: Proposed policy on peat

Given the clear importance of peat in the Broads and given that one of the areas that puts peat at risk is development, a stronger policy stance is proposed.

Peat is not a habitat, but it is a key component to some habitats and the Authority considers it irreplaceable in that it is very technically difficult and takes a very long time (perhaps thousands of years) to recreate once destroyed. Furthermore, peat can support lowland fen which is an irreplaceable habitat as defined by the NPPF[7]. And in terms of priority habitats,

[7] See glossary: National Planning Policy Framework - GOV.UK

it can also support wet woodland, purple moor grass and rush pasture, coastal floodplain grazing marsh and reedbed.

A site in Salford that formed part of Greater Manchester's local spatial framework Places for Everyone was removed by Inspectors (February 2024) due to the development proposal's public benefits not outweighing the loss of deterioration of peat[8].

It is therefore proposed to have a policy in the Local Plan that takes the general thrust of the decision made by the Inspector who examined Greater Manchester's local spatial framework Places for Everyone and elevates the importance of peat to that of irreplaceable habitats.

See Appendix 1 for the proposed policy.

7: Wind turbines and peat – proposed policy

In the **NPPF consultation document** (summer 2024), there was a question relating to renewable energy on peat:

Question 74 *– Some habitats, such as those containing peat soils, might be considered unsuitable for renewable energy development due to their role in carbon sequestration. Should there be additional protections for such habitats and/or compensatory mechanisms put in place?*

In the response to the consultation (December 2024), the Government said:

'The government welcomes the views provided in response to this question. Some habitats that include peat soils are already protected by the National Planning Policy Framework definition of irreplaceable habitats, including blanket bog and lowland fen. Given the breadth of further habitats which could be considered irreplaceable, including those containing peat, the government plans in due course to review and ensure the robustness of the definition of irreplaceable habitats to ensure it is comprehensive to support decision makers.

The government plans to publish a 12-week consultation on land use early in the New Year. The consultation will inform the development of a Land Use Framework for England, to be published in 2025. This will set out the government's vision for long-term land use change and focus on the principles for land use decision making and priority areas for policy change'.

There is also **emerging scientific work** relating to the impact of peatland windfarms on carbon emissions. For example, work undertaken by the University of Aberdeen: Planning peatland windfarms with carbon calculations – this website says: ''*When wind turbines are installed, carbon is not only released from the peat, but also during all stages of the process*

[8] IN37-Further-Action-Points-July-2023-Final-Publication.pdf (hwa.uk.com) and the final Inspector's Report

and it's important that we can understand how this process affects the amount of carbon dioxide being released into the atmosphere.

"Although land restoration can help to mitigate further carbon release, often the payback time is calculated to be longer than the lifetime of the windfarm. If this is the case, developers, planners and campaigners can use this data to determine if the windfarm installation should go ahead'.

This document, **Clean Power 2030 Action Plan: A new era of clean electricity** (December 2024), sets out our first major steps towards clean power. In relation to peat, it says: *'We should therefore ensure delivery of our climate and nature targets wherever possible, in an integrated and joined up way. This means ensuring habitats like peatlands store rather than emit greenhouse gas emissions; or restoring salt marshes and sea grasses so that they are sequestering carbon as well as protecting our coastal communities from rising sea levels and extreme weather. This means that new energy infrastructure should be built in a way that protects the natural environment by following a "mitigation hierarchy" to do what is possible to avoid damage to nature, and then minimising, restoring and delivering compensation when damage is impossible to avoid'.*

Ultimately, the deeper the soil, the more carbon will be emitted during construction, which also rapidly decomposes the peat and creates large holes in the land. As the surrounding peat drains into the holes, the peatland dries out, and huge quantities of carbon dioxide are released

It is therefore proposed to add the following under the wind turbine section of Policy PUBDM21: Renewable and low carbon energy:

Proposals for turbines or access routes located on peat soils are likely to not be supported.

8: Summary and conclusion

Peat is clearly an important soil type locally and nationally. It is at risk of excavation as a by-product of development. There is a clear direction to restore peat, and this is best done by keeping in situ. It is proposed that that emerging Local Plan has strong policies that protect peat, and the above wording is added to policy PUBDM21.

Appendix 1: Proposed policy on peat soils

Policy PUBDM12: Peat soils

See map: Appendix 10: Location of peat soils

1. Sites of peat soils[9] will be protected, enhanced, and preserved.

2. There will be a presumption in favour of preservation in-situ for peat soils.

3. Development resulting in the loss or deterioration of peat will be refused, unless there are wholly exceptional reasons (see supporting text), and a suitable compensation strategy is put in place by the applicant/developer, and it is demonstrated that:

i) There is not a less harmful viable option; and
ii) The amount of harm has been reduced to the minimum possible; and
iii) An evaluation is submitted to assess the impact of the proposal in relation to palaeoenvironments, archaeology, biodiversity provision and carbon content; and
iv) Satisfactory provision is made for the evaluation, recording and interpretation of the peat before commencement of development; and
v) The peat is disposed of in a way that will limit carbon loss to the atmosphere.

4. Development that seeks to enhance biodiversity but may result in some peat removal will still need to demonstrate the criteria i) to v) and that the biodiversity benefit will outweigh carbon loss.

5. Proposals to enhance peat and protect its qualities will be supported.

Reasoned Justification

Peat is an abundant soil typology in the Broads and an important asset. While there is a certain irony in protecting the peat soils in an area where the lakes originated from peat extraction, peat is a finite resource. This policy seeks to address schemes that result in the excavation of peat as a result of development. The Authority has other projects that relate to the restoration of peat such as The Peat Discovery Project and Creating a New Approach to Peatland Ecosystems.

Ecosystem services

Peat has many qualities and provides many ecosystem services:

- **Climate change:** The total amount of carbon stored in peat in the Broads National Park is estimated at 12 to 14 teragrams or 12 to 14 million metric tonnes of carbon[10]. Peat soils release previously stored carbon when they are dry. UK peats therefore represent both a threat and an opportunity with respect to greenhouse gas emissions. Correct

[9] Peat is a partially decomposed mass of semi-carbonised vegetation which has grown under waterlogged, anaerobic conditions, usually in bogs or swamps

[10] Assessing carbon stocks within the peat of the Broads National Park

management and restoration could lead to enhanced storage of carbon and other greenhouse gases in these soils, while mismanagement or neglect could lead to these carbon sinks becoming net sources of greenhouse gases.

- **Biodiversity:** Peat soils support internationally important fen, fen meadow, wet woodland, and lake habitats. 75% of the remaining species-rich peat fen in lowland Britain is found in the Broads. Milk parsley, the food plant of the Swallowtail caterpillar, grows only on peat soils. Fen orchids have their UK stronghold in the Broads, so the peat soils are critical for the survival of this species. Other rare and important plant and invertebrate communities (collection of species) are supported by the peaty soils.
- **Archaeology:** Historic England has identified the Broads as an area of *exceptional waterlogged heritage*. Because of the soil conditions in the Broads, there is great potential for archaeology to be well preserved, giving an insight into the past. Archaeology is discussed in more detail in the Heritage section of this Plan.
- **Palaeoenvironments:** The peat has accumulated over time and thus incorporates a record of past climatic and environmental changes that can be reconstructed through, for example, the study of its stratigraphy and pollen content, leading to increased knowledge of the evolution of the landscape.
- **Water:** Peaty soils help prevent flooding by absorbing and holding water like a sponge as well as filtering and purifying water. Peat can absorb large quantities of nutrient and other pollutants, although peat soils can under certain conditions release these chemicals back into the surrounding water.

How peat quality can be impacted

Land management that could impact on the quality of the peat soil includes land drainage, introduction of polluted water, burying the peat under hard surfaces or gardens, compacting peat and peat removal to change the land use.

Peat. Priority habitat. Irreplaceable habitat.

NPPF (2024) para 193c) says 'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons[67] and a suitable compensation strategy exists'.

Footnote 70 says 'For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat'.

The NPPF glossary defines 'irreplaceable habitats' as 'habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, considering their age, uniqueness, species diversity or rarity. They include ancient woodland, ancient and veteran trees, blanket bog, limestone pavement, sand dunes, salt marsh and lowland fen'.

Priority habitats and species are defined by the NPPF as 'Species and Habitats of Principal Importance included in the England Biodiversity List published by the Secretary of State under section 41 of the Natural Environment and Rural Communities Act 2006'. Lowland fen is a priority habitat under the UK Biodiversity Action Plan and the EU Habitats Directive because of the quality and diversity of species it supports. Lowland Fen is also classed as an 'irreplaceable habitat' in the NPPF. The Joint Nature Conservation Committee (JNCC) says 'fens are peatlands which receive water and nutrients from the soil, rock and ground water as well as from rainfall: they are minerotrophic'.

Peat is not a habitat, but it is a key component to some habitats and the Authority considers it irreplaceable in that it is very technically difficult and takes a very long time (perhaps thousands of years) to recreate once destroyed. Furthermore, peat can support lowland fen which is an irreplaceable habitat as defined by the NPPF. And in terms of priority habitats, it can also support wet woodland, purple moor grass and rush pasture, coastal floodplain grazing marsh and reedbed. The tests set out in the NPPF will need to be passed for development that negatively impacts peat to go ahead.

A site in Salford that formed part of Greater Manchester's local spatial framework Places for Everyone was removed by Inspectors due to the development proposal's public benefits not outweighing the loss of deterioration of peat[11].

Biodiversity enhancements schemes

On occasion, for nature conservation benefits, peat can be removed to create shallow turf ponds or scrapes (areas of temporary open water) on areas of fen or scrub habitat to maximise the biodiversity value and hold back succession to woodland habitat. The removal of peat can also be necessary for conservation management – for example, the most biodiverse areas of UK fen occur in areas where the turf has been stripped and vegetation subsequently grown back. This policy allows for such operations, provided they can justify the proposal against the criteria set out in the policy.

Excavation of peat as a mineral resource

The NPPF and NPPG mentions peat soils specifically in relation to its excavation as a mineral resource, rather than the issue in the Broads relating to impact due to groundworks from development and inappropriate land management.

If the public benefit of a scheme is proved to clearly outweigh the loss or deterioration of peat

The policy and NPPF seeks protection of peat soils through changes in the location of development in the first instance and then designing proposals to minimise disturbance to the qualities of the peat and the amount of peat removed. Development proposed on areas of peat would require justification for the need to site the development on peat, and subsequently a peat assessment that shows how efforts have been made to reduce adverse

[11] IN37-Further-Action-Points-July-2023-Final-Publication.pdf (hwa.uk.com) and the final Inspector's Report

impacts on peat. Proposals that would result in removal of peat are required to assess the archaeological and paleoenvironmental potential of peat and make adequate recordings prior to removal.

To prevent the loss of carbon to the atmosphere that is sequestered in peat soils, disposal is of great importance. The Authority expects peat to be disposed of in a way that maintains the carbon capture properties. Peat needs to go somewhere where it can remain wet (and hence retain its function to lock up carbon and prevent it being released into the atmosphere) or potentially provide a seedbank (the potential for ancient peat to provide a viable seedbank may need to be evidenced) or be reused for local benefit (for example by boosting organic matter in degraded arable soils). When dry, peat changes its properties and oxidizes, so transfer to the receiving site would need to be immediate.

The Broads Authority has produced a guide to understanding and addressing the impact of new developments on peat soil. This Peat Guide (or successor document) provides additional information to help applicants meet the requirements of the related peat policy. It seeks to reduce the amount of peat excavated, ensure the special qualities are addressed, and that any peat excavated it disposed of in a way to ensure stored carbon is not emitted into the atmosphere.