Broads Authority

02 December 2022
Agenda item number 9

Climate Change update

Report by Carbon Reduction Project Manager

Purpose

To provide an update on the Broads Authority work on climate mitigation, and to propose the next steps to take following the completion of the baseline work carried out by Small World Consulting Ltd.

Broads Plan context

A2 - Work towards making all Broads Authority operations carbon neutral by 2030 and carbon zero by 2040.

A3 - Agree carbon reduction targets for the Broads National Park and promote action to reduce emissions.

B3 - Protect peatlands as carbon sinks

Recommended decisions

i) Approve the priority actions set out in Section 3, noting the Authority's limited ability to deliver them because of the reduced National Park Grant;

ii) Note the progress on the reduction of carbon emissions for Broads Authority operations, and the climate change workplan with the list of projects/bids in the pipeline.

Contents

1. Introduction

1.1. In July 2020 Members received a report on Climate Change Action Plan, where it was resolved

(i) to note the update on work undertaken since November 2019 and adopt the Action Plan including engaging with organisations that have responsibility for emissions in the Broads area to map a route towards zero carbon; and

(ii) to set the target of a 1.5^{o} compliant emissions curve for the Broads Executive area, in line with Tyndall Centre recommendations, and use this as the basis for public engagement and working with partners.

1.2. The 2020 Action Plan included 8 actions, all of which have progressed. A key output was action 1: "Complete the baseline and develop trends to zero carbon with Small World Consulting".

1.3. In July 2022 the Authority received the final analysis from Small World Consulting Ltd, using a methodology that has been agreed and used across all the UK National Parks. This set out a baseline emissions calculation for the Broads, and a recommended pathway to Net-Zero in line with the Paris Agreement, and the UK's sector targets. This report was presented in a Member workshop on 25 July 2022.

1.4. The headline emission figures from this report are

- Annual Emissions from residents 251,105 tCO_2e
- Annual Emissions from visitors while in the area – 85,594 tCO_2e
- Annual Emissions from visitors travelling to/from the area – 112,728 tCO_2e
- Annual Industry Emissions – 341,896 tCO_2e

1.5. These figures are calculated on a consumption basis, so they assess the full supply chain, rather than just emissions in the Broads. For instance, when considering Petrol Consumption in the Broads, it will also include the emissions from extracting and refining the petrol, as well as producing the car it was used in.

1.6. The report gives six categories of emissions, and as a scenario gives an annual percentage reduction in emissions, and an achievable ceiling showing the minimum they can be reduced to. This achievable ceiling represents likely residual emissions that need to be offset through measures to increase take up of Greenhouse Gases from the atmosphere.

Area	**Size of emissions (tCO_2e)**	**Target annual Reduction**	**Achievable ceiling**
Energy Only	123,414	13.3%	5% of present-day emissions
Food & Drink	107,808	5%	30% of present-day emissions
Travel to & From	112,728	5%	10% of present-day emissions

Other Non-Food Shopping	38,603	10%	7.5% of present day emissions
Land Use CO_2	83,880	See following section	N/A
Land Use Non-CO_2	62,356	See following section	30% present-day emissions

1.7. The annual targets relating to land-use are complicated as they are a mixture of reducing emissions (by rewetting peatlands) and increase the uptake of GHG from the atmosphere. For details please see the land-use section in the "Next Steps" section below.

1.8. The full report is accessible on A greenhouse gas emissions assessment and target scenario for the Broads (broads-authority.gov.uk).

1.9. Climate change was also discussed with Members during the preparation of the Broads Plan 2022-2027, and the first theme highlighted in the Broads Plan is Theme A: "Responding to climate change and flood risk". Strategic Objective B3 (to protect peatlands as carbon sinks) is also relevant under Theme B. The two relevant strategic objectives under Theme A are:

- A2 - Work towards making all Broads Authority operations carbon neutral by 2030 and carbon zero by 2040.
- A3 - Agree carbon reduction targets for the Broads National Park and promote action to reduce emissions.

1.10. Sea level rise, coastal change and the predicted more rapid changes to the climate pose enormous challenges to the special qualities of the Broads, this easterly, low-lying wetland. Responding to these challenges is central to all themes in this Broads Plan. It is clear that we need to act now, both to mitigate the scale of change (such as reducing our carbon emissions) and to adapt to the changes that are inevitable. This reports updates Members on climate mitigation actions.

2. Next Steps

2.1. Reducing Greenhouse Gas Emissions requires change across the entire economy, and will need joint action at local and national level. The Authority needs to ensure it is focusing its limited resources on those areas where it can have the biggest impact, and are most relevant to its general remit.

2.2. For example, whilst the Broads Authority as the planning authority can influence how new developments are insulated, make use of zero-emission heating where appropriate, and support appropriate deployment of renewables, it is not within the

powers or remit of the authority to compel and fund retrofit. These issues will need to be addressed by other authorities and central government.

2.3. As the Authority will need to access external funding for many of these initiatives, the timing of when action will be taken will inevitably depend on the availability of funding. Therefore, it is not possible to create a precise multi-year timetable.

2.4. The Small World Report broke down emissions into 6 areas. These are reviewed in this report, with proposals for areas the Authority to target.

2.5. In Appendix 2, we list the completed, ongoing and proposed projects that we are looking at seeking for external funding, to form a climate change workplan over the next period.

2.6. The climate change workplan is based on building further partnerships and working in collaboration with key partners, all of which have shared their intent and willingness to work on climate change issues. The Authority's own resources to enable that work will be included in the budget paper which will be discussed by Members in January 2023.

3. Priority Areas

Energy only footprint

3.1. The energy only footprint includes central heating, electricity use, and other forms of direct energy consumption such as a gas hob in a pub kitchen.

3.2. Within the control of the Broads Authority, the most direct form of action we can take is through the Planning system, in ensuring that the Local Plan policies are based on the latest evidence to support high standard of insulation, and to make use of the most appropriate heating technology to reduce emissions. The Local Plan policies can also enable appropriate development for renewable technologies such as solar and battery systems.

3.3. The Broads Authority also has direct responsibility for the waterways, and the energy used by boating. Whilst this is a small part of the overall footprint of the Broads, developing techniques and technologies in the Broads can influence behaviour across a wider area. This work is the focused of the Electrifying the Broads Scheme

3.4. Energy use in tourism businesses can be addressed with support through the Sustainable Tourism Officer we have proposed through the Norfolk Investment Fund (NIF) programme. A particular area where this could have an impact is encouraging businesses to use green tariffs, and providing information on how to select those green tariffs that have the most benefits[1].

[1] For example, following the guide for SMEs produced by the carbon trust https://www.carbontrust.com/resources/energy-procurement-and-green-tariffs

3.5. The Broads Authority has already advertised the Solar Together[2] scheme through its social media channels. The Solar Together scheme groups buyers of domestic solar panels & batteries to achieve a better price for installation.

3.6. However, these measures alone will be insufficient to achieve Net-Zero within the timeframe proposed by Small World Consulting. We are dependent on actions taken by partners to address a significant part of this area in several key areas:

3.6.1. Firstly, the reduction of emissions associated with electricity generation will depend on national targets for deployment of renewables. With the exception of local small-scale projects this is outside the scope of the Broads Authority.

3.6.2. Secondly, our planning policies can only influence new development, whereas the majority of energy consumption in 2050 will be from buildings that already exist. Retrofit of heating systems and insulation will depend on local and national schemes.

3.7. Priority Actions

- ***Continue to work on the Electrifying the Broads scheme, expanding the number of electric points, and identify funding sources to fund a pilot project.***
- ***Ensure that on the review of the Local Plan considers opportunities to reduce energy use, and to use the most appropriate technologies, such as heat pumps.***
- ***Continue to promote schemes such as Solar Together to Broads Residents.***

Food and Drink

3.8. The key changes in this area will be behaviour change, and therefore represents a significant challenge. Some of these behaviour changes have limited cost - for example, reducing food waste is a win-win as it saves the consumer money and cuts the resource cost of our food system. Likewise promoting local draught ales over imported larger boosts local businesses, gives visitors a more authentically "Broads" dietary experience, and reduces the transport footprint associated with the drink.

3.9. Other messages, such as ensuring vegetables are local and seasonal rather than air freighted, may require a less straightforward change in behaviour, but are central to achieving a sustainable food system.

3.10. The main lever for the wider sustainable food system is the Broads Authority engagement with the Environmental Land Management scheme (ELMs) development, to support the National Farmers Union goal of net-zero farming by 2040. If the farming industry becomes Net-Zero, then promotion of local produce is a simple way to reduce the footprint of diets.

3.11. If we received funding through the Norfolk Investment Fund for a Sustainable Tourism strategy, a part of this work will include: working with the eateries of the Broads on

[2] https://solartogether.co.uk/

how to ensure their offerings help customers choose sustainable eating, and promoting information to visitors on the benefit of local and seasonal eating.

3.12. The review of the Sustainable Tourism Strategy which is underway is deemed an essential delivery mechanism to communicate on Food & Drink.

3.13. Priority Actions

- ***In the new Sustainable Tourism Strategy, include the design of communication tools to support behaviour change on issues such as seasonal eating and reducing food waste***.
- ***In developing the Sustainable Tourism Strategy, identify ways to include actions on local food & drink offering in the Broads.***
- ***Work with the NFU and other partners to support net-zero agriculture in the local food supply chain.***

Transport

3.14. Transport to and from the Broads is the largest single source of CO2 in the tourism economy. There are a range of challenges in tackling this, including visitors wanting to go to areas away from public transport, and visitors coming for longer stays bringing more luggage than can be conveniently transported by train or bus.

3.15. However, most visitors are day visitors, and based on traffic data from the "Visit the Broads" website, the two largest sources of visitors to the Broads are London and Norwich. Therefore, for quick wins it would make sense to target journeys from these locations, and on day visitors.

3.16. Through the recently announced BMW partnership (see more details in Appendix 2), we will be able to install Electric Vehicle (EV) charging points in the Broads, helping to make the Broads more accessible to EVs. Demonstrating that rural areas as well as urban areas are accessible to EVs will help with the wider national transition to electric vehicles. It is also important for attracting visitors to the Broads as one in 6 new cars sold has a plug.

3.17. Overall, achieving the change we want to see in this area will require us to capitalise on National Changes to transport. For example, the proposed £2 bus fare cap proposed for 3 months after January 2023 is an opportunity to encourage visitors to try out bus routes in and out of the Broads, including walking routes and other visits that are more easily made by public transport.

3.18. We are also reliant on the quality of service offered by the railways and buses in the Broads, which will depend on the contracting carried out by the new Great British Railways in the coming months.

3.19. Priority Actions

- ***Identify locations to take advantage of the BMW partnership***.
- ***Promote public transport offers (such as the £2 bus tickets), and activities that can be carried out in the Broads from bus access.***
- ***Work with transport partners (Norfolk County Council, Greater Anglia etc) to design schemes to encourage more use of public transport in the Broads.***

Land Use

3.20. Whilst the report separates Carbon Dioxide from Methane and Nitrous Oxide, the land changes we need to make can be covered under a single heading. The land use change that is required to turn the Broads landscape from a net source of GHG emissions to a net sink are very significant. As an illustrative model, Small World Consulting produced the figures presented in Table 1 below. These figures are an illustration of the level of change that would be required, rather than a firm proposal of the types and ratios of change we should make.

3.21. Table 1: Small World Theoretical Land Use Changes

Theoretical Land use Changes	**Value**	**Units**
New Native Broadleaf / Mixed Woodland	50.0	ha per year
New Productive Coniferous Woodland	0.0	ha per year
Restored Peatland	97.5	ha per year
Agroforestry (improved grassland & cropland)	44.7	ha per year
New Hedgerows (improved grassland & cropland)	2.6	ha per year
Legumes (improved grassland)	250.2	ha per year
Cover Cropping (cropland)	97.4	ha per year
Associated Carbon Sequestration	**Value**	**Units**
New Native Broadleaf / Mixed Woodland	-923	tCO_2e per year per year
New Productive Coniferous Woodland	0	tCO_2e per year per year
Restored Peatland	-1,197	tCO_2e per year per year
Agroforestry (improved grassland & cropland)	-105	tCO_2e per year per year
New Hedgerows (improved grassland & cropland)	-27.2	tCO_2e per year per year

Legumes (improved grassland)	-514	tCO_2e per year per year
Cover Cropping (cropland)	-114	tCO_2e per year per year

3.22. These targets imply a level of progress that is significantly more than the current level of restoration, although projects such as the Broads Peat Partnership should deliver some level of change.

3.23. The main levers to achieve the necessary level of change will be through National Policy, such as the ELMs programme, and the development of blended finance (private and public funds). The Broads Peat project is funded through the Nature for Climate Peatland Grant Scheme, and the new Paludiculture Exploration Fund is expected to launch next year. The Broads Authority has done substantial work through its Environmental Policy Adviser to support the development of this workstream.

3.24. Priority Actions

- ***Continue working with the Broads Peat Partnership to secure funding to deliver the restorations of drained peat with blended finance.***
- ***Seek funding to develop more peat restoration feasibility sites, and continue to engage with farmers to assess water and other feasibility requirements.***
- ***Continue to showcase good practice and pilot initiatives***.
- ***Influence government policy, especially ELMs, by working with Defra through the Lowland Agricultural Peatland Task Force to deliver the Road Map (launch expected soon) and Natural England to ensure the Broads are well represented in their Peatland Road Map***.
- ***Support land owners to access carbon markets to finance carbon saving actions.***

Other Non-Food Shopping

3.25. This includes all purchases of tangible non-food and drink items such as clothing, electronic equipment, furniture, soft furnishings and cars. This target is important because it brings two particular elements into the landscape's carbon management agenda: sustainable consumption of non-edible products, and circular economy principles.

3.26. Individuals spending habits are difficult for the Broads Authority to influence. However, working on wet farming trials including the Horsey Wet Farming trial has shown it is possible to produce sustainable materials in the Broads, that can boost the circular economy.

3.27. Priority Actions

- ***Continue to support the reed cutting industry, as this provides a local and sustainable building material. This includes building on the work of the CANAPE project.***

4. Progress on the reduction of BA carbon emissions

4.1. The Broads Authority carbon footprint is broken down into Scope 1, Scope 2 and Scope 3 emissions. Scope 1 is emissions directly arising from the BA burning fuels, such as in a car engine. Scope 2 is the emissions associated with electricity from the National Grid. Scope 3 is the supply chain emissions, including purchase of machinery, commuting and employee working from home.

4.2. Between 2019/20 and 2021/22 the Authority's estimated carbon footprint has fallen from 647 tCO2e to 514tCO2e, a fall of 21%. This is a good result going beyond the initial theoretical target. More details are included in Appendix A. The majority of this fall has come from the Scope 1 and 2 emissions, through a combination of;

a. Replacing Gas Oil (Red Diesel) for construction equipment with Hydrotreated Vegetable Oil (HVO). This biofuel, sourced from waste streams, has significantly reduced the emissions of our vehicles. This will be used as a temporary measure until electric/alternative fuelled construction equipment is available.

b. Purchasing numerous electric vehicles, with the BA now operating 7 Electric Vehicles

c. A general shift to meetings being held remotely, leading to a permanent reduction in the use of pool vehicles.

d. Switching remaining tariffs to Green electricity.

4.3. Whilst there has been a significant fall in commuting emissions with a shift to Working From Home (WFH) policies, this has been offset by a set of "WFH" emissions. However, allowing the Authority to reduce office space will further reduce emissions.

4.4. We have begun the process of fitting more hybrid engines to Ranger Patrol vessels. In normal circumstances the vessel could operate on 100% electric power, but the need for a 24 hours coverage means that a backup system is required.

4.5. Longer term, the continued replacement of fossil powered vehicles with electric vehicles will bring down the residual transport emissions. This will depend on the availability of vehicles with towing capacity. A key challenge for the vehicle industry is producing an electric vehicle with the battery capacity for towing that is light enough to still be allowed to legally tow heavy trailers.

5. Financial implications

5.1. Members will be aware of the impact of the flat cash settlements for National Park Grant. This limits the Authority's ability to respond to the climate and biodiversity

emergencies. The Authority will consider a draft budget for 2022/23 at its meeting in January, including creating a small project pot of seed funding which could be used as Broads Authority match-funding, subject to Management Team approval of the submission of any specific bid.

5.2. The majority of actions listed in Section 3 will be through partnership working and with external funds. Project management costs will be built into projects' budget to cover the costs of managing and coordinating projects (when relevant).

6. Risk implications

6.1. The delivery of most actions listed in this report is subject to the successful outcome of bids for external funding.

Author: Harry Mach

Date of report: 18 November 2022

Background papers: Climate Change action plan (broads-authority.gov.uk)

Broads Plan strategic actions: A2, A3, B3

Appendix 1 – Broads Authority emissions 21/22

Appendix 2 – Climate Change Workplan

Appendix 1: Broads Authority emissions 21/22

Definitions

CO2e – Carbon Dioxide Equivalent. This measure compares Greenhouse Gases other than Carbon Dioxide to Carbon Dioxide.

Period

This report covers the 1st of April 2021 to the 31st of March 2022. This is the first "post covid" period, and gives an opportunity to see if any changes from the previous year have been embedded.

Estimate of Broads Authority emissions 2021/2022

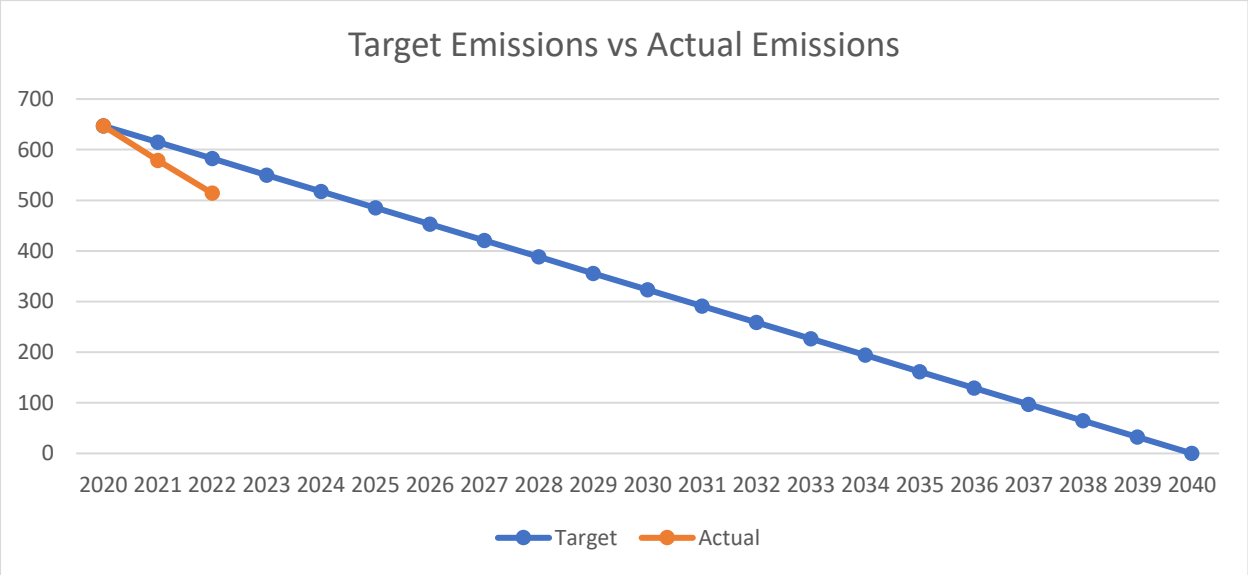
The Broads Authority Carbon footprint amounts to around 532 tonnes of CO2e for the year from April 2021 to March 2022, or 3.5 tonnes of CO2e per employee. This represents an approximately 9% fall in emissions from the previous year, and an approximate 18% reduction in emissions since 2019/2020.

For context, the CO2e per capita emissions of the UK is approximately 5.5 tonnes CO2e.

The Broads Authority footprint is roughly broken down as follows:

Scope 1 – Direct emissions

Source	TCO2e 19/20	TCO2e 20/21	TCO2e 21/22
Fuel for vehicles, vessels and Equipment	283	277.4	157
Heating Oil	2.5	2.3	2
HVO**	0	0.1	1
Scope 1 Total	289.23	279.8	160



Comments and notes

The largest share of reduction in emissions is the switch from Gas Oil to HVO. The reduction in emissions from driving BA vehicles seen last year due to the pandemic has been maintained, most likely due to the routine use of video conferencing.

Scope 2 – Electricity

Source	TCO2e 19/20	TCO2e 20/21	
Yare House Electric	27.5	0 (20.8 before applying green tariff)	0 (Green tariff – awaiting data)
Other Electric (purchased under a green tariff)	0 (58 before applying green tariff)	0 (41.4 before applying green tariff)	0 (47.6 before applying green tariff)
Scope 2 Total	27.5	0	

Comments and Notes

Total electricity consumption outside of Yare House has increased from 296 MWh to 325 MWh. This is driven largely by a return to normal use of Electric Pillars at BA 24 hour moorings, after an exceptionally low usage in 20/21.

Power use at the Dockyard was down by around 25%, most likely due to the milder winter.

Scope 3 – Indirect emissions

Source	TCO2e 19/20	TCO2e 20/21	TCO2e 21/22
Materials	54	53	75
Equipment Purchases	116	75	117
Travel (Staff Commuting, Rail, flights, and use of private vehicles)	86	48	53
Staff WFH*	0	36	36
Waste Disposal	2	2	2
Well-To-Tank and Transmission	72	71	71
Total (Scope 3)	**330**	285	354
Total (All Scopes)	**647**	**579**	**514**

Comments and Notes

The increase in Scope 3 emissions has been driven by two factors;

a) A “return to normal” in terms of expenditure on equipment
b) Large increase in purchase of steel and aggregate.

For Staff WFH, the calculation in 20/21 was originally 53 tCO2e. This was done based on an estimate of heating use, and assumptions for the amount of CO2 the heating would produce. In the new GHG conversion tables, the government has produced an estimate of 0.34075 kgCO2e per hour of homeworking. Applying this figure gives an estimate of 36 tonnes of CO2e per year.

Outside of Scope

This relates to the use of bioenergy (HVO) – although for the purposes of the scope 1 Biogenic CO2 (CO2 that arises from burning biological material, rather than fossil material) is not counted, we are required to report the emissions separately.

Source	TCO2e 19/20	TCO2e 20/21	TCO2e 21/22
HVO		7.2	74.1

Appendix 2 – Climate Change Workplan

Updated November 2022

	Description	Ongoing Actions
Sustainable Tourism strategy	A coherent strategy is required to support the decarbonisation of the tourism industry, building on the work that has already been done by many operators.	A Norfolk Investment Fund bid was submitted for funding to develop the new Strategy, and to fund the employment of a Sustainable Tourism Officer for one year to implement the strategy.
Electrifying the Broads (ETB)	The first phase of the ETB project was carried out last winter in partnership with Ren Energy, Norfolk Broads Direct, Net-Zero East, and Hethel Innovation. This produced a feasibility report and outline plan for electric hire cruisers. The two immediate goals for ETB are expanding the provision of electric pillars throughout moorings in the Broads, and securing funding to support the trial of fully electric cruisers on the Broads.	We are seeking external funding to support further electrification and to develop a pilot in partnership with boatyards.
Broads Peat Discovery Project	This is an ongoing project funded by the Nature for Climate Grant Scheme, to carry out an assessment of 13 sites in and around the Broads to plan for future restoration actions. These are peatland sites with a potential to store carbon in the long term.	The project looking at feasibility studies will complete in March 2023. Then there will be opportunities to submit applications for funding the restoration phase of sites meeting the criteria.
BMW Partnership	National Parks Partnerships have signed a sponsorship deal with BMW. This includes the installation of charging points in national parks for electric vehicles, as well as general project funding within the parks.	Identifying suitable locations for charging points in the broads, and liaising with Local Authority colleagues to avoid duplication.
Climate Change Partnerships	The Broads Authority is part of both the Norfolk and Suffolk Climate Change Partnerships. Through these partnerships we can identify common projects, and	Continue to identify opportunities for collaborative working with our Local Authority Partners.

	opportunities for the Broads to contribute to County Level decarbonisation plans.	
Pioneer Places	The Pioneer Places fund is seeking placed based solutions to Net-Zero, focusing on the social and economic challenges, rather than technical issues. We believe that the Broads Tourism economy will be a good fit for this fund, as the technology for a zero-emission tourism economy exists, but the transition will be complex. The bid looks at the full life-cycle of a tourist, from booking, transport, activity in the Broads, and offsetting any residual emissions.	We are drafting a bid in partnership with Norfolk County Council.