

Summary of the 2012-2017

Trinity Broads Management Plan



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Date: **October 2011**

Contents

	Page number
Executive Summary	3, 4
1. Description of the Trinity Broads	5, 6
2. Our Vision, and how we will achieve it	7
3. Partnership, Policies and Consultation	8
4. Factors affecting the Trinity Broads	9, 10, 11
5. Objectives and Targets	12, 13, 14
6. Actions for the next five years	15, 16, 17, 18, 19
7. Review and Evaluation	20
How to find out more	21

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Executive Summary

The Trinity Broads Management Plan will guide what happens in the Trinity Broads area over the next five years. It is written by the Project Officer on behalf of the Project Partners in consultation with the local community.

The full Management Plan is a technical document to guide the site managers and is available to download on the Broads Authority website www.broads-authority.gov.uk/projects/trinity-broad/past-and-future-work.html. This summary document does refer to some Appendices and Maps within the main document.

Managing Land and Lakes for All

The Trinity Broads are a tranquil and beautiful part of the Broadland landscape; a hidden gem isolated from the bustling main river system. Situated north-west of Great Yarmouth, the Trinity Broads make up 14% of the open water within the Broads, which is a member of the National Park family. The habitats include wide expanses of shallow open water, extensive tracts of broadshore reedbed and undisturbed areas of wet woodland. These habitats support a wealth of wildlife, from the tiniest rare snail, to stands of bulrushes, historically used for basket making, which have virtually disappeared from the rest of the Broads area, to the spectacular bittern. The wildlife importance means that over 3km² of the Trinity Broads is protected by national and international conservation designations.



The Trinity Broads are linked to the River Bure via the Muck Fleet watercourse; this passes through another protected site called Burgh Common, over 1.2km². As another core wildlife area Burgh Common is home to some of the most diverse fen vegetation in the Broads, which in turns supports a stunning array of insects and bird life including a heronry. As part of this working landscape cows graze the grassland between the ditches, woodland and shallow open water. These broads are at the heart of the local communities, providing drinking water for the people of Great Yarmouth and the local villages themselves, a superb recreational resource for local anglers and sailors as well as the foundation of successful local businesses. The surrounding farmland not only produces our food, it also provides refuges for wildlife along the field margins, dykes and patches of woodland.

The Trinity Broads Partnership works to safeguard and enhance the Trinity Broads for wildlife and people. The four partners have been working together for over 15 years to restore the habitats to their full potential, and to encourage sustainable enjoyment of the site by the local community and visitors.

Our Vision for the Trinity Broads

Biodiversity - We would like to maintain a landscape that has natural transitions between shallow lakes, dykes, marginal reedbed, open fen and wet woodland, which supports a wealth of plants and animals.

Water Quality - We would like to achieve consistently clear, low nutrient water in the Trinity Broads that supports diverse communities of aquatic wildlife and provides a high quality drinking water supply.

Recreation - We would like to manage the Trinity Broads as a place where people come to enjoy the peace and quiet, both on the water by boat and from land using viewing areas and walkways.

Local Community - We would like to encourage local people to become passionate and well-informed about the Trinity Broads, and facilitate their involvement by providing volunteer opportunities, events for the public and school projects.

Links to the Broads Plan

The Broads Plan 2011 is the key strategic management plan for the Broads. It sets out a vision, aims and objectives for the Broads, and coordinates a wide range of strategies, plans and policies relevant to the area with the purposes and duties set out in the Broads Acts. To read more about the Broads Plan please look at the Broads Authority website www.broads-authority.gov.uk/authority/strategy/broads-plan.html. The Trinity Broads Partnership is delivering key priorities outlined in the Broads Plan:

1. **Planning our long term future in response to climate change** - The Trinity Broads are recovering from a legacy of nutrient enrichment, our research is helping to secure this improvement. In addition the freshwaters are within the Broads flood plain, yet are relatively protected from the impacts of sea level rise because the area is above sea level and is not directly connected to the river system. Enhancing the health of this ecosystem is therefore a sustainable investment. Our projects to remove sediment and increase water storage capacity are protecting critical drinking water resources. Advice to surrounding farmers is based on finding business solutions that work for wildlife, reduce water treatment costs and therefore people's water bills. Creating more water storage and cleaner water will mean the Trinity Broads will be more resilient to extremes in weather, a likely effect of climate change.
2. **Working in partnership on sustainable management** - The Trinity Broads Partnership extends into the local community through our successful volunteer activities, advice to farmers and liaison with parish councils, local businesses and recreation clubs. We have been working on a landscape scale for five years, delivering advice and free services to local farmers and landowners, which has already resulted in sustainable management of both natural habitats and productive arable land. Our management decisions for the water and wetland habitats are aimed at achieving the wildlife targets for the site and are informed by monitoring and research.
3. **Encouraging sustainable use and enjoyment** - The Trinity Broads were created by people in medieval times, and their resources have been harnessed and enjoyed over the centuries. Although the uses have changed, the local community continues to value the site, with sailing and angling some of the most popular activities. The Partnership places a high emphasis on community involvement, to protect the interests of wildlife and people. We do this through our thriving volunteer network, providing quiet and sensitive events for the public, and involving parish councils and residents in decision making.

Our Recent Achievements

The Trinity Broads Project made the following achievements during 2006 - 2011:

- Recovery of clear water and water plants in all of the Trinity Broads, with the exception of Filby.
- Mud pumping of Little Broad (Burgh Common) and the eastern arm of Ormesby Broad resulting in return of rare species of water plants.
- Large scale clearance of scrub from marginal reedbeds and open fen providing more habitat for wetland wildlife such as bittern and swallowtail butterfly.
- Extensive monitoring and free advice provided to all farmers in the catchment to reduce nutrients in the broads.
- New monitoring and new research to increase our knowledge of the broads including assessing fish populations and surveying sediment.
- Increase in volunteers involved in practical conservation management and ongoing survey work, providing career start up.
- Enhancing enjoyment of the broads by the public through improving public access sites, providing an events programme including canoe trails, and producing newsletters, leaflets and interpretation.
- Gaining national acclaim by winning two prestigious awards, and raising the profile through local and national media, such as BBC Countryfile. (right) Partnership staff with the Waterways Renaissance Award, 2010



1. Description of the Trinity Broads

Location and size

The Trinity Broads are located in a sub-catchment of the River Bure, between the villages of Caister and Acle. They are a network of five interconnected waterbodies, surrounded by reedbed and wet woodland. The Trinity Broads protected area is 3.15km² and Burgh Common is 1.21km². The surrounding catchment, which is predominantly in arable agriculture, is approximately 36km². The Trinity Broads and Burgh Common overlap a number of parishes, including Ormesby St Margaret, Ormesby St Michael, Rollesby, Fleggburgh and Filby. They are within Great Yarmouth Borough, and also the Broads Authority's Executive Area.

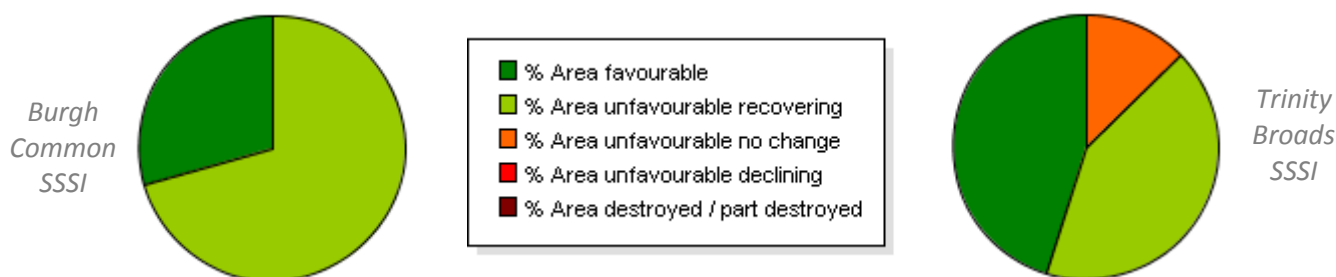
Land ownership

Essex & Suffolk Water (ESW) own the majority of the Trinity Broads and surrounding reedbeds, as well as some of the wet woodland. The remainder is owned by private landowners or is common land (see Appendix 1, Map 1c).

Nature conservation status

The Trinity Broads and Burgh Common are both Sites of Special Scientific Interest (SSSI) because the wildlife present here is important in a national context. The Trinity Broads and Burgh Common are also part of the Broads Special Area of Conservation (SAC) because they contain habitats and species which are rare or threatened within a European context.

Figure 1 - Pie charts showing the condition status of the two SSSIs (data from Natural England, February 2011)



Recreation and access

There are many opportunities for people to access the Trinity Broads (see map 1). There are three restaurants beside the broads offering rowing boats to hire, as well as two angling clubs offering boats for their members. Two wheelyboats are available to hire for wheelchair and other users. Rollesby Sailing Club has many members, and Norfolk Schools Sailing Association provides sailing courses on Filby Broad. In addition to these facilities available to the public, there are also parish staithe where some local people can launch their boats into the broads.

For those not wishing to venture out in a boat, there are car parks and fishing platforms at Rollesby Broad and Filby Broad. At Filby Bridge car park, members of the public can wander through the woodland to a viewpoint across Ormesby Little Broad.



The Trinity Broads Project hosts a series of events throughout the year for the public to experience and learn about the broads. This includes guided walks and canoe trails, bat and moth evenings and talks. The Project also produces interpretation boards to display at public access points, and informative newsletters which are circulated regularly. On occasion, officers assist local schools with education projects.

Map 1 - Access and Recreation Facilities in the Trinity Broads

-  **Wildlife Sensitive Areas**
Please avoid disturbing wintering birds between October and March
- 1 Rollesby Broad**
Fishing platforms can be found at the north shore.
 Please park in the free Ormesby St Michael car park on the A149 east of Rollesby Bridge.
- 2 The Waterside Restaurant** 01493 740531
- 3 Eels Foot Inn** 01493 730342
- 4 Filby Bridge Restaurant** 01493 368142
- Filby Broad**
5
A walkway at the north shore has fishing bays.
 Please park at the free Broads Authority car park just west of Filby Bridge on the A1064, follow the footpath to the platforms.



Environmental information

The Trinity Broads flow from north to south, and output via the Muck Fleet channel into the River Bure at Stokesby. Water has to be pumped from the Muck Fleet into the River Bure, but there is no flow from the Bure. This means that the Trinity Broads are protected from inputs of nitrate-rich river water and occasional saline incursions that happen during spring tides and storm surge events. This environmental feature has the potential to safeguard the Trinity Broads and Burgh Common from medium term climate change impacts.

The Trinity Broads vary in depth, from Lily Broad, the shallowest at approximately one metre deep, to Filby Broad, the deepest at up to three metres deep. Essex & Suffolk Water (ESW) abstracts more than five million litres of water every day (on average) from Ormesby Broad, which helps to supply more than 80,000 customers in the Great Yarmouth area.

A large amount of monitoring and research has been undertaken regarding hydrology (water regime) at the Trinity Broads by ESW, in order to confirm that their abstraction is not having a detrimental effect on the protected wildlife. This research shows there is usually a summer drop in water levels, which are then recharged over the winter months, even in dry years. A study into flushing times found that all of the water in the Trinity Broads is flushed through the system on at least an annual basis. Regular flushing of shallow lakes is important to reduce build up of nutrients and algae. Nutrient levels in the Trinity Broads are higher than recommended for shallow lakes, which can cause algal blooms and associated decline in water plants and other aquatic wildlife. These nutrients enter the broad from farmland in the surrounding catchment, and from septic tanks and occasional failures of sewage pumping stations. Nutrients are also present in the sediment on the bottom of the broads.

Culture and history

The Trinity Broads were created by medieval peat digging, largely for fuel, which subsequently flooded as sea levels rose. The adjacent fen habitat is the product of human management i.e. reed cutting and fen mowing. The products were used for thatching and animal bedding amongst other things. More recently the Trinity Broads have supported a low level of water based recreational activity. The area has historically been used for wildfowling and angling. Other land use includes grazing on areas of fen meadow, mowing of reedbeds, coppicing, water abstraction and drainage. The mud pumping of Ormesby Broad in 2010 included the creation of lagoons on an adjacent field. During the planning application stage of this project, an archaeological survey discovered Neolithic and Bronze Age remains on the field in Ormesby St Michael, including pottery and tools.

2. Our Vision, and how we will achieve it

Biodiversity - To maintain a landscape that has natural transitions between shallow lakes, dykes, marginal reedbed, open fen and wet woodland, which supports a wealth of plants and animals. We will achieve this vision by:



- Managing our reedbed and fen meadow by grazing, mowing and removing young scrub to extend habitat for swallowtail butterfly and other wildlife
- Creating new areas of shallow open water within fen sites, and restoring dykes and water connections for fish and other aquatic life
- Watching out for invasive species such as *Rhododendron ponticum* and *Crassula helmsii* and carrying out management where possible
- Monitoring the health of our wildlife by carrying out surveys and research

Water quality - To achieve consistently clear, low nutrient water in the Trinity Broads that supports diverse communities of aquatic wildlife and provides a high quality drinking water supply. We will achieve this vision by:



- Working with land managers to promote at least a two metre buffer strip between arable fields and all watercourses to reduce amounts of fertiliser and soil entering the broads
- Removing accumulated mud from shallow areas in the broads
- Working with local communities and Anglian Water to investigate and resolve problems with septic tanks and sewage pumping stations
- Monitoring and researching the movement of nutrients within the water catchment area

Recreation - To manage the Trinity Broads as a place where people come to enjoy the peace and quiet, both on the water by boat and from land using viewing areas and walkways. We will achieve this vision by:



- Carrying out maintenance and improvements to footpaths, fishing platforms and car parks
- Liaising with stakeholders to discuss boat access on the broads
- Improving information provision for visitors through new signs and leaflets
- Monitoring the level of recreation and researching carrying capacity of the environmental resources

Local community - To encourage local people to become passionate and well-informed about the Trinity Broads, and to facilitate their involvement by providing volunteer opportunities, events for the public and school projects. We will achieve this vision by:



- Organising annual meetings of the Trinity Broads stakeholder groups
- Organising a productive and rewarding active volunteer network
- Organising an exciting programme of events for the public with priority to encourage local communities, and writing informative newsletters
- Establishing links with schools in the Trinity Broads area to promote self-led visits

3. Partnership, Policies and Consultation

The Trinity Broads Project began in 1995, when ESW purchased a large proportion of the Trinity Broads. To ensure their landholding was managed effectively, they formed a partnership with the Broads Authority, the Environment Agency and Natural England (formerly English Nature). A Project Officer has been employed since 1997 to coordinate the work of the project on behalf of the partnership.

A memorandum of agreement (MoA, included within the full plan) exists between the four partner organisations. A project board comprised of staff from each organisation meets quarterly to steer the work of the project. A technical group also meets quarterly to provide practical and technical expertise regarding monitoring, research and management, which informs the decision making process of the project board. The MoA covers ESW landholdings at Trinity Broads and Burgh Common, as well as some other sites.

The Trinity Broads Consultation Group is made up of local community stakeholders (see full plan) and it meets annually to discuss management with staff from the project board. The consultation group is a forum for informing and involving local people in the decision making process. The Fisheries Conservation Group also meets annually with interested fishermen to discuss monitoring and management of fish in the Trinity Broads.

The Trinity Broads Project has a thriving volunteer group, comprised of local people who assist with practical tasks like scrub removal, reedbed cutting and footpath maintenance on a weekly basis. A number of volunteers regularly assist with wildlife monitoring, such as monthly wetland bird surveys and annual water plant surveys.

Responsibilities of the Partner Organisations

<i>Partner</i>	<i>General Purpose of Organisation</i>	<i>Financial contribution towards Trinity Broads Project</i>	<i>In-kind contribution towards Trinity Broads Project</i>
Broads Authority	<ul style="list-style-type: none"> • To conserve and enhance the natural beauty, wildlife and cultural heritage of the Broads • To promote opportunities for understanding and enjoyment of the special qualities of the Broads by the public • To protect the interests of navigation 	<ul style="list-style-type: none"> • Funding towards biodiversity monitoring • Funding towards installation and maintenance of public access infrastructure 	<ul style="list-style-type: none"> • Coordinating employment and line management of project staff • Project and budget administration • Assistance with operational works in the project area
Essex & Suffolk Water	<ul style="list-style-type: none"> • To provide a sustainable, affordable, clean and safe water supply for its customers 	<ul style="list-style-type: none"> • Funding to enable employment of project staff • Funding for general project costs • Funding for capital projects 	<ul style="list-style-type: none"> • Construction, maintenance and management of the project's 'team room' on the internet
Environment Agency	<ul style="list-style-type: none"> • To protect and improve the environment • To promote sustainable development 		<ul style="list-style-type: none"> • Provision of staff and equipment for water quality monitoring • Enforce and advise on water quality issues
Natural England	<ul style="list-style-type: none"> • To protect and improve England's natural environment • To encourage people to enjoy and get involved in their surroundings 	<ul style="list-style-type: none"> • Funding towards biodiversity management 	<ul style="list-style-type: none"> • Enforce and advise on designated nature conservation features

4. Factors affecting the Trinity Broads

The Trinity Broads are an important site for people and wildlife. There are many pressures on the Trinity Broads that can have an impact on the wildlife or the ecosystem services which the broads provide to people. These factors are often complex and interrelated. The table below summarises the factors affecting the Trinity Broads to give an overall impression of the multipurpose and integrated nature of the Trinity Broads Project.

<i>Factor</i>	<i>Reason for action</i>	<i>Link to evidence and/or research</i>
Partner objectives and legal responsibilities	<p>The Trinity Broads and Burgh Common are protected by UK and EU legislation, and therefore the partners are legally obliged to meet targets for these sites. Relevant legislation includes:</p> <ul style="list-style-type: none"> • EC Water Framework Directive 2000 • EC Habitats Directive 1992 • EC Birds Directive 1979 • Water Resources Act 1991 • Wildlife and Countryside Act 1981 • and all their subsequent changes 	<p>Regular monitoring to measure the standard of the site to assess whether it meets the targets for legislation includes:</p> <ul style="list-style-type: none"> • water levels • water quality • aquatic plants • fish populations • wintering bird populations • breeding bird populations <p>In addition, every six years Natural England assesses the SSSI units to establish the condition status.</p>
Internal natural factors - 1. Succession	<p>Succession is a continuous natural process that results in a change from one type of habitat to another. If succession is left to progress unchecked it will eventually result in a climax community where the habitat is stable. At the broads, succession occurs on reedbeds and fen meadows, moving from scrub to woodland over time. This would result in loss of the open fen habitat and all the associated wildlife and services that provides.</p>	<p>Much management has been undertaken in the past management plan periods to remove encroaching scrub from the broad shore and to restore an appropriate grazing regime to larger fen areas. The requirement for scrub clearance is clear just from looking along the broadshore, and so there have not been detailed surveys of the reedbed and fen areas. In this management plan we hope to attain a more detailed understanding of the fen and wet woodland.</p>
Internal natural factors - 2. Nutrient cycling	<p>In some areas as much as one metre of sediment is on the bed of the Trinity Broads. Much of this sediment is nutrient rich as a result of diffuse nutrient input from the agricultural land, point sources such as sewage pumping station failures, or large amounts of algae settling on the bottom after an algal bloom. These sediments release phosphorus back into the water. Mud pumping is an important management technique to reduce nutrient levels as well as increase water resource capacity.</p>	<p>Hydrographic mapping of bathymetry and sediment depth was undertaken by Randalls (2006), and studies of sediment cores by Scott (2007) and ENSIS (2008) showed that these sediments are nutrient rich.</p> <p>An options appraisal was carried out in 2009 to assess which locations were highest priority within the Trinity Broads, following the higher level Broads Lake Restoration Strategy (2008) which identified the Trinity Broads as a high priority for mud pumping in comparison with other broads sites.</p>


<i>Factor</i>	<i>Reason for action</i>	<i>Link to evidence and/or research</i>
<p>Internal man-induced factors -</p> <p>1. Hydrology</p>	<p>Water is abstracted from the broads for public water supply and agriculture. The current regime comprises summer drawdown and winter recharge. Excessive summer drawdown may affect the rare Desmoulin's whorl snail, the success rate of spawning fish and the favourable condition status of emergent and aquatic plant communities. Increased retention times or low water levels can lead to an increase in the growth of macro-algae due to absence of the natural flushing process, increased temperatures and decreased oxygen conditions. For these reasons, it is crucial to understand, monitor and manage water levels and flows.</p>	<p>ESW's Site Investigation Report (Robinson and Scott, 2007) investigated the impact of hydrology on the designated features of the site. The following are particularly relevant:</p> <ul style="list-style-type: none"> • Water Balance Study (Green, 2007a) • Water Flushing Rates (Green, 2007b) • Nutrient Budget (Scott, 2007a) <p>All of these illustrate the delicate balance required to meet the needs of water supply whilst protecting the designated habitats and features. Ongoing monitoring of hydrology is crucial, as is management of water levels within agreed thresholds.</p>
<p>Internal man-induced factors -</p> <p>2. Fish populations</p>	<p>The fish community in Ormesby Broad has shifted towards a favourable composition as a result of removal of bream and roach in the 1990s (biomanipulation). This technique creates clear water, by allowing large numbers of water fleas to consume lots of algae (the fleas are prey of roach and small bream). Today Ormesby Broad contains a more diverse community including tench and rudd and a higher proportion of piscivores, such as pike.</p> <p>A fish barrier was placed under Rollesby Bridge following biomanipulation, to prevent roach and bream returning to Ormesby Broad. This barrier remains in place today as a precautionary measure. There is an understanding that sometimes roach breach the barrier to over-winter in the Spring Dyke system, but surveys suggest these roach migrate south in spring.</p>	<p>There is much evidence that fish populations affect water clarity and therefore water plants, and also that biomanipulation in Ormesby Broad has brought about an improvement in water clarity and also water plants (ECON fish reports, 1995 to present).</p> <p>There is still a need for some fish surveys, particularly to monitor roach within Ormesby Broad. However, whilst the water plant community is abundant, general conclusions about fish populations can be drawn from plant surveys and water clarity observations.</p>
<p>Internal man-induced factors -</p> <p>3. Disturbance</p>	<p>To reduce disturbance to the large numbers of wintering wildfowl, wildlife sensitive areas have been identified (see Map 1). These are located in bays where good numbers of wildfowl are routinely recorded during bird surveys, and boats are requested not to enter these zones between October and March. Where ESW can license access to the water and where Natural England can regulate access through the planning process, these zones are compulsory.</p> <p>The SSSI notification states that the Trinity Broads are important for some species of breeding birds, and therefore users are advised to only use proper launching and landing areas, and to keep away from reed margins during the breeding season (March - July).</p>	<p>Monthly wetland bird surveys have been carried out since the mid 1990s. This data is reviewed at regular intervals (Macdonald, 2004; Gray, 2008; ECON, 2011). This evidence is required for determining appropriate access such as the wildlife sensitive areas that are set up to protect the interests of anglers and wintering birds.</p>



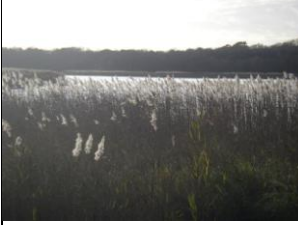
Factor	Reason for action	Link to evidence and/or research																																
Internal man-induced factors - 4. Non-native invasive species	Introduced non-native species can have a massive impact on the local habitats and species. In the Trinity Broads SSSI, woodland quality is compromised by rhododendron and sycamore. Fen and reedbeds are at risk from species such as Himalayan balsam and <i>Crassula helmsii</i> , both present in some dykes and ponds near to the broads. In addition, there are invasive animals e.g. mink present at the site. These animals come into the site as they become naturalised in the UK countryside.	Invasive Non-Native Species Framework Strategy for Great Britain, DEFRA, 2008 Norfolk Non-Native Species Initiative - see www.norfolkbiodiversity.org																																
External factors - Diffuse pollution	The recent recovery of aquatic plants within the wider Trinity Broads system is particularly fragile whilst nutrient levels remain elevated in the water. Phosphorus in particular is an issue, with average levels across the system around 175 micrograms per litre (ug/l), when the target level is 30 micrograms per litre. See chart to the right, from Catchment Officer records (Holland, 2011) It is critical that measures are put in place to reduce diffuse pollution entering the broads from the catchment, in order to prevent algal blooms and a reverse trend in water plant growth.	<p style="text-align: center;">Phosphorus Concentrations in the Trinity Broads (Jun 2007 - Feb 2011)</p> <table border="1"> <caption>Approximate data from the Phosphorus Concentrations chart</caption> <thead> <tr> <th>Location</th> <th>Mean (ug/l)</th> <th>Max (ug/l)</th> <th>Min (ug/l)</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>140</td> <td>450</td> <td>40</td> </tr> <tr> <td>North-East</td> <td>130</td> <td>240</td> <td>35</td> </tr> <tr> <td>North-West</td> <td>110</td> <td>220</td> <td>50</td> </tr> <tr> <td>Central</td> <td>190</td> <td>320</td> <td>60</td> </tr> <tr> <td>South-East</td> <td>180</td> <td>350</td> <td>70</td> </tr> <tr> <td>South-West</td> <td>220</td> <td>420</td> <td>60</td> </tr> <tr> <td>South</td> <td>220</td> <td>480</td> <td>20</td> </tr> </tbody> </table>	Location	Mean (ug/l)	Max (ug/l)	Min (ug/l)	North	140	450	40	North-East	130	240	35	North-West	110	220	50	Central	190	320	60	South-East	180	350	70	South-West	220	420	60	South	220	480	20
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The local community	The local community values the Trinity Broads for many reasons. The Partnership must consider all of the following users: <ul style="list-style-type: none"> • Businesses who rely on the broads • People with shooting rights • People who fish on the broads • People who sail on the broads • Farmers managing surrounding land • People who appreciate the landscape and wildlife of the broads These users have the potential to have an impact on the Trinity Broads, therefore it is vital that the partnership communicates effectively with them. Effective education, mediation and motivation are part of this.	There is much evidence to show that involving stakeholders within integrated projects like the Trinity Broads can prevent much distrust and conflict. The Trinity Broads Consultation Group and Fisheries Group were set up soon after the partnership was created. The Project Officer coordinates meetings annually. The Project Officers also run events for the public and give talks to local groups to inform people about the broads, as well as writing newsletters and articles for local magazines. In addition, the Catchment Officer liaises with farmers, through one to one visits, organising workshops and writing newsletters.																																




5. Objectives and Targets

This section is the heart of the Management Plan. It lists the important features that the Trinity Broads Partnership is managing, and sets out targets. In the full Management Plan, there are detailed visions which describe the Partnership’s objective for each habitat feature, followed by threshold targets which have been taken from the Joint Nature Conservancy Council’s (JNCC) Common Standards Monitoring (2005).

For this summary document, we have included a table which contains a shortened objective and summary targets for each feature - the full text for each objective and target can be found within the full Management Plan.

<i>Feature</i>	<i>Objective</i>	<i>Targets</i>
<p>Open Water</p> 	<p>The wide open waters of the Trinity Broads are clear right down to the bottom, even in Filby Broad, the deepest of the group. In this crystal clear water, plants grow up from the lake-bed from early May, right through to the onset of autumn. The diverse nature of the plant community includes many species of potamogeton, large beds of stoneworts, and other species characteristic of the Broads.</p> <p>Amongst the aquatic vegetation there are plenty of hiding places for water fleas (zooplankton), as they attempt to evade predation by fish such as roach. Therefore large communities of zooplankton species persist throughout the summer to ensure that algal populations do not grow exponentially. The algal species that have a tendency to bloom are restricted further by the low concentrations of nutrients such as nitrate and phosphorus in the water column. This good quality water is abstracted from Ormesby Broad and treated cost-effectively to supply Great Yarmouth with drinking water, as well as providing a beautiful space for sensitive recreation.</p> <p>The open water has appropriate numbers of boats that are powered only by oars, sail or electric engines. These conditions create a quiet and tranquil extensive area of habitat with sufficient water plants persisting into the autumn and winter to ensure waterbirds can feed during the winter months, improving their condition for their long migrations.</p>	<ul style="list-style-type: none"> • Water plant surveys should find a characteristic stonewort species in seven out of 10 sample points. • Water plant surveys should find a characteristic potamogeton species in six out of 10 sample points. • Phosphorus concentration in the water should be lower than 30ug/l. • Chlorophyll a concentration in the water should be lower than 40mg/l. • No significant reduction in wintering bird populations.

<i>Feature</i>	<i>Objective</i>	<i>Targets</i>
<p>Wet Woodland</p> 	<p>From farmland surrounding the Trinity Broads only occasional glimpses of the open water are possible, because there is a stand of woodland around the perimeter of the broads. The wet woodland is dense in places, and in other places there are surprising open glades, where an old tree has fallen. In these places saplings grow up, some will become veteran trees in hundreds of years. The large standard trees are ash, alder and willow, with occasional oak trees.</p> <p>Some of the larger trees are dead but still standing, and home to many species of animals and fungi. Smaller species of willow and elder grow below the main canopy, providing different levels within the woodland, and the ground is covered with native shrubs and herbs, which thrive in the wet conditions. Hardly any non-native plants are present, due to regular management.</p>	<ul style="list-style-type: none"> • Variation in age and size class within woodland, and presence of open space and old trees maintained. • Small trees and shrubs present over at least 20% of woodland. • Characteristic ground flora present over 50% of woodland. • At least 3 fallen trees or large branches/ ha lying on the ground. • Four trees/ ha allowed to die standing. • Sufficient regeneration in a 10 year period to maintain canopy. Composition of native woodland species. • At least 90% of cover in one layer is of native or acceptable naturalised species. • No more than 5% of canopy in woodlands comprised of sycamore.
<p>Fen Meadow and Fen</p>  <p>e.g. Rollesby Charity Lands, Burgh Common</p>	<p>The fen meadow is bleak in winter, with little shelter from the wind, and underfoot is very wet amongst vegetation seemingly dominated by rushes. In the summer, the ground is still wet, and there is still little shelter, but there is huge activity and diversity.</p> <p>Walking through the fen in spring you may see snipe and lapwing, in the summer many species of butterfly and dragonfly. A few cattle or ponies maintain the landscape and microhabitats that result in rich populations of invertebrates as well as flowers during the spring and summer.</p>	<ul style="list-style-type: none"> • Maintain type and extent of fen meadow plant communities. • No more than 5% cover of negative indicator species such as common nettles and thistles. • No more than 50% cover of common rush species. • Maintain patches of bare mud or peat, up to 5% of fen area. • Variable height of sward in summer months.
<p>Broad Shore Reedbed</p> 	<p>The open water and wet woodland are separated by a margin of swamp. This is mainly reed, characteristic throughout Broadland, but in places there are darker stands of bulrushes which are uncommon elsewhere. Within the dense, tall reedbeds, there are patches of saw sedge, cowbane and milk parsley, the food plant of the swallowtail butterfly's caterpillars.</p> <p>Coppicing, scrub removal and reedbed mowing prevent transition to woodland. The swamp habitat is inaccessible to humans in most places, creating a quiet and tranquil broad shore where characteristic birds of reedbed habitats can forage and breed.</p>	<ul style="list-style-type: none"> • Maintain type and extent of broadshore reedbed plant communities. • Common reed should ideally cover 70-90% of habitat. • No more than 5% cover of common nettles and brambles. • 5-10% cover of willow scrub. • Average height of stands at least 50cm. • Ground should be damp but not completely underwater. • Habitat suitable for characteristic bird species to breed.

<i>Feature</i>	<i>Objective</i>	<i>Targets</i>
<p>Wider Catchment</p> 	<p>Whilst around the Trinity Broads area you notice that every field has a one metre wide uncultivated margin at its edge and that ditches have wider grassed areas next to them. You also see further grassed areas at the bottom of sloping land.</p> <p>Farm workers know the land management can protect the water resources for people and wildlife. Farmers tell you that every year their fertiliser spreader is checked for accuracy and any manure they put on the field is analysed by the project.</p>	<ul style="list-style-type: none"> • All fertiliser application equipment is calibrated and certified annually. • Soil analysis and manure analysis results available prior to manure application. • No field has a phosphorus index above three for more than one year. • All water courses are protected by a field edge buffer strip at least two metres wide. • Septic tank owners are informed of the correct way to use their facility. • Drive forward connection of Ormesby St Michael properties to mains sewerage. • Work with highways authorities to identify and mitigate any pathways of diffuse pollution from roads. • Regularly contact farmers through visits, meetings and workshops to advise and promote sensitive land management.
<p>Local Community</p> 	<p>Local people are passionate and well informed about the Trinity Broads. Many people are involved in the volunteer group. Interesting and informative events are held for local people to attend throughout the year. Local schools are encouraged to come and see the Trinity Broads and learn more about the water and wildlife.</p>	<ul style="list-style-type: none"> • Annual meeting of consultation groups. • Write two newsletters per year. • Project staff to attend parish meetings. • Regular and varied volunteer activities. • Support volunteers with training. • Organise at least four events per year. • Establish links with local schools.
<p>Access and Recreation</p> 	<p>The Trinity Broads is a place where people come to enjoy the peace and quiet, both on the water by boat and from land using viewing areas and walkways.</p> <p>Codes of practice are understood and well respected by all users.</p>	<ul style="list-style-type: none"> • Information provision is up to date, topical and interesting. • Access for disabled users is provided for land and water based recreation. • Access for disadvantaged groups in society is promoted. • Zonation of boat use is agreed through dialogue with users based on evidence. • Identify potential sites for land access.

6. Actions for the next five years

This section sets out the key actions associated with each objective (set out in section 2) for the next five years. Actions are split into three categories:

- **Monitoring and research** - an action which consists of observing, measuring or surveying to check the condition of something
- **Managing** - an action which consists of making a change to maintain or improve something
- **Administering** - an action which is required to ensure that work carried out is legal, safe or recorded

The partners responsible for delivering and/or funding these actions are abbreviated as follows:

- ESW = Essex & Suffolk Water, BA = Broads Authority, EA = Environment Agency, NE = Natural England

NB The lead organisation is highlighted in bold where more than one partner is involved.

More detail of costs and timescales can be found in the full management plan, section 7.

Routine actions

There are certain actions required for the Trinity Broads Project to run efficiently and effectively which overarch the individual objectives below. These are detailed in the full management plan and include:

- Regular meetings of the technical group and project board
- Report writing for these meetings and for auditing purposes
- Managing budgets
- Obtaining consents for management works
- Health and safety actions
- Maintenance of vehicle and equipment
- Staff related actions including line management, training, uniform etc.

New actions for 2012 - 2017

Any actions listed below which are new to the project are **highlighted** in the tables and a short explanation of the reasoning behind their inclusion follows the table for that objective.



Biodiversity

To maintain a landscape that has natural transitions between shallow lakes, dykes, marginal reedbed, open fen and wet woodland, which supports a wealth of plants and animals.

<i>Action</i>	<i>Who will do it?</i>	<i>Who will fund it?</i>
<p>Monitoring:</p> <p>Undertake annual survey of water plant distribution and diversity.</p> <p>Record locations of non-native invasive species.</p> <p>Monitor fen meadow, broad shore reedbed and wet woodland habitats.</p> <p>Carry out formal condition assessment of SSSI features.</p> <p>Monitor fish populations within Ormesby Broad.</p> <p>Carry out fisheries research in the Trinity Broads.</p> <p>Specific monitoring of bats and Desmoulin's whorl snail.</p> <p>Analyse open water ecosystem dynamics by assessment of existing data.</p> <p>Breeding and wintering bird monitoring and assessing disturbance.</p>	<p>BA</p> <p>BA</p> <p>BA</p> <p>BA, NE</p> <p>Contractor</p> <p>EA</p> <p>BA, ESW</p> <p>All</p> <p>BA, NE</p>	<p>BA, ESW</p> <p>ESW</p> <p>BA, ESW</p> <p>NE</p> <p>BA</p> <p>EA</p> <p>ESW</p> <p>All</p> <p>ESW, BA, NE</p>
<p>Managing:</p> <p>Carry out scrub removal within broad shore reedbeds and fens.</p> <p>Graze fen meadow at low density (Burgh Common, Rollesby Charity Lands).</p> <p>Cut and bale meadow at Filby Common.</p> <p>Implement programme of removal of non-native invasive species.</p> <p>Create scrapes of bare, lowered ground within fen areas.</p> <p>Carry out rotational conservation cutting within reedbeds and fens.</p> <p>Carry out management of dykes to improve fish habitat.</p> <p>Replace and service Rollesby Bridge fish barrier annually.</p> <p>Investigate landscape scale habitat creation and connection ideas.</p> <p>Investigate feasibility of eel passes along Muck Fleet channel.</p> <p>Install tern platforms on Ormesby and Filby Broads.</p>	<p>Contractor, volunteers</p> <p>Farmer, BA</p> <p>Farmer</p> <p>BA</p> <p>Contractor</p> <p>BA, volunteers</p> <p>Contractor</p> <p>Contractor</p> <p>All</p> <p>EA, ESW</p> <p>BA</p>	<p>ESW, NE</p> <p>BA, NE</p> <p>ESW</p> <p>ESW, BA</p> <p>BA, NE</p> <p>ESW</p> <p>ESW, NE</p> <p>ESW</p> <p>All</p> <p>EA, ESW</p> <p>ESW</p>
<p>Administrating:</p> <p>Tender, let and manage contract for scrub clearance.</p> <p>Maintain databases for monitoring and write reports of findings.</p> <p>Record management activities undertaken.</p>	<p>BA</p> <p>BA</p> <p>BA</p>	<p>ESW</p> <p>ESW</p> <p>ESW</p>

New Actions:

- Habitat creation and connection - it is expected that a result of climate change will be that some wetland habitats within the broads will become brackish and saline, so new areas of freshwater fen and open water will be necessary to enable the characteristic Broads species to have robust populations.
- Eel passes - the Trinity Broads are isolated from the River Bure by a number of obstructions along the Muck Fleet channel. The site has been highlighted as an important location for eels due to its proximity to the sea, and so we will explore the options for making eel migration from the river into the broads feasible.
- Tern platforms - terns have recently started nesting on existing structures which have alternative uses, so new tern platforms are planned to attract the terns instead.



Water Quality

To achieve consistently clear, low nutrient water in the Trinity Broads that supports diverse communities of aquatic wildlife and provides a high quality drinking water supply.

<i>Action</i>	<i>Who will do it?</i>	<i>Who will fund it?</i>
<p>Monitoring:</p> <p>Regular monitoring of water levels and water quality across the Trinity Broads and the wider catchment.</p> <p>Carry out ad hoc monitoring of water flow and quality following wet weather events in the wider catchment.</p> <p>Analyse soil nutrient content and manure nutrient content before application of fertilizers and manure on to fields.</p>	<p>BA, ESW, EA</p> <p>ESW</p> <p>ESW</p>	<p>ESW, EA</p> <p>ESW</p> <p>ESW</p>
<p>Managing:</p> <p>Protect all watercourses with at least a two metre buffer strip.</p> <p>Ensure all fertiliser spreaders are correctly calibrated.</p> <p>Resolve water level issues in Town Dyke and Narrowgate Corner.</p> <p>Implement mud pumping of silted up sections of the system when funding becomes available.</p> <p>Encourage residents to connect to mains sewer in Ormesby St Michael when work is carried out.</p>	<p>Landowners</p> <p>Farmers, ESW</p> <p>ESW</p> <p>BA</p> <p>ESW</p>	<p>NE</p> <p>ESW</p> <p>NE</p> <p>ESW, BA</p> <p>ESW</p>
<p>Administrating:</p> <p>Advise landowners on appropriate Environmental Stewardship options.</p>	<p>ESW</p>	<p>ESW</p>

New actions:

- Town Dyke - there have been issues with flooding and septic tank failure at properties on Narrowgate Corner for some years, and mitigation measures have been developed which involve clearing out Town Dyke to improve drainage, or rerouting the channel altogether. This is required to prevent seepage of high nutrient water into Lily Broad, and will also improve ground and road conditions for the residents.



Recreation

To manage the Trinity Broads as a place where people come to enjoy the peace and quiet, both on the water by boat and from land using viewing areas and walkways.

Action	Who will do it?	Who will fund it?
Monitoring:		
Monitor Environment Agency rod licences.	EA	EA
Record any reports of wintering or breeding bird disturbance.	BA	ESW
Specific monitoring of water plants within cutting zone of Rollesby Broad.	Sailing Club	n/a
Carry out review of bird use and boat use to inform policy.	BA	ESW
Managing:		
Run programme of events for the general public.	BA	ESW
Annual meetings of the Trinity Broads Fisheries Conservation Group.	BA	ESW
Install viewing platform at Filby Bridge.	BA	BA
Design and install new interpretation at Filby Bridge boardwalk.	BA	BA, ESW
Restore Ormesby bailiff's hut and install interpretation.	BA, Contractor	ESW
Ensure that litter is removed from public access sites.	BA	BA
Manage vegetation to enable access at amenity areas.	BA, Volunteers	ESW
Replace fishing platforms at Rollesby Broad.	BA	BA
Liaise with parish councils regarding parish staithes.	BA	ESW
Design and distribute leaflets as required.	BA	ESW
Carry out cutting of aquatic plants in Rollesby Broad if required.	BA	BA, ESW
Identify potential new sites for land access around Trinity Broads.	BA	ESW
Administrating:		
Record any new or revised rights of access on to the Trinity Broads.	BA	ESW
Carry out inspections of public access points within the Trinity Broads.	BA	ESW
Undertake a risk assessment and advice prior to works or events.	BA	ESW

New actions:

- Filby viewing platform - a new footpath is being built during winter 2011/12 at Filby car park to improve access for people at this site. The existing bird hide is in a poor condition and is periodically subject to vandalism. A new design for a viewing platform in the location of the existing bird hide will provide more space for people to look out over the broad, and should be less vulnerable to damage.
- Filby car park interpretation - other parts of this public access site are being improved and the interpretation is also in need of updating. We hope to install a new panel at the car park and some new information at the new viewing platform. There is also scope for creating some leaflets to promote cycling around the area and to provide some cycle racks at the car park, which will depend on funding.
- Ormesby bailiff's hut - the bailiff's hut at Sportsman's Staithe is a lovely little building which was rethatched in 2011. The reed panel walls, door and window are in need of some attention, and there is scope for some interesting interpretation here relating to the history of the building and the staithe itself.

- Aquatic plant cutting - a one year trial has already received consent from Natural England. This was going to happen in summer 2011, but the plants didn't grow to a height which impeded sailing therefore the cutting was cancelled. It may be that in future summers cutting is required to enable water-based recreation to continue.
- New land access - there is little opportunity for people to explore the Trinity Broads on foot, and there may be locations where some small-scale access would be achievable without compromising the wildlife value.



Local Community

To encourage local people to become passionate and well informed about the Trinity Broads, and to facilitate their involvement by providing volunteer opportunities, events for the public and school projects.

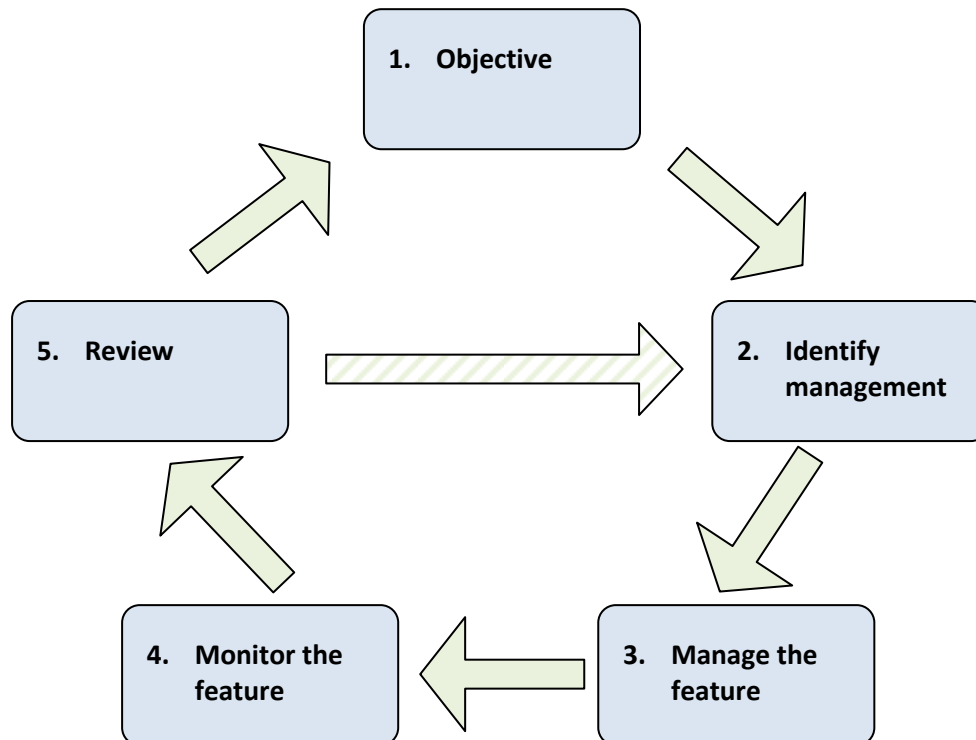
Action	Who will do it?	Who will fund it?
Monitoring:		
Record volunteer hours.	BA	ESW
Record number of people attending events.	BA	ESW
Managing:		
Restore Filby village pond at clay pits site and enable access by school.	BA	ESW, BA
Annual meetings of the Trinity Broads Consultation Group.	BA	ESW
Organise Trinity Broads volunteer activities.	BA	ESW
Organise Trinity Broads volunteer training and social events.	BA	ESW
Write newsletters about project activities to update community.	BA	ESW
Attend parish council meetings when invited.	BA	ESW
Give talks and presentations to local groups when invited.	BA	ESW
Establish relationships with local schools.	BA	ESW
Administrating:		
Upload newsletters and reports to website for public viewing.	BA	ESW
Provide training, uniform and Personal Protective Equipment to Trinity Broads volunteers.	BA	ESW

New actions:

- Filby pond - the small pond adjacent to the school along Thrigby Road has become very silted up and overgrown. Some work has been done by volunteers to clear willow and remove an old boardwalk. Opening up this pond again and providing a dipping platform would provide the village school with a useful resource.
- Local schools - there are a number of schools in the wider Trinity Broads catchment that would be able to satisfy some aspects of their curriculum through learning about and visiting the broads. We would like to promote this opportunity with the schools and facilitate some access for them, even though we do not have the resources for regular school visits or talks.

7. Review and Evaluation

Every management plan must go through a logical process, which must be regularly reviewed. The adaptive planning cycle according to Conservation Management Systems is shown below (taken from Alexander, 2010).



- Stage 1 - identify what it is you want to achieve i.e. the objective
- Stage 2 - work out what management you require to get to that point i.e. the rationale
- Stage 3 - carry out the management
- Stage 4 - make sure you monitor what is happening, ideally before, during and after management
- Stage 5 - review whether the management has achieved the objective, and whether the objective is still appropriate

An adaptive management plan will go through these stages in a cycle. Each time a plan is revised (in this case every five years) the cycle starts again, re-evaluating what the objectives are and incorporating what has been learnt in recent times. This plan has followed this process, and will continue to do so in future years and revisions.

How to find out more

Read more about the Trinity Broads

You can read more about the Trinity Broads on our website, where you can download our latest newsletter, and the full version of the Trinity Broads Management Plan www.broads-authority.gov.uk/projects/trinity-broad.html.

To find out more about the partner organisations please see:

www.broads-authority.gov.uk, www.environment-agency.gov.uk, www.eswater.co.uk, www.naturalengland.org.uk.

Come and enjoy the Trinity Broads

There is so much to get involved in at the Trinity Broads. See the map on page 5 to locate places below.

Sailing

You can become a member of the Rollesby Broad Sailing Club, or take a sailing course at the Norfolk Schools Sailing Association at Filby, or if something smaller takes your fancy why not check out the Broads Radio Yacht Club:

- Rollesby Broad Sailing Club - www.rbsc.org.uk
- Norfolk Schools Sailing Association - www.nssa.co.uk
- Broads Radio Yacht Club - www.broadsradioyachtclub.co.uk

Rowing and Refreshments

You can enjoy refreshment at an establishment overlooking the Trinity Broads and hire a boat as well:

- The Waterside, Rollesby - www.thewatersiderollesby.co.uk
- The Eels Foot Inn, Ormesby St Michael - 01493 730342
- Filby Bridge Restaurant - www.filbybridgerestaurant.com

Wheelyboats are available at the Eels Foot Inn and The Waterside for people in wheelchairs.

Angling

Many people prefer to hire a boat for angling on the Trinity Broads, and there are also fishing platforms free of charge at Rollesby Bridge (A149) and Filby Bridge (A1064). Both of these locations have car parks and fishing platforms that are accessible to wheelchair users. Please remember you need an Environment Agency rod licence and the Broads closed season is from 15 March to 15 June inclusive. You can find out more information in our leaflet *Fishing by boat and land on the Trinity Broads*, available in local rowing boat outlets and on the Broads Authority website.

Walking

Walking access is limited due to the marshy terrain. A footpath at Filby car park on the A1064 leads up to a bird hide that overlooks Ormesby Little Broad. On the other side of the road from this car park there is an easy access boardwalk over Filby Broad. You can also park and picnic at a car park by Rollesby Bridge on the A149.

Volunteer!

The Trinity Broads Volunteer Wardens meet regularly to carry out practical conservation work, for example coppicing and brush cutting. They also assist with wildlife surveys, running events and general patrols of the area. We are always looking for new volunteers and any time you can spare will benefit this important site.

Contacts

Trinity Broads Partnership: trinity.broads@broads-authority.gov.uk, or via the Broads Authority head office on 01603 610734.