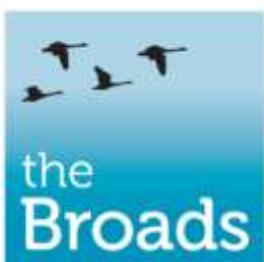


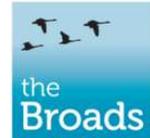
Summary

Upper Thurne Waterspace Management Plan 2012



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1. Introduction - Managing Land and Lakes for All

The Upper Thurne Waterspace Management Plan provides the framework for partnership working in the area. It was written by the Upper Thurne Working Group covering 2006-2009. The facts contained within the plan remain current and it should be considered along with the 2008 'synthesis of research in the Upper Thurne'. This summary does not aim to repeat this information, but brings the plan up to date with a summary of current and future projects and issues.

The full Management Plan is a technical document to guide the site managers and is available to download on the Broads Authority website:

<http://www.broads-authority.gov.uk/authority/publications/conservation-publications.html>

The overall aim of the Upper Thurne Working Group is to develop by consensus a common vision and plan for sustainably managing the rivers and broads of the Upper Thurne. This will be based on a sound understanding of the functioning of the hydrological and ecological catchment area, its importance for natural and cultural heritage, navigation and other forms of recreation, social and economic activities and on the promotion of best environmental practice in its management.

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 key priorities within the Broads Plan are:

- 1. Planning our long term future in response to climate change** - The Upper Thurne Broads have a complex history with nutrient enrichment from gulls and agricultural land, our research is helping to secure this improvement. In addition the waters are affected by saltwater drawn through the coastal drains and through the pumps. This makes them brackish and creates a different ecology to the rest of the Broads. The Upper Thurne lies within the flood plain and closer to the coast than other rivers, so it is less protected from the impacts of sea level rise. There is potential for greater levels of salt intrusion as sea level continues to rise, the ecological effects on freshwater dependant life in the Upper Thurne could be significant depending on the scale and timeframe for change. Enhancing the freshwater health of this ecosystem is critical given the ecological changes forecast for the future. Advice to surrounding farmers is based on finding business solutions that work for food production, wildlife and for the water environment. Creating a better environment will mean the Upper Thurne Broads will be more resilient to extremes in weather, a likely effect of climate change.
- 2. Working in partnership on sustainable management** - The Upper Thurne Working Group extends into the local community through liaison with parish councils, advice to farmers and, involving volunteers, local businesses navigational and conservation interests and recreation clubs. We have been working on a landscape scale for five years, delivering advice to local farmers and landowners. This effort has already resulted in alternative water management discussions and trials. Our management decisions for the water and wetland habitats are aimed at achieving integrated targets for the site and are informed by monitoring and research.
- 3. Encouraging sustainable use and enjoyment** - The Upper Thurne Broads were created by village 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 and wildlife appreciation

some of the most popular activities. The Upper Thurne Working Group places a high emphasis on community involvement to find appropriate solutions to protect the interests of wildlife and people. We do this with regular meetings and involving parish councils and residents in decision making.

Our Recent Achievements

The Upper Thurne Working Group has recorded the following achievements in the last five years:

- Sediment removal in priority locations and designing and construction of novel reed islands for disposal of sediment within the sensitive landscape
- Goose grazing protection and enhancing some of the reed margins
- Large scale wetland enhancement on the surrounding fen and reedbed habitats providing more habitat for wetland wildlife such as bittern and swallowtail butterfly.
- Extensive monitoring of the Brograve catchment and free advice provided to all farmers in the catchment to reduce nutrients in the broads.
- Programme of monitoring and new research to increase our knowledge of the water and ecology including assessing the catchment and surveying water plants.
- Enhancing navigational signage and posts/buoys to protect the interests of navigation.
- Wildlife protection zones with user agreements



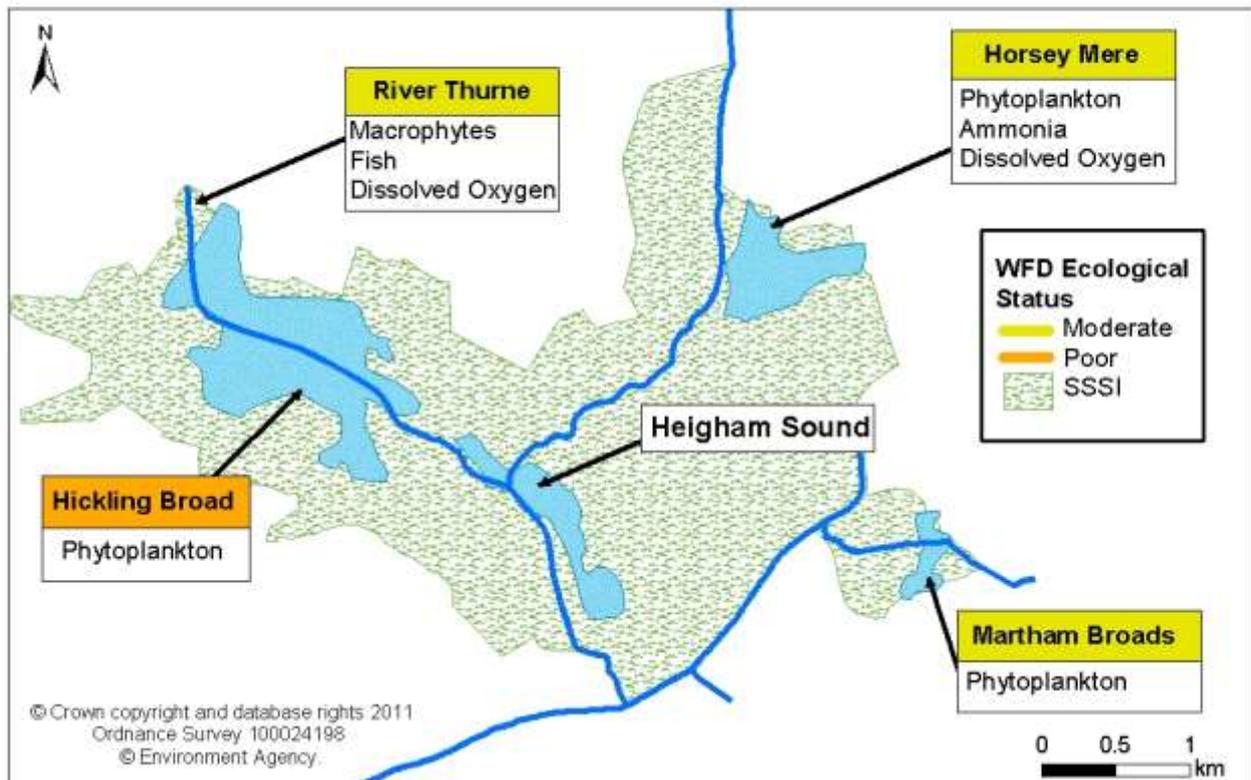
2. Description of the issues and projects

A full description of the Upper Thurne Broads is located in the Upper Thurne Management Plan. The diagram below shows some of the issues, projects and initiatives.



Water quality is a particular issue for the majority of the Upper Thurne waterspace. All sites fail European Water Framework Directive targets of achieving 'good' status. Hickling Broad is of particular concern, quite simply it has too much algae, making the water green without much water life.

Upper Thurne WFD Ecological Status with Failing Elements





3. Our Vision, and how we will achieve it

In 2026, the Upper Thurne water space comprises a series of shallow lakes and interconnected waterways, fringed by reedswamp vegetation and bordered by reed and sedge dominated fens and grazing marshland. Much of the system is slightly brackish, and therefore forms a marked hydrological and ecological contrast with the rest of Broadland, which is a predominantly freshwater ecosystem.

The drained marshland bordering the Thurne waterways, parts of which had been ploughed up during the 1980s and 1990s and used for growing arable crops, has been put back under grass and is being managed on a low intensity basis. In addition, following changes in agricultural practice and new economic incentives, the watercourses are not receiving such large inputs of sediment and fertilisers from agricultural land.

These land use changes have ensured that nutrient inputs into the waterways are substantially less than they were twenty years ago and this is reflected in a major improvement in their ecology. More specifically, the latter no longer exhibit the marked oscillations between the aquatic plant and algal dominated state which constituted the Upper Thurne's ecology in the past.

Algal dominated communities, tend to be transitory and far less well developed than they were in the latter part of the 20th century. As a consequence, the waterways are clear throughout the year. This has not only greatly improved their aesthetic appearance, but has favoured the development of an aquatic plant dominated community. The latter is helping to stabilise the sediment and render it more suitable for the growth of a greater variety of rooted water plants than was present 20 years ago. The highly diverse aquatic flora now found within the water space has in turn led to a marked improvement in the richness and diversity of the birds, fish and invertebrates found in this part of the Broadland ecosystem.

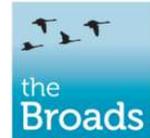
The management regime now in place in the Brograve and Eastfield Levels has greatly reduced salinity levels and hence it has reduce the amount of ochre and salt being discharged by the Brograve pumping station into Waxham Cut. This has stabilised the salinity of Horsey Mere, reduced salinity levels in Hickling Broad and at the same time alleviated the sediment deposition problem previously encountered in the Cut and at its mouth. Equally important, the water in Horsey Mere is no longer discoloured by ochre.

The lakes support large numbers of wintering waterfowl where there are sufficient underwater plants for food and quiet water space for roosting.

These superb and unique open waters provide for waterborne recreation of all types and in all kind of vessels. This includes historic vessels, currently used water craft, as well as those with new designs, constructed and containing new technologies that reflect this watery environment.

The fisheries in the Upper Thurne waters are of a high quality and offer good quality sport during the open season.

Mutual understanding and agreement about management of the water space has been reached by all interested parties, and the local economy is vibrant as many local people earn a livelihood in this protected landscape. High quality facilities supplying high quality goods and services are well used by visitors arriving in the area to enjoy the wildlife and opportunities for quiet recreation in a wild landscape. Local people and visitors of all ages learn from the experiences of their visit to the Upper Thurne which is held in high regard as an example of what can be achieved in integrating different interests and uses into a special landscape. People are so inspired that they often make return visits. For everyone, this is a place that's hard to leave.



4. Partnership and Consultation

The Upper Thurne Working Group is made up of local parishes representatives, interested people who are representative of the local community stakeholders (see Terms of Reference). It meets twice a year to discuss new projects, routine management, issues to the area and new evidence with staff from the project board. The Upper Thurne Working Group is a forum for informing and involving local people in the decision making process. The Upper Thurne Wintering Bird Refuge Group also meets twice a year with angling, boating and canoeing to discuss management of zoning in the Upper Thurne Broads.

The Upper Thurne Broads area has many volunteers, comprised of local people who assist with practical tasks like scrub removal, reedbed cutting and footpath maintenance on a weekly basis.

The Upper Thurne Working Group partners include:

Broads Authority

Parish Councils

- Catfield
- Hickling
- Horsey
- Martham
- Potter Heigham
- Somerton
- Lessingham and Hempstead with Eccles

Broads Angling Strategy Group

Broads Hire Boat Federation

Broads Society

Electric and sailing hire-boat yards

Environment Agency

Hickling Broad Sailing Club

Hickling Broad Windsurfing Club

Horsey Estate Trust

National Trust

Natural England

Norfolk and Suffolk Boating Association

Norfolk Wildlife Trust

RSPB

Water Management Alliance

The geographical remit of the Upper Thurne Working Group will cover the entire catchment area of the Upper Thurne (i.e. upstream of the junction of the River Thurne with Candle Dyke), while focusing specifically on that part of the catchment which falls within the Broads Authority's executive area.

The management plan will focus on providing an integrated strategy for achieving conservation navigation and recreation objectives with respect to the rivers and broads of the Upper Thurne. Such a strategy will need to include recommendations on measures for mitigating against land use and water management practices in the surrounding catchment area that adversely impact on achieving such conservation and recreation objectives.

5. Factors affecting the Upper Thurne Broads

The Upper Thurne Broads are an important site for people, local communities and wildlife. There are many pressures on the Upper Thurne 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. These factors are well described in the main Management Plan (2006) and provide a comprehensive assessment of the multipurpose and integrated nature of the work in the Upper Thurne Broads area. Some of these factors and summarised in the table below and in the Objectives and Targets (Section 5).

Summary of factors and their effect on the ecosystem and the local management options

	Factors	Effect on	nutrients	plankton	sediment	fish	birds	Local management options
Global	Population						★	
	Climate			★	★	★	★	
Regional	General lower nutrient levels	★	★	★	★	★	★	
	Micro-pollutants							★
	Invaders	-	-	-	-	-	★	★
Local	Human use						★	★
	Habitat diversity			★	★	★	★	★
	Connectivity					★		★

6. Objectives and Targets

This section lists the important features that the partners of the Upper Thurne Working Group are managing, and sets out targets. In the full Management Plan, there is more detail which describes the objectives.

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

Overall Objective:

To achieve and subsequently maintain an ecologically healthy aquatic system of broads, rivers and dykes in favourable ecological condition, whose special features are conserved in harmony with the maintenance and sustainable management of traditional rights and access to the broad for the purposes of navigation and recreation and the promotion of viable local livelihoods.

<i>Feature</i>	<i>Objective</i>	<i>Targets to aim for</i>
<p>Biodiversity</p> 	<p>To achieve and maintain Favourable Ecological Condition for the international, national and locally important wildlife of the open water and margins of the Upper Thurne.</p>	<ul style="list-style-type: none"> • Good water quality. • Clear water. • Extensive aquatic plant beds present throughout the water bodies. • Actively-growing reed swamp margins. • Suitable habitat to support healthy winter waterfowl populations. • No significant reduction in wintering bird population
<p>Wider Catchment</p> 	<p>To achieve and maintain precise and profitable farming that takes into account the farming for the benefit of food, water and wildlife management.</p>	<ul style="list-style-type: none"> • Fertiliser application equipment is calibrated and certified annually. • 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. • 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>To encourage local people to become passionate and well informed about the Upper Thurne Broads, and to facilitate their involvement by providing volunteer opportunities, events for the public and school projects.</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, Navigation and Recreation</p> 	<p>To manage the Upper Thurne Broads as a place where people come to enjoy the boating and racing sailing, as well as angling and walking around the margins of the waterways of this superb wetland landscape.</p>	<ul style="list-style-type: none"> • Maintain agreed water depth for boating throughout the water space, without prejudice to navigation rights. • Maintain water space for navigation and recreation. • Maintain access to and develop opportunities for boat moorings • Promote eco-friendly boating with sails, electric power, or pollution-free motorboats. • Maintain access on foot. • Maintain access for angling. • Access for disadvantaged groups in society is promoted. • Zonation of boat use is agreed through dialogue with users based on evidence.
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7. 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:

- BA = Broads Authority, EA = Environment Agency, NE = Natural England, NT = National Trust, NWT, Norfolk Wildlife Trust, WMA = Water Management Alliance

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 achieve and maintain Favourable Condition for the international, national and locally important wildlife of the open water and margins of the Upper Thurne.

<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>Carry out formal condition assessment of SSSI features.</p> <p>Monitor fish populations as required.</p> <p>Analyse open water ecosystem dynamics by assessment of existing data.</p> <p>Monitor and assess breeding and wintering bird disturbance as required.</p> <p>Map extent of reedswamp and compare to 1970s.</p> <p>Monitor the feral geese population as required.</p> <p>Map sediment quality and depth in selected rives, broads and dykes.</p>	<p>BA</p> <p>NWT, BA</p> <p>NE</p> <p>EA</p> <p>All</p> <p>NT, NWT</p> <p>BA</p> <p>NWT</p> <p>BA</p>	<p>BA</p> <p>BA</p> <p>NE</p> <p>BA</p> <p>All</p> <p>NT, NWT, NE</p> <p>BA</p> <p>NWT</p> <p>BA</p>
<p>Managing:</p> <p>Carry out scrub removal within broad shore reedbeds and fens.</p> <p>Carry out further reedswamp protection works.</p> <p>Investigate options for management of feral geese.</p> <p>Implement removal of non-native invasive species.</p> <p>Carry out management of waterways to improve fish habitat.</p> <p>Investigate landscape scale habitat creation and connection ideas.</p> <p>Investigate feasibility of eel passes.</p> <p>Restore reed islands.</p>	<p>NWT</p> <p>BA, NWT, NE</p> <p>BA/BTO</p> <p>As required</p> <p>BA, EA, NWT</p> <p>All</p> <p>EA</p> <p>BA, NT, NWT</p>	<p>NWT</p> <p>BA, NWT, NE</p> <p>BA</p> <p>As required</p> <p>BA, EA, NWT</p> <p>All</p> <p>EA</p> <p>BA, NT, NWT</p>
<p>Administation:</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 Upper Thurne Broads are connected to the wider river system and are surrounded by wetlands. These wetlands along with the river provide habitat for eels. Any obstructions to eels that may exist should be assessed to see if they could be improved to allow the passage of eels. 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.
- Reed islands – many islands have been lost from the Upper Thurne Broads in the past decades. Novel techniques are being developed and tested and these trials if successful could be extended to enhance habitats.



Water Quality

To achieve clear, low nutrient water in the Upper Thurne Broads that supports diverse communities of aquatic wildlife and provides a high quality resource for people to enjoy.

<i>Action</i>	<i>Who will do it?</i>	<i>Who will fund it?</i>
Monitoring: Landowners, public and organizations to report any pollution incidents to the EA Carry out monitoring of water quality in selected rivers and dykes Provide assistance with analysis of manure nutrient content as required.	All EA EA, NE	EA EA, NE
Managing: Brograve project to assess and invest in pumps and dyke realignment to lower salinity Protect all watercourses with at least a two metre buffer strip. Ensure all fertiliser spreaders are correctly calibrated. Review mud pumping as a technique for achieving water plant restoration in Upper Thurne broads	WMA Landowners Farmers, NE, EA BA	NE, EA BA
Administrating: Advise landowners on appropriate Environmental Stewardship options.	EA, NE	EA, NE

New actions:

- Mud pumping in the Upper Thurne for lake restoration has not been trialed due to the uncertainty of how effective it would be as well as issues with practicality and cost. A review of how cost effective and feasible this technique would be for lake restoration would be worthwhile before embarking on a trial.



Access, Navigation and Recreation

To manage the Upper Thurne Broads as a place where people come to enjoy the boating and racing sailing, as well as angling and walking around the margins of the waterways of this superb wetland landscape.

<i>Action</i>	<i>Who will do it?</i>	<i>Who will fund it?</i>
<p>Monitoring:</p> <p>Monitor Environment Agency rod licences.</p> <p>Record any reports of wintering bird disturbance.</p> <p>Specific monitoring of water plants around the priority club sailing areas.</p> <p>Carry out review of bird use and boat use to inform policy.</p>	<p>EA</p> <p>UTWG</p> <p>Sailing Club</p> <p>UTWG</p>	<p>EA</p> <p>n/a</p> <p>n/a</p> <p>BA, NE, NT</p>
<p>Managing:</p> <p>Run programme of events for the general public.</p> <p>Twice a year meetings of the Upper Thurne Wintering Bird Refuge Group.</p> <p>Invest in fishing platforms and boat access in accordance to appropriate opportunities.</p> <p>Design and distribute leaflets as required.</p> <p>Restore sediment disposal sites as required.</p> <p>Remove sediment and ensure waterways specifications are met for recreation and navigation.</p> <p>Patrol waters to ensure safe and responsible enjoyment of the waterways.</p> <p>Manage buoys, post and signs as appropriate for navigation marking.</p> <p>Cutting aquatic plants in accordance to guidance and as required.</p> <p>Identify potential new and enhanced opportunities for land access around the Upper Thurne Broads.</p>	<p>NWT</p> <p>UTWG</p> <p>EA, BA</p> <p>UTWG</p> <p>BA</p> <p>BA</p> <p>BA</p> <p>BA</p> <p>BA</p> <p>BA</p> <p>UTWG</p>	<p>NWT</p> <p>n/a</p> <p>EA</p> <p>As required</p> <p>BA</p> <p>BA</p> <p>BA</p> <p>BA</p> <p>BA</p> <p>As required</p>
<p>Administrating:</p> <p>Record any new or revised rights of access on to Upper Thurne.</p>	<p>UTWG</p>	<p>BA</p>

New actions:

- New land access - there is some opportunity for people to explore the Upper Thurne on foot, and there may be locations where some small-scale access would be achievable without compromising the wildlife value.



Local Community

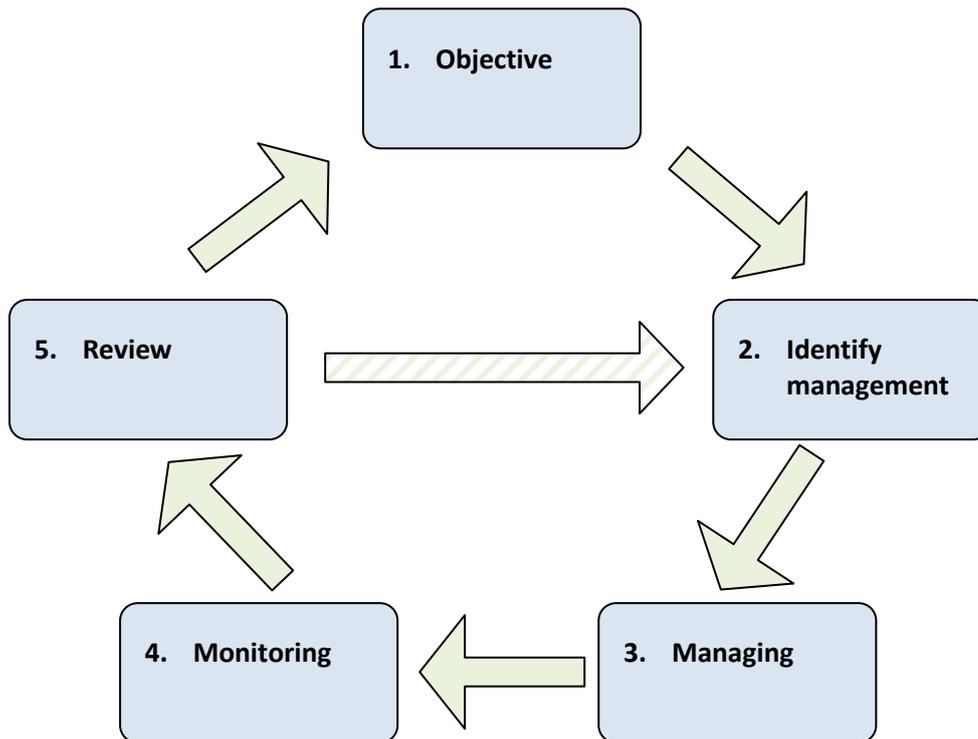
To encourage local people to become passionate and well informed about the Upper Thurne Broads, and to facilitate their involvement by providing volunteer opportunities, events for the public and school projects.

<i>Action</i>	<i>Who will do it?</i>	<i>Who will fund it?</i>
Monitoring:		
Record volunteer hours.	TBP	ESW
Record number of people attending events.	TBP	ESW
Managing:		
Liaise with parish councils on access opportunities.	UTWG	n/a
Twice a year meetings of the Upper Thurne Working Group.	UTWG	BA
Write articles about the Upper Thurne for parish and other local newsletters.	UTWG	n/a
Attend parish council meetings when invited.	UTWG	n/a
Give talks and presentations to local groups when invited.	As required	n/a
Work with volunteers from the local community.	NWT, BA, NT	NWT, BA, NT
Continue local schools education work.	NWT, BA, NT	NWT, BA, NT
Administrating:		
Upload management plan and reports to website for public viewing.	BA	BA
Provide training, uniform and Personal Protective Equipment to volunteers.	NWT, BA, NT	NWT, BA, NT

New actions:

8. Review and Evaluation

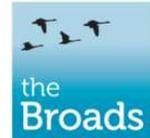
Every management plan must go through a logical process, which must be regularly reviewed. The adaptive planning cycle according to Conservation Management Systems is shown below (taken from Alexander, 2010).



- 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.

Reviewing the research and science is an important process for the Upper Thurne. A summary of some of the research undertaken to date can be found on the Broads Authority website: <http://www.broads-authority.gov.uk/authority/publications/conservation-publications.html>



How to find out more

Read more about the Upper Thurne Broads

You can read more about the Upper Thurne Broads on our website, where you can download our latest newsletter, and the full version of the Upper Thurne Management Plan and a synthesis of research undertaken in the area <http://www.broads-authority.gov.uk/authority/publications/conservation-publications.html>

To find out more about the partner organisations please see:

www.broads-authority.gov.uk, www.environment-agency.gov.uk, www.naturalengland.org.uk,
www.norfolkwildlifetrust.org.uk www.nationaltrust.org.uk www.rspb.org.uk

Come and enjoy the Upper Thurne Broads

There is so much to get involved in at the Upper Thurne Broads.

Sailing

You can become a member of the Hickling Sailing Club or the Windsurfing Club:

- Rollesby Broad Sailing Club - www.hicklingbroad.com
- Norfolk Schools Sailing Association - www.hicklingbroad.co.uk

Boat trips and Refreshments

You can enjoy refreshment at an establishment overlooking the Hickling Broad and take a boat trip from NWT as well:

- The Pleasure Boat, Hickling – www.thepleasureboat.com
- Norfolk Wildlife Trust - www.norfolkwildlifetrust.org.uk

Angling

Many people prefer to hire a boat for angling on the Upper Thurne Broads, and there are also are fishing platforms various locations including candle dyke. 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 from the Environment Agency.

Walking

Walking access is provided by the Weavers Way long distance footpath along with several other paths around the margins of the wetland area. Norfolk Wildlife Trust also provide paths around the wetland at Hickling visitor center.

Volunteer!

The Norfolk Wildlife Trust, Broads Authority, National Trust, RSPB all offer volunteer opportunities where people can meet regularly to carry out practical conservation work. We are always looking for new volunteers and any time you can spare will benefit this important site.