

Broadland District Ecological Network Mapping



Compiled by
R.Land
Norfolk Wildlife Trust on behalf of
Econet Topic Group
January 2007

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1 Introduction

This report is put forward to foster further discussion about the development of an ecological network in Broadland District. The report has been produced as a draft for further discussion and refinement, and is based on consultation carried out by the Norfolk Econet Topic Group¹.

The overall aim is to take forward the findings of the county-level ecological network report² and to apply these at the District level. Specifically, the report seeks to:

- Identify the key statements contained in the county econet report pertaining to the district;
- Present recommendations on how these ecological network priorities can be further developed and implemented at the district level.

There are considerable limitations in the information base required to develop the ecological network and suggestions are made on how these can be addressed.

2 Ecological features and BAP habitats

2.1 Summary of key ecological characteristics

The District is dominated by farmland with semi natural habitat widely spaced and highly fragmented, especially outside of river valleys and the Horsford area. The key ecological characteristics of the District therefore can be summarised as

- Two major river valleys, comprising the chalk rivers of the Bure, Yare and Wensum, and their tributaries. These have a range of wetland habitats in their floodplains – wet grassland, lowland meadows, wet woodland, reedbed and fen. Eutrophic waters (eg gravel pits) may also be a significant habitat. Especially important is the European protected site comprising the River Wensum and a number of fens, including those in the Broads.
- Areas of heathland and fen centred on Horsford-Felthorpe, associated with coniferous and deciduous woodland, including European protected sites comprising heathland and fen.
- Relatively extensive areas of woodland and shelterbelts often associated with large estates and a number of ancient woodlands scattered through the District
- Arable landscape features, comprising hedgerows, mature trees, copses and ponds, and forming a significant catchment to the major rivers and the Broads. These features are key components of the ecological network at a local scale and collectively they amount to a significant biodiversity resource (but are not covered further in this exercise).

The suburban area of Norwich and other market towns are often associated with significant areas of public and private greenspace and areas of semi-natural habitat.

The presence of the Broads to the District cannot be ignored. The land uses within the District have a major impact on the wetland habitats of the Broads. It is important that actions undertaken in the District as a whole also secure the integrity of the Broads.

¹ Attendees at consultation meeting: Officers from Natural England, Broadland District Council, Forestry Commission, Norfolk Wildlife Trust, RSPB, Broads Authority, Norfolk County Council, Environment Agency.

² Report of the Ecological Network Mapping Project for Norfolk. 2006. Norfolk Wildlife Trust, on behalf of the Norfolk Biodiversity Partnership.

2.2 BAP habitats of County and District importance

The Econet Report identified the following components of the ecological network for the District

- Core area based on Horsford-Felthorpe and the major rivers – Bure, Yare and Wensum and tributaries (eg River Aisle, River Tud, Witton Run, Pedham Beck, Spixworth Beck+)
- Core area centred on the Broads (also within BA Executive Area).
- Zone of heath-grass-woodland creation in west of District
- Zone of general habitat enhancement in central and east of District
- Area of publicly accessible urban greenspace deprivation based on Norwich and also Aylsham

+ names given to tributaries may not be 'official' recognised names

The Econet Report identified the following extant BAP habitats as being County priorities

- Lowland meadows generally in the west
- Woodland centred on Weston Longville and north of Foxley
- Wood pasture covering much of the centre of the District
- Heath centred on Horsford-Felthorpe
- Chalk rivers of the Wensum and Bure
- Fen, reedbed, wet woodland, floodplain grazing marsh in Wensum, Yare and Bure river valleys and associated tributaries

The following national BAP habitats have been identified at the county level and probably occur in the District

- Naturally fluctuating water bodies – possible pingo sites north of Norwich requiring survey (this is underway)
- Eutrophic waters - the lack of a Norfolk BAP means these cannot be identified but could include lakes in Parkland and gravel pits
- Parkland eg Blickling, Heydon and Salle which are currently County Wildlife Sites as well as other Historic Parks

An objective of the current exercise is to identify components of the econet that are of District importance. Amongst those identified are

- A large number of tributaries of the Wensum, Bure and Yare – eg King's Beck, Mermaid Stream, Hevingham Beck, Swannington Beck, Foulsham Beck. All containing fen, reedbed, grazing marsh and wet woodland.
- Areas of Parkland (BAP habitat) at Heggatt etc with secondary woodland
- Marriot's Way-Weaver's Way and Bure Valley disused railway line
- Areas with a high proportion of ancient or species rich hedgerows (these are not currently shown on the District econet map but may be present).
- Areas of grassland associated with small airfields, eg, commons, green lanes, churchyards (these are not currently shown on the District econet map).

3 Developing an ecological network for the District

In the section below, the key actions for econet implementation are outlined. It is important to note that the strategy does not cover the actions required to protect and maintain existing BAP habitats; it refers only to actions required for habitat creation and/or buffering.

3.1 Econet priorities

The county Econet Report recommended that the following key measures be taken within the District in order to contribute toward the establishment of an ecological network;

- Enhance the wetland habitats associated with the Rivers Wensum, Bure, Yare and associated tributaries as well as the Broads including buffering of these areas.
- Enhance and create a mosaic of heathland, wood pasture and woodland habitats within the Horsford/Felmingham area;

- Enhance and create woodland, particularly in the woodland core areas north of Foxley and at Weston Longville, and grassland particularly in the west of the District;
- Enhance existing greenspace and create new greenspace in the Norwich fringe.

3.2 Strategy for econet implementation

The econet priorities for the District are also shown in the attached map.

Objectives	Action	Potential delivery
Restore natural functioning and wetland habitats to major rivers and tributaries	<ol style="list-style-type: none"> 1. Produce river restoration plans. 2. Create new wetland BAP habitats in floodplain to expand sites 3. Create habitat ecotones from wet to dry habitat 4. Buffer floodplains by encouragement of low input agricultural systems or semi natural habitats 5. Enhance connectivity through creating new wetland linkages and enhancing the matrix (land uses surrounding a wetland) 	FC Wet woodland project S106 planning obligations agreements Environmental Stewardship
Significantly increase the connectivity of woodland in core areas	<ol style="list-style-type: none"> 1. Assess functional connectivity within woodland core areas 2. Expand existing woods, so that some are >25ha and all are over 3ha. 3. Buffer woodland to 30m minimum through restoration or creation of habitats adjacent to sites or encouragement of more sympathetic land uses. 4. Enhance connectivity through creating new woodland linkages and enhancing the matrix (land uses surrounding a woodland) 	NCC Community Woodland Scheme English Woodland Grant Scheme S106 planning obligations agreements
Significant increase in area of grassland	<ol style="list-style-type: none"> 1. Identify areas of grassland that can form the nucleus for enhancement and expansion 2. Expand existing grasslands where possible, eg, commons, verges, churchyards, pasture 3. Create new grasslands and associated habitats such as scrub close to rural communities 4. Buffer grassland through restoration or creation of habitats or encouragement of low input agricultural systems 5. Enhance connectivity through creating new grassland linkages and enhancing the matrix (land uses surrounding a grassland) 	S106 planning obligations agreements Environmental Stewardship
Increase the area of heathland-wood pasture in suitable areas.	<ol style="list-style-type: none"> 1. Produce heath-wood pasture creation plan 2. Expand existing heathland where possible to minimum 50ha 3. Create new heathland adjacent other habitats or on former heathland sites and in association with mineral extraction restoration 4. Buffer heathland through restoration or creation of habitats adjacent to sites or encouragement of low input agricultural systems 5. Enhance connectivity through creating new heath/wood pasture linkages and enhancing the matrix (land uses surrounding a heath/wood pasture) 	S106 planning obligations agreements for minerals restoration and other development Environmental Stewardship
Enhance Broads margins to buffer from adjacent land uses and create ecotones	<ol style="list-style-type: none"> 1. Develop greater connectivity between Broads wetlands and valley side habitats 2. Buffer Broads from adverse impacts of hinterland 3. Create habitat ecotones from wet to dry habitat 4. Expand and link existing wetland habitats 5. Create new habitats on the Broads margins 	Environmental Stewardship FC Wet woodland project River valley planning by BA S106 planning obligations agreements
Create greenspace in	<ol style="list-style-type: none"> 1. Produce biodiversity plan for green infrastructure plan 2. Provide more accessible greenspace 	S106 planning obligations agreements

urban areas and urban fringe.	3. Ensure core areas of BAP habitats remain connected with wider countryside	
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4 Other actions

There are a number of measures that could help establish an ecological network in the District. These are a mixture of practical projects and policy development.

4.1 Strategic measures

- **Local Development Frameworks:** Broadland District Council should incorporate the econet concept in its Local Development Framework. This should include specific policies in the Core Strategy as well as the identification of habitat creation areas within Site Specific Proposals and Area Action Plans based on the attached map.
- **Section 106 planning obligations:** The potential for using Section 106 agreements to promote habitat creation related to development should be actively explored. Specific examples include the provision of urban greenspace that contributes towards an agreed green infrastructure plan; restoration of habitats in river valleys and creation of heathland and woodland. In addition opportunities for creating areas of rough grassland and scrub habitats close to villages, in order to replace historical 'lost commons', should be encouraged.
- **Landscape Characterisation:** The District's landscape characterisation should integrate the ecological network concepts. This integration would help identify mutual objectives and possible areas of conflict. See annex.
- **Development of a green infrastructure plan for the District.** As a significant urban area it will be important to develop a plan for the development of accessible greenspace involving the strategic provision of new greenspace in the form of BAP habitats. The development of green infrastructure should incorporate the ecological network principles.

4.2 Gaining further information

The following actions are considered necessary to provide information to take forward the planning and development of implementation projects:

- There is a need to map information on the distribution of BAP habitats on County Wildlife Sites in the District and to assess each site to ascertain the opportunities for enlargement or buffering. Further survey work is also required to identify BAP habitats that are not CWSS.
- Ecological modelling can be used to identify where habitats need to be created in order to increase connectivity between BAP habitats. This will aid targeting of habitat creation. Initially it is suggested that a study is undertaken of a woodland core area to identify the current and desired level of connectivity.
- The Horsford area is an area of high biodiversity importance with a wide range of habitats. It will be necessary to look at the area and devise a habitat restoration and creation plan that looks at woodland, wood pasture and heathland and associated wetland habitats. It is recommended that a detailed study be undertaken of this area to identify habitat creation opportunities and areas of conflict.
- River restoration plans need to be produced identifying opportunities for the creation and expansion of habitats and how to restore natural functioning. In addition since rivers valleys represent important corridors across the county it would be beneficial to identify headwaters of rivers where there are opportunities to create a more wildlife friendly landscape. It is suggested that a study be undertaken to looking at the feasibility of river restoration and the potential for connectivity across watersheds. The proposed river Wensum restoration plans would form the basis of this work in Broadland but other studies are desirable.

5 Explanation of District ecological network map

5.1 GIS layers provided

The following layers make up the Broadland District ecological network map. The information is based on the County ecological network map but has been refined and expanded after consultation with representatives from Natural England, Broads Authority, Forestry Commission, Environment Agency, RSPB, Norfolk Wildlife Trust, Norfolk County Council, North Norfolk Council, NB. Some features have not been shown on the map but are mentioned in the text above. They are, however, considered as important in a District or even County context and are mentioned in the text. Their omission was primarily based on the need to maintain the clarity of the map.

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5.2 District ecological network map

1. Landscape Description Unit (LDU) 1:50000 layer from Norfolk County Council
2. Broadland district boundary and Broads Authority Executive Area boundary
3. Zone of grass-heath-wood enhancement – based on the County ecological network report. This includes the core areas for lowland meadow and wood pasture. The boundary of this zone has been slightly amended to incorporate more fully the wood pasture core area and parts of the core area that have not been assigned to a specific habitat at the District level.
4. Zone of general habitat enhancement. Based on the County ecological network map but part of this zone has been assigned to the zone of grass-heath-wood
5. Wetland habitat enhancement zone based on the LDUs that are classified as ‘wetland’ and the 1:100 flood risk area from Environment Agency. This refines the strategic river corridors in the County ecological network report. It is assumed that this incorporates the majority of the area available for the creation and enhancement of the following BAP habitats – wet woodland, reedbed, fen, chalk river, grazing marsh, mesotrophic waters and to a great extent eutrophic waters.
6. Heathland core area defined as the priority areas for heathland and heathland creation in the North Norfolk Heaths Re-creation Strategy³.
7. Woodland core area as defined in the County ecological network report showing concentrations of primarily deciduous woodland. These areas generally have a high concentration of SSSI or CWS woodlands or ancient woodland. The core areas shown in the County ecological network report have been additionally expanded to include areas identified at the District level.
8. Buffer zones for Broads and Wensum. Two buffer zones around the River Wensum and Broads national park. These are all shown as buffered to 1km to highlight the extreme importance of these areas and the need to consider adjacent land use.
9. Urban areas of Norwich and Aylsham
10. Core habitat corridors. Indicative arrows showing desirable connectivity between woodland and heathland core areas

³ North Norfolk Heathland Re-creation Strategy English Nature 2002.....

Annex 1 Ecological network priorities by landscape type⁴

This annex compares the econet priorities as set out above with the District Landscape characterisation

The core areas based on Horsford-Felthorpe, River Wensum, River Bure

- The LCA (E) in the landscape assessment better represents the area of ecological interest in the Taverham-Horsford core area compared with the Econet Report Map 5. The latter shows a more restricted core area in the north as a result of the 1:50,000 LDU boundary.
- The major river valleys and a number of lesser streams are covered by LCAs B (Wensum) and G (Bure). There are a large number of tributaries to these rivers which occur in other landscape types. These are not always identified by their own sub compartments.

Zone of heath-grass-woodland enhancement covering a swathe north and west from Norwich. It is generally covered by LCAs A, C, D, F.

Zone of general habitat enhancement north east and east of Norwich generally covered by LCAs F, H-M.

Local character area A

The priorities are the creation of all types of grassland and woodland especially mixed habitats of grassland and scrub/woodland. Increased connectivity with Hockering Wood (outside District) is a priority. Along the Tud the enhancement and creation of wetland habitats such as wet meadows and wet woodland is a priority. In addition buffering the Wensum and Tud through catchment sensitive farming will help protect these core areas.

LCA B

The priorities are the enhancement of the Wensum and creation of wetland habitats such as wet meadows and wet woodland. In addition buffering the Wensum from diffuse pollution inputs through catchment sensitive farming will help protect this river. On valley sides creation of all types of grassland and woodland especially mixed habitats of grassland, heath and scrub/woodland.

The area borders the Norwich urban area and is a priority for the management and creation of urban and urban fringe greenspace as well as the maintenance and enhancement of green corridors through the built areas.

LCA C

Priorities include the creation of mixed habitats of grassland, heath and scrub/woodland in the woodland core area. In addition buffering the Wensum and River Aisle(?) from diffuse pollution inputs through catchment sensitive farming will help protect these rivers. Enhancement of the farmed landscape is a priority.

LCA D

Within this area the priority habitats are wood pasture and grassland probably based on the existing parks at Salle, Heydon, Blickling. The restoration of the tributary river valleys is a priority. In addition catchment sensitive farming will help protect the rivers Wensum and Bure, both chalk rivers. Enhancement of the farmed landscape is a priority.

LCA E

The priorities in these areas are heath, fen and other wetland habitat creation, the restoration of ancient woodland and expansion of sites and the restoration or creation of wood pasture. The creation of habitat mosaics comprising heath, woodland and wood pasture is a priority.

LCA F

The priorities are woodland and wood pasture and the creation or restoration of wetland habitats in the stream valleys. In addition catchment sensitive farming will help protect the river Bure. Enhancement of the farmed landscape is a priority.

⁴ Broadland District Landscape Assessment BDC Consultation Draft 2002

LCA G

The priority is the enhancement of the Bure and tributary wetland habitats.

LCA H

Priorities are catchment sensitive farming to help protect the river Bure and enhancement of the farmed landscape.

LCA I

The area borders the Norwich urban area and is a priority for the management and creation of urban and urban fringe greenspace as well as the maintenance and enhancement of green corridors through the built areas.

LCA J

The area borders the Norwich urban area and is a priority for the management and creation of urban and urban fringe greenspace as well as the maintenance and enhancement of green corridors through the built areas. Other priorities are catchment sensitive farming to help protect the river Bure and Yare along with enhancement of the farmed landscape

LCA K

The presence of the Broads places the priority on catchment sensitive farming to help protect the river Bure and the development of wetland habitats in the stream valleys. The development of semi natural habitats along the edge of the Broads would enhance the adjacent wetland habitats.

LCA L

The proximity to the Broads places the priority on catchment sensitive farming to help protect the river Yare and the development of wetland habitats in the stream valleys. The development of semi natural habitats along the edge of the Broads would enhance the adjacent wetland habitats.

LCA M

The proximity to the Broads places the priority on catchment sensitive farming to help protect the river Yare. The development of semi natural habitats along the edge of the Broads would enhance the adjacent wetland habitats.