North Norfolk District Ecological Network Mapping

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February 2006

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1 Introduction

This report is put forward to foster further discussion about the development of an ecological network in North Norfolk District. The report has been produced as a draft for further discussion and refinement, and is based on inputs received from members of the Norfolk Biodiversity Partnership.

The overall aim is to take forward the findings of the county-level ecological network report[1] 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 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 comprises several distinctive landscapes.

- Arable landscape often associated with large estates and parkland. In the west the landscape is open with the main biodiversity interest associated with the arable landscape and features such as hedgerows and shelterbelts. In the east the arable landscape comprises more woodland (including ancient woodlands) with ancient hedgerows, veteran trees and ponds being more prominent.

- The coastal plain comprising the low lying north coast with intertidal habitats, sand dunes and freshwater wetlands. The cliffed coastline with stretches of sand dune on the east coast merge into the Broads and still retain remnant areas of wetland and heathland despite intensive drainage

- The major river valleys are the Wensum and Bure, Glaven, Stiffkey, Ant/Dilham canal and Thurne along with an extensive network of tributaries associated with these rivers. These have a range of wetland habitats in their floodplains – wet grassland, lowland meadows, wet woodland, reedbed and fen.

- Relatively extensive areas of woodland, wood pasture and heathland associated with the Cromer Ridge shelterbelts

- The juxtaposition 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 also secure the integrity of the Broads.

- The urban areas are relatively small but include Cromer and Sheringham along with North Walsham and Fakenham. These are all identified as being deficient in areas of accessible greenspace.

[1] 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 of coastal habitat including the low lying coastal plain and the cliffed and sand dune coast
- Core area based on the Cromer ridge
- Core area comprising the River Wensum, Glaven, Stiffkey and Bure
- Core area centred on the Broads and the upper rivers eg Ant, Dilham Canal, Hundred Stream and Thurne (most within BA Executive Area).
- Zone of heath-grass-woodland creation in north and centre of the District
- Zone of general habitat enhancement in west and east of the District particularly bordering the Broads
- Area of urban greenspace deprivation based on Sheringham, Cromer, North Walsham and Fakenham

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

- Coastal habitats especially sand dune, soft cliffs, intertidal habitats, reedbed and coastal grazing marsh
- Lowland wet grassland, reedbed, fen and wet woodland– all these associated with the major river valleys and margins of the Broads
- Chalk rivers of Stiffkey, Glaven, Wensum and Bure
- Chalk grassland and meadows including roadside verges
- Woodland core areas centred on Cromer Ridge and Swanton Novers
- Wood pasture zone covering much of the centre of the District but primarily within the woodland core areas mentioned above
- Heathland centred on Cromer Ridge, North Walsham, Ant valley and Upper Thurne (the last is not shown as the boundary is generally close to that of the BA Executive Area).
- Parkland associated with Gunton, Barningham, Itteringham, Wolterton, Mannington and Holkham Parks
- In addition to the BAP habitats identified in the County report the Paston Barn bat site is of international importance. It is important that a large zone (6km radius), comprising mainly arable land and coastal areas, around this site is managed sympathetically.

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 Bure and Broads rivers – Skeyton Beck and Scarrow Beck. All containing fen, reedbed, grazing marsh and wet woodland.
- Areas of woodland at Plumstead and Gunthorpe-Snoring
- Areas of parkland (often associated with grassland, woodland and eutrophic waters) based largely on the historic parks listed above. There is currently no Norfolk BAP for eutrophic waters so it is not possible to identify those sites that would be covered. Individual historic parks are not shown on the ecological network map.
- Disused railway line comprising part of Weaver's Way, Wells and Walsingham Line (these are not shown on ecological network map).
- Extensive areas of grassland associated with Sculthorpe airfield (this is not shown on ecological network 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;

- Increase connectivity between Swanton Novers and Foxley core area, Cromer ridge and other blocks of secondary woodland, for example, at Plumstead, Hunworth and Gunthorpe-Snoring

- Enhance and create wetland habitats associated with the main rivers and tributaries especially chalk rivers
- Enhance and create woodland, heathland, wood pasture in Cromer ridge and North Walsham and also grassland
- Enhance and buffer Broads margins to develop semi natural habitats including heathland and also wetland in the Upper Thurne
- Enhance and create coastal habitats including along the developed stretches

3.2 Strategy for econet implementation

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

Objective	**Strategy**	**Delivery**
Restore natural functioning and wetland habitats to major rivers and tributaries	1. Produce river restoration plans. 2. Create habitat ecotones from wet to dry habitat 3. Buffer floodplains by encouragement of low input agricultural systems or semi natural habitats 4. Enhance connectivity through creating new wetland linkages and enhancing the matrix (land uses surrounding a wetland)	FC Wet woodland project S106 agreements Environmental Stewardship
Significantly increase the connectivity of woodland core areas	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
Enhance coastal zone habitats	1. Create habitat ecotones from coastal habitats to upland 2. Enhance connectivity and buffering of habitats along coast 3. Encouraging natural processes where appropriate	Shoreline Management Plans
Significant increase in area of grassland	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 agreements Environmental Stewardship
Increase the area of heathland-wood pasture in suitable areas.	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 from adverse impacts of surrounding land uses 5. Enhance connectivity through creating new heath/wood pasture linkages and enhancing the matrix (land uses surrounding a heath/wood pasture)	S106 agreements for minerals restoration and other development Environmental Stewardship
Enhance Broads margins to buffer from adjacent land uses and create ecotones	1. Develop greater connectivity between Broads wetlands and valley side habitats 2. Buffer Broads from adverse impacts of hinterland 3. Expand and link existing wetland habitats 4. Create new habitats on the Broads margins	Environmental Stewardship FC Wet woodland project River valley planning by BA

4 Other actions

There are a number of specific actions that could help establish an ecological network in the District. These are a mixture of practical projects and policy development. In particular, it is suggested that consideration be given to the following.

4.1 Strategic measures

- **Local Development Frameworks**: It is recommended that North Norfolk District Council 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 through development gain should be actively explored. Specific examples include the 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**: It will be important for the District's landscape characterisation to integrate the ecological network concepts. This integration helps identify mutual objectives and possible areas of conflict.

- **Linking econet to linear routes**: There are numerous linear routes throughout the district that can act as a focus for the development of the econet at the local scale. Routes include the public footpath network, disused railway lines and cycle routes. When developing or enhancing these routes consideration should be given to the development of semi natural habitats alongside. This will not only encourage wildlife but add to the appeal of routes to the public.

4.2 Gaining further information

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

- **Mapping of BAP habitats**. There is a need to map information on the distribution of BAP habitats in the District

- **CWS study**. There is a need to assess CWSs to ascertain the opportunities for enlargement or buffering. CWS sites will occur in many core areas and throughout the District. It is important that they are considered as important biodiversity areas within the general matrix of the countryside.

- **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.

- **A study of the Cromer ridge**. This 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 but other studies are desirable.

- **Green infrastructure plans** should be developed for market towns and larger villages. These could incorporate the idea of creating an area of 'common land' adjacent each village thus providing biodiversity and access benefits. In addition the possibility of looking at the rights of way and highway network to assess how these can contribute toward enhancing connectivity in the landscape could be investigated.

5 Explanation of District ecological network map

5.1 GIS layers provided

The following layers make up the North Norfolk 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. North Norfolk district boundary and Broads Authority Executive Area boundary
3. Zone of grass-heath-wood enhancement – 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
4. Zone of general habitat enhancement
5. Wetland habitat enhancement zone based on the LDUs that are classified as 'wetland' and the 1:100 flood risk area from Environment Agency. 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. Coastal habitat zone made up of all LDUs with a coastal frontage. Between Weybourne and Horsey it is defined as up to 250m from the coastline. It is assumed that this will incorporate the majority of area available for the creation and enhancement of the following BAP habitats – all intertidal habitats, sand dune, shingle beach, saline lagoon as well as grazing marsh and reedbed where appropriate
7. Calcareous grassland core area as shown in the County ecological network report and based on LDUs with calcareous soils. Because of difficulties in defining an area for this habitat at the District level, the county map has been used
8. Heathland core area defined as the priority areas for heathland and heathland creation in the North Norfolk Heaths Re-creation Strategy[2]. In addition an area around the northern margins of the Broads in the Ant valley has also been defined
9. 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.
10. Paston barn management area. A 6km radius around the SAC has been defined. This represents Natural England's management unit for this important bat site

[2] North Norfolk Heathland Re-creation Strategy English Nature 2002…….

11. Buffer zones for Broads, Wensum and North coast. These are all shown as buffered to 1km to highlight the extreme importance of these areas and the need to consider adjacent land use.
12. Urban areas of Sheringham, Cromer, Fakenham and North Walsham
13. Core habitat corridors. Indicative arrows showing desirable connectivity between core areas of woodland and heathland

Annex 1 Ecological network priorities by landscape type[3]

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

Parliamentary enclosed rolling farmland
The priorities for creation would be all types of grassland according to soils (calcareous is the priority north of the Wensum valley) and heathland adjacent to Syderstone and West Rudham Common. In addition buffering the Wensum, Stiffkey and tributary valleys through catchment sensitive farming and low input grassland will help protect this chalk stream from diffuse pollution inputs.

Randomly enclosed rolling farmland
Priorities for habitat creation are grassland throughout the area and woodland within the core area and especially linkages to woodlands of the 'Wooded with parkland' landscape character type. The creation of mixed habitats of grassland, heath and scrub would be desirable. In addition buffering of river valleys through catchment sensitive farming and low input grassland will help protect the chalk rivers of the Stiffkey, Glaven and Wensum as well as downstream areas of the Broads from diffuse pollution inputs.

Randomly enclosed low plain farmland
Priorities are buffering of river valleys through catchment sensitive farming, low input grassland and creation of mixed habitats of grassland, heath and scrub: an analogue of the sites shown in Faden to protect rivers and especially the Broads from diffuse pollution.

Broads
The Broads form a county core area as they contain European protected sites and many other non-designated areas are of national importance for biodiversity. Priorities for habitat creation are fen, reedbed, floodplain grazing marsh and wet woodland as well as mosaics of these habitats. Adaptation to environmental change through climate change is a priority requiring the creation of habitats in middle reaches of the Ant valley. It would be desirable to develop more naturally functioning river systems and wetlands. Restoration of the Upper Thurne catchment to remove ochre and salinity inputs into the Broads is a priority.

Broads fringe
The county priority for heath creation covers the Broadland valley sides in the Upper Thurne and Ant valleys. Priorities are also the buffering of the Broads to reduce diffuse pollution inputs through catchment sensitive farming.

Coastal fen
Priorities for habitat creation include allowing coastal dunes to 'roll-back', wetland creation such as coastal and floodplain grazing marsh, fen and reedbed. Buffering of these dunes through the development of grassland and scrub habitats on their landward side is a priority. In addition buffering of the margins to the Broads (Upper Thurne) with semi natural habitats to reduce diffuse pollution inputs from ochre and salinity is a priority. This is an area potentially subjected to major environmental change in the future.

Coastal plain
The county core area is the soft cliffs which require the continuation or reinstatement of natural processes to operate to ensure its continued development. In addition, a priority would be grassland creation on the cliff top.

Coastal towns and villages
The priority habitats are maritime cliff and slope. This core area requires natural processes to operate or be reinstated to ensure their continued development and grassland creation on the cliff top. A characteristic local habitat that is a priority for creation is acid grassland with scrub, especially gorse.

Rolling coast heath and arable
. The priority for habitat creation is heathland and wood pasture and in particular expansion and linking of existing sites. A characteristic local habitat that is a priority for creation is grassland with scrub and especially gorse. In addition buffering of the Glaven river through catchment sensitive farming and low input grassland is a priority.

Wooded and parkland

Priorities for habitat creation are heathland, especially at Holt, Cromer ridge and North Walsham. The priority should be to expand and link existing sites that are often small and surrounded by farmland or woodland. The woodland in these areas is a relatively connected habitat within the component parts of this character area but linkages through the intervening Rolling Open Farmland to link these wooded areas is a priority. The creation of wood pasture should be investigated..

Drained marsh & Undrained marsh
Priorities would be the establishment or maintenance of natural processes to ensure the continued development of coastal habitats. Habitat creation priorities include all coastal habitats in appropriate locations. Where there is no conflict with the long-term objectives of shoreline management plans then the maintenance and creation of freshwater habitats would be a priority.

Small valleys & Large valleys
Priorities for habitat creation are all types of wetland habitat such as grazing marsh, lowland meadow, fen, reedbed and wet woodland. In the river valleys upriver from the Broads the priority is to create habitats that may be lost due to se level rise in Broadland. In some cases this may mean restoration of sites that have changed into woodland or scrub. In addition the restoration of chalk rivers (Glaven, Stiffkey and Wensum) is a priority and buffering of these by creating low input grassland or semi-natural habitats such as woodland and heath.