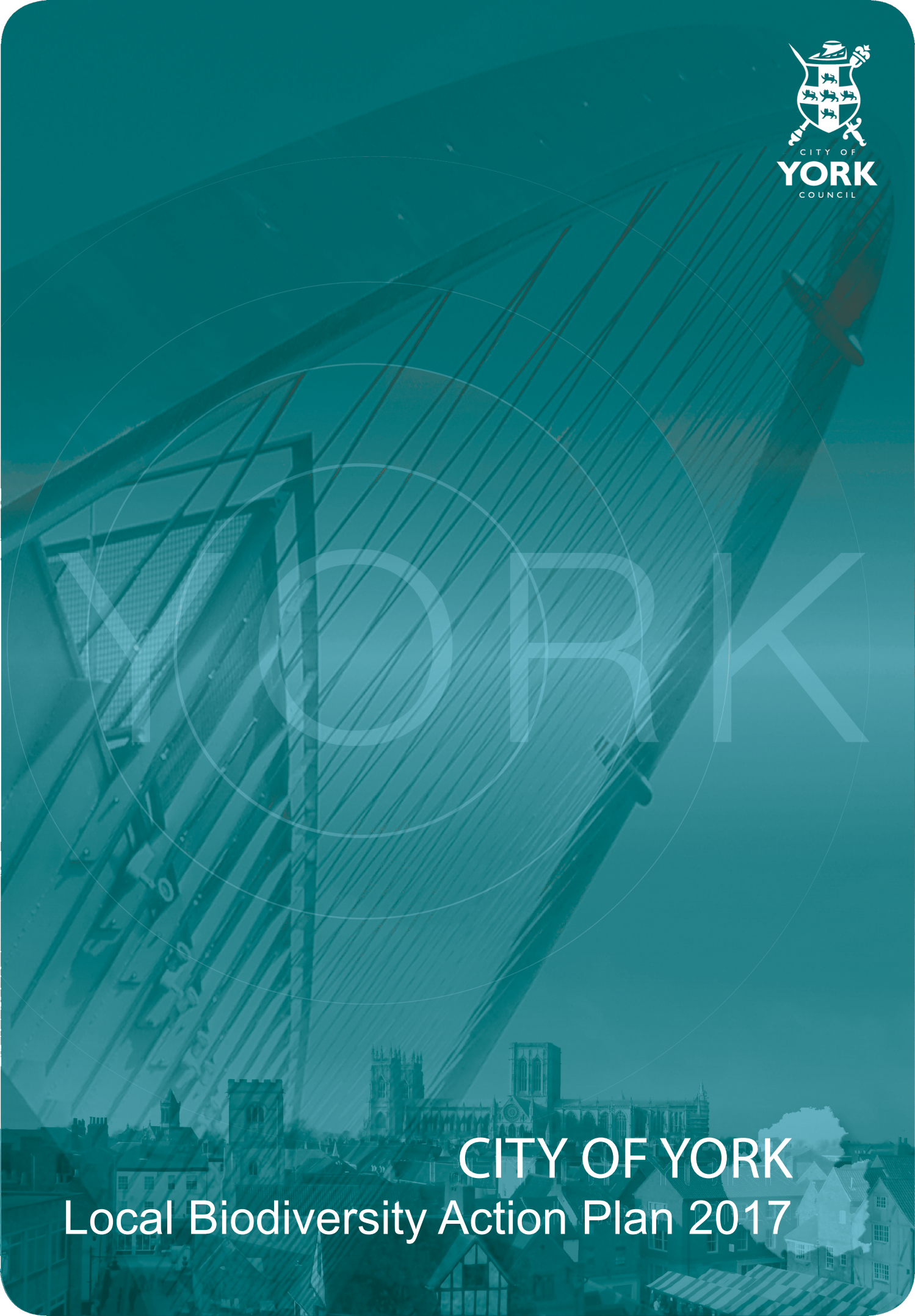

CITY OF YORK
Local Biodiversity Action Plan 2017

City of York Local Biodiversity Action Plan - Executive Summary

What is biodiversity and why is it important?

Biodiversity is the variety of all species of plant and animal life on earth, and the places in which they live.

Biodiversity has its own intrinsic value but is also provides us with a wide range of essential goods and services such as such as food, fresh water and clean air, natural flood and climate regulation and pollination of crops, but also less obvious services such as benefits to our health and wellbeing and providing a sense of place.

We are experiencing global declines in biodiversity, and the goods and services which it provides are consistently undervalued. Efforts to protect and enhance biodiversity need to be significantly increased.

The Biodiversity of the City of York

The City of York area is a special place not only for its history, buildings and archaeology but also for its wildlife. York Minister is an 800 year old jewel in the historical crown of the city, but we also have our natural gems as well.

York supports species and habitats which are of national, regional and local conservation importance including the endangered Tansy Beetle which until 2014 was known only to occur along stretches of the River Ouse around York and Selby; ancient flood meadows of which c.9-10% of the national resource occurs in York; populations of Otters and Water Voles on the River Ouse, River Foss and their tributaries; the country's most northerly example of extensive lowland heath at Strensall Common; and internationally important populations of wetland birds in the Lower Derwent Valley.

There are 10 nationally designated Sites of Special Scientific Interest, three of which are also internationally designated as either Special Protection Areas or Special Areas of Conservation. There is a network of regionally important Sites of Importance for Nature Conservation and four statutorily designated Local Nature Reserves, with a fifth approved for designation.

What is the City of York Local Biodiversity Action Plan?

The Local Biodiversity Action Plan (LBAP) sets out what is special about the biodiversity in the City of York and identifies those plants and animals and where they live that are most at risk in our local area. These are referred to as Priority Species and Priority Habitats. The LBAP describes what can be done to ensure that these parts of our local wildlife are not lost completely.

The habitats and species that have been identified as a priority in the City of York are summarised in the table below. Action Plans with an objective for conservation, key actions and suggestions of who to work with have been produced for all of the habitats and those species where a specific need can be addressed through the LBAP.

Priority Habitats	Priority Species and Groups
• Unimproved Neutral Grassland • Flood Meadow • Wet Grassland • Lowland Heath • Acidic Grassland • Lowland Fens and Swamps • Woodland • Ancient and Species-rich Hedgerows • Traditional Orchards • Farmland • Urban habitats	• Great Crested Newt • Water Vole • Otter • Bats • Aculeate Hymenoptera (Bees and wasps) • Farmland Birds • Tansy Beetle • Tasteless Water Pepper • Marsh Carpet Moth • Waved Water Beetle • Depressed River Mussel • Pond Mud Snail • River Lamprey and Sea Lamprey • Rare Invertebrates • Rare Plants

The LBAP is not a supplementary planning document and does not aim to duplicate or modify existing planning policy and legislation. It does however form part of the evidence base for the Local Plan. As such it should be used in the planning system to highlight important habitats and species and opportunities for biodiversity enhancement in York.

How to get involved

The delivery of the actions identified in the LBAP will depend on working in partnership. The City of York already has a wide range of organisations and groups working to protect conserve and enhance the natural environment. Anyone can get involved by volunteering with will local groups, taking action on their own land or taking part in citizen science projects to record biodiversity.

Further Information

Countryside and Ecology Officer
Economy and Place
City of York Council
West Offices, Station Rise
York, YO1 6GA

Records of wildlife sightings should be sent to the North and East Yorkshire Ecological Data Centre.

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Acknowledgements:

Ian Bowes and Martin Hammond, for the research and production of the original City of York Biodiversity Audit and Action Plan in 1997, which forms the basis of this work.

Martin Hammond, members of the North Yorkshire & York Sites of Importance for Nature Conservation (SINC) Panel and the North and East Yorkshire Ecological Data Centre (NEYEDC) for work on the City of York Biodiversity Audit 2010 and SINC Review 2017.

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1.0 Introduction

About the Local Biodiversity Action Plan

The Local Biodiversity Action Plan (LBAP) has been drawn up to provide information about the wildlife that is found in York; the sites that are of value, its importance both for York and nationally, the current threats and what can and is being done to conserve it.

It comprises information on habitats and species thought to be important in York, their diversity, location and what is being done to conserve and enhance them. It takes forward information from the York Biodiversity Audit 2010 and suggests how we move forward to both conserve and enhance that which makes York special.

Information about individual habitats and sites can be found in the City of York Biodiversity Audit 2010. This audit is based on a comprehensive survey of York carried out between 2008 through to 2010. In 2017 a review of a selection of Sites of Importance for Nature Conservation (SINC) was undertaken which provides an update to the Biodiversity Audit.

How this plan can be used

The LBAP sets a framework for activities which seek to protect, conserve and enhance biodiversity. Where action has been identified this will often need to be delivered in partnership, and suggestions of who this could be involve are made in the individual Action Plans. It will also provide an evidence base to support the Local Plan, policies, strategies and schemes of the City of York Council, as well as other organisations and partnerships in the area.

Table 1: York's Priority Habitats and Species

Priority Habitats	**Priority Species and Groups**
• Unimproved Neutral Grassland • Flood Meadow • Wet Grassland • Lowland Heath • Acidic Grassland • Lowland Fens and Swamps • Woodland • Ancient and Species-rich Hedgerows • Traditional Orchards • Farmland • Urban habitats	• Great Crested Newt • Water Vole • Otter • Bats • Aculeate Hymenoptera (Bees and wasps) • Farmland Birds • Tansy Beetle • Tasteless Water Pepper • Marsh Carpet Moth • Waved Water Beetle • Depressed River Mussel • Pond Mud Snail • River Lamprey and Sea Lamprey • Rare Invertebrates • Rare Plants

What is Biodiversity and why does it matter?

Biodiversity is the huge variety and variability of life that surrounds us; plants, animals and ecosystems. It includes the diversity between species and within species (their genes). An ecosystem is a community of plants, animals and smaller organisms that live, feed, reproduce and interact in the same area or environment.

Biodiversity is everywhere and is the foundation of life on Earth; it is crucial for the functioning of ecosystems without which we couldn't live.

'Ecosystem services' is a term used to describe the services provided by the natural environment that benefit people. The Millennium Ecosystem Assessment identifies four broad categories of ecosystem service which all lead to different benefits:

- **Provisioning services**: we obtain products from ecosystems such as food, fibre and medicines.
- **Regulating services**: we benefit from the results of ecosystem processes such as water purification, air quality maintenance and climate regulation.
- **Cultural services**: we gain non-material benefits from our interaction with the natural environment such as education and wellbeing.
- **Supporting services**: functions that are necessary for the production of other ecosystem services from which we benefit, such as soil formation and nutrient cycling.

Box 1 below provides a basic illustration of the ecosystem services which our local environment can provide, using Fishponds Wood as an example. Fishponds Wood is a predominantly broadleaved plantation woodland with areas of marshy grassland located in Acomb Ward, in the West of the City. The Friends of Fishponds Wood and Beech Grove are a group of volunteers whose primary objective is to maintain the biodiversity of the site.

Regulatory Services	Cultural Services
Fishponds Wood, as an urban woodland will help to regulate the environment within its vicinity. It does this by **providing shade** in warm weather to people, wildlife and properties and by acting as a **wind break**, slowing wind speeds. Woodlands also help to **moderate rainfall events**, delaying and reducing flood events. The trees on this site help to alleviate the negative impact of burning fossil fuels, as trees take in carbon dioxide and store carbon; known as **carbon sequestration**. Carbon will also accumulate where production of plant litter exceeds decomposition and generally under waterlogged, predominantly anaerobic conditions which the fen element of Fishponds Wood will contribute to. The trees on this site will help to improve **air quality** by capturing atmospheric pollutants and can result in reduced exposure for people. Belts of trees between residences and transport routes can absorb sound and therefore Fishponds Wood will contribute to **noise reduction** in the local area. Woodlands are likely to provide habitat for diverse wild **pollinator** communities of importance to trees, crops and other plants. There is potential to improve the hedgerows using native flowering shrubs, the amenity grass and the tall ruderal areas through the introduction of native flowering plants.	Trees and woodlands increase the **diversity of landscape character**. The mature beech trees in the eastern corner relate to the trees on Beech Avenue. Historic maps show these areas previously connected by trees and the area referred to as 'Fishponds Nursery' and so the site forms part of the **local heritage**. Access to local green space such as Fishponds Wood **facilitates exercise** and benefits human health and longevity. **Recreation** delivers both physical and mental health benefits. There is considerable evidence that **contact with nature** can improve **mental and physical health** and feelings of general well being. These effects have been recorded across social boundaries, age and gender. Studies even suggest that access to green spaces can reduce health inequalities. Fishponds Wood is currently under used as an **educational resource**. The educational opportunities which it delivers are suitable for life long learning and as an outdoor classroom for primary and secondary age school children or for cross generational family and community groups. The natural environment and trees can **inspire creativity** and art work; at Fishponds Wood this is demonstrated on site through the carvings in old tree stumps. Fishponds Wood has the ability to provide and enhance **community cohesion** by providing the reason and the means for people to form relationships and operational links at individual, family, group and community level, building friendships and mutual respect. Ability to take part collectively in nature based activities is considered to aid community cohesion.
Provisioning Services	**Supporting Services**
There is the potential to use **timber** products (e.g. harvesting residues, stumps and roots) from Fishponds Wood as fuel for domestic firewood. However as the deadwood element on site is extremely important for the rare invertebrates found here it would only be possible on an ad hoc basis as excess material is produced from any management activities. The springs which arise in the site will contribute to the local **water** cycle.	Woodlands and fens facilitate **soil formation, nutrient and water cycling**, and **oxygen production**; processes essential to life. Fishponds Wood is relatively small but holds a **diversity of plants and animals**, some which are not found else where, such as the cranefly *Phylidorea longicornis* recorded on site in 2009 but not recorded in any other location in Yorkshire. A 'Bug Hotel' and wood pile habitats have been put in place (June 2015), this initiative could be extended.

How is Biodiversity Protected?

There is a range of legal mechanisms available for the conservation of biodiversity. The national suite of legislation for biodiversity arises from the international, European and domestic levels. The main biodiversity legislation is;

International:

- Convention on Biological Diversity 1992.
- The Ramsar Convention 1971 – from which **Ramsar Wetland sites** are designated.

European:

- Council Directive of 2 April 1979 on the Conservation of Wild Birds (79/409/EEC) - under which **Special Protected Areas** are designated for rare and vulnerable birds and for regularly occurring migratory species.
- Council Directive of 21 May 1992 on the Conservation of Natural Habitats and of Wild Flora And Fauna (92/43/EEC) - under which **Special Conservation Areas** are designated for habitat types and species that are those considered to be most in need of conservation at a European level (excluding birds).
- Water Framework Directive (2000/60/EC).

National:

- National Parks and Access to the Countryside Act 1949 - under which **National Nature Reserves** and **Local Nature Reserves** are designated.
- Wildlife & Countryside Act 1981 as amended - under which **Sites of Special Scientific Interest** are designated and many species are protected.
- The Conservation of Habitats and Species Regulations 2017 – enacting the European Directives.
- Natural Environment and Rural Communities (NERC) Act 2006.

Further details regarding other legislation and the contents of the Acts themselves are available on the Internet from a number of websites.

At a Regional level there are Local Sites, which in North Yorkshire (including York) are referred to as Sites of Importance for Nature Conservation (SINC). International and Nationally designated sites have statutory protection in law whilst SINCs are non statutory designations within the Local Authority's responsibilities and they are protected by local and national policy.

Biodiversity and Planning

Published in March 2012, the National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied through the preparation of Local Plans. It replaced Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) notes.

Section 11: Conserving and Enhancing the Natural Environment of the NPPF sets out that the planning system should contribute to and enhance the natural and local environment, including by minimising impacts on biodiversity and providing net gains

where possible, and by recognising the wider benefits of ecosystem services. The policy goes on to say that local planning authorities should set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and Green Infrastructure.

The City of York Local Plan is the document that the Council has to produce in order to guide and manage development and land use within the City. Biodiversity is incorporated into Section 9: Green Infrastructure, particularly Policy GI1 Green Infrastructure and Policy GI2 Biodiversity and Access to Nature, but also Policy GI3 Green Infrastructure Network and Policy GI4 Trees and Hedgerows.

The LBAP is not a supplementary planning document and does not aim to duplicate or modify existing planning policy and legislation. It does however form part of the evidence base for the Local Plan. As such it should be used in the planning system to highlight important habitats and species and opportunities for biodiversity enhancement in York.

In 2013 the British Standards Institution published BS 42020:2013 Biodiversity – Code of Practice for Planning and Development. This British Standard seeks to promote transparency and consistency in the quality and appropriateness of ecological information submitted with planning applications and applications for other regulatory approvals.

Biodiversity Offsetting

Biodiversity offsets are conservation activities designed to deliver biodiversity benefits in compensation for losses through development activities in a measurable way. Biodiversity offsets are distinguished from other forms of ecological compensation by the requirement for measurable outcomes: the losses resulting from the impact of the development and the gains achieved through an offset are measured in the same way. The Government began piloting this approach in 2012 however it is yet to become a widespread approach.

https://www.gov.uk/guidance/biodiversity-offsetting

Biodiversity Action Planning Framework

The UK Biodiversity Action Plan (1992 – 2012) was replaced by the UK Post-2010 Biodiversity Framework (July 2012, JNCC) and is the governments response to the publication of the Convention of Biological Diversity's 'Strategic Plan for Biodiversity 2011–2020'. The UK Post-2010 Biodiversity Framework focuses on a more holistic landscape scale approach to managing the environment.

Habitats and species previously identified in the UK BAP as the most threatened and requiring conservation action have been used to create the statutory lists of Priority Habitats and Species under Section 41 of the Natural Environment and Rural Communities Act 2006.

Natural Environment and Rural Communities Act (2006)

The Natural Environment and Rural Communities (NERC) Act 2006 requires that every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. Conserving biodiversity includes restoring or enhancing a population or habitat. This is more commonly know as the 'biodiversity duty' and applies to all public bodies such as local authorities (including parish or town councils), Internal Drainage Boards (IDB), the NHS Trust and utility companies such as Yorkshire Water.

Section 41 (S41) of the NERC Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. Fifty-six habitats and 943 species of principal importance are included on the S41 list, which is kept under review by Natural England and updated as necessary.

Making Space for Nature - a review of England's Wildlife Sites and Ecological' (2010)

In 2010 an independent review of England's wildlife sites and the connections between them was published, with recommendations to help achieve a healthy natural environment. The review was chaired by Professor Sir John Lawton and is commonly referred to as the 'Lawton Review'.

The report argued that in order to stop the ongoing loss of wild plants and animals we need a step-change in our approach to wildlife conservation, to one of large-scale habitat restoration and recreation to achieve a coherent and resilient ecological network. This was summed up in the words "more, bigger, better (managed) and joined (up)" places for nature.

There are five key approaches which encompass these, and also take account of the land around the ecological network. We need to:

(i) Improve the quality of current sites by better habitat management.
(ii) Increase the size of current wildlife sites.
(iii) Enhance connections between, or join up, sites, either through physical corridors, or through 'stepping stones'.
(iv) Create new sites.
(v) Reduce the pressures on wildlife by improving the wider environment, including through buffering wildlife site.

Part of the Government's response to this review was the publication of the Natural Environment White Paper in 2011.

Natural Environment White Paper (2011)

The Government White Paper 'The Natural Choice: Securing the Value of Nature' (Defra, 2011) emphasises the socio-economic and environmental importance of natural spaces and promotes the benefits of Green Infrastructure.

The White Paper was informed by the findings of the National Ecosystem Assessment, which showed that over 30% of the services provided by the natural environment are in decline, and by the 'Lawton Review' (2010) which found that nature in England is highly fragmented and unable to respond effectively to new pressures such as climate and demographic change.

The establishment of Local Nature Partnerships (LNP) was one of the key initiatives recommended to change how we work on the natural environment (see section below).

Biodiversity 2020: A strategy for England's wildlife and ecosystem services (2011)

Biodiversity 2020 is a national strategy for England's wildlife and ecosystem services; it was published in summer 2011. It sets out the Government's ambition to halt overall loss of England's biodiversity by 2020, support healthy well functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.

Biodiversity 2020 deliberately avoids setting specific targets and actions for local areas because Government believes that local people and organisations are best placed to decide how to implement the strategy in the most appropriate way for their area or situation. However, local projects are particularly likely to be making a key contribution to the strategy if they involve:

- Improving the quality of existing habitats so they are able to better support biodiversity;
- Creating new areas of priority habitat;
- Identifying and managing ways for habitats to be linked together to create new networks for wildlife;
- Managing biodiversity at the scale of whole natural systems and landscapes;
- Engaging people in new ways that increases the number of people who understand and value nature.

A Green Future: Our 25 Year Plan to Improve the Environment (2018)

This document sets out the Government's goals for improving the environment, within a generation, and leaving it in a better state. It covers the broad environment with targets for clean air and water, thriving plants and wildlife, reducing risks from environmental hazards (e.g. flooding), sustainable resource use, enhancing landscape, heritage and engagement, mitigating and adapting to climate change, minimising waste, managing exposure to chemicals and enhancing biosecurity.

Policies relevant to this LBAP include:

- Embedding an 'environmental net gain' principle for development, including housing and infrastructure;
- Designing and delivering a new environmental land management system;
- Supporting larger scale woodland creation, including the development of a new Northern Forest;
- Expanding the use of natural flood management solutions;

- Publishing a strategy for nature that builds on the Biodiversity 2020 strategy (2011);
- Developing a Nature Recovery Network, providing 500,000ha of additional wildlife habitat;
- Creating green infrastructure, including reviewing and updating standards for green infrastructure by summer 2019.

The Government commits to consulting on how it should be held to account for environmental outcomes by a new independent, statutory body. This consultation, to be launched early in 2018, will consider the best way to ensure government fulfils its environmental obligations and responsibilities.

https://www.gov.uk/government/publications/25-year-environment-plan

North Yorkshire and York Local Nature Partnership Strategy (2014)

The North Yorkshire and York Local Nature Partnership (LNP) was established in 2012 following the publication of the Natural Environment White Paper. The vision of the LNP is to see the natural environment of North Yorkshire and York conserved, enhanced and connected across the whole LNP area for the benefit of wildlife, people and the economy. To deliver its vision, the LNP has a series of objectives based around four themes:

- Habitats & Species - we will conserve, restore and create natural sites and strengthen natural corridors for species movement.
- Economy – we will develop connections between nature and the local economy.
- People & Communities – we will increase access to nature to improve public health and increase engagement with local communities on nature projects.
- Climate Change – we will strengthen climate change mitigation and adaptation through natural solutions.

The City of York has been identified as an urban green infrastructure priority area.

http://www.nypartnerships.org.uk/lnp

York Green Infrastructure Strategy (proposed)

Green Infrastructure is defined as a network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities.

Within the City of York Local Plan the council commits to deliver a Green Infrastructure Strategy in line with Policy GI1 Green Infrastructure which aims to conserve and enhance York's landscapes, geodiversity, biodiversity and natural environment.

Single Data List 160-00

The single data list is a list of all the data that local authorities are required to submit to central government departments in a given year. Single Data List (SDL) 160-00

Proportion of local sites where positive conservation management is being or has been implemented, measures the percentage of Local Sites (SINCs) where positive conservation management is being or has been implemented in the previous 5 years.

In 2016 City of York Council reported 59% of sites where positive conservation management is being or has been implemented in 5 years prior to 31/3/2016. This was a 2% increase on the previous year (57% 2014/15).

Research and Publications by the Third Sector

There are a wide range of charitable wildlife organisations such as The Wildlife Trusts, RSPB, Bat Conservation Trust, Buglife and the Fresh Water Habitats Trust just to name a few, that undertake surveys, research and consultations to produce guidance and recommendations on conserving and enhancing the natural environment. This work adds considerably to guidance provided by Government (including Natural England, Forestry Commission and Environment Agency) and helps to further our understanding and approach to the conservation of biodiversity.

2.0 The Biodiversity of York

Overview

The City of York area is a special place not only for its history, buildings and archaeology but also for its wildlife. York Minister is an 800 year old jewel in the historical crown of the city, but we also have our natural gems as well.

There are 10 nationally designated Sites of Special Scientific Interest (SSSI), three of which are also internationally designated as either Special Protection Areas (SPA) or Special Areas of Conservation (SAC). York also supports species and habitats which are of national, regional and local conservation importance including the endangered Tansy Beetle which until 2014 was known only to occur along stretches of the River Ouse around York and Selby, and ancient flood meadows of which c.9-10% of the national resource occurs in York.

Currently 101 sites have been identified as fulfilling the requirements for designation as regional Sites of Importance for Nature Conservation (SINC). The City also has four statutorily designated Local Nature Reserves with a fifth approved for designation, and a series of green corridors identified as part of York's Green Infrastructure, linking sites together.

The Geology of York

Wildlife and landscape are fundamentally influenced by the geology on which they occur. Hard rocks, usually so important, play little part in York's geological and landscape character. Instead overlying soft 'drift' and how it was formed are the key factors.

York is set within the Vale of York and Mowbray Natural area, a low lying tract of land that stretches from the Humberhead levels in the south to the Hambleton Hills in the north. It is bounded by the Yorkshire Dales to the west and the North York Moors and Yorkshire Wolds in the east and links along the Derwent Valley to the Vale of Pickering, another low lying area running east to the sea.

It is an area that was formed during the last ice age when much of the land was covered by ice sheets. As they moved over the land they eroded it and soil and rock were pushed up to form mounds or 'moraines'. The rocks beneath over which they flowed were ground into smaller and smaller particles. As they retreated they left this material as a thick layer of clay, known as drift material and sorting of this by water and wind left gravel and sand, all of which covered the underlying hard geology.

This deposition was not done evenly or uniformly though and shallow depressions were formed where less material was left. As the ice sheets retreated and expanded as climate changed slightly, material was pushed up into features such as moraines, deposits of clay and sand forming ridges across the underlying valley. York is built on one of these moraines because of the drier conditions found there. Streams beneath the ice and flowing from it created ridges along the valley and fans of coarser sand and gravel were deposited where these streams opened out.

All of this diversity of landform created different conditions providing opportunities for the wide variety of wildlife that we see around us.

The Countryside Character of York

The English countryside is a priceless national asset. It is also fundamental to our regional sense of place and provides a unique backdrop to our local identity. To help secure what is special and needs preserving, an assessment of what contributes to the character of the countryside has been completed by Natural England for the Vale of York area. The key characteristics of the Vale of York Character Area are:

- Low lying, generally flat or gently undulating land, crossed by obvious ridges formed by the York and Escrick glacial moraines (a ridge of sand and clay deposited by the retreating ice) left after the last ice age.
- It is crossed by the floodplains of several major rivers, notably the Ouse, Derwent, Foss, Wharfe, Ure and Nidd.
- The River Derwent and the Lower Derwent Valley is nationally important for wildlife and requiring management to reduce diffuse pollution and improve water quality.
- Washland and traditional grazed hay meadows in the river floodplains.
- Medium to large sized open fields intensively farmed for arable crops but with some dairy.
- Low, intermittent hedge field boundaries with sparse scattered hedgerow trees.
- Scattered small woods, some semi-natural ancient woodland with more extensive conifer plantations on sandy soils.
- Important areas of lowland heathland commons on sandy soils.
- Distinctive linear character of settlements often located just above the floodplain 'Ings'
- Historic buildings typically constructed in mottled brick with pantile roofs with scattered, large brick built farmsteads within parklands and designed landscapes.
- Rich historical and archaeological heritage from pre-Roman through to 19th and 20th century.
- Focus on City of York with roads radiating from the city and York Minster providing a focal point visible in long views from the surrounding area.

York in particular is set on the York moraine; clearly visible at Bachelor Hill and Severus Hill, where the River Ouse has cut through the overlying deposits. The soils vary from sand and gravel through to clay and river loams.

Extensive old woodlands are not characteristic of the area, having been largely cut down many centuries ago but there are extensive areas of conifer, mainly on the sandy soils to the south and east of the city. Fields as for much of the Vale of York tend to be large but many of the villages retain the smaller, strip fields associated with the old 'closes' that went with the old houses. Many of these have tall, thick, unmanaged hedgerows.

The floodplain Ings are characteristic of the City and are not only valuable and nationally significant wildlife resources but also provide flood protection and are of significant historical interest in their own right. They could be classed as York's

natural equivalent to York Minister, indeed they used to have very close links to the medieval Church.

The Wildlife Character of York

For a relatively small Local Authority area (27,200ha.) renowned for being a flat, low lying area with, apparently, little physical relief, the biodiversity resource of the City is exceptionally rich. The low lying nature and long and intensive agricultural history result in the primary interest being its wetland and grassland habitats. These are mainly associated with the river corridors, the Ings land or flood meadows. However, there are also remnants of old grasslands outside of the flood plain that are also of significant interest.

Where soils were sandy the primary wildlife interest lies in the old commons. The dry, infertile soils were not improved and were left for grazing and developed as heathland. Later, many were either converted for arable, improved grassland or conifer plantation. These tend to be to the south and east of York but with some interest also in the Acomb area.

Woodland has never, in recent times, been a significant part of York's natural heritage. Much of the woodland was removed very early on and intensive agriculture has kept tree cover limited to hedgerow trees. There are though a few ancient woodland sites that are of interest, mainly in the south and west, whilst birch woodland is associated with many of the heathland sites where they have not been planted with conifers.

Intermixed with these primary wildlife resources, particularly associated with agricultural land, there are ponds, fens and hedgerows that make a significant further contribution to the overall interest. Whilst not extensive in area terms, these do contribute in great measure to the overall biodiversity of York and there protection is therefore integral to nature conservation in the city.

The Resource

York has 10 nationally important Sites of Special Scientific Interest (SSSI) and three of these are internationally important and designated as either Special Protection areas (SPA) or Special Areas of Conservation (SAC).

These include part of the internationally-important Ramsar wetland site of the Lower Derwent Valley, a large lowland agricultural area of farmland and wet grassland which holds large numbers of wading and waterfowl, as well as rare breeding birds, wildflowers and insects. The River Derwent, which forms the eastern boundary of the City and is considered one of the best lowland rivers in eastern Britain in terms of its ecology, whilst Strensall Common is the most northerly lowland heath site in Britain. The other SSSIs are predominantly flood meadow grasslands and wetlands.

The extensive survey work carried out over a number of years for the Biodiversity Audit (2010) has identified a considerable number of local sites, covering a whole range of the habitats that also have significant interest. Using the North Yorkshire Guidelines for Sites of Importance for Nature Conservation Selection to identify

especially important sites, some 76 Sites of Importance for Nature Conservation value (SINC's) have been ratified with a further 21 identified as candidate SINCs and requiring further assessment.

The candidate SINC status reflects the fact that a site has not yet been subject to formal survey and review, for example either due to limited resources or issues with access. These sites are treated as extant SINCs until such a time as they can be surveyed and assessed against the site selection guidelines and are therefore afforded the same weight in local policy.

Table 2: Local, National and Internationally Designated Sites in York.

Designation level	**Designation Type and Site Names**
Local/Regional	Sites of Importance for Nature Conservation (SINC)
	SINCs are found across the York area and represent a comprehensive network of sites of substantive nature conservation value. There are currently 76 ratified SINC and 21 candidate SINCs across York.
	Local Nature Reserves
	Acomb Wood and Meadow Clifton Backies Hob Moor St Nicholas Fields Hassacarr Nature Reserve, Dunnington (awaiting formal designation by Natural England)
National	National Nature Reserves
	Lower Derwent Valley
	Sites of Special Scientific Interest
	Acaster South Ings Askham Bog Church Ings Clifton Ings and Rawcliffe Meadows Derwent Ings Fulford Ings Heslington Tilmire Naburn Marsh River Derwent Strensall Common
International	Special Area for Conservation (SAC)
	Lower Derwent Valley River Derwent Strensall Common
	Special Protection Area (SPA)
	Lower Derwent Valley
	Ramsar (Wetlands of International Importance)
	Lower Derwent Valley

The Government website MAGIC (www.magic.gov.uk) provides an authoritative source of mapping and link to information for national and international designated

sites. Information on local sites is held by the North and East Yorkshire Ecological Data Centre (NEYEDC) and City of York Council.

Habitats previously identified in the UK BAP as the most threatened and requiring conservation action and now part of the statutory lists of Priority Habitats under Section 41 of the NERC Act (2006) have been mapped at a national level by Natural England, although not verified at a local level, and are available on the above website.

This though is only a part of the wildlife resource in York, other important assets include:

- Ancient flood meadows; some 9-10% of the national resource occur in York.
- Other species rich grasslands, mainly old neutral, wildflower rich hay meadows and grazing pasture. Within York, these are rarer than the nationally rare flood meadows.
- Lowland heath; 1% of the national resource along with associated acid grasslands, is found in York.
- Woodlands and scrub; In York, the extent of woodland is low and the majority is secondary conifer woodland of more limited conservation interest. There are though a few old woodland sites dating from the medieval period. Scrub is similarly limited both in extent and woody species diversity, it can though be very important for insects and birds.
- Hedgerows form the natural corridors for many species of wildlife through the countryside and into the city itself. These vary from recent species poor hedgerows through to big, old hedgerows with 10 or more species and dating possibly even from the Roman period.
- Ponds, marshes and fens supporting up to five species of amphibians including Great Crested Newt (*Triturus cristatus*), many flowers, dragonflies and other insects.
- The City also supports some of Britain's rarest breeding birds such as Corncrake (*Crex crex*), Black-necked grebe (*Podiceps nigricollis*), Ruff (*Philomachus pugnax*) and Spotted Crake (*Porzana porzana*).
- There is a good Otter (*Lutra lutra*) population, occurring on both the River Ouse and the River Foss.
- Numerous nationally-rare and highly localised invertebrates, including the Tansy Beetle (*Chrysolina graminis*), Waved Water Beetle (*Agabus undulatus*) and Nomad bees (*Nomada sp.*).
- Plant life includes such rarities as elongated sedge (*Carex elongata*), marsh fern (*Thelypteris palustris*), bog rosemary (*Andromeda polifolia*), marsh gentian (*Gentiana pneumonanthe*) and pillwort (*Pilularia globulifera*).

Invasive Non-Native Species

A non-native species is any which has been introduced (i.e. by human action) outside its natural past or present distribution. An invasive non-native species is any non-native animal or plant that has the ability to spread causing damage to the environment, the economy, our health and the way we live.

Whilst the Romans are better known for their roads and towns, they also introduced rabbits (*Oryctolagus cuniculus*) and ground elder (*Aegopodium podagraria*) over 2000 years ago, both for food. Many people now consider these a problem, especially if you are a gardener or farmer. Today, some of our native habitats and species are threatened by new invasive, non-native plants and animals that spread quickly and are persistent and difficult to eradicate. In 2015, there were nearly 2,000 non-native species established in Great Britain, most of which are terrestrial (c.1,800) with smaller numbers in the marine and freshwater environments (c.80 in each).

Invasive non-native species have an impact on native biodiversity in a number of ways, such as displacing or preying upon native species, dominating habitats or by introducing new diseases or parasites. Their impacts can take decades to become apparent but once established they are likely to cause long term impacts. About 10-15% of non-native species established in Great Britain cause significant adverse impacts.

The most significant invasive non-native species identified in York are;

- Himalayan Balsam (*Impatiens glandulifera*)
- Japanese Knotweed (*Fallopia japonica*)
- Giant Hogweed (*Heracleum mantegazzianum*)
- Australian Stonecrop (*Crassula helmsii*)
- Water Fern (*Azolla filiculoides*)
- Floating Pennywort (*Hydrocotyle ranunculoides*)
- Common Ragwort (*Senecio jacobaea*)
- American Mink (*Neovison vison*)
- Signal Crayfish (*Pacifastacus leniusculus*)
- Sudden Oak Death fungus (*Phytophthora ramorum*)
- Alder Root Disease fungus (*Phytophthora*)
- Ash die back fungus (*Chalara fraxinea*) – first confirmed from Ordnance Survey grid squares SE54, SE55, SE65 in 2015/16 (Forestry Commission).

At a national level Defra has published the Great Britain Non-Native Species Strategy (updated 2015) led by the Non-Native Species Secretariat, and maintains a website providing tools and information for those working to support the strategy.

http://www.nonnativespecies.org/home/index.cfm

The overarching aim of the strategy is to minimise the risk posed by, and reduce the negative impacts of, invasive non-native species in Great Britain. It follows the Convention on Biological Diversity's hierarchical approach of; prevention, followed by early detection and rapid response and finally long-term management and control.

Building awareness and understanding is also an important element and several national campaigns have been developed to engage the public such as '*Check, Clean, Dry'* aimed at water users who may unknowingly be helping to spread invasive species from one water body to another in equipment, shoes and clothing.

City of York Council is working to map and treat invasive non-native species on their land where possible, although currently this is done on an 'ad-hoc' basis. In some areas such as along the river corridors the frequency of flooding means that a coordinated approach is needed. The River Foss corridor is a good candidate for this.

In West Yorkshire a partnership between Yorkshire Wildlife Trust, Yorkshire Water and the Environment Agency has established the Yorkshire Invasive Species Forum (http://www.ywt.org.uk/invasives). This is working strategically to tackle the control of invasive non-native species, primarily Himalayan Balsam and Japanese Knotweed. It engages the public in recording and monitoring and works with private landowners to coordinate eradication work. Subject to funding, there is potential for this to be expanded into North Yorkshire, including York.

Actions towards reducing the negative impacts of invasive non-native species which could be taken in partnership in York include:

- Create and maintain an evidence base - record and map the distribution of key invasive non-native species,
- Raise awareness,
- Influence the right kind of behaviours to avoid the spread, and
- Undertake systematic treatment in defined geographical areas such as the River Foss catchment.

Climate Change

All plants and animals require particular conditions in which to live; any change to these conditions can and will affect local wildlife dramatically. Some species are more selective than others and therefore are far more susceptible to change. A few degrees in temperature change may not seem very much but we are already seeing changes in the distribution of some species; some decreasing as they are pushed north, some increasing as they move up from the south. Biodiversity also has an important role in climate change adaptation and mitigation. For example, soils, forests and oceans hold vast stores of carbon.

The City of York Climate Impact Profile (CYCIP) 2010 projections predict that by 2050 the City of York will be experiencing the following principal climate effects;

- Increased frequency of extreme rainfall events;
- Changes in seasonal rainfall distribution causing drier summers (May, June and July) and wetter winters (November, December and January);
- Increased average daily temperatures (2.5℃);
- Increased frequency of heatwaves.

The Climate Change Framework and Climate Change Action Plan (2010 – 2015) developed by City of York Council and partners commits the city to 40 per cent reduction in carbon emissions by 2020. Regardless of this ambition, how habitats and ecosystems are managed will have a significant effect on their ability to respond to a changing climate, as well as their ability to keep providing the ecosystem services we rely on. The actions identified in the LBAP have an overarching objective of contributing to addressing this.

Habitat Networks and Green Infrastructure

Historically the main emphasis of wildlife conservation has been on individual species or sites known to have wildlife interest either because of the habitats or the species present. However, sites do not occur in isolation and are not independent of each other. Their location in relation to each other is just as important, providing opportunities for wildlife to move across an area. In this context, sites of lower individual interest can have their value enhanced through their position linking other sites together.

This network of wildlife sites is one aspect of York's Green Infrastructure. Retaining and enhancing this infrastructure network is key to ensuring that York's biodiversity is maintained and is resilient enough to cope with the uncertainties and vagaries of both a changing climate and a changing environment. The ability for wildlife to adapt and move through York is critical not only to the City but regionally and nationally as well.

In 2009 a series of strategic Green Corridors were identified through Natural England's Yorkshire & Humber Green Infrastructure Mapping Project, which aimed to link together to create an overall structural network for the region. For York this work was consolidated in the Local Development Framework (LDF) Core Strategy Green Corridor Technical Paper (2011).

These corridors are not identified exclusively for wildlife however, and they accommodate a whole range of Green Infrastructure functions such as flooding, recreation and heritage. Depending on how many functions were present, a category for each corridor was determined. This was based on the number of functions present, the corridor size and local knowledge of initiatives and likely opportunities for interventions. The strategic approach to the work meant that the functions provided within the corridor had to be significant to be considered in the corridors. The corridors are hierarchical and have been identified as being of;

i) **Regional** importance, where they link with corridors in neighbouring authorities.
ii) **District** (City) importance, where they provide links across and within the City and to other corridors.
iii) **Local** importance, where they link areas within a particular part of the city.

In terms of wildlife, these corridors are not necessarily contiguous but may consist of a series of open space 'stepping stones' separated by otherwise less hospitable habitat.

Planning for Green Corridors

The aim of developing a strategic Green Corridor Network, which represents a consensus of where there is a concentration of Green Infrastructure, is to help target enhancement to where it is likely to be the most effective. They are not meant to be exhaustive or be used as fixed boundaries.

The network does not have to be continuous open space but can be a series of sites or stepping stones. Even in the countryside, not every habitat that wildlife is adapted to exists as continuous network. The essential element is that the spaces are not so far apart as to reduce the ability of species to move between them. As such, the aim of enhancing any corridor is to improve the ability of wildlife to move from one site to another. This can be by improving the quality of existing sites, linking sites together with a more wildlife friendly (more porous) corridor or providing additional sites in between to reduce the distances that need to be covered.

Such new sites need not necessarily be large or on the same level. Especially within the urban setting, individual new green infrastructure resources could be incorporated at height, for instance as part of a green roof or wall. This would still aid the overall continuity of the corridor whilst accommodating other development needs.

Neither is it necessary or even practicable to create all habitats in every corridor, although some habitats are ubiquitous across the whole of the York area. Each corridor does in fact have its own suite of habitats that are suitable within its confines. For instance the heathland corridors are best suited for establishing acid grassland, heath, acid woodland etc. They would not be suitable for establishing neutral grassland sites. Ponds and wetlands on the other hand could be provided wherever the ground conditions are suitable.

The aim would always be to establish new habitats suited to the area and the needs of the corridor in which they are found. At the same time other corridor functions should be considered in line with other priorities. The proposed production of a City of York Green Infrastructure Strategy will go into greater detail of this multi-functional approach.

There is further work to be undertaken to refine the Green Corridors for biodiversity by mapping the distribution of Priority Habitats (as defined under s41 of the Natural Environment and Rural Communities Act, 2006). This will facilitate a more strategic approach to conserving habitats at a landscape-scale and if undertaken a regional level, across local authority boundaries. It would also enable specific targets for this LBAP to be set and monitored.

York's Green Corridors

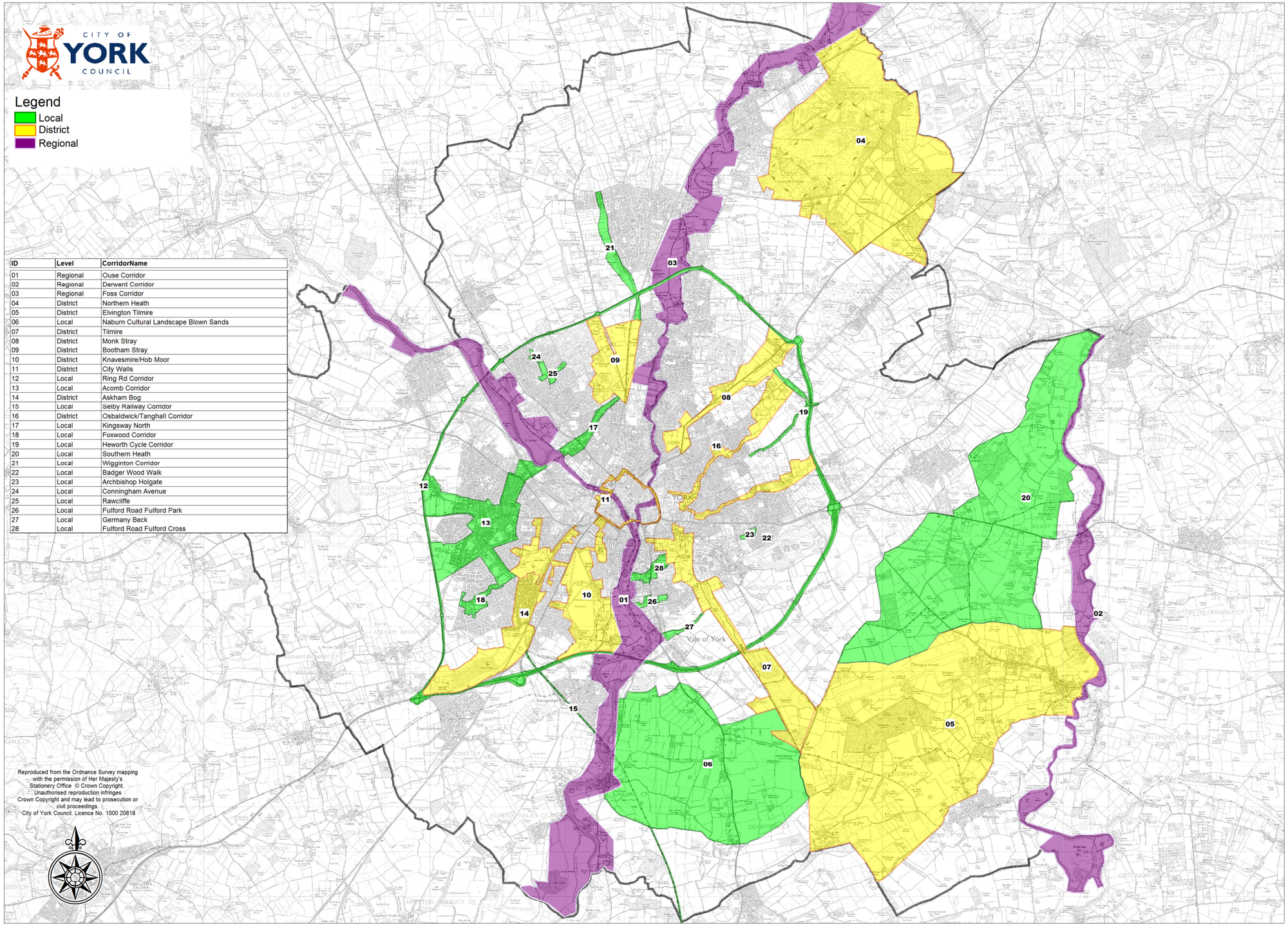
The network of Green Corridors essentially comprises a series of radial green corridors emanating from the City Centre out to the surrounding countryside like the spokes of a wheel. These are connected by two circular rings associated with the Ring Road and the City Walls. There are also a number of short links between individual corridors that together make a reasonably coherent network. The corridors identified for the City of York area are shown in Table 3 below and mapped in Figure 1.

Corridors have a number of functions and each corridor will vary as to what these are and to the extent of each interest, however, all will have a degree of value in wildlife terms. The reasons for categorising the corridors as indicated below are given in more detail in Appendix A. This information was originally presented in the City of York Local Development Framework (LDF) Core Strategy Green Corridor Technical Paper (2011).

Table 3: Green Corridors identified within the City of York area.

Corridor No.	Corridor Level	Corridor Name	Primary Function
01	Regional	Ouse Corridor	Nature conservation and flood alleviation
02	Regional	Derwent Corridor	Nature conservation and flood alleviation
03	Regional	Foss Corridor	Nature conservation and flood alleviation
04	District	Northern Heath	Nature conservation
05	District	Elvington Tilmire	Nature conservation
07	District	Walmgate/Tilmire	Nature conservation
08	District	Monk Stray	Open space
09	District	Bootham Stray	Nature conservation and open space
10	District	Knavesmire/Hob Moor	Nature conservation and open space
11	District	City Walls	Archaeology and nature conservation
14	District	Askham Bog	Nature conservation
16	District	Osbaldwick/Tanghall	Nature conservation and open space
06	Local	Naburn Cultural Landscape Blown Sands	Archaeology
12	Local	Ring Road Corridor	Transport and nature conservation
13	Local	Acomb Corridor	Nature conservation
15	Local	Selby Railway Corridor	Cycleway and nature conservation
17	Local	Kingsway North	Transport and nature conservation
18	Local	Foxwood Corridor	Nature conservation and open space
19	Local	Heworth Cycle Corridor	Cycleway and nature conservation
20	Local	Southern Heath	Nature conservation
21	Local	Wigginton Corridor	Nature conservation
22	Local	Badger Wood	Open space
23	Local	Archbishop Holgate	Open space
24	Local	Blue Beck (Conningham Avenue)	Open space
25	Local	Blue Beck (Rawcliffe)	Open space
26	Local	Fulford Park	Open space
27	Local	Germany Beck	Flood alleviation and nature conservation
28	Local	Fulford Cross	Open space

Figure 1: Green Corridors



ID	Level	CorridorName
01	Regional	Ouse Corridor
02	Regional	Derwent Corridor
03	Regional	Foss Corridor
04	District	Northern Heath
05	District	Elvington Tilmire
06	Local	Naburn Cultural Landscape Blown Sands
07	District	Tilmire
08	District	Monk Stray
09	District	Bootham Stray
10	District	Knavesmire/Hob Moor
11	District	City Walls
12	Local	Ring Rd Corridor
13	Local	Acomb Corridor
14	District	Askham Bog
15	Local	Selby Railway Corridor
16	District	Osbaldwick/Tanghall Corridor
17	Local	Kingsway North
18	Local	Foxwood Corridor
19	Local	Heworth Cycle Corridor
20	Local	Southern Heath
21	Local	Wigginton Corridor
22	Local	Badger Wood Walk
23	Local	Archbishop Holgate
24	Local	Conningham Avenue
25	Local	Rawcliffe
26	Local	Fulford Road Fulford Park
27	Local	Germany Beck
28	Local	Fulford Road Fulford Cross

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Priority Habitats

Identification of York's Priority Habitats

A number of criteria have been used to identify priority habitats for this LBAP. These include;

i. Habitat that is of principal conservation concern as set out in Section 41 of the Natural Environment and Rural Communities Act 2006, and formerly the UK Biodiversity Action Plan.
ii. Habitat features of international concern where vegetation types are identified as being largely confined to the British Isles.
iii. Habitat that is in serious decline at a national and local level.
iv. Habitat that is important for scarce and threatened species.
v. Habitat for which the City of York is of national importance.

Priority habitats have been identified as those meeting three or more of the above criteria. These are:

- Unimproved neutral grassland, flood meadow and wet grassland
- Lowland heath and acidic grassland
- Fens and swamps
- Ponds

Other habitats that are considered important with the York context are:

- Ancient and Species-rich Hedgerows
- Woodland
- Traditional Orchards
- Farmland
- Urban Habitats

National Vegetation Classification:

Since the 1980s, the National Vegetation Classification (NVC) has become the standard way for describing the vegetation found in UK habitats. It is based on the plant species identified and their relative abundance. One or two letters identify the broad vegetation type followed by a number for specific plant communities.

For example 'MG5' is unimproved neutral grassland characterised by the presence of Crested Dog's-tail and Common Knapweed and 'W10' is Oak Woodland.

This categorisation has been used within York. However, whilst it is extremely valuable, it is based on relatively limited survey data across the whole country and the factors that influence the presence of plants on a local level are very variable; from geology to soil type to rainfall to management history. This means that in the field, the plant composition may not exactly match these categories and will grade from one community type into another. If a site does not fit easily into an NVC habitat category, it should not be considered in any way detrimental to its overall value in the local context.

HABITAT ACTION PLANS

Unimproved Neutral Grassland, Flood Meadow and Wet Grassland

1.0 Introduction

A broad range of unimproved (species-rich) traditionally managed grasslands occur on neutral clays and alluvial substrates across the Vale of York. The vast majority of these grassland types are relatively dry during the summer months thought they may flood in the winter. They do however grade into the wet grassland communities that remain moist even in summer. The traditional management of these grasslands was based around grazing or mid to late summer hay cutting, followed by late summer/autumn grazing.

Such agriculturally unimproved meadows and pastures are an increasingly scarce resource in lowland Britain, mainly as a result of modern farming methods.

2.0 Legal Status

'Lowland Meadows' and 'Coastal and Floodplain Grazing Marsh' are habitats of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

The Environmental Impact Assessment (Agriculture) (England) Regulations 2017 protect uncultivated land and semi-natural areas from being damaged by certain types of agricultural work, and prevent the restructuring of rural land holdings from having a significant environmental impact. The regulations cover projects to increase agricultural production of uncultivated land or semi-natural areas by physical or chemical means (e.g. increased use of fertiliser, draining land, ploughing) and restructuring features of the land (e.g. adding or removing field boundaries, earth or other materials). If the work or project is likely to have a significant impact consent will be required from Natural England.

3.0 The Resource

There are a large number of different grassland types within the UK, reflecting local variations in physical features and climate, as well as the way in which they are managed. Within York the following moderately rich (mesotrophic) NVC grassland communities are known to occur:

- **MG1 dry tall-herb grassland**,
- **MG4 floodplain meadow**,
- **MG5 lowland hay and pasture**, and
- MG6 improved permanent grassland.

Wet grassland communities known to occur within York are:

- **MG8 flood pasture**,
- MG9 damp pasture,
- MG10 rush pasture,
- **MG11 and MG13 inundation grassland**.

Examples in York include;

- Clifton Ings and Rawcliffe Meadows SSSI for MG4 and MG8 grassland.
- Hessay Churchyard SINC for MG5 and MG1 grassland.
- Hob Moor for MG6 grassland.
- Acomb Wood Meadow SINC for MG9 grassland.

Neutral Grassland

The MG1 False Oat-grass (*Arrhenatherum elatius)* grassland is typical of many roadside situations but also occurs on a range of other uncut and un-grazed sites throughout the area. Although often floristically poor, the structure of this tall grassland community is of high value for invertebrates and some examples can be floristically species-rich, particularly where there is a calcareous influence. These grasslands can grade/revert into other grassland types such as MG5 depending on the extent of management

Dry, neutral grassland of the MG5 (unimproved) or MG6 (semi-improved) communities are characterised by Crested Dogs-tail (*Cynosurus cristatus)* and a broad range of other species such as Common Knapweed (*Centaurea nigra)*, Ox-eye Daisy (*Leucanthemum vulgare)*, Red Clover (*Trifolium pratense),* Meadow Vetch *(Lathyrus pratense)* and Bird's-foot Trefoil (*Lotus corniculatus*), as well as locally uncommon species such as, Adders-tongue (*Ophioglossum vulgatum),* Yellow Rattle (*Rhinanthus minor*) and Common Spotted Orchid (*Dactylorhiza fuchsii)*. Additionally, some sites have developed on mildly calcareous substrates (chalky boulder clay) or more acid, sandy substrates and have developed richer swards with species such as Cowslip (*Primula veris)*, Lady's Bedstraw (*Galium verum)*, Yellow Oat-grass (*Trisetum flavescens)*, Betony (*Betonica officionalis)*, Pyramidal Orchid (*Anacampsis pyramidalis)* and Common Quaking-grass (*Briza media)*.

In the flood plains of the Ouse and Derwent, the freer draining alluvial soils support the nationally rare MG4 floodplain meadow community. These grasslands are characterised by the presence of Greater Burnet (*Sanguisorba officinalis)* and Meadow Foxtail (*Alopecurus pratensis*) but also support many of the species present in the MG5 community as well as those more tolerant of periodic flooding such as Meadowsweet (*Filipendula ulmaria*). An unusual aspect of flood meadow grasslands in York is the presence of Meadow Crane's-bill (*Geranium pratense*), rarely recorded in flood meadows further south. Also several woodland indicator species such as Wood Anemone (*Anemone nemorosa*) can occasionally be found. These grasslands grade into the wet grassland, grazing marsh communities.

Old Meadows and Pastures

Species-rich grassland on better drained soils occurs mainly in small enclosed fields in the City of York, often bearing the ridge-and-furrow imprint of pre-enclosure cultivation. The characteristic plant community is MG5 Crested Dog's-tail - Common Knapweed grassland. Typical herbs include common Bird's-foot Trefoil, Betony (*Stachys officinalis*), and Pignut (*Conopodium majus*).

Old meadow grassland has virtually vanished from the farmed countryside of the Vale of York as a result of modern, intensive, agricultural methods. Most examples in the City of York now survive as small, unimproved fields on the outskirts of settlements. Abandonment of traditional management by hay making or grazing is

also a problem, resulting in the encroachment of coarse grasses such as False-oat grass and Cock's-foot (*Dactylis glomerata*).

Nationally, it is estimated that over 98% of the old wildflower grasslands have been lost in the last 80 years and there is perhaps 12,000ha left. The total known City of York resource for old meadow grassland is estimated to be approximately 90 ha of diverse sward left with a further 126 ha of moderately diverse sward. The majority of the most floristically diverse grassland is designated as SINC but there is very little under statutory protection within existing SSSIs. Losses between 1993 and 1996 amounted to nearly 30% of the previous known total. This was mainly as a result of urban development in the former Southern Ryedale. This is arguably one of the most threatened habitats in lowland Yorkshire.

Flood Meadows

Winter-flooded hay meadows (Ings) are a highly characteristic feature of the River Ouse and River Derwent flood plains. Where these have escaped modern agricultural 'improvement', the typical plant community is MG4 Meadow foxtail-Great burnet grassland (MG4). These meadows have a very long history of traditional management, in some cases possibly dating back to the Roman period. During the medieval period a complex system of management evolved based upon private rights to harvest hay from strips and common rights of aftermath grazing.

Due to a combination of historical and bio-geographical factors, this type of flood meadow is almost unique to lowland eastern England. The City of York holds 294ha of flood meadow grassland. Not all of this is however MG4 Meadow foxtail-Great burnet grassland, some grades into other wet grassland habitats. It is thought though that York holds around 8% of the national MG4 grassland resource. The Lower Derwent Valley, part of which lies within the City boundaries, holds the most extensive area of floristically-rich flood meadow in Britain. This interest is shared with the East Riding of Yorkshire and Selby.

The hay meadows in the Lower Derwent Valley form part of a complex of winter-flooded grasslands which support internationally important populations of wintering waterfowl and nationally important concentrations of breeding waders and wildfowl. Species of conservation importance associated with grassland in the Lower Derwent Valley include Corncrake, Quail (*Coturnix coturnix*), Ruff, Brown Hare (*Lepus europaeus*), Narrow-leaved Water-dropwort (*Oenanthe silaifolia*) and the click beetles *Oedostethus quadripustulatus* and *Selatosomus nigricornis*.

Wet Grasslands

Wet grasslands are largely confined to the main river flood plains of the City of York and often grade into flood meadow, fen or swamp communities. The largest concentration of wet grassland within the City is at Wheldrake Ings. The City contains an estimated 63 ha of agriculturally-unimproved wet grassland including 1% of the national resource of Creeping bent - Marsh foxtail grassland.

Wet grassland communities characterised by annual plants such as Bur-marigolds (*Bidens spp.*) and Creeping Yellow-cress (*Rorippa sylvestris*) occur in habitats which are flooded for much of the year but dry out rapidly in late summer. Such

communities are within local semi-natural floodplain systems, and important examples can be found at Wheldrake Ings.

Wet grasslands have seriously declined in the City of York as a result of land drainage and agricultural improvement; although no quantitative estimate of habitat loss is available. Areas of grazing marsh at Fulford Ings have declined in wildlife interest as a result of neglect or over-grazing.

Wet grasslands in the City of York are of great entomological interest, supporting insects such as the rare ground beetle *Dromius sigma*, the nationally-scarce mirid bug *Capsus wagneri* and the Dentated Pug moth (*Anticollix sparsata*).

Within the Lower Derwent Valley, wet grasslands support internationally-important populations of wintering waterfowl and nationally-important concentrations of breeding waders. By contrast, characteristic breeding birds of wet grasslands such as Redshank (*Tringa tetanus*) and Snipe (*Gallinago gallinago*) have virtually disappeared from the Ouse floodplain. Damp semi-improved grassland and poor fen at Heslington Tilmire SSSI are of ornithological interest with breeding Redshank, Snipe, Lapwing (*Vanellus vanellus*) and Yellow Wagtail (*Motacilla flava*).

Other species also associated with wet grassland include Tasteless Water-pepper (*Persicaria mitis*), Marsh Carpet moth (*Gagitodes sagittata*), *Panagaeus cruxmajor* (a ground beetle), *Agabus uliginosus* (a diving beetle), *Hydrothassa hannoveriana* (a leaf beetle), *Omphiscola glabra* (a pond mud snail), Bittern (*Botaurus stellaris*), Whooper Swan (*Cygnus cygnus*), Marsh Harrier (*Circus aeruginosus*), Hen Harrier (*Circus cyaneus),* Water Rail (*Rallus aquaticus*), Spotted Crake (*Porzana porzana*), Black-tailed Godwit (*Limosa limosa*), Short-eared Owl (*Asio flammeus*), Reed Bunting (*Emberiza schoeniclus*) and Water Vole (*Arvicola amphibious*).

4.0 Management

Most types of lowland grassland, in the absence of management by cutting, grazing or burning, would undergo vegetation change resulting in the development of scrub and woodland.

Natural England (2013) advises that in order to maintain a species-rich sward, each year's growth of vegetation must be removed. Without such management the sward becomes progressively dominated by tall and vigorous grasses which, together with an associated build up of dead plant matter, suppress less vigorous species and reduce the botanical diversity of the site.

In neutral hay meadows, this is traditionally achieved by closing the fields to stock in the autumn and cutting the following year's resultant growth as hay, usually in early July. The precise timing of the cut depends on local factors, including past management and the prevailing weather conditions, but should be after ground-nesting birds have fledged their young and any short-lived, characteristic plants have set seed. The aftermath is then grazed in late summer/autumn. Low density aftermath grazing is important for maintaining a species-rich sward, both through controlling competitive grasses and through hoof-prints providing suitable sites for seedlings to establish.

For the damper meadows, regular and careful maintenance of surface drainage including ditches and drains may be necessary to prevent adverse changes in the plant species composition of the sward. The Floodplain Meadows Partnership has produced a technical handbook for the management of grassland available to download from their website http://www.floodplainmeadows.org.uk/floodplain-meadow-technical-handbook

5.0 Threats

Semi-natural grassland has greatly declined in area since 1945, with losses of around 90% in the UK's lowlands, although in the last decade this loss has slowed sustainably. Loss was largely through intensification of agriculture and the spread of built development.

Locally, two-thirds of meadowland on the Ouse Ings has either disappeared or suffered serious loss of wildlife interest during the past 150 years. Similarly in the early 1990's, 30% of the then known wildflower meadow resource was thought to have been lost in southern Ryedale, in part to the development of York.

Threats from intensification of agriculture include ploughing, reseeding, herbicide spraying, and fertiliser applications. However, overgrazing, under grazing and neglect have all had, and continue to have, a significant impact as well as loss to development.

Under grazing and neglect are a significant problem for both meadows and flood meadows, reducing floral diversity as more aggressive species dominate the sward. However, it should be noted that whilst rank, unmanaged swards can be detrimental to the wildflower interest, they can be exceptionally valuable for invertebrates and this should be accommodated in any management proposals for sites.

For old meadows this is primarily because the majority of the remaining fields are small and in independent ownership. This has contributed to their retention in the past but, because it is now more difficult to get hay cropping and grazing on such small fields, they are now often either neglected or turned over to overgrazed horse pasture. Such meadows also tend to be close to existing settlements and are therefore most likely to be considered for further development.

For flood meadow grassland, neglect can come about as a result of climate change. Currently, there is increasing summer flooding and this is forecast to increase over the coming century. This can destroy their value as hayfields and make grazing problematic. In the past, adjacent un-flooded pasture land was available for stock to move to in times of flood. Much of this adjacent land has been converted to arable and there is therefore no land available in times for stock when it does flood. This, coupled with the reduced market value of beef, means that the old flood meadows which cannot be converted to arable are simply left.

In addition there is also an increasing need for flood storage. This means that old flood meadow land is potentially valuable for controlled flood storage and this can, if carried out in summer, be extremely detrimental to the existing wildlife interest of these meadows.

Other potential threats to flood meadow grassland include marina developments, mining subsidence and other hydrological changes, Eutrophication of some meadows on the Ouse floodplain is a serious problem, resulting in replacement of herb-rich communities by grass-dominated swards.

Eutrophication through atmospheric pollution depositing substantial quantities of nitrogen is also considered is also thought to be an increasing problem as is the deposition of dog faeces and urination on urban grassland sites.

Road verges are particularly vulnerable to changes whether management or development related. Long lists of factors adversely affecting road verges have been recorded. These include road improvement schemes, conversion of verge to hard surfaced footpaths or cycle paths, essential cable and pipe laying work, modification through introduction of new roadside ditch systems or widening of existing roadside drainage ditches, encroachment on verge by adjacent landowner (including ploughing of the verge), leachate run-off from adjoining agricultural land, spray drift from adjacent fields, salt runoff and, not least management.

This latter impact can be through lack of cutting and associated scrub encroachment, inappropriate cutting regimes and timing of cutting, notably cutting and leaving the cuttings on site during the growing season and even in some cases hedge and tree planting.

The factors currently affecting neutral grassland reduce both the quality and quantity of the habitat, and such fragmentation brings greatly increased risk of species extinctions in the small remnant areas. Many of the county's remaining areas of neutral grassland are so small and isolated that chance extinctions due to unfavourable conditions, even if temporary, mean that the sites' diversity becomes impoverished over time. The less mobile faunal and floral species are particularly at risk.

Ancient Ings meadows are the product of consistent management over many centuries and cannot be replaced but there may be limited potential for re-establishing similar grasslands on the Ouse and Derwent floodplains. Ings grasslands which have been degraded by adverse management or neglect can be restored by sympathetic management provided they have not been frequently ploughed out and reseeded or regularly fertilised.

6.0 Potential for Enhancement

In the City of York there is some potential for restoring grassland habitat both on Ings grasslands and old pastures which have been degraded by adverse management or neglect. These can be restored by sympathetic management provided they have not been ploughed out and reseeded or regularly fertilised for any length of time.

Ancient Ings meadows are the product of consistent management over many centuries and cannot easily be replaced but there may be limited potential for re-establishing similar grasslands on the Ouse and Derwent floodplains. Equally it can be possible to re-establish new grasslands on arable land provided the nutrient

levels are not too high. Such work is however time consuming and requires considerable work over a period of years. Such grasslands will have floristic interest but will take time to establish and will take time for other interests, for instance insects, to develop.

7.0 Current Action

Flood meadow grassland features prominently in the SSSI series in York with the majority of significant areas being nationally designated. These and the condition of neutral grassland SSSIs are regularly monitored by Natural England.

The majority of the best old meadows have a measure of protection through their designation as part of the local SINC network. City of York Council actively manages a number of grassland SINCs, and other sites for their conservation interest. Notably this includes Hob Moor, Walmgate Stray, Bootham Stray and Clifton Backies, Breckes Lane Meadow, Middlethorpe Crematorium Field, Acomb Meadow, Danebury Court, Hessay Churchyard and parts of the Knavesmire.

City of York Council also has responsibility for the management of road verges and in rural areas the cut is limited to a 1m strip adjacent to the carriageway twice a year, leaving the remaining width to grow naturally. In the local authority area there are four road verges designated as SINCs because of the species-rich grassland they support. There is an opportunity to explore managing more road verges for wildflowers.

The protection, enhancement and creation of neutral grasslands within the City are sought through the planning system.

A significant contribution has been made by various non-governmental organisations to the conservation of neutral flood meadow grassland in York. Yorkshire Wildlife Trust has a number of nature reserves in the area, notably at Wheldrake Ings. Similarly the Carstairs Countryside Trust also owns a number of reserves including Water Fulford Ings (Naburn Marsh SSSI). York Natural Environment Trust and a number of local 'Friends of' groups manage grassland sites, notably at Rawcliffe Ings, Danesmead and Mayfields. The Joseph Rowntree Trust manages New Earswick Meadow SINC.

Over the last 10-15 years initiatives such as Environmental Stewardship have played a significant role in effective management of neutral grassland sites. Environmental Stewardship is an agri-environment scheme that provides funding to farmers and other land managers in England to deliver effective environmental management. The latest iteration of this, following the European Union (EU) Common Agricultural Policy reform in 2014, is called 'Countryside Stewardship' and is a targeted and competitive scheme. It is currently unclear how the UK's vote to leave the EU will impact on agricultural subsidies. City of York Council manages Walmgate Stray, Bootham Stray and Clifton Backies, and Hob Moor as part of a Higher Level Environmental Stewardship Scheme (2010 – 2020).

8.0 Conservation Direction

Objective:

Maintain the extent and quality of species-rich neutral grassland sites; restore degraded neutral grasslands to buffer sites; and restore the range of neutral grasslands.

Actions:

- Protect species-rich neutral grassland from inappropriate changes in land use.
- Encourage environmentally sensitive management of neutral grasslands.
- Achieve positive conservation management for species-rich neutral grassland SINCs.
- Re-habilitate and enhance local semi-improved grassland sites.
- Buffer unimproved grassland sites to prevent damage by external factors, such as agricultural spray drift and development.
- Create new areas of unimproved neutral grassland, aiming to enlarge and link existing sites wherever possible.

Working With:

- Natural England through the management of SSSIs and Agri-Environment schemes.
- Land managers through Agri-Environment schemes and the management of SINCs.
- Yorkshire Wildlife Trust.
- Local Conservation Groups e.g. Friends of Rawcliffe Meadows, St Nicholas Fields.

Lowland Heath and Acidic Grassland

1.0 Introduction

Lowland heath and acid grassland typically occurs on sandy and gravelly acidic soils which are free draining and often associated with acidic rocks, sands or gravels. Acid grassland is generally species-poor, but supports specialist species.

Heathland is a very important invertebrate habitat, supporting many rare British species that are at the edge of their European range. Adders (*Vipera berus*) are a characteristic species of lowland acid grassland.

The Joint Nature Conservancy Council (2011) reports that the area of lowland acid grassland has undergone substantial decline in the UK, mostly due to agricultural intensification. Although there are no figures available on rates of loss, 30 000 ha is estimated to remain in the UK with only approximately 50ha or less in North Yorkshire. Britain, holding as it does, around one-fifth of the global resource, has an international responsibility to conserve lowland heath.

2.0 Legal Status

'Lowland Dry Acid Grassland' and 'Lowland Heathland' are habitats of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

The Environmental Impact Assessment (Agriculture) (England) Regulations 2017 protect uncultivated land and semi-natural areas from being damaged by certain types of agricultural work, and prevent the restructuring of rural land holdings from having a significant environmental impact. The regulations cover projects to increase agricultural production of uncultivated land or semi-natural areas by physical or chemical means (e.g. increased use of fertiliser, draining land, ploughing) and restructuring features of the land (e.g. adding or removing field boundaries, earth or other materials). If the work or project is likely to have a significant impact consent will be required from Natural England.

A number of plant, invertebrate and bird species of acid grassland/heath are protected under the Schedules of the Wildlife and Countryside Act 1981.

3.0 The Resource

Within York the following NVC communities are known to occur:

- H9 *Calluna vulgaris – Deschampsia flexuosa* heath
- U1 *Festuca-Agrostis-Rumex* grassland
- U2 *Deschampsia* grassland
- M2 *Eriophorum angustifolium* bog pool community
- M4 *Carex rostrata – Sphagnum recurvum* mire
- M16 *Erica tetralix – Sphagnum compactum* wet heath
- M25 *Molinia caerulea – Potentilla erecta* mire.

It generally occurs on acid bedrocks such as sandstones, and on superficial fluvio-glacial deposits such as sands and gravels. In York, it is the latter that provides the most extensive areas of interest and they provide an important reservoir of rare species.

Examples of Sites of Importance for Nature Conservation containing lowland heath and acidic grassland include;

- Wheldrake Wood where there is relict heath on the ride-sides and felled conifer blocks.
- The former Westfield school field where there is acid grassland
- Oxcarr Lane, Strensall where there is acid and wet grassland.

The City of York contains the country's most northerly example of extensive lowland heath at Strensall Common. This represents 1% of the national habitat resource. The Common itself comprises a mosaic of wet heath with Cross-leaved Heath (*Erica tetralix*) and Purple Moor-grass (*Molinia caerulea*), dry heath dominated by heather (*Calluna vulgaris*), acidic grassland and mire communities. Other fairly extensive areas of heath and acid grassland survive nearby at World's End and more fragmentary stands in the roughs at Fulford Golf Course and in several coniferised plantations. Several fragments of former heathland, such as Dunnington Rabbit Warren have reverted to birch woodland and large areas have also been planted with conifers, as at World's End Plantation and Wheldrake Wood.

Some acid grasslands are difficult to separate from heath into which they grade to form heathland/grassland mosaics. Equally, there are also examples where neutral grasslands also have acidic components and again form grassland mosaics, such as at Elvington Airfield. Sites have, for the most part, been attributed to one or the other habitat group dependent on extent of interest present.

There are also a few examples of a sandy breck type community found on free draining sand with a variety of annual species such as Common Stork's-bill (*Erodium cicutarium*), Bird's-foot Trefoil and Changing Forget-me-not (*Myosotis discolour*). Such communities now occur on the margins of arable and paddock land at Strensall, Sandburn and Acomb.

Overall, the City of York heathland and acidic grassland/mire resource is approximately 890 ha. (2010) whilst this appears quite a large area, it is largely concentrated on one site at Strensall Common with three ancillary sites immediately adjacent to it. Together, these three sites occupy 75% of the total resource in York. A large proportion of the remaining area is within woodland or golf course where heathland only occupies a proportion of the area given. It can be seen therefore that the extent of this habitat is very restricted.

Despite this, it still represents only a fraction of the once very extensive tracts of heathy Common overlying sandy soils to the east and north of York. Within the City boundaries, 77% of heathland and acidic rough pasture has been lost during the past 200 years due a combination of agricultural reclamation and afforestation. The extent of the remaining areas is only as high as it is because of the protection that has been afforded by the Ministry of Defence (MOD) at Strensall.

Acidic heath and grassland is very important for biodiversity in the City of York. A number of scarce and threatened plants are dependent upon this habitat, species such as Marsh Gentian (*Gentiana pneumonanthe*) and Pillwort (*Pilularia globulifera*). Alongside this are characteristic insects such as the Green Tiger Beetle (*Cicindela campestris*) and Heath Assassin Bug (*Coranus (Coranus) subapterus*) and notable rarities include the ground beetle *Carabus nitens*, the fly *Phaonia jaroschewskii*, the Dark-bordered Beauty moth (*Epione vespertariai*) and the mining bee *Andrena ruficrus*. Characteristic birds and animals include Whinchat (*Saxicola rubetra*), Adder and Common Lizard (*Zootoca vivipara*). Strensall Common is also noted for Nightjars (*Caprimulgus europaeus*).

A number of rare heathland plants, have disappeared from the City of York including the nationally-endangered Fingered Speedwell (*Veronica triphyllos*) and Small Allison (*Alyssum alyssoides*), as well as Tower Mustard (*Turritis glabra*), Spring Vetch (*Lathyrus vernus*) and Small Cudweed (*Filago minima*). Heathland-type habitat is much localised in Britain and is confined to a few areas where low rainfall coincides with well-drained sandy soils. Even where such conditions occur, habitat has been lost due to intensive arable cultivation, reclamation of marginal land, urban development and afforestation. The Common Stork's-bill (*Erodium cicutarium*) and Shepherd's Cress (*Teesdalia nudicaulis*) community occurs on the southern edge of the Vale of Pickering near Scampston and here in the City of York.

A number of rare invertebrates have also been found associated with these grasslands, including several notable flies normally associated with coastal dune systems.

4.0 Management

Almost all lowland heathland and acid grassland needs grazing or cutting to maintain is distinctive flora, with the control of scrub encroachment a priority. Some burning of lowland heath is also an option.

However, as always, there is a careful balance to achieve to ensure key species are supported. For example the Dark Bordered Beauty Moth (*Epione vespertaria*) which is found in England only occurring on Strensall Common relies on creeping willow (*Salix repens*) as its foodsource; a low growing bush that can easily be over grazed. Often a mosaic of habitats achieved through rotational scrub clearance is the best approach to management.

On sites being restored there can be pubic opposition to tree-felling and scrub clearance. Brambles, nettles and lush green grass are signs of nutrient enrichment.

5.0 Threats

Historically, the major loss of lowland heath and acid grassland habitats in York has arisen either from afforestation or from with agricultural intensification through re-seeding, ploughing and the use of fertilisers, herbicides and other pesticides. Spray drift and enrichment through fertiliser run-off may also be a problem on some sites whilst other sites have also been lost to development.

The major threat today is still afforestation and intensive agricultural practices. One major site was ploughed out in 2006 but has been allowed to re-establish though the success of this is not known.

Atmospheric pollution, particularly acidification from nitrogen deposition and climate change are recognised as potentially significant issues for the future. Assessments indicate that critical air pollution loads for acidity and nutrient nitrogen are being exceeded on many lowland heaths, with dry deposition of ammonia very high in most parts of England.

Recreational pressures on lowland heath and acid grassland sites can be high and, due to their structure, are sensitive and prone to damage. Also, because of their open nature, wildlife is largely ground based and therefore prone to disturbance. Intensive recreational use therefore also brings about floristic changes associated with this disturbance, soil compaction and erosion, as well as eutrophication from dog-fouling.

The factors currently affecting acid grassland and lowland heath reduce both the quality and extent of the habitat, and its fragmentation brings increased risk of species extinctions in the small remnant areas. Many of York's remaining areas of acid grassland are so small and isolated that chance extinctions due to unfavourable conditions, even if temporary, mean that the sites' diversity can become impoverished over time. The less mobile fauna species are particularly at risk in this way.

Anecdotal evidence suggests that some road verges are becoming more rank, though this may be as a result of only being cut once per year in autumn with arisings being left. Salt spray is also having an impact on road verges. However, even where acid grasslands are being managed for conservation, there still appears to be a decline in interest.

6.0 Potential for Enhancement

In the City of York there is some potential for restoring heathland habitat on arable set-aside where the drought-prone sandy soils at Acomb, Strensall and elsewhere have not been greatly improved. In such situations, fertiliser and lime residues may leach from the soil fairly rapidly and disturbance such as rabbit grazing or periodic cultivation may allow a rich annual sand flora to establish.

There is also considerable potential to re-establish heathland on some afforested sites. Heathland vegetation often occurs as fragmented remnant populations within the plantations or within the seed bank. Removal of the conifer crop can, with care, release these plants to begin to re-establish a heathland habitat. This will though be suppressed by re-establishment of a tree crop.

7.0 Current Action

Lowland heath and acid grassland feature prominently in the SSSI series in York with over 80% of the most significant areas being nationally designated. In addition

Strensall Common is designated as a Special Area of Conservation for its open heathland habitat. The site is in positive conservation management through Yorkshire Wildlife Trust and the MOD. The majority of the rest of sites containing lowland heath and acid grassland do have a measure of protection through their designation as part of the local SINC series.

Wheldrake Wood is a coniferised former heathland owned and managed in part by the Forestry Commission and The Woodland Trust and parts of the wood area actively managed to support the heathland habitat.

Initiatives such as Agri-Environment schemes have played a significant role in effective management of existing heathland sites although re-establishment of new sites is very limited.

Sympathetic management is also undertaken by some landowners on a number of sites, a prime example is the work that is being undertaken at Grimston Wood near Elvington to restore a coniferous plantation to native broadleaf woodland and heathland through felling and grazing with longhorn cattle.

8.0 Conservation Direction

Objective:

Maintain and improve by management existing lowland heathland and acid grassland, restore areas of degraded acid grassland and re-establish heathland where opportunities arise, particularly in areas where this will reduce habitat isolation.

Actions:

- Protect heath and unimproved acidic grassland from inappropriate changes in land use.
- Encourage environmentally sensitive management of heath and unimproved acidic grassland.
- Achieve positive conservation management for heath and unimproved acidic grassland SINCs.
- Restore and enhance local heath and unimproved acidic grassland sites, including re-establishment from plantation woodlands where the opportunities arise.
- Buffer unimproved grassland sites to prevent damage by external factors, such as agricultural spray drift and development.
- Create new areas of heath and unimproved acidic grassland, aiming to enlarge and link existing sites wherever possible.

Working With:

- Natural England through the management of SSSIs and Agri-Environment schemes.
- Land managers through Agri-Environment schemes and the management of SINCs.

- Forestry Commission and the Woodland Trust
- Yorkshire Wildlife Trust
- Ministry of Defence (Strensall Common)

Lowland Fens and Swamps

1.0 Introduction

Fen, swamp and marsh habitats may be described as short to tall herbaceous vegetation formed over peat or mineral soil where the water-table is generally close to soil level and where that water tends to flow laterally through the upper soil horizons. They can be split into base-rich or base-poor systems, topogenous (landform-fed) or soligenous (groundwater-fed) sites and can have a mosaic of basic and acidic conditions within quite small spatial scales. They can also have a combination of water-sources in addition to rainfall.

The UK is thought to host a large proportion of the fen surviving in the EU. As in other parts of Europe fen vegetation has declined dramatically in the past century.

2.0 Legal Status

'Lowland Fens', 'Lowland Raised Bog' and 'Reedbeds' are habitats of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

The Environmental Impact Assessment (Agriculture) (England) Regulations 2017 protect uncultivated land and semi-natural areas from being damaged by certain types of agricultural work, and prevent the restructuring of rural land holdings from having a significant environmental impact. The regulations cover projects to increase agricultural production of uncultivated land or semi-natural areas by physical or chemical means (e.g. increased use of fertiliser, draining land, ploughing) and restructuring features of the land (e.g. adding or removing field boundaries, earth or other materials). If the work or project is likely to have a significant impact consent will be required from Natural England.

Askham Bog has been nationally designated as a SSSI for its fen communities. A number of plant, invertebrate and bird species of acid grassland/heath are protected under the Wildlife and Countryside Act (as amended) 1981.

3.0 The Resource

Within York the following associated NVC communities are known to occur:

- M22 *Juncus subnodulosus – Cirsium palustre* fen-meadow.
- M24 *Molinia caerulea – Cirsium dissectum* fen-meadow.
- M27 *Filipendula ulmaria – Angelica sylvestris* mire.
- S4 *Phragmites australis* swamp and reed-beds.
- S5 *Glyceria maxima* swamp.
- S7 *Carex acutiformis* swamp.
- S10 *Equisetum fluviatile* swamp.
- S19 *Eleocharis palustris* swamp.
- S24 *Phragmites australis-Peucedanum palustris* tall-herb fen.
- S27 *Carex rostrata-Potentilla palustris* tall-herb fen.
- S28 *Phalaris arundinacea* tall-herb fen.
- W2 *Salix cinerea-Betula pubescens-Phragmites australis* woodland.
- W5 *Alnus glutinosa-Carex paniculata* woodland.

Examples of Sites of Importance for Nature Conservation containing lowland fen and swamp include;

- Westfield Marsh
- Fishpond Wood
- Middlethorpe Ings

The City of York contains a remarkable variety of fen/marsh types influenced by soils, hydrology and management history; although these habitats are limited in extent. Askham Bog contains fen woodland, fen-meadow and tall-herb fen communities. Wheldrake Ings has complex and extensive mixtures of wet grassland, fen, swamp and inundation communities whilst sites on the River Ouse Ings contain more fragmentary examples of naturally-eutrophic flood plain fen. Examples of 'poor' fen, characteristic in more acidic conditions, are found at Heslington Tilmire and World's End. The latter site contains purple moor grass fen-meadow, a habitat of European conservation interest.

Fens and other mires would formerly have been much more widespread in the City of York, on river floodplains and on the once-extensive Commons. Combinations of agricultural improvement, drainage, urban development and river engineering have resulted in the loss of a majority of these wetlands. Askham Bog - a nationally important example of valley fen - has been affected by natural succession, lowering of the water table and pollution. Even small areas are vulnerable: a reedbed at Acomb Grange was cleared for agriculture in 1995 although some recovery is occurring. One community, *Glyceria maxima* swamp, has increased in recent decades as a result of agricultural dereliction at Fulford Ings.

Fens in the City of York are of great entomological interest, supporting insects such as the rare ground beetle *Dromius sigma*, the nationally-scarce mirid bug *Capsus wagneri* and the Dentated Pug moth (*Anticollix sparsata*). Scarce plants associated with fens locally include Elongated Sedge (*Carex elongate*), Marsh Fern (*Thelypteris palustris*) and Marsh Stitchwort (*Stellaria palustris*).

Other species associated fens and swamps locally include Tasteless Water-pepper (*Persicaria mitis*), Water-violet (*Hottonia palustris*), Marsh Carpet moth (*Gagitodes sagittata*), *Panagaeus cruxmajor* (a ground beetle), *Agabus uliginosus* (a diving beetle), *Hydrothassa hannoveriana* (a leaf beetle), *Omphiscola glabra* (a pond mud snail), Bittern (*Botaurus stellaris*), Whooper Swan (*Cygnus Cygnus*), Marsh Harrier (*Circus aeruginosus*), Hen Harrier (*Circus cyaneus*), Water Rail (*Rallus aquaticus*), Baillon's Crake (*Zapornia pusilla*), Spotted Crake (*Porzana porzana*), Black-tailed Godwit (*Limosa limosa*), Snipe (*Gallinago gallinago*), Short-eared Owl (*Asio flammeus*), Reed Bunting (*Emberiza schoeniclus*) and Water Vole.

Other sites occur as a mosaic within other habitat types such as flood meadow grassland or heathland.

4.0 Management

Fens and marshes are successional habitats and active management is required to maintain them. Without management, the accumulation of organic litter and

colonisation by woody plants eventually causes the drying and leads to the replacement of fen vegetation with scrub and woodland.

Topography, hydrology and geology all play important roles in determining how a fen develops and is maintained.

Management activities that focus on preventing scrub encroachment include mowing, grazing, burning and scrub clearance.

Adequate supplies of high quality, unpolluted water are harder to manage but can include initiatives formulated to address nutrient runoff problems and the pollution of ground water.

5.0 Threats

- Lack of management resulting in natural habitat succession to scrub and woodland.
- Reduction in the water table as a result of abstraction from aquifers and, in particular, changes in land drainage can reduce the important lateral movement of water into and through systems.
- Eutrophication of incoming waters can alter the plant and animal communities found in sites.
- Isolation and fragmentation of sites in the city reduces the ability of wetland plants and animals to disperse between sites.
- Climate change. A substantial change in water supply would alter the balance of hydrological inputs to fens and a significant rise in temperature would produce wide-ranging effects such as changes in water quality and the structure and make-up of plant and invertebrate communities. A long-term decrease in rainfall could alter groundwater regimes and may ultimately depress levels in the underlying aquifers to such an extent that they cease to be fed with spring waters.

6.0 Potential for Enhancement

The incorporation of Sustainable Drainage Systems (SuDS) in developments can create a range of wetland habitats.

Agri-environment Schemes may provide funding to manage existing and create new wetland sites.

These sites are few in number and relatively small and therefore opportunities to expand and buffer them, whether with similar or complimentary habitat should be sought.

7.0 Current Action

Askham Bog SSSI is actively managed by Yorkshire Wildlife Trust.

In 2015 a management plan for Fishponds Wood SINC was produced by CYC and a Friends of Fishponds Wood group established. A management plan for Westfield Marsh SINC has also been drafted.

8.0 Conservation Direction

Objective:

Maintain and protect the existing area of lowland fen and swamp habitat. Create new areas of wetland on land of low conservation importance, aiming to enlarge and link existing sites wherever possible.

Actions:

- Protect lowland fen and swamp from inappropriate changes in land use.
- Achieve positive conservation management for lowland fen and swamp SINCs.
- Re-habilitate and enhance local lowland fen and swamp sites.
- Buffer lowland fen and swamp sites to prevent damage by external factors, such as agricultural spray drift and development.
- Create new areas of lowland fen and swamp, aiming to enlarge and link existing sites wherever possible.

Working With:

- Natural England through the management of SSSIs and Agri-Environment schemes.
- Land managers through Agri-Environment schemes and the management of SINCs.
- Yorkshire Wildlife Trust.

Ponds

1.0 Introduction

The Freshwater Habitats Trust defines a pond as a body of water (normally fresh water, but occasionally brackish), which can vary in size between one square meter and two hectares, and which holds water for four months of the year or more.

Priority Habitat ponds are those which have high ecological quality; a diversity of native plants and aquatic invertebrate and ponds supporting rare or protected species such as Great Crested Newts.

Ponds are widespread throughout the UK, but high-quality examples are now highly localised, especially in the lowlands.

2.0 Legal Status

Ponds are a habitat of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Ponds themselves are not legally protected but some of the species that use them are including Great Crested Newt, Grass Snake (*Natrix natrix*) and Water Vole.

3.0 The Resource

Despite their popularity, ponds are a threatened habitat in Britain: about three quarters have disappeared over the last century, from an estimated 1.3 million to 375,000. Surveys in Southern Ryedale in 1992 indicated a loss of one-third of ponds shown on recent OS maps, with a further 10% reduced to dried-up hollows. 86% of ponds in Acomb and Dringhouses (an area once containing numerous brick ponds) have disappeared since 1892.

There are though still a considerable number across the City, though more limited in intensive arable areas. Based on aerial coverage and sample studies there are thought to be about 900 ponds in York of which 800 are thought to regularly hold water.

Examples of Sites of Importance for Nature Conservation designated, at least in part, for their pond habitat include;

- Gollie Ponds, Naburn
- Hassacarr Pond, Dunnington
- Joseph Rowntree School Pond, New Earswick (candidate SINC)
- World's End, Strensall

Recently there has been an increase in awareness of the dependence of pond wildlife on its immediate surroundings. The best ponds in the country are surrounded by rough pasture with adjacent shrubby cover, providing essential terrestrial habitat for amphibians and a semi-natural zone providing a measure of insulation from outside activities. The meeting of two or more habitats tends to increase the utility of

the pond to species thereby increasing its biodiversity value beyond that of a similar but isolated pond. Similarly, the adjacent habitats also benefit greatly from the presence of a pond.

The principal types of ponds in the City of York are field ponds, fen ponds, heathland pools, brick ponds and detention ponds. Garden ponds are excluded from consideration although they may still have considerable value in the urban setting. Similarly, fishing ponds are excluded as they tend to be heavily managed for fish and tend to have limited wildlife value although their setting may be of interest.

Temporary pools are a further category of pond and have only recently been identified as a habitat in their own right and have thus been undervalued. Many have been changed in character by excavation to create permanent water or at the other extreme drained to produce agricultural land less 'liable to flooding'. The more less thought of examples of standing water such as wheel rut puddles, tree fall pools and branch crotch pools are now better understood although still poorly appreciated. Temporary ponds aid distribution and encourage species like Fairy Shrimp (*Chirocephalus diaphanous*) that cannot survive in permanent ponds. These however, are not considered further in this habitat action plan but should still be valued as an asset in considering the wildlife potential of an area.

Long-established field ponds often support a varied and interesting fauna absent from newer ponds. They have a rich flora and invertebrate fauna and are a particularly important habitat for the declining Great Crested Newt. They can also be used by Water Vole, another declining species. Ancient ponds, such as Hassacarr Pond at Dunnington, may support rich aquatic invertebrate communities and marginal flora. Most of the brick ponds on the outskirts of York have been reclaimed and the five remaining major ponds are large, deep water bodies probably with limited wildlife interest. Formerly the York brick ponds were of national importance for their water beetle and mollusc fauna. There may still be a few smaller brick pits, for instance at Acomb and Elvington, that have survived and still hold considerable interest.

Chapman's Pond, Dringhouses is a former clay working of approximately 0.7ha and with free public access is very popular with anglers, and managed by the Friends of Chapman's Pond. An OPAL Water Survey undertaken in 2011 showed a relatively 'good health' score although the pond is eutrophic (high in nutrients) and the stocking of fish impacts on wildlife.

Fen ponds are found at Askham Bog and World's End, supporting several scarce aquatic insects. Heathland ponds on Strensall Common support a mixture and bog and fen species due to their unusual hydrology. Floating or marginal carpets of *Sphagnum* moss are a characteristic feature of these ponds which are now very rare in lowland Yorkshire. These ponds tend to have relatively low nutrient levels and are often the most diverse.

Nutrient-poor clay ponds at Rawcliffe flood reservoir support stonewort (*Chara*) beds, a habitat feature of European conservation concern associated with clean, clear water.

Detention ponds are a relatively new and increasing habitat as they form part of SuDS (Sustainable Drainage Systems). They have fluctuating water levels and often relatively high nutrient status but they can develop as important wetland features in urban areas, not necessarily having a range of rare species but providing a home for the more common species when in an urban area that can benefit the local community. They can be permanently wet or simply flood during wet weather and hold a range of habitats from inundation habitats to wet grassland or willow scrub.

Village ponds have changed extensively through the centuries as their function has changed from utility to landscape feature. Most ponds in this category now have well-defined vertical edges and are bounded by roads. As a result such ponds have a limited profile with limited marginal habitat, a negligible ability to spread with wet weather and a poor association with adjacent habitat. This may reduce their value for wildlife considerably.

Notable species associated with ponds locally include Great Crested Newt, Waved Water Beetle (*Agabus undulatus)*, *Dytiscus dimidiatus* (a Great Diving Beetle), *Limnophila fasciata* (a cranefly) and Medicinal Leech (*Hirudo medicinalis*), the later only recorded at Strensall (1951, NBN Gateway).

4.0 Management

Ideally pond management would be considered at a landscape scale to provide a range of habitats; shallow, seasonal and deep ponds, new ponds and silty ponds full of vegetation, grazed ponds and wooded ponds.

Specific pond management depends on the type of pond, the species present and aims of the land manager. As important as the pond itself is the surrounding habitat. Ponds should be protected by creating or maintaining buffer zones of semi-natural land use around the pond wherever possible.

The Freshwater Habitats Trust has produced a wealth of information about pond creation and management which is readily available on their website.

5.0 Threats

- Pollution, from point or diffuse sources can cause significant harm, whilst both organic and inorganic fertilisers, leads to excessive plant growth and algal blooms. These and the subsequent decay process can lead to shortage of dissolved oxygen. Algal blooms can lead to limited light conditions in the water body. On top of the lack of dissolved oxygen, this further limits the development of aquatic plants.
- Changes in land cover, such as removal of waterside vegetation (which may be an effective barrier to particle matter, act as a sink for nutrients and is also important for wildlife) can increase soil erosion which increases water borne sediments, which in turn increases nutrients to the water.
- Other detrimental changes include infilling and digging out, field drainage, cessation of grazing, nitrate eutrophication, pesticide drift and loss to development.

- Recreational use can cause disturbance and movement of the bottom silts which in turn cause eutrophication etc. Stocking with fish can have a very detrimental effect with dragging/ disturbance of the bottom, clearance of bankside vegetation and heavy baiting, particularly when carp fishing, causing significant harm. Even the introduction of small fish for 'ornamental' purposes can significantly harm the value.
- Climate Change is also likely to have a significant effect with changing hydrology patterns and larger swings between extremes of drought and flood likely to have a significant impact on pond diversity.
- The introduction of non-native species of plants and animals can be extremely damaging, for example the signal crayfish (*Pacifastacus leniusculus*) has eliminated almost all the local native populations of white-clawed crayfish (*Austropotamobius pallipes*). It has also destabilised the biota of some waters by consuming large amounts of aquatic vegetation. Mink (*Neovison vison*) also have a definite impact on species such as water vole and many water fowl species. Other examples of non-native species include affecting water bodies include Floating Pennywort (*Hydrocotyle ranunculoides*), New Zealand Pigmyweed (*Crassula helmsii*), Red-eared Terrapin (*Trachemys scripta elegans*) and Gold fish (*Carassius auratus*).

6.0 Potential for Enhancement

By promoting an appreciation of the value that ponds have, even as small water bodies can lead to better management. This is crucial to pond conservation as proper management of old ponds is as important as providing new ponds. This includes the need to provide buffers around ponds to protect them from adjacent land uses.

Newly created ponds in favourable situations, especially close to established wetlands, can provide major benefits for wildlife but new ponds in less advantageous locations are likely to support mainly widespread and common species.

7.0 Current Action

Ponds have been created in various parts of York through development and Agri-Environment Schemes. A number of organisations such as Yorkshire Wildlife Trust and the Environment Agency seek opportunities for pond creation and manage existing ones.

In 2015 - 2017 the Freshwater Habitats Trust has been leading PondNet, a national volunteer survey to collect information about trends in pond quality and pond species. This has included amphibian, invertebrate and botanical surveys, and testing nitrate and phosphate levels. Flagship ponds surveyed include at Strensall Common and Rawcliffe Meadows. The main species of interest at Strensall are Great Crested Newts, Pond Mud Snail (*Omphiscola glabra*), Pillwort (*Pilularia globulifera*), Marsh Stitchwort (*Stellaria palustris*) and Tubular Water-dropwort (*Oenanthe fistulosa)*. At Rawcliffe Meadows the main species are Tubular Water-dropwort, Water Vole and Tansy Beetle.

8.0 Conservation Direction

Objective:

Maintain and improve the conservation interest of ponds through enhancement and appropriate management, and the sensitive management of adjacent land. Create new ponds, of maximum wildlife benefit, where possible.

Actions:

- Collate the existing data on standing water resources and their ecological value to prioritise conservation action.
- Maintain the condition of all City of York Council ponds currently judged as in favourable condition and restore those in less favourable condition.
- Create new ponds and complimentary habitats through planning consents and pro-active projects.
- Maximise the biodiversity potential of Sustainable Drainage Systems (SuDS).
- Increase knowledge and understanding by land managers and the general public of standing waters and their associated habitats and species.
- Promote creation of ponds and habitats associated with open water.

Working With:

- Freshwater Habitats Trust
- Landowners
- Members of the public creating and managing garden ponds for wildlife

Ancient and Species-Rich Hedgerows

1.0 Introduction

Hedgerows are important for a wide range of common and rare species and are an especially valuable habitat for farmland birds, bats, moths and butterflies. It is also recognised that as linear habitats they can act as links between areas of semi-natural habitat, encouraging movement and dispersal for some species through what is generally an intensively managed landscape.

In the Hedgerow Survey Handbook (2007) Defra defines a hedgerow as any boundary line of trees or shrubs over 20m long and less than 5m wide at the base, provided that at one time the trees or shrubs were more or less continuous. It includes an earth bank or wall only where such a feature occurs in association with a line of trees or shrubs. This includes 'classic' shrubby hedgerows, lines of trees, shrubby hedgerows with trees and very gappy hedgerows (where each shrubby section may be less than 20m long, but the gaps are less than 20m).

Where the species making up a 30m section of hedgerow include at least four (in northern and eastern England) native woody species, the hedgerow is defined as species-rich. Climbers and bramble do not count towards the total except for roses.

Ancient hedgerows may be defined as those which were in existence before the Enclosure Acts, passed mainly between 1720 and 1840 in Britain.

2.0 Legal Status

Hedgerows are a habitat of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

The Hedgerows Regulations 1997 protect most countryside hedgerows from being removed, including being uprooted or otherwise destroyed. If a landowner wants to remove a hedgerow (or part of a hedgerow) they must to apply to City of York Council as the Local Planning Authority, in writing before they do so. City of York Council will assess if the hedgerow is 'important' as defined under the Hedgerow Regulations. If it is found to be 'important' then a retention notice stating that the hedgerow must be kept will be issued.

The Local Planning Authority has the power to impose penalties if there is a breach of the Hedgerow Regulations.

3.0 The Resource

Hedgerows have long been considered an important part of the English landscape and some hedgerow at least may pre-date the Roman occupation. However, they were not always as extensive and the network was increased dramatically during the Enclosure Period (1720 to 1840). Ancient Hedgerows are considered to be those that pre-date this Enclosure Period. Such hedgerow tend to be more diverse; either

because they have been derived from woodland clearance, have had a long time to allow new species to colonise or were planted more diversely in the first place.

Species rich hedgerows are defined as having 4 or more woody species in a 30m section. In contrast, many late enclosure hedgerows are dominated by Hawthorn (*Crataegus monogyna*), possibly with Elder (*Sambucus nigra*). Whatever their origin, old, species-rich hedgerow tend to support a greater variety of wildlife and can be of great nature conservation and landscape significance.

Their value lies partly in their similarity to woodland edge habitats and they can contain many woodland plants and insects such as Bluebell (*Hyacinthoides non-scripta*), Primrose (*Primula vulgaris*), Dog's Mercury (*Mercurialis perennis*) and Comma butterfly (*Polygonia c-album*). This is particularly the case if they are connected either through time or place directly with old woodland. They criss-cross the countryside in a far reaching network and provide the primary habitat for a considerable number of species of concern in the countryside, for instance many farmland birds.

Often associated with them are other significant features such as old ditches, banks and hedgerow trees, especially ancient ones. These in turn provide habitat for other species not otherwise found in hedgerow including bats, Barn Owls, Tree Sparrows (*Passer montanus*) and a wider variety of insects and plants.

Historically, hedgerow can also be of great interest, being associated with ancient field patterns, old boundaries such as parish, township or estate boundaries or old woodland sites.

With agricultural change and the mechanisation of farming following World War II, however, hedgerow losses began to be increase as fields were expanded. It is estimated that 22% of hedgerow were removed between 1947 and 1985 and a further 21% between 1984 and 1990.

In 1993 it was estimated that there were approximately 329,000km left, of which 138,000km were considered to be species-rich or ancient in origin. Losses were thought to be continuing at about 5% a year. Losses were not uniform but were greater in the eastern part of the country where arable intensification was greatest. To offset this loss, the Hedgerow Regulations were introduced in 1997 requiring hedgerow removal to be notified and assessed by the local authority. This offered a measure of protection to old and species-rich hedgerows.

This decline has eased dramatically in recent years and hedgerow losses are much reduced. In part this is due to Agri-Environment Schemes offering grants encouraging farmers to plant or replant hedgerows. It also encourages landowners to manage and improve their remaining hedgerows to offset one of the other major causes of hedgerow loss, that of neglect.

Many ancient hedgerows, although still present, are not in favourable nature conservation condition due to the way they are, or have been, managed.

In York there is an extensive network of hedgerows numbering many thousands and there has been no comprehensive assessment of hedgerows. Some 300 hedgerows have though been surveyed over the years from various parts of the city and perhaps 15% would be considered species rich according to the Priority Habitat definition (based on the Hedgerow Regulations criteria) of 4 species per 30m. The south and west of the city seem particularly rich although rich hedgerows can be found in every parish, probably dependent on when enclosure took place. There are indeed some notable hedgerows that exceed 10 species per 30m. These are associated with the line of old roman roads or the boundaries of old commons and strays and so may be many hundreds of years old.

Examples of Sites of Importance for Nature Conservation designated, at least in part, for species-rich hedgerows include;

- Cherry Lane, Knavesmire
- Germany Beck Meadow, Fulford
- Kexby West Bank

4.0 Management

Hedgerows are a man-made landscape feature; if left unmanaged they will loose their structure and grow out into a line of trees. They need to be sensitively managed taking account of natural growth and ageing patterns, as both over-management and neglect can lead to their decline.

Hedgerow management practices normally include regular trimming; although repeated cutting at the same height each year causes gradual damage and reduced flowering. The recommended approach is to cut just once every two or three years, or each time let the hedge grow out and up a little.

Longer term management can include laying or coppicing the hedge in combination with planting new whips to fill gaps which rejuvenates those which have been allowed to grow out and loose their dense structure.

A range of organisations including Natural England, the RSPB and Hedgelink have published guidance on hedgerow management for biodiversity which is widely available.

5.0 Threats

Agricultural management can have a considerable impact on the quality of a hedge, even if losses from removal are much reduced. Unsympathetic cutting, herbicide and pesticide spraying into the hedge bottoms, overgrazing or ploughing up to or into a hedge bottom can all have a significant effect on the wildlife value of a hedge. Equally, lack of management can also lead to loss or decline in overall value.

Although only a part of a hedge, hedgerow trees are a significant habitat within them and of conservation value in their own right. They are of particular value to species such as bats, Barn Owls, Tree Sparrows etc. They can be particularly important in very old hedgerows that have historical links with ancient woodland, potentially retaining species not otherwise found. These can be felled without felling consents

and are difficult to protect. The scale of any changes in the numbers of hedgerow trees is not known and so their status is uncertain.

Losses from development can now be a major form of hedgerow loss and may disproportionately affect old species rich hedgerows. Developments tend to be concentrated on the fringes of settlements or as infill and these sites are often as significant for their old hedgerows, as for old unimproved grassland. Once development has occurred, even if they are left in place they lose their protection from the Hedgerow Regulations and often suffer from inappropriate management.

6.0 Potential for Enhancement

Although losses have significantly decreased, there are considerable opportunities for enhancement both of the extent and quality of hedgerows. Environment Stewardship and management advice to farmers encourages planting and thickening of hedgerows.

Inappropriate planting of species within existing hedgerows can be detrimental to their overall value. Where possible planting should use native species and be in character with other hedgerows in the locality.

Finding out the extent of species rich hedgerows and of hedgerow trees will enable a better understanding of the actions necessary to ensure the long term enhancement of this important habitat within the context of a farmed landscape.

Development often results in some hedgerow loss or, if not loss, then a reduction in value through unfavourable management. Mitigation for this loss, both within the development site and outside it can offset this decrease in biodiversity.

7.0 Current Action

The Council's countryside and ecology officer assesses and grants approval for the removal or retention of countryside hedgerows in line with the Hedgerow Regulations 1997, providing advice to landowners on the management of important, species rich hedgerows.

Through the Agri-Evironment schemes on the Strays, and other private land, native species hedgerow planting and enhancement has been undertaken.

Where it is unavoidable for hedgerows are to be lost through development the Council seeks appropriate mitigation and compensation.

8.0 Conservation Direction

Objective:

Maintain the quantity and quality of ancient and species-rich hedgerows; extend hedgerows to increase cover and connect isolated habitat fragments.

Actions:

- Continue to implement the Hedgerow Regulations (1997) in full.
- Encourage the conservation and good management of species-rich hedgerows.
- Encourage the retention and replanting of hedgerow trees.
- Encourage the planting of new native hedgerows that re-establish or compliment the local field patterns and local hedgerow character
- Ensure development takes full account of the importance of hedgerows and that adequate mitigation is provided so that there is a net gain in the local context.
- Look to establish new hedgerows within City of York Council schemes and on council land where this is appropriate.

Working With:

- Natural England through Agri-Environment schemes.
- Campaign for the Farmed Environment.
- Landowners
- Treemendous

Woodland

1.0 Introduction

Woodland can be defined as land under stands of trees with a canopy cover of at least 20%, including integral open space. There are many types of woodland in the UK, all varied and complex.

Within England, there is little if any natural woodland left due to centuries of management. This is especially the case in the Vale of York which has had intensive cultivation for many centuries. Some woodland though does have a long history and has stood for many hundreds of years. They contain woodland species that do not readily colonise new woods, even if they have been there for centuries and so only occur on these ancient sites. These are our ancient semi-natural woodlands.

Such woodlands are very special and, because they have often survived by chance, they are very rare. In fact in Britain, less than 0.08% of our remaining woodland is ancient, semi-natural. This makes them very important both historically and for nature conservation. York has very little if any true ancient semi-natural woodland, but just a few do still have some ancient characteristics.

Woodland though is not just a group of trees; there are many types, each with a range of plants and animals suited to particular conditions. In York these include lowland Ash woodland, acid Oak woodland and very rarely wet woodland. Birch woodland is also present, mainly to the east and south of the city associated with old heathland sites.

2.0 Legal Status

'Lowland mixed deciduous woodland', 'wet woodland' and 'wood-pasture and parkland' are habitats of principal importance for the conservation of biodiversity in England, as required under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Ancient woodland and veteran trees is a statutory designation making them a material consideration in planning application decisions. Ancient semi-natural woodland and plantations on ancient woodland sites have equal protection under the National Planning Policy Framework.

Felling licences from the Forestry Commission are normally required for tree felling within woodlands.

Tree Preservation Orders can be applied to individual trees, or groups of trees or woodland by the Local Planning Authority.

3.0 The Resource

Within York the principal NVC communities to occur are:

- W10 *Quercus robur – Pteridium aquilinum – Rubus fruticosus woodland* acid oak woodland

- W8 *Fraxinus excelsior – Acer campestre – Mercurialis perennis woodland* ash woodland
- W4 *Betula pubescens – Molinia caerulea* birch woodland

However, many of the woodlands have been replanted and are either coniferous or Oak, Ash, Sycamore plantations with affinities to the above woodlands.

York has about 12% of its area as woodland but it is not particularly rich in old woodland. This is below the national average for woodland cover and is largely explained by the intensive agricultural history of the Vale of York. Overall there is less than 100ha of moderately diverse woodland and much of this is in small copses or blocks within larger plantation woodland, mainly to the south and west of York. The majority of this is in private ownership but there are a number of woodlands that are publically accessible including;

Acomb Wood is a Local Nature Reserve of broadleaved woodland in the Woodthorpe area of York covering 1.15 ha. The woodland is home to Greater Spotted Woodpeckers (*Dendrocopos major*) and Tawny Owl (*Strix aluco*) whilst the adjacent meadow contains historic ridge and furrow supporting a large population of wild flowers.

Hagg Wood is a coniferous plantation on an ancient woodland site at Dunnington that still has many remnants of the native woodland vegetation. The site is owned by the Church Commissioners and managed by the Forestry Commission. A local group, the Friends of Hagg Wood, help care for the woodland and are actively involved in its management. Hagg Wood is a Planted Ancient Woodland Site (PAWS for short). Management of the wood is aimed at gradually removing most of the coniferous trees and restoring it to native woodland. This is a process that will take many years. The wood is designated as a SINC.

Wheldrake Wood is a predominantly pine woodland planted on what was, at one time lowland heath. The area is very flat and access is easy although there are no waymarked trails. Although there are no ancient trees in the wood the age of the different stands or 'compartments' of trees is quite diverse and makes this an interesting wood to visit. Badgers, Roe and Fallow Deer all use the wood but are rarely seen except by the most careful observer. This is good wood for watching butterflies, with species such as Wall Brown (*Lasiommata megera*) and Speckled Wood (*Pararge aegeria*). It is also a good area for dragonflies such as the Brown Hawker (*Aeshna grandis*) and the Broad-bodied Chaser (*Libellula depressa*). The road verges are particularly rich, supporting flowers such as Common Spotted (*Dactylorhiza fuchsia*) and Bee Orchids (*Ophrys apifera*). The wood is designated as a SINC.

Knavesmire Wood next to the Racecourse is owned by the Woodland Trust. It is old plantation woodland that does have a number of ancient trees within it and a moderately diverse woodland ground flora. The wood is designated as a SINC.

Regardless of their floristic interest, some of the older woodlands do have numbers of ancient veteran trees. These can be particularly important for wood boring insects,

though no surveys have been undertaken for this. They can also be invaluable for other wildlife such as birds.

Such veteran trees are of value in their own right and can occur separately from woodland as individual trees within the open countryside. This is particularly evident on land north of Askham Bog where the old hedgerow and ditch pattern have numerous old trees and are shown on the 1st Ed OS Map of 1854 as having good tree cover. This would suggest that there is a long history of hedgerow trees in this area. Further veteran trees can be found in a 'parkland setting' of trees within grassland, as at the Archbishop's Palace.

A special woodland type is wet woodland. This is woodland developed on very wet or swampy soils or immediately adjacent to rivers. It is very restricted with only a few examples, the best being at Askham Bog. There are however, a number of other localised sites such as Skelton and Acomb Landing. They are especially important for invertebrates.

4.0 Management

Management has had a strong influence not only on the survival but also on the character of woodland. Originally much woodland would have been managed as coppice for both timber (shipbuilding, house construction etc) and for charcoal. Coppice is where trees and shrubs are regularly cut down and allowed to re-grow, leaving only a few big trees each time. This has changed in the past few hundred years or so to high forest. High Forest is where there is an even aged, tall woodland canopy with trees grown for straight timber and a limited understorey.

Both the Forestry Commission and The Woodland Trust produce guidance on managing woodlands for wildlife. Management priorities for woodland will vary between types and age structure but will include activities such as;

- Management and removal of invasive non-native species,
- Establishing new native species trees,
- Enhancing native ground flora,
- Coppicing on rotation, and
- Retaining deadwood and creating habitat piles.

Management of woodlands also needs to take account of any archaeological interest such as wood banks or earthworks.

New woodland creation schemes should include short and long-term management costs within them.

5.0 Threats

In general, threats to remaining ancient woodland are much reduced, with the Forestry Commission exerting strict controls on the felling, management and planting of woodland. There are, however, still some threats to native woodland from inappropriate or changed management practices and from replanting ancient woodland sites. One particular problem can be balancing the needs of health and

safety in managing or removing old trees, particularly those with cavities in, and their value for nature conservation.

A particular problem for certain woodland types is the spread of invasive non-native species, notably Rhododendron in acid woodlands and Himalayan Balsam in wet woodlands. These can both spread very aggressively and dominate the field or shrub layer.

Drainage can also be a problem with wet woodlands and for wet woodland mosaics within larger woodlands. Here the pressure to provide conditions for more productive species can lead to drainage that can affect the extent of wet woodland. Scrub clearance of willow can also be a problem. Such work does not necessarily require licensing.

Much woodland is small and isolated making them vulnerable to a loss of diversity. Climate change is likely to make this issue more urgent in the medium to long term.

A further threat to woodlands is the spread of new fungus diseases such as Sudden Oak Death, Alder Root Disease and Ash die back. The latter was first confirmed from Ordnance Survey grid squares SE54, SE55, SE65 around York in 2015/16 (Forestry Commission).

6.0 Potential for Enhancement

As well as the management activities mentioned above woodlands can be enhanced by managing or creating in-wood habitat features such as wet hollows, rides and glades, and developing scrubby woodland edge.

The use of trees and shrubs of local provenance and origin should be used, particularly when planting in and close to ancient woodland. Sometimes it is appropriate to enhance ground flora by planting native woodland species, although the reason they are not there (e.g. too closed a canopy) should be addressed first.

Bird nest boxes and bat boxes are a simple but effective addition to woodlands.

7.0 Current Action

Since 2011 ‘Treemendous’ has been carrying out a programme of woodland and tree planting in and around York. This voluntary partnership has achieved a huge amount; planting over 15,000 trees to date (July 2017).

Small woodland and tree planting has been undertaken through Agri-Environment Schemes, including by the Council on Bootham Stray. In 2017 woodland is one of the Countryside Stewardship scheme’s priorities and funding is available to improve existing woodlands, support the preparation of management plans, address tree health issues and create new woodland.

Woodland management advice is provided by the Forestry Commission and The Woodland Trust, who are also offering free packs of trees to schools and community groups until 2020.

8.0 Conservation Direction

Objective:

Maintain the extent of woodland in York, including no loss of ancient semi-natural woodland, and reduce their fragmentation and isolation from other priority habitats.

Actions:

- Support the creation of new native woodland in appropriate locations with local partners, particularly where it will help to buffer the existing resource.
- Support landowners to restore degraded ancient semi-natural woodland sites.
- Encourage an increase in diversity in conifer plantations by increasing the proportion of native broadleaves.
- Increase the number of SINC designated woods under favourable management for nature conservation.

Working With:

- Treemendous
- The Woodland Trust
- The Forestry Commission
- Private landowners

Traditional Orchards

1.0 Introduction

The People's Trust for Endangered Species (PTES) traditional orchard project has been used as a source of information for this habitat action plan https://ptes.org/campaigns/traditional-orchard-project/

Traditional orchards are defined, for priority habitat purposes, as groups of fruit and nut trees planted on vigorous rootstocks at low densities in permanent grassland; and managed in a low intensity way (e.g. without chemicals and frequent grass mowing) (UK BAP). The minimum size of a traditional orchard is defined as five trees with crown edges less than 20m apart. However the potential biological and genetic interest of sites with fewer trees, such as relict orchards and individual trees within gardens is noted (PTES).

Traditional orchards usually contain many varieties of fruit trees in a given block leading to an extended period of flowering and fruiting. This benefits both insects, which in turn benefits pollination, and birds and mammals who feed on the fruit.

The grassland beneath old orchards can be species rich, unimproved grassland. In many areas of the country there is a tradition of grazing these swards. The combination of old, individual trees within grassland creates a habitat with similarities to wood pasture.

The hedgerows that often surround traditional orchards, not only protect the fruit trees from frost and wind damage, but also provide additional habitats for wildlife. The best hedgerows for orchard wildlife are comprised of mixed native species with an untended margin at the base. These provide an additional nectar source of value to invertebrates. Overall therefore, old orchards can be of significant wildlife value.

Trees within old orchards can be over 60 years old. Fruit trees decay more quickly than most British hardwoods and can provide a variety of deadwood habitats. As such they can be particularly valuable for invertebrates for example the increasingly scarce Basket Longhorn Beetle (*Gracilia minuta)* was recorded at Fulford Community Orchard in 2011.

Crevices and hollows also provide nesting sites for birds such as Spotted Flycatchers (*Muscicapa striata*) and Little Owl (*Athene noctua*), and large specimens can provide roosts for many species of bat. The non-acid bark supports a wide variety of mosses although the bark chemistry of apples is variable, with some cultivars hosting many more mosses than others. The bark of plums is acid and they are poor hosts for mosses but much better for lichens. Even when isolated therefore, old orchard trees can be of interest although no work has been done to assess what the extent of this interest is in York.

2.0 Legal Status

'Traditional Orchards' is a habitat of principal importance for the conservation of biodiversity in England, as required under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

There is no default protection for orchards, and without an additional measures being in place there is little to stop a landowner from removing an orchard as long as it yields less than 5 cubic metres of timber (i.e. below the threshold for a felling licence).

The Town and Country Planning (Tree Preservation) (England) Regulations 2012 make it possible to place a Tree Preservation Order (TPO) on fruit trees, either individually or as a group, where it is in the interest of amenity to do so and where such trees are not part of a commercial orchard. There are no known orchard sites in the York area protected by a TPO.

Orchards may be designated as a local green space through Neighbourhood Plans which provides a strong presumption against development.

3.0 The Resource

Work by the PTES has identified over 35,000 individual orchards in England and revealed that 90% of traditional orchards have been lost since the 1950s, with the majority of the loss attributed to neglect and development. Furthermore, 45% of the remaining orchards surveyed in were found to be in declining condition as a habitat.

The extent of traditional orchards in York is unknown beyond those recorded through the national habitat inventory which records 32 individual sites within the City of York administrative boundary. This data is drawn from aerial photography interpretation and there may be many more that have not been identified.

There are no orchards designated as a SINC in York as there are no specific guidelines covering this habitat, however several are recorded as being of local interest;

- Fulford Community Orchard
- The Dormouse Orchard, Clifton Without
- Former Clifton Hospital Orchard
- Former St Josephs Convent of Poor Clare Collentines, Lawrence Street

In Yorkshire there is no long tradition of cider or perry making but most old farms did have their own small orchards for local use; many are shown on the 1st edition OS map (1854) around villages. With the coming of the railway in the middle of the 19th century quick and easy access to the large city markets was made possible. Because of this, there was a proliferation of planting particularly around York and in the Vale of York and the 2nd Edition OS of 1898 shows this clearly. Most of the orchards therefore in York were around 150 years old with older ones being associated with villages and farms.

This increase in orchards, however, was short lived and by the early 20th century they were in decline as improved transport and cultivation in more favourable areas affected their economic viability and many were removed. Today there are very few orchards and those remaining are unmanaged and derelict.

Even where orchards have largely disappeared however, some trees may still remain to indicate where these orchards used to be. In some areas, where houses were being built as York expanded, individual trees were retained within each garden and even incorporated into deeds of the houses. This is known to be the case at Skelton and Tanghall where there are still some fine examples of big, old pear and apple trees present. Such trees are of considerable age and interest, akin to veteran trees, and are also of cultural significance.

4.0 Management

There is a balance between managing an orchard for productivity and biodiversity. New fruit trees need to be planted to ensure a succession of habitats alongside retaining dead and decaying wood within old trees. Leaving some fruit on the trees or windfalls on the ground provides a food source in autumn and winter.

The surrounding habitats are an important component of an orchard structure. Varied grassland of long and short grass with staggered mowing, areas of scrub and native species hedgerows will support a greater diversity of insects, small mammals and birds.

The PTES have produced a guide to wildlife and management in traditional orchards and other resources which are available to download from their website.

5.0 Threats

- Many orchards are on the edges of villages. This has left them vulnerable to development and to other changes of use.
- Changing economics and changing social behavior has meant that producing your own fruit locally is no longer a normal practice.
- Many of the few remaining traditional orchards have been unmanaged for many years and are falling into a state of dereliction.
- The skills required to manage an orchard have been lost.

6.0 Potential for Enhancement

As well as the management techniques above orchards can be further enhanced for wildlife by not using pesticides, putting up bird and bat boxes and introducing habitat features such as log piles.

In York there has been little work done to research the extent and value (wildlife and cultural) of orchards at a local level. There are therefore opportunities to generate interest in some of the old orchards through local community groups taking establishing themselves to take on management of such sites.

7.0 Current Action

Public interest in orchards is increasing and some charitable groups take an interest in fruit collection for making locally sourced produce. Edible York leads 'Abundance' an urban harvesting project which identifies fruit growing that would otherwise go to waste, and redistributes it to charities or community groups that will make good use of it. Keeping orchards in use this way will help to conserve them.

Fulford Community Orchard, what remains of the old orchard that originally belonged to Naburn Hospital, is actively managed by volunteers (http://fulfordcommunityorchard.org.uk/).

Askham Bryan College manage an orchard on site through practical learning with students.

Agri-environment schemes provide financial incentives for land managers to look after their environment. The Higher Tier of the current Countryside Stewardship (2017) has an option for the management of traditional orchards. This only applies to traditional orchards where at least one-third of the original stations are occupied by trees over 25 years old. There is also a Higher Tier option to create new traditional orchards.

8.0 Conservation Direction

Objective:

Conserve and maintain traditional orchards in the York area through positive management for biodiversity.

Actions:

- Carry out further assessment of the extent and interest of orchards in the York area.
- Re-habilitate existing relict orchards through encouraging renewed management by voluntary groups and landowners alike.
- Raise awareness of traditional orchards and their biodiversity value.
- Encourage the establishment of new community orchards where the opportunity arises.

Working With:

- Askham Bryan College
- Edible York - Abundance
- Friends of Groups
- Treemendous
- The Conservation Volunteers
- PTES Traditional Orchard Project

Farmland

1.0 Introduction

The patchwork fields of farmland are perhaps the most familiar of British landscapes. Farmland is essentially a non-natural environment that has been deliberately cleared to make way for agriculture, so it embraces many different habitats. The effects of human activity on the land are a constant balancing act, making farmland an interesting habitat.

2.0 Legal Status

'Arable field margins' is a habitat of principal importance for the conservation of biodiversity in England, as required under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

The Environmental Impact Assessment (Agriculture) (England) Regulations 2017 protect rural land in England that's uncultivated or semi-natural from changes in agricultural activities that might cause damage by increasing productivity or physically changing field boundaries. Permission must be sought from Natural England to change the use of rural land in this context.

The Hedgerows Regulations 1997 protect most countryside hedgerows from being removed, including being uprooted or otherwise destroyed.

3.0 The Resource

The City of York Local Authority area covers approximately 27,200 ha. Of this, around 4,500 ha is built-up area, with the remaining 22,700 ha being open countryside, a significant proportion of which is farmland.

In the Vale of York Natural Area arable cultivation is the predominant land use, with extensive areas of wheat and root vegetables. A smaller proportion of holdings are mixed cropping, lowland cattle, sheep, pigs and poultry, as well as some dairy. Arable fields are predominantly medium to large in size and enclosure is by low, flailed, often intermittent hedges, with few hedgerow trees. Throughout the 20th century sugar beet was a common crop around the City of York, as farmers supplied the York sugar beet factory. Since its closure in 2007, sugar beet production has been replaced by a range of other crops, notably oil seed rape. Broadly speaking land around the north and east of the City is classified as Grade 3 (good to moderate) agricultural land, and to the south-west Grade 2 (very good) agricultural land. The area around and including Strensall Common is classified as Grade 5 (very poor) agricultural land.

Farmland is the single largest land use in Britain, and long-term research has established that the farmed countryside is very important for biodiversity. For instance, the British Trust for Ornithology (BTO) has monitored changes in the population of wild birds through national recording schemes on farmland for many years.

However, many species, particularly flowering arable annual plants and farmland birds, have continued to decline dramatically, partly through intensification of farming methods. Farmland is also important for pollinators and these too have declined. It is therefore vitally important that wildlife is considered alongside the farming industry's primary role of food production if Britain's natural heritage is to survive.

The species decline associated with modern and intensive farming methods need to be addressed by considering the re-instatement of ponds, meadows and hedgerows and returning to some more traditional practices to restore a balance that benefits both wildlife and food production.

4.0 Potential for Enhancement

Natural England's area profile for the Vale of York identifies the following opportunities within the existing agricultural systems;

- Managing, restoring and thickening hedgerows, as well as replacing and planting new hedgerow trees to create species-rich hedgerows. This will help to create a network across the agricultural landscape which enhances sense of place and creates wildlife corridors.
- Encouraging sustainable agricultural practices that enhance the delivery of an increased range of ecosystem services from the land to increase soil quality reduce soil erosion and improve water quality and management. Practices such as increased organic matter input, undersowing and inclusion of grassland into rotation will preserve the quality of the soils for future food production.
- Restoring field ponds and other features such as ditches, dykes, small woodlands and shelterbelts, to ensure that they are being adequately managed for their contribution to the landscape and biodiversity. This will help to maximise their contribution to the permeability of the landscape and their role as stepping stones connecting larger areas of habitat.
- Encouraging agricultural practices that support farmland birds and provide habitats for insects and pollination, such as diverse field margins and weedy stubble on fields.
- Creating grassland buffer strips in arable areas (around fields, watercourses and drainage ditches) linked to the wider grassland resource to create a grassland habitat network.
- Enhancing and creating field margins and hedgerows to create a network that increases connectivity between other areas of semi-natural habitat through the agricultural landscape.

The Natural Area Profile is available to download from Natural England's access to evidence website.

5.0 Current Action

In 2015 a new Agri-Environment scheme launched named Countryside Stewardship. This is a competitive scheme and funding is limited with priorities targeted to Natural Areas. Biodiversity, including the maintenance of arable field margins, is one of the top priorities for the Vale of York.

In the last ten years the Council's countryside officer has worked with 10 landowners to develop stewardship proposals to enhance the conservation interest of their farms; however there is no longer the capacity to undertake this type of work apart from on an ad-hoc basis.

Since 2010 Clifton Backies and Bootham Stray, Walmgate Stray and Hob Moor/Micklegate Stray have been in Higher Level Stewardship Agri-Environment schemes, administrated by Natural England, which run until 2020.

The UK's decision in 2016 to leave the European Union presents opportunities and risks in reforming the British farm subsidy system.

Rawcliffe Cornfield was established in 2000 to ensure that a representative area of farmland habitat was retained when the Rawcliffe Bar Park & Ride site was developed. The site is managed by the Friends of Rawcliffe Meadows with a mix of grassland for hay and a seed crop to provide food for declining farmland birds including Linnet (*Carduelis cannabina*), Tree Sparrow (*Passer montanus*), Yellowhammer (*Emberiza citronella*), Reed Bunting (*Emberiza schoeniclus*) and Corn Bunting (*Emberiza calandra*).

6.0 Conservation Direction

Objective:

The farmland in the City of York area is maintained by sustainable agriculture methods which minimise damage to the environment and promote the conservation of notable farmland species.

Actions:

It is not proposed to set any actions for farmland at this time due to the uncertainty around Agri-Environment schemes.

Working With:

- Landowners/managers
- Natural England
- Campaign for the Farmed Environment
- Yorkshire Farming and Wildlife Partnership

Urban Habitats

1.0 Introduction

Whilst urban environments generally support fewer species and habitats, the biodiversity associated with urban green spaces is very important. Often they represent the main contact with nature for the majority of people, but also provide valuable stepping stones for nature as part of wider ecological networks.

This Habitat Statement includes residential gardens, allotments, churchyards, public open space as well as buildings and brownfield sites (previously developed land).

2.0 Legal Status

'Open mosaic habitats on previously developed land' are habitats of principal importance for the conservation of biodiversity in England, as required under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Tree Preservation Orders (TPOs) can be placed on individual trees or groups of trees within urban greenspaces that have significant amenity value, but not solely for biodiversity value.

3.0 The Resource

Although less than 5% of Great Britain is classified as urban, built-up areas are increasingly important to the survival of British wildlife and you can find a huge variety of animals and plants if you know what signs to look for. Already, high-rise buildings have become inland cliffs for roosting seabirds, wasteland has been transformed into wildflower meadows and railway embankments are home to families of badgers and foxes. In York one of the most visible examples of this are the Peregrine falcons which are resident on York Minster, most often seen of the north face of the north-west bell tower.

Urban green space

The City of York is well serviced by a range of formal and informal green spaces through parks (31.82ha), allotments (53.73ha), amenity (317.54) and natural/semi-natural (500.59ha) areas (City of York Council Local Plan Evidence Base: Open Space and Green Infrastructure, September 2014). All of these areas, and others such as roadside verges, have at least some intrinsic value for biodiversity.

Domestic gardens have the potential to play a crucial role in supporting urban biodiversity, often together forming a reasonably sized piece of undeveloped land. They are likely to be unlit adding to its value for wildlife such Hedgehogs and foraging bats.

Previously developed land

Open mosaic habitats on previously developed land such as brownfield sites will comprise of early successional communities consisting mainly of stress-tolerant

species (e.g. indicative of low nutrient status or drought) such as Common Centaury (*Centaurium erythrea),* Fairy Flax (*Linum catharticum*) or Hare's-foot Clover (*Trifolium arvense*), tall ruderal and open grassland, alongside areas of un-vegetated, loose bare substrate. However they can be extremely diverse, including such wide ranging sites as railway sidings, former industrial works and brick pits. One of the principal reasons for the habitat being a priority is its importance for invertebrates.

Examples of brownfield sites which have been designated as a SINC are;

- York Business Park; a site levelled off with quarry waste and left vacant for around 20 years. Some of the remaining undeveloped plots have thin-soiled sandy or rubble (and in some places rather calcareous) substrates and a pond supports great crested newts.
- North Selby Mine; a 12 ha site comprised of the spoil generated during the mines excavation, the earth bunds created to provide a visual screen during operation and areas of partly-restored land. The habitats comprised a mix of grassland, wetland, scrub and colonising habitats.
- British Sugar Railway Sidings (Bee Bank); the old railway sidings include a steep, sunlit, south-west facing sandy bank with scrub along the bank top. Within the bank are numerous burrows of bees and wasps including those of unusual/rare species.
- Severus Hill; an old Victorian stone lined reservoir basin with a mosaic of scrub and neutral grassland.

4.0 Management

Management of most urban green spaces rightly focuses on access and usability but this can, and often does include actions that benefit biodiversity. Increasingly local volunteer community groups are becoming involved with their management.

Open mosaic habitats on previously developed land can often persist for decades without active management although scrub encroachment may need to be controlled.

5.0 Threats

There are negative impacts on green space by 'urban edge effects' from activities such as flytipping (including tipping of garden waste), domestic curtilage creep, vandalism and fire. Domestic animals can have a detrimental affect on urban biodiversity through cat predation on birds and small mammals, and nutrient enrichment of habitats from dog detritus.

As with many habitats urban green spaces are susceptible to inappropriate or over management, in particular to achieve 'tidiness'. Non-native plants are often introduced in inappropriate locations and then naturally spread further afield. Invasive non-native species can be a particular issue on brownfield sites.

Possibly the biggest threat is the loss and fragmentation of urban green space to development, including infill development on domestic gardens.

6.0 Potential for Enhancement

The biodiversity value of urban green spaces can be enhanced through a number of small-scale interventions including;

- Allowing areas to grow wild or reducing the mowing frequency of grassland,
- Not using weedkiller or chemical fertilizer,
- Favouring native species or those with a known benefit for wildlife (e.g. nectar rich flowers),
- Creating habitat piles and 'bug hotels',
- Creating gaps under fences to allow the movement of wildlife, in particular Hedgehogs, and
- Putting up bird nest boxes and bat boxes.

Developments should include integral nest sites for birds and roost sites for bats in new and renovated or redeveloped buildings.

New developments should where possible incorporate green roofs; this can be a particularly effective way of recreating the open mosaic habitats found on brownfield sites.

Sustainable Drainage Systems (SuDS) can be used to improve water quality (and so protect habitats) and also have benefits for biodiversity by creating habitats.

7.0 Current Action

There are a wide range of community groups, too many to name here, across York working to look after and improve their local green space. Dedicated local people help residents have a say in the management of areas, help to raise funds, undertake practical tasks and lead walks, talks and events.

Sustrans Greener Greenways project aims to enhance biodiversity along vehicle-free cycle/walking routes create corridors for wildlife. Both Route 65 and 66 of the National Cycle Network run through York, partially along disused railway line, and connect to other routes around the city.

York Urban Buzz was a 21 month project (2015/2017) to create habitat for pollinators. Led by the invertebrate charity Buglife, and supported by City of York Council work was undertaken to create 100 sites across 25 hectares. More information is available from the Buglife website https://www.buglife.org.uk/urban-buzz/york

Where appropriate the council aims to include biodiversity enhancements in their schemes such as the use wildflower grassland seed mix and native hedgerow planting on the A59/A1237 roundabout scheme. A green roof has been included on the new building at Poppleton Park and Ride and the green roof at York Eco Business Centre, Clifton Moor built in 2008 now supports Common Spotted-orchids (*Dactylorhiza fuchsia*) (Enviroscope pers. comms., 2016).

8.0 Conservation Direction

Objective:

Increase the biodiversity value of existing urban green spaces and promote opportunities for biodiversity gain in all appropriate developments.

Actions:

- Take account of existing biodiversity interest on brownfield sites in considering any planning application.
- Through the planning process, seek to integrate biodiversity (e.g. green roofs, nesting and roosting boxes, ecologically appropriate landscaping) into all new developments.
- Promote 'Friends of' groups in those urban areas where they are not currently present, and support existing groups to enhance the biodiversity of their sites.
- Encourage large landowners (such as utilities, large corporations, health trusts, colleges, transport agencies) to improve provision for wildlife on their landholdings.

Working With:

- Local community and 'Friends of Groups'
- Landowners/managers
- Developers

Priority Species

Identification of York's Priority Species

A number of criteria have been used to identify priority species for this LBAP. These include;

i. Species that are of principal conservation concern as set out in Section 41 of the Natural Environment and Rural Communities Act 2006, and formerly the UK Biodiversity Action Plan.
ii. Species or groups that are in serious decline at a national and local level.
iii. Species or groups especially characteristic of Priority Habitats.
iv. Species for which the City of York holds important examples or populations.

However, full Species Action Plans (SAPs) have been prepared only for those species where there is a specific need for conservation action which can be addressed through the City of York LBAP;

- Great Crested Newt
- Water Vole
- Otter
- Bats
- Hymenoptera Aculeate (Bees and Wasps)
- Farmland Birds

For others, Species Action Notes have been outlined as the scope of these is largely confined to monitoring and/or reactive measures should the species become threatened in the LBAP area or in the case of Tansy Beetle and Dark-bordered Beauty moth where there would be duplication of other work.

For other species, particularly those confined to protected sites, the LBAP either would not be able to address their conservation needs or there is little scope for additional conservation measures so long as their habitats are adequately protected.

This does not mean that they are not important or that the Council will not take account of their interest, it is simply that it is not possible to consider all things within the scope of the LBAP.

Species for which LBAP Action Plans are not proposed

Grey Partridge *(Perdix perdix)*, **Corn Bunting** *(Emberiza calandra)* and **Skylark** *(Alauda arvensis)* share similar conservation requirements and are covered by the group SAP for farmland birds, which is also relevant to other declining species such as **Tree Sparrow** *(Passer montanus)* and **Linnet** *(Carduelis cannabina)*. Similarly, the conservation requirements of **Brown Hare** (*Lepus europaeus*) are broadly similar to those of farmland birds and a separate SAP has not therefore been produced. As with Corn Bunting, some populations also make use of flood-plain hay meadows and would potentially benefit from the Habitat Action Plan (HAP) for unimproved neutral grassland, flood meadow and wet grassland.

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Reed Bunting *(Emberiza schoeniclus)* and some Corn Bunting populations in the City of York are associated with floodplain hay meadows and the HAPs for unimproved neutral grassland, flood meadow and wet grassland, and fens and swamps are thus also relevant to these species.

Within the City of York, **Whooper Swan** *(Cygnus Cygnus)*, **Marsh Harrier** *(Circus aeruginosus)*, **Ruff** *(Philomachus pugnax)*, **Black-tailed Godwit** *(Limosa limosa)*, **Quail** *(Coturnix coturnix)* and **Spotted Crake** *(Porzana porzana)* are largely or entirely confined to the Lower Derwent Valley National Nature Reserve (NNR). In the York area the reserve is actively managed by Natural England and Yorkshire Wildlife Trust and the production of separate SAPs for these species is not considered necessary. The HAPs for unimproved neutral grassland, flood meadow and wet grassland, and fens and swamps could potentially benefit these species outside the NNR. The conservation requirements of **Water Rail** *(Rallus aquaticus)* are encompassed, in general terms, by the same HAP. **Snipe** *(Gallinago gallinago)* are also broadly addressed through theses HAPs. This is a species which can respond readily to restoration of high water levels, it is however sensitive to disturbance as are many ground nesting species.

Both **Bittern** *(Botaurus stellaris)* and **Corncrake** *(Crex crex)* occur within the City of York and have been the subject of special conservation programmes centred on the Lower Derwent Valley. There is little that can be done outside of these areas at present and it is not proposed therefore to produce a SAP for these species. This will however be kept under review for further consideration.

Short-eared Owl *(Asio flammeus)*, **Hen Harrier** *(Circus cyaneus)* and **Merlin** *(Falco columbarius)* are scarce winter visitors to the City, most often to extensive grassland and floodplain sites. Other than general habitat conservation it is difficult to identify specific measures for these species within the scope of the LBAP.

In 2016 **Nightjar** (*Caprimulgus europaeus*) was recorded singing on Strensall Common after an absence of 12 years (P. Reed, Strensall Conservation Group pers.comms.). The reasons for the previous disappearance of Nightjar here are unclear, although they may include the loss of heathland on the periphery of the Common. This species could potentially benefit from heathland restoration from plantation woodland which is included as an action in the lowland heath and acidic grassland HAP. Similarly this will benefit **Woodlark** (*Lullula arborea*) another heathland species, first recorded breeding at Strensall Common in 2005 and now stable at around three territories annually (P. Reed, Strensall Conservation Group pers.comms.).

SPECIES ACTION NOTES

Tansy Beetle (*Chrysolina graminis*)

Gaining its name from the Tansy plant (*Tanacetum vulgare*) on which it almost exclusively feeds, the Tansy Beetle is a large (around 10mm) iridescent, green leaf beetle. Currently the only known British populations are along a 45 km stretch of the River Ouse centred on York, and at Woodwalton Fen, Cambridgeshire, where it was rediscovered in 2014 after a 40 year absence of records. Populations have declined dramatically in recent years, both in Britain and across its worldwide range.

Tansy Beetle is a species of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. In 2014 it was classified as Endangered in the UK Red List review establishing the beetle as a species of national conservation concern.

Proposed Action
The Tansy Beetle Action Group (TBAG) was established to develop and oversee conservation efforts aimed at saving the Tansy Beetle from extinction in Britain. Although focused on York, TBAG consists of a range of local and national organisations working in partnership. A Tansy Beetle Conservation Action Plan 2017-2021 has been produced and can be downloaded from the 'Tansy Beetle Hub' on Buglife's website.

Tasteless Water-pepper (*Persicaria mitis)*

Tasteless Water-pepper is a nationally scarce and declining annual plant associated with inundation habitats. It occurs in wetland draw-down zones where long periods of flooding or waterlogging are followed by rapid drying-out in late summer.

The only recently known localities for this species in the City of York are Fulford Ings and Wheldrake Ings (where it was recorded for the first time in 1997). Tasteless Water-pepper was formerly more widespread in the York area with old records from drains on the Knavesmire, the banks of the River Foss and mudbanks at Foss Islands.

This species is vulnerable to habitat loss through drainage or agricultural improvement. At Fulford Ings, lack of livestock grazing and the encroachment of perennial vegetation in seasonally-flooded hollows and silted-up ditches make the survival of this species unlikely unless appropriate action is taken. *Persicaria* species have a persistent seed bank and disturbance of soil together with removal of perennial vegetation may allow plants to regenerate. A number of scarce plants with similar habitat requirements have become extinct in the City of York including Marsh Dock (*Rumex palustris*), Golden Dock (*R. maritimus*) and Small Water-pepper (*Persicaria minus*).

Proposed Action
Support Natural England in undertaking practical activities, and in seeking agreements with the multiple owners of Fulford Ings SSSI to restore sympathetic management of the site.

Prioritise the restoration of sparsely-vegetated, seasonally-flooded habitats where Tasteless Water-pepper is known to occur or has occurred in the recent past.

Establish an ex-situ population of plants grown from seed collected from Fulford Ings SSSI so that the species can be re-introduced to this or other suitable sites if necessary.

Dark-bordered Beauty moth (*Epione vespertaria*)

Strensall Common is the last known site for the Dark-bordered Beauty moth (*Epione vespertaria*) in England. Researchers at the University of York monitoring the York population between 2007 and 2014 found the numbers of adult moths reduced by an average of 30-35% annually. The research also highlighted the potential conflict between bespoke management for species and generic management of habitats; in this case grazing of a heathland SAC/SSSI to control scrub invasion and the resulting impact on the food-plant Creeping Willow (*Salix repens*).

Dark-bordered Beauty moth is a species of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and is listed as 'Rare' in the UK Red Data Book.

Proposed Action
The research identified that conservation action on Strensall Common must focus on the recovery of large, high density patches of Creeping Willow in areas still occupied by Dark-bordered Beauty moth, and then extending a network of such patches across the Common to create a more robust population.

A regular monitoring transect was implemented at Strensall Common in 2007. In 2015 the Butterfly Conservation Trust in partnership with the Ministry of Defence and Yorkshire Wildlife Trust began working to increase the food plant of the moth's caterpillars by planting out willows grown from local seed, and protecting them from grazing sheep.

The research is presented in Baker D, Barrett S, Beale CM, Crawford TJ, Ellis S, Gullett T, et al. (2016) *Decline of a Rare Moth at Its Last Known English Site: Causes and Lessons for Conservation*. PLoS ONE 11(6): e0157423. Available at https://doi.org/10.1371/journal.pone.0157423

Marsh Carpet Moth (*Gagitodes sagittata*)

The Marsh Carpet Moth is a much localised fenland insect known in Yorkshire only from Askham Bog and Thornton Ellers in the Lower Derwent Valley. Elsewhere in the country it is known from sites in Cambridgeshire, Nottinghamshire and Norfolk.

The larvae of the Marsh Carpet feed on the seeds of Meadow-rue (*Thalictrum aquilegiifolium*), a plant associated with tall-herb fen vegetation. Because Meadow-rue flowers and sets seed late in the summer, larval populations may be vulnerable to mowing during this period.

Although there were records from Askham Bog during the late 1980s, the present status of Marsh Carpet moth at the site is uncertain.

Proposed Action
Survey work is required to determine the present status and distribution of this species, both at Askham Bog and other potential sites where the larval foodplant grows. This is best undertaken by searching for larvae since light trap records do not necessarily indicate the presence of breeding populations. Additional target sites should include Strensall Common, Wheldrake Ings, Rawcliffe Meadows/Clifton Ings, Church Ings and Naburn Ings riverbank.

Appropriate management should be considered for any sites found to support Marsh Carpet moth, ensuring that stands of Meadow-rue are not cut until after they have set seed and died back.

Waved Water Beetle (*Agabus undulatus*)

The Waved Water Beetle, *Agabus undulatus*, is a medium-sized diving beetle with distinctive gold zig-zag markings on its wing cases. It is a rare species in Britain confined to ancient wetlands and secondary habitats (e.g. brick ponds, fen drains) connected to them.

Although *A. undulatus* tolerates some pollution it is incapable of flight and therefore very vulnerable to habitat loss. Unlike most *Agabus* species its larvae are adapted to swimming in open water and this may render them sensitive to fish predation.

The beetle has been recorded from 14 hectads (10km^2 areas) in England from 1980 onwards but it appears to have become extinct in southern England and in the Midlands. It was once established in clay-pits in the south-western outskirts of York, focused around Askham Bog which was long renowned as the British centre for this insect.

Most of the local sites have been destroyed by reclamation of old clay workings. Two small ponds adjacent to Chapman's Pond supported very large numbers in the 1970s but have become dried-out and overgrown. Deterioration and loss of aquatic habitats at Askham Bog resulted in diminishing populations within the reserve and based on surveys undertaken in 2012 it is now considered no longer present.

A survey undertaken in 2008 of Gollie Ponds near Fulford confirmed the presence of the beetle in two ponds, and it had previously been recorded in a third on this site in 1998. This appears to be the only remaining site for the beetle, not only in York, but in northern England. This population is potentially vulnerable to agricultural run-off, climatic change and successional change.

Gollie Ponds is designated as a SINC. Some limited short term conservation measures were carried out here in 2011 but to date it has not been possible to verify whether this work has been successful.

Proposed Action
Carry out an updated survey of Gollie Ponds SINC to verify the status of *A. undulatus* and seek ongoing positive management actions for the site.

Survey other ponds in the City of York for *A. undulatus*, possibly through a volunteer programme. This distinctive species is considered a suitable candidate for regular field monitoring by non-coleopterists.

Investigate the feasibility of captive breeding and reintroduction of *A. undulatus* at Askham Bog.

Restore the two small ponds adjacent to Chapman's Pond and consider reintroduction of *A. undulatus*.

Depressed River Mussel *(Pseudanodonta complanata)*

The Depressed River Mussel is an uncommon and localised mollusc found in large, relatively unpolluted lowland hard water rivers. Like many other freshwater mussels it has a parasitic larval stage, apparently associated with host fish such as Perch (*Perca fluviatilis*) and Stickleback (*Gasterosteus aculeatus*). The main predator of the Depressed River Mussel is Otters and so a decline in its population could impact them too.

It is widespread but locally distributed in the lower reaches of slow flowing lowland rivers throughout England. It is classified as Vulnerable by the IUCN, Vulnerable (RDB 2) in the UK Red Data Books and is a Section 41 (NERC Act 2006) Conservation Priority Species. The species is widely distributed throughout Europe, with the UK and Finland hosting the largest populations, but populations are unstable and occur patchily where found and is considered threatened on a European scale.

Threats are likely to include water pollution (organic and inorganic), siltation, channelization, habitat disturbance and loss through water abstraction, dredging and drought, and low populations of host fish species. Any developments affecting river habitats could potentially impact upon this species including increased navigation, mineral extraction, water abstraction or pollution.

This species is present throughout the River Ouse through the City of York boundary. Records also exist from the River Derwent at Stamford Bridge and near Elvington. Due to lack of recording it is not possible to assess if there has been a loss of the species. Previously the Environment Agency has complied information on the ecology of Depressed River Mussel and its distribution in the Ouse and Derwent systems.

Proposed Action
Compile information on the ecology of Depressed River Mussel and record its distribution in the Ouse and Derwent river systems. Obtain any records held by the Environment Agency and share with the North and East Yorkshire Ecological Data Centre.

Ensure that any development affecting river habitats in the City of York takes full account of the conservation requirements of this species including the need to maintain abundant populations of coarse fish as larval hosts. Where appropriate a specialist survey should be undertaken.

Pond Mud Snail *(Omphiscola glabra)*

Omphiscola glabra is a pond mud snail, associated with shallow, often temporary, base-poor water on acidic soils including small ditches, temporary pools or seepages and track-ruts. It is small (14 - 25mm long) with an elongated brown conical shell. It is much localised in Britain and classified as Near Threatened by the IUCN, Vulnerable (RDB 2) in the UK Red Data Books and is a Section 41 (NERC Act 2006) Conservation Priority Species. Yorkshire, particularly the Humberhead Levels and Vale of York, is among the few remaining strongholds.

This species is threatened by habitat loss and fragmentation, declines in water quality from pollution and hydrological change such as improvements in field drainage destroying boggy areas.

Around the turn of the century, *O. glabra* was known from five sites within the present-day City of York boundary and today is known to occur at Strensall Common and Heslington Tilmire SSSI. It is also known to occur at Sutton on Forest, North Yorkshire just outside the City of York and may possibly still occur at other localities.

Proposed Action
In 2016 the Freshwater Habitat Trust provided training for volunteers and undertook surveys for *O. glabra* at Strensall Common and Heslington Tilmire SSSI. This survey should be extended to further sites including ditches at Askham Bog SSSI and ponds at World's End SINC, Strensall. Buglife have produced a Pond Mud Snail management sheet which is available online.

River Lamprey (*Lampetra fluviatilis*) and Sea Lamprey (*Petromyzon marinus*)

River Lamprey and Sea Lamprey are migratory fish which breed in rivers, move downstream as larvae and feed at sea as adults before returning to spawn and die. The adults are parasitic on other fish but the larvae (known as ammocoetes) burrow in silt for several years and feed as detritivores.

Both species are considered threatened in a European context due to the pollution of estuaries, the obstruction of migration routes by barrages, locks and weirs and the loss of spawning habitats. Populations of both have declined in Britain.

Sea Lampreys migrate up the Ouse in small numbers with spawning recorded in the Swale and the Ure. River Lampreys occur in relatively large numbers in the Ouse system with their main spawning areas in the Nidd and the Ure. River Lamprey also occurs in good numbers in the Derwent but Sea Lamprey is now very rare in that river.

The Ouse system is certainly of regional importance for River Lamprey and Sea Lamprey, and possibly of national importance. Nonetheless, populations have

declined since huge numbers were trapped on the Ouse and Derwent in the late 19th century for use as fishing bait.

Proposed Action
Obtain any records held by the Environment Agency and share with the North and East Yorkshire Ecological Data Centre.

Ensure that any development affecting the Rivers Ouse or Derwent takes account of the requirements of migratory fish species such as River Lamprey and Sea Lamprey. Obstacles such as new locks, weirs and barrages should be subject to full environmental impact assessment.

Rare Plants

Plants can be rare because of many factors. Alongside habitat loss, degradation and fragmentation, climate change is increasingly recognised as one of the most serious threats.

When considering what can be done about maintaining populations of rare plants, one consideration will be the possibility of enhancing the existing population and another re-introducing it to other suitable sites. For example, a small population of Greater Water-parsnip has been planted in the pond at Natural England's office at Bank Island, Wheldrake to be monitored by Freshwater Habitat Trust volunteers. However any reintroduction needs to be carefully considered and agreed with the appropriate National and Local partners. Key to success is if the conditions suitable for the species to flourish and for the population to become self-sustaining exist, and if there will not be a negative impact on the rest of the ecosystem.

At a local scale the primary threats to any species that is reduced to only one location has to be accidental loss from one off development, inappropriate management or the accidental picking or damage by a member of the public. However, other threats include the loss of reproductive viability because of the small population and the potential loss because of extremes in climatic conditions (e.g. a very wet summer).

Current Action
As well as Greater Water-parsnip the Freshwater Habitats Trust has begun monitoring and habitat management targeted at Pillwort on Strensall Common, and Tubular Water-dropwort at Rawcliffe Meadows and Hassacarr Pond.

Proposed Action
Carry out a desktop study to ascertain the species likely to be considered as rare and assess the viability for action to be taken. Species of interest already identified include:

- Common Meadow-rue *(Thalictrum flavum).*
- Heath Cudweed (*Gnaphalium sylvaticum)*
- Greater Water-parsnip (*Sium latifolium)*
- Creeping Marshwort (*Apium repens)*
- Pillwort *(Pilularia globulifera)*
- Tubular Water-dropwort (*Oenanthe fistulosa*)

Where any rare species is found, consideration will be given to its protection, conservation and appropriate enhancement to mitigate for any potential harm.

Rare Invertebrates

A number of species of very rare insects, at least in the local context, have been recorded in York. However, many of these are from old or individual records, or where their ecology is little known. As such it is difficult to establish a Species Action Plan or to ascertain the exact status and viability in York, but they are still of biodiversity interest and it is important that they are given consideration.

As for plants, insects are rare because of many factors with habitat loss and climate changes being the leading ones.

Current Action
Nationally, Buglife – The Invertebrate Conservation Trust are working to promote the environmental importance of invertebrates, develop and share knowledge about how to conserve invertebrates, and undertake practical conservation projects. Their website contains a range of advice and guidance documents.

At a local level some work has been undertaken to protect and the habitat for the Waved Water Beetle and extensive work done around the Tansy Beetle (see Species Action Notes above).

Local expert and specialist recorders, such as those affiliated with the Yorkshire Naturalist's Union, are very important in the conservation of rare invertebrates.

Proposed Action
Carry out a desktop study to ascertain the species likely to be considered as rare and assess the viability for action to be taken. Species already known that fall into this category include:

- Hairy Canary *Phaonia jaroschewskii* (house fly)
- *Myopa vicaria* (thick-headed fly)
- *Amara famelica* (ground beetle)
- *Dromius sigma* (ground beetle)
- *Panagaeus cruxmajor* (Crucifix ground beetle)
- *Agabus uliginosus* (diving beetle)
- *Andrena ruficrus* (mining bee)
- *Dytiscus dimidiatus* (water beetle)
- *Limnophila fasciata* (crane fly)
- *Paraphotistus nigricornis* (click beetle)

Where any rare species is found, consideration will be given to its protection, conservation and appropriate enhancement to mitigate for any potential harm.

SPECIES ACTION PLANS

Great Crested Newt

1.0 Introduction

Great Crested Newt (*Triturus cristatus*) is the largest species of newt in the UK. It can be distinguished from the other native newt species (Smooth Newt, *Lissotriton vulgaris* and Palmate Newt, *Lissotriton helveticus*) by its size and colouring. Great Crested Newts are significantly larger at up to 17cm in length, have a granular skin texture and in the terrestrial phase are dark grey, brown or black over most of the body, with a bright yellow/orange and black belly pattern. Males have a prominent crest along the back, and above and below the tail, which is larger during the breeding season.

Whilst Great Crested Newts have declined in recent years, Britain still supports one of the largest populations in Europe. In suitable conditions, populations can increase quickly. York has a healthy population of Great Crested Newts and therefore has an international responsibility to conserve this species.

2.0 Legal Status

Great Crested Newt is a species of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Great crested newts have full protection under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. This makes it illegal to;

- Capture, kill, disturb or injure great crested newts deliberately,
- Damage or destroy a breeding or resting place,
- Obstruct access to their resting or sheltering places (deliberately or by not taking enough care),
- Possess, sell, control or transport live or dead newts, or parts of them, and
- Take great crested newt eggs.

Where offences under the Conservation of Habitats and Species Regulations 2017 cannot be avoided (e.g. through land management or development) European Protected Species Licences from Natural England can be obtained to legitimise works. In February 2017 the Government announced the introduction of District Level Licensing which aims to take a landscape-scale approach.

Some Great Crested Newt breeding sites are considered important enough to have a local, national or European designation. For example at Kirk Deighton, approximately 12km West of the City of York boundary (north of Wetherby, North Yorkshire), a pond and surrounding habitat is designated as a Special Area of Conservation (SAC) for Great Crested Newts.

3.0 The Resource

Within York Great Crested Newt is locally common and widespread, although many populations are isolated due to habitat fragmentation and are declining.

Sites of Importance for Nature Conservation with Great Crested Newt records include;

- Brinkworth Rush,
- Carr Banks Meadow, Stockton on the Forest,
- Hasscarr Pond, Dunnington, and
- Strensall Village Meadows.

Without a large scale strategic survey of ponds, there are probably many undiscovered sites.

Ecology

Like all amphibians, Great Crested Newts rely on ponds and other waterbodies for breeding, but actually spend a large part of their annual lifecycle on land. The breeding season begins as soon as the winter dormancy is over, and newts begin migrating from overwintering habitat to breeding ponds from February-April, but this is influenced by a range of factors, such as temperature and weather conditions. Courtship and egg-laying generally takes place from mid-March to mid-May. A female can lay up to 200 eggs per season over several weeks, carefully folding or wrapping each egg in a leaf of a submerged plant. Larvae will hatch after around three weeks and will continue to develop over the next two - three months, feeding on a range of crustaceans, insect larvae, tadpoles and other newt larvae. Adult newts gradually leave the breeding pond from May onwards, with the juveniles having completed metamorphosis (efts) leaving from August-October.

Whilst on land, Great Crested Newts will be foraging; feeding on a range of invertebrate prey; dispersing; or taking refuge in dense vegetation or under suitable refuge sites. Over winter, newts hibernate and this may last from October to February.

Great Crested Newts often (but not always) inhabit ponds which are part of a larger pond cluster or wider pond network. This allows populations to persist, and they are also better able to cope with some loss of habitat for example through one of the ponds drying up or getting in-filled. This can though complicate conservation efforts as an impact on a single pond can obviously have knock on effects on newts in another nearby pond. High quality terrestrial habitat near to the breeding pond is also essential, especially pasture, as is a lack of barriers to dispersal (e.g. busy roads, fast flowing water courses etc.). Suitable refuge sites and hibernacula (places where amphibians can over winter) commonly include mammal burrows, rock piles, deadwood, deep leaf litter etc. Newts will commonly move between ponds within c.250m of each other, and will generally stay within c.500m of the breeding site, although they have been known to disperse over much greater distances to colonise new ponds.

4.0 Management

Practical conservation for Great Crested Newts focuses on habitat improvement work aimed at providing a sustainable network of good quality breeding sites that are protected and managed. The scale at which action is taken is important; creating or

restoring a pond whilst also addressing the surrounding habitat and connectivity to other ponds will maximize the benefits.

Great Crested Newts favour medium to large ponds with marginal and emergent vegetation but which are not too overshaded and maintain a level of open water. Fish, and in particular sticklebacks (*Gasterosteidae*), can be significant predators of Great Crested Newt larvae and so dense populations of fish will affect the presence of amphibians. The surrounding (within 250m) terrestrial habitat is very important and ideally offers good opportunity for shelter and foraging (rough grassland, scrub, woodland).

A European Protected Species Licence is generally not required for most standard pond management works as long as it is planned well to minimise the risk of deliberate killing, injuring or disturbing newts. The work should normally be carried out in late autumn through winter, typically early November to late January, when great crested newts are least likely to be present in ponds. Care must be taken not to damage terrestrial damage habitat and hibernacula (places where newts over-winter).

5.0 Threats

The main threats to Great Crested Newts (both accidental and deliberate) include:

- Loss of ponds and terrestrial habitat through development work,
- Intensive agriculture, including overstocking of livestock that can damage pond edges and pollute water quality,
- Incorrect management and filling in of ponds,
- Habitat fragmentation and reduction,
- Invasive species affecting the suitability of ponds e.g. New Zealand Stonecrop,
- Introduction of fish i.e. the predation of Great Crested Newt larvae by fish, in particular sticklebacks but also species introduced for angling purposes,
- Disturbance for example from dogs entering ponds,
- Predation by cats,
- Pollution,
- Amphibian diseases including Chytridiomycosis ('Chytrid') and Ranavirus ('red leg').

6.0 Potential for Enhancement

In sites supporting Great Crested Newts, landowners and land managers can ensure the following actions are carried out to safeguard local populations and retain suitable habitat:

- Where mowing is required, cut at a time when amphibians are not vulnerable, i.e. during hot and dry conditions and carry out a high cut (15cm).
- Carry out any pond management work during Autumn/Winter, preferably November/December when newts are out of the ponds and hibernating.
- Ensure refuge sites are retained and build new hibernacula piles. Leave cut timber on site.
- Carry out scrub control around ponds to prevent over-shading.

- Fence areas or reduce stock levels to prevent over grazing or heavy poaching.
- Leave a buffer of rough grassland around the pond, or leave field margins as rough grass.
- Carry out hedgerow restoration and new planting, and improve connectivity between ponds and other suitable terrestrial habitat.
- Existing ponds can be re-profiled to allow some deeper areas.
- Create new ponds to strengthen the local pond network.

7.0 Current Action

There are criteria for sites supporting a significant population of Great Crested Newts to be designated as a Site of Importance for Nature Conservation.

Consideration of this species is a material requirement in the planning process. The Council's countryside and ecology officer advises on planning applications, including mitigation and enhancement where appropriate. Site protection, mitigation and habitat creation takes place through the development process.

There are Higher Level Stewardship Schemes (Agri-Environment) in place on Council owned land with Great Crested Newt as one of the named target species, for example at Bootham Stray, and has included the creation and management of new and historical ponds and wetland habitat.

In 2015 - 2017 the Freshwater Habitats Trust has been leading PondNet, a national volunteer survey to collect information about trends in pond quality and pond species. Survey techniques have included traditional methods for Great Crested Newts (netting, torching, egg search) and also Environmental DNA (eDNA); monitoring the freshwater species that live in waterbodies by collecting a water sample, and analysing it for traces of DNA.

8.0 Conservation Direction

Objective: Maintain York as a key area for Great Crested Newt populations.

Actions:

- Undertake work to identify further populations of Great Crested Newt to establish the full extent and range in York. Encourage submission of records to the North and East Yorkshire Ecological Data Centre.
- Maintain and enhance the known population through continued advice and implementation of mitigation schemes as part of the planning process/development management work.
- Maintain and enhance Great Crested Newt habitat through correct management and the creation of new aquatic and terrestrial habitat.
- Improve pond networks and connectivity between sites and populations.
- Provide advice to landowners on the correct management of habitats to benefit Great Crested Newt, and raise awareness of their conservation.

Working With:

- Freshwater Habitats Trust
- North and East Yorkshire Ecological Data Centre
- Landowners/managers

Water Vole

1.0 Introduction

Water Vole (*Arvicola amphibius*), 'Ratty' of The Wind in the Willows fame, was once a frequent inhabitant of the banks of rivers, lakes, ditches and dykes where the gentle 'plop' as it entered the water used to be a common occurrence. However, since the 1900's, the Water Vole population has rapidly declined, and continues to be one of Britain's fastest declining wild mammals. National surveys carried out in the 1990's found that water voles had been lost from two thirds of their known sites. Yorkshire was one of the worst areas with 97% of populations lost.

2.0 Legal Status

Water Vole is a species of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

The water vole is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981. It is illegal to;

- Intentionally capture, kill or injure water voles,
- Damage, destroy or block access to their places of shelter or protection (on purpose or by not taking enough care),
- Disturb them in a place of shelter or protection (on purpose or by not taking enough care), or
- Possess, sell, control or transport live or dead water voles or parts of them (not water voles bred in captivity).

In England certain displacement activities, in the context of development, can be carried out under a Class Licence by a registered person; others require a site-specific licence from Natural England.

3.0 The Resource

Water Voles are fairly widespread within the York area, however in more recent years they have disappeared from many sites where they had previously been recorded. Numbers fluctuate widely depending on winter conditions and flooding.

Examples of populations known to exist across York are on various stretches of the River Foss, in Blue Beck and ponds at Clifton Ings and Rawcliffe Meadows, in Tang Hall Beck at St Nicholas Fields and in Germany Beck at Fulford.

Ecology

The Water Vole is the largest of the British voles. It is herbivorous, feeding largely on lush stems and leaves of a wide range of aquatic and marginal plants including many species of grasses, reeds, rushes, sedges and other wetland plants. During the winter, roots and bark also form an important part of their diet. It is known to feed on over 200 species of plants including some broad-leaved species.

Water Voles can be found in most freshwater habitats and favour water courses with a slow, stable flow rate, with bankside and marginal vegetation to provide food and cover, and stepped or steep earth banks suitable for burrowing above the high water level. They build their nests in extensive burrow systems on the banks of the riverside, ponds and ditches, although can occasionally weave nests above ground in the bases of sedges and reeds.

They have very high site specificity, probably due to the suitability of the banks for burrowing, availability of refuge sites for times of flood etc. and a plentiful food source. Because of this, they do not easily adapt to changes in their habitat, although in some situations they can be quite tolerant to disturbance, particularly in more urban environments.

Water Voles tend to live in colonies, but a series of continuous territories are established by breeding females in the spring and are marked by latrines. Breeding occurs from March-October with females producing 2-5 litters a year, each with 5-8 young. Males have much larger territories which can overlap with one or more breeding female territories.

Characteristic field signs of water voles include latrines marking range boundaries; distinctive feeding stations with a neat pile of chewed vegetation; burrows; grazed lawns around land holes; above-ground nests; footprints; and runways in the vegetation.

Water Voles can be distinguished from the Brown Rat (*Rattus norvegicus*) from its much blunter muzzle, short rounded ears, and well furred tail. Water Voles also swim more buoyantly in the water.

4.0 Management

Water voles rely on good habitat providing shelter and food to survive. Sensitive habitat management is also key to supporting existing populations.

Mowing regimes can be altered to allow a margin of longer and denser vegetation is retained on the bank just above the water's edge. Maintaining banks on rotation by cutting vegetation on alternate years reduces disturbance and ensures there is always suitable habitat available.

Overgrazing and trampling of banks by stock can be prevented through fencing-off areas of the watercourse or pond and providing buffer strips.

Reduction and control of over shading by trees and scrub encourages a healthy growth of bankside, marginal and aquatic vegetation.

The Water Vole Conservation Handbook (Strachan *et al*. 2011) provides more detail on management.

5.0 Threats

The main threats that have contributed to the decline of Water Voles in recent years include:

- Predation – this has increased dramatically following the release of the American Mink from fur farms, brown rat and domestic cats also prey on Water Vole; a particular problem in urban areas.
- Loss of habitat – directly through land use changes and canalisation, culverting, bank stabilisation and dredging of water courses, but also through over or under-management such as overgrazing, excessive grass cutting and over-shading from scrub, trees and invasive species.
- Habitat fragmentation - causing isolation and population being less able to recover from disturbance.
- Increased drought and/or flooding caused by climate change, urbanisation and intensive agriculture. Fluctuations in water levels may have an adverse affect, particularly if there is no suitable refuge habitat nearby such as 'off-line' ponds.

6.0 Potential for Enhancement

Many of the Water Vole populations in York are small and very isolated and so are particularly susceptible to changes such as habitat degradation, habitat loss, predation and pollution. These populations are therefore very vulnerable to extinction. Where Water Vole populations exist, land owners and managers can carry follow best practice management advice, as outlined in Section 4.0 to help to safeguard populations, extend existing habitat and improve connectivity for example through the creation off-stream ponds to act as refuge sites during times of flood and to link with other sites would increase. The Freshwater Habitats Trust offers advice on how to create ponds for Water Voles.

7.0 Current Action

In 2007 Yorventure funded a scheme on Bur Dike, Clifton aimed at securing the existing Water Vole population. Work included fencing off the watercourse from livestock, scrub control on banks, and altering the mowing regime.

In 2015 St Nicks received funding from the SITA Trust for a project focusing on surveying Tang Hall and Osbaldwick Beck and undertaking habitat management and enhancement. This successful project trained volunteers in surveying techniques and re-confirmed the presence of Water Vole along these watercourses.

Consideration of this species is a material requirement in the planning process. The Council's countryside and ecology officer advises on planning applications, including mitigation and enhancement where appropriate. Site protection, mitigation and habitat creation takes place through the development process.

Where appropriate, the Council provides advice to landowners, CYC drainage engineers, IDB and Yorkshire Water to ensure scheduled work takes account of, and wherever possible, enhances the habitat for Water Vole.

The People's Trust for Endangered Species (PTES) is co-coordinating a National Water Vole Monitoring Programme. In 2015 two sites in York were surveyed, both along Tang Hall Beck, both of which were positive for water voles.

8.0 Conservation Direction

Objective:

To increase and maintain a stable Water Vole population in the York area.

Actions:

- Undertake work to identify further populations of Water Voles to establish the full extent and range in York. Encourage submission of records to the North and East Yorkshire Ecological Data Centre.
- Maintain and enhance the known population through continued advice and implementation of mitigation schemes as part of the planning process/development management work.
- Maintain and enhance Water Vole habitat through correct management techniques, scrub control on banks and the creation of new habitat.
- Improve connectivity between sites and create new off-line ponds which can provide refuge sites for voles during times of flooding and to avoid predators.

Working With:

- St Nicholas Fields
- The River Foss Society
- Yorkshire Mammal Group
- Internal Drainage Boards
- Environment Agency
- Landowners/managers

Otter

1.0 Introduction

The Otter is a carnivorous mammal that inhabits rivers, streams, wetlands and coastal waters. The limiting nature of their food supply means that otters can have very large home ranges. On rivers, a typical range size is 10 - 25km for females and 25 - 50km for males. Female ranges are thought to overlap whereas males' are territorial. This need for a wide geographical range means that a catchment wide approach is essential to otter conservation.

2.0 Legal Status

Otter is a species of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

The Otter receives special protection under the Conservation of Habitats and Species Regulations 2017 and section 9 (4) (b) (c) and (5) of The Wildlife and Countryside Act 1981 (as amended), making it illegal to kill, injure or take an otter or destroy or obstruct access to its resting places. It's listing in Annex 2 of The European Habitats Directives (92/43/EEC) requires the designation of Special Areas of Conservation (SAC's) for sites supporting important Otter populations.

3.0 The Resource

Otter Populations thrived throughout the UK until the 1960's when it was noticed that numbers were declining at an alarming rate. This population crash was thought to be due to poisoning from agricultural pesticides that drained into river systems.

In York, Otter are present on the River Foss and River Ouse as well as their tributaries. They are often recorded in off-lying ponds, particularly those stocked with fish. Recent sightings have also been recorded within the city centre area. Unfortunately, there have also been a number of road casualties in recent years.

Recent records of Otters include from;

- Germany Beck, Fulford
- Tang Hall Beck, St Nicks
- River Foss at Strensall
- River Foss near Hungate

Otters are a qualifying feature (but not a primary reason for site selection) of the River Derwent Special Area of Conservation.

Ecology

The otter is one of our largest predators in Britain, and well adapted to a semi-aquatic lifestyle. They have webbed feet, a long rudder-like tail and thick, waterproof, and highly insulating fur. Their diet is predominantly fish although they will also eat a range of crustaceans, small mammals, birds and amphibians. They are usually

solitary, territorial and most active at dusk or during the night, although they can also be seen during the day. Ranges can be very large along the river corridor and will also include smaller tributaries and nearby ponds and wooded/scrub habitat. Otters will often use a variety of lying-up sites or 'holts' during day, which can be covered or un-covered, away from high levels of disturbance. Such holt sites have been found under the root systems of bank-side trees, within dense vegetation, under a pile of rocks or a cavity within an old river wall, or a hole in the bank. They have also been known to use pipes, and old buildings.

Separate breeding holts which are more permanent, secure and free from disturbance are used by the female to have and rear her young. These breeding sites are not always close to the water, but can be traditional sites, which the otter will return to year after year. Otters do not hibernate, and breeding can occur throughout the year. Typically 1-4 cubs are born. The young are in the water by 10 weeks, but they will remain dependent on their mother for around one year, and so females will often only breed once every two years.

An Otters' main requirements are:

- A plentiful food supply from a variety of habitats depending on the season of the year.
- Secure, undisturbed breeding and resting sites in close proximity to good food supplies.
- Good water quality so as to ensure a good food supply with minimal pollutants to ensure poisons do not build up within the otter and effect life expectancy and breeding success.
- Freedom from accidental mortality such as road deaths.

Although Otters are elusive creatures and not often seen, signs of their presence along a watercourse can be found in the form of otter spraint (the sweet smelling, black tar-like droppings made up predominantly of fish bones and scales, which are deposited in prominent locations to mark their range); footprints on sandy or muddy riverbanks; and suitable lying-up sites.

Otters can be distinguished from the American mink (*Neovison vison*) by its size, shape and colouration – Otters are larger and broader, with paler grey-brown fur, and a pale chest and throat. The spraint of mink is much fouler smelling, and tends to contain more mammal hair/bones.

4.0 Management

As with many species it is actually better not to focus exclusively on them but manage land as a mosaic of habitats within the local landscape. However, good quality wetland habitats and lack of disturbance from people and dogs is particularly important.

5.0 Threats

Contributing factors to the decline in Otter populations have included:

- Loss of habitat through urban development and agricultural intensification
- Continued hunting pressure and persecution

- Accidental deaths – such as road kills, and drowning in eel nets
- Disturbance of breeding sites through recreational activities
- Water pollution and poisoning - Otters are carnivores at the top of their food chain, and so any poisons present in their prey are retained and build up to dangerous, often fatal, levels
- River-bank engineering works
- Increased grazing pressure of riparian habitats

6.0 Potential for Enhancement

Otter conservation can be supported by maintaining existing habitat along the river corridor where otters are known to be present, and by creating suitable new habitat. Some of the things which can be done to achieve this include:

- Maintaining buffers along the river corridor, including undisturbed areas of dense vegetation which would provide additional cover for wildlife, away from public use.
- Creating new holt sites. This can be done through the construction of an artificial otter holt, made from timber or recycled materials in a suitable, undisturbed area.
- Planting up new scrub habitat, particularly around new holt sites.
- Fencing to prevent livestock poaching and grazing of certain areas of the riverbank to maintain suitable cover. Fencing can also be installed to prevent otters crossing busy roads in order to reduce road mortalities.
- In order to contribute to on-going monitoring, and to help with conservation efforts, all otter sightings should be recorded.

7.0 Current Action

When the opportunity has arisen there has been the creation of artificial otter holts on privately owned land adjacent to the rivers for example, in the Foss Basin and at King's Pool on the River Foss.

Consideration of this species is a material requirement in the planning process. The Council's countryside and ecology officer advises on planning applications, including mitigation and enhancement where appropriate. Site protection, mitigation and habitat creation takes place through the development process.

8.0 Conservation Direction

Objective:

Within the York area, establish a stable Otter population.

Actions:

- Protect and increase the Otter population within the York area.
- Maintain and enhance Otter habitat through correct management and the creation of new holt and lying-up sites away from disturbance.

- Ensure adequate buffer zones are maintained alongside rivers and waterways and to strengthen river corridors.
- Continue to monitor and survey populations to establish the full extent and range of Otter in York.

Working With:

- Environment Agency
- Yorkshire Mammal Group
- The River Foss Society

Bats

1.0 Introduction

There are currently 17 species of bat breeding in Britain, nine of which can be found locally. Each species has its own particular requirements, but as a group they may be found within all habitats. Some species often rely on and use buildings for roosting, and so bats have a special connection with humans. During the past century most species are thought to have declined dramatically. However, it is difficult to quantify the losses.

2.0 Legal Status

Brown Long-eared Bat *(Plecotus auritus)*, Soprano Pipistrelle *(Pipistrellus pygmaeus)* and Noctule *(Nyctalus noctula)* are species of principal importance for the conservation of biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. All of these are found within the York area.

All bats and their roosts are afforded special protection under the Wildlife and Countryside Act 1981 as amended, and the Conservation of Habitats and Species Regulations 2017. This protection applies to roosts all year round, even when the bats are seasonally absent. Any work proposed on a dwelling house which might affect bats or their roosts will require consultation with Natural England. In other buildings, structures and trees known (or suspected) to support a bat roost, a European Protected Species Licence from Natural England may be required.

3.0 The Resource

In York, there are thought to be up to nine bat species present although some have only been recorded on a few occasions. It is not known whether all of these are breeding within the York area. Common Pipistrelle *(Pipistrellus pipistrellus)* and Soprano Pipistrelle are the most commonly encountered species in the York area and are often found within the urban environment roosting in buildings. They are regularly seen foraging over parks and open spaces. Residential gardens also play an important role in providing good quality foraging habitat, adding to green corridors. Greater species diversity is seen moving out towards the outskirts of York, leading out to more open countryside and where there are more varied habitats.

Bats known to occur in the York area are;

- Common Pipistrelle
- Soprano Pipistrelle
- Nathusius' Pipistrelle (*Pipistrellus nathusii*)
- Daubenton's bat (*Myotis daubentonii*)
- Natterer's bat (*Myotis nattereri*)
- Whiskered/Brandts bat (*Myotis mystacinus/brantii*)
- Noctule (*Nyctalus noctula*)
- Brown Long-eared Bat (*Plecotus auritus*)

The Bat Conservation Trust's Bat Surveys for Professional Ecologists Good Practice Guidelines (2016) provides a clear summary of roosting and habitat preferences for the different species of bat.

Two SINC sites in York are designated for the presence roosting bats; Kexby Bridge over the River Derwent on the York – East Riding boundary which supports a population of Daubenton's bat and is regularly monitored by East Yorkshire Bat Group, and Clifton Bridge over the River Ouse which supports Pipistrelle sp., Daubenton's bat and Noctule.

Ecology

Bats are one of the most diverse of all of the mammalian groups. All UK bats feed on insects and other small invertebrates, and are nocturnal, emerging from their roosts around sunset and returning at dawn. From November and over the winter, when insects are scarce and difficult to find, bats will hibernate in cool dark places with a stable temperature, such as underground sites, trees and buildings. They will start to become more active again during March when temperatures start to increase, foraging on milder nights, but will go into torpor if temperatures are low.

In late spring-summer, females gather together and form maternity roosts to give birth and rear their young. Maternity colonies are very variable in numbers, for example for Pipistrelle species from 20 to over 1,000. Normally, only one infant is born each year in June-July, and the young is dependent on their mother's milk until it is old enough to fly and hunt. This dependency and slow population recruitment rate means that maternity roosts are particularly vulnerable to disturbance and if disturbed females can abandon the roost completely and therefore also abandon their young. During this time, the males and non-breeding females will roost separately, often close by, and either individually or in very small numbers.

Bats will use different roosts throughout the year utilized throughout the year include night roosts (used between periods of foraging); temporary day roosts; summer roosts; mating roosts; and feeding perches. Being long-lived animals they are site faithful, particularly with regard to maternity and hibernation roosts, and return to the same places year after year to roost. Mating and swarming takes place in autumn, just before going to their hibernation roosts. We are not aware of any major swarming sites within the York area.

As well as suitable roosting sites, good quality foraging habitat and strong commuting networks linking between habitats and sites are essential. Although the different species have different requirements their needs are broadly similar; insect-rich habitats and features for navigation. Examples include;

- River corridors and other wetland habitats including ponds and ditches,
- Tree cover, particularly deciduous woodland and woodland-edge habitat,
- Hedgerows and tree-lines, and
- Rough grassland habitats.

4.0 Management

Bat roosts require no human management, other than the avoidance of disturbance. However the maintenance and modification of buildings and arboricultural activity can inadvertently reduce the available roosting opportunities.

Sensitive habitat management which promotes biodiversity benefits bats; from Environmental Stewardship Schemes on farmland to planting night-scented flowers in formal parks and gardens.

5.0 Threats

The main threats to bats include:

- Destruction of roosts (both lawful and due to negligence) through development, building maintenance and tree work/removal,
- Loss of potential roosting habitat through development, building maintenance and tree work/removal,
- Habitat loss and fragmentation,
- The use of pesticides and intensive farming practices leading to a reduction in the abundance of insects,
- Predation of bats by domestic cats,
- Artificial lighting if it is sited on key bat habitat or near roosts, and
- Modern building practices e.g. chemical timber treatment and the use of breathable roofing membranes (in which bats can get entangled).

6.0 Potential for Enhancement

There are many ways in which bats can be encouraged and to ensure that existing habitat is protected and enhanced. Some of these actions are included below, and all will help with the conservation of a declining species.

- Create new roosting opportunities for bats through incorporating habitat features into a building, for example special bat access tiles, bat bricks or through adapting a section of soffit box to provide good roosting space for bats. Bat boxes can also be put up on buildings and/or in trees.
- Create new ponds and other wetland features.
- Restore existing hedgerows through gapping-up and maintaining as a tall, thick, continuous hedge. Planting new native mixed wildlife hedgerows to connect fragmented habitats and to strengthen the existing local hedgerow network.
- Where lighting cannot be avoided, design any lighting schemes so that there is no direct illumination of roost entrances, foraging areas or commuting routes. Ensure that dark corridors are retained for continued foraging and commuting. Reduce/minimise any light spillage as much as possible, through the type of light used, column height, and the use of hoods or cowls etc. to direct light to where it is needed.
- Plant street trees.
- Wherever possible, retain veteran trees which may provide good roosting opportunities. Where there are perceived public safety issues, consider alternatives to felling, such as crown reduction or pollarding.

- Do not use breathable roofing membranes where there are existing roosts, or where new roosts are being created within the roof of a building.
- Plant native, nectar-rich plant species in gardens, particularly with night scented flowers to attract more insects.

7.0 Current Action

Consideration of this species is a material requirement in the planning process. The Council's countryside and ecology officer advises on planning applications, including mitigation and enhancement where appropriate. Site protection, mitigation and habitat creation takes place through the development process.

The North Yorkshire SINC Guidelines include criteria for designation of sites based on the presence of a significant bat roost, however they are not intended to be applied to domestic or industrial (including agricultural) buildings. The Kexby Bridge SINC is regularly monitored by the East Yorkshire Bat Group.

Local groups such as Friends of Clifton Backies and Friends of York Victorian Cemetery put on 'bat walk and talks' aimed at engaging and educating members of the public.

Projects which improve habitat for invertebrate or increase connectivity benefit bats. For example, Urban Buzz was a 21 month project (2015/2017) to create habitat for pollinators, which in turn can lead to an increase in food for bats. More information is available from the Buglife website https://www.buglife.org.uk/urban-buzz/york

8.0 Conservation Direction

Objective: To maintain the current population and range of bats in the York area.

Actions:

- Undertake work to establish baseline knowledge of recorded bat roosts by mapping existing records.
- Develop 'Core Substance Zone' maps to identify the most important habitat networks for bats.
- Monitor and survey populations to establish the full extent and range of bat species in York. Encourage submission of records to the North and East Yorkshire Ecological Data Centre.
- Maintain and enhance bat habitat through good management and the creation of new roosting and foraging habitat.
- Strengthen commuting corridors and improve connectivity between sites.

Working With:

- North Yorkshire Bat Group
- Yorkshire Mammal Group
- Land managers
- Developers

Hymenoptera: Aculeata (Wasps and Bees)

1.0 Introduction

Hymenoptera is the third largest order of insects, and Aculeata is an insect having a sting. Information for this Species Statement has been drawn from *Threatened Wasps, Ants and Bees (Hymenoptera: Aculeate) in Watsonian Yorkshire. A Red Data Book. Archer, M (1998)* and *The Wasps, Ants and Bees (Hymenoptera: Aculeata) of the 'Green Spaces' of Urban York. Archer, M (2012).* Information has also been used from the Bees, Wasps & Ants Recording Society (BWARS) website.

Most aculeate, unlike the thousands of parasitoid species of wasps capture, sting and paralyse prey that are fed to their larvae. Most species usually have a narrow range of prey that they will hunt, such as weevils, flies, caterpillars, aphids or spiders. There are social, solitary and cuckoo wasps. Social nesters include hornets and the common wasp (*Vespula vulgaris*).

Most bees collect pollen which they live on. Social bees are those which live in colonies with a dominant reproductive queen, reproductive males (drones) and non-reproductive worker females. Solitary bees are so named because, unlike honeybees and bumblebees, they do not live in colonies. Some species of solitary bees nest in the ground by excavating loose soil. Other solitary bee species are aerial nesters in locations such as borings in timber or hollow dead stems of plants. Cuckoo and parasitic bees use the nests of solitary or social bees.

2.0 Legal Status

Seven species of wasp and 17 species of bee are species of principal importance for the conservation of biodiversity in England, as required under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

3.0 The Resource

Work published by Michael Archer in 2012 summarised that urban York has 169 recorded aculeate species across 32 sites, which represents about 50% of the current Yorkshire list.

Solitary Wasps

Nationally Rare species;

- *Chrysura radians* – A cuckoo wasp which occurs in a variety of open, sunny habitats. It is usually seen around old wooden posts, stumps and dead trees where its *Osmia* species host nests.
- *Argogorytes fargei* – A wasp species associated with nesting in the dry soil of bare river banks in sunny situations. Recorded at Fulford Ings.

Nationally Scarce Species:

- *Pseudomalus violaceus* – A cuckoo wasp whose hosts are several species of stem and wood nesting wasps.

- *Auplopus carbonarius* – A wasp that tends to inhabit woodland, especially that with streams and marshy areas which provide wet mud and clay for nesting materials.
- *Ectemnius dives* – A wasp that has been recorded from a variety of situations, particularly in relatively open habitats with a combination of large pieces of dead wood (e.g. stumps, fallen trunks, old fence posts) and umbellifer flowers.
- *Stigmus pendulus* – A wasp generally found associated with twigs or dead timber, including fence posts where wood-boring beetles have left holes. This species has been recorded nesting in the upstanding dead wood tree trunks in Fishponds Wood SINC, Acomb in 2008.
- *Diodontus tristis* – A wasp which occurs in sandy places, including heathland, sand/gravel pits and hedge-banks. The nest is constructed in dry, sandy soil, often in sloping or vertical faces.
- *Sphecodes crassus* – A parasite wasp whose hosts are ground nesters in bare or sparsely vegetated soils in sunny situations.
- *Sphecodes ferruginatus* – A parasite wasp whose hosts are ground nesters in bare or sparsely vegetated soils in sunny situations. Recorded at Strensall Common and Askham Bog.

Solitary Bees

- Tawny Mining Bee (*Andrena fulva*) – A soil nester in managed lawns, sparsely vegetated dry soil in sunny situation. Visits wide variety of flowers incuding Willow (*Salix* spp.), Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus* spp.), Fruit trees, Oilseed Rape (*Brassica napus*), Umbellifers, Buttercups and Dandelion.
- Wool Carder Bee (*Anthidium manicatum*) – An aerial nester in pre-existing cavities in walls, dead wood, plant hollow stems. Visits garden Lamb's Ear (*Stachys byzantine*) and Black Horehound (*Ballota nigra*).
- Davies' Yellow Face Bee (*Colletes daviesanus*) – A soil nester in bare or sparsely vegetated dry soils, on slopes and vertical faces. Uses Common Fleabane (*Pulicaria dysenterica*), but Tansy is also particularly important.
- Red Mason Bee (*Osmia bicornis*) - Aerial nester in pre-existing earth faces, hollow plant stems. Visits many flowers in gardens and orchards.
- *Coelioxys inermis* – A cuckoo bee whose hosts include an aerial nester in rotten wood and a ground nester in banks. Recorded from Heworth.

Notable sites in York include York Victorian Cemetery, Strensall Common SAC/SSSI, Askham Bog SSSI, Fishponds Wood SINC, Bachelor Hill SINC, British Sugar bee bank SINC, Fulford Ings SSSI, St Nicholas Fields LNR, Rawcliffe Meadows, and Clifton Backies LNR.

4.0 Management

Habitat management is key to supporting the success of species. Bees and wasps need structurally diverse habitats to provide shelter and nesting sites, alongside plant species richness as a food source.

5.0 Threats

- Solitary species have low reproductive rates.
- Species have a complex mixture of resource requirements e.g. dead wood for nesting and nearby habitat with flowers for food resources.
- Intensification of land use restricts species to specialised habitat such as lowland heath and old grasslands which in themselves are becoming rarer.
- Most species have limited dispersal and so as habitats become more fragmented and isolated, re-colonisation becomes less likely.
- Many species require sunny sheltered bare ground or dead wood for nesting which normally occur in disturbed and neglected sites. The 'tidying-up' of these areas and loss of brownfield sites to development eliminates these sites.
- Climate change causing unpredictable/extreme weather.
- Mis-use and over-use of pesticides.
- Bees and wasps can be perceived as a nuisance by many people resulting in individuals/colonies being killed.

6.0 Potential for Enhancement

Land managers and the public can enhance areas for bees, wasps and other pollinators by growing more flowers, shrubs and trees that provide nectar and pollen as food throughout the year. Leaving patches of land to grow wild with plants like stinging nettles and dandelions to provide other food sources.

Providing habitat diversity on sites by leaving some grassland areas uncut, planting hedgerows and scrub and creating areas of disturbed ground or bare earth in sunny areas will help to provide the shelter and nesting sites that bees and wasps need.

New developments can mitigate for the loss of Brownfield sites by incorporating green roofs.

Retaining standing and lying deadwood provides habitat and artificial nest sites can be provided by building 'bee hotels'.

7.0 Current Action

The Government has produced a ten-year National Pollinator Strategy: for bees and other pollinators in England (2014). Pollinating insects include many different species of bees and other insects such as hoverflies, beetles, flies, butterflies and moths.

From this a 'Bees Needs' campaign and website has been launched that promotes five simple five simple actions people can take to help pollinators:

1. Grow more flowers, shrubs and trees,
2. Let your garden grow wild,
3. Cut your grass less often,
4. Don't disturb insect nest and hibernation spots, and
5. Think carefully about whether to use pesticides.

There are three guidelines under the *North Yorkshire Guidelines for SINC Selection* which can be used to designate sites for their Hymenoptera interest. A management plan has been produced for Fishponds Wood SINC and an area of habitat translocation at Bachelor Hill is actively managed.

The current Agri-Environment scheme 'Countryside Stewardship' includes options for farmers through the 'wild pollinator and farm wildlife package' which aims to provide essential food, shelter and nesting sites for wild pollinators and farm wildlife throughout the year.

Urban Buzz was a 21 month project (2015/2017) to create habitat for pollinators. Led by the invertebrate charity Buglife, and supported by City of York Council work was being undertaken to create 100 sites across 25 hectares. More information is available from the Buglife website https://www.buglife.org.uk/urban-buzz/york

8.0 Conservation Direction

Objective:

Protect and improve the habitat available in York for threatened species of bees and wasps, expanding and linking areas where possible.

Actions:

- Improve management to provide opportunities for threatened species of bees and wasps where sites of known occurrence are currently in poor condition.
- Ensure the value of Brownfield sites for bees and wasps is taken account of in the development planning process.
- Work to reduce fragmentation and isolation of habitats of importance to threatened species of bees and wasps, particularly heathlands, sandy grasslands and open woodland on sandy soil.
- Create suitable conditions for bees and wasps on sites where appropriate.
- Undertake surveys to identify new sites and monitoring to understand the status of species at existing sites.
-

Working With:

- Natural England through Agri-Environment schemes.
- Buglife.
- Campaign for the Farmed Environment.
- Local Community and 'Friends of' Groups.

Farmland Birds
Including Grey Partridge, Skylark and Corn Bunting

1.0 Introduction

Farmland birds are those species dependent on lowland farmland and not widespread in other habitats. Species such as Skylark and Yellowhammer are intimately linked to farming practices although many other species do use a variety of habitat and are found in towns, gardens and woodlands, as well as farmland.

The British Trust for Ornithology (BTO) reports that Defra's Wild Bird Populations National Statistics Release published in 2016, showed the breeding farmland bird index in the UK fell again and has declined by 56% since 1970. Although the pattern of the long-term decline has been apparent for many years and the rate of decline is not as steep as during the 1970s and 1980s, the short-term decline of 9% since 2010 shows that farmland birds are still a priority for conservation.

This decline has taken place despite targeted actions for farmland birds within Agri-Environment schemes (paid for through the EU Common Agriculture Policy). The UK's decision in 2016 to leave the European Union presents opportunities and risks in reforming the British farm subsidy system.

Priority species of declining farmland birds in the City of York include Grey Partridge, Skylark and Corn Bunting. Other species of conservation concern include Lapwing, Turtle Dove, Linnet, Barn Owl, Yellowhammer and Tree Sparrow.

2.0 Legal Status

Many farmland birds including Grey Partridge, Skylark, Reed Bunting, Tree Sparrow, Linnet, Lapwing, Yellowhammer and Turtle Dove are listed under the section 41 of the Natural Environment and Rural Communities Act 2006.

All species covered by this Action Plan are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird or their eggs or nests.

3.0 The Resource

Farmland birds have the greatest percentage of species (12 of 26) on the UK Red List (Birds of Conservation Concern 4: the Red List for Birds, published in December 2015).

The following UK population trends have been calculated by the BTO for the period 1967-2014. Data is based on results of the ongoing Common Bird Census (CBC) and Breeding Bird Survey (BBS) (https://www.bto.org/about-birds/birdtrends/2017)

Grey Partridge (*Perdrix perdrix*)	91% decline
Skylark (*Alauda arvensis*)	63% decline
Tree Sparrow (*Passer montanus*)	96% decline
Linnet (*Carduelis cannabina*)	72% decline

Reed Bunting (*Emberiza schoeniclus*)	19% decline
Corn Bunting (*Emberiza calandra*)	87% decline

Natural England has identified the Vale of York as a priority for farmland birds and there is evidence that at least some of these species have declined markedly in the City of York. Species with scattered small populations such as Corn Bunting, Grey Partridge and Skylark are particularly vulnerable to the loss of individual populations.

4.0 Management

The 'Big Three' for farmland birds is a phrase coined to identify their key requirements;

- A safe place to nest,
- Food in spring and summer for their growing chicks, and
- Food and shelter over the winter.

It is possible to deliver all of these through good farming practice for hedgerow, field margins and over-winter cover crops.

5.0 Threats

- Agricultural intensification and land management changes such as the reduction of mixed farming;
- Loss of hedgerows, hedgerow trees and in-field trees;
- Intensive management of boundary features such as hedgerow flailing and ditch clearance;
- Loss of peripheral habitats such as wet field corners and ponds;
- Use of pesticides that impacts a wide range of invertebrate and so the food source for many birds; and
- Timing, speed and method of mechanical farming operations.

6.0 Potential for Enhancement

Agricultural policies are the biggest influence on the fortunes of farmland birds and actions outside of this can be challenging. The Campaign for the Farmed Environment (CFE) is helping farmers to implement voluntary measures that benefit farmland birds. A Regional Priority for North Yorkshire is promoting action to deliver the 'Big Three' for farmland birds.

The RSPB have produced a range of material to advise farmers on good management practices which are readily available online.

7.0 Current Action

Many farms are in Agri-Environment schemes with some measures specifically designed to help stabilise and recover farmland bird populations.

A 'cornfield' buffer zone has been introduced as part of the Rawcliffe Bar Park and Ride, to provide habitat for farmland birds such as Grey Partridge, Skylark and Corn

Bunting. This is managed as spring-sown arable with no fertiliser and limited herbicide and no pesticide inputs to support weed-rich winter stubbles and standing corn. Wild bird mixes are also sown.

Winter feeding stations on many farms have been provided specifically for species such as Corn Bunting Reed Bunting, Yellowhammer and Tree Sparrow.

The Game and Wildlife Conservation Trust organizes a 'Big Farmland Bird Count' each February, now in its fourth year (2017), to record the effect of any conservation work undertaken on farmer's and gamekeeper's land. They also lead the Partridge Count Scheme to collect information on the annual abundance and breeding success of Grey Partridge.

'Operation Turtle Dove' is a targeted project launched in 2012 which aims to reverse the decline of Turtle Dove http://www.operationturtledove.org/

8.0 Conservation Direction

Objective:

Maintain and increase the current range of farmland birds in the York area.

Actions:

- Encourage the sharing of bird data with the North and East Yorkshire Ecological Data Centre.
- Ensure development proposals take account of urban fringe areas that may support important populations of declining species such as Grey Partridge, Tree Sparrow and Skylark.
- Where the opportunity arises promote Agri-Environment options for farmland birds.

Working With:

- Farmers and land managers
- RSPB
- The Game and Wildlife Conservation Trust

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APPENDIX 1 York's Green Corridors

Regional Corridor (1) - The River Ouse

This is a significant multifunctional corridor of value not only for wildlife but recreation as well, providing as it does a link between Selby and Harrogate back to its headwaters in the Pennines. It is though not just the river itself that is of significance but the extensive flood plain adjacent to it. The river itself is designated as a candidate SINC for migratory fish, and there are a number of meadows adjacent to it that are designated as SSSI and SINC.

It is an essential link for migratory fish such as Sea Lamprey which, whilst they do not breed in York, do have to pass through in order to reach their spawning grounds. Equally, the river is needed as a link for riverine species such as the Depressed River Mussel or Otter or various aquatic plants and insects.

It is though, also a major corridor for the adjacent flood meadow grasslands that are associated with its flood plain or as a foraging and migratory corridor for bats that utilise all of the flood plain habitats on either side of the river. The boundaries of this corridor are therefore not distinct but are linked to the overall extent of the influence of the river.

As a corridor its functions include wildlife, water born recreation, bankside recreation, transport, agriculture, culture, history, water supply and flood alleviation. Its wildlife interest also covers not only aquatic and riverine habitats but also the whole range of habitats found in association with them.

Priorities for wildlife enhancement include:
i. Wet and flood meadow grasslands
ii. Riverine habitats- Fens and marshes
iii. Wet woodland
i. Ponds
ii. Riverine habitats.
iii. Tansy Beetle
iv. Bats
v. Otter

Regional Corridor (2) - The River Derwent

This is again a significant multifunctional river corridor, providing the link between Selby and the Ouse through to Ryedale and back to its headwaters in the North York Moors. The river itself is designated as an SSSI and a SAC. It is though not just the river that is of significance but the flood plain adjacent to it holding as it does extensive areas of flood meadow and wet grassland, large areas of which (The Lower Derwent Valley) are themselves also designated as SSSI and SPA. There are a number of other sites that are designated as SINCs adjacent to the river.

The river is an essential link for migratory fish such as Sea Lamprey which, whilst they do not breed in York, do have to pass through in order to reach their spawning

grounds. Equally, the river is needed as a link for many riverine species such as Otter or various aquatic plants and insects.

It is also a major corridor for the adjacent flood meadow grasslands that are associated with its flood plain or as a foraging and migratory corridor for bats that utilise all of the flood plain habitats on either side of the river. The boundaries of this corridor are therefore not distinct but are linked to the overall extent of influence of the river. As a corridor its functions include wildlife, water born recreation, bankside recreation, transport, agriculture, culture, history, water supply and flood alleviation. Its wildlife interest also covers not only aquatic and riverine habitats but also the whole range of habitats found in association with them.

Priorities for wildlife enhancement include
i. Wet and flood meadow grasslands
ii. Riverine habitats - fens and marshes
iii. Wet woodland
iv Ponds
v. Riverine habitats.
vi. Bats
vii. Otter

Regional Corridor (3) - The River Foss

The River Foss provides a continuous link from Ryedale to the east through to the city centre at its confluence with the Ouse. Although not as significant as the Ouse and Derwent in overall habitat interest or multifunctionality, it does provide a corridor right into the City and connects it with adjacent countryside and a neighbouring authority corridor. The river itself has quite high nutrient levels and its floristic diversity is limited and has declined but it is still important for the movement of wildlife into the urban area. It is particularly important for Otter and Water Vole and is likely to be significant for Bats as well.

As for any riverine system, it is not only the river itself that is important but the adjoining habitats as well. On the Foss, being a much smaller watercourse, these are much more restricted and the flood plain is narrow and there are no extensive flood meadow grasslands, there are, however, a number of small grassland sites of interest, some of which are designated as SINCs as well as other riverine features such as marshes and ox bow channels left from when the Foss was canalised. The boundaries of this corridor are restricted as the influence of the river itself is limited. Back gardens are a significant contributory habitat for wildlife within the urban area.

As a corridor its functions include wildlife, bankside recreation, transport, agriculture, culture and history. Its value for water supply and flood alleviation are limited. Its wildlife interest also covers not only aquatic and riverine habitats but also the whole range of habitats found in association with them.

Priorities for enhancement include
i. Wet and flood meadow grasslands
ii. Fens and marshes
iii. Wet woodland

iv Ponds
v. Riverine habitats
vi. Bats
vii. Otter
viii. Water Vole
ix. Gardening for wildlife.

District (City) Corridors (4) – The Northern Heathland Belt
This corridor is more restricted in its overall interest being primarily for agriculture, forestry and, in wildlife terms, for its heathland sites. It follows an indistinct belt taking in the sandy soils from Strensall along the eastern edge of the city around to the south east edge into Selby. Here it continues as a designated corridor within Selby taking in sites such as Skipwith Common. It then connects with a further local corridor, the Southern Heathland Belt (20) that includes sites such as Wheldrake Woods.

Within this corridor, the free draining, acidic conditions originally allowed heathland and acid grassland to establish on agriculturally poor soils. Many of the old rough commons were established on these impoverished areas and on which there are opportunities for re-establishment on degraded sites.

Priorities for enhancement include
i. Heathland
ii. Acid grassland
iii. Mesotrophic ponds
iv. Acid woodlands

District (City) Corridors (7, 8, 9, and 10) - The Strays including Monk Stray, Bootham Stray, the Knavesmire and Hob Moor and Walmgate and Heslington Tilmire.

These are primarily extensive corridors that form wedges of open space running into the city like the spokes of a wheel. They are essentially farmed landscapes that have been developed by grazing over hundreds of years although many have been improved. They mainly comprise a mosaic of neutral to acidic grasslands, hedgerows, ponds and scrub. Their historical value as common grazing has protected them from agricultural intensification and conversion. Within the city itself they also include allotments, cemeteries and extensive grounds of places such as golf courses, and The Retreat.

Priorities for wildlife enhancement include
i. Neutral/Acidic grassland
ii. Ponds
iii. Hedgerows
iv. Scrub

District (City) Corridor (11) – City Walls

This is a bank of grassland on which York's medieval city walls have been constructed, built from the 13th century onward. They are essentially a ring of

grassland around the historic core of the city. Its function is primarily cultural and as visual open space. In wildlife terms, the grassland has become rough and relatively species poor over the years but still contains an interesting range of plants though few insects. Considerable planting has been done both of trees and daffodils. Both can be problematic in biodiversity terms. There is considerable potential for enhancement both visually and for wildlife.

Priorities for wildlife enhancement
i. Grassland
ii. Habitat mural for public engagement

District (City) Corridor (16) - The Osbaldwick/ Tanghall Beck Corridor

There are a whole series of small becks running through the city. These have mostly been canalised or, in places, culverted. Their overall biodiversity interest is limited as water quality can be low and they often flow within constrained and wooded corridors but they can provide a valuable link between houses and other areas of open space. Riverside habitat is limited and often degraded through neglect but back gardens can be a significant contributory factor to their wildlife value.

Priorities for wildlife enhancement
i. Neutral Grassland
ii. Scrub/wet woodland
iii. Ponds
iv. Other riverine habitat such as marshes and fens
v. Bats
vi. Wildlife gardening.

District (City) Corridor (5) - Elvington Tilmire

This is a broad farmland belt between the Heslington Tilmire and the Lower Derwent Valley. It contains a mosaic of habitats including wet and acid to neutral grassland, relict heath, ancient hedgerows and woodland as well as extensive arable. It is particularly noteworthy for the extensive grassland belt on the Elvington Airfield, part of the former Langwith Stray that links the Heslington Tilmire to the Derwent Valley and this provides habitat for many bird and invertebrate species. Its primary function is for agriculture, forestry and wildlife.

Priorities for wildlife enhancement include
i. Neutral/Acidic grassland
ii. Ponds
iii. Hedgerows
v. Heathland
vi. Ground nesting birds

District (City) Corridor (14) - Askham Bog

This is primarily a wetland and wet woodland corridor that extends into the city to connect Askham Bog to Hob Moor. It is centred on the Chaloners Whin, a stream that drains the land adjacent to the bog and runs northward to join the Holgate Beck.

Askham Bog is nationally important basin mire both for its habitats, vegetation and for invertebrates. It is buffered by an area of wet grassland and the Pike Hills Golf Course. An attractive, old enclosure landscape with ancient, species rich hedgerows and tree lines. The stream flows northwards and is culverted where it flows through residential areas. There are a number of old brick pits established on the line of the corridor as well as wet woodland and willow scrub.

Priorities for wildlife enhancement include
i. Wetland mire habitats
ii. Wet woodland
iii. Streamside habitat
iv. Neutral grassland
v. Ponds
vi. Hedgerows

Local Corridor (6) - Naburn Cultural Landscape Blown Sands

In biodiversity terms, this corridor has limited existing interest, this largely being confined to hedgerows within a mainly arable landscape. There is some limited woodland interest but also old ditch lines. Its primary value, however, is for sub-surface archaeology, which is thought to exist beneath the overlying blown sand deposits formed during the early post glacial period.

Priorities for wildlife enhancement include

i. Hedgerows
ii. Woodland
iii. Streamside habitat.

Local Corridor (12) - The Ring Road

This corridor follows the York ring road and the A64 around the City. It comprises the immediate roadside, embankments, roundabouts and hedgerows of the highways and adjacent land as it affects the highway. Its major function is naturally as a highway but it does have significant value as a linking corridor that effectively connects with all of the regional and district corridors together. There are also a number of Sites of Nature Conservation Interest (SINCs) associated with this corridor and they too are connected.

In habitat terms the corridor is made up primarily of rank, coarse grassland but interspersed with a mosaic of scrub and more diverse grassland. There is also a number of detention ponds associated with the drainage of the ring road. Some of these are already of wildlife interest.

The corridor though does have the potential to be of particular value for invertebrates as movement corridors but also particularly where the embankments have been constructed of lighter soils such as at Poppleton.

Priorities for wildlife enhancement include

i. Neutral/acid grassland
ii. Hedgerows
iii. Ponds
iv. Woodland.

Local Corridor (13) - Acomb Corridor

This is a primarily residential corridor on the west side of York. It links a series of mainly SINC grasslands sites and extensive aligned gardens to create a network of corridors through the area. The grasslands are unusual in York terms as they are dry, slightly acidic grasslands established on sandy soils. They are akin to breck grasslands and are relicts of the once extensive droughty grasslands that once covered the Acomb area until the Victorian era. Their primary interest is for their unusual annual flora but also for invertebrates. The dry, sandy soils are especially valuable for bees and wasps. There are a number of sites which have unique sand dune species not normally found inland. There are also several spring fed systems which again provide unusual habitats, for instance the fens at Fishponds Wood and Westfield Marsh.

Priorities for wildlife enhancement include

i. Neutral/acid grassland
ii. Garden habitat
iii. Ponds
iv. Fens and marshes

Local Corridor (15) - Selby Railway Corridor

This is a cycle corridor following the old railway line to Selby and is part of the Sustrans Trans Pennine Trail. However, it is also designated as a SINC site within York as the embankments provide an excellent scrub/grassland mosaic habitat corridor through an otherwise largely intensive arable landscape. In addition, it provides a link between a number of SINCs. The embankments will increasingly scrub over and reduce the grassland interest without significant intervention.
Its primary function is as part of a national cycle trail; however, the wildlife interest provides a major secondary function that does not conflict with this.

Priorities for wildlife enhancement include

i. Neutral grassland
ii. Hedgerows
iii. Scrub

Local Corridor (17) - Kingsway North

This mainly transport corridor is centred along Kingsway North with links through back gardens and grounds at Water End to the Ouse corridor. There are no existing SINCs within it but it does provide the connection between the Bootham and Ouse corridors. Its primary interest is as a potential corridor for bats and insects through

the enhancement of the central reservation grassland of Kingsway North and adjacent gardens.

Priorities for wildlife enhancement include

i. Neutral grassland
ii. Garden enhancement
iii. Trees

Local Corridor (18) - Foxwood Corridor

This is a short, mainly residential corridor that is centred on Acomb Wood. It provides the links between the Hob Moor and Acomb corridors and the eastern edge of York.

Priorities for wildlife enhancement include

i. Neutral/acid grassland
ii. Woodland and trees.
iii. Bats

Local Corridor (19) - Heworth Cycle Corridor

This is a proposed cycle corridor link whose function is again mainly as a transport link. It passes through fairly open arable land with limited wildlife interest or trees but with fairly extensive new woodland planting close to the A64. There would be opportunity for general wildlife enhancement as part of this transport corridor but with an emphasis on improving the visual character of the area by tree planting along the corridor.

Priorities for wildlife enhancement include

i. Neutral/acid grassland
ii. Woodland and trees.
iii. Bats

Local Corridor (20) - Southern Heath

This is an extensive corridor that continues the Northern Heath corridor having passed through the western edge of Selby. It follows an indistinct belt taking in the sandy soils on the south eastern edge of the city and connects through to the Tilmire and the Naburn Blown Sands areas to the west. As for the northern heath, it is more restricted in its overall interest being primarily for agriculture, forestry and, in wildlife terms, for its heathland. The free draining, acidic conditions originally allowed heathland and acid grassland to establish on agriculturally poor soils. Many old rough commons were established on these impoverished areas but these were extensively afforested and the remaining heathland interest is limit largely to relict heath within this woodland cover. There are though opportunities for heathland re-establishment within these woodland sites. A significant problem with these sites is

the spread of Rhododendron. Sites of known interest include Wheldrake Woods, Rabbit Warren Wood and Hagg Wood, Dunnington.

Priorities for enhancement include
v. Heathland
vi. Acid grassland
vii. Mesotrophic ponds
viii. Acid woodlands

Local Corridor (21) - Wigginton Corridor

This narrow corridor follows the line of the Haxby Beck from Wigginton, beneath the Ring Road and along the western side of New Earswick. It runs through what is essentially an urban edge agricultural landscape though the most significant landscape feature is the large new woodland planted by Haxby Parish Council. There are no SINC sites present although there are several (including the Beck itself) that are of local interest. This interest includes good populations of Water Vole on the beck.

The primary value is the potential to provide an enhanced wildlife link along the Beck with good public access linking to the Foss corridor and Bootham Stray.

Priorities for wildlife enhancement include
i. Riparian habitats
ii. Woodlands and trees
iii. Neutral grassland
iv. Water Vole
v. Bats

Local Corridors (22 and 23) - Badger Wood and Archbishop Holgate

These are two areas of open space within the Badger Hill area along Field Lane and Windmill Lane. They are made up of the School grounds and field adjacent to Windmill Lane and the Badger Wood open space. They link to the University and Heslington Campus grounds. Neither have significant wildlife interest, although there is a large pond with Great Crested Newt, but they do provide an element of open space whose general enhancement for wildlife would benefit both the visual and biodiversity value of the area. The university grounds are known to have good bat interest and some floristic interest as well and enhancement here would extend this interest further into the local community.

Priorities for wildlife enhancement include
i. Ponds
ii. Woodland and trees
iii. Neutral grassland
iv. Great Crested Newt
v. Bats

Local Corridors (24 and 25) – The Blue Beck Corridor

This is a residential corridor based on two areas along the Blue Beck and Rawcliffe Lake, a large detention pond established to reduce flooding issues created by the surrounding residential development. It is proposed to extend the corridor along the Blue Beck to the west up to the Shipton Road. The area includes School grounds, Rawcliffe Lake, the Blue Beck (back gardens and roadside habitat) and open space. It links to Ouse Corridor and provides a stepping stone between it and the Bootham Stray to the east.

The Rawcliffe Lake has been designated as a SINC on the grounds of its establishing bankside wildflower grassland. The lake itself is of limited value although does provide overwintering bird interest.
The corridor does have potential for enhancement based on riparian habitats that would strengthen the link between the Stray and the River Ouse.

Priorities for wildlife enhancement include

i. Riparian habitats
ii. Gardens
iii. Woodlands and trees
iv. Neutral grassland
v. Water Vole
vi. Bats

Local Corridor (26) – Fulford Park

This corridor is based on the grounds of Connaught Court, and old parkland that adjoins Fulford Ings SSSI. To the east it includes areas of garden and open space that extend towards Heslington.

Connaught Court is of some interest as a site for unusual fungi that may be present because of the old established trees that have survived since the 18th Century. These trees in turn provide a good foraging link through to Fulford Ings and the Ouse Corridor. The retention of open space and the old tree cover is a prerequisite of maintaining the value of this corridor.

Priorities for wildlife enhancement include

i. Parkland habitat and trees
ii. Gardens
iii. Neutral grassland
iv. Bats

Local Corridor (27) - Germany Beck

The Germany Beck corridor is an established beck corridor that cuts across intensive agricultural land between the Tilmire and the River Ouse. It follows a narrow stream that takes drainage from Heslington and has some existing biodiversity interest, notably the Germany Beck Meadow and some ancient species rich hedgerows. A further wildlife interest is the potential for the Beck to provide a corridor for wildlife movement between Heslington Tilmire and the River Ouse.

Its primary function is as a drainage corridor but it has great potential for both wildlife enhancement and as a footpath link.

Priorities for wildlife enhancement include

i. Riparian habitats
ii. Trees
iii. Neutral and flood meadow grassland
iv. Water vole
v. Bats

Local Corridor (28) - Fulford Cross

This is an area of relatively open land that incorporates the grounds of the North Yorkshire Police, Imphal Barracks, allotments and land to the south of Maple Grove. It is a relatively well wooded corridor but with some residential and employment land that do cut across the corridor. Any proposals should aim to enhance the integrity of the corridor rather than further divide it.