Protecting and Enhancing Kingsley's Natural Environment

Cheshire Wildlife Trust

January 2019

Introduction

Neighbourhood Planning has provided an important opportunity for communities to shape their local environment for future generations. Identifying and evaluating opportunities and constraints will mean that communities are in an informed position and therefore better able to protect their valuable natural assets.

In 2011, the government published their Biodiversity 2020 '*strategy for England's Wildlife and Ecosystem services*' which built on the recommendations of the earlier Natural Environment white paper. The mission of the Biodiversity 2020 strategy is to *'halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.'*

The National Planning Policy Framework (NPPF), first published in 2012 drew on these principles and protecting and enhancing 'our natural, built and historic environment' is one of the three core objectives in the revised NPPF 2018 (paragraph 8c). Local (non-strategic) policies specifically designed to address the overall loss of biodiversity are known as 'no net loss policies' or 'net gain policies'. The guidance for this is enshrined in the NPPF in paragraphs 118a, 174b and 175d with the latter two paragraphs referring to 'measurable' net gain (i.e. use of a biodiversity metric). At a local level, policy ENV4 of the Cheshire West and Chester Local Plan stipulates that 'Development should not result in any net loss of natural assets, and should seek to provide net gains'. Cheshire West and Chester are also a signatory to the Cheshire Region Local Nature Partnership (CrLNP) **'Net Gains for Nature'** policy (January 2016) which sets out the guidance and principles of biodiversity accounting and compensation.

According to Biodiversity 2020, there are numerous ways to work towards achieving these aims, with landowners, conservation charities and individuals playing a part. However, the planning system has a central role in achieving the aims of Biodiversity 2020, particularly strategic planning, but also development control. At a local level, Neighbourhood Planning has the potential to be a key factor in determining whether the aims of Biodiversity 2020 are realised, by identifying local priorities for nature conservation and ensuring these are taken into consideration in the planning process.

In 2018, as part of its 25 Year Environment Plan, the government pledged to become the first generation to leave the natural environment in a better condition than that they inherited.

In the State of Nature Report 2016, the UK was ranked among the most nature-depleted countries in the world. The government's ambitious proposals for nature recovery and "clean growth" could be pivotal in the future of our environment.

Although this is a national framework, its success will also depend on local communities and partnerships working to protect and enhance their environment to contribute to its social, economic and environmental objectives.

Objectives of the study

The first stage to protecting and enhancing the natural environment is to identify the natural assets that exist within the neighbourhood. This report aims to identify the core, high ecological value sites for nature conservation in the Kingsley Neighbourhood Planning Area, as well as sites deemed to be of medium ecological value. The high value sites are recommended for protection through the neighbourhood planning process and the medium value sites could be considered as biodiversity opportunity areas subject to further evaluation. Medium and high value sites should also act as an alert in the planning system triggering full evaluation should they be proposed for future development.

The report also aims to identify key local and regional ecological networks within the neighbourhood planning area and recommends that these are protected through the neighbourhood plan. Additionally, it identifies key features associated with the landscape character of the Kingsley area so these can be referenced in planning policies.

Background – ecological networks

In 2010 Professor Sir John Lawton submitted a report to DEFRA entitled 'Making Space for Nature: A review of England's Wildlife Sites and Ecological Network'. The report identified that we need a step change in our approach to wildlife conservation from trying to hang on to what we have, to one of large-scale habitat restoration and recreation, underpinned by the re-establishment of ecological processes and ecosystem services, for the benefits of both people and wildlife. The report also identified that this vision will only be realised if we work at local scales in partnership with local people.

The natural environment is fundamental to our well-being, health and economy, and provides us with a range of ecosystem services such as food, water, materials, flood defences and carbon sequestration – and biodiversity underpins most, if not all, of them. The pressures on our land and water are likely to continue to increase and we need to learn how to manage these resources in ways which deliver multiple benefits, for example, achieving profitable and productive farming while also adopting practices which enhance carbon storage, improve flood water management and support wildlife.

England's wildlife habitats have become increasingly fragmented and isolated, leading to declines in the provision of some ecosystem services, and losses to species populations. Ecological networks or Nature Recovery Networks have become widely recognised as an effective way to conserve wildlife in environments that have become fragmented by human activities.

Ecological networks generally have five components (see Figure 1) which reflect both existing and potential ecological importance and function.

- *Core areas*

These are areas of high nature conservation value which form the heart of the network. They contain habitats that are rare or important because of the wildlife they support or the ecosystem services they provide. They generally have the highest concentrations of species or support rare species. They include protected wildlife sites and other semi-natural areas of high ecological quality.

- *Corridors and stepping stones*

These are spaces that improve the functional connectivity between core areas, enabling species to move between them to feed, disperse, migrate or reproduce. Connectivity need not just come from linear, continuous habitats; a number of small sites may act as 'stepping stones' across which certain species can move between core areas.

- *Restoration areas*

These are areas where measures are planned to restore or create new high value areas (which will ultimately become 'core areas') so that ecological functions and species populations can be restored. They are often situated so as to complement, connect or enhance existing core areas.

- *Buffer zones*

These are areas that closely surround core areas, restoration areas, 'stepping stones' and ecological corridors, and protect them from adverse impacts from the wider environment.

- *Sustainable use areas*

These are areas within the wider landscape focussed on the sustainable use of natural resources and appropriate economic activities, together with the maintenance of ecosystem services. Set up appropriately, they help to 'soften the matrix' outside the network and make it more permeable and less hostile to wildlife, including self-sustaining populations of species that are dependent upon, or at least tolerant of, certain forms of agriculture. There is overlap in the functions of buffer zones and sustainable use areas, but the latter are less clearly demarcated than buffers, with a greater variety of land uses.

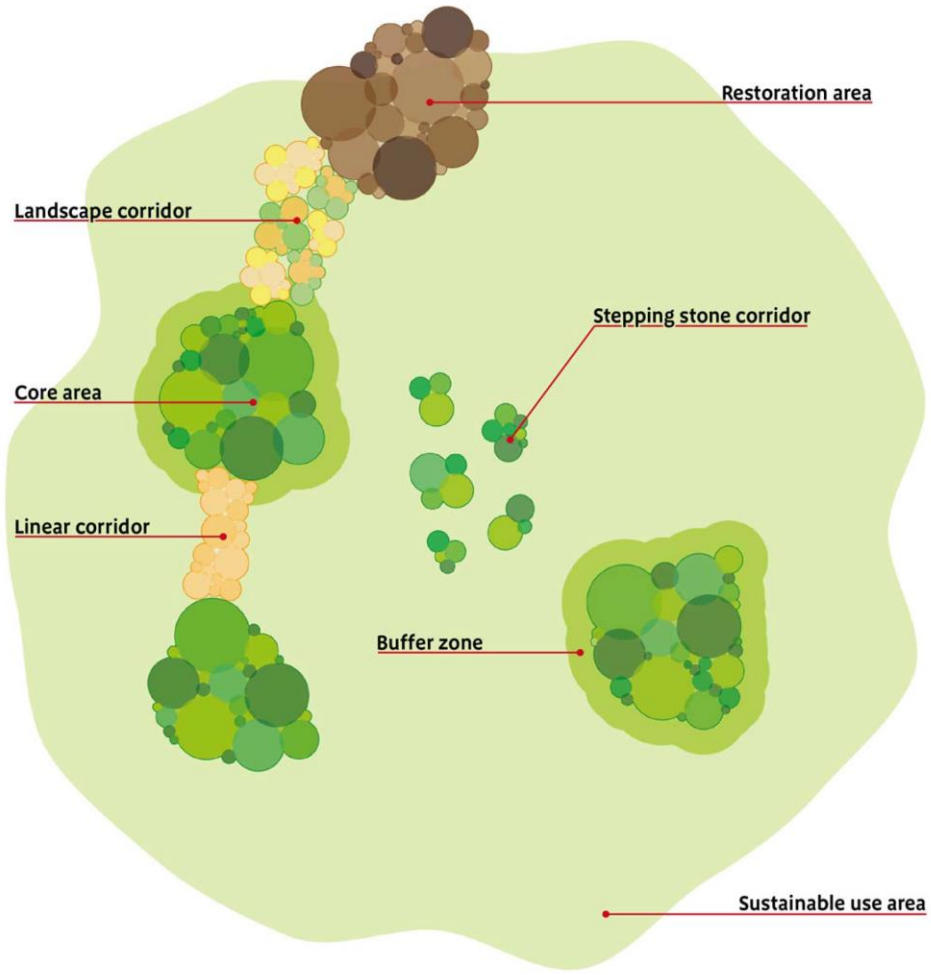


Figure 1. The components of ecological networks (Making Space for Nature report)

The principles of creating coherent ecological networks have since been embedded within many planning and policy documents. The Natural Environment White Paper 'The Natural Choice', which was published in 2011, reiterated a Government commitment to move from net biodiversity loss to net gain, by recognising the importance of supporting healthy, well-functioning ecosystems and establishing more coherent ecological networks.

The National Planning and Policy Framework revised in 2018, includes specific guidance on conserving, restoring and enhancing ecological networks including:

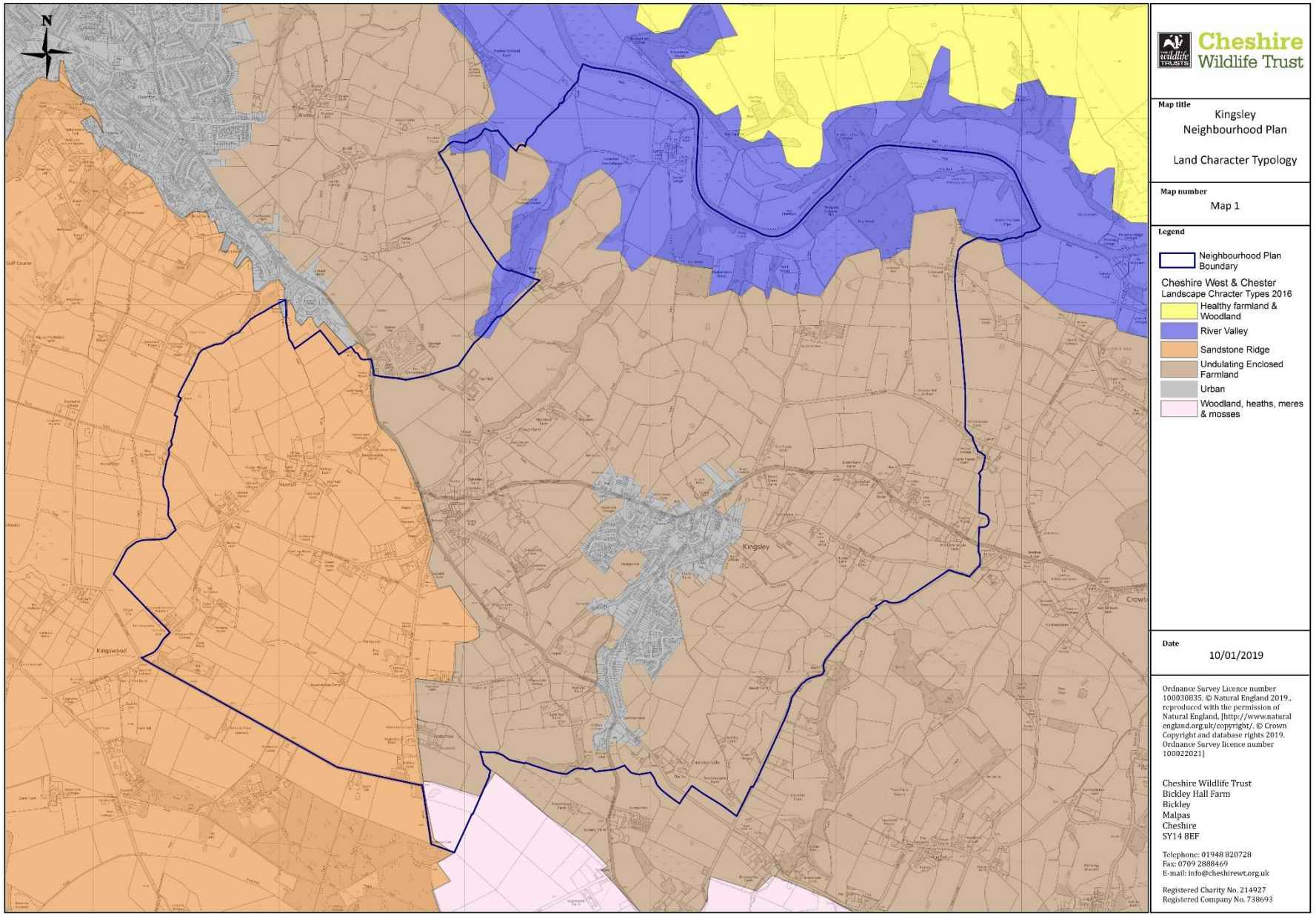
- Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation;
- promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

- Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

Landscape Character Assessment for the Cheshire region

On a national level the Parish of Kingsley lies within National Character Area (NCA) 61 – Shropshire, Cheshire and Staffordshire Plain NCA and extending to the Cheshire Sandstone Ridge NCA 62 a discontinuous ridge rising sharply from the Cheshire Plain. More locally Cheshire West and Chester Council have produced a Landscape Strategy which incorporates 16 Landscape Character Types (LCTs). Different aspects such as geology, landform, soils, vegetation and land use have been used to identify recognisable patterns that have categorised into different LCTs. This Landscape Strategy is intended to be used as a basis for planning and the creation of future landscape strategies as well as raising public awareness of landscape character and creating a sense of place.

Map 1: Landscape Character Typology



The Landscape Character Assessment (Map 1) identifies four recognisable landscape character types (LCTs) within the Kingsley Neighbourhood Planning Area, namely: Sandstone Ridge, Undulating Enclosed Farmland, River Valley and a small area of Woodland, heaths, meres & mosses in the southern extent. Each LCT is subdivided into smaller Landscape Character Areas (LCAs); details of the relevant LCTs and LCAs are given below:

WOODLANDS, HEATHS, MERES & MOSSES

General Description

This character type comprises extensive blocks of largely planted coniferous woodland with some broadleaved woodlands. Woodlands are interspersed with a mosaic of relict heath, and meres and mosses formed in glacial hollows. More recently water bodies have formed in quarry workings following the extraction of sand, gravel and sandstone.

The complex of heath, meres and mosslands are of international importance for nature conservation and support species such as nightjar, common lizard, crossleaved heath and round leaved sundew.

LCA 1a Delamere

A small section of the Kingsley Neighbourhood Planning area, in the southern extent of the Parish falls within the Delamere landscape character area. This LCA occupies a hollow created during the last glaciation when meltwaters forced their way through the sandstone ridge and deposited extensive glacial sand and gravel deposits in the area that is now Delamere Forest. This extensive area encompasses the glacio-fluvial deposits and accompanying sandy soils which are bound to the north and south by undulating clay farmland, and to the west by the prominent sandstone ridge.

Key Landscape Characteristics

- A gently undulating large scale landscape of woodland, farmland and heathland overlying sand and gravel glacio-fluvial drift material, deposited during the last glaciation, lying between 65m and 85m AOD
- An organic mosaic of meres, mosses, swamp, fen, woodland and heathland forming part of the ancient Forest of Mara and Mondrem, interspersed with conifer plantations, quarries and large, straight sided field
- A dynamic landscape with many areas showing different stages of peatland/ mossland development and vegetation succession
- Large open water bodies occupying kettle holes formed during the last glaciation, known as meres, are associated with fen, mire, acidic grassland and bog habitats and form part of the Meres and Mosses Ramsar site
- Peatland features include quaking bogs or ‘schwingmoor’, where Sphagnum moss has formed over the water surface e.g. at Abbots Moss
- Large areas of plantation woodland on former heath and peatland, dominated by conifers, at Delamere Forest

- Sandy soils also support species rich acid grassland, oak-birch woodland and lowland heath – Little Budworth Common, one of best surviving examples of lowland heath in Cheshire
- Active and inactive sand and gravel and sandstone extraction sites
- Extensive glacio-fluvial drift deposits have created a resource of sand which is actively quarried to create large water bodies and lakes
- Around and between the woodland and water is pattern of planned 19th century enclosure representing relatively late enclosure of this landscape from waste heath
- Large areas managed for recreation including Delamere Forest, Little Budworth Country Park, parking and picnic sites, two golf courses and part of the Sandstone Trail long distance recreational path
- Low settlement density. Settlement form is relatively late in origin and comprises farmsteads of 18th-19th century origin, linked by turnpike roads, and set within areas of relatively recent enclosure together with scattered linear development
- Buildings are characteristically red brick or sandstone with clay or slate tiles. White washed buildings are also characteristic and prominent features within the landscape
- A great contrast between the openness of the heaths, clearings and meres, and the enclosed nature of the woodland
- The skyline is dominated by trees, most often the dark line of conifer plantations
- There is a great diversity of visual experiences -of particular significance are the open views across the Meres

Key factors for landscape change

As part of the 2014 Mersey Forest Plan planting policies there will be planting of new woodland on former agricultural land around Delamere Forest. There is the potential for biodiversity and landscape enhancement through plantation, thinning and recreation of a mosaic of broadleaved woodland, open heathland and scrub landscape interspersed with restored peatlands including basin mires, mosses, wetlands and meres. Whilst increased conifer plantation could result in a lowering of the water table.

The impact of invasive non-native species such as Crassula, Himalayan balsam and Rhododendron will potentially result in the deterioration of ancient woodland, meres, mossland and heathland habitats where these plants are present and left unmanaged.

There is pressure for increased recreational use in the landscape, coupled with an increased demand for visitor accommodation, including holiday cottages, caravan parks and holiday cabin developments, along with the associated infrastructure and facilities. This could lead to an increase in developed areas and the loss of tranquillity, and the loss or fragmentation of habitats.

Recreation activities could be directed towards appropriate man-made sites to alleviate continued pressure on existing designated and natural sites, but this would need balancing with conservation objectives to restore sites for wildlife, such as former quarries.

Continued pressure for mineral extraction is a potential threat for wildlife habitat
and the historic environment but could also provide opportunities for habitat creation once extraction has ceased and sites are restored and landscaped.

Pressure for the expansion of existing settlement, ribbon development and infill could lead to habitat loss and/or fragmentation as well as the erosion of built environment character. Additionally, the upgrading of lanes and minor roads could lead to an increasingly suburban character of the countryside.

Cheshire West & Chester Council Local Plan policies with an influence on the landscape character

- Green Belt (north of the A556);
- Countryside (south of the A556);
- Area of Special County Value (ASCV) across the north of the LCA;
- Natural heritage sites of international, national, regional and/or local significance;
- Nationally designated heritage assets (on Historic England's National Heritage List for England) and locally significant heritage assets;
- Flood risk and water management (Sandyford Brook)

LCT 2 – Sandstone Ridge

General Description

Rising dramatically above the surrounding Plain, the Sandstone Ridge Character Type is one of the most visible landmarks in the Cheshire West and Chester landscape. A spine like ridge that runs roughly north-south from Helsby through Tarporley and on to Duckington for some 30km. It comprises a series of scarps and sandstone outcrops, punctuated by glacial meres and mosses with Helsby Hill and Beeston Crag two prominent features. Although this LCA shares characteristics with the Sandstone Fringe character type, the visual and topographic differences set it apart. The ridge has a strong natural and cultural heritage, comprising woodland, heathland and sandstone exposures alongside sandstone quarries, buildings, walls sunken lanes and Iron Age settlements and fortifications.

LCA 2a Frodsham

A prominent ridge that extends from Frodsham in the north to Delamere Forest in the south. The boundaries are defined primarily by geology and topography shaped by six thousand years of human activity. This Character Area forms the bulk of the Western extent of the parish.

Key Landscape Characteristics

- Outcrops of Triassic sandstone form a prominent ridge reaching over 150m with hills forming features at Beacon Hill, Harrol Edge and Birch Hill
- Steep sandstone cliffs to the north and west of the ridge support dense woodland, including ancient oak woodland, for example at Alvanley Cliff Wood

- Dry gorges, created by glacial meltwater, are features of the northern and western edges of the ridge
- Brown sandy soils support permanent grassland, dwarf shrub heath, bracken and gorse scrub and woodland on steeper slopes, for example at Frodsham and Overton Woods
- Groups of Scots pines form distinctive skyline elements
- Quarries are features, particularly along the west-facing cliff
- Less steep slopes support arable farmland
- Regular geometric fields, resulting from late eighteenth and early nineteenth century enclosure by private agreement and Parliamentary Act, dominate the ridge
- New Pale is a 17th century deer park with a distinctive boundary which is a feature in the landscape
- Low density of dispersed farms and hamlets –many farm buildings are constructed from sandstone (quarried from the ridge) with welsh slate roofs
- Sunken lanes provide access over the ridge, responding to landform –there are no main roads
- Late Bronze Age/Iron Age promontory hillfort at Woodhouse Hill on the western edge of the ridge, and a former Roman camp at Birch Hill, occupy prominent positions on the ridge (both Scheduled Monuments)
- The War Memorial on Frodsham Hill is a landscape feature, from where there are panoramic views over the Mersey Estuary
- Long distance footpaths run along the length of the ridge from where there are some spectacular panoramic views from the ridge as far as Wales to the west and the Peak District to the east
- Locally designated as an Area of Special County Value (ASCV) recognising its landscape and scenic quality and its historic, archaeological and ecological importance

Key factors for landscape change

Future influencing factors that could affect this landscape include growth of developed and built areas due to pressure for residential development and recreational provision including holiday homes/cabins and caravan parks. There is also pressure for farm extension as well as diversification of farmland and buildings for residential and commercial use, with erection of modern portal sheds to replace the lost space;

This could result in the erosion of built environment character and increased suburbanisation through incremental development and the associated infrastructure.

Due to the elevated topography and wind speeds there is also pressure for further communication masts, wind turbines and other tall structures in the landscape.

This is an area of search for sand and gravel extraction;

Policies within the 2014 Mersey Forest Plan include establishing a woodland framework around Frodsham and Helsby linking the Sandstone Ridge (whilst avoiding the escarpment) with the Weaver Valley.

Increased recreational use, development, suburban creep and potential future sand and gravel extraction could lead to the fragmentation of habitats and the loss of tranquillity of the area.

Cheshire West & Chester Council Local Plan policies with an influence on the landscape character

- Green Belt;
- Area of Special County Value (ASCV);
- Natural heritage sites of international, national, regional and/or local significance;
- Nationally designated heritage assets (on Historic England's National Heritage List for England) and locally significant heritage assets.

LCT 5 – Undulating Enclosed Farmland

General Description

The character type is found across a large part of the Cheshire West and Chester borough; to the east between Northwich and the Sandstone Ridge and in the south of the borough. Away from main roads, railways and settlement the landscape is generally quiet and rural and is defined by undulating pastureland, fragmented by nucleated, rural villages and scattered farmsteads.

Views within this type very much depend upon location and the nature of the immediate topography. There is a range of monuments from Bronze Age barrows to post medieval canal locks.

LCA 5b: Frodsham to Northwich

The Frodsham to Northwich character area surrounding the village of Kingsley forms the largest proportion of the Neighbourhood planning area. This LCA represents an area of large scale, gently undulating farmland located to the south of the Weaver Valley between Frodsham and Northwich. To the south west is the more steeply undulating Norley character area. The boundary between these two character areas is defined by a marked change in topography as the ground begins to rise towards the Sandstone Ridge.

Key Landscape Characteristics

- A bedrock geology of Bollin Mudstones (part of the Mercia Mudstone Group) covered by a mantle of glacial drift deposits that gives rise to a gently undulating topography between 25m and 50m AOD (rising to 90m where it joins the Frodsham Sandstone Ridge
- Steep, wooded cloughs and valleys incise the hills, containing small brooks that drain towards the River Weaver, for example along Cliff Brook, and are of local wildlife importance
- Grassland meadows that are of local wildlife importance
- Boulder clay deposits mask the underlying mudstones giving rise to a predominance of poorly draining clay soils that support dairying and some arable crops
- Small scale fields resulting from late eighteenth and early nineteenth century enclosure by private agreement and Parliamentary Act are bounded by hedgerows with hedgerow trees and drainage ditches. Small scale Medieval town fields surround Kingsley

- Small farm woodlands and coverts are important features of a landscape with generally relatively low woodland cover
- Historic orchards throughout the area (previously designated as Areas of Significant Local Environmental Value (ASLEV))
- Field ponds are a feature of the lower lying areas, indicating the extraction of marl (calcareous deposits) from the boulder clay for past agricultural improvement
- Designed landscapes at Pike Nook Farm, Hefferston Grange, Weaver Holt, and Hollies Farm are associated with large country houses or farmsteads
- Passive recreation in the form of public footpaths, including parts of the Delamere Way, Eddisbury Way and North Cheshire Way
- Community woodland sites at Thorn Wood and Hazel Pear Wood are managed by the Woodland Trust and provide open access
- A network of small sunken lanes that link scattered farms, hamlets and halls. Kingsley, Acton Bridge and Weaverham form nucleated settlements on the edge of the area
- Building materials are typically red brick with large red brick dairy barns a particular feature. Peel Hall is a medieval moated farmstead and a Scheduled Monument
- Promontory hillfort at Bradley, a Scheduled Monument
- Mainline railway lines, the disused ICI mineral railway, electricity pylons, the A49 and A556 pass through the area, contributing to the sense of movement and noise locally
- The Frodsham Sandstone Ridge and the Norley Undulating Enclosed Farmland form a backdrop to views, and Weaverham Church tower is a landmark on the skyline, but generally here is no strong skyline to this relatively low lying landscape
- There are panoramic views fromtheB5152 across the Weaver Valley

Key factors for landscape change

This LCA is located within an area of search for sand and gravel extraction, so there is the potential for new quarry works which could cause habitat fragmentation and loss but could also be an opportunity to restore areas for wildlife or recreation following works.

Agricultural diversification and a shift from agriculture to equine land use, including the introduction of riding schools, stables and paddocks as well as pressure for conversion of farm buildings to residential, business and industrial use.

There is also pressure for settlement expansion, and small scale residential development, principally around the main settlements abutting the character area but also in the wider countryside.

The location within The Mersey Forest indicates that there is likely to be additional tree planting in the area, principally restoring and creating Cheshire orchards, copses and small woodlands within the existing field pattern which would be a positive change.

Cheshire West & Chester Council Local Plan policies with an influence on the landscape character

- Green Belt;
- Natural heritage sites of international, national, regional and/or local significance;

- Nationally designated heritage assets (on Historic England's National Heritage List for England) and locally significant heritage assets;
- Flood risk and water management.

LCT 15 – River Valleys

General Description

Cheshire West and Chester borough is partly bounded by the Mersey estuary to the north and the River Dee to the west, both of which largely drain areas outside the district. The River Weaver flows northwards into the Mersey and is an important main river originating within Cheshire East, with its tributary the River Dane which arises in the Derbyshire Peak District to the east. The Dane and the Gowy also flow northwards and are also important for draining large parts of the district.

LCA 15c: Lower Weaver Valley

Flowing from Northwich to the Mersey Estuary, the Lower Weaver Valley has fairly low, but steep valley sides. The boundaries of the valley are defined predominantly by landform with the top of the slopes meeting the adjacent landscapes types of the Undulating Enclosed Farmland and Cheshire Plain East.

Key Landscape Characteristics

- Distinct valley with a flat open floodplain and steep, wooded, valley sides containing the course of the River Weaver and Weaver Navigation with many artificial channels (`cuts'), remnant meanders, locks at Dutton and sluices/weirs
- The steep valley sides and series of steep sided tributary valleys support distinctive clough woodland, much of which is ancient-some have extensive displays of bluebells
- The LCA includes Beechmill Wood and Pasture SSSI and Warburton's Wood and Well Wood SSSI Valley sides also support small/medium scale arable and pastoral fields, bounded by low gappy hedgerows
- Alluvium on the valley floor gives rise to waterlogged soils which generally support permanent pasture including seasonally wet species rich grassland
- Recreational opportunities are provided by public footpaths alongside the river/navigation, including Delamere Way and the Cheshire Ring Canal Walk long distance recreational footpaths
- The locks and 'boat graveyard' at Dutton, and the Anderton Boat Lift are visitor attractions
- Views are typically restricted to within the valley, for example there are views across the valley from either side, and from floodplains to the valley sides. The top of the valley side forms a skyline
- Generally, a quiet and tranquil landscape with a low settlement density. However, industrial elements have a defining visual influence on parts of the valley
- The Trent and Mersey Canal (a Conservation Area) follows the northern bank of the valley - contributing associated structures and artefacts of industrial archaeology, many of which are listed
- Steel road bridges, such as at Frodsham (A56), Acton (A49), and Northwich Swing Bridge (A533) and two huge sandstone arched railway viaducts (Frodsham and Dutton viaducts) contribute to the industrial character of the valley

- Settlement is generally absent from floodplain, except at locks and alongside the A49. Scattered farms are typical of the less steep valley sides
- Industry has had a great influence on the valley with old tipping lagoons, dredging lagoons and deposit grounds now forming rich wildlife habitats including open water, reed beds and unimproved grassland
- Large scale industrial works have a defining visual influence on the valley at Winnington (Northwich) and Rocksavage (Runcorn)

Key factors for landscape change

A decline of important ancient and semi-natural woodland habitats through reduction, fragmentation and deterioration of clough and wet woodlands;

A change in climate could affect established vegetation balance and water environment.

Extension of the wooded nature of the valley by more planting on valley shoulders, sides and, where appropriate, the valley floor buffering and connecting ancient semi-natural woodland (planting policies within the 2014 Mersey Forest Plan);

Further river bank erosion.

Cheshire West & Chester Council Local Plan policies with an influence on the landscape character

- Green Belt and Countryside;
- Extensive parts of the LCA are Area of Special County Value (ASCV) between the A56 in the west and Weaverham in the east;
- Flood risk and water management;
- River Weaver corridor;
- Natural heritage sites of international, national, regional and/or local significance;
- Nationally designated heritage assets (on Historic England's National Heritage List for England) and locally significant heritage assets.

Natural Area

Natural Areas as defined by English Nature (now Natural England) in 1996 are a series of biogeographical units reflecting ecological integrity land form, land-use and cultural influences. Their boundaries usually correspond to those of the Landscape Character Areas although they normally encompass multiple LCAs as they are generally larger.

Most of Cheshire, the northern half of Shropshire and part of northwest Staffordshire sit within the *Meres and Mosses Natural Area*. This is an expansive area of gently rolling agricultural plain which at the end of the last ice age was largely underwater. Although the vast area of water eventually drained away it left behind a wetland landscape of meres, mosses, meandering rivers and ponds. This landscape is recognised as being of international importance for its wetland wildlife.

Habitat Network Mapping Project

Natural England has developed a Nature Networks Handbook which is an Integrated Framework for creating Ecological Networks for Wildlife & People. It aims to provide practical recommendations that support the delivery of Biodiversity 2020 Strategy, the Natural England Conservation Strategy (C21) & the Government 25 year environment plan. The National Habitat Network Mapping Project is a spatial tool developed as part of the Handbook. It provides a national overview of the distribution of habitat networks for 19 separate priority habitats. (listed below)

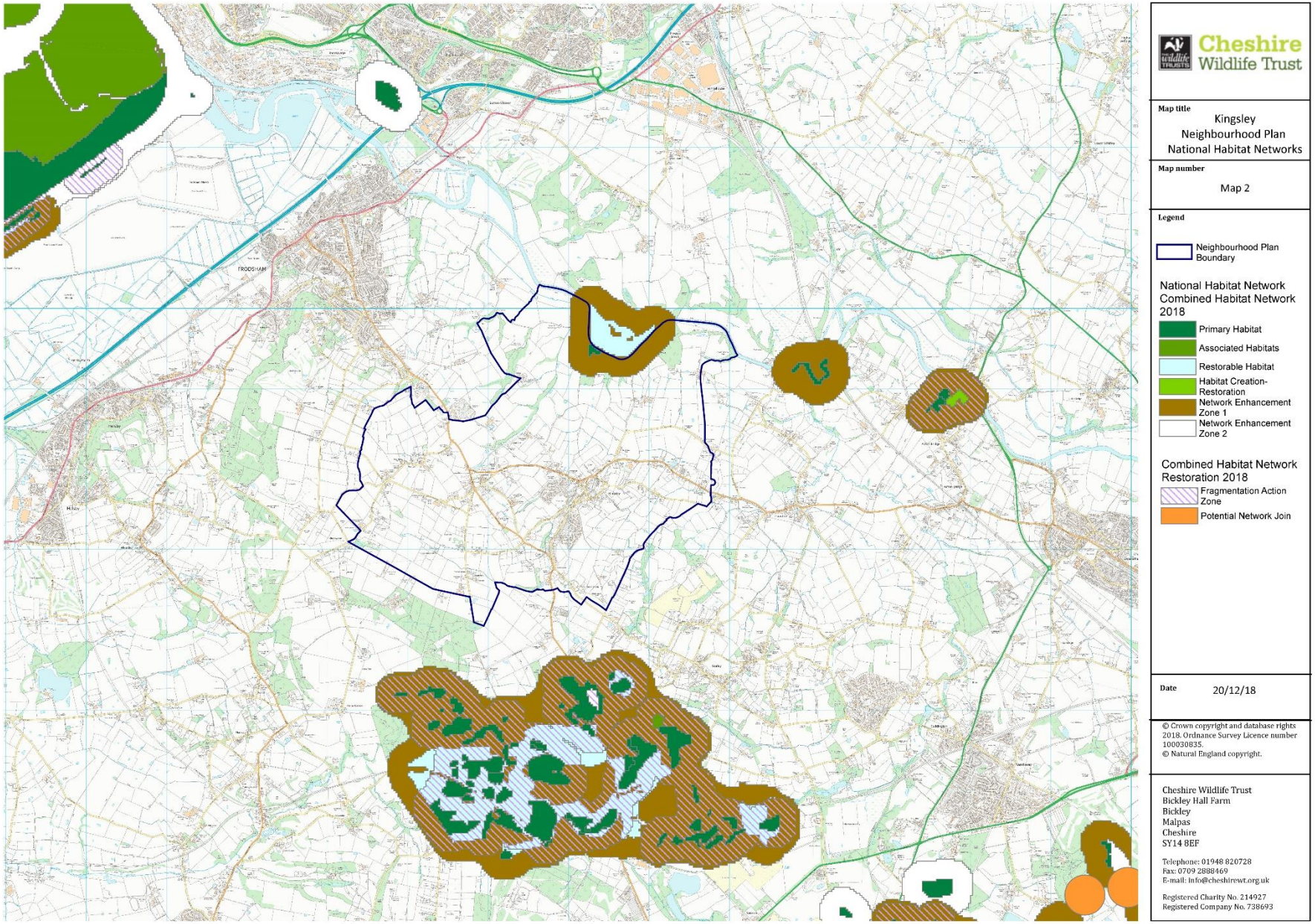
- Upland calcareous grassland
- Lowland calcareous grassland
- Reed-beds
- Lowland meadows
- Upland hay meadows
- Purple moor-grass and rush pastures
- Lowland dry acid grassland
- Lowland heathland
- Upland heathland
- Upland flushes fens & swamps
- Lowland fens
- Lowland raised bog
- Blanket bog
- Limestone pavements
- Coastal sand-dunes
- Coastal shingle
- Maritime cliff & slope
- Saltmarsh
- Semi-natural Ancient Woodland

The Key components of the National Habitat Network map are:-

Primary Habitat - existing patches of priority habitat for each habitat network e.g. lowland Heathland;
Associated Habitats – other habitat types that form a mosaic or an ecologically coherent grouping;
Habitat Created-Restored -habitat where restoration or creation of new habitat is underway
Restorable Habitat – habitats that are currently degraded but have the potential to be restored;
Network Enhancement Zones – These are areas that should be prioritised for actions to buffer priority habitat/habitat networks;
Fragmentation Action Zone - smaller fragmented areas of habitat that have the potential to be enlarged or joined with other habitat patches;
Potential Network Joins - potential locations for action to create network links

The maps are intended for use at both a national level and to feed into the development of ecological networks at a local level. They should be used in conjunction with other data sets and local knowledge to help improve the ecological resilience of habitats and habitat networks.

Map 2: National Habitat Network Combined Habitat Mapping (excludes woodland habitats) – Natural England 2018



National Habitat Network Mapping has highlighted an area of floodplain as Restorable Habitat just north of Kingsley's Parish boundary along the River Weaver Corridor. This is abutted by a small patch of Lowland fen near Hunter's Wood Local Wildlife Site, which has been identified as Primary Habitat. These two habitats are buffered by a Network Enhancement Zone, where opportunities to enhance the habitat network should be prioritised. This could be through restoring degraded habitat or through expanding existing habitat.

The map also identified a large mosaic of habitat networks within Delamere Forest to the South of Kingsley Parish as well as two small areas of Priority Habitat (Lowland Fen and Lowland Meadow) on the River Weaver Floodplain just east of the Parish Boundary.

Ecological Network for Cheshire West & Chester – draft 2016

As part of the Cheshire West and Chester updated Local Plan (Part 2), which contains detailed policies to protect and enhance the natural environment, a map of the ecological network within the borough has been created. The ecological network is not intended to restrict development or growth but to provide a tool to inform and guide development and support a 'net gain' in biodiversity.

In line with the existing Local Plan (Part One) new development will be expected to protect, conserve, restore and enhance the components of the ecological network for the borough. The existing designated sites (statutory and non-statutory) and priority habitats are essential components of the network and need to be protected and conserved.

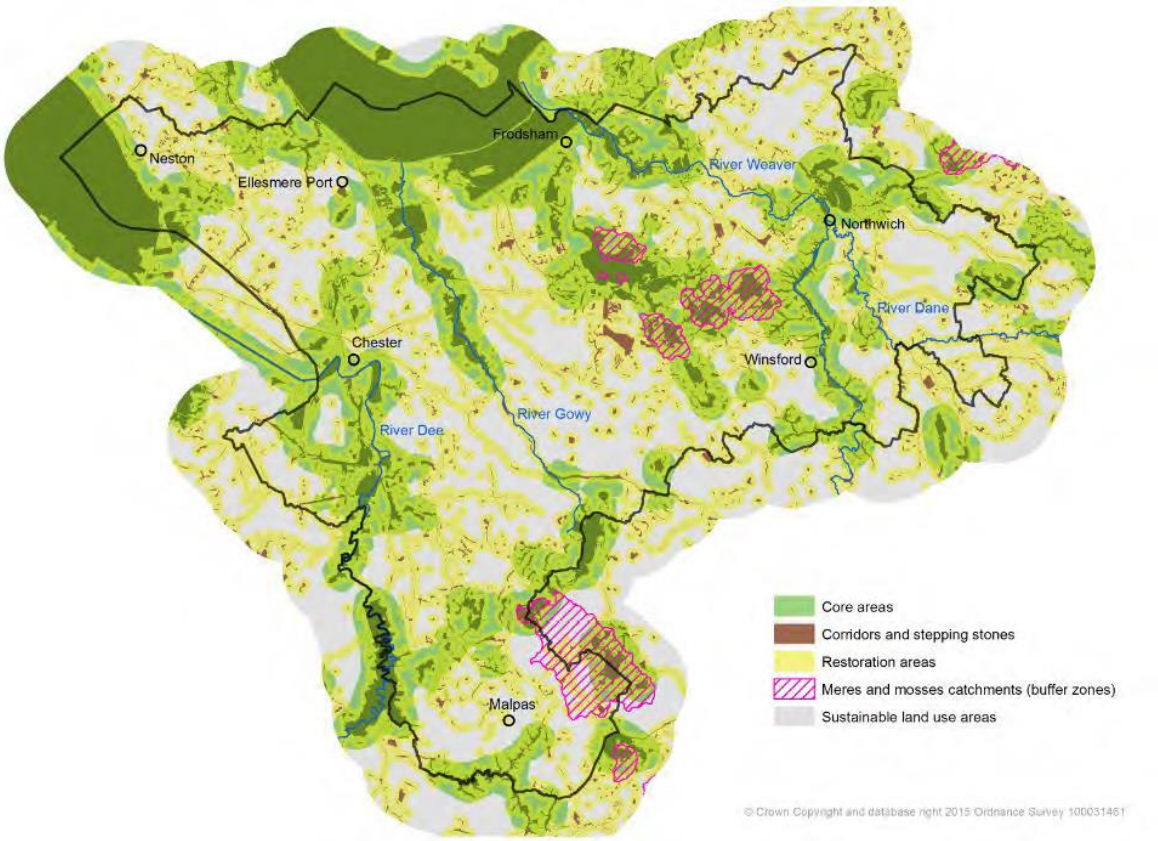


Figure 2. Ecological Network for Cheshire West & Chester map

Outside the planning system the ecological network is intended to inform land management and investment decisions and priorities such as agri-environment schemes, river catchment partnership plans and NGO (non-government organisation) landscape scale initiatives".

The Cheshire West & Chester Ecological Networks identify broad networks for the whole borough, whereas the wildlife corridors identified in this report (see map 10) are more specific to ecological networks that are important for conserving and enhancing biodiversity at a local scale.

Methodology

Creating a habitat distinctiveness map

In line with current Defra methodologies to determine 'net gain' in biodiversity, habitat data from the sources listed below was attributed to one of three categories listed in the table:

Habitat type band	Distinctiveness	Broad habitat type covered	Colour on map
High ecological value	High	Priority habitat as defined in section 41 of the NERC Act, Designated nature conservation sites (statutory and non-statutory)	Red
Medium ecological value	Medium	Semi-natural habitats and habitats with potential to be restored to Priority quality. Includes field ponds.	Orange
Low ecological value	Low	E.g. Intensive agricultural but may still form an important part of the ecological network in an area.	n/a

Habitat type bands (Defra March 2012)

1. Several published data sets were used to produce the habitat distinctiveness maps:
   - Priority habitat Natural England 2016 – High/medium confidence coded as high distinctiveness, and low confidence coded as medium distinctiveness unless other data is available.
   - Landcover data, Centre for Ecology and Hydrology 2007. Priority habitats (principal importance) and semi-natural habitats coded as medium distinctiveness (data in Appendix 1)
   - Agricultural land classification, Natural England - grade 4 medium distinctiveness, grade 5 high distinctiveness (adjusted where other data is available).
   - Protected sites (International Sites, European Sites, Sites of Special Scientific Interest, Local Wildlife Sites and Local Nature Reserves), Natural England, CWT/CW&C Local Authority – coded as high distinctiveness.
   - Ancient woodlands – Natural England 2015 – coded as high distinctiveness.
   - Meres and Mosses and other peat soils, Meres and Mosses Landscape Partnership scheme, 2016. Functional Ecological Units, river valley peat and destroyed (historical) peat coded as medium distinctiveness. (Supporting information in Appendix 2.)

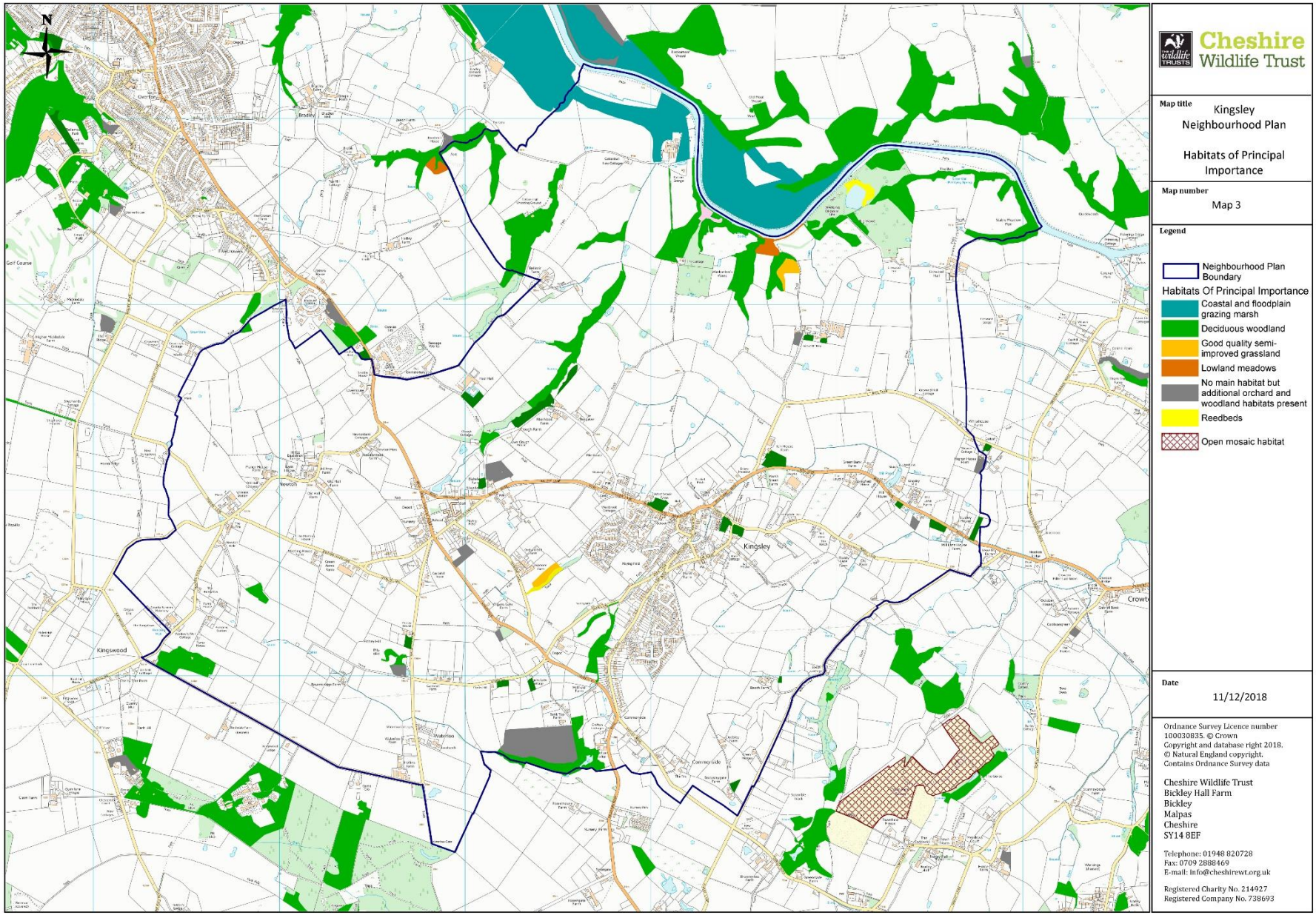
2. Aerial photography (Microsoft Bing ™ Imagery, Google Earth) was used to validate the results by eye.

3. The Kingsley Neighbourhood Plan Area Land Character Assessment and Natural England's National Habitat Network categories were mapped and the results were used to inform the conclusions.

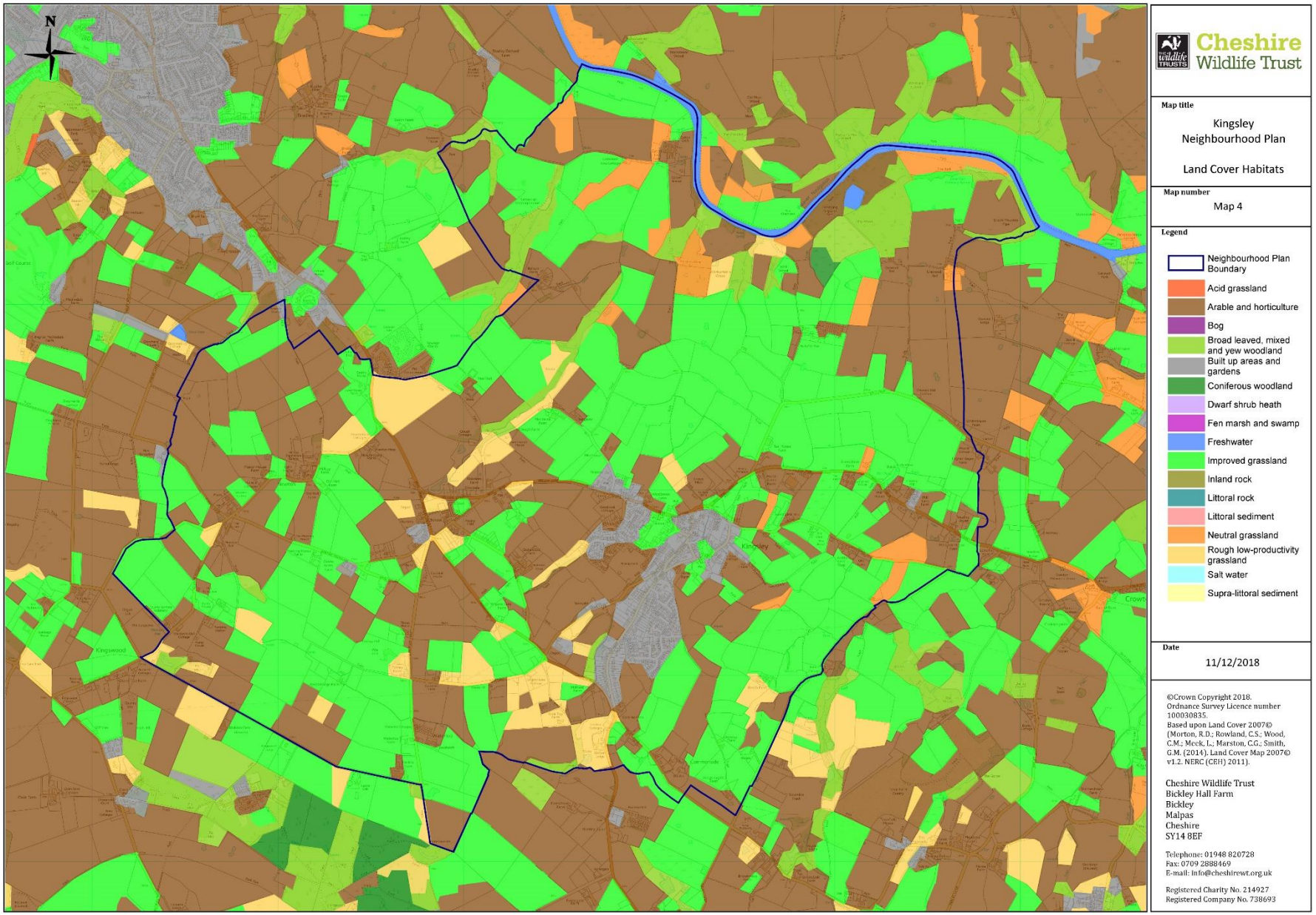
4. Information from recent planning applications in Kingsley Parish were researched and species records have been incorporated where appropriate. Ecological records were also obtained (where available) from, the NBN (National Biodiversity Network) Atlas and the Woodland Trust's Ancient Tree Hunt website.

Mapping

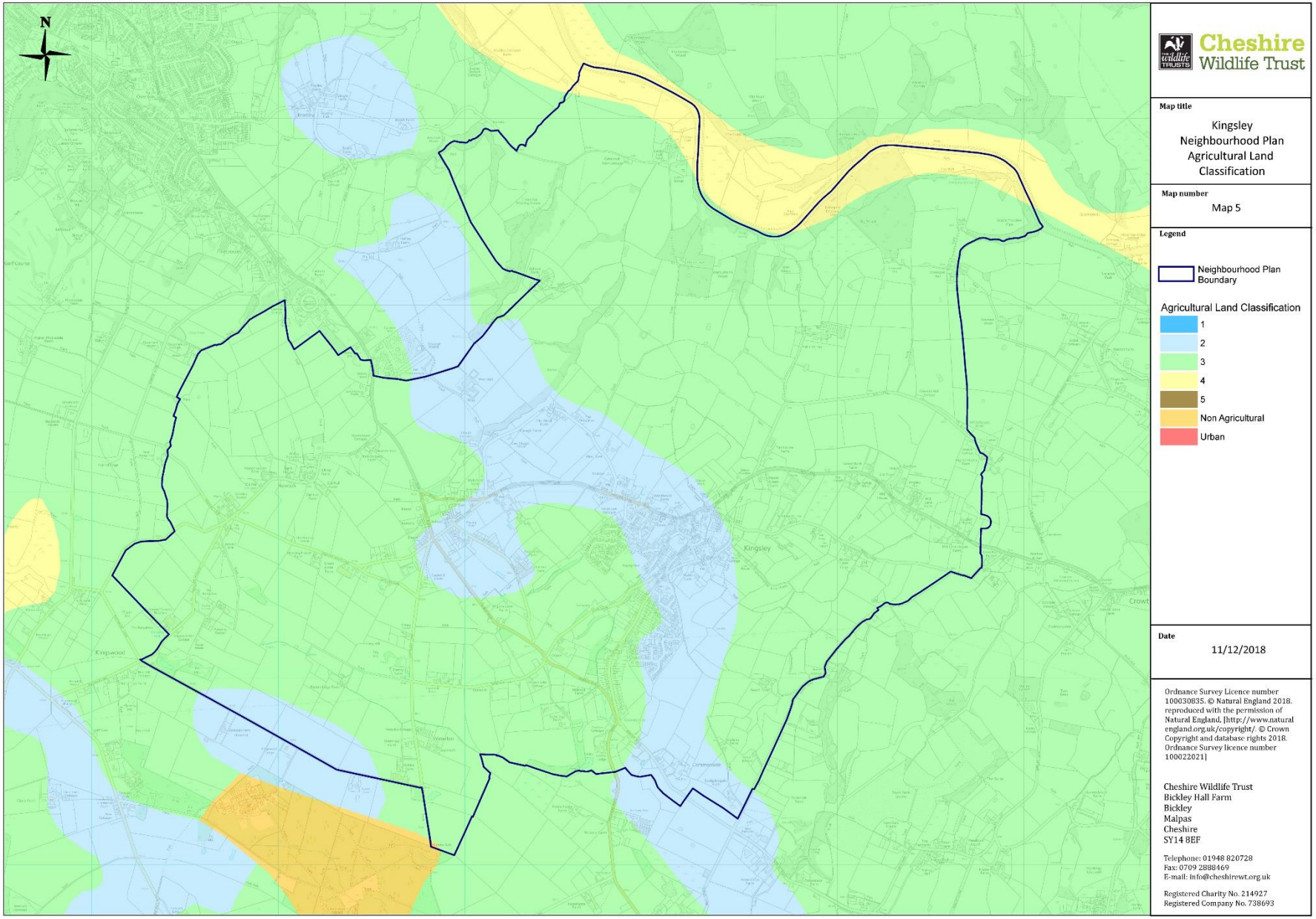
Map 3: Terrestrial habitats of Principal Importance – Natural England 2016



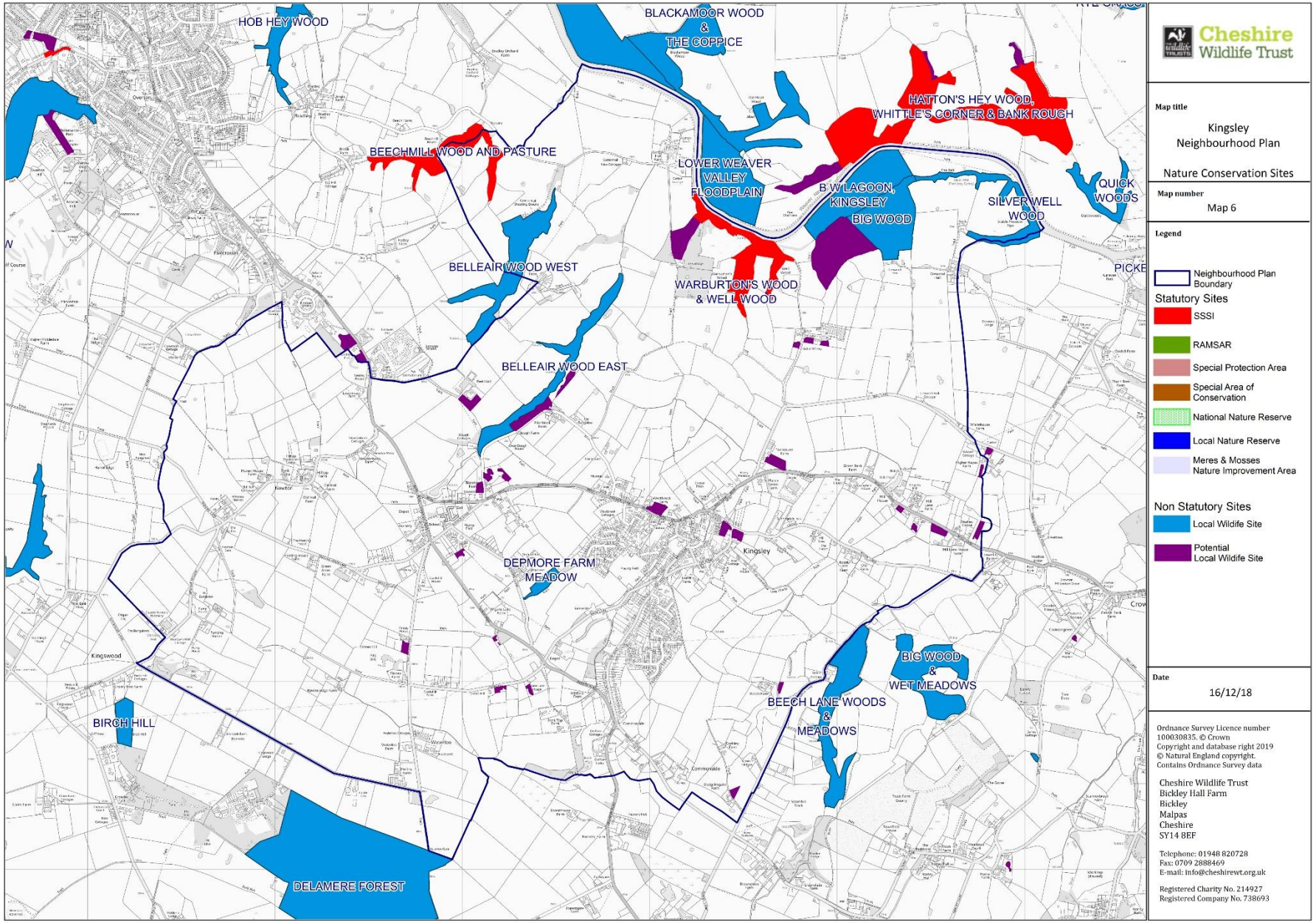
Map 4: Land Cover Map 2007 (LCM2007) parcel-based classification of satellite image data showing land cover for the entire United Kingdom derived from a computer classification of satellite scenes obtained mainly from the Landsat sensor



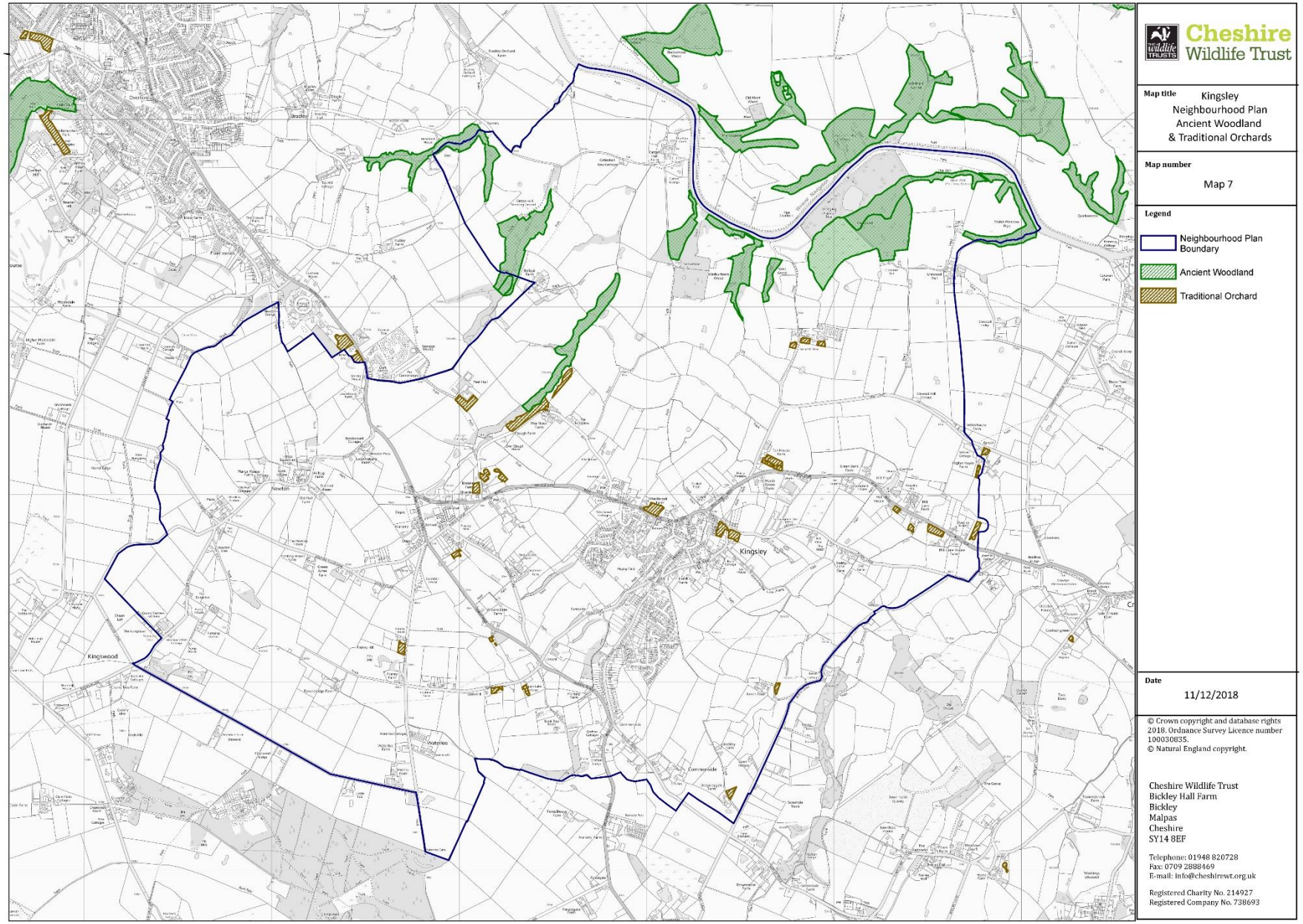
Map 5: Agricultural Land Grading – Natural England 2013



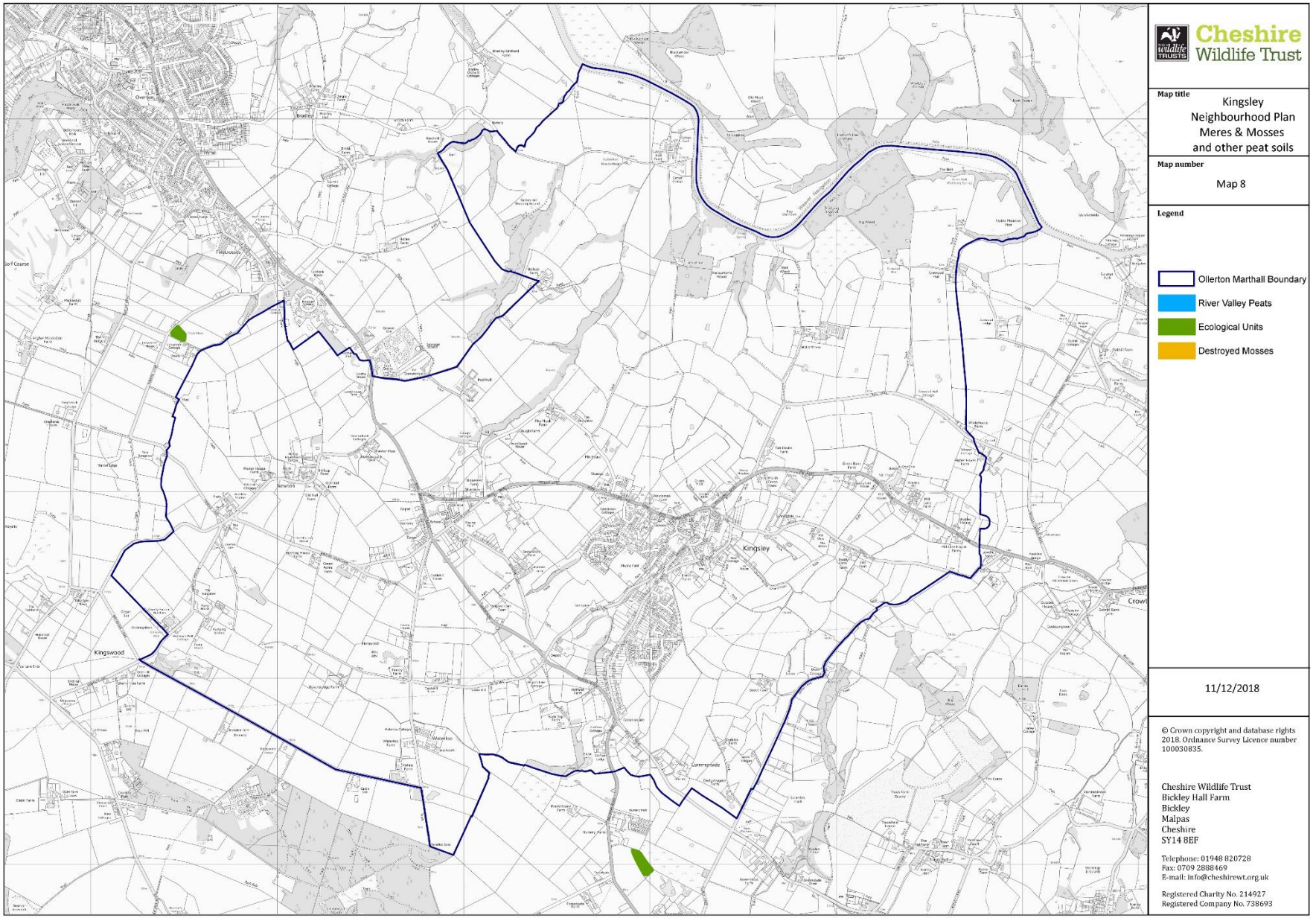
Map 6: Nature Conservation Sites, including designated Sites of Special Scientific Interest, Local Nature Reserves, European designated sites (SAC, SPA), Ramsar sites, Local Wildlife Sites and non-designated Potential Local Wildlife Sites



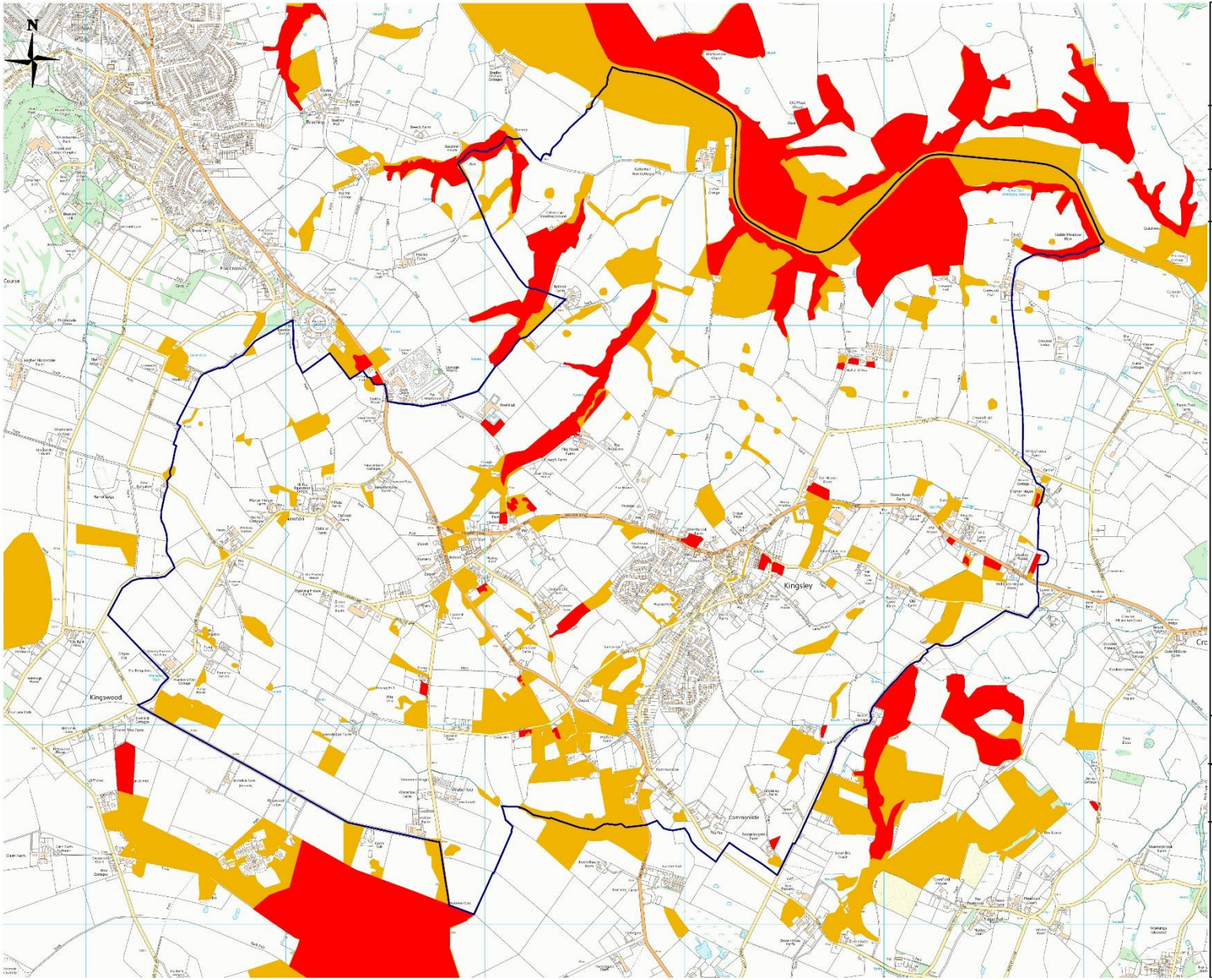
Map 7: Ancient woodland and traditional orchards – Natural England 2018



Map 8: Meres and Mosses and other peat soils, Meres and Mosses Landscape Partnership Scheme 2016



Map 9: Habitat Distinctiveness



Cheshire Wildlife Trust

Map title
Kingsley
Neighbourhood Plan
Habitat Distinctiveness

Map number
Map 9

Legend
Neighbourhood Plan Boundary
Habitat Distinctiveness
High Value Habitat
Medium Value Habitat

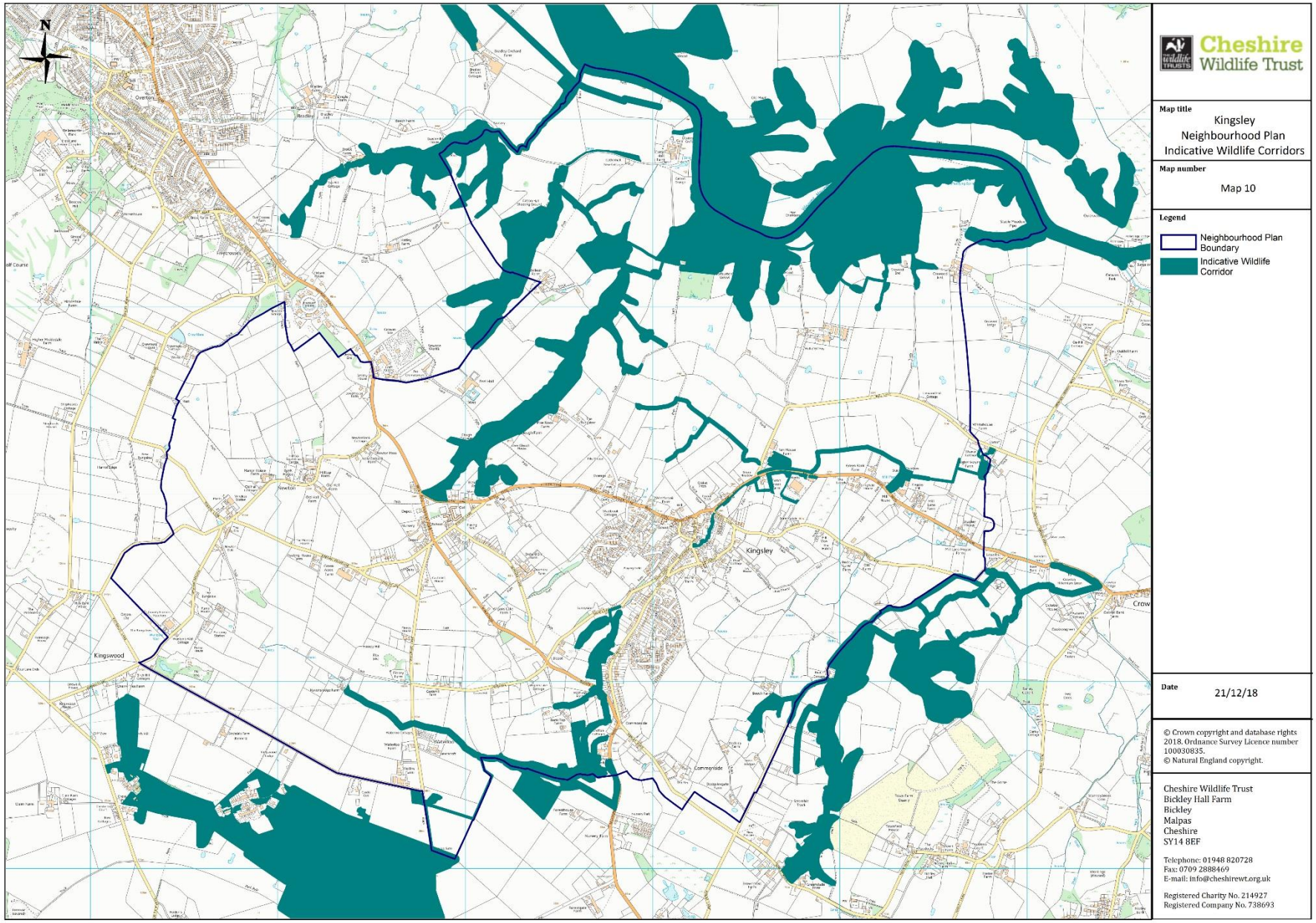
Date 21/12/18

Cheshire Wildlife Trust
Bickley Hall Farm
Bickley
Malpas
Cheshire
SY14 8EF

Telephone: 01948 820728
Fax: 0709 2888469
E-mail: info@cheshirewt.org.uk

Registered Charity No. 214927
Registered Company No. 738693

Map 10: Indicative Wildlife Corridors for Biodiversity & Nature Conservation



Results and discussion

High distinctiveness habitat

1. Woodland

Apart from Delamere Forest along the Southern boundary, there is little woodland cover in the south of the Parish. There are a few scattered stands of Broadleaved deciduous woodland within the south of the parish. These are small blocks of farm woodlands and coverts in a landscape generally dominated by a patchwork of small dairy or arable fields on poorly draining clay soils.

In contrast there is relatively high woodland cover in the north of the parish, particularly along the slopes of the River Weaver Corridor. Additionally, Map 7 reveals the woodlands in the northern half of the Parish are almost all ancient semi-natural woodlands. Ancient woods are our richest land-based habitat for wildlife and are home to more threatened plants and animals than any other. Their soils remain relatively undisturbed, providing a home for communities of fungi, invertebrates and dormant seeds. Many of Cheshire's woodlands have been lost, with the percentage of woodland covering the county now considered to be around 5% as a result the areas of woodland are highly valuable, and these long established habitats are not easily replaced.

This pattern is reflected in the number of woodland sites for conservation value distributed across the Parish. In the North two areas of woodlands deemed to be of national significance are designated as Sites of Special Scientific Interest (Beechmill Wood and Pasture and Warburton's Wood & Well Wood) and a third Site of Special Scientific Interest (Hatton's Hey Wood, Whittle's Corner & Bank Rough) adjoins the northern boundary. There are also four woodlands of county significance listed as Local Wildlife Sites (Belleair Wood West, Belleair Wood East, Big Wood and Silver Well Wood). None of the woodlands in the south of the parish carry any for conservation. There are however, three woodland Local Wildlife Sites (LWS's)that sit just outside the boundary. Two small blocks to the south east (Beech Lane Woods & Meadows and Big Wood & Wet Meadows) and Delamere Forest LWS along the Southern boundary of Kingsley Parish.

<u>Beechmill Wood SSSI</u>

Beechmill Wood is a woodland clough on a steep sided valley. When it was last assessed in 2011 part of the woodland was deemed to be in unfavourable-recovering condition. This section was described as having a developed and diverse canopy with of oak. There was also a good understory comprising wych elm, hawthorn and holly and a well-developed ground flora, with Bluebell frequent along the upper parts of the wood and ramson's in damper areas alongside the stream. A small area of the site had been disturbed resulting in a small loss of woodland habitat. A second section of the wood was deemed to be in favourable condition in 2011. It was described as having a well-structured, mature canopy with a good diversity of species including ash, oak, wild cherry, alder and crack willow. There was a good understorey of elm, elder, hawthorn, holly and hazel and diverse ground flora typical of the woodland communities and soil types present. Bluebell was frequent along the upper edges of the wood and there were swathes of ramson's with dog's mercury and wood anemone on more

base rich soils down the slope. Large bitter-cress, opposite-leaved golden-saxifrage with marsh marigold were frequent on the extensive wet flushed areas beside the stream. Favourable. Sycamore was regenerating frequently upstream of the bridge and whilst of concern did not appear to be affecting the interest of the site.

Warburton's Wood & Well Wood

An ancient semi-natural clough woodland with a small tributary of the River Weaver which was in favourable condition when it was last assessed (2010-2014). To the north of the wood is an area of herb-rich unimproved grassland, which runs down to the River Weaver. Part of the site is also a Nature Reserve managed by Cheshire Wildlife Trust.

Overall, the woodlands have a good structure and composition holding many ancient woodland indicator species. They are all largely native with very little sycamore present, with two oak/ash woodlands and an area of wet oak/alder woodland.

The oak/ash woodlands support a good diversity of other native trees including birch, wild cherry, lime, as well as hazel, elder, hawthorn, blackthorn, holly, elm, field maple, crab apple and the rare wild service tree in the scrub layer. The Oak alder woodland is less diverse but still has a well-developed understorey, comprising wych elm and hawthorn, with alder and willow in wetland areas.

The ground flora in these woodlands were rich and diverse boasting a good list of species. Bluebells are frequent along on upper slopes of the woodlands and abundant dog's mercury and ramson's are present on the base rich soils further down the slope. Wood melick, wood sedge, yellow archangel, wood sorrel, hard fern, wood speedwell, pignut, yellow pimpernel, wood avens, enchanter's nightshade and Hart's tongue fern are also found throughout the woodland. The wetter areas beside the stream also contain marsh marigold, opposite-leaved golden-saxifrage, pendulous sedge, yellow flag iris, bittersweet, wild garlic and greater tussock sedge. In the wet woodland where springs or small streams flow down into areas of fen / woodland carr, yellow iris, common reed, and marsh marigold have developed.

Himalayan balsam was entirely absent when last surveyed but could well have established since, particularly in sections proximal to the River and its tributary streams.

A number of bird species have been recorded within Warburton's Wood during monitoring surveys undertaken by the Trust in 2013. These include four red listed birds (marsh tit, song thrush, mistle thrush) and four amber listed birds (bullfinch, dunnock, reed bunting, willow warbler) which are of conservation concern due to recent declines in their populations. It is also likely to support Tawny Owls which are nocturnal and not usually picked up during standard monitoring surveys which are carried out in the day.

Belleair Wood West

This ancient semi natural clough woodland occupies the steeply incised sides of a tributary of the River Weaver. It has been partly replanted and is a mix of mature and semi-mature broadleaved species including ash, sycamore, beech and pedunculate oak. There is a stand of larch at the

southern end. The ground flora species include bluebell, wood millet, wood sorrel and opposite-leaved golden-saxifrage.

Belleair Wood East

This site is a long broadleaved woodland surviving on the northern flanks of a clough running northeast into the River Weaver.
The woodland is a mix of mature and young, planted trees. Canopy species are sycamore and pedunculate oak with occasional ash. There is an elder and hazel understorey. Many of the hazels have been coppiced. The ground flora has species such as bluebell, greater stitchwort, wood millet, bramble and bracken

Big Wood

Big wood is a mixed semi-natural and plantation woodland located on a north-facing slope.
The canopy comprises sycamore, silver birch, ash, alder, beech, pedunculate oak and occasional Scots pine interspersed with rows of European larch. Small leaved lime is present in the north-east corner and is a locally scarce in Cheshire as well as being an ancient woodland indicator. In the broadleaved areas understorey species are elder, hazel, holly and rowan. It also has a relatively diverse ground flora with species present including red campion, broad buckler fern and another ancient woodland indicator, wood meadow-grass.

Although there are no records for the invasive non-native species Himalayan balsam for the parish, it is known to have recently established in Big Wood and could potentially be present in some of the other woodlands located along the River Weaver. This plant is unfortunately almost ubiquitous along Cheshire's water courses/bodies and within damp woodlands. Himalayan Balsam is probably the biggest threat to the integrity of woodlands and wetlands in Cheshire as its vigorous growth outcompetes native flora. This can have a devastating impact on the native flora and a knock on effect on groups of species such as birds, invertebrates and mammals. Himalayan balsam, which is an annual plant that dies back in the winter, can also cause severe soil erosion issues when the native flora that binds the soil disappears

Silver Well Wood

Silver Well itself is a petrifying spring and its' woodland namesake comprises the Belt, a clough above the flood plain of the River Weaver, and Stable Meadow Pipe, a clough woodland with a small tributary stream flowing into the Weaver.

The dense canopy has frequent beech, sycamore and wych elm with occasional pedunculate oak and small-leaved lime, which is rare in Cheshire and is an indicator of ancient woodland. The ground flora is limited.

The areas of high quality described above have relatively good connectivity through the landscape and provide an important corridor for wildlife. They are also likely to be high in biodiversity, offering potential habitat for rare and vulnerable species such as priority red listed[1] woodland birds and UK priority bat species. Whilst there are a number biological records for birds within Warburton's

[1] Birds of Conservation Concern 2017

Wood, there are no recent records available for the remaining woodlands which would be able to evidence this. However, a lack of recent records does not necessarily indicate a decline in or lack of bird species.

There are a number of biological records for bats throughout the parish, with four different species identified. That of Common pipistrelle, Soprano pipistrelle, Brown long-eared and Noctule. Despite no records for bats within the woodlands, this is more likely due to a lack of recent recording effort than absence of these species. Kingsley's woodlands are highly likely to support roosts of bat species, which will forage for insect prey along the woodland edges, hedgerows and water bodies. All bats are European Protected Species (EPS) and many are also UK species of Principal Importance (S41 species). Roof spaces and crevices in buildings also provide places for bats to roost.

There are few historic records for Otter and Polecat along the River Weaver Corridor and the series of woodlands that flank the river offer suitable habitat for both these species.

2. Traditional Orchards

Traditional orchards are a quintessential component of the historic English landscape. Orchards are becoming increasingly rare due to neglect, intensification of agriculture and pressure from land development. But these habitats provide excellent conditions for biodiversity to thrive and can support rare species. The Undulating Enclosed Farmland land character area in the centre of the parish describes historical orchards throughout this landscape. This is confirmed in Map 7 which shows traditional orchards scattered throughout this area.

3. Grassland

Species-rich grasslands support a range of life, particularly plant and invertebrate but grasslands are the fastest disappearing habitat in the UK. Cheshire is no exception and many of the county's once biodiverse grasslands have been converted to species poor pastures dominated by perennial rye grass or arable land. Map 4 shows that there is much improved grassland and arable/horticultural land within Kingsley, confirming this trend within the parish.

Map 3 shows a swathe of grazing marsh and wet grassland with a small pocket of reedbed habitat along the Weaver Floodplain. There is also a small area of good quality semi-improved grassland and acid grassland in the centre of the county and just west of Kingsley village. These grasslands are designated as Depmore Farm Meadow Local Wildlife Site, and comprise a small meadow straddling a stream. Neutral grassland is found on the north west side of the stream, with supporting soft rush and floating sweet grass in the wetter, water logged areas at the bottom of the slope. The grassland on the south east of the stream comprises oak and birch woodland with open areas of acid grassland with tormentil, heath bedstraw, sheep's sorrel and patches of gorse. Acid grassland is rare in lowland Cheshire and as such it is highly valuable habitat.

4. Floodplain Grazing Marsh

Map 3 shows the River Weaver is flanked by Floodplain grazing marsh priority habitat, part of which is designated as the Lower Weaver Valley Floodplain LWS. This Local Wildlife Sites sits just outside the Kingsley Boundary on the opposite side of the River Weaver.

The fields surrounding Catton Hall, in the north western extent of Kingsley Parish, are also mapped as Floodplain grazing marsh. Many areas of coastal and floodplain grazing marsh have been agriculturally 'improved' and are of limited botanical interest. Consulting Map 5, the underlying area is classed as grade 3 agricultural land, which is of moderate suitability for agricultural production. Perennial rye-grass, Yorkshire fog and rushes tend to dominate the sward. However, there may be pockets of interest for wildlife in damper patches and drainage ditches on former areas of marsh can support a good diversity of plants and invertebrate populations, such as dragonflies and damselflies. Grazing marsh can also potentially support breeding waders such as Curlew and Lapwing both of which are Birds of Conservation Concern and are red listed.

5. Reedbed

Reedbeds are an important habitat in their own right which have declined drastically over the last century. A number of threatened species rely on them and they are one of the most important habitats for birds in the UK. Map 7 indicates a small patch of reed bed along the northern boundary of the Kingsley, which forms part of the B W Lagoon Local Wildlife Sites. It was previously a lagoon for dredging spoil from the Weaver Navigation. The site is enclosed by a bund on three sides about 5m high and 2m wide. The fourth edge is bound by Big Wood LWS. Himalayan Balsam has established in the adjacent woodland and could potentially spread into the areas of reedbed.

The reed bed is adjacent to a body of open water and is dominated by common reed with occasional bulrush and wild angelica. The pool and surrounding reedbed supports a number of bird species, with 49 species recorded in 2015. This includes five red listed species of bird (mute swan, black-tailed godwit, song thrush, marsh tit) and ten amber listed species (gadwall, mallard, shelduck, teal, shoveler, tawny owl, house martin, dunnock, willow warbler, reed bunting) on the BTO's Birds of Conservation Concern.

Habitat management works have recently been carried out at this site to clear areas of scrub encroaching the reedbed and new scrapes have been created.

Medium distinctiveness habitat

Areas of medium distinctiveness habitat are shown on map 9 (displayed as orange) and provide important wildlife habitats in their own right as well as acting as ecological stepping stones and corridors. Because the methodologies used to produce the maps are desk based rather than field survey based, there is a possibility that some of the medium distinctiveness areas have been undervalued and an ecological survey may indicate they should be mapped as 'high distinctiveness'

Priority habitat (which would be displayed as red in map 9). Conversely there may be areas which have been overvalued, particularly if recent management has led to the deterioration of the habitat; in which case these areas should be removed from the habitat distinctiveness map.

1. Field Ponds

Fields ponds contribute to the permeability of the landscape for wildlife and provide important habitats for aquatic invertebrates as well as breeding habitat for amphibians. Larger waterbodies are likely to be valuable for both breeding and overwintering birds as well as foraging bats. Any ponds have been highlighted as habitat of medium distinctiveness in map 9 and should always be retained where possible when land is developed. The biological records identify several historical records for amphibians within the pond north of Beleair Wood East, ponds south of Warburton's Wood, and a small pond in the north east of the parish. These include common frog, common toad and smooth newt.

There are also historical records that indicate some of the ponds were floristically rich, with creeping willow, brooklime, gypsywort, lesser water parsnip, and soft rush recorded within the pond north of Beleair Wood East and the ponds south of Warburton's Wood ponds supporting, celery leaved buttercup, fennel pondweed, yellow iris, pendunculate water star-wort, creeping willow, floating sweet grass, hard rush, lesser pond sedge, and lesser water parsnip.

2. Grasslands

Some of the 'medium distinctiveness' habitats identified in map 9 are semi-natural grasslands, particularly on less productive waterlogged areas and margins of watercourse. Semi-natural grasslands are valuable for wildlife as they can support populations of invertebrates and a variety of mammals. Many farmland birds on the BTO's Birds of Conservation Concern like the red listed Skylark and Linnet feed on insects that live in semi-natural grasslands. The amber listed kestrel, also recorded within the parish, rely on the small mammal populations, supported by rough grassland. These grasslands also provide important feeding areas for overwintering birds; starlings (red listed) and swifts (amber listed) within the parish. Wet grasslands are also important for the red listed Curlew and Lapwing, which are recorded within the parish.

Rough grasslands, can provide valuable terrestrial habitat for newts, including the nationally protected species great crested newt, provided they are in the vicinity of (up to 1km from) a breeding site and there are no intervening barriers (such as main roads or rivers).

3. Scattered trees and Hedgerows

Hedgerows have not been included within the habitat distinctiveness mapping as it is difficult to gauge the wildlife value of a hedge from aerial mapping. However, the smaller field parcels are bounded by a good network of hedgerows and there are also a number of field drainage ditches. Many of the hedgerows within the parish also include trees (standards) with have been allowed to grow out of the hedgerows, creating a more varied habitat.

Scattered farmland trees together with the hedgerow network are fundamental to landscape permeability, particularly those with adjacent wide field margins or lying adjacent to semi-natural grassland. Hedgerows provide important corridors for foraging bats, small mammal populations and amphibians as well as many invertebrate species. They offer valuable nesting habitat for birds, including many declining birds like the red listed yellow hammer and house sparrow, both of which have been recorded within the parish.

There are numerous historical records for Hedgehogs as well as several recent records, on the NBN Atlas, that are located in Kingsley, in the fields surrounding the village. These mammals, a species of principal importance, make use of hedgerows, woodlands, meadows and suburban gardens.

4. Woodlands

As well as the high value woodland habitats concentrated in the north of the parish, there are woodlands that may be ancient in origin but are too small to appear on the ancient woodland inventory (map 7), which has a minimum size threshold of 2 hectares. These possible ancient woodlands have been mapped as medium distinctiveness due to lack of survey information.

Deciduous woodlands considered likely to be habitats of principal importance by Natural England are marked on map 3. A small woodland located north of Belleair Farm is identified by Natural England as being a habitat of principal importance and is also on the old tithe maps from the 1800's. There is a similar woodland north of the pumping station and west of Kinglsey village that is also mapped as a habitat of principal importance and appears on the old tythe maps. Both these woods could be ancient in origin.

There are a few small scattered woodland blocks on the western boundary of Kinglsey to the east and west of Kinglsey Green that appear on map 3 as priority woodland habitat and on the tythe maps. Again these may potentially be ancient in origin.

A small block of woodland mapped as priority habitat is located on Finney Hill. Part of the woodland at The Finneys is present on old tythe maps and more recently woodland appears to have established around the old Marl Pits. The newly established areas, although not ancient in origin woodlands, are still likely to provide a valuable habitat for wildlife, particularly invertebrates and birds.

Wildlife corridor network

Wildlife corridors are a key component of wider ecological networks as they provide connectivity between core areas of high wildlife value/distinctiveness enabling species to move between them to feed, disperse, migrate or reproduce. In conjunction with the results of the National Habitat Network Mapping (2018), and the Cheshire West and Chester Ecological Network Map (2016) this study has identified a number of wildlife corridors (shown in map 10) with ecological connectivity within and beyond the Neighbourhood Planning area. The National Habitat Network map and the Cheshire West and Chester Ecological Network provide a broad map of the networks across England and the borough respectively, the wildlife corridors identified in map 10 are more specific to ecological networks that are important for conserving and enhancing biodiversity at a local scale. All the network maps

(including map 10) identify “primary habitat” or “core areas” for biodiversity within the Kinglsey area along the River Weaver Corridor and just south of the boundary at Delamere Forest.

Although the identified segments of corridor do not all join together, they do link areas of valuable habitat including woodlands, grasslands and freshwaters. The corridors that have been identified follow hedgerows and watercourses within the parish. Connectivity is good through the areas identified as corridors. The corridors do however cross over roads where connectivity will not be maintained, but even here the maximum gap is less than 30 metres enabling some more mobile species to cross. Some of the hedgerows within the identified corridors may not be species rich, such as the hedgerows that joins Delamere Forest to the woodlands and mill pool near to Commonside in the south of the Parish. Part of the hedgerow also runs through intensively farmed land, which means there are likely to be high inputs of agrochemicals. Increasing hedgerow diversity and changing management, as well as creating a buffer strip of rough grassland along its edge would help bolster ecological connectivity in this area. Similarly, there are parts of the corridors that run along watercourses with intensively farmed agricultural land adjacent where buffers would be beneficial.

Protection of the wildlife corridor and other high and medium distinctiveness habitat

Map 10 incorporates an indicative boundary for the wildlife corridor network; however, this is likely to require refinement following detailed survey work. The corridor should be wide enough to protect the valuable habitats identified in Map 9 and for this reason we have incorporated a 15 metre buffer zone around any high distinctiveness habitat. The buffer is necessary to help protect vulnerable habitat from factors such as light pollution, ground water pollution, predation by domestic pets and invasive garden species if adjacent land is developed.

Any potential development proposals adjacent to a high distinctiveness habitat or a wildlife corridor should incorporate substantial mitigation and avoidance measures to lessen impacts on wildlife. For example, low spillage (bat sensitive) lighting should be used on the outside of buildings or in car-parks and along pathways and watercourses. Developers should be asked to install hedgehog-friendly fencing, purposely designed to allow the passage of hedgehogs from one area to another. Other measures could include the creation of south facing butterfly banks or bunds for other invertebrates and the incorporation of bee bricks and bat/bird boxes into the design of buildings, ideally made of highly durable material such as woodcrete. Surface drainage water from developed areas should always be directed away from sensitive areas due to the risk of pollution unless the source of the water is clean, such as rainwater collected from roofs. Sustainable Drainage Schemes (SuDS) are useful in providing additional wildlife habitat and preventing flooding, but they may still hold polluted water so should not drain directly into existing wildlife habitat unless the filtration system is extensive.

Not all sections of the wildlife corridor provide high quality habitat and measures to improve its ability to support the movement of species is desirable[2]. Enhancement of the corridor may be facilitated by opportunities arising through the planning process (e.g. Section 106 agreements, biodiversity offsetting/compensation) or through the aspirations of the local community or local landowners.

[2] Refer to Recommendations section

There are also opportunities through the 2014 Mersey Forest Plan planting policies through planting of new woodland on former agricultural land around Delamere Forest to create links between sections highlighted as wildlife corridors.

In addition to the 'wildlife corridor network' this study has identified further areas of high or medium 'habitat distinctiveness' (Map 9) which, although outside the wildlife corridor network, may nevertheless provide important wildlife habitats acting as ecological stepping stones. These areas comprise semi-natural grassland, ponds and semi-natural woodlands.

The network of field boundary hedgerows and farm drainage ditches within Kinglsey provides habitat connectivity between high distinctiveness areas, which would otherwise be separated by extensive areas of land predominantly of low habitat distinctiveness with restricted potential for wildlife to disperse. Not all the hedgerows are identified as key components of the parish's ecological network, however collectively these hedgerows provide linear connectivity through the neighbourhood and beyond. In addition to their intrinsic ecological value a good hedgerow network also adds to the landscape character value.

Old meadows supporting species-rich neutral or marshy semi-natural grassland such as the areas of grazing marsh and associated ditches along the Weaver Corridor, are the fastest disappearing habitats in the UK. These grasslands are particularly important for pollinating insects and insectivorous birds and mammals. It is extremely important that the highlighted 'medium distinctiveness' areas should be thoroughly evaluated in the development control process. If they are found to support species-rich grassland they should be re-classified as 'high distinctiveness' (Priority/principal importance) habitat and there is a presumption that they should not be built on (as stipulated in the Local Plan and the NPPF). In order to achieve 'net gain' in biodiversity, compensation may be required should these areas be lost to development when avoidance and mitigation strategies have been applied in line with the guidance set out in the National Planning Policy Framework.

Conclusion

This study has highlighted that the important wildlife habitat in Kinglsey is mainly associated with the high value woodlands and associated habitats along the Weaver Valley. The field and hedgerows with trees also provide an important network for wildlife through the parish. There appear to be few semi-natural grasslands, making the ones that are present even more important. By attributing habitat distinctiveness values to all land parcels in the Neighbourhood Plan area the study has provided important evidence that should be taken into consideration when planning decisions are made. However, we strongly recommend that further (phase 1) habitat survey work is undertaken at the appropriate time of year, in particular to verify that 'medium value' habitats have not been over or under-valued.

Most notably the study has highlighted a 'wildlife corridor network' which provides ecological connectivity between woodland, grassland and riparian habitats within and beyond the Neighbourhood Planning area. The wildlife corridor network is likely to support a wide range of species including numerous birds, mammals (including priority bat species), plants and invertebrates that are

in decline both locally and nationally. These species depend on the semi-natural habitats highlighted in the report.

We recommend that the corridor network shown in map 10 is identified in the Neighbourhood Plan and protected from development so that the guidance relating to ecological networks set out in the NPPF (paragraphs 170d, 171, 174a, 174b, and footnote 57) may be implemented at a local level. The wildlife corridor network includes a buffer zone of up to 15 metres in places to protect the notable habitats shown in map 9. If new areas of high distinctiveness habitat are subsequently identified these should also be protected by a 15 metre non-developable buffer zone.

Any future development of sites which lie adjacent to high distinctiveness habitat or a wildlife corridor should be able to demonstrate substantial mitigation and avoidance measures to lessen any potential impacts on wildlife. This should include measures such as installing bat/otter sensitive lighting schemes, installing durable bat/bird boxes and hedgehog-friendly fencing and ensuring surface water is directed away from sensitive areas and into SUDS schemes.

To summarise, future development of Kingsley should respect the natural environment. The most intact landscapes, in terms of biodiversity, landform and historical/cultural associations should be valued highly when planning decisions are made. Protection and enhancement of Kingsley's natural assets is of crucial importance for nature conservation and ecosystem services but it is also important for the enjoyment of future generations.

Recommendations for improving and protecting habitat in order to create a coherent ecological network

Following adoption of the neighbourhood plan, CWT advises that the following recommendations should be actioned:

1. **Create links between existing 'wildlife corridor network'**

There is currently good connectivity between the habitats along the Weaver Corridor and the high value woodland in the north of the parish. However, there is no connection between the two wildlife corridors in the south of the parish. It is recommended that the wildlife value of the hedgerows between the two corridors is enhanced to extend the corridors and join them together. To achieve this, hedgerows could be cut less frequently, perhaps on rotation, additional trees planted to increase diversity and some of the hedgerow trees not flailed and allowed to grow up as standards.

2. **Improve the quality of the 'wildlife corridor network' and assess against Local Wildlife Site selection criteria**

The areas highlighted as 'wildlife corridor network' in Map 10 incorporates two of the three designated Local Wildlife Sites, however it is highly likely that other land would meet also the criteria for Local Wildlife Site selection. These areas (which may be identified as potential Local Wildlife Sites

in map 6) should be designated if the selection criteria[3] are met, as LWS designation is likely to provide a greater level of protection within the planning system.

The wildlife corridor network should be in 'favourable condition'[4] to provide breeding, foraging and commuting habitat for the native species that live there and native species, which may subsequently colonise. Ideally these areas should be surveyed by a qualified ecologist to identify management priorities.

Management priorities:

- Field ponds which have become overgrown and choked with vegetation should be cleared out to allow light to penetrate, to provide areas of open water and allow a more diverse marginal flora to develop (tree/scrub cover should ideally be 10 - 15%). These measures will also benefit amphibians and invertebrates. Ideally no more than one third of the pond should be dredged in a single year so that existing biodiversity is retained and enhanced. Waste vegetation should be left at the side of the ditch for 24 hours before removal to allow any fauna to return to the water. Prior to any works ponds professional advice should be sought and ponds should be assessed to ensure existing wildlife is not impacted, such as roosting bats which may use crevices in trees surrounding the ponds, or rare aquatic species like the lesser silver water beetle which is recorded in ponds in Cheshire.
- Watercourses in intensively farmed land should be buffered by semi-natural areas to provide riparian habitat and help prevent pollution runoff (1 metre from the top of the bank of a watercourse is the minimum requirement under cross compliance regulations, however 4-6 metres is recommended). This will help any water vole or otter populations as well as provide breeding and foraging areas for other species. It will also improve water quality.
- Hedgerows that are not already in good condition (particularly those that form part of the wildlife corridor) should be restored or re-instated using locally native species such as hawthorn, blackthorn, hazel and holly (plant 60-90cm high 'whips' which have a good rate of survival and use tree guards to protect from rabbits and stock fence where necessary). New sections of hedgerow should ideally incorporate a tree every 30m (on average) which are demarked so as not to be inadvertently flailed.
- Hedgerows in intensively farmed land should be buffered by semi-natural areas to provide wildlife habitat (2 metres from the centre of the hedge is the minimum requirement under cross compliance regulations, however 4-6 m is recommended).
- Cutting or grazing of all semi-natural grassland should be carried out to retain the wildlife value. This will prevent more competitive species from taking hold and the grasslands from eventually scrubbing over. Where cutting is used as a method of management it should be carried out after flowering plants have set seed. Where farmland birds such as skylark are breeding cutting outside of the bird breeding season (March to August inclusive) will avoid

[3] Local Wildlife Site criteria for the Cheshire region 2012
https://www.cheshirewildlifetrust.org.uk/sites/default/files/files/Cheshire%20LWS%20criteria%20V40.pdf

[4] The definition of 'favourable condition' for various habitats is provided in the Farm Environment Plan (FEP) Manual (Natural England 2010). The definition of 'positive management' for Local Wildlife Sites is provided in Appendix 3

destruction of nests. Under the Wildlife and Countryside Act 1981 it is an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. Conversion of semi-natural grassland to arable land should be avoided.

- Schedule 9 invasive species should be prevented from colonising Kinglsey's natural habitats. Under the Wildlife and Countryside Act 1981 it is an offence to plant or otherwise cause these species to grow in the wild. Areas of Himalayan balsam is present within the parish should be managed to control its spread. This species colonises rapidly and will outcompete native woodland, grassland and wetland flora.
- It is likely that other Schedule 9 species such as variegated yellow archangel, montbretia and Spanish hybrid bluebells are present within the parish as they easily spread from domestic gardens. If present they should be eradicated. Of particular concern are non-native bluebells, which may spread into the parish's bluebell woodlands after being planted as a garden ornamental. Householders should be made aware of the problems and steer clear of planting any Schedule 9 invasive species within their gardens especially where they adjoin open areas.

3. Protect, enhance and connect areas of high/medium value which lie outside the wildlife corridor

Opportunities should be explored to restore or create more wildlife friendly habitat especially where connectivity with other areas of valuable habitat can be achieved or where valuable sites can be buffered. Larger areas of better connected habitat support larger and healthier species populations and help prevent local extinctions.

Ways to enhance connections or to buffer sites could include the restoration of hedgerows, creation of low maintenance field margins and sowing locally sourced (local genetic stock) wildflower meadows[5].

Woodland expansion is desirable to buffer Kinglsey's existing woodlands, particularly the poorly connected and limited woodland blocks in the south of the county, where there are opportunities through the Mersey Forest Plan. New plantations that are isolated from existing woodland are of limited value due to slow colonisation by woodland species. It is vitally important that tree planting should only occur on species-poor, semi-natural habitats, proximal to existing woodland. A full botanical survey should be carried out prior to any planting. Trees should be planted away from the edges of watercourses including ditches and ponds. Professional advice should always be sought when creating new habitat particularly when designing the layout, position and composition of new woodland and how to use local woodlands as a 'reference'. Well-designed new woodlands contain up to 40% open space (glades and rides) and up to 25% shrub species. For maximum benefit biodiversity rides should be east-west oriented (so that sunlight is maximised) and at least 30 metres wide to avoid over-shading when the canopy closes. It is recommended that trees and shrubs should be sourced from the Forestry Commission seed zone, from seed collected from local stands or from the local seed

[5] Cheshire Wildlife Trust can provide advice and seeds for locally sourced wildflower meadow creation.

zone (collections should be made under the Voluntary Scheme for Certification of Native Trees and Shrubs, endorsed by the Forestry Commission).

Planting woodland corridors between already existing woodland would create valuable habitat links for the dispersal of species. Stepping stones of scattered woodland between existing woodland would provide habitat within the landscape for the more mobile species to colonise. It is vitally important that tree planting should only occur on species-poor habitats and away from the edges of watercourses including ditches and ponds. Survey should be undertaken beforehand to establish which grassland species are present. The continued loss of a vast number of Cheshire's unimproved and good semi-improved grasslands has made these grasslands uncommon within the county and every effort should be made to protect those that remain.

Professional advice should always be sought when creating new habitat particularly when designing the layout, position and composition of new woodland and how to use local woodlands as a 'reference'. Well-designed new woodlands contain up to 40% open space (glades and rides) and up to 25% shrub species. For maximum benefit biodiversity rides should be east-west oriented (so that sunlight is maximised) and at least 30 metres wide to avoid over-shading when the canopy closes. It is recommended that trees and shrubs should be sourced from the Forestry Commission seed zone or from seed collected from local stands or from the local seed zone (collections should be made under the Voluntary Scheme for Certification of Native Trees and Shrubs, endorsed by the Forestry Commission).

4. Protect existing hedgerow network

Hedgerows that meet certain criteria are protected by *The Hedgerow Regulations*, 1997. Under the regulations it is against the law to remove or destroy 'Important' hedgerows without permission from the Local Planning Authority. Removal of a hedgerow in contravention of *The Hedgerow Regulations* is a criminal offence. The criteria used to assess hedgerows relate to its value from an archaeological, historical, landscape or wildlife perspective. The regulations exclude hedgerows that have been in existence for less than 30 years, garden hedges and some hedgerows which are less than 20 metres in length. The aim of the regulations is to protect 'Important' hedgerows in the countryside by controlling their removal through a system of notification.

Any proposals that involve the removal of hedgerows or sections of hedgerows or their associated features (e.g. ditches, banks, standard trees) should be supported by an assessment to ascertain their status in relation to *The Hedgerow Regulations*. Should the Local Planning Authority grant permission for removal, compensatory hedgerows should be provided; however, it is good practice to compensate for the loss of all hedgerows whether the hedgerow regulations apply or not. Like-for-like replacement is considered the minimum level of compensation, but it is likely that good condition high value hedges will require a 3:1 replacement ratio.

Any new sections of hedgerow should be created following the guidance provided above (point 1).
Filling of gappy hedgerows will ensure that hedgerows have greater connectivity, which will be of particular advantage to bats. Ideally hedgerows should be cut on rotation (outside the bird breeding season) every three years towards the end of winter. This leads to greater flowering and allows plants to fruit and/or set seed, providing a greater food resource for invertebrates, mammals and birds. Some

butterfly and moth species overwinter as eggs on shoots and twigs and are therefore severely impacted by annual flailing.

5. Measures to protect species

Hedgehogs travel an average of 1 mile every night, but their movement through suburban landscapes is often impeded by impenetrable garden fences. Encouraging householders, particularly in Kingsley where there are hedgehog records in the vicinity, to make holes in the bottom of their fences will increase permeability of the landscape and the amount of land available to this species of principal importance. This should be complemented by use of no or non-toxic slug pellets.

6. Ensure net gain policies are embedded in Neighbourhood Planning policies

Providing 'net gain' for biodiversity is embedded in the guidance in the NPPF (paragraphs 118a, 170d, 174b, 175d). In order to protect local natural assets, it is recommended that net gain policies form part of the Neighbourhood Plan.

7. Phase 1 habitat mapping

It is strongly recommended that Kingsley's Neighbourhood Planning area is phase 1 habitat mapped. This will provide a high level of habitat detail and could be used to verify the results of the habitat distinctiveness mapping (map 9). Phase 1 mapping may identify further areas of medium or high distinctiveness (Priority) habitat not identified by this assessment. Areas identified as having medium value habitat in this report should be targeted for survey as a priority. Phase 1 mapping should also be used to determine the exact position of the wildlife corridor network.

Appendices

Appendix 1

Habitats, LCM2007 classes[6] and Broad Habitat subclasses for LCM2007 CEH

LCM2007 class	LCM2007 class number	Broad Habitat sub-class	Broad habitat sub-class code	Habitat Score
Broadleaved woodland	1	Deciduous	D	Medium
		Recent (<10yrs)	Dn	Medium
		Mixed	M	Medium
		Scrub	Sc	Medium
'Coniferous Woodland'	2	Conifer	C	Low
		Larch	Cl	Low
		Recent (<10yrs)	Cn	Low
		Evergreen	E	Low/Medium
		Felled	Fd	Medium
'Arable and Horticulture'	3	Arable bare	Aba	Low
		Arable Unknown	Aun	Low
		Unknown non-cereal	Aun	Low
		Orchard	O	Medium

[6] No habitat scores higher than 'medium distinctiveness' due to the reliability of the data

		Arable barley	Aba	Low
		Arable wheat	Aw	Low
		Arable stubble	Ast	Low
Improved Grassland'	4	Improved grassland	Gi	Low
		Ley	Gl	Low
		Hay	Gh	Low
Rough Grassland	5	Rough / unmanaged grassland	Gr	Medium
'Neutral Grassland'	6	Neutral	Gn	Medium
'Calcareous Grassland'	7	Calcareous	Gc	Medium
Acid Grassland	8	Acid	Ga	Medium
		Bracken	Br	Medium
'Fen, Marsh and Swamp'	9	Fen / swamp	F	Medium
Heather	10	Heather & dwarf shrub	H	Medium
		Burnt heather	Hb	Medium
		Gorse	Hg	Medium
		Dry heath	Hd	Medium
Heather grassland	11	Heather grass	Hga	Medium

'Bog'	12	Bog	Bo	Medium
		Blanket bog	Bb	Medium
		Bog (Grass dom.)	Bg	Medium
		Bog (Heather dom.)	Bh	Medium
'Montane Habitats'	13	Montane habitats	Z	Medium
Inland Rock'	14	Inland rock	Ib	Medium
		Despoiled land	Ud	Medium
Salt water	15	Water sea	Ws	Medium
		Water estuary	We	Medium
Freshwater	16	Water flooded	Wf	Medium
		Water lake	Wl	Medium
		Water River	Wr	Medium
'Supra-littoral Rock'	17	Supra littoral rocks	Sr	Medium?
'Supra-littoral Sediment'	18	Sand dune	Sd	Medium
		Sand dune with shrubs	Sds	Medium
		Shingle	Sh	Medium?
		Shingle vegetated	Shv	Medium
'Littoral Rock'	19	Littoral rock	Lr	Medium

		Littoral rock / algae	Lra	Medium
Littoral sediment	20	Littoral mud	Lm	Medium
		Littoral mud / algae	Lma	Medium
		Littoral sand	Ls	Medium
Saltmarsh	21	Saltmarsh	Sm	Medium
		Saltmarsh grazing	Smg	Medium
Urban	22	Bare	Ba	Low
		Urban	U	Low
		Urban industrial	Ui	Low
Suburban	23	Urban suburban	Us	Low

Appendix 2

Meres & Mosses LPS / NIA:
Methodology for Mapping Extant Meres & Mosses

The mapping of 'Functional Ecological Units' is primarily based on topography, with use being made of lidar data. Lidar is a remote sensing technique whereby an airborne survey using lasers generates detailed topographic data (known as a Digital Terrain Model (DTM)). With approximately 70% coverage of the Meres & Mosses landscape.

Mapping of the Functional Ecological Units (FEUs) started with the identification of extant sites: -

1) All designated sites, SSSIs and County (Local) Wildlife Sites, that are either a mere or a moss were included.
2) Beyond the designated sites, use was made of a detailed peat soils map for the area. From this dataset a distinction was made between likely moss peats and extensive areas of likely fen peat associated with some of the river valleys. The moss peat sites were then reviewed using aerial photography and divided into two categories: destroyed and de-graded. The former are sites under arable, intensive grassland or other land use, where any relict habitat, and potentially even the peat itself, have been lost – these were excluded. The de-graded sites are those supporting some form of relict habitat (e.g. extensive grassland, rush pasture or woodland) offering potential for restoration – these were taken forward as FEUs.
3) Finally, the 1: 10,000 scale OS base map was scanned for names alluding to meres and mosses. All waterbodies specifically called "Mere" were included in the mapping, but sites with names suggestive of meres (e.g. Black Lake) were ignored. A few sites were identified called "Moss" – however, because these were not shown on the peat soils map, these were excluded.

For each potential FEU the lidar data was manipulated to show land within a nominal 3 metres elevation of the lowest point on the site. The FEU was then defined as the obvious basin around the lowest point – i.e. the land where it should be possible to restore hydrological function and therefore a wetland habitat mosaic (generally a nominal 1.0 - 1.5 metres above the lowest point on the site). Where no lidar data was available, the likely boundary of the FEU was estimated from the peat soils data and aerial photography.

Appendix 3

In order for a Local Wildlife Site to be recorded as in positive management all four of the following should be met:

- The conservation features for which the site has been selected are clearly documented.
- There is documented evidence of a management plan/management scheme/advisory document which is sufficiently targeted to maintain or enhance the above features.
- The management requirements set out in the document are being met sufficiently in order to maintain the above features. This should be assessed at 5 year intervals (minimum) and recorded 'not known' if the interval is greater than 5 years.
- The Local Sites Partnership has verified the above evidence.