Protecting and Enhancing Marbury's Natural Environment

Cheshire Wildlife Trust

November 2021

Acknowledgements

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Introduction

Neighbourhood Planning provides an important opportunity for communities to shape their local environment for future generations. Identifying and evaluating local environmental opportunities and constraints at a neighbourhood level grants communities an informed position and enables them to better protect their valuable natural assets.

Biodiversity Policy Overview

In 2011 the government published Biodiversity 2020, a 'strategy for England's Wildlife and Ecosystem services', which built on the recommendations of a previous government 'Natural Environment' white paper. The mission of the Biodiversity 2020 strategy was 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.' While the Biodiversity 2020 strategy has now been superseded its aims and outcomes built a foundation for, and have been adopted into, more recent and forthcoming environmental policy. Achieving the outcomes set out in Biodiversity 2020 remains an important undertaking if the national decline of natural assets is to be halted and reversed.

In 2013 the State of Nature Partnership (SoNP), consisting of 25 conservation organisations, published its first 'State of Nature Report' with the key aim of 'diagnosing the causes of wildlife decline'. When the first update was published in 2016 the UK was ranked amongst the most nature-depleted countries in the world. By the time of the most recent update in 2019, the SoNP had grown to include over 70 partners drawn from conservation NGOs, research institutes, and the UK and national governments. Unfortunately however, many of the observed SoN measures suggested the decline of nature has continued in the most recent decade and that there has been no let-up in the net loss of nature in the UK.

In 2018, as part of the DEFRA 25 Year Environment Plan, the government pledged to improve the environment within a generation, leaving it in a better condition than they inherited it in. A key goal of the plan is to achieve a growing and resilient network of land, water and sea that is richer in plants and wildlife through the creation of a Nature Recovery Network; a national network of wildlife-rich places. The government aims to achieve the goals of the 25 Year Environment Plan through a number of mechanisms including the planning system (via the NPPF) and through the forthcoming Environment Bill.

The National Planning Policy Framework (NPPF), first published in 2012 and subsequently updated and in 2018, 2019 and most recently in 2021, draws on the principles set out above. 'Protecting and enhancing our natural, built and historic environment' is one of the three core objectives in the revised NPPF 2021 (paragraph 8c). In the recent revisions of the NPPF there has been a shift from 'no net loss policies', to policies that mandate a 'measurable net-gain in biodiversity', i.e. referring to the use of BNG metric to measure biodiversity gains. Accompanying this shift toward providing a biodiversity net-gain is growing support for establishing coherent ecological networks at the local level, in order to strategically underpin the protection and enhancement of local biodiversity assets. Non-strategic local policies and strategic policy guidance related to ecological networks and biodiversity net-gain is enshrined in the NPPF (2021) paragraphs 120a, 174d, 179a and 179b.

The forthcoming Environment Bill (first submitted to parliament in October 2019) sets out a new environmental governance framework as the UK leaves the European Union's environmental policy and legislative structures. The Bill proposes new systems for target-setting, planning, monitoring and reporting with the aim of improving our natural environment. As with the shift toward biodiversity net-gain and ecological networks supported in the NPPF, the Environment Bill will include:

- The establishment of a mandatory requirement for developers to provide a 10% biodiversity net-gain as a condition of planning permission for new development applicable to all development under the Town and Country Planning Act 1990 and Nationally Significant Infrastructure Projects, and;
- The introduction of a new national system of spatial strategies for nature known as Local Nature Recovery Strategies (LNRS). Each strategy will, for the area that it covers; map the most valuable existing habitat for nature; map specific proposals for creating or improving habitat for nature and wider environmental goals, and; agree priorities for nature's recovery. It is anticipated this local network will then inform a national Nature Recovery Network (NRN).

At a local level, ecological networks are enshrined in the existing Cheshire East Local Plan (adopted July 2017) Policy SE 3 – Biodiversity and Geodiversity. Local sites and assets identified at the neighbourhood planning level are also safeguarded under Policy SE3. Cheshire East Council are currently in the process of adopting a Site Allocations and Development Policies Document (September 2020). Within the SAPD, 'Policy ENV 1 – Ecological Network' seeks to strengthen the protection of ecological networks across the borough while 'Policy ENV 2 – Ecological Implementation' requires development to deliver an overall net-gain for biodiversity. To supplement Policy ENV 2, Cheshire East Council have also produced a Biodiversity Net Gain Supplementary Planning Document (May 2021) that is also in the process of being adopted. This SPD provides detailed guidance on achieving Biodiversity Net-Gain (BNG) from new development and sets out how this can be achieved in Cheshire East.

The primary aim of our national and local strategic biodiversity policy is to bring nature back into recovery and leave it in a better state than in which we inherited it. The primary focus is protection and enhancement at the landscape scale; developing coherent ecological networks by delivering strategic habitat creation incentivised through biodiversity net-gain, with developers, landowners, conservation charities and individuals playing a part. The planning system has a central role in this, particularly in regard to spatial biodiversity strategies and the delivery of net-gain, but also through development control. At a local level Neighbourhood Planning will be a key factor in determining whether the aims of national strategies such as DEFRA's 25 Year Environment Plan are realised, by identifying local priorities for nature conservation that should be taken into account during the planning process. Although this is a national plan its success will depend on the contributions of local communities toward achieving social, economic and environmental objectives and working to protect and enhance their local environment.

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 a need for change in our approach to wildlife conservation; shifting 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 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 well-being, health and the economy, and provides us with a range of ecosystem services such as food, water, raw materials, flood defences, air quality and carbon sequestration. Biodiversity underpins most, if not all, of these ecosystem services. Anthropogenic pressures on the environment are likely to continue to increase and therefore we need to learn how to manage these important natural resources in ways that deliver multiple benefits, for example; achieving profitable and productive farming while also adopting practices which enhance carbon storage, improve floodwater management and support biodiversity.

England's wildlife and semi-natural habitats have become increasingly fragmented and isolated, leading to significant declines in the provision of certain ecosystem services and biodiversity. Ecological networks and 'Nature Recovery Networks' are now widely recognised as an effective way to conserve wildlife in environments that have been fragmented by human activities and bring nature back into recovery.

Ecological networks generally have five components (Figure 1) which reflect both the existing and potential future ecological importance and function:

- **Core areas** – These are areas of high nature conservation value that form the heart of an ecological 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 assemblages. 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 mobile species can move between core areas.
- **Restoration areas** – These are areas where measures are planned to restore or create new high value areas (with the ultimate goal of becoming 'core areas') so that ecological function is restored and the associated species populations can return. They are often situated so as to complement, connect or enhance existing core areas.
- **Buffer zones** – These are areas closely surrounding core areas, restoration areas, and ecological corridors and stepping stones that 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 alongside 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, supporting self-sustaining populations of species that are dependent upon, or at least tolerant of, certain forms of agriculture. The functions of buffer zones and sustainable use areas overlap, but the latter are less clearly demarcated than buffers and have a greater variety of land uses.

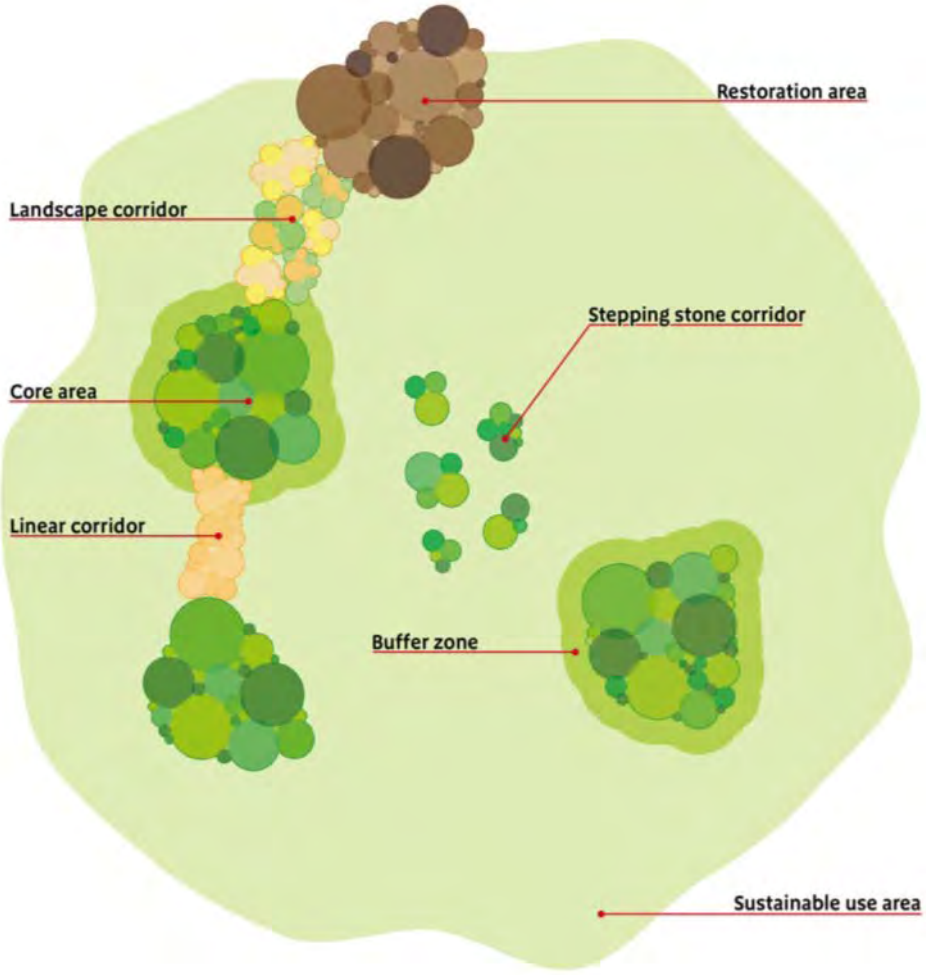


Figure 1. The components of ecological networks (Making Space for Nature report)

As discussed, the principles of establishing coherent ecological networks are now embedded within many planning and policy documents. The NPPF (2021), includes specific guidance on conserving, restoring and enhancing ecological networks including:

- Paragraph 174 - Planning policies and decisions should contribute to and enhance the natural and local environment by:
    a) Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
c) Maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
d) Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.
e) Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
f) Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

- Paragraph 175 - 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.
- Paragraph 179 - To protect and enhance biodiversity and geodiversity, plans should:
    a) 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; and
    b) 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.

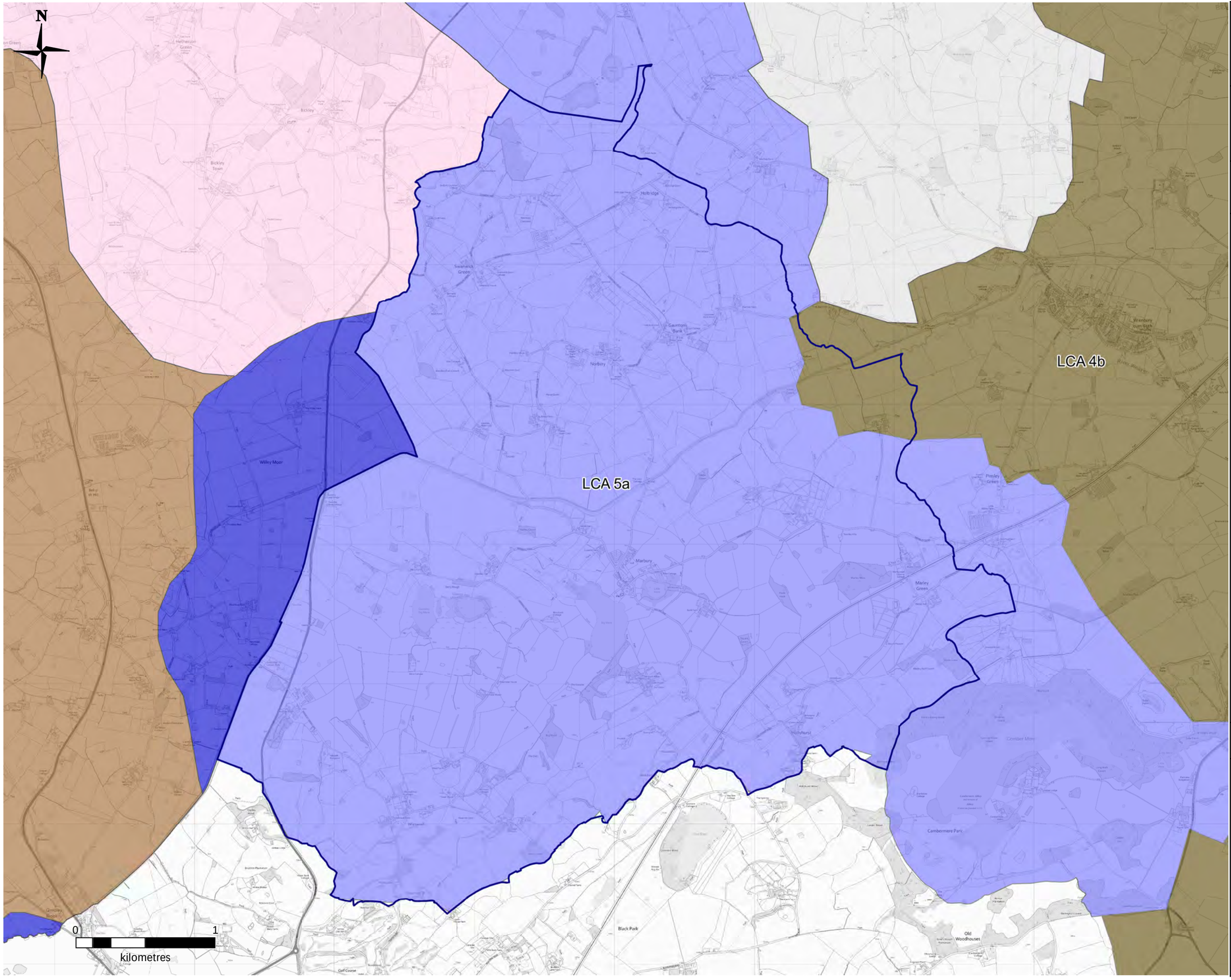
Objectives of the Study

In order to protect and enhance the natural environment it is important to first identify the natural assets that exist within a neighbourhood. This report aims to identify the core, high and medium ecological value sites for nature conservation within the Marbury Neighbourhood Planning Area. High value sites are recommended for protection through the neighbourhood planning process and 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 and assessment, should they be proposed for future development. The report also aims to identify the main local and regional ecological networks within the Neighbourhood Planning Area and recommends these are safeguarded within the neighbourhood plan. Additionally, it identifies key features associated with the landscape character of the Marbury area so they can be referenced in neighbourhood planning policies.

Marbury's Landscape Character Assessment

At a national level Marbury lies within National Character Area (NCA) 61 – Shropshire, Cheshire and Staffordshire Plain; a largely pastoral area of rolling plain which is important for food production. Especially important is dairy farming which is well suited to the damp lush pastures that are found on the glacial till clay soils. More locally Cheshire East Council produced a Landscape Strategy in 2018 which incorporates 14 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.

The Landscape Character Assessment for Cheshire East (Map 1) identifies two recognisable landscape character types (LCT) within the Marbury Neighbourhood Planning Area. The majority of Marbury falls within the Wooded Estates and Meres LCT although a very small portion of the planning area falls within the Cheshire Plain East LCT. Each LCT is subdivided into smaller Landscape Character Areas (LCAs), the details of which are given below.



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Map title

Marbury & District Neighbourhood Plan

Landscape Character Types

Map number

Map 1

Legend

Neighbourhood Plan Boundary

Cheshire East Landscape Character 2018

- Cheshire Plain East
- Wooded Estates and Meres

Cheshire West & Chester Landscape Character 2016

- River Valley
- Undulating Enclosed Farmland
- Woodland, heaths, meres & mosses

Date

20/10/2021

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LCT 4: Cheshire Plain East

General Description

This large expanse of flat and very slightly undulating land comprises a relatively large proportion of the Cheshire East landscape. Woodland cover is low, with small coverts scattered intermittently across the area, however numerous hedgerow trees create the perception of a well-treed landscape. It is a working, farmed landscape with field patterns comprising a mix of medieval enclosure and post medieval improvement bound by hedgerows with mature trees. Settlement is predominantly low density villages and dispersed farms, although there are influences from adjacent urban areas. Some parts of the landscape are intensively farmed. The lack of woodland cover enables long views across the plain.

Landscape Guidance

The following points provide guidance for landscape management and built development within the LCT:

- Avoid construction of large-scale buildings which will be widely prominent within the landscape (particularly those with a height above the tree-line).
- Important semi-natural habitats are conserved and appropriately managed. Manage and enhance valued semi-natural habitats, particularly the frequent ponds which punctuate the landscape and remnant areas of heath and grassland through appropriate management/farming practices, including preventing agricultural run-off and managing scrub. Create and enhance linkages between habitats to improve biodiversity function.
- Protect the remnant areas of woodland in the area through appropriate management of the small pockets of deciduous woodland (including ancient woodland) and mature in-field and hedgerow trees. Link up woodland areas where appropriate within the landscape, and maintain a diverse age and species structure for the benefit of biodiversity.
- Historic field patterns are retained and reinstated where boundaries have been degraded or lost. Hedgerows are replaced where they have been lost as a result of intensive farming.
- Protect and appropriately manage the cultural heritage of the area, including nationally important Scheduled Monuments and the Registered Battlefield of the Battle of Nantwich to preserve a sense of history. Promote interpretation of these features where this would not be at odds with conservation of these assets.
- In-field ponds are retained for their biodiversity value and sense of time-depth they provide to the landscape.
- Protect the integrity and setting of valued heritage features including Conservation Areas, Listed Buildings and Registered Parks and Gardens.
- Any new development within the landscape is in keeping with the form and vernacular of existing settlement. Any conversion of agricultural buildings is undertaken in a sensitive manner and retains the character of the building and its surrounds.
- Promote, maintain and seek to link up existing rights of way including the South Cheshire Way, Crewe and Nantwich Circular Walk and various canal towpaths.
- The strong rural character of the landscape is retained and existing intrusive features within the landscape are mitigated/screened where possible/appropriate.

LCA 4b: Ravensmoor Character Area (Including Reaseheath, Burland & Broomhall Green)

This is a large character area. It extends from Bunbury, east to Nantwich and as far south as Audlem. It comprises a mix of ancient enclosure and later reorganisation during the post-medieval period i.e. both irregular and regular shaped fields, as well as patches of enclosure by Act of Parliament, which survives as a grid-like field pattern e.g. at Swanley. Hawthorn hedges and standard trees are typical boundary types.

This is a predominantly flat landscape and the different patterns of enclosure strongly influence the character of the landscape. Near the A51 in the north of the area the landscape is open and expansive, with larger fields and thin or low hedges with few trees, allowing extensive views across the plain as far west as the Sandstone Ridge. Views southward from the A51 reveal the large structures and warehouses of the Wardle Industrial Estate, developed on the very flat former airfield site. A small radio telescope structure is very noticeable relatively close to the road.

By contrast many areas in the south and west possess a smaller-scale landscape, with much more limited views restricted by high vegetation associated with smaller fields, abundant hedges and hedgerow trees. Such areas have a very tranquil and rural character.

The church tower at Aston provides a squat landmark from several directions. Nearby at Burland there are buildings of architectural interest. A number of distinctive brick-built cottages with very decorative windows and chimneys face the A534, whilst a number of substantial Victorian farmsteads are also visible from the highway.

This character area has the greatest settlement density of the whole East Lowland Plain character type. There are a number of nucleated villages such as Bunbury, Wrenbury and Aston as well as hamlets and a scatter of dispersed farms and halls. Dorfold Hall and garden to the west of Nantwich has a Grade II Registered Park and Garden. Buildings mainly comprise red brick but there are also a number of timber-framed structures, with brick and in some cases wattle and daub in-fill.

The Shropshire Union Canal runs through the area, the Barbridge Junction is just to the northwest of Nantwich, from which the Llangollen and Middlewich branches emerge. The A51, A534 and the A530 are the main arterial routes in this area, which have acted as a focus for the development of settlement. Winding roads and country lanes are also typical. Railways cross the area - running from Nantwich to Whitchurch and Crewe across to Chester.

Reaseheath Cheshire College of Agriculture is just north of Nantwich and the Secret Bunker at Hack Green, which is a vestige of the Cold War period is a popular tourist attraction.

LCT 5: Wooded Estates and Meres

General Description

This type is defined by a concentration of historic estates and their associated features, including parkland and formal gardens, a high density of woodland and mosses and meres which are often utilised as ornamental lakes. The topography of the type ranges from flat ground, through broad undulations to occasional steeper slopes. Fields are varied in size and shape and are generally of medieval or post-medieval origin. Settlement is mainly dispersed with a limited number of small nucleated villages and hamlets including Rostherne and Marbury.

Landscape Guidance

The following points provide guidance for landscape management and built development within the LCT:

- Avoid siting development (including buildings and other structures) in visually prominent areas or areas of complex landform.
- Protect the distinct geological features of the landscape, including rock exposures and continue to implement appropriate management regimes.
- Protect and appropriately manage the dense woodland that characterises the estate landscapes. Plan for the restoration of plantation woodland with native species and the replacement of aging specimen trees.
- Manage and enhance valued semi-natural habitats, particularly the undesignated ponds, mosses, meres which are focal features of the landscape as well as woodland and unimproved grassland habitats. Seek to create linkages between habitats where possible to improve biodiversity resource within the landscape.
- Ensure that the meres are appropriately managed and conserved for their natural heritage value and issues including agricultural run-off are addressed.
- Conserve the historic integrity of the designed landscapes and their component heritage features. Promote interpretation of these features where this would not be at odds with conservation of these assets.
- Retain historic field patterns and restore the hedgerows and walls forming field and estate boundaries where they have been lost or degraded.
- Respect the setting, form and vernacular of existing settlements, including those designated as Conservation Areas. Ensure any conversion of farm buildings to residences retains a rural character and does not introduce sub-urbanising features.
- Ensure that the recreational value of the landscape is retained, whilst managing activity in a sustainable manner that promotes conservation of the valued features.
- Plan strategically for sustainable transport routes to the attractions and recreation destinations. Avoid introduction of recreation activities which may detract from the valued perceptual qualities of the landscape.
- Maintain any sweeping, designed views/vistas within the estates and longer views experiences in the landscape which include the Pennines and the Sandstone Ridge.
- Ensure that the sense of enclosure and high levels of tranquillity experienced throughout much of the landscape are retained.
- Utilise trees and woodland to screen major transport routes to reduce their visual and audial impacts.
- Retain the rural character of the narrow, winding roads and avoid the over-engineering of roads which could create an urbanising influence within the strongly rural landscape. Conserve and maintain the characterful lanes with avenues of mature trees.

LCA 5a: Cholmondeley Character Area (Including Castle & Meres, Norbury, Marbury & Comber Mere)

The topography of this character area comprises broad, sweeping undulations c. 80-100m AOD. This has a more intimate scale, with shorter, steeper slopes in the south of the character area near Marbury and Quoisley (up to 150m AOD at Wirswall).

In the north of the character area the large blocks of woodland associated with the Cholmondeley estate are very conspicuous in views to the west from the busy A49. The very large conifer plantation to the south of the parkland is particularly noticeable as it fills the western horizon for a considerable distance. By contrast the landscape to the east is more representative of the Cheshire field system with low hedgerows and hedgerow trees. Points of higher ground provide views out, often framed by hedgerow trees, over the undulating fields of the East Lowland Plain to the north, with the occasional glimpse of one of the meres in the area. Elsewhere very narrow sunken lanes with high hedges, winding through a gently undulating landscape, contribute to the perception of a remote, small scale landscape.

There is a particular concentration of black and white timber framed cottages in this area. Around Norbury the field pattern opens out to present a larger scale landscape with low hedges and post and wire fences, allowing more extensive views. To the west of Cholmondeley Castle the distinctive profile of the Sandstone Ridge forms the northern skyline within a fairly open landscape. Views to the south are dominated by the high ground in the vicinity of Wirswall near the county boundary.

There are ten meres in this character type, many of which are incorporated into the ornamental landscapes of historic estates – for example at Combermere Park, Cholmondeley Castle, Marbury Hall and Quoisley Hall. The large mere in Combermere Park is completely hidden from public view but the surrounding woodlands are very conspicuous, blocking views northward from the A530 for quite a distance.

There are concentrations of woodland on the Combermere and Cholmondeley estates, portions of which are designated as SBIs. This is generally made up of a mix of broad leaves and coniferous trees, but with some areas of solely broad leaved woodland. To the south of the ornamental landscape at Cholmondeley is the large conifer plantation of Moss Wood (one of the largest in the county). Bickley Brook and the infant River Weaver are the most dominant among the various drainage features in the area and ponds are also typical features.

There are small nucleated settlements such as Norbury and Marbury, but mostly settlement comprises a low density of dispersed farms and halls connected mainly by a winding pattern of minor roads. The A49 runs north through the character area and the Llangollen branch of the Shropshire Union Canal utilises a flat area of topography as it crosses Willey Moor, and passes through Steer Bridge.

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.

Marbury, along with 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.

National and Regional Ecological Network

Habitat Network Mapping

Natural England's 'Nature Networks Handbook' is an integrated framework for creating ecological networks for wildlife and people. It aims to provide practical recommendations that support the delivery of the Biodiversity 2020 Strategy, the Natural England Conservation Strategy (C21) & the DEFRA 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 the following 19 separate priority habitats:

- 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, and;
- **Potential Network Joins** - Potential locations for action to create network links.

The maps are intended for use at 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. The National Habitat Network in the vicinity of Marbury is shown in Map 2.

In spring 2022 Natural England are due to roll out Local Nature Recovery Strategies which, once completed, should inform a national Nature Recovery Network. Until then, the 'Nature Networks Handbook' is the preferred methodology at scales above the local level.

Cheshire Wildlife Trust

Map title

Marbury & District Neighbourhood Plan

National Habitat Networks

Map number

Map 2

Legend

- Neighbourhood Plan Boundary
- Fragmentation Action Zone
- Potential Network Join
- Primary Habitat
- Associated Habitats
- Restorable Habitat
- Habitat Restoration-Creation
- Network Enhancement Zone 1
- Network Enhancement Zone 2

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Date

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National Habitat Network Mapping has highlighted a large area of coastal floodplain and grazing marsh Restorable Habitat to the west and north of Quoisley Meres SSSI / Midlands Meres and Mosses Ramsar in the west of Marbury. There are also a number of Primary Habitats associated with Quoisley Mere itself and in the immediate vicinity of the site, including; lowland fen, purple moor grass and rush pasture and broadleaved deciduous woodland. Also in this area are Primary Habitats associated with Marbury Big and Little Meres, including purple moor grass and rush pasture.

On the northern boundary of the Marbury Neighbourhood Planning Area, associated with Norbury Meres SSSI, is another area of Primary Habitat. Habitats in this area include; lowland fen and purple moor grass and rush pasture, broadleaved deciduous woodland, reedbeds and lowland meadow.

Just outside the south-east boundary of Marbury, two additional areas have been identified on the National Habitat Network Map, associated with Oss Mere SSSI and Comber Mere SSSI. A number of Restorable Primary Habitats are associated with Comber Mere, including; broadleaved deciduous woodland, reedbeds and lowland fen.

The Primary and Restorable habitats described above are buffered by Network Enhancement Zones and Fragmentation Action Zones; where opportunities to enhance the habitat network should be prioritised. This could be through the restoration of degraded habitat or through the expansion of existing habitat.

Ecological Network for Cheshire East 2018

As part of the Cheshire East Site Allocations and Development Policies Document (September 2020), which contains detailed policies to protect and enhance the natural environment, a map of the ecological network within the borough has been produced (Figure 2). The ecological network is associated with SADPD Policy ENV 1 and incorporates existing protected sites and priority habitats and identifies areas to restore and buffer the network. The Council aims for the ecological network to assist in the provision of nature conservation and ecosystem services that are essential for sustainable development, including; water management, carbon capture and access to nature with associated recreational and health benefits. It is not intended to restrict development or growth but instead should be used as a tool to guide development and inform the strategic delivery of biodiversity net-gain.

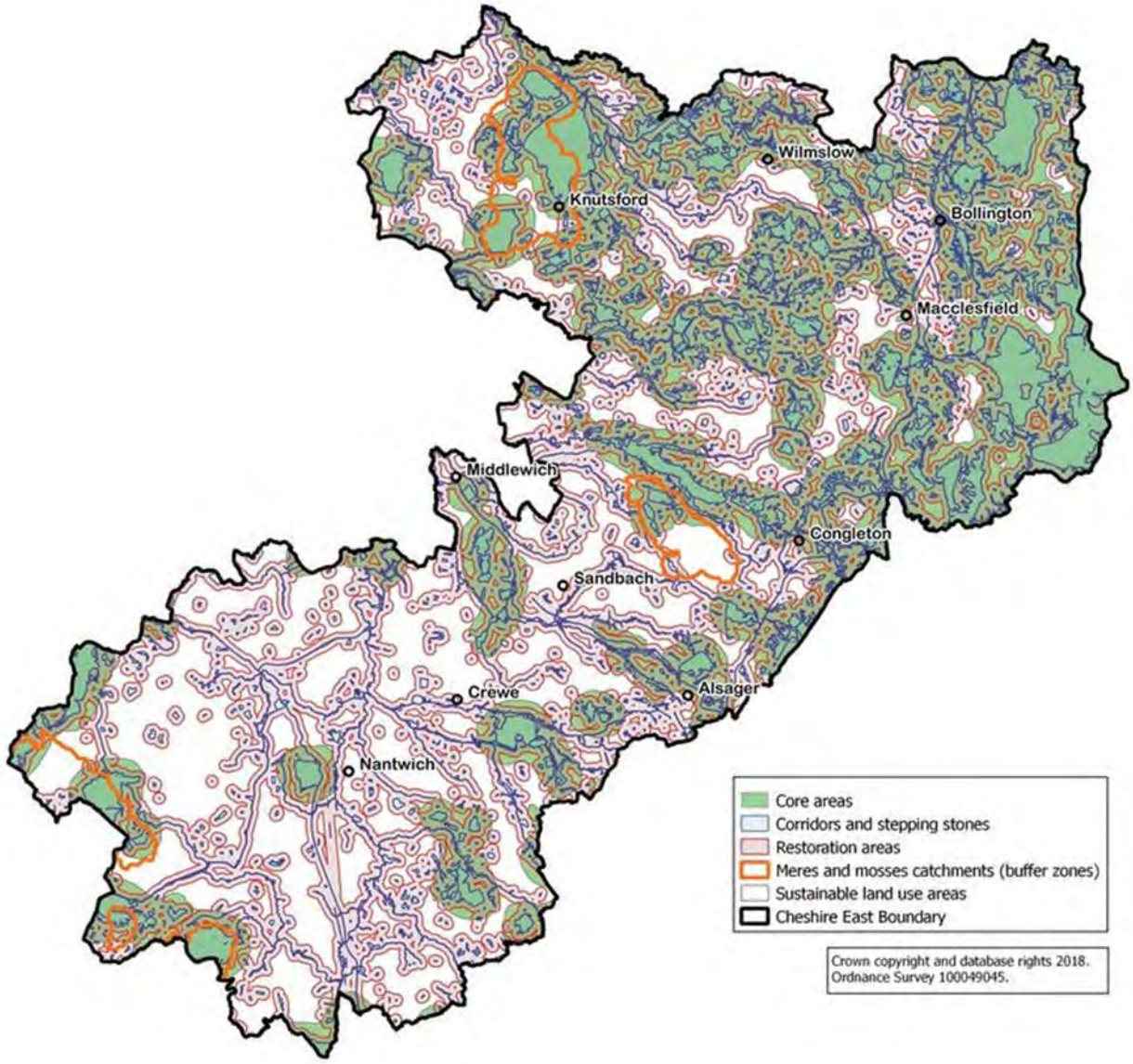


Figure 2. Ecological Network for Cheshire East 2018

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. The purpose of the SADPD Policy ENV 1 (Ecological Network) is to ensure that; where development occurs in any area that is strategically important for biodiversity, the habitat creation delivered by these developments is done so in a strategic manner, maximising the benefits to enhancing a resilient ecological network within the Borough. As specified in the forthcoming Cheshire East Biodiversity Net Gain Supplementary Planning Document (May 2021); the Ecological Network Map associated with Policy ENV 1 should also be used to inform the strategic significance of habitat creation when delivering biodiversity net-gain using the DEFRA metric.

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

The Cheshire East Ecological Networks identify broad networks for the whole borough, whereas the wildlife corridors identified in this report (Map 11) are more specific to ecological networks that are important for conserving and enhancing biodiversity at a local scale.

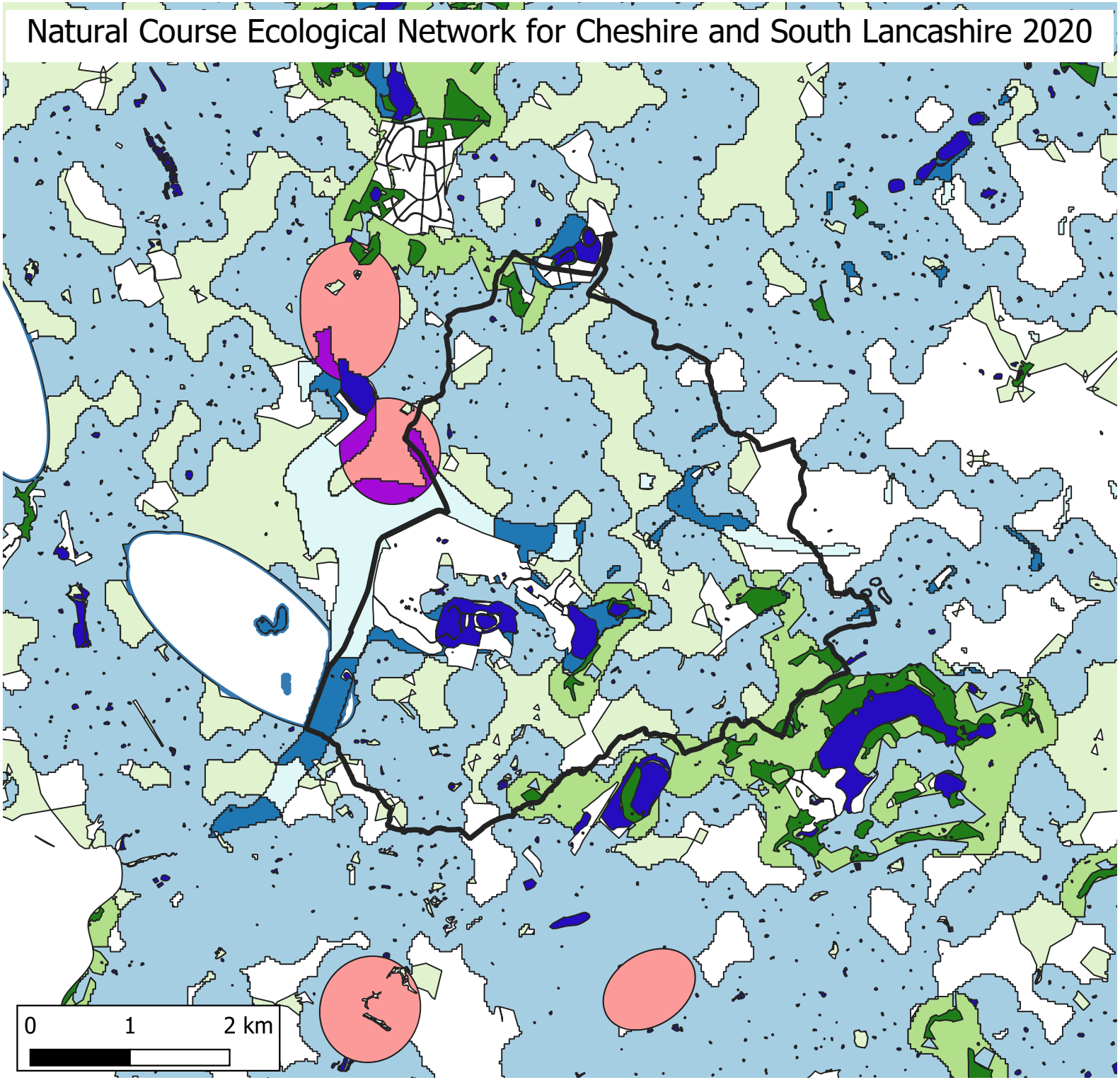
Natural Course Ecological Network Tool 2020

Natural Course, an EU funded LIFE Integrated Project, is a collaboration of public, private and third sector organisations working together to help to deliver improvements to rivers and the water environment across North West England. The project seeks to better understand and overcome some of the biggest barriers preventing the achievement of 'good ecological status' under the EU Water Framework Directive in the North West River Basin District.

As part of Natural Course, Natural England has created an ecological network tool that models wetland and woodland habitat networks across Cheshire and South Lancashire. The tool highlights priorities for biodiversity and nature-based solutions for Natural Course objectives in order to protect and enhance water quality across the North West. The tool also provides a robust evidence base for Local Nature Recovery Strategies, anticipated to be mandated in the forthcoming Environment Bill and rolled out in spring 2022.

The primary wetland and woodland habitats and their associated action zones (i.e. where opportunities exist to create, buffer or expand these habitats) within the Marbury Neighbourhood Plan Area, as modelled by the Natural Course Ecological Network Tool, are shown in Map 3. Supporting information on the Wetland and Woodland Habitat Categories for the Network Tool can be found in Appendix 1.

Natural Course Ecological Network for Cheshire and South Lancashire 2020



NATURAL COURSE
OUR WATER. OUR FUTURE

Legend

- Marbury Boundary

Natural Course Ecological Network

- Primary Wetland Habitat
- Primary Woodland Habitat
- Priority Wetland Creation Zone
- Priority Woodland Creation Zone
- Wetland Buffer Zone 1
- Wetland Buffer Zone 2
- Wetland Creation Zone
- Wetland Network Expansion Zone
- Woodland Buffer Zone 1
- Woodland Buffer Zone 2
- Woodland Creation Zone
- Woodland Network Expansion Zone

Local Habitat Distinctiveness and Wildlife Corridor Network

Methodology

The local ecological network mapping relates directly to habitat distinctiveness; the central component of biodiversity quality used by DEFRA to determine biodiversity net-gain. Habitat distinctiveness is based on an assessment of the distinguishing features of a habitat or linear feature, including the consideration of species richness, rarity (at local, regional, national and international scales), and the degree to which a habitat supports species rarely found in other habitats. The distinctiveness band of each habitat is preassigned by DEFRA and the bands are based upon the UK habitat classification system. A combination of simple rules and expert judgement have been used to assign each habitat type to the appropriate distinctiveness band. While DEFRA uses five bands of distinctiveness (very high, high, medium, low and very low), for the purposes of this exercise the very high and high distinctiveness bands have been merged to leave only four bands.

Habitat data from the sources listed below was attributed to one of the four distinctiveness categories listed in Table 1 below:

Table 1. Habitat type bands (Defra July 2019)

Habitat Type Band	**Habitat Distinctiveness**	**Broad Habitat Type**	**Colour on Map**
Very high or high ecological value	Very High or high	• Designated nature conservation sites (statutory and non-statutory); • Endangered or Critical European red List habitats; • Priority habitat (with the exception of arable field margins) as defined in Section 41 of the NERC Act, and; • 'Rare' habitats in the UK with a high proportion unprotected by designation.	Red
Medium ecological value	Medium	• Arable field margin priority habitat; • Non-priority habitats with significant wildlife benefit; • Semi-natural habitats and habitats with the potential to be restored to priority quality, and; • Field ponds.	Orange
Low ecological value	Low	Agricultural and Urban land use of lower biodiversity value but may still form an important part of local ecological network	n/a
Very low ecological value	Very Low	Urban land use with artificial structures which are un-vegetated, sealed/unsealed surface or built linear features of very low biodiversity value.	n/a

Data sources used to produce the habitat distinctiveness maps included:

1. Several licensed and open data sets:
    a. Priority Habitat Inventory (PHI) – Natural England 2019 (last updated 20 October 2020) – High and medium confidence habitats (as defined on the PHI by NE) were classified as high distinctiveness. Low confidence habitats were classified as medium distinctiveness unless other supporting data was available.
    b. Land Cover Map (LCM2007) – Centre for Ecology and Hydrology 2007. Priority habitats (principal importance) and semi-natural habitats classified as medium distinctiveness (data included in Appendix 2).
    c. Agricultural Land Classification (ALC) – Natural England 2017 (last updated 19 February 2019) – Grade 4 classified as medium distinctiveness, Grade 5 classified as high distinctiveness (adjusted where other supporting data was available).
    d. Designated Sites of Nature Conservation (including International Sites, Sites of Special Scientific Interest, Local Wildlife Sites/Sites of Biological Importance and Local Nature Reserves) – Natural England and CWT/CE Local Authority were classified as high distinctiveness.
    e. Ancient woodlands – Natural England 2019 (last updated 28 April 2021) – classified as high distinctiveness.
    f. Meres and mosses and other peat soils – Meres and Mosses Landscape Partnership scheme 2016 – Functional Ecological Units, river valley peat and destroyed (historical) peat classified as medium distinctiveness (supporting information included in Appendix 3).
2. Open source aerial imagery (Microsoft Bing ™ Imagery and Google Earth) was used to validate and review the habitats by eye.
3. The Marbury 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 Marbury were researched and species records have been incorporated where appropriate. Ecological records were also obtained (where available) from, the National Biodiversity Network (NBN) Atlas and the Woodland Trust's Ancient Tree Inventory.

Maps

The suite of maps produced during the local ecological network mapping exercise are included below.

Cheshire Wildlife Trust

Map title

Marbury & District Neighbourhood Plan

Habitats of Principal Importance

Map number

Map 4

Legend

- Neighbourhood Plan Boundary

Habitats of Principal Importance

- Coastal and floodplain grazing marsh
- Broadleaved deciduous woodland
- Good quality semi-improved grassland
- Lowland fens
- Lowland meadows
- No main habitat but additional habitats present
- Purple moor grass and rush pastures
- Reedbeds
- Open Mosaic (draft)
- Wood Pasture and Parkland

0 1 kilometres

Date

20/10/2021

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Cheshire Wildlife Trust

Map title

Marbury & District Neighbourhood Plan

Land Cover

Map number

Map 5

Legend

Neighbourhood Plan Boundary

Land Cover 2007

- Acid grassland
- Arable and horticulture
- Bog
- Broad leaved, mixed and yew woodland
- Built up areas and gardens
- Coniferous woodland
- Dwarf shrub heath
- Fen marsh and swamp
- Freshwater
- Improved grassland
- Inland rock
- Littoral rock
- Littoral sediment
- Neutral grassland
- Rough low-productivity grassland
- Salt water
- Supra-littoral sediment

0 1

kilometres

Date

08/06/2021

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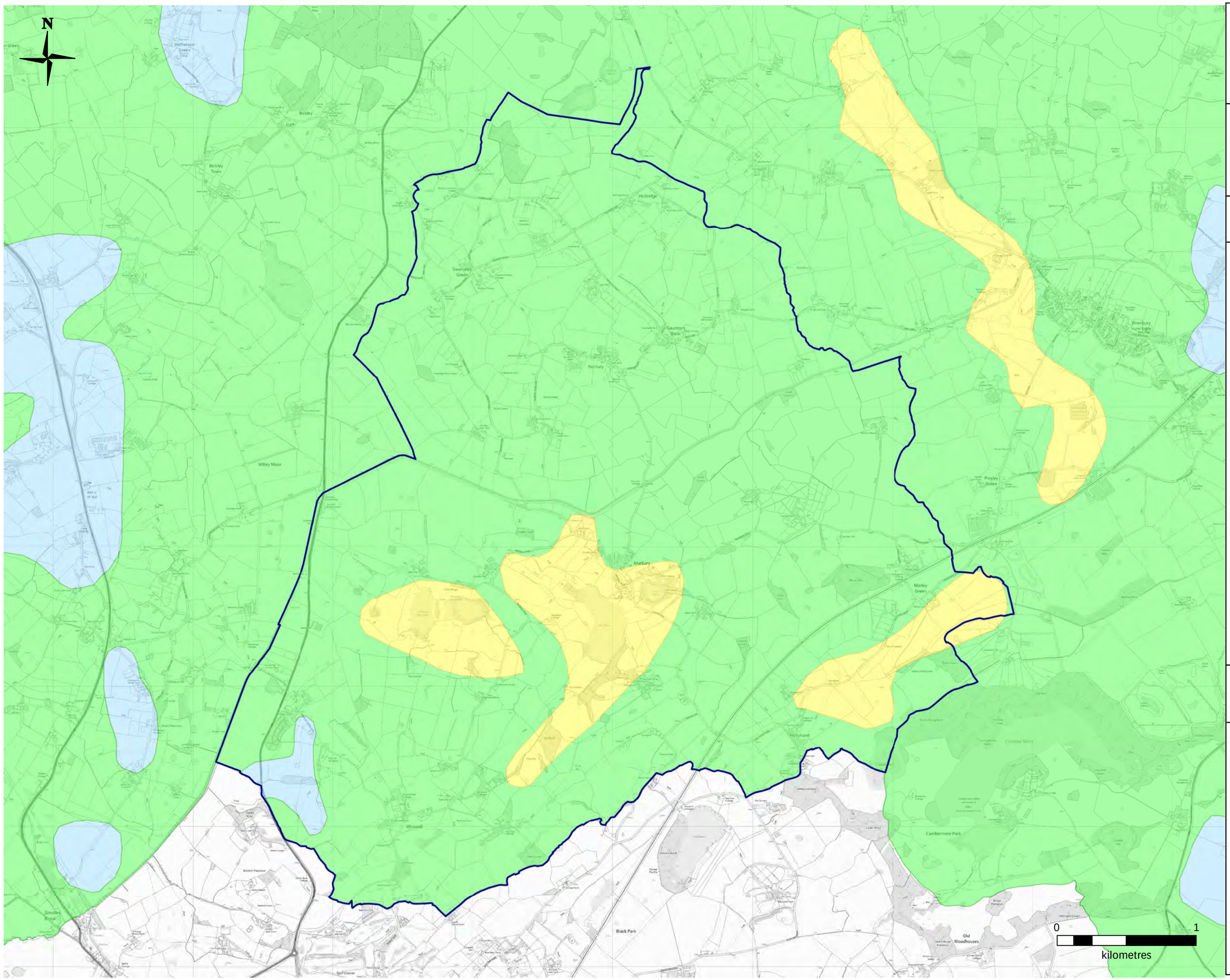

Cheshire Wildlife Trust

Map title

Marbury & District Neighbourhood Plan Agricultural Land Classification

Map number

Map 6

Legend

Neighbourhood Plan Boundary

Agricultural Land Classification

- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Grade 5
- Non Agricultural
- Urban

Date

08/06/2021

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Cheshire Wildlife Trust

Map title

Marbury & District Neighbourhood Plan

Nature Conservation Sites

Map number

Map 7

Legend

Neighbourhood Plan Boundary

Statutory Sites

- SSSI
- RAMSAR
- Special Protection Area
- Special Area of Conservation
- National Nature Reserve
- Local Nature Reserve

Non-statutory Sites

- Local wildife Sites
- Potenital Local Wildlife Sites
- Meres & Mosses Nature Improvement Area

Date

09/11/2021

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kilometres

Cheshire Wildlife Trust

Map title Marbury & District Neighbourhood Plan Ancient Woodland & Traditional Orchards

Map number

Map 8

Legend

- Neighbourhood Plan Boundary
- Ancient Woodland
- Traditional Orchard

0 1

kilometres

Date

08/06/2021

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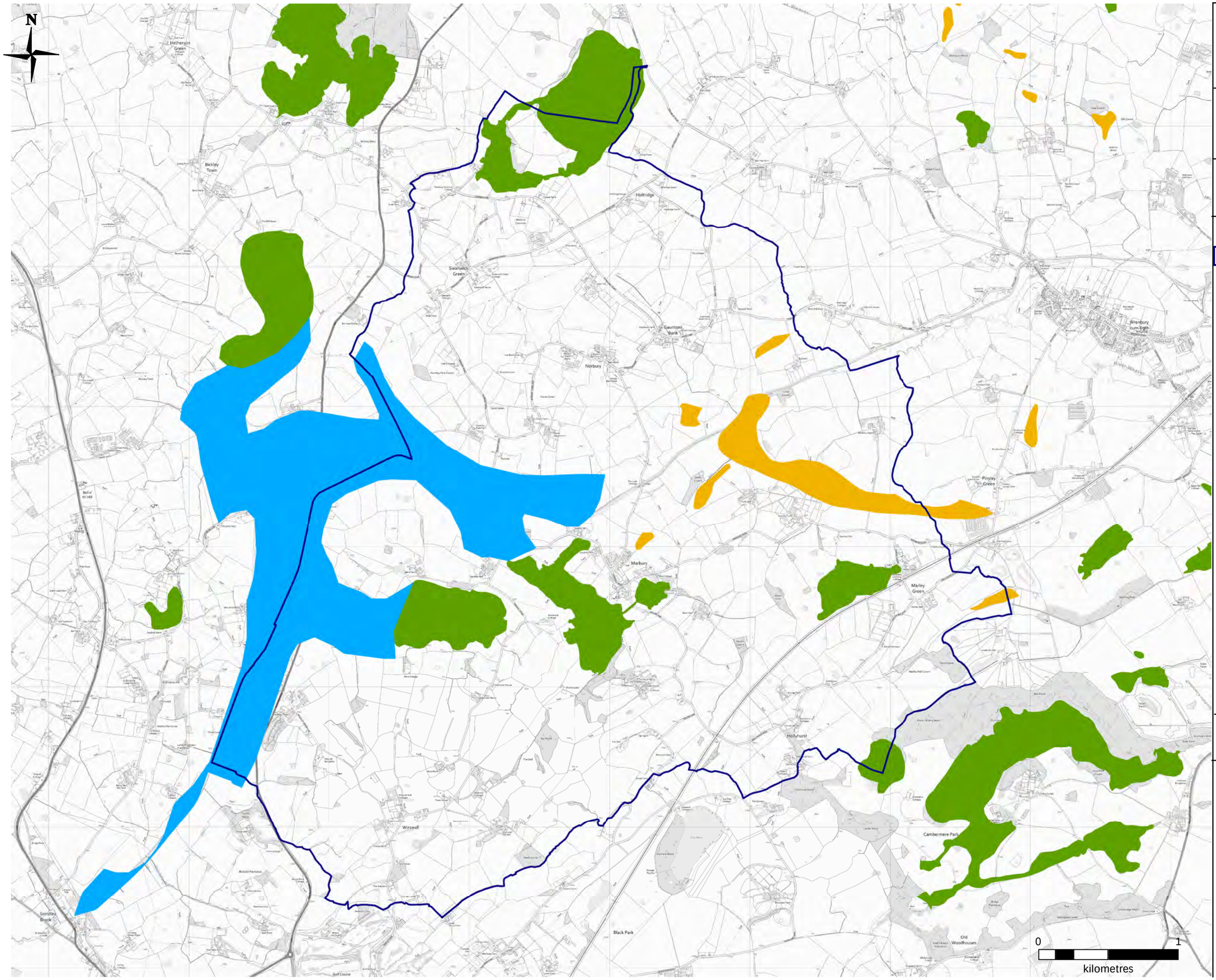

Cheshire Wildlife Trust

Map title Marbury & District Neighbourhood Plan Meres & Mosses and other peat soils

Map number

Map 9

Legend

- Neighbourhood Plan Boundary
- Ecological Units
- River Valley Peats
- Destroyed Peats

Date

08/06/2021

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0 1

kilometres

Scale 1:24,360

Cheshire Wildlife Trust

Map title

Marbury & District Neighbourhood Plan Habitat Distinctiveness

Map number

Map 10

Legend

Marbury & District Boundary

Habitat Distinctiveness
(based on Defra Metric 2.0)

High value

Medium value

Date 09/11/2021

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0 1

kilometres

Scale 1:24,190

Cheshire Wildlife Trust

Map title

Marbury & District Neighbourhood Plan Indicative Wildlife Corridors

Map number

Map 11

Legend

Marbury & District Boundary

Indicative Wildlife Corridor

Date 09/11/2021

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Results & Discussion

High Distinctiveness Habitats

Areas of high distinctiveness habitat are shown on Map 10 – Habitat Distinctiveness (mapped in red). These are natural or semi-natural habitats which are of significant or critical importance to wildlife due to their high biodiversity and ecological value. They should be a priority for conservation and appropriately managed in order to maintain or enhance their ecological features. Habitats of high distinctiveness within the Marbury Neighbourhood Planning Area are discussed in detail below.

Quoisley Meres – Midlands Meres and Mosses Phase 1 Ramsar Site & SSSI

The Midlands Meres & Mosses Phase 1 Ramsar is a geographically discrete series of lowland open water and peatland sites in the north-west Midlands of England. The Ramsar designation is made up of 16 component sites and includes Quoisley Mere. The site is also designated as a SSSI as the meres and mosses of the North West Midlands form a nationally important series of open water and peatland sites. These have developed in natural depressions in the glacial drift left by the ice sheets which covered the Cheshire-Shropshire plain some 15,000 years ago. The majority lie in Cheshire and north Shropshire, with a small number of outlying sites in adjacent parts of Staffordshire and Clwyd.

Quoisley Meres has been selected to represent a type of mere with nutrient rich open water, well developed fringing habitats and areas of damp grassland. Quoisley Big Mere has a narrow border of both white and yellow water-lilies. A continuous narrow reedswamp surrounds the mere and consists of a mixture of species including lesser reedmace, common club-rush and greater pond-sedge. The reedswamp grades into a species-rich fen community which includes the locally rare tufted-sedge while the narrow woodland fringe is dominated by alder. Quoisley Little Mere provides an interesting contrast to Big Mere as it has a large population of white lily and an extensive reedswamp, but with fewer species.

The aquatic invertebrate fauna of the meres is good, particularly for beetles and bugs. A number of locally and nationally rare invertebrates have been recorded at the site. The damp grassland areas are moderately species rich and include purple small-reed and brown sedge. Marsh fern and meadow thistle – two species which are rare in Cheshire – also occur. Recent records[1] of Cetti's Warbler and kingfisher, legally protected species under Schedule 1 of the Wildlife & Countryside Act 1981 as amended (WACA) and a number of Birds of Conservation Concern[2] (BoCC) on the amber list are associated with Quoisley Meres including; common sandpiper, goldeneye, greylag goose, mallard, mute swan, oystercatcher, reed bunting and snipe.

Norbury Meres SSSI

A small part of Norbury Meres SSSI lies within the Marbury Neighbourhood Planning Area with the majority lying to the north in Cholmondeley. As with Quoisley Meres SSSI, this site is also part of the nationally important series of open water and peatland sites known as the meres and mosses of the North West Midlands.

[1] Within the last 15 years.

[2] Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746

Norbury Meres has been selected to represent an unusual mere type consisting of highly eutrophic open water with poorly developed fringing habitats. The site also includes important areas of grassland including unimproved and semi-improved neutral grassland, acidic and marshy grassland with a network of drainage ditches. Around both meres the fen vegetation is restricted to narrow and disjointed stands, however, of particular note are two rare sedges, great fen sedge and tufted sedge. Alder carr surrounds both meres and contains the rare marsh fern.

The pastures on the south side of the meres consist of a mosaic of grassland types of which acid marshy areas are the most species rich. Among the more uncommon species recorded here are marsh arrow grass, bogbean, star sedge, fen bedstraw, marsh speedwell and common spotted orchid. A number of drainage ditches cross the grassland and surround the meres. These ditches contain notable species such as water violet and great spearwort.

Wetlands

In the Marbury area; Norbury Common, Marbury Big Mere, Marbury Little Mere and Marley Moss are selected as Sites of Biological Importance (SBI's) for their wetland habitats. These sites contain a diverse array of wetland habitats including: lowland fen, purple moor grass and rush pasture, swamp, wet woodland, marginal/inundation communities and open waterbodies. There are also four wetland sites adjacent and to the north of Marbury Big Mere SBI that have been identified as Potential Local Wildlife Sites (pLWS). These are sites that are highly likely to be selected as Local Wildlife Sites but have not yet been formally surveyed against the selection criteria.

The northern woodland of Norbury Common SBI appears to have developed from fen and supports a diversity of wetland plants, which in 2005 included valerian, marsh marigold, remote sedge, false fox-sedge and cyperus sedge. Along the western edge of the site's wet woodland more open conditions have been maintained by grazing. In the north-east of the site there is a small bog basin which is an old sand pit, this area is botanically diverse and supports a number of uncommon species including bog pondweed, common cotton-grass, marsh pennywort and bottle sedge.

Marbury Big Mere SBI is a large mere immediately south-west of Marbury, the most recent survey in 2008 found large stands of marginal vegetation that included common reed and yellow iris with other wetland species including greater and lesser pond sedges and sea clubrush. The site also supports significant populations of wildfowl, including great crested grebe. Other bird species recorded at the site include reed bunting, sedge warbler and willow warbler.

Marbury Little Mere SBI (last surveyed in 2008) is another of Cheshire's glacial meres and is surrounded by dense wet Willow and Alder woodland with a marshy ground flora. The vegetation grows out into the mere from around the edge almost everywhere leaving virtually no area of open bank. Plant species recorded at the site include: lesser celandine, hop, fool's water-cress, ragged robin, greater tussock sedge, lesser and greater pond sedges, bladder sedge and yellow iris.

Following a review of recent planning applications[3] a number of bat roosts have been previously identified in buildings close proximity to Marbury Big and Little Mere SBI's. This included Brown long eared and pipistrelle sp. bat roosts in 2016 and a soprano pipistrelle roost in 2011. Although these exact roosts may no longer exist, it is reasonable to assume roosts of these relatively common species

[3] Within the last 10 years.

still persist in the local area. All bat species and their roosts are legally protected, by both domestic and international legislation, and are UK species of Principal Importance for conservation in England (S41 species)[4]. There are also recent records of a number of invertebrates, particularly damselflies including the uncommon variable damselfly and BoCC amber listed kingfisher (also protected under the WACA), lesser black-backed gull, mallard, mute swan, reed bunting, whooper swan and tawny owl in proximity to the Big and Little Mere SBI's. Great Crested Newt, a legally protected and S41 species, have also been recorded in close proximity to these SBI's suggesting they are potentially breeding in smaller ponds in the area.

Woodland

Many woodlands in Cheshire are isolated, fragmented and impoverished, which makes the woodlands that are present particularly important features for biodiversity in the region.

In the Marbury area and its immediate surroundings, part of Bar Mere, Oss Mere and Comber Mere are selected as SSSIs for their woodland habitats, many of which are wet or fen woodlands associated with the glacial meres scattered across the region. Norbury Common, Marley Moss and part of Marbury Little Mere are selected as SBI's for their woodland habitat, and the nearby Combermere Big Wood is selected as a Local Wildlife Site (LWS) for its extensive and mature semi-natural and plantation woodland.

There is no ancient woodland (i.e. thought to be at least 400 years old) shown on Natural England's ancient woodland inventory (AWI) within Marbury. Ancient woodlands are defined as irreplaceable habitats in the NPPF due to the time taken for them to acquire their diverse flora and fauna. However, although not listed on the AWI, woodland at the following locations appears on the Cheshire Tithe maps c.1839, suggesting it could potentially be ancient in origin:

- Norbury Common SBI;
- Marley Moss SBI;
- Combermere Big Wood LWS;
- Immediately adjacent Marbury Big Mere SBI, and;
- Big Wood (south east of Marbury Big Mere SBI).

High quality woodlands, such as those discussed above, are likely to support important assemblages of woodland birds, including BoCC red listed song thrush (also an S41 species) and mistle thrush, and yellow listed dunnock, which have been recorded in the area recently. The woodlands are also highly likely to support badgers and several species of bat which roost in trees, forage for insect prey and commute along the network of woodland edges, hedgerows and watercourses such as Pipistrelle sp. and noctule.

Shropshire Union Canal

The Shropshire Union Canal (Llangollen Branch) at Marbury is designated as an SBI and dissects the entire Marbury Neighbourhood Planning Area. This section of the canal runs between the Cheshire/Shropshire boundary and Burland and when last surveyed in 2010 supported marginal and inundation habitats alongside the standing open water of the canal itself. The towpath is known to

[4] Listed on section 41 of the NERC Act 2006 or UK Biodiversity Action Plan species

support species rich grasslands, with notable species recorded including; purple loosestrife, garlic mustard, gipsywort, wild onion, cowslip and bird's foot trefoil. It also supports a valuable hedgerow network and notable bird species including kingfisher and reed bunting.

Following a review of recent planning applications significant bat activity has been previously recorded in close proximity to the Shropshire Union Canal SBI. This included foraging and commuting noctule, Brown long eared, Myotis sp. (likely to be Daubenton's bats that forage over standing and flowing water such as canals) and Pipistrelle sp. in 2014. There are also recent records of a number of BoCC red listed birds including grey wagtail and BoCC amber listed birds including black-headed gull, dunnock, kingfisher (also WACA), mallard, pink footed goose and reed bunting in proximity to the canal. There are also a number of records of badgers and farmland birds using the arable farmland surrounding the canal including BoCC red listed skylark and lapwing and BoCC amber listed meadow pipit, and redwing. There are a significant number of records of otter associated with the canal itself, showing its value as an aquatic wildlife corridor throughout the Neighbourhood Planning Area.

Traditional Orchard

Traditional orchards are a quintessential component of the historic English landscape. Orchards are becoming increasingly rare due to neglect, the intensification of agriculture and increasing pressure from development. These habitats provide excellent conditions for biodiversity to thrive and can support assemblages of rare species. One traditional orchard was identified within Marbury on Map 8, located at Wickstead Old Hall to the west of Oss Mere. This orchard has also been selected as a Potential Local Wildlife Site (pLWS); sites that are highly likely to be selected as Local Wildlife Sites but have not yet been formally surveyed against the selection criteria.

Medium Distinctiveness Habitats

Wetlands

As can be seen on Map 9 – Meres, Mosses and Other Peat Soils, there are a number of significant peat deposits spanning the Marbury Neighbourhood Planning Area. Many of Marburys peatlands have developed in wet hollows left by the Ice Age, where the waterlogged conditions have prevented decomposition. The resulting organic matter is known as peat and it can contain mosses, trees, other wetland plants and occasionally animal or even human remains that have accumulated throughout its history. Where peatlands have not been drained or degraded they retain a characteristic flora and fauna including many rare and threatened species. Even drained/degraded or partially drained/degraded sites can be of value for nature conservation.

As a result of the extensive glacial activity in the past there are a number of additional important wetland habitats (Map 4), including; open water, lowland fen, lowland raised bog, purple moor grass and rush pasture and reedbeds that have not been selected for nature conservation designation. While not designated, these habitats are considered likely to be habitats of principal importance by Natural England and are frequently located in close proximity to the designated sites in Marbury. They are rare and likely support similar species to those mentioned above and those associated with the internationally, nationally and locally designated network of meres and mosses across the North West Midlands. They should therefore be considered highly valuable features in the context of both local and national biodiversity.

In addition to the value of wetlands, and in particular peatlands, for biodiversity; current literature suggests that peatlands are one of three key semi-natural habitats that deliver ongoing carbon sequestration (alongside woodlands and saltmarsh). Peatlands also offer additional stacked ecosystem services and natural capital value: In addition to supporting rare biodiversity and sequestering carbon from the atmosphere, peatlands in good condition also intercept and store greater volumes of water; mitigating flood risk and providing a sustainable supply of high-quality drinking water.

Woodland

As well as the woodlands selected as SBIs discussed above, there are a number of smaller scattered blocks of broadleaved woodland present across the Marbury Neighbourhood Planning Area, particular concentrated in the south.

These broadleaved deciduous woodlands are considered likely to be habitats of principal importance by Natural England (Map 4). More recently established woodlands such as these, although not ancient in origin, are still likely to provide a valuable habitat for wildlife, particularly invertebrates and birds, and given their connectivity provide important corridors through the landscape.

Similar to the high quality woodlands such as those discussed above, medium distinctiveness woodlands are likely to support important assemblages of woodland birds, badgers and several species of bat.

In addition to the value of semi-natural woodlands for biodiversity; current literature suggests that woodlands are one of three key semi-natural habitats that deliver ongoing carbon sequestration (alongside peatlands and saltmarsh). Woodlands also offer additional stacked ecosystem services and natural capital value: In addition to supporting biodiversity and sequestering carbon from the atmosphere, woodlands in good condition also contribute to the formation and stabilisation of soil and the improvement of air quality.

Grassland

Species-rich grasslands are the fastest disappearing semi-natural habitat in the UK and losses across Cheshire are above the national average. Only a few pockets of good quality semi-improved grassland within Marbury remain, two of which are associated with Quoisley Meres but not included in the Ramsar or SSSI designation.

A large area of coastal and floodplain grazing marsh (CFGM) priority grassland is located to the north and west of Quoisley Meres (shown on Map 4). Grazing marsh is defined as periodically inundated pasture, or meadow with ditches which maintain the water levels, containing standing brackish or fresh water. Ditches associated with CFGM are especially rich in plants and invertebrates. Almost all areas are grazed and some are cut for hay or silage. Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities, but not extensive areas of tall fen species like reeds; although they may abut with fen and reed swamp communities. The exact extent of grazing marsh in the UK is not known but England holds the largest proportion. However, only a small percentage of this grassland is semi-natural or supports a high diversity of native plant species. In the case of Marbury, the majority of the grassland parcels within the area of CFGM appear to be intensively farmed and are unlikely to be species rich. Therefore these areas have been excluded from

the final habitat distinctiveness and wildlife corridor mapping. However, the ditches, drains and wetland scrapes associated with this habitat have been left in as they are likely to be important features for local biodiversity. Grazing marshes are particularly important for grass snake and a number of breeding waders such as snipe, lapwing and curlew. Internationally important populations of wintering wildfowl also depend on CFGM including Bewick's swans and whooper swans.

Areas of species-rich grassland will support populations of declining pollinators including moths, specialist grassland butterflies (such as small skipper or common blue) and solitary bees and hoverflies. Where species-rich grasslands are located close to waterbodies, such as Quoisley Meres and Norbury Common, dragonflies and damselflies are likely to be present as these feed on other invertebrates but also require waterbodies to breed.

There are significant number of recent records of barn owl throughout Marbury, a legally protected and S41 species. Good quality and rough grasslands provide essential foraging habitat for barn owls and are crucial in the conservation of this charismatic flagship species.

Field Ponds, Drains, Scrapes and Watercourses

Fields ponds, drains, scrapes and watercourses contribute to the permeability of the landscape for wildlife. They are essential for the survival of aquatic invertebrates, riparian mammals and provide breeding habitat for amphibians including protected species such as the great crested newt. Larger waterbodies are likely to be valuable for both breeding and overwintering birds as well as foraging bats. Where ponds are stocked with high numbers of fish the wildlife value is decreased. This is because introduced fish (such as bottom feeding non-native carp) can deplete the pond of invertebrate larvae, amphibian eggs/larvae and water plants. The key ponds, drains, scrapes and watercourses within the Neighbourhood Planning Area have been highlighted as habitats of medium distinctiveness in Map 10 and should always be retained and buffered where possible when land is developed. Recent records of great crested newt in Marbury suggest that the species is likely breeding in field ponds across the Neighbourhood Planning Area making this habitat particularly valuable in the context of the wider Parish.

Hedgerows and Scattered Trees

Hedgerows have not been included in the habitat distinctiveness mapping as it is difficult to gauge the wildlife value of a hedge from aerial mapping. However, many of the field parcels within Marbury are bounded by a significant network of hedgerows and drainage ditches. Many of the hedgerows also include trees (standards) that have been allowed to grow out, resulting in a more structurally diverse habitat.

Similar to field ponds, scattered farmland trees together with the hedgerow network are fundamental to landscape permeability; particularly those adjacent to wide field margins or those lying adjacent to semi-natural grassland. Hedgerows provide important corridors for foraging bats, small mammals, amphibians and many invertebrate species including pollinators. They also offer valuable nesting and foraging habitat for birds, including many declining species such as the BoCC red listed fieldfare, tree sparrow and yellowhammer, which have all been recorded within Marbury. A significant number of farmland BoCC species have also been recorded in Marbury, including; house martin, kestrel, lapwing, linnet, redwing, skylark, starling and meadow pipit, many of which likely use the network of hedgerows to forage and for shelter.

Wildlife Corridor Network

Wildlife corridors are a key component of wider ecological networks as they provide connectivity between core areas of high wildlife value and habitats of high distinctiveness; enabling species to move between them to feed, disperse, migrate and reproduce. In conjunction with the results of the National Habitat Network Mapping (2018) and the Ecological Network for Cheshire East, this study has identified a number of indicative wildlife corridors (Map 11) with ecological connectivity throughout and beyond the Neighbourhood Planning Area. The National Habitat Network map and Ecological Network for Cheshire East provide a broad map of the networks across England and Cheshire East respectively. The wildlife corridors identified in Map 11 supplement these, while also being more specific to ecological networks that are important for conserving and enhancing biodiversity at a local scale. The CE Ecological Network mapping and the wildlife corridor maps (Map 11) both identify primary habitat or core areas for biodiversity within Marbury: Stemming from the numerous designated meres and their associated priority habitats and reaching out along the Shropshire Union Canal. The canal is a key feature in the indicative wildlife corridor, running through the heart of the Neighbourhood Planning Area with links to the wider landscape. Connections to the Shropshire Union Canal should be protected, created and enhanced wherever possible. The series of ponds, drains, watercourses, wetlands and woodland habitats in the south western corner of the Parish demonstrate how fragile the corridor network can be. While this area shows relatively good connectivity, almost certainly providing an important network for wildlife, it could easily be fragmented by even small scale developments, potentially leading to isolated pockets of high or medium distinctiveness habitats. There are clear opportunities in the north, east and south of the Neighbourhood Planning Area to create, enhance, expand and connect the habitats already present in order to improve the indicative wildlife corridor network. This would also improve the connectivity outside of the Parish, increasing links to key sites designated for nature conservation such as Norbury Meres SSSI and Combermere SSSI.

The identified corridors link areas of valuable habitat with good connectivity, including; wetlands, woodlands, grasslands and freshwaters. Some of the mapped corridors do cross over roads where direct connectivity will not be maintained, however in these instances the maximum gap is less than 30 metres meaning more mobile species should not be affected. Some of the hedgerows within identified corridors may not be species rich and many run through intensively farmed land, meaning high inputs of agrochemicals could potentially be negatively affecting the species composition, particularly at ground level. Increasing hedgerow diversity and implementing wildlife friendly management regimes, as well as creating rough grassland buffers would help improve the ecological connectivity the hedgerows across Marbury provide.

Protection of the Wildlife Corridor and other High and Medium Distinctiveness Habitat

The indicative boundary of the Marbury wildlife corridor network is shown in Map 11. However, this is likely to require refinement following detailed survey work undertaken on the ground. A 15 metre wide buffer has been incorporated around any high distinctiveness habitat in order to ensure the corridors are substantial enough to protect the valuable habitats identified in Map 10. This buffer is necessary to protect vulnerable habitats from the effects of encroachment by external pressures such as increased anthropogenic disturbance, light pollution, ground water/aquatic pollution, domestic pet predation and the spread of invasive non-native plant species or garden cultivars.

Any potential development proposals in the Neighbourhood Planning Area must avoid high distinctiveness habitats, core wildlife areas and the wildlife corridor network. Any development adjacent or in close proximity to these areas must incorporate substantial mitigation to minimise the residual effects on wildlife while also seeking to enhance the overall condition of habitats in order to achieve a measurable net-gain for biodiversity. This can be achieved by:

- Prioritising a scheme design that retains and enhances important semi-natural habitats and key features for biodiversity, while also improving the permeability and function of the site for wildlife by creating new resources within and new connections to the wider landscape.
- Embedding out of bounds areas and dark corridors along watercourses, woodland edges and hedgerows into the environmental design of the scheme.
- Ensuring all external lighting is directional, low spillage and wildlife friendly.
- Ensuring the scheme drainage strategy directs run off away from sensitive environmental assets and does not promote pollution propagation pathways. This is particularly important for habitats that are dependent on hydrology such as running or standing water, peatlands, saltmarsh and coastal or floodplain grazing marshes.
- Incorporating Sustainable Drainage Schemes (SuDS) which can provide additional wildlife habitat, provide measurable net-gains for biodiversity and prevent flooding. However, SuDs may hold polluted water so should not drain directly into running or standing water unless an extensive filtration or settlement system is in place.
- Ensuring only UK and Northern Ireland sourced and grown nursery stock of native plant and tree species be used in the landscaping of developments.
- Incorporating species specific mitigation measures where appropriate such as:
    - Hedgehog-friendly fencing, purposely designed to allow the passage of hedgehogs from one area to another;
    - South facing banks or bunds for reptiles, butterflies and other invertebrates, and;
    - Bee bricks and bat or bird boxes, ideally made of highly durable material such as woodcrete.

Not all sections of the Marbury wildlife corridor provide high quality habitat, and measures to improve its ability to support the movement of species is a priority (see Recommendations section). Enhancement of the corridor may be facilitated by opportunities arising through the planning process (e.g. Biodiversity Net Gain or other ecological compensation via Section 106 Agreements or Planning Conditions), through government incentives (such as Environmental Land Management Schemes aka ELMS) or through the aspirations of the local community working with local businesses and landowners.

There are also opportunities to enhance the wildlife corridor, such as those set out in the UK Government England Trees Action Plan[5]. **However, it is vitally important that tree planting should only occur on species-poor habitats away from existing (non-woodland) priority or semi-natural habitats, watercourses or aquatic habitats such as ditches and ponds and any other habitats of value to specific wildlife. Specialist ecological advice should always be sought before any tree planting is undertaken to ensure no unintended negative effects to biodiversity arise as a result.**

[5] https://www.gov.uk/government/publications/england-trees-action-plan-2021-to-2024

In addition to the wildlife corridor network, this study has identified other areas of high or medium habitat distinctiveness (Map 10) which, although outside the network, likely provide important wildlife habitats and facilitate the movement of more mobile species throughout the wider landscape by forming essential ecological stepping stones. These areas primarily comprise ponds and semi-natural woodlands.

The network of field boundary hedgerows and agricultural drainage ditches within the Marbury Neighbourhood Planning Area provide connectivity between high and medium distinctiveness habitats. These areas would otherwise be separated by extensive areas of land predominantly of low habitat distinctiveness; potentially restricting the ability of wildlife to disperse throughout the area. Not all the hedgerows are identified as key components of Marbury's ecological network, however, collectively these hedgerows provide linear connectivity throughout 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, marshy or semi-natural grassland and wetlands are some of the fastest disappearing habitats in the UK. These habitats are particularly important for a variety of invertebrates including pollinating insects and other species such as; breeding and wintering birds, mammals, amphibians and some species of reptiles. 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 or wetland habitats they should be re-classified as 'high distinctiveness' priority habitat or habitat of principal importance. These habitats should not be built on (as stipulated in the Local Plan and the NPPF). In order to achieve a 'net gain' for biodiversity, significant compensation that is difficult to achieve will likely be required if these areas are lost to development, assuming avoidance and mitigation strategies have been applied in line with the guidance set out in the National Planning Policy Framework.

Recommendations for Creating a Coherent Ecological Network

Following adoption of the Marbury Neighbourhood Plan, CWT advises that the following recommendations should be actioned in order to protect and enhance habitats which contribute to the creation of a coherent ecological network:

1. Create and expand links between the existing wildlife corridor network.

There is currently good connectivity between the Shropshire Union Canal and the numerous wetland nature conservation sites across the Neighbourhood Planning Area. It is recommended that the wildlife value of existing hedgerows, agricultural drainage ditches and field ponds are enhanced to extend and join these existing corridors to other identified areas of medium and high distinctiveness habitats. To achieve this, hedgerows could be managed less intensively including; less frequent cutting or cutting on rotation with additional trees planted or managed as standards in order to increase species and structural diversity. Drainage channels that regularly contain standing or flowing water can be specifically managed for wildlife under Countryside Stewardship and potentially under the forthcoming ELMS. Semi-natural woodlands can be left to expand and regenerate naturally, increasing coverage and connectivity across the neighbourhood while also providing biodiversity benefits arising as a result of the diverse structure of natural tree growth.

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

The areas within the wildlife corridor network shown on Map 11 incorporate all of the locally designated Local Wildlife Sites for Cheshire East, however it is highly likely that other land within the network will also meet the criteria for LWS selection. These areas (including those identified as pLWS on Map 7) should be designated if the selection criteria[6] are met, as LWS designation will provide a greater level of protection within the planning system. The wildlife corridor network should also ideally be in 'favourable condition'[7] in order to provide optimal breeding, foraging and commuting opportunities for the native species that currently utilise the network, and those that may subsequently colonise it. These areas should be surveyed by a qualified ecologist to identify specific management priorities, however some general priorities are included below:

- Wherever possible, highly degraded agricultural peatlands (i.e. intensive grassland or arable fields located on deep peaty soils) should be restored to modified or rewetted semi-natural habitats. Peatlands in degraded conditions emit significant amounts of greenhouse gases to the atmosphere as well as providing minimal flood protection/alleviation or benefits to biodiversity. Emissions can easily be reduced (avoided emissions) or reversed (carbon sequestration) by reverting the land use back to either a less intensive agricultural use (e.g. light grazing, wetland hay meadow or silage) or a semi-natural wetland habitat (e.g. a rewetted bog). This will also increase the capacity of the land to protect/alleviate flooding and provide substantial benefits for biodiversity.

[6] Giles, R. (2012) Local Wildlife Site Selection Criteria for the Cheshire region. Covering the districts of Cheshire West and Chester, Cheshire East, Wirral Halton and Warrington. Updated February 2014. Cheshire Wildlife Trust. [https://www.cheshirewildlifetrust.org.uk/wildlife/our-work-wildlife/our-work-wildlife/local-wildlife-sites]

[7] 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 4.

- Where agricultural peatlands cannot be restored, it is essential that the water table is kept at or as close to the surface of the ground level for the majority of the year. This can achieved by reducing the scale and capacity of drainage channels and installing bunds where appropriate. Again, although not as significantly as restoration, this will reduce emissions, improve flood alleviation and improve the land for biodiversity.
- Coastal and floodplain grazing marsh (CFGM) is a rapidly declining habitat across England and the substantial area of this habitat to the north and west of Quoisley Mere should be protected, enhanced and expanded. The ditches associated with CFGM are often especially rich in plants and invertebrates and should be managed to maintain minimal scrub cover (less than 10%. Despite the richness of the drainage ditches, the main grassland is often not very species-rich. To maintain CFGM in good condition; water levels should be maintained at high levels through the spring and early summer, in field scrub cover should be zero, the cover of rushes should be less than 40% and the cover of undesirable species (such as creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, marsh ragwort and common nettle) should be managed and kept to a minimum (i.e. less than 5%). Managing CFGM (both the grassland and ditches) in this way will improve the suitability for the habitats for a range of protected and priority species including breeding and wintering waders and wildfowl, invertebrates, amphibians, otter, water vole and grass snake.
- Drainage ditches and watercourses within intensively farmed land should be buffered by semi-natural areas to provide riparian habitat and reduce 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 benefit any populations of otter using the watercourses, as well as provide breeding, foraging and commuting areas for other species. It will also improve water quality and bank stability while decreasing siltation resulting in a reduction in the need to dredge.
- 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 (using 60-90cm high 'whips' which have a good rate of survival and tree guards or stock fencing). New sections of hedgerow should incorporate a tree every 30m (on average) which can be demarked so as not to be inadvertently flailed. Non-native invasive plant species should be removed by a specialist contractor and a bespoke management plan put in place to ensure they do not return.
- Hedgerows in intensively farmed land should be buffered by semi-natural areas to provide additional wildlife friendly habitat (2 metres from the centre of the hedge is the minimum requirement under cross compliance regulations, however 4 - 6 m is recommended) and improve the diversity of ground flora species.
- Cutting or grazing of all semi-natural grassland should be carried out to retain the wildlife value. This will enable more herb growth within the sward, prevent more competitive species from taking hold and prevent 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 nesting season (March to September inclusive) will avoid the destruction or abandonment 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.

- 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 (with the remaining tree/scrub cover around 10 - 15%). These measures will also benefit amphibians, invertebrates and mammals. 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 work professional advice should be sought and ponds should be assessed to ensure existing wildlife is not impacted, including; great crested newts which use ponds for breeding and may also be present in rank vegetation or under brash piles around the banks, or roosting bats which may be roosting in trees surrounding ponds.**
- Invasive non-native species (listed on Schedule 9 of the WACA) should be prevented from colonising Marbury's semi-natural habitats. Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to plant or otherwise cause these species to grow in the wild. Although the NBN Atlas returned no confirmed records of invasive non-native plant species (INNPS) in Marbury, it is likely they are present and caution must be taken as they spread prolifically, with common examples such as Himalayan Balsam and Japanese Knotweed spreading particularly effectively along watercourses. These species colonise rapidly and will outcompete native woodland, grassland and wetland flora and any existing or future stands of INNPS should be managed by a specialist contractor to control their spread as.
- It is also likely that other Schedule 9 INNPS such as variegated yellow archangel, montbretia and Spanish hybrid bluebells are present in the area, as they easily spread from domestic gardens. If present they should be eradicated by, or under the supervision of, a specialist contractor. New and existing householders should be educated of the problems with the encroachment of INNPS or non-native garden cultivars into semi-natural habitats and avoid inadvertently planting any invasive species in their gardens, especially where they adjoin open areas, semi-natural habitats or watercourses.

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

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

Ways to enhance connections or to buffer sites could include the restoration of hedgerows, allowing semi-natural woodland to expand through natural regeneration, creation of wetland scrapes or ponds, creation of low maintenance field margins and sowing locally sourced (local genetic stock) wildflower meadows[8].

Woodland expansion is desirable to buffer Marbury's existing woodlands, particularly throughout the south of the Neighbourhood Planning Area. New plantations that are isolated from existing woodland are of limited value due to slow colonisation by woodland species, whereas planting woodland

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

corridors between existing woodlands (or letting woodlands expand and merge naturally) creates valuable habitat links for the dispersal of species. The creation, expansion or enhancement of woodland stepping stones between existing core woodland areas also enhances links across the landscape for more mobile species. **It is vitally important that tree planting should only occur on species-poor habitats away from existing (non-woodland) priority habitats, and the edges of watercourses including ditches and ponds.** A detailed botanical survey should always be carried out prior to any woodland planting taking place. 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 (in the form of glades and rides) and up to 25% shrub species. For maximum benefit biodiversity rides should be east-west oriented (to maximise sunlight penetration) 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 zone (collections should be made under the Voluntary Scheme for Certification of Native Trees and Shrubs, endorsed by the Forestry Commission).

4. Protect the 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 and the removal of a hedgerow in contravention of The Hedgerow Regulations is a criminal offence. The criteria used to assess hedgerows relate to their 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, sections of hedgerows or their associated features (e.g. ditches, banks and 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 will be required to 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 high value hedges in good condition will require a 3:1 replacement ratio.

Any new sections of hedgerow should be created following the guidance provided above. In-filling of gappy hedgerows will ensure greater connectivity, which will be of particular advantage to bats and small mammals. Ideally hedgerows should be cut on rotation (outside the nesting bird season) every three years towards the end of winter. This leads to increased 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 other species.

In addition to the general habitat management priorities above that will benefit a wide range of species throughout the Neighbourhood Planning Area, ensuring new developments provide wildlife

permeable fencing as standard and encouraging householders to make holes in the bottom of their fences will increase the permeability of the more urbanised areas in Marbury. A key example is hedgehogs that could travel an average of 1 mile every night were their movement through suburban landscapes not impeded by impenetrable garden fences. Increasing the permeability of suburban landscapes in this way will also provide benefits for other species such as newts, toads and frogs. Wildlife permeable fencing should be complemented by educating and advocating for the use of non-toxic slug pellets by residents.

6. Ensure the requirement to secure a measurable biodiversity net gain is embedded in Neighbourhood Planning policies.

Providing a measurable net gain for biodiversity is embedded in NPPF (paragraphs 8, 32, 174d, 179b and 180d) and required under CEC local policy SE 3 and forthcoming CEC local policy ENV 1. In order to protect local natural assets, it is essential that strong biodiversity net gain policies form part of the Neighbourhood Plan. Any new green infrastructure arising as a result of biodiversity net-gain should take consideration of the recommendations set out in this report and how it can contribute to the wider ecological network.

7. Habitat mapping.

It is strongly recommended that Marbury's Neighbourhood Planning Area is mapped in detail using either the Phase 1 Habitat or the UK Habitat Classification System methodologies. This will provide an accurate, detailed picture of the habitats within the Neighbourhood Planning Area and could be used to verify the results of the habitat distinctiveness mapping (Map 10) undertaken in this study. Detailed survey may identify additional habitats of principal importance or priority, high or medium distinctiveness habitat that have not been identified in this assessment. Areas identified as having medium value habitat in this report should be targeted for survey as a priority, in order to verify the findings and ensure they are not under or over-valued. Ground level survey can also inform the exact position of the wildlife corridor network with greater accuracy than this study.

Conclusion

This study has highlighted that the important wildlife habitat in Marbury is predominantly associated with, or in close proximity to, the designated wetland sites spread across the Neighbourhood Planning Area: Quoisley, Norbury, Marbury Big and Marbury little Meres, the Shropshire Union Canal and the drains and field ponds associated with an area of coastal and floodplain grazing marsh west of Quoisley Mere. This is supported by a significant distribution of scattered semi-natural woodlands throughout the southern extent of Marbury, linked together by a network of hedgerows, ditches, watercourses and field ponds which is strongest in the south west of the Parish. Apart from those associated with Quoisley and Norbury Meres, very few semi-natural grasslands were identified, meaning the ones that are present are of particular importance.

By attributing habitat distinctiveness values to all land parcels in the Neighbourhood Planning Area the study has provided important evidence that should be taken into consideration when planning decisions are made. However, it is strongly recommended that further (phase 1/UK Habitat Classification) habitat survey work is undertaken at the appropriate time of year, in order to supplement this study and to verify that 'medium value' habitats have not been over or under-valued in their importance.

Most importantly the study has highlighted a wildlife corridor network which provides ecological connectivity between wetland, woodland, grassland and riparian habitats throughout and beyond the Marbury Neighbourhood Planning Area. The wildlife corridor network is likely to support a wide range of species including birds, amphibians (including protected and priority newt species), mammals (including protected and priority bat species), plants and invertebrates that are in decline both locally and nationally. These species depend on the existence and connectivity of semi-natural habitats highlighted in this report.

We recommend that the wildlife corridor network (Map 11) is incorporated into the Marbury Neighbourhood Plan and protected from development, to ensure the guidance relating to ecological networks set out in NPPF (paragraphs 174d, 175, 171, 179a, 179b) is implemented at the local level in Marbury. The wildlife corridor network includes a buffer zone of up to 15 metres in places to protect the notable habitats shown in Map 10. If new habitats of high distinctiveness are subsequently identified in the Neighbourhood Planning Area, or identified habitats of medium distinctiveness are shown to be undervalued, these areas should also be protected by a 15 metre buffer zone exempt from development. Following adoption of the Marbury Neighbourhood Plan, CWT advises that a number of recommendations should be actioned in order to protect and enhance habitats which contribute to the creation of a coherent ecological network.

Any future development of sites which lie adjacent to a high distinctiveness habitat or a wildlife corridor will need to demonstrate substantial mitigation and avoidance measures to lessen any potential impacts on wildlife (in line with NPPF Para 180a; the avoidance, mitigation and compensation hierarchy), and seek to enhance these features where reasonable to do so (in line with NPPF Para 179b; the provision of measurable biodiversity net gains). This can be achieved by prioritising a scheme design that retains and enhances the sites important semi-natural habitats and key features for biodiversity, while also improving the permeability and function of the site for wildlife by creating new resources within and new connections to the wider landscape. This should then be

supplemented with bespoke mitigation where appropriate and with additional protective measures such as sensitive lighting designs, the provision of dark corridors and appropriate drainage strategies.

Protection and enhancement of Marbury's natural assets is of the utmost importance for nature conservation, ecosystem services and for the enjoyment of future generations. Therefore, future development in Marbury should respect and prioritise the natural environment with the most intact landscapes, in terms of biodiversity, landform and historical/cultural associations valued highly when planning decisions are made.

Appendices

Appendix 1 – Natural England Ecological Network Model Interpretation

Woodland and Wetland Habitat Network Categories for Natural England's Ecological Network Tool GIS layers 2020:

Category	Description	Recommended Action
Core SSSI Habitat	SSSIs are among the most protected sites in Great Britain, and Natural England has statutory obligations to act for the benefit of SSSIs and encourage owner/occupiers to manage the land to favourable condition.	SSSIs can be noted for a range of biological or geological features. Regardless of the nature of the SSSI, management should always aim to achieve favourable condition for the features for which the site is notified. Therefore, should woodland or wetland network zone overlap with the boundaries of a SSSI, the action suggested by the model (see below) should only be carried out if it is consistent with the management of the notified features.
Primary Habitat	Wetland habitat from the priority habitat inventory (lowland raised bog, lowland fen and reedbeds), ponds and lakes (OS MasterMap). National Forest Inventory broadleaved or mixed-mainly broadleaved woodland.	The restoration and enhancement of primary habitat should be considered to improve habitat quality where necessary (e.g. scrub management on lowland bogs, encouragement of diverse age structure in woodlands) or increase extent if possible.
Priority Wetland Creation Zone	Land where wetland network connectivity is most restricted due to fragmentation and the land is suitable for wetland creation such as mosslands or reedbeds.	Priority Wetland Creation Zones are a high priority for wetland habitat creation, as it represents a major pathway of the network through a highly fragmented landscape. This may involve increasing the extent of existing habitat patches, or creating new habitat within the vicinity appropriate for the species being considered. Rigorous ground-truthing and consideration of other priority habitats or conservation objectives in the area will be vital before creating new wetlands.
Wetland Creation Zone	Land where wetland network connectivity is most restricted due to fragmentation and is less suitable for wetland creation.	To bolster the wetland network in these areas, alternative wetland creation should be considered e.g. SuDS or lined ponds.
Wetland Buffer Zone 1	Land within the network which connects existing primary wetland habitats and is naturally suitable for wetland creation. Wetland Buffer Zones are a high priority for	The restoration and creation of wetland habitats e.g. rewetting of modified bogs, in these areas should be considered, however conditions on the ground will determine the most appropriate action within these areas; restoration to improve habitat quality, creation to increase the extent of existing habitat patches, or to

	restoration or creation, as they represent connecting areas within the network which could join existing primary habitat.	provide stepping stones between habitat patches. Where other associated habitats of conservation importance overlap with Wetland Buffer Zones, such as species-rich grasslands or wet woodlands, restoration and improvement of these habitats should be considered, to improve the resilience of primary wetland habitats by providing buffer zones and diverse habitat mosaics. Rigorous ground-truthing and consideration of other priority habitats or conservation objectives in the area will be vital before creating new wetlands.
Wetland Buffer Zone 2	Land within the network which connects existing primary wetland habitats but which is less suitable for natural wetland habitat creation.	Non-natural wetland restoration measures e.g. SuDS, lined ponds, should be considered in these areas. Management and bolstering of important associated habitats, as with Wetland Buffer Zone 1, should also be considered here.
Wetland Network Expansion Zone	Land outside of the current wetland network where land is suitable for wetland creation, which could help to link up the existing habitat across the landscape.	Habitat creation in the Wetland Network Expansion Zone has the potential to aid the joining up of existing habitats patches within the network, however these areas are less of a priority in terms of improving the overall connectivity of the network as a whole. These areas may become 'Wetland Buffer Zone 1' in future iterations of the model if projects on the ground result in additional primary habitat. Rigorous ground-truthing and consideration of other priority habitats or conservation objectives in the area will be vital before creating new wetlands.
Priority Woodland Creation Zone	Land where woodland network connectivity is most restricted due to fragmentation and the land is potentially suitable for wet woodland creation.	Woodland Creation Zones are a high priority for woodland habitat creation, as it represents a major pathway of the network through a highly fragmented landscape. This may involve increasing the extent of existing habitat patches, or creating new habitat within the vicinity appropriate for the species being considered. In Priority Woodland Creation Zones, the land may also be suitable for wetter habitats, and encouragement of wet woodland may be considered here. Rigorous ground-truthing and consideration of other priority habitats or conservation objectives in the area will be vital before creating new woodlands.
Woodland Creation Zone	Land where the network connectivity is most restricted due to fragmentation and is less suitable for wet woodland creation.	To bolster the woodland network in these areas, woodland creation measures are of high priority here. This may include the planting of new woodlands, with careful consideration of appropriate species mix, or encouragement of natural regeneration where possible. Rigorous ground-truthing and consideration

		of other priority habitats or conservation objectives in the area will be vital before creating new woodlands.
Woodland Buffer Zone 1	Land within the network which connects existing primary woodland habitats and is potentially suitable for wet woodland creation.	Woodland Buffer Zones are a high priority for restoration or creation, as they represent connecting areas within the network which could join existing primary habitat. Conditions on the ground will determine the most appropriate action within these areas; restoration to improve habitat quality, creation to increase the extent of existing habitat patches, or to provide stepping stones between habitat patches. Given the potential suitability for wetter habitats here, rewetting and management for wet woodland may be considered here. Rigorous ground-truthing and consideration of other priority habitats or conservation objectives in the area will be vital before creating new woodlands.
Woodland Buffer Zone 2	Land within the network which connects existing primary wetland habitats but which is less suitable for natural wetland habitat creation.	The restoration and creation of woodland habitats e.g. tree planting or encouragement of natural regeneration should be considered in these areas. Where other associated habitats of conservation importance overlap with Woodland Buffer Zones, such as species-rich grasslands or heathlands, restoration and improvement of these habitats should be considered, to improve the resilience of primary woodland habitats by providing buffer zones and diverse habitat mosaics. Rigorous ground-truthing and consideration of other priority habitats or conservation objectives in the area will be vital before creating new woodlands.
Woodland Network Expansion Zone	Land outside of the current woodland network where species flow is likely to be relatively high due to better landscape permeability.	Habitat creation in the Woodland Network Expansion Zone has the potential to aid the joining up of existing habitats patches within the network, however these areas are less of a priority in terms of improving the overall connectivity of the network as a whole. These areas may become 'Woodland Buffer Zone' in future iterations of the model if projects on the ground result in additional primary habitat. Rigorous ground-truthing and consideration of other priority habitats or conservation objectives in the area will be vital before creating new woodlands.

Appendix 2 - Habitats, LCM2007 Classes and Broad Habitat Sub-classes 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
		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 3 – 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 4 – Local Wildlife Site Definition of Positive Management

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

1. The conservation features for which the site has been selected are clearly documented.
2. There is documented evidence of a management plan/management scheme/advisory document which is sufficiently targeted to maintain or enhance the above features.
3. 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.
4. The Local Sites Partnership has verified the above evidence.