Protecting and Enhancing Handbridge's Natural Environment

Cheshire Wildlife Trust

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Acknowledgements

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Contents

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 prior governments 'Natural Environment' white paper. The mission of Biodiversity 2020 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 While the Biodiversity 2020 strategy has now been superseded its aims and outcomes built a foundation for, and have been adopted into, more recent and forthcoming environmental policy.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 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. The fourth SoN report, published in 2023, described how nature has declined even further across the UK with almost 1 in 6 species now threatened with extinction.

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 Environment Act.

The Environment Improvement Plan 2023 has now also been released, which is the first revision of DEFRA's 25 Year Environment Plan. This review builds on the 25YEP vision with a new plan detailing how DEFRA will collaborate with landowners, communities and businesses to deliver their goals for improving the environment; and they have set out interim targets to measure progress along the way. The targets for some of the original 25YEP goals have been expanded and more specific details have been added to increase the potential of the 25YEP. Their central goal remains the same, to halt the decline in our biodiversity and allow wildlife to thrive; the next review is scheduled for 2028.

The National Planning Policy Framework (NPPF), first published in 2012 and subsequently updated 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 a

Biodiversity Net Gain (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 Environment Act (2021) sets out a new environmental governance framework as the UK leaves the European Union's environmental policy and legislative structures. The Act mandates 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 Act includes:

- 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, biodiversity and ecological networks are enshrined in the Cheshire West and Chester (CWaC) Local Plan (Part One) Strategic Policies (adopted January 2015) and Part Two Land Allocations and Detailed Policies (adopted July 2019). Policy ENV 4 – Biodiversity and Geodiversity (Local Plan Part One) seeks to safeguard and enhance biodiversity and geodiversity through the identification and protection of sites and/or features of local importance. Policy DM 44 – Protecting and Enhancing the Environment (Local Plan Part Two) seeks to strengthen the protection of ecological networks across the borough while requiring development to deliver an overall net-gain for biodiversity. To supplement their net gain and ecological network policies, CWaC Council have also produced a Biodiversity Net Gain and Ecological Networks guidance note (June 2022). This guidance note provides information on the approach to BNG within the borough, demonstrating the various ways development can achieve this, contributing positively to biodiversity and ecological networks in a way that is measurable in accordance with the adopted development plan.

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 BNG, 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 25YEP are realised, by identifying local priorities for nature conservation that should be considered 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 by working 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 (Figure 1) 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.

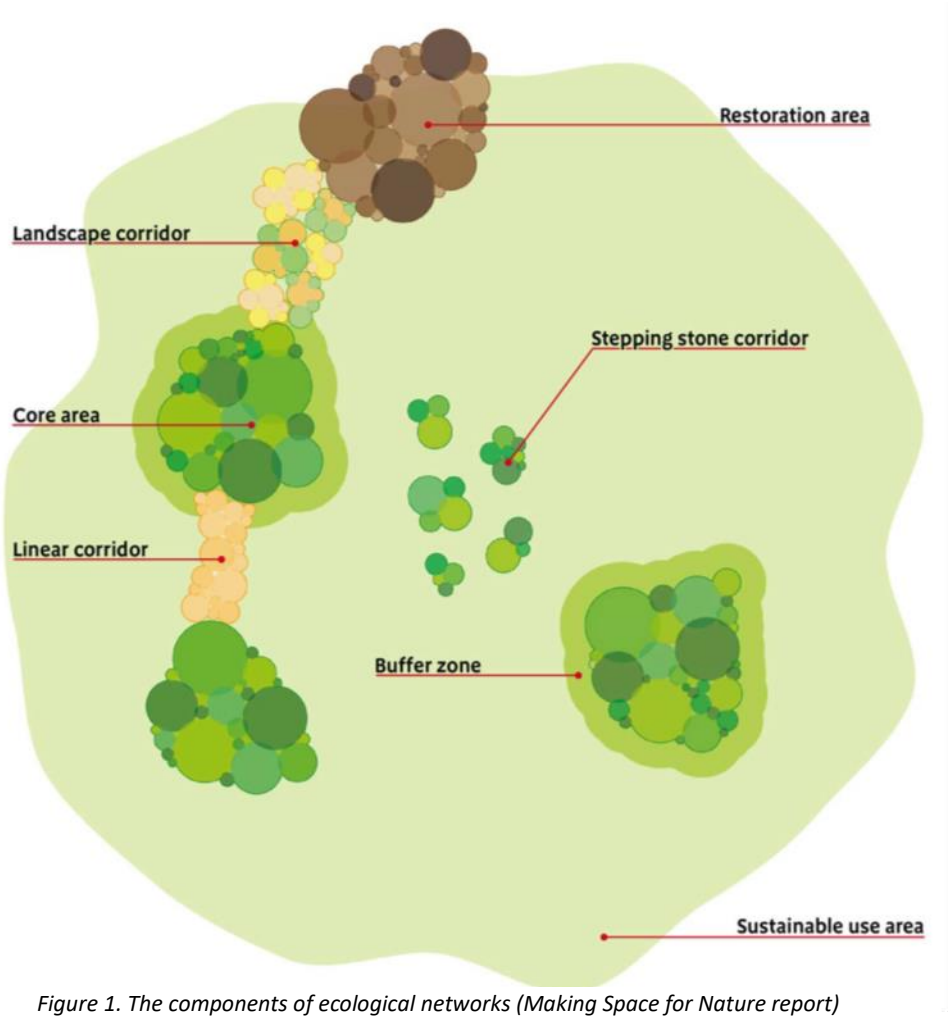


Figure 1. The components of ecological networks (Making Space for Nature report)

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.

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 Handbridge Neighbourhood Planning (NP) 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 Handbridge NP area so they can be referenced in neighbourhood planning policies.

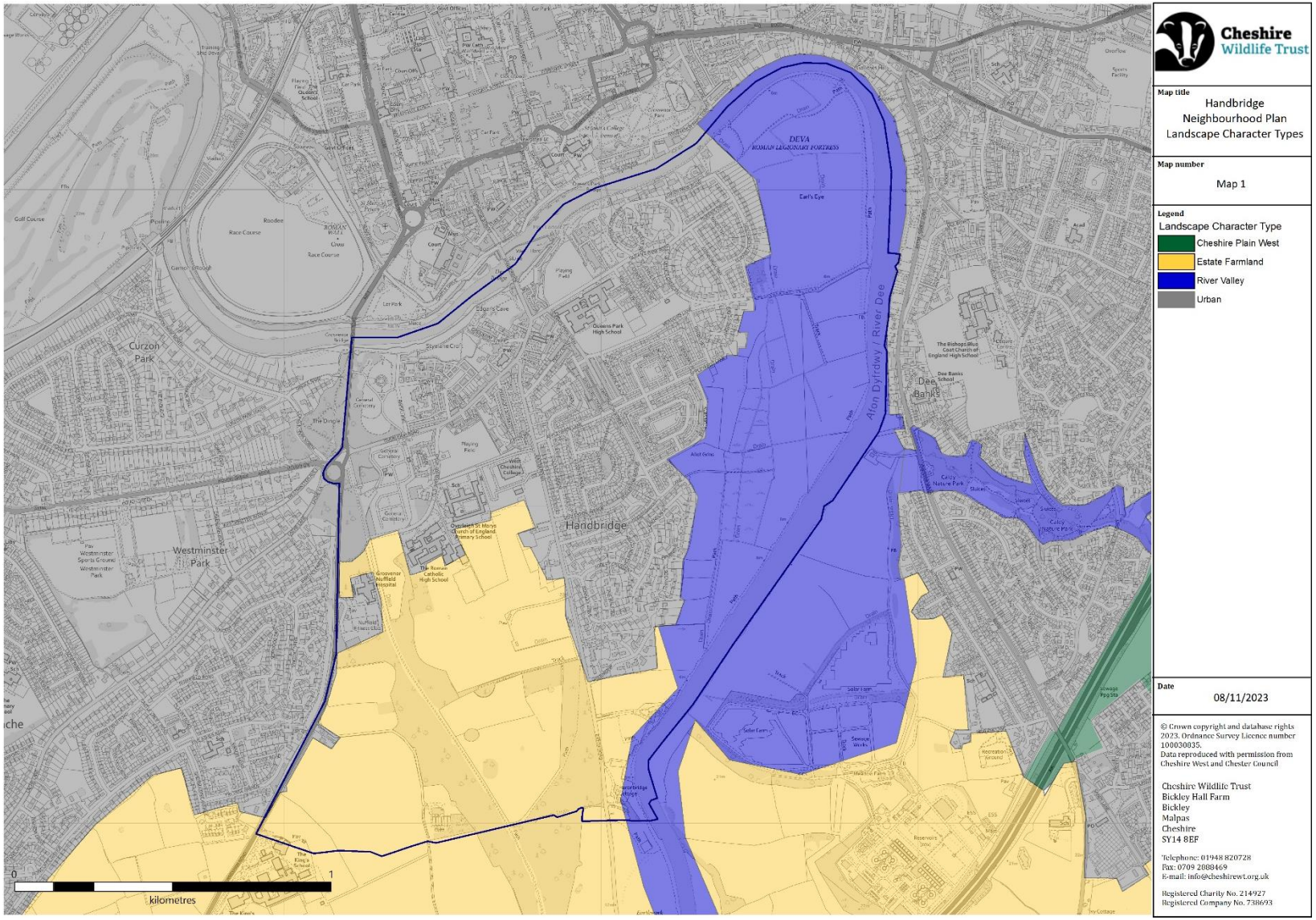
Handbridge's Landscape Character Assessment

At a national level, the Handbridge NP area 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 West and Chester Council produced a Landscape Strategy in 2016 which incorporates 16 Landscape Character Types (LCTs). Different aspects such as geology, landform, soils, vegetation and land use have been used to identify recognisable patterns that have categorised into different LCTs. This Landscape Strategy is intended to be used as a basis for planning and the creation of future landscape strategies as well as raising public awareness of landscape character and creating a sense of place.

The Landscape Character Assessment for Cheshire West and Chester (CWaC) (Map 1) identifies two recognisable landscape character types (LCT) within the Handbridge NP area; with the 'River Valley' LCT to the east, and 'Estate Farmland' LCT in the south. Each LCT is subdivided into smaller Landscape Character Areas (LCAs), the details of which are given below.

Map 1 – Cheshire West and Chester Landscape Character Typology 2018



LCT 11: Estate Farmland

General Description

A landscape of consistent topography, land use, woodland blocks and formal parkland and tree-lined avenues associated with historical estate ownership, this character type shares many characteristics of the Cheshire Plain West LCT. The flat or gently rolling topography has extensive areas of designed parkland and mature woodland and is punctuated with highly attractive estate villages and buildings.

LCA 11a: Grosvenor Estate Character Area

This is the only character area within the Estate Farmland LCT; it is split into two blocks by the River Dee, but both sections display strong consistencies in appearance. There is little connectivity between the two sections of the character area as there are limited crossing points across the River Dee, this is also seen through the limited public and rights of way in the west compared to the vast network in the east. The Handbridge NP area lies within the north of this LCA where it joins the City of Chester. The LCA is a mixture of pastoral and arable land use with large blocks of woodland. There are also extensive areas of floodplain where tributaries flow into the River Dee, while dense concentrations of listed historic estate buildings sit within the Conservation Areas at Eaton Hall.

Landscape Guidance

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

- Maintain an intact hedgerow network through management of hedges, planting lost hedge lines, and re-planting a young stock of hedgerow trees. Consider a programme of replacement hedgerow tree planting to re-instate those that have been lost over the years.
- Avoid over-intensive flail mowing or ploughing too close to hedgerow boundaries – protect saplings and encourage trees to grow up at intervals along the hedgerow.
- Promote appropriate management of farmland to create a wildlife rich habitat supporting farmland birds, including retaining areas of fallow land, overwintering stubbles, maintaining an unploughed margin around arable land, and management of existing hedgerows.
- Increase the biodiversity of intensively managed grassland – create and link buffer strips along linear features such as hedgerows to create a continuous network of wildlife corridors.
- Conserve and manage the remaining field ponds and wetlands across the plain – seek opportunities to extend areas species rich unimproved grassland.
- Avoid further loss of ridge and furrow through agricultural intensification or development.
- Promote traditional woodland management techniques of the deciduous woodland to ensure a diverse (indigenous) species and age structure.
- Seek opportunities to expand and link existing woodlands in areas currently of low ecological value – support plans to create large woods in balance with the open agricultural landscape.
- Minimise the impact of existing major roads and industry by using native planting to screen.
- Seek to conserve and restore historic designed landscapes and their settings, such as the historic parkland at Eaton Hall and consider opportunities to enhance access to, and appreciation of, this landscape. Respect approaches to Eaton parkland.
- Avoid road ‘improvements’ (e.g. kerbs, lighting) that alter the rural character of the lanes.

LCT 15: River Valleys

General Description

Cheshire West and Chester borough is partly bounded by the Mersey estuary to the north and the River Dee to the west, both of which largely drain areas outside the district. The River Weaver flows northwards into the Mersey and is an important main river originating within Cheshire East, with its tributary the River Dane beginning in the Derbyshire Peak District. The Dane and Gowy rivers also flow northwards and are important for draining large parts of the district. There are many smaller incised rivers and streams across the district but most of these are too small to constitute character areas and instead contribute to the character of other landscape types. This character area contains internationally significant ecological and nationally important geomorphological features, with some river sections designated as Special Areas of Conservation (SAC) and Sites of Special Scientific Interest (SSSI) for their species and habitats.

LCA 15f: Dee Valley Character Area

A narrow and sinuous landscape area reflecting the course of the River Dee following the western boundary of the CWaC borough, in part defining the border between England and Wales. The low lying, shallow valley sides of arable farmland and pasture allows for seasonal flooding of Chester Meadows and south of Farndon, with the area punctuated with pockets of woodland and estate plantation. The north of the LCA, including the Handbridge NP area, represents a green corridor into the City of Chester, whereas the south passes between the managed landscape of the Estate Farmlands.

Landscape Guidance

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

- Support the management of all existing riparian trees and vegetation.
- While wet woodland may be appropriate alongside the river on the valley floor care should be taken to also conserve the pastoral and open character of the valley floor.
- Encourage reversion of arable back to pasture on the floodplain. Encourage seasonal grazing to maintain the pastoral character of the floodplain.
- Conserve and extend characteristic floodplain habitats such as unimproved grassland, traditionally managed meadows, reed beds and riverside trees which contribute to the natural character of the floodplain.
- Support recreational use of the landscape, particularly passive recreation, and ensure that any visitor facilities are integrated into their landscape context.
- Seek to improve boundary management including hedgerow boundaries.
- Minimise the impact of built development on the valley sides using native planting of locally appropriate species to create a landscape buffer where appropriate.
- Monitor water levels and manage abstraction to prevent impact on wetland ecosystems.
- Control spread of invasives e.g. Japanese Knotweed, Himalayan Balsam and Giant Hogweed.

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.

The Handbridge NP area, 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 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

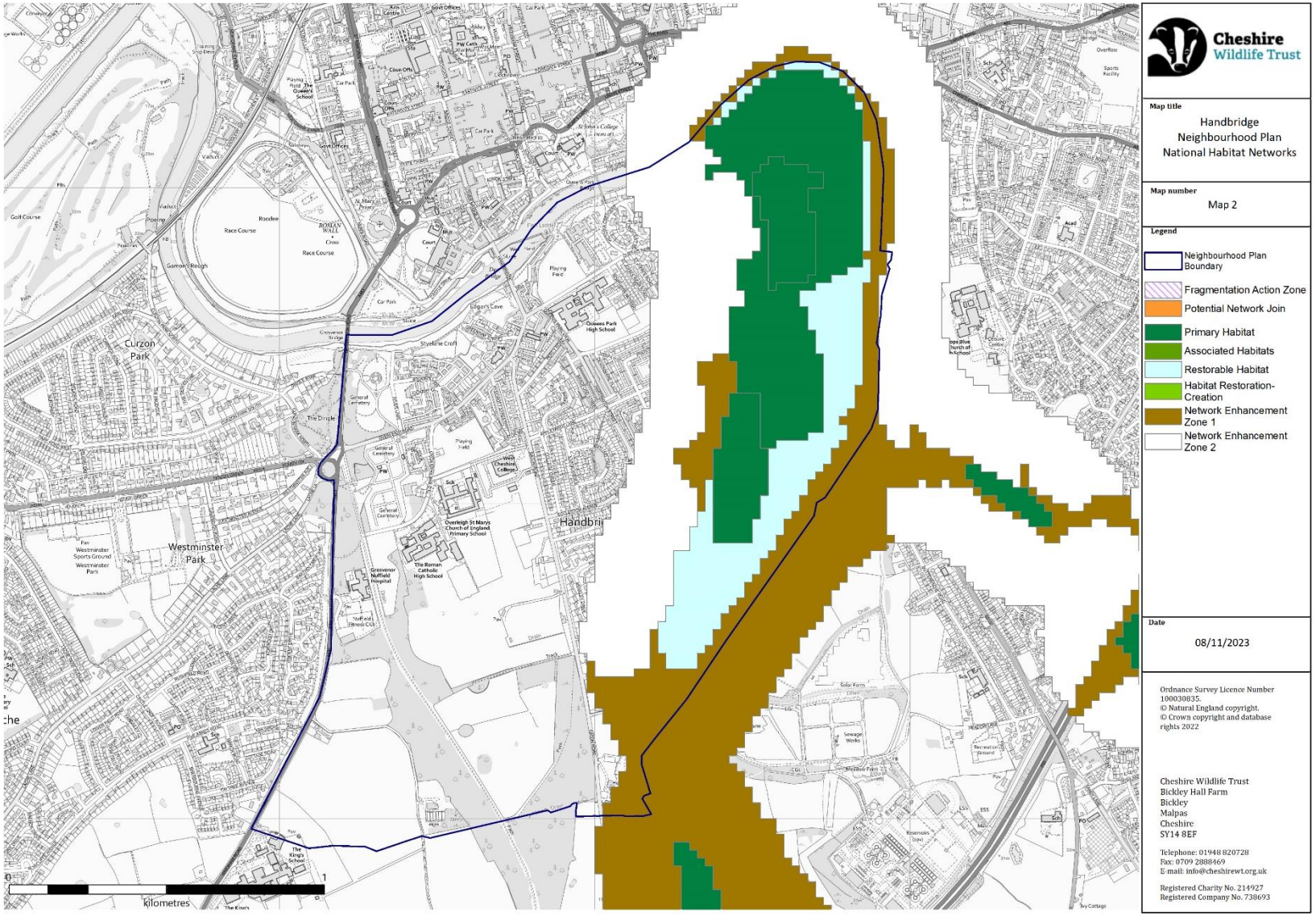
The Key components of the National Habitat Network map are:

- **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 the Handbridge NP area is shown in Map 2.

In 2023 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.

Map 2 – National Habitat Network



National Habitat Network Mapping has highlighted areas of lowland meadow and lowland fen Primary Habitat in the eastern parts of the Handbridge NP area. These habitats are focussed along the River Dee, with some Restorable Habitat also present. These Primary and Restorable habitats 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 West and Chester 2016

As part of the Cheshire West and Chester updated Local Plan (Part Two), 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).

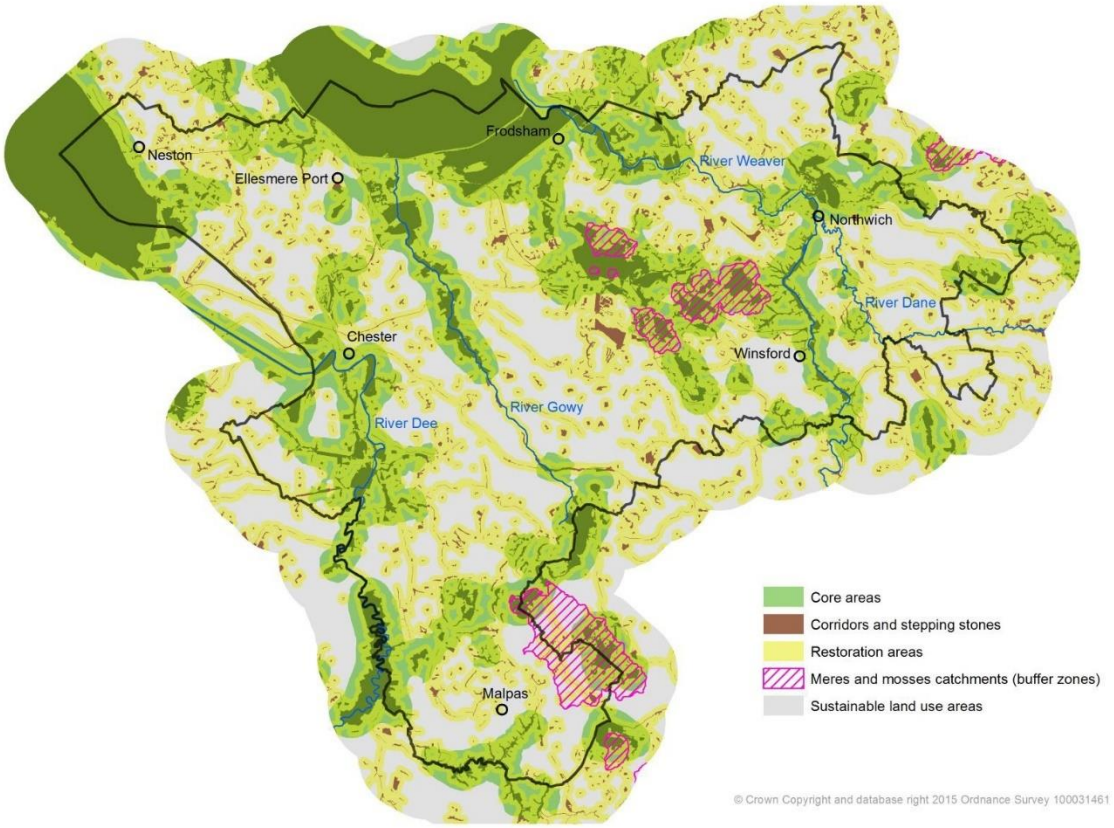


Figure 2. Ecological Network for Cheshire West and Chester 2016

The ecological network is associated with Local Plan (Part Two) Policy DM 44 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 contribute towards strengthening the borough's wider green infrastructure network, natural capital and maximise gains to the natural environment as a whole. 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.

The Local Plan (Part One) safeguards and enhances biodiversity and geodiversity through the identification and protection of sites and/or features of international, national and local importance.

These sites and priority habitats are essential components of the network and need to be protected and conserved. The purpose of the Local Plan (Part Two) Policy DM 44 is to ensure that development that makes a positive contribution towards the borough's ecological network will be supported. As stated in the CWaC Council Biodiversity Net Gain and Ecological Networks guidance note (June 2022), the primary role of the network is to identify areas of the borough in which habitat loss (such as that resulting from development) will likely cause the most negative impact, and where habitat management/creation will have the most positive impact. It will therefore be used as a tool to give greater focus on promoting habitat creation/management within the optimal places where it has most ecological benefits; both of which will allow for more resilient borough wide biodiversity net gain.

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 CWaC Ecological Network identifies a broad network for the whole borough, whereas the wildlife corridors identified in this report (Map 10) 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, mandated in the Environment Act (2021) and rolled out in 2023.

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 Handbridge NP area, as modelled by the Natural Course Ecological Network Tool, are shown in Figure 3. Supporting information on the Wetland and Woodland Habitat Categories for the Network Tool can be found in Appendix 1.

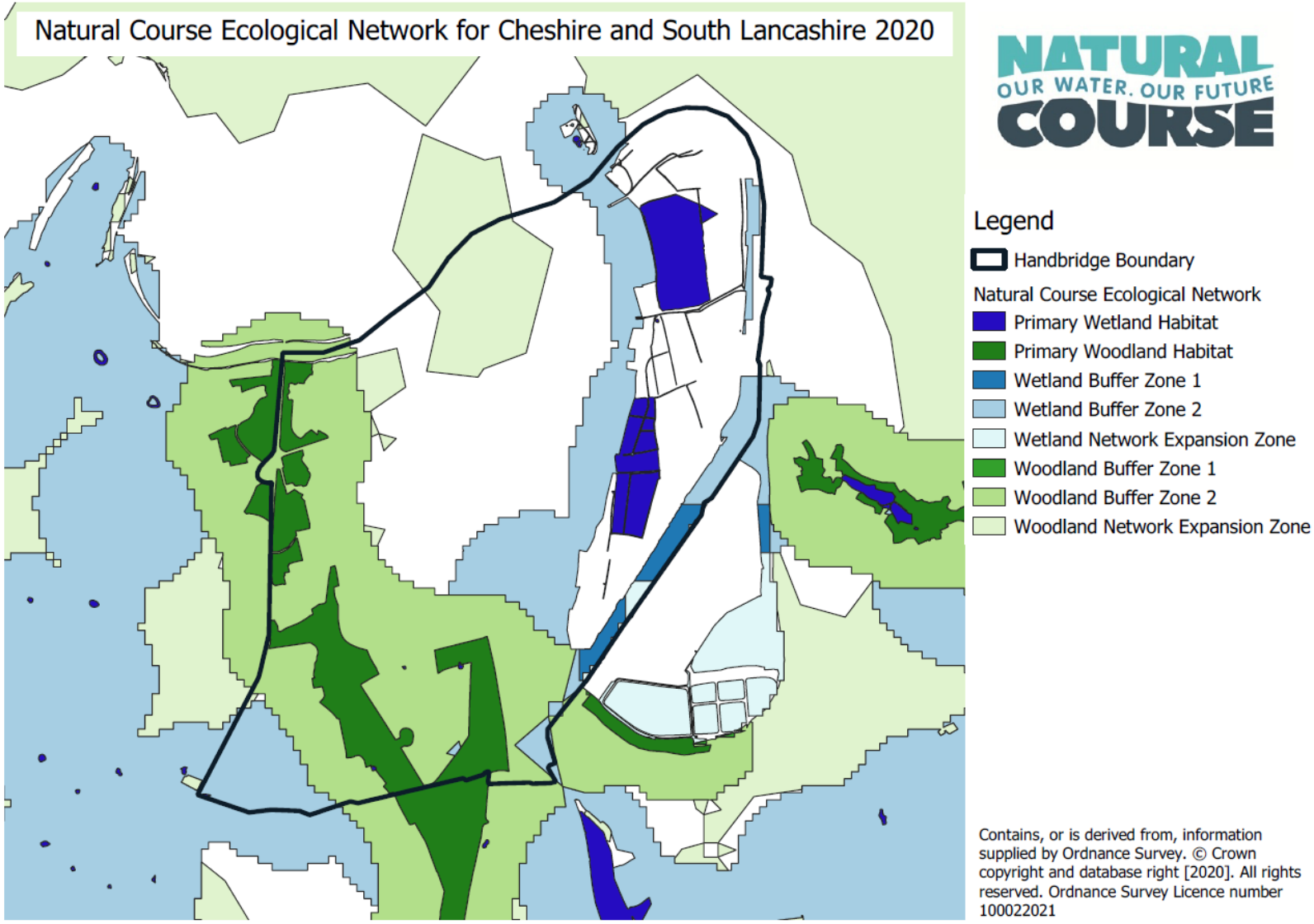


Figure 3. Natural Course Wetland and Woodland Habitat Network

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

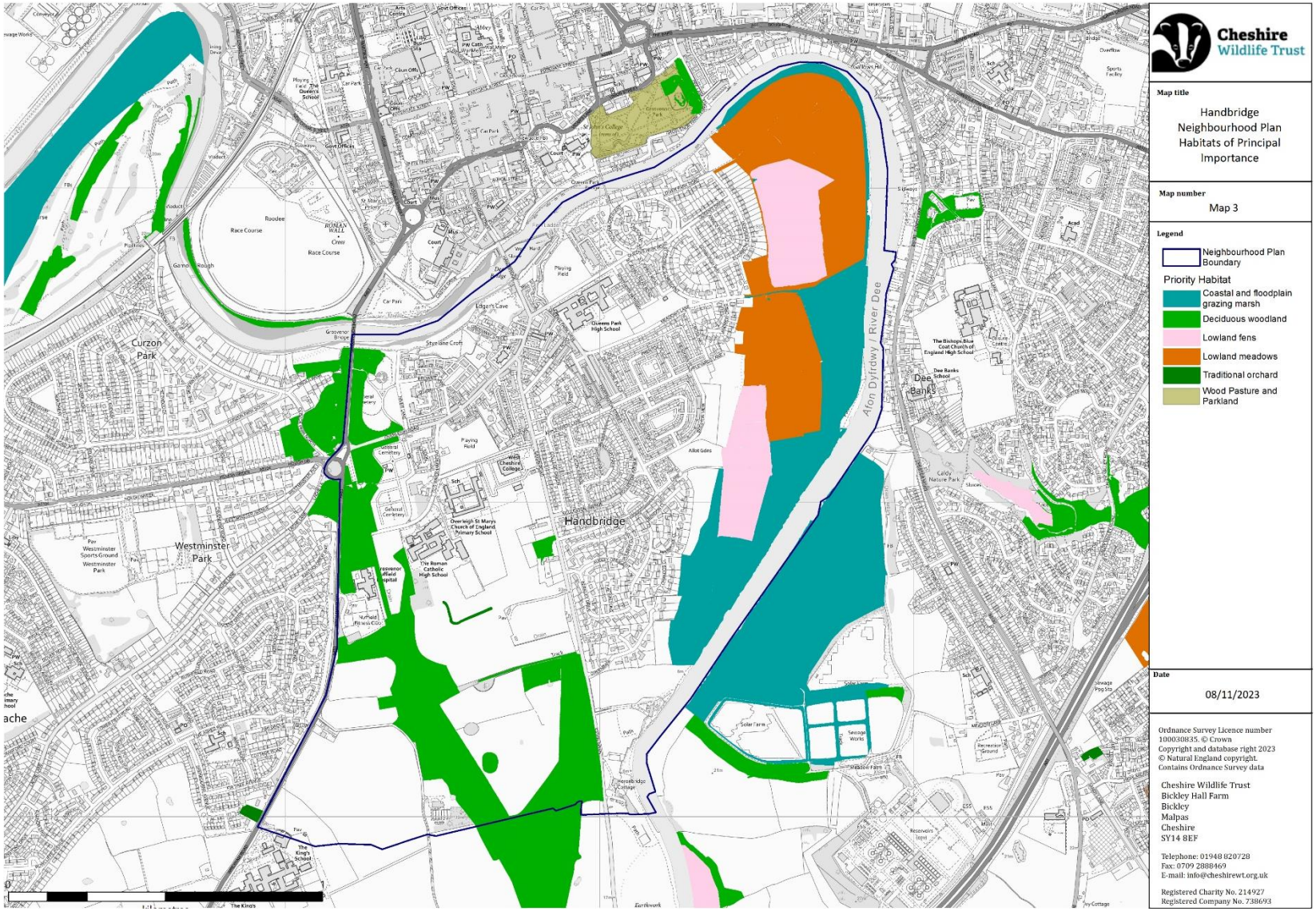
Data sources used to produce the habitat distinctiveness maps included:

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 (LCM2019) – Centre for Ecology and Hydrology 2019. 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/CWaC Local Authority were classified as high distinctiveness.
    e. Ancient woodlands – Natural England 2019 (last updated 20 November 2022) – 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).
    g. Cheshire Tithe Maps Online – Using maps from Cheshire Archives looking for woodlands that could be potential Ancient Woodlands due to presence over a long period of time but haven't been formally identified. Classed as medium distinctiveness.
2. Open source aerial imagery (Microsoft Bing ™ Imagery and Google Earth) was used to validate and review the habitats by eye.
3. The Handbridge 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 the Handbridge NP area 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.

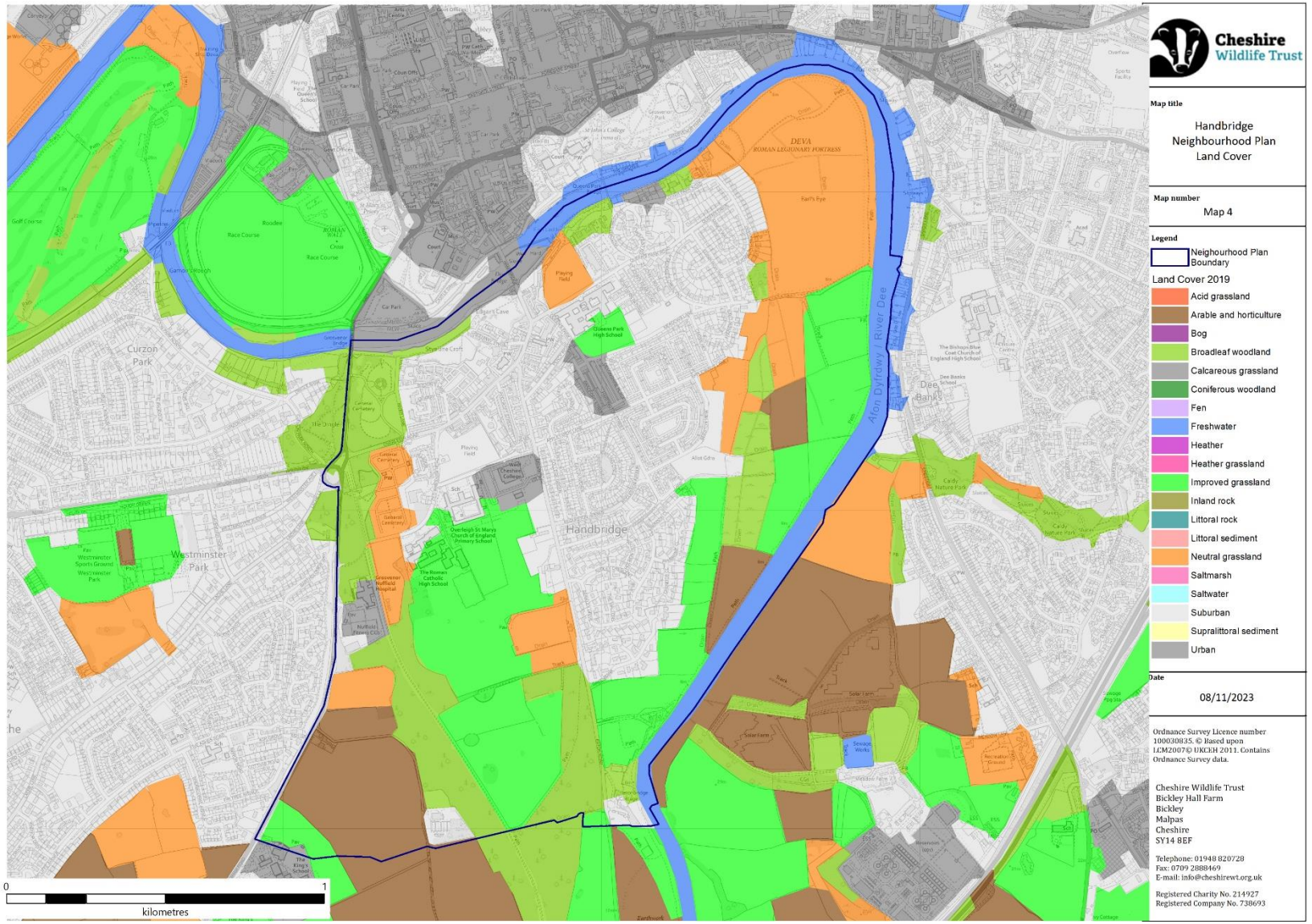
Maps

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

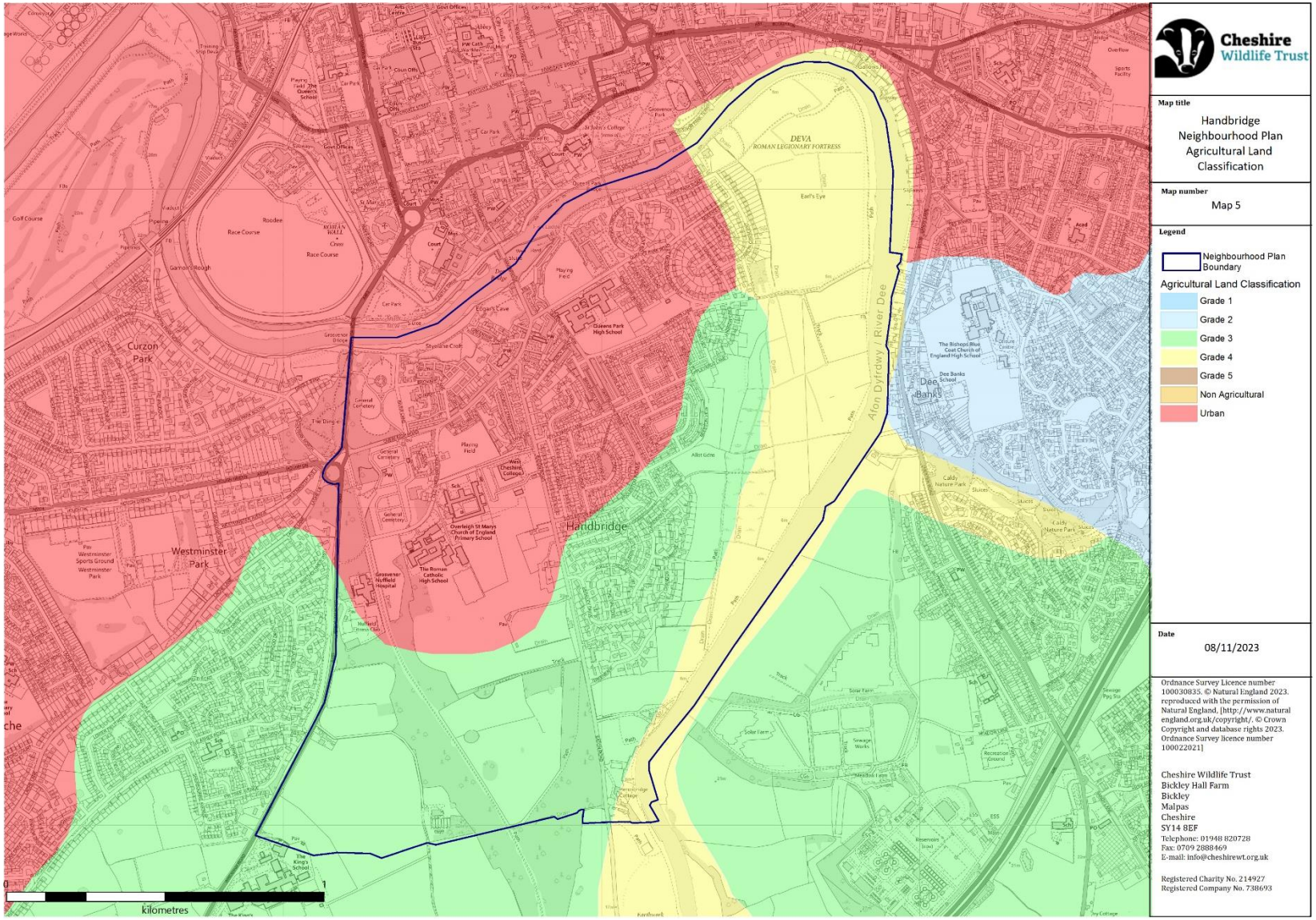
Map 3 – Terrestrial Habitats of Principal Importance



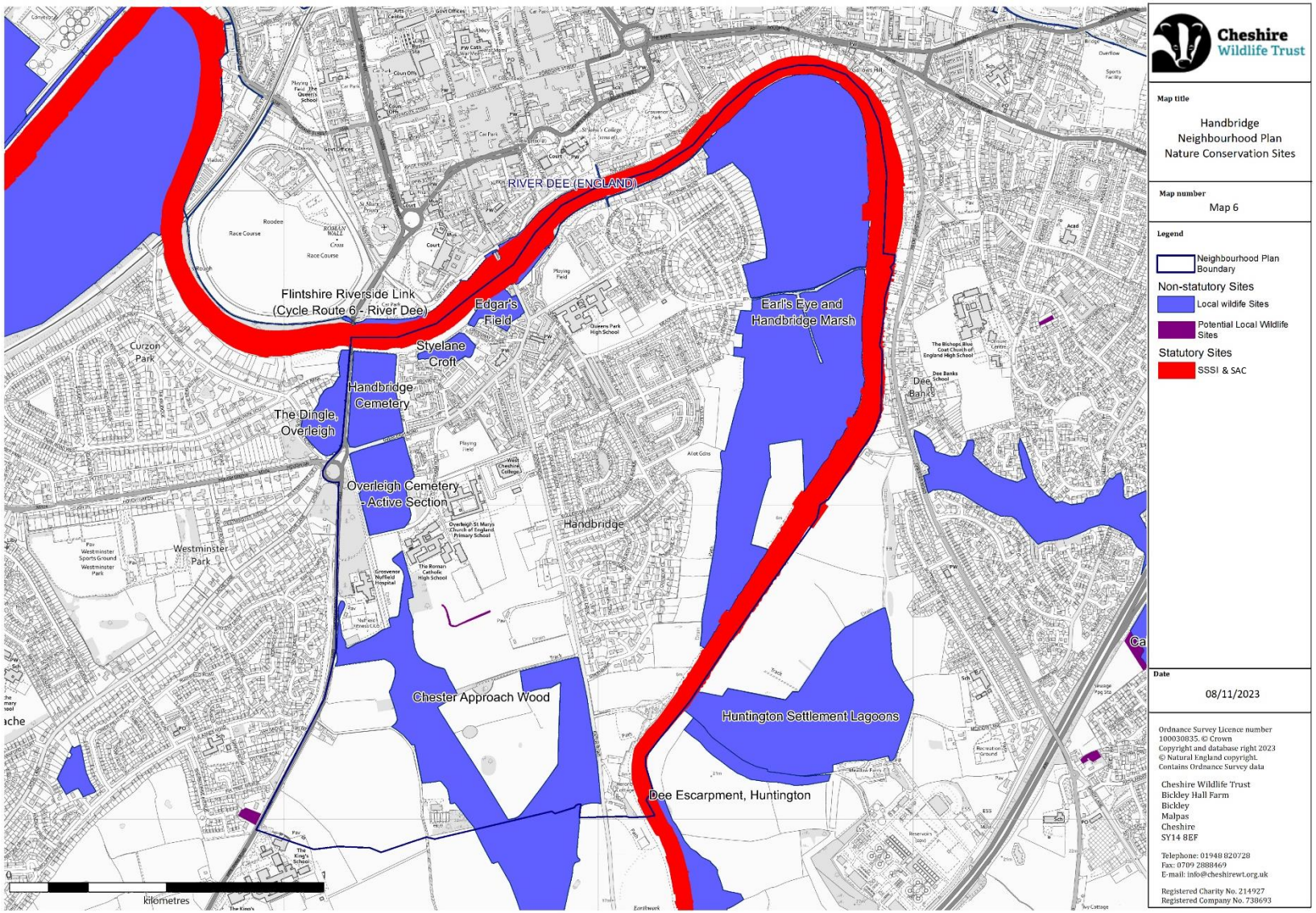
Map 4 – Land Cover (2007)



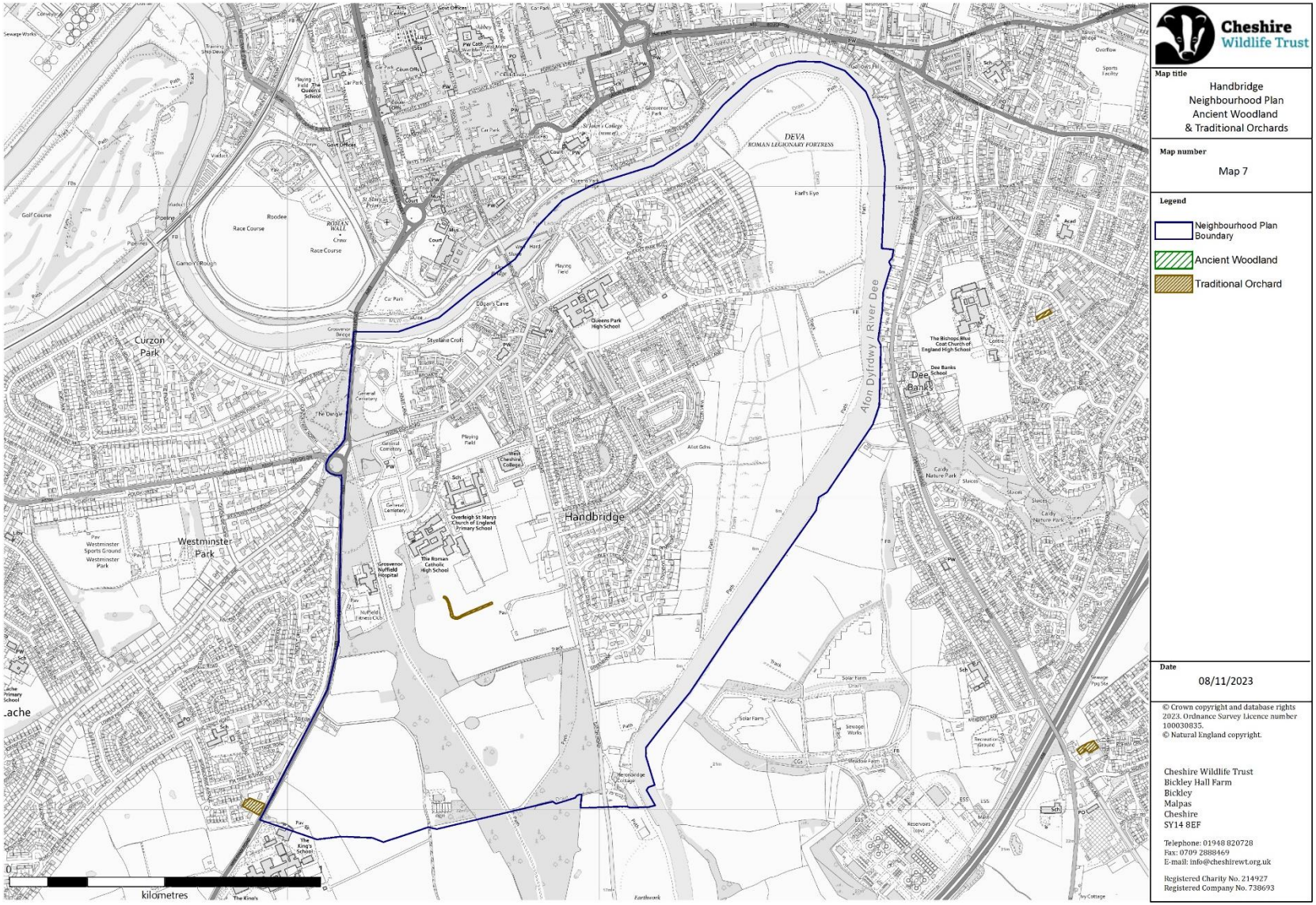
Map 5 – Agricultural Land Classification



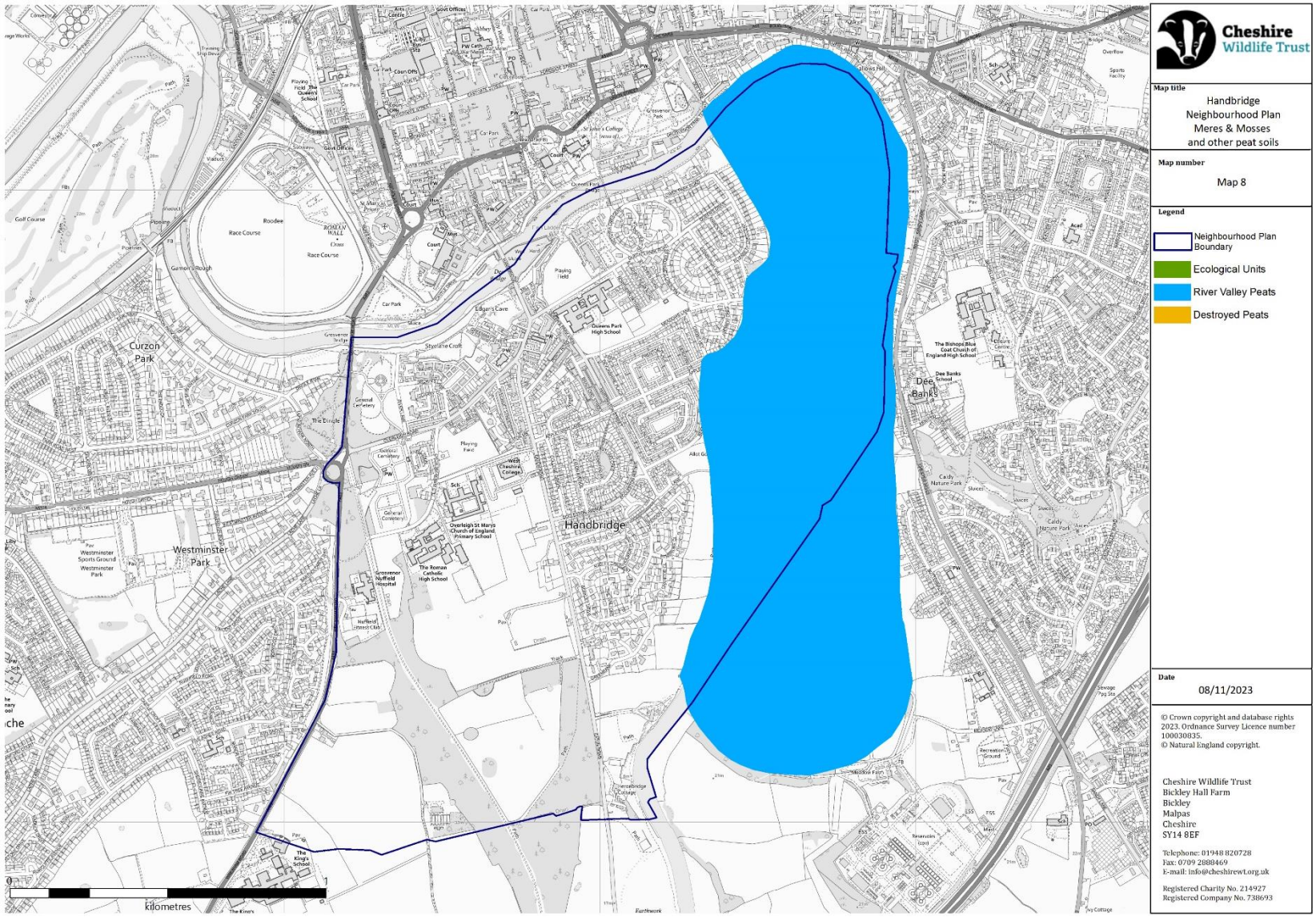
Map 6 – Designated Sites of Nature Conservation



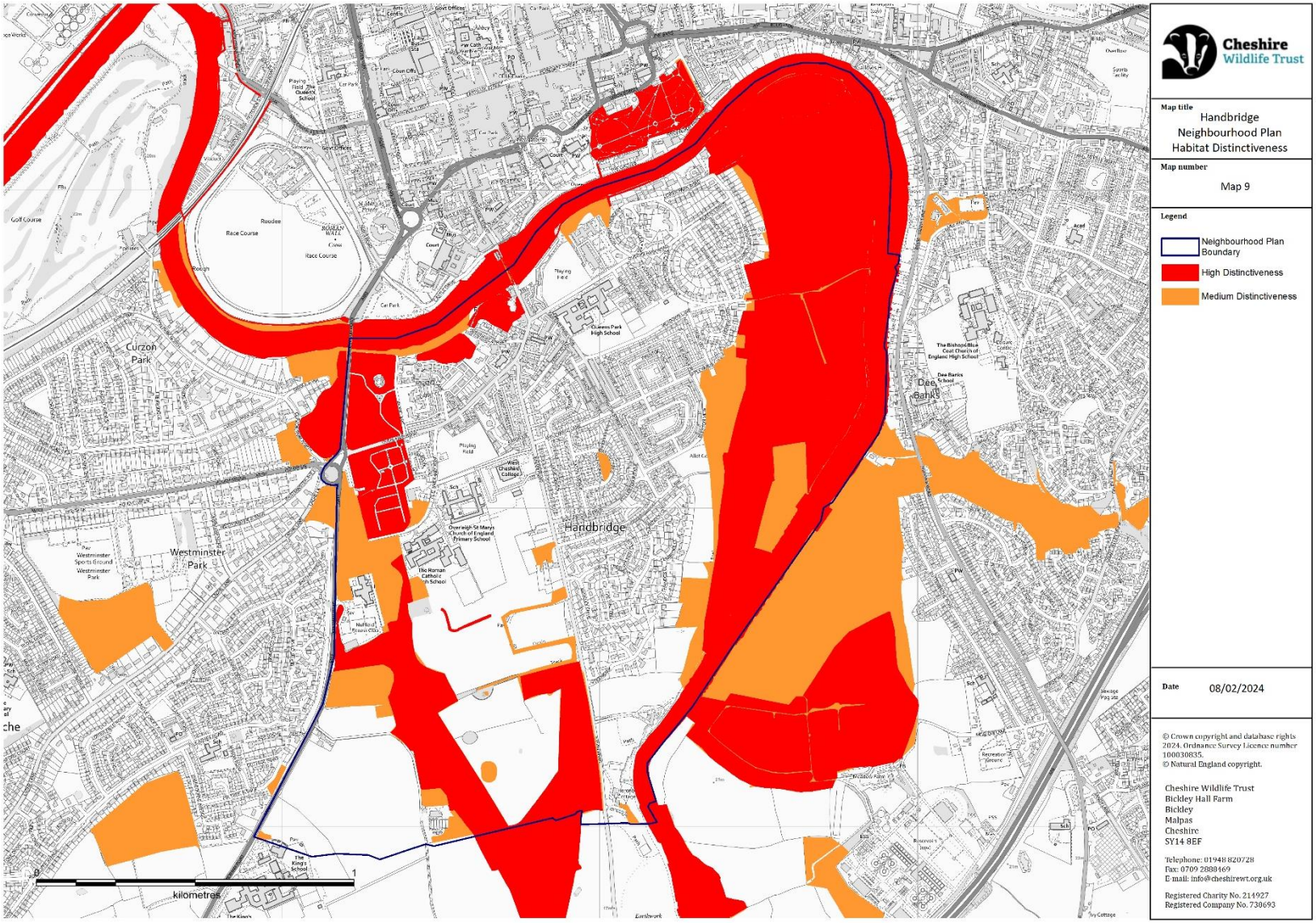
Map 7 – Ancient Woodland and Traditional Orchards



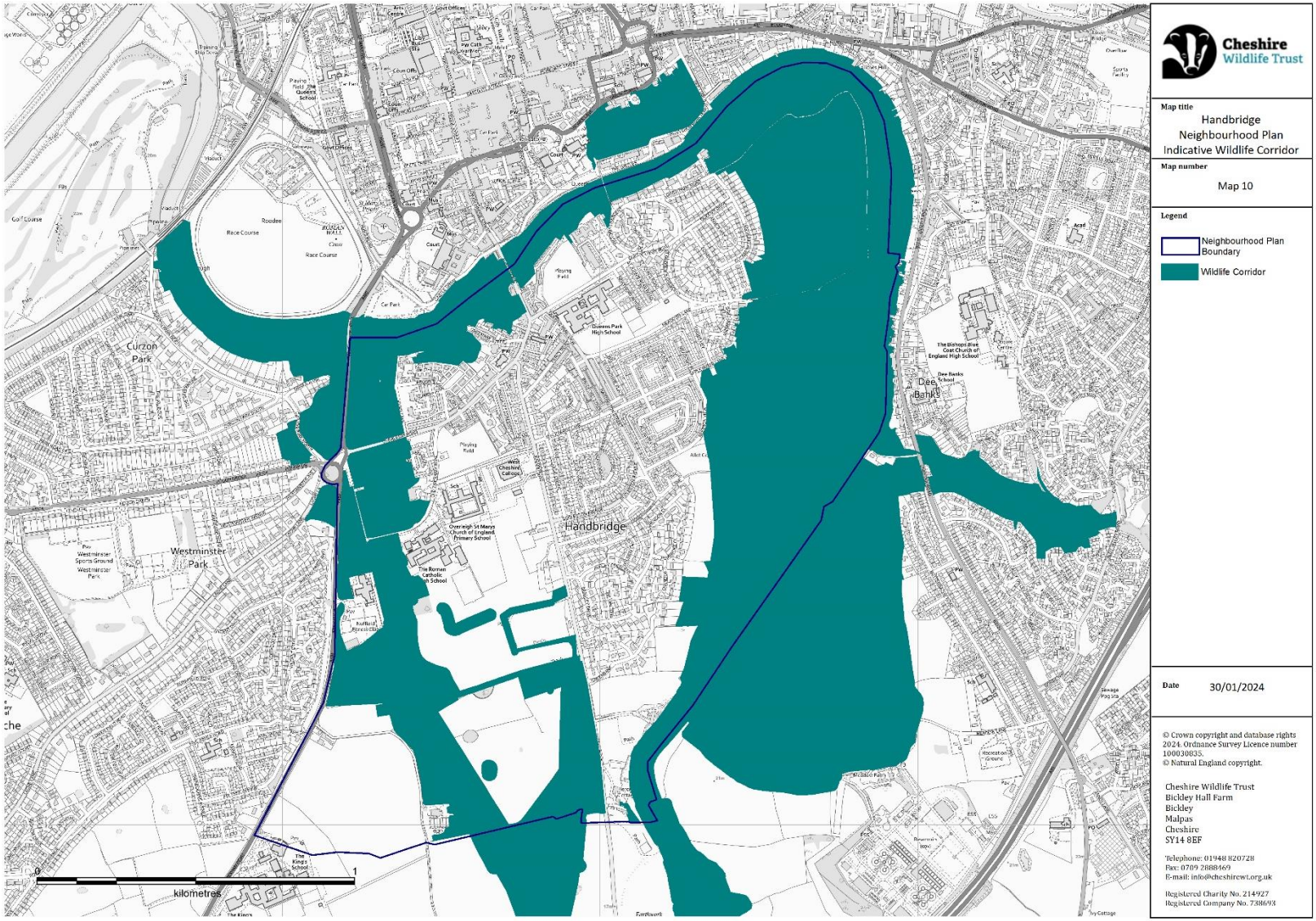
Map 8 – Meres, Mosses and Other Peat Soils



Map 9 – Habitat Distinctiveness



Map 10 – Indicative Wildlife Corridor



Results & Discussion

High Distinctiveness Habitats

Areas of high distinctiveness habitat are shown on Map 9 – 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 Handbridge NP area are discussed in detail below[1].

River Dee SSSI and SAC

The River Dee Site of Special Scientific Interest (SSSI) comprises a section of the Dee which meanders downstream across the Cheshire plain from Shocklach, at the border between England and Wales, northwards through Chester. The SSSI was designated in 1996 for its nationally important river habitats, fluvial geomorphology and wildlife, such as Atlantic salmon, otter, water vole and club-tailed dragonfly. The club-tailed dragonfly is a nationally scarce species which is found along the Lower Dee, particularly in areas of slow flowing waters adjacent to woodland habitat or other bankside vegetation, which provides cover for adults.

The River Dee SSSI also supports a large number of breeding birds, including kingfisher and sand martin which use the eroding river banks as nesting habitat. The stretches of river with fast flowing waters provide excellent feeding habitat for dipper and grey wagtail, whilst other bird species prefer the slower flowing reaches (e.g. yellow wagtail and mute swan). The Lower Dee floodplains provide significant breeding grounds for many wader species, including the Birds of Conservation Concern (BoCC) red listed lapwing, and when flooded, they provide over-wintering sites for the pintail[2]. Additionally, the River Dee and Lake Bala Special Area of Conservation (SAC) was designated in 2005, mainly for its Atlantic salmon and floating water-plantain populations, as well as the presence of sea lamprey, brook lamprey, river lamprey, bullhead, and otter[3].

This internationally important site forms the northern and eastern boundaries of the Handbridge NP area (Map 6 and 9), where some of these key species have been recently recorded, such as water vole and common club-tail dragonfly. The River Dee is also home to a number of Invasive Non-Native Species (INNS), some of which are present within and in close proximity to the Handbridge NP area. Some aquatic species (i.e. Chinese mitten crab, floating pennywort) and riparian plant species (i.e. Himalayan balsam, Japanese knotweed, giant hogweed) have been recently recorded in the area[4]. These invasive species colonise rapidly and will outcompete native flora and fauna if left unmanaged.

Wetland

There are significant wetland habitats present along the eastern boundary of the NP area, adjacent to the River Dee, including two Habitats of Principal Importance (PHI) as recognised by Natural England: coastal and floodplain grazing marsh, and lowland fen (Map 3 and 9). These habitats are largely found

[1] The habitats and species described in the 'Results & Discussion' section are derived from internal CWT resources (e.g. Local Wildlife Site citations) unless stated otherwise.
[2] Natural England's River Dee (England) SSSI Citation, last revised May 2002.
[3] JNCC website, accessed October 2024.
[4] NBN Atlas data, accessed January 2024.

within Earl's Eye and Handbridge Marsh Local Wildlife Site (LWS), with some further areas located just outside the boundary on the other side of the Dee, including at Huntington Settlement Lagoons LWS (Map 6).

Earl's Eye and Handbridge Marsh LWS forms part of the River Dee natural floodplain and encompasses Earl's Eye, Handbridge Marsh, Boat House Field and Bottoms Lane Field. Parts of this wildlife site are cut to provide recreational areas for the public, whilst other compartments are grazed by livestock. The rich mosaic of habitats on this site comprises an extensive area of floodplain grazing marsh, a thin strip of semi-natural alder woodland, patches of alder-willow carr, hedgerows, numerous ditches and ponds, and an area of fen. The marshy grassland is not particularly species rich but does contain meadowsweet and gypsywort. Whereas the fen areas are dominated by common reedmace, reed canary-grass and reed sweet-grass, and the many ponds and ditches at the site are colonised by aquatic plants such as yellow iris, celery-leaved buttercup, pink water-speedwell and water-plantain.

Earl's Eye and Handbridge Marsh LWS is of great ornithological importance for breeding and over-wintering wetland birds, including reed bunting, sedge warbler and common sandpiper[5], as well as the BoCC amber listed snipe. The marshes also provide valuable habitat for the common frog and smooth newt as well as many species of damselfly and dragonfly, including the azure damselfly and hairy dragonfly, which have been recently recorded on the site[6]. Additionally, the BoCC red listed swift has been documented in urban areas adjacent to the marshes[7]; this highly endangered bird species is utilising both the urban and semi-natural habitats present in the area.

Several bat species are associated with the marshes, including Daubenton's and noctule bats which feed over the river and grassland habitats, respectively. There are species-rich hedgerows which surround the Boat House Field with blackthorn, hawthorn, hazel, wild cherry, holly and field-rose present; this hedgerow network provides important foraging habitat for common and soprano pipistrelles which have been recently recorded in the area[8].

Huntington Settlement Lagoons LWS lies just outside the south-eastern boundary of the NP area, and it comprises five settlement lagoons with hedgerows and mature trees running along its boundary. Four of the lagoons contain water with emergent vegetation at the edges, including purple-loosestrife, bulrush, yellow iris, brooklime, water figwort and amphibious bistort. There are also two large areas of "restored" lagoon which have been filled in and seeded with native plant mixtures to create important species-rich grassland habitat. The mosaic of water bodies, hedgerows and grassland found at this wildlife site support a number of important bird, invertebrate and mammal species including hedgehogs, a highly threatened priority species which has been recently recorded at the site[9].

Grassland

There are several sites within the Handbridge NP area which are home to high distinctiveness grassland habitats, including a significant area of lowland meadows priority habitat located on the River Dee floodplain (Map 3 and 9) at Earl's Eye and Handbridge Marsh LWS. The grasslands at this LWS lie on the natural floodplain and are comprised of a mixture of unimproved and semi-improved

[5] NBN Atlas data, accessed January 2024.
[6] NBN Atlas data, accessed January 2024.
[7] NBN Atlas data, accessed January 2024.
[8] Planning application (reference 19/02789), ecological survey data.
[9] NBN Atlas data, accessed January 2024.

neutral grassland habitats, with some locally scarce species present, including water chickweed and sea club-rush which are found along the northern edge near the river.

These areas of species-rich grassland are particularly important for pollinators, where ten species of bumblebee have been recorded in recent years; several butterfly species have also been recorded in close proximity to the site, including painted lady, purple hairstreak and common emerald. These grasslands provide vital foraging habitat for many bird species including barn owls which have been recently recorded nearby[10].

There are five further LWS, in the north-west of the Handbridge NP area, which contain important grassland habitats and species (Map 6). There are two cemeteries which have been designated as LWS (Overleigh Cemetery LWS and Handbridge Cemetery - Active Section LWS) for their semi-improved grassland habitats. There are many interesting species present at these sites including autumn hawkbit, germander speedwell, ribwort plantain, common knapweed, oxeye daisy, common bird's-foot-trefoil and biting stone-crop. Additionally at Overleigh Cemetery, which is very close to the River Dee, there are scattered native trees and some buildings which provide potential bat roosts.

The three remaining LWS with grassland habitats are also located alongside the River Dee SSSI. Styelane Croft LWS is an area of sloping grassland on the edge of the river, with one edge of the site bounded by a sandstone escarpment. The grassland at this site contains indicators of semi-improved conditions such as black medick, yarrow and autumn hawkbit. The Flintshire Riverside Link (Cycle Route 6 – River Dee) LWS is an important wildlife corridor running alongside the River Dee which connects a number of LWS in the area, including Edgar's Field and Earl's Eye and Handbridge Marsh.

The Riverside Link LWS is home to a diverse ground flora along the path edges which includes common knapweed, tansy, devil's-bit scabious and goat's-beard; in damper areas yellow iris, gypsywort, meadowsweet and purple-loosestrife are present, along with the locally scarce species thrift and bristly oxtongue. Thrift is generally associated with coastal habitats but can occur at inland marshes. Thrift is also present at Edgar's Field LWS, a public park with amenity grassland, occasional trees and scrub, which also forms part of a Regionally Important Geodiversity Site and was once a roman quarry.

There are two LWS which sit outside of the Handbridge NP area, on the south-eastern boundary, which are home to high distinctiveness grassland habitats. Firstly, Dee Escarpment LWS contains a tree-lined field of semi-improved grassland adjacent to the river, consisting of a range of grasses and herbs, and an adjoining area of species-rich grassland to the east with common bird's-foot trefoil, knapweed and meadow vetchling. Secondly, the two restored lagoons at Huntington Settlement Lagoons LWS are thriving, with many grassland species present including common sorrel, knapweed, yarrow, germander speedwell, common bird's-foot trefoil, selfheal and red fescue.

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. This vital habitat represents a large proportion of the priority habitats (PHI) recognised by Natural England within the Handbridge NP area, as shown on Map 3. There is a particular concentration of high distinctiveness

[10] NBN Atlas data, accessed January 2024.

woodlands in the west and south of the NP area, which are largely located within Chester Approach Wood LWS and in the areas running alongside the Overleigh and Handbridge cemeteries (Map 9).

Chester Approach Wood LWS is a large broadleaved woodland, forming the main approach to the Eaton Estate, with dry ditches and ponds throughout. This site is dominated by sycamore, ash, lime, pedunculate oak, elm and beech, with an understorey of hawthorn, holly, elder and hazel. Interestingly, this woodland appears on the Cheshire Tithe map c.1842 (labelled as plantation woodland), and the ground flora includes some ancient woodland indicators such as ramsons, wood sedge and bluebell, which suggests it could potentially be ancient in origin. High-quality woodlands such as these provide valuable habitat for many bird species including green woodpecker, waxwing and tawny owl which have been recently recorded in the area[11].

Handbridge Cemetery LWS is located on the site of a former sandstone quarry, with numerous rocky exposures, wooded patches and areas of grassland. The woodland at this LWS comprises a mix of native and exotic species; the native species include ash, beech, alder, horse chestnut, elder, holly and yew, and there are also lichens on the gravestones. On the opposite side of the A5104, lies The Dingle, Overleigh LWS, which is a steep-sided wooded valley located just outside the NP boundary dominated by sycamore, and with lime, beech and pedunculate oak also present. Both of these wildlife sites contain diverse ground floras, with the following species present at one or both sites: enchanter's nightshade, wood dock, wood avens, lord's-and-ladies, hart's tongue and broad buckler fern.

Dee Escarpment LWS also lies just outside the Handbridge NP area, to the south-east (Map 6). This LWS contains an area of semi-natural broadleaved woodland along the escarpment dominated by sycamore with ash, holly and hawthorn with ground flora including barren strawberry, bluebell, dog's mercury and wood anemone. The spur of woodland in the north running inland is also dominated by sycamore and has a ground flora rich in ancient woodland indicators such as bluebell, primrose, moschatel, wood anemone and wood avens.

There are several species generally associated with woodland habitats which have been recently recorded in the NP area, but not at the woodland sites detailed above. For instance, the BoCC red listed woodcock has been recorded in the southern part of Earl's Eye and Handbridge Marsh LWS, which does contain some woodland habitat[12]. Additionally hedgehogs (a highly threatened priority species) have been recorded at multiple locations, including Earl's Eye and Handbridge Marsh LWS, Styelane Croft LWS, Chester Approach Wood LWS and in the streets nearby Edgar's Field LWS. This species is usually associated with woodland edges and hedgerows as well as gardens in urban areas, and similarly to swifts, it is utilising the urban and semi-natural habitats present in the 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 including many birds and insects. Two traditional orchards were identified in and around the Handbridge NP area on Map 7, and both of these sites have been

[11] NBN Atlas data, accessed January 2024.
[12] NBN Atlas data, accessed January 2024.

identified as potential LWS (pLWS); pLWS are sites that are highly likely to be selected as LWS but have not yet been formally surveyed against the selection criteria.

Medium Distinctiveness Habitats

Woodland

Most of the woodlands in the Handbridge NP area have been classified as high distinctiveness habitat and were discussed in the previous section. The remaining woodlands have been classified as medium distinctiveness habitat and were identified using Natural's England PHI (Map 3), Land Cover data (Map 4) and/or aerial imagery. These woodlands mainly consist of small pockets which occur along the River Dee, as well as those extending northwards from Chester Approach Wood LWS (Map 3, 4 and 9).

Grassland

Species-rich grasslands are the fastest disappearing semi-natural habitat in the UK and losses across Cheshire are above the national average. Those areas of low-productivity grassland which are not designated (Map 6), have been classified as medium distinctiveness habitat on Map 9. These areas of grassland have been identified using Land Cover data (Map 4) and Agricultural Land Classification (i.e. Grade 4 only[13], Map 5), and subsequently refined using aerial imagery. It is advisable for surveys to be undertaken to ascertain the condition of these habitats, which is unfortunately beyond the scope of this report; it is possible that some areas could be species-rich and/or have locally or nationally rare species present, which could make them high distinctiveness habitats.

These grasslands provide important habitat for many species of wildlife including many birds, such as BoCC red listed linnet, and amber listed oystercatcher, redwing and kestrel, which have been recently recorded in the area and are associated with open habitats (e.g. grassland, farmland, wetlands). There are also recent records for mammals which can be associated with grassland habitats, including stoat and harvest mouse (a legally protected priority species)[14]. Additionally, where species-rich grasslands are located close to waterbodies, dragonflies and damselflies are likely to be present as these feed on other invertebrates but also require waterbodies to breed.

Field Ponds, Hedgerows and Scattered Trees

Fields ponds contribute to the permeability of the landscape for wildlife, and they are essential for the survival of aquatic invertebrates, riparian mammals and amphibians. Larger waterbodies are 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, because introduced fish can deplete the pond of invertebrate and amphibian larvae. Similar to field ponds, scattered farmland trees are fundamental to landscape permeability, particularly those adjacent to wide field margins or semi-natural grassland.

Hedgerows provide important corridors for foraging bats and farmland birds, small mammals, amphibians and many invertebrate species including pollinators. Hedgerows are rarely included in the habitat distinctiveness mapping as it is difficult to gauge the wildlife value of a hedge from aerial mapping; where trees have been allowed to grow out (standards), the habitat becomes more structurally diverse and has greater benefit to wildlife. The key ponds, hedgerows and drainage ditches

[13] Only Agricultural Land Classification Grades 4 and 5 are considered for distinctiveness mapping, because they are defined as poor quality agricultural land; this implies a low intensity form of land management and/or agriculture which is likely to be beneficial to local wildlife.
[14] NBN Atlas data, accessed January 2024.

within the Handbridge NP area have been highlighted as habitats of medium distinctiveness in Map 9 and should always be retained and buffered where possible when land is developed.

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 CWaC, this study has identified a number of indicative wildlife corridors (Map 10) with ecological connectivity throughout and beyond the Neighbourhood Planning area. The National Habitat Network map and Ecological Network for CWaC provide a broad map of the networks across England and Cheshire West and Chester respectively. The wildlife corridors identified in Map 10 supplement these, while also being more specific to ecological networks that are important for conserving and enhancing biodiversity at a local scale. The CWaC Ecological Network mapping and the wildlife corridor (Map 10) maps both identify primary habitat or core areas for biodiversity within the Handbridge NP area, discussed in detail below.

The identified corridors link areas of valuable habitat with good connectivity, including the River Dee and its associated wetland and grassland habitats, as well as extensive areas of woodland. 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 as they run through intensively farmed land. High inputs of agrochemicals associated with intensively managed land 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 improve the ecological connectivity of the hedgerow network.

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

The indicative boundary of the Handbridge NP area wildlife corridor network is shown in Map 10. However, this is likely to require refinement should detailed survey work be undertaken. 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 9. 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 Handbridge NP area 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 via Section 106 Agreements or Planning Conditions), through government incentives such as Environmental Land Management schemes (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[15]. **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.**

In addition to the wildlife corridor network, this study has identified other areas of high or medium habitat distinctiveness (Map 9) 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 woodlands.

The network of field boundary hedgerows and agricultural drainage ditches within the Handbridge NP 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 the ecological network, however, collectively these hedgerows

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

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 (and difficult to achieve) 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 Handbridge NP, 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 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 Biodiversity Net Gain. 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 10 incorporate all of the locally designated Local Wildlife Sites for Cheshire West and Chester 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 6) should be designated if the selection criteria[16] 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'[17] 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.
- 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 be achieved

[16] 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]

[17] 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.

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.

- 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 (IINS; listed on Schedule 9 of the WACA) should be prevented from further colonising semi-natural habitats in the area. Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to plant, release or otherwise cause these species to grow and spread in the wild. NBN Atlas returned multiple confirmed records of INNS in and around

the Handbridge NP area, including Chinese mitten crabs, and riparian plant species Himalayan balsam, giant hogweed and Japanese knotweed which spread particularly effectively along watercourses. These species colonise rapidly and will outcompete native flora and fauna and any existing or future occurrences of INNS should be managed by a specialist contractor to control their spread.

- It is also likely that other Schedule 9 INNPS (invasive non-native plant species) 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[18].

Woodland expansion is desirable to buffer existing woodlands in the Handbridge NP area. New plantations that are isolated from existing woodland are of limited value due to slow colonisation by woodland species, whereas planting woodland 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).

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

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 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 more urbanised areas. 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 policies ENV 4 and DM 44 of the CWAC Local Plan. 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 Handbridge's NP 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 9) 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 the Handbridge NP area is predominantly associated with the River Dee, including the river habitat itself, as well as the wetland, grassland and woodland habitats which lie on the natural floodplain. 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, grassland and woodland habitats throughout and beyond the Handbridge NP 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 10) is incorporated into the Handbridge NP 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. The wildlife corridor network includes a buffer zone of up to 15 metres in places to protect the notable habitats shown in Map 9. If new 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 to protect from development. Following adoption of the Handbridge NP, 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 the natural assets in the Handbridge NP area is of the utmost importance for nature conservation, ecosystem services and for the enjoyment of future generations. Therefore, future development in the Handbridge NP area 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.