Protecting and Enhancing Ince's Natural Environment

Cheshire Wildlife Trust

February 2021

Introduction

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

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

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

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

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

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

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

Objectives of the study

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

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

Background – Ecological Networks

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

The natural environment is fundamental to our well-being, health and economy, and provides us with a range of ecosystem services such as food, water, materials, flood defences and carbon sequestration. Biodiversity underpins most, if not all of them. The pressures on our land and water are likely to continue to increase and we need to learn how to manage these resources in ways 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 semi-natural habitats have become increasingly fragmented and isolated, leading to declines in the provision of some ecosystem services, and losses to species populations. Ecological networks or Nature Recovery Networks have become widely recognised as an effective way to conserve wildlife in environments that have become fragmented by human activities.

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

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

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

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

- *Buffer zones*
    - These zones closely surround core areas, restoration areas, 'stepping stones' and ecological corridors, and protect them from adverse impacts from the wider environment.

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

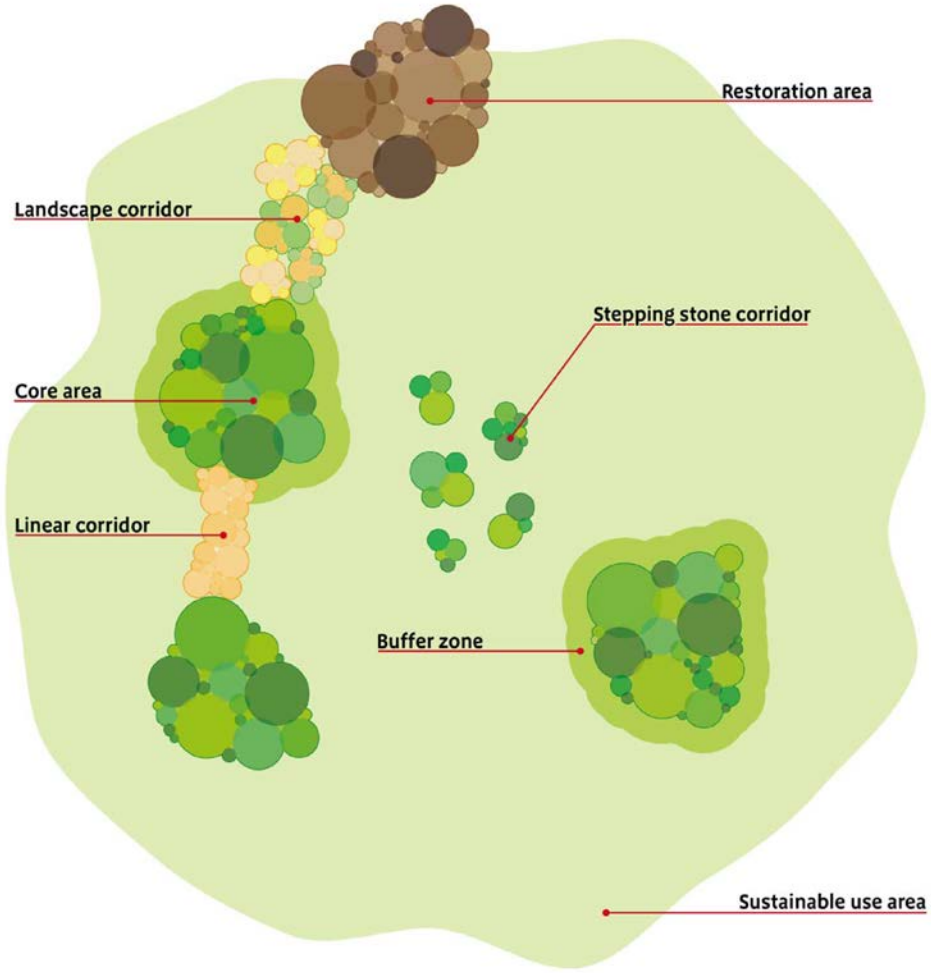


Figure 1. The components of ecological networks (Making Space for Nature report)

The principles of creating coherent ecological networks are embedded within many planning and policy documents. The Natural Environment White Paper 'The Natural Choice', which was published in 2011, reiterated a Government commitment to move from no-net biodiversity loss to biodiversity net-gain, by recognising the importance of supporting healthy, well-functioning ecosystems and establishing more coherent ecological networks.

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

- Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation.

- Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

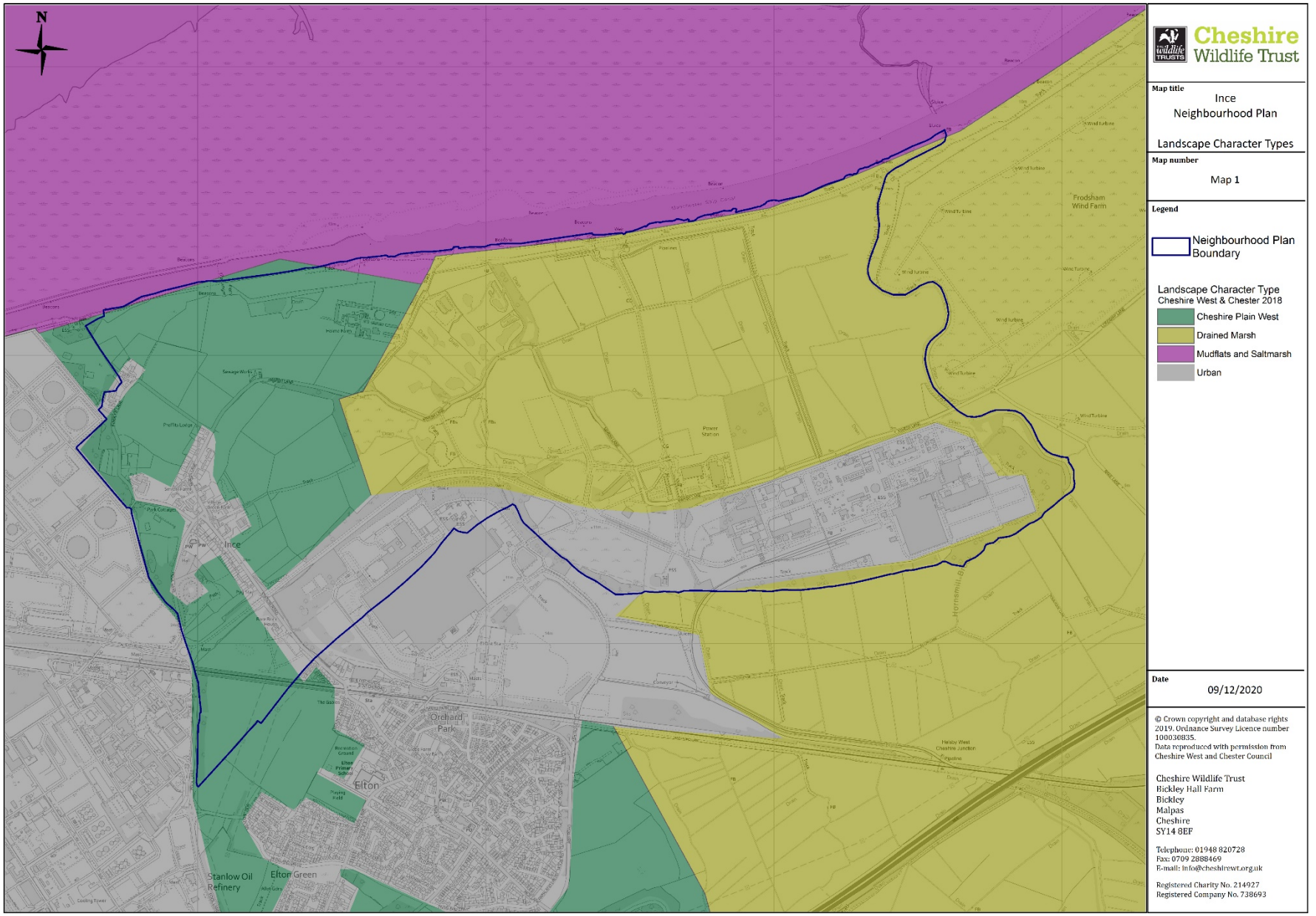
- Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

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

Landscape Character Assessment for the Cheshire region

On a national level, the Parish of Ince lies within National Character Area (NCA) 61 the Shropshire, Cheshire and Staffordshire Plain and extends to NCA 62 the Cheshire Sandstone Ridge; a discontinuous ridge rising sharply from the Cheshire Plain. Locally, Cheshire West and Chester Council have produced a Landscape Strategy that 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 been categorised into different LCTs. This Landscape Strategy is intended to be used as a basis for planning and the creation of future landscape strategies, as well as raising public awareness of landscape character and creating a sense of place.

Map 1: Landscape Character Typology



The Landscape Character Assessment (Map 1) identifies two recognisable landscape character types (LCTs) within the Ince Neighbourhood Planning Area, namely: Cheshire Plain West and River Valley. Each LCT is subdivided into smaller Landscape Character Areas (LCAs); details of the relevant LCTs and LCAs are given below:

LCT 9 Cheshire Plain West

General Description

The large majority of the Ince Neighbourhood Planning area falls within the Cheshire Plain West landscape character area. This character type dominates a large proportion of Cheshire West and Chester and as such, it has been broken down into four character areas which reflect the subtle variations that exist in the landscape. It extends from Stanlow and Helsby in the north to Threapwood at the south-westerly tip of the borough. It bounds the northern and eastern fringes of the City of Chester and is framed by the Sandstone Fringe to the east. Its northern portion, from around Beeston, is bisected along a southeast to north-west line by the linear Gowy Valley LCA. This landscape type is defined by its flat or very gentle topography enclosed by hedgerows and standard trees in small-medium enclosures that follow an irregular and semi-regular field pattern. It is differentiated from the Cheshire Plain East by the physical barrier of the Sandstone Ridge. However, in many respects there are shared characteristics and features between the Cheshire Plain East and Cheshire Plain West landscape character types. Woodland cover is very low, with small blocks scattered intermittently across the area. The field patterns comprise a mix of ancient enclosure and post medieval improvement. Settlement is predominantly dispersed and has a low density

LCA 9a Dunham to Tarvin Plain

The Dunham to Tarvin Plain Land Character Area lies across the north-eastern parts of the Cheshire Plain West Land Character Type. It includes the urban fringe south of Stanlow, Elton to the north and the free-standing rural settlements of Tarvin, Ashton Hayes and Great Barrow to the south.

Key Landscape Characteristics

- A broad, gently shelving and mostly flat plain landscape characterised by hedges and hedgerow trees providing limited vistas;
- Wide areas of improved grassland for dairy farming and fodder crops;
- Limited woodland, confined to isolated coverts and copses, although hedgerow oaks are important elements of the landscape;
- Historic medieval field patterns and increases in tree cover are still found around smaller settlements;
- Extensive network of small field ponds which are generally inconspicuous in the landscape;
- Larger settlements punctuate the plain where historic form has often been lost within areas of 20th century and later housing development, e.g. at Tarvin;
- Elsewhere, settlement is scattered across the plain in small linear hamlets and freestanding farmsteads;
- Petro-chemical and Industrial development outside the character area is prominent across the north of the LCA;
- The Sandstone Ridge presents a more elevated skyline to the east of the LCA;

- Where hedgerows and tree networks remain, the area can present some degree of limited enclosure due to an absence of elevation and viewpoints;
- Some loss of field boundaries diminishes this enclosure where some arable farming has been established, and;
- Significant transport infrastructure dissects the area and diminishes tranquillity and rurality, particularly across the north of the LCA.

Key Factors for Landscape Change

Past Change

- Agricultural intensification with enlargement of fields and loss of hedgerow boundaries (oak trees left 'in-field') with loss of historic field pattern;
- Under management and deterioration of some small farm woodlands;
- A shift from pasture grazing with increasing areas being cultivated for arable cropping, silage or feed crops including cereals and maize;
- Loss of historic parkland to recreational use (such as golf courses) or farmland;
- Loss of unimproved grassland;
- Loss of ridge and furrow;
- Limited management of field ponds has resulted in some silting up and drying out due to natural processes of vegetation succession and overshadowing from trees;
- Prominent transport and energy transfer infrastructure;
- Erosion of local distinctiveness in larger settlements, and;
- Increased visual intrusion and loss of tranquillity from industrial and transport infrastructure to the north, including the M56.

Potential Future Change and Key Issues Affecting LCA 9a: Dunham to Tarvin Plain

- Farm diversification including introduction of riding schools, stables and paddocks;
- Pressure for Solar PV farms;
- Pressure for residential/employment development, for example at Tarvin and Ashton Hayes;
- Pressure for conversion of farm buildings for other uses including residential, business and industrial use, with erection of modern portal sheds to replace the lost space;
- Degradation of vernacular building style through alteration, and;
- Pressure for built development around settlements and associated with the main M56 corridor at Junction 14 that passes through the landscape.

Landscape Management Guidelines

The overall management strategy for this landscape should be to conserve and restore the historic field pattern of hawthorn hedgerows and hedgerow oak trees, enhance the grassland and small woodland network, and limit the influence of urban and industrial development to the north on the rural character of the plain.

1. Maintain an intact hedgerow network through management of hedges and ensuring a young stock of hedgerow trees.
2. Avoid over-intensive flail mowing or ploughing too close to hedgerow boundaries – protect saplings and encourage trees to grow up at intervals along the hedgerows.

3. Consider opportunities to replace hedgerows where they have been lost, utilising appropriate species of hawthorn and oak standards.
4. Conserve the remaining hedgerow trees and seek opportunities to encourage a new generation of hedgerow trees to increase their presence in the landscape.
5. Manage existing small woodlands and coverts to ensure a diverse canopy structure and rich ground flora.
6. Consider opportunities to plant simple, small pockets of trees and small blocks of woodland in field corners to ensure the continuation of these declining characteristic features.
7. Conserve the small to medium scale pattern of fields, particularly early field systems that provide historic continuity in the landscape, particularly around settlements.
8. Maintain the pastoral character of the landscape and reduce soil erosion by minimising exposure of bare soil (e.g. as a result of increased crop growing).
9. Increase the biodiversity of intensively managed grassland and arable land – create and link buffer strips along linear features such as hedgerows to create a continuous network of wildlife corridors.
10. Encourage sympathetic integration of horse paddocks through maintenance of hedgerow field boundaries, rather than sub-division of fields and erection of high visibility fencing - ensure the land use does not break up traditional field patterns.
11. Encourage sympathetic integration of golf courses through maintenance of hedgerow field boundaries and existing woodland rather than planting of alien ornamental species - ensure the land use does not break up traditional field patterns.
12. Conserve the remnant fragments of unimproved grassland that is of nature conservation value and consider opportunities to extend / recreate this habitat.
13. Encourage the retention and management of field ponds and brooks that are of wildlife importance as well as contributing to the diversity of the landscape.
14. Conserve the remaining areas of ridge and furrow by restricting use of fields to pasture.
15. Conserve the sense of peace and quiet away from the main roads, and conserve the rural character of the lanes. Avoid features that 'suburbanise' the landscape such as kerbs and large-scale signage.
16. Conserve distant views to the Welsh hills and take account of views from the Sandstone Fringe and Sandstone Ridge when planning for change.

LCT 4 Drained Marsh

General Description

This landscape character type is located on former saltmarsh or mudflats adjacent to the Dee and Mersey estuaries. It is drained by inter-connecting networks of drainage channels arranged in a regular, often linear pattern, giving the impression of an open unenclosed landscape. This character type is significantly reduced in size; it formerly covered a much greater area. Today the reclaimed land is mainly used as grazing land, with some arable crops. The flat, open nature of this landscape often provides expansive views of the surrounding area including the Dee and Mersey estuaries, which are intrinsic to its existence and character. The close proximity to industrial sites and the open views of these areas also has a significant impact.

LCA 4a: Frodsham, Helsby and Lordship Marshes

Key Landscape Characteristics

- A flat, low lying landscape (up to 13m AOD) of former mudflats and saltmarsh alongside the Mersey Estuary, contrasting with surrounding built development (previously designated as an Area of Significant Local Environmental Value – ASLEV);
- Strong interconnection and intervisibility with LCT 16 Mudflats and Saltmarsh to the north;
- Reclaimed as part of the opening of the Manchester Ship Canal in 1894, with further drainage following the Second World War to produce productive farmland;
- The flat landscape is etched with a distinctive pattern of straight drainage ditches which delineates the field pattern of planned 19th century enclosure;
- There is an extensive ditch system, a stronghold for water voles in the borough;
- Incomplete hedgerow boundaries provide partial enclosure along some field boundaries;
- Land to the north of Lordship Lane is used as a deposit ground for dredgings from the Manchester Ship Canal and supports a range of wetland habitats;
- Land to the south of Lordship Lane is in agricultural use – a mixture of pasture and arable with incomplete thorn hedgerows;
- Canal dredging grounds defined by high earth embankments;
- The area is of local, national and international importance for its breeding, wintering and passage birds which add movement to the landscape;
- An isolated, bleak and open landscape - settlement is limited to isolated farms linked by rough tracks between ditches;
- A system of surfaced tracks and bridleways serve the area, including National Cycle Route (NCR) 5;
- The M56 and railway utilise the flat landscape, crossing the marsh at the base of the Helsby to Frodsham Undulating Enclosed Farmland that gently rises to the south;
- Running parallel to the M56 area a number of large scale overhead power lines which are dominant features in this flat landscape;
- The flat, open landscape provides clear views to and from the adjacent Frodsham Sandstone Ridge and Helsby Hill;
- Industrial works at Ince Marshes, and at Halton and Rocksavage in Runcorn, form a backdrop in views to the west and east respectively, and;
- Permitted windfarm will become dominant creating a ‘windfarm landscape’ when constructed.

Key Factors for Landscape Change

Past Change

- Reduction of cultivated areas and increase in set-aside;
- Loss of wet grassland communities;
- Reduction in dredging lagoons with loss of wildlife interest;
- Increase in horse grazing around peripheral areas with associated changes to field boundaries and use of informal animal shelters, sheds etc.;
- Loss and fragmentation of hedgerows, and decline in fencing condition;
- Ditches are eutrophic as a result of nutrient run-off due to the intensive agricultural use of the land;
- Approved development of the Ince Resource Recovery Park on Ince Marshes;

- Small consented developments including model aircraft strip and Hoverforce (leisure hovercraft and segways);

Potential Future Change and Key Issues Affecting LCA 4a: Frodsham, Helsby and Lordship Marshes

- Continued dredging and dumping is likely to continue to affect the landscape of the marshes;
- Pressure for increased transport infrastructure / improvements;
- Encroachment by industrial development and infrastructure: pressure for expansion of industry on the marshes, including renewable energy development;
- Visual impact of prominent development and traffic could be reduced by tree planting but this would change the open character of the area;
- Cost of artificial drainage could lead to withdrawal of pumping and loss/under-management of historic drainage systems and change in water levels on farmland;
- Climate change could lead to increased flooding affecting the use and management of the land;
- Improved drainage measures could lead to local modification of the field systems hydrological characteristics and may threaten paleo-environmental remains, and;
- When constructed, the Frodsham Wind Farm will dominate the landscape, reduce the openness of the marshes and create a 'windfarm landscape'.

Landscape Management Guidelines

The overall management strategy for this landscape should be to enhance and restore the condition of habitats and features of the marshes whilst safeguarding its open character.

1. Encourage recreational development as a means of managing some of the more derelict and degraded areas of the landscape. Encourage use of the area by walkers, cyclists, rowers and horse riders (including provision of picnic facilities and viewing opportunities) whilst safeguarding the nature conservation interest of the area, particularly its importance for birds.
2. Maintain the distinctive field pattern that reveals the planned 19th century enclosure of the marsh.
3. Seek to restore thorn hedgerows that are falling into decline.
4. Maintain and ecologically enhance the ditch system, riparian habitats and land supporting breeding, over wintering and passage birds. Seek opportunities to re-create habitats such as species rich grassland and reed beds.
5. Increase the biodiversity of intensively managed grassland and arable land – create and link buffer strips along linear features such as hedgerows and ditches to create a continuous network of wildlife corridors.
6. Improve water quality by encouraging less-intensive agricultural practices to reduce fertiliser run-off and nutrient levels in the ditches.
7. Encourage restoration of derelict industrial land including re-creation of salt-marsh and reintroduction of grazing to maintain the open character of the marsh.
8. Consider opportunities to create views across the Mersey Estuary.
9. Conserve the 'remote' character of the marshes away from the main transport corridor of the M56.
10. Retain the open character of the marsh by restricting planting to low growing scrubby species typically found in the local landscape, taking into account the importance of the area for

ground nesting birds and wintering/passage birds. Woodland planting /screening using tall or ornamental species is not appropriate in the open marsh.

LCT16 Mudflats and Saltmarsh

General Description

This is a landscape character type of large tracts of intertidal mudflats and saltmarsh within the Dee and Mersey Estuaries, which partially define the northern fringes of CWaC. Both are habitats of international importance for birds. Estuary marsh within Cheshire is used for wildfowling and stock grazing. It has a very open aspect and due to spring tide flooding, trees are totally absent. These are flat, open areas which afford views of the estuarine landscape and beyond e.g. to the Clwydian Hills and Liverpool.

LCA 16a: Stanlow & Ince Banks

Key Landscape Characteristics

- A flat, open and expansive landscape of mudflats, sandflats and saltmarsh alongside the Mersey Estuary;
- Strong interconnection and intervisibility with LCT 4 Drained Marsh to the south;
- A naturalistic landscape with winding channels forming intricate patterns in the salt marsh;
- Excavation of the Manchester Ship Canal in the later 19th century resulted in the creation of the Stanlow and Ince Banks, an area of embanked land at the southern edge of the mudflats;
- A dynamic landscape composed of rising and falling tides, constantly shifting sediments and flocks of over-wintering birds;
- Recognised as an internationally important site for wildfowl (protected by SSSI, SPA and Ramsar designations);
- A remote and peaceful landscape of international importance for nature conservation and relatively undisturbed by humans. The area of saltmarsh between Stanlow Point in the west and Frodsham Score in the east is grazed;
- No public access to this remote area, although there is a landing stage on the canal at Frodsham Score to the east of the area;
- Devoid of settlement;
- Long, uninterrupted views and large skies;
- Industrial works at Ince Marshes, Halton and Rocksavage form a striking backdrop;
- Panoramic views across the estuary from Helsby Hill (above Helsby) and Beacon Hill (above Frodsham);

Key Factors for Landscape Change

Past Change

- A highly dynamic landscape where natural tidal forces and some ship canal management alters the locally detailed, visual mosaic of the Banks, but maintains their balance of features.

Potential Future Change and Key Issues Affecting LCA 16a: Stanlow and Ince Banks

- Activities or development in adjacent areas could result in siltation and deposition on intertidal habitats;

- Activities or development in adjacent areas could impact on the visual amenity of the LCA;
- Recreational use of the landscape and surroundings could result in physical damage through abrasion caused by the wash from boats or by trampling from walkers;
- Industrial, transport and recreational activities in adjacent areas may result in noise and visual disturbance;
- In this heavily industrialised area, pollution arising upstream, or seepage from old landfill sites, could adversely affect the habitats of the Banks;
- The large numbers of outfalls around the Mersey Estuary could increase nutrient and organic loading in the Estuary that may affect habitats of the Stanlow and Ince Banks;
- Hydro dynamic changes in the estuaries will lead to changes in the pattern of erosion and deposition;
- Climate change – sandbanks, mudflats and salt marshes are vulnerable to sea level rise due to increased storm frequency, particularly where they lie in front of flood defences;
- Susceptible to artificial enrichment by sewage pollution, discharges from agriculture, industry and urban areas, and;
- Alien species.

Landscape Management Guidelines

The overall management objective for this landscape should be to conserve the naturalistic and dynamic qualities of this landscape, relatively undisturbed by humans.

1. Conserve and enhance coastal and estuarine habitats.
2. Monitor the area to ensure activities or developments in adjacent areas do not result in siltation and deposition on the inter-tidal habitats of the Frodsham Shore.
3. Ensure abrasion caused by the wash from boats does not affect the inter-tidal habitats and saltmarsh in this area.
4. Ensure pollution arising upstream, or seepage from old landfill sites, does not adversely affect the habitats of the Stanlow and Ince Banks.
5. Minimise nutrient and organic loading in the Estuary upstream.
6. Conserve the remote character of the area.

Natural Area

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

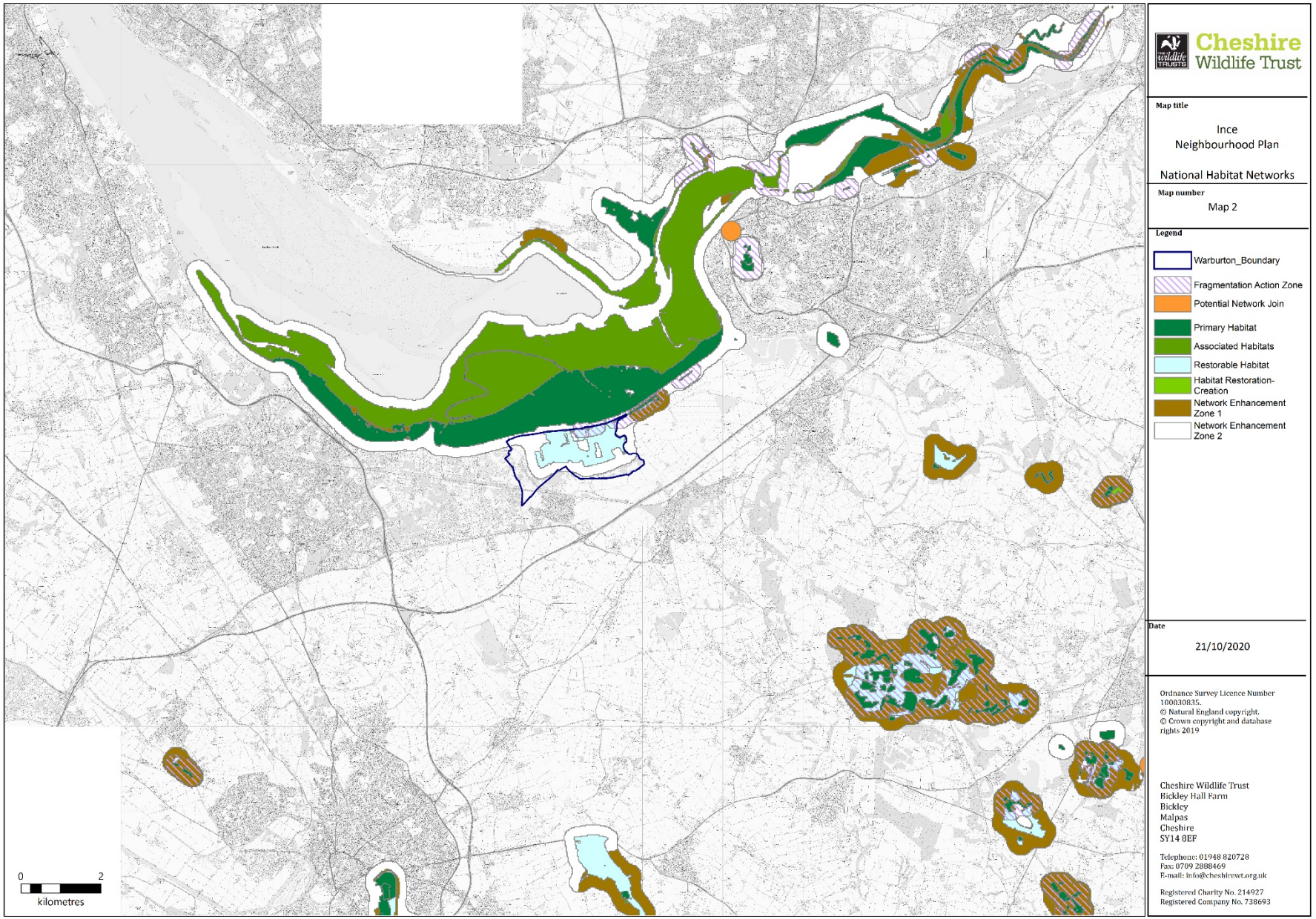
Most of Cheshire, the northern half of Shropshire and part of northwest Staffordshire sit within the *Meres and Mosses Natural Area*. This is an expansive area of gently rolling agricultural plain, which at the end of the last ice age was largely underwater. Although the vast area of water eventually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

Habitat Network Mapping Project

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

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

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



National Habitat Network Mapping has highlighted a large area of floodplain grazing marsh within the Parish Boundary as Restorable Habitat. This is contained within Frodsham and Helsby and Ince Marshes LWS and covers a large extent of the parish. The restorable habitat within the marshes links to primary saltmarsh habitats along the River Mersey Estuary Corridor in the wider landscape to the north of the parish boundary. These habitats are buffered by Network Enhancement Zones, where opportunities to enhance the habitat network should be prioritised. This could be through improving or restoring degraded habitat or through expanding existing habitat.

Ecological Network for Cheshire West & Chester – Draft 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 created. The ecological network is not intended to restrict development or growth but to provide a tool with which to inform and guide development and support a 'net gain' in biodiversity.

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

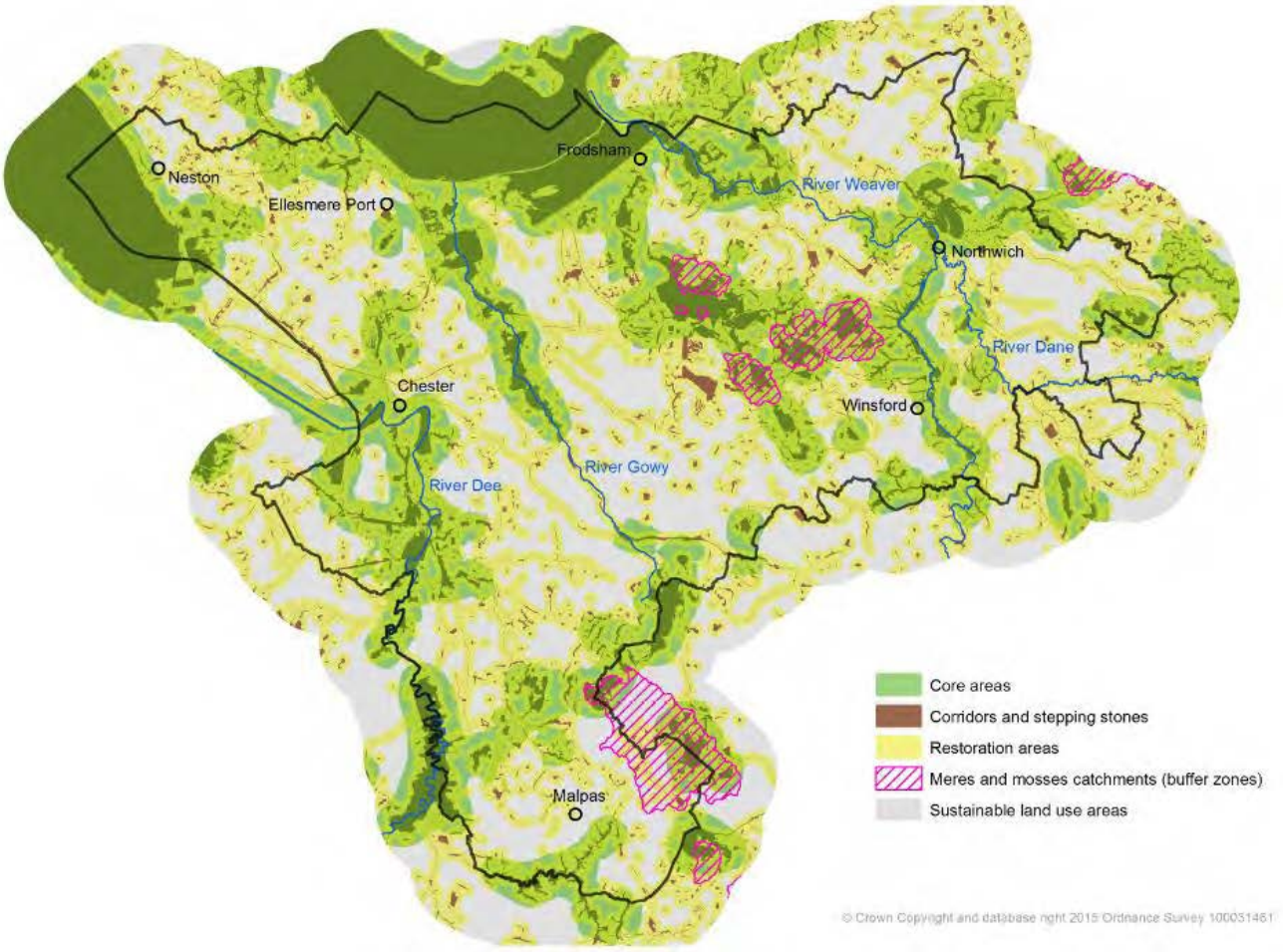


Figure 2. Ecological Network for Cheshire West & Chester map

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

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

Natural Course Ecological Network Tool 2020

As part of Natural Course, an EU funded LIFE Integrated Project that tackles big environmental challenges, Natural England has created an ecological network tool that models wetland and woodland habitat networks across Cheshire and South Lancashire. It highlights priorities for biodiversity and nature-based solutions for Natural Course objectives to improve and protect the water quality of the North West and provides an evidence base for Local Nature Recovery Strategies. Figure 4 shows primary wetland and woodland habitats and action zones highlighted within the Ince Neighbourhood Plan Area.

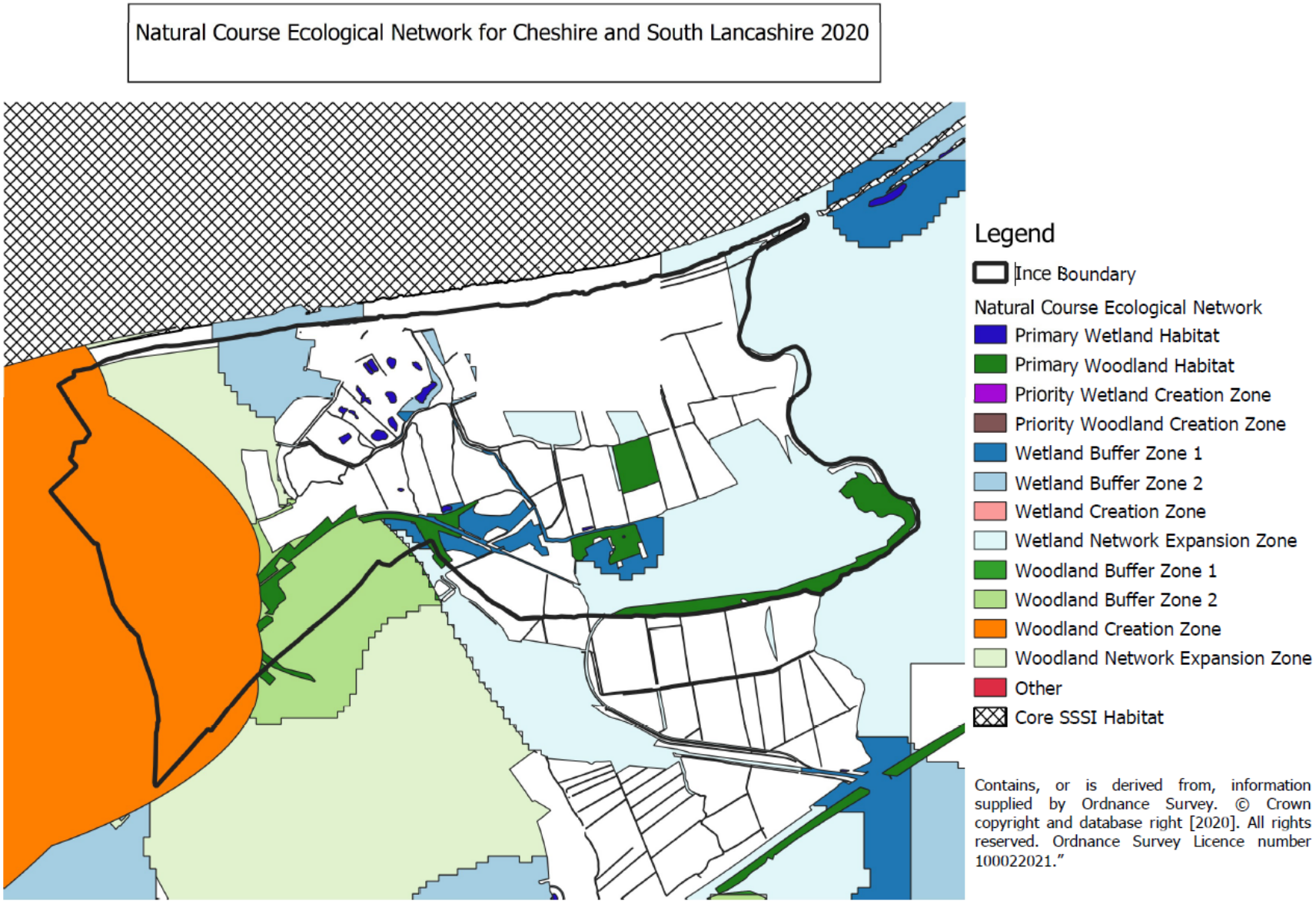


Figure 4. Map of Wetland and Woodland Habitat Networks identified in Ince by Natural England's Ecological Network Tool 2020

Methodology

Creating a Habitat Distinctiveness Map

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

Habitat type band	Distinctiveness	Broad habitat type covered	Colour on map
High or Very high ecological value	High or Very High	• Designated nature conservation sites (statutory and non-statutory) • Endangered or Critical European red List habitats • Priority habitat* as defined in section 41 of the NERC Act • '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 • Includes 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 structure which are un-vegetated, unsealed surface or built linear features of very low biodiversity value.	n/a
*with the exception of arable field margins			

Habitat type bands (Defra July 2019)

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

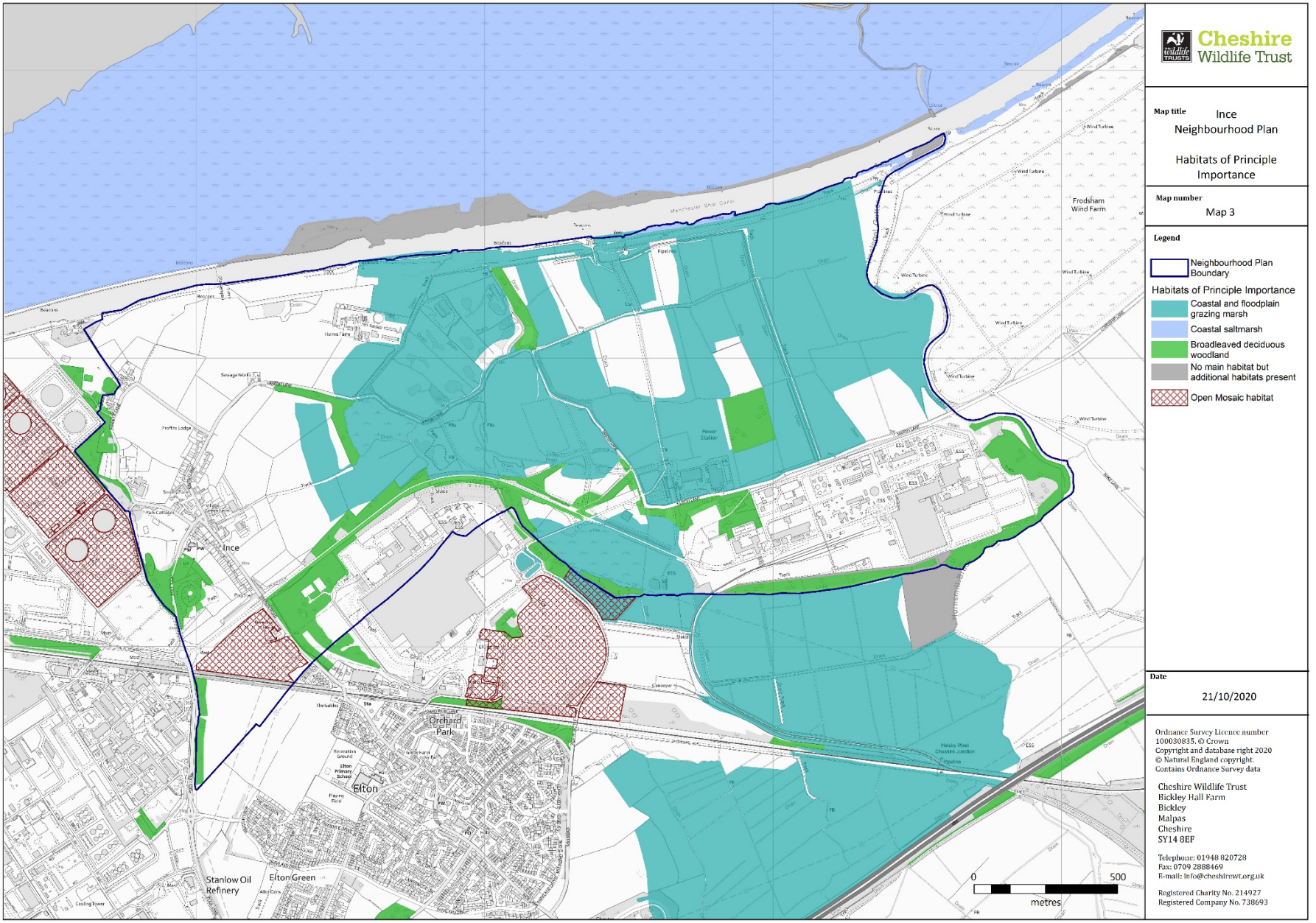
2. Aerial photography (Microsoft Bing ™ Imagery, Google Earth) was used to validate the results by eye.

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

4. Information from recent planning applications in Ince Parish were researched and species records have been incorporated where appropriate. Ecological records were also obtained (where available) from, the NBN (National Biodiversity Network) Atlas and the Woodland Trust's Ancient Tree Inventory website. Tree records for Ince Parish from a local recorder have also been included and mapped where they meet the Woodland Trust Ancient, Veteran or Notable tree criteria.

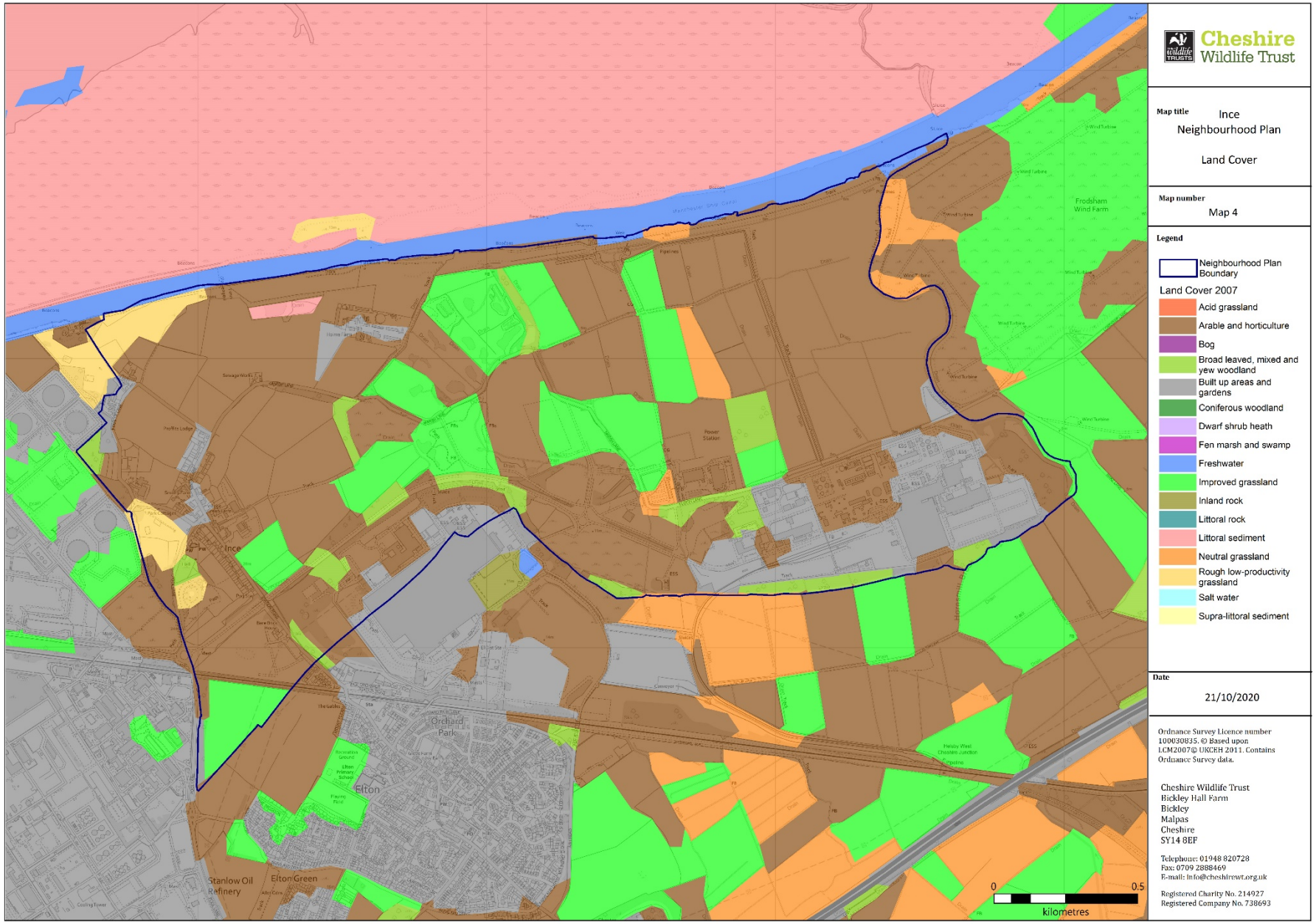
Mapping

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

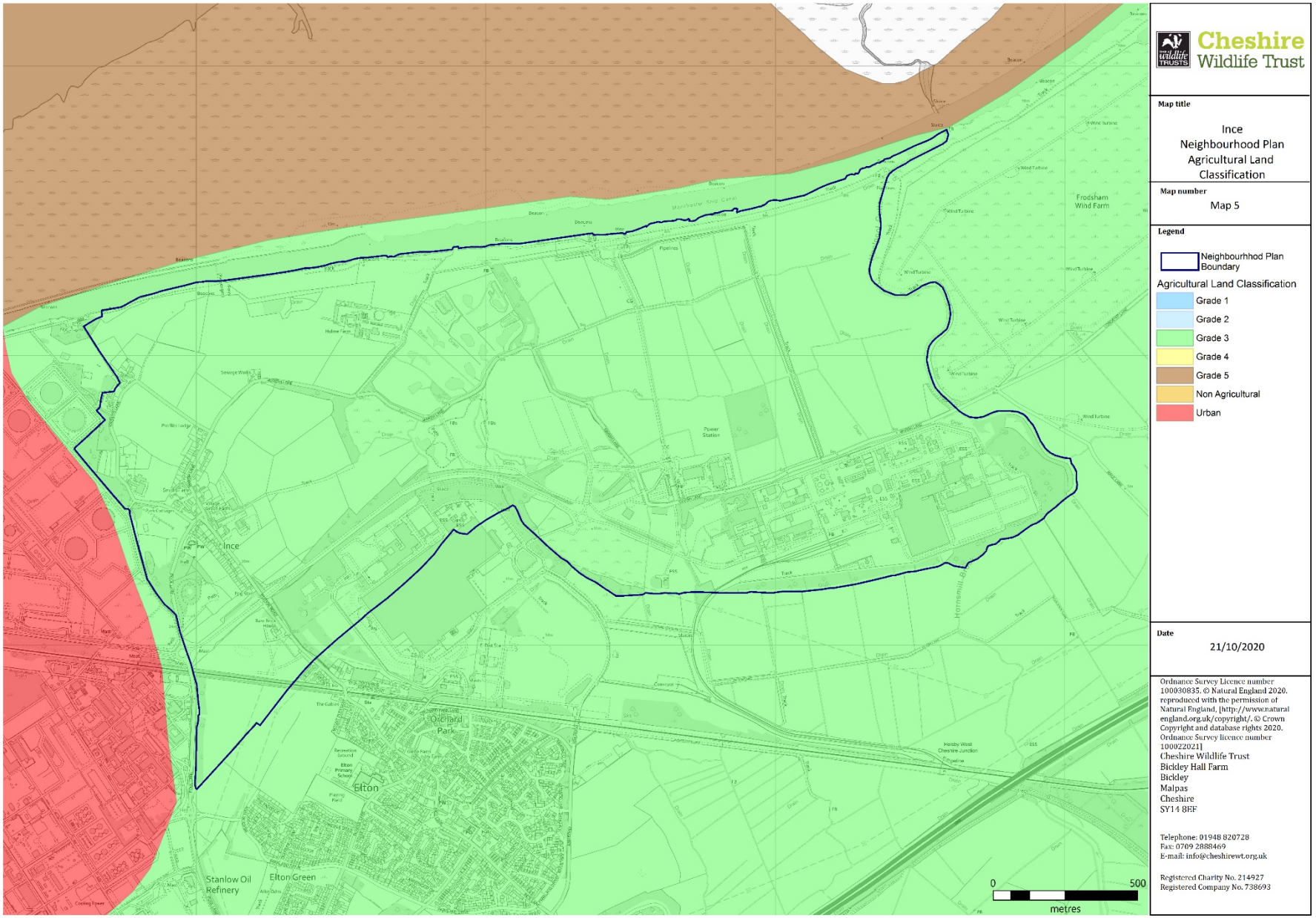


Map 4: Land Cover Map 2007

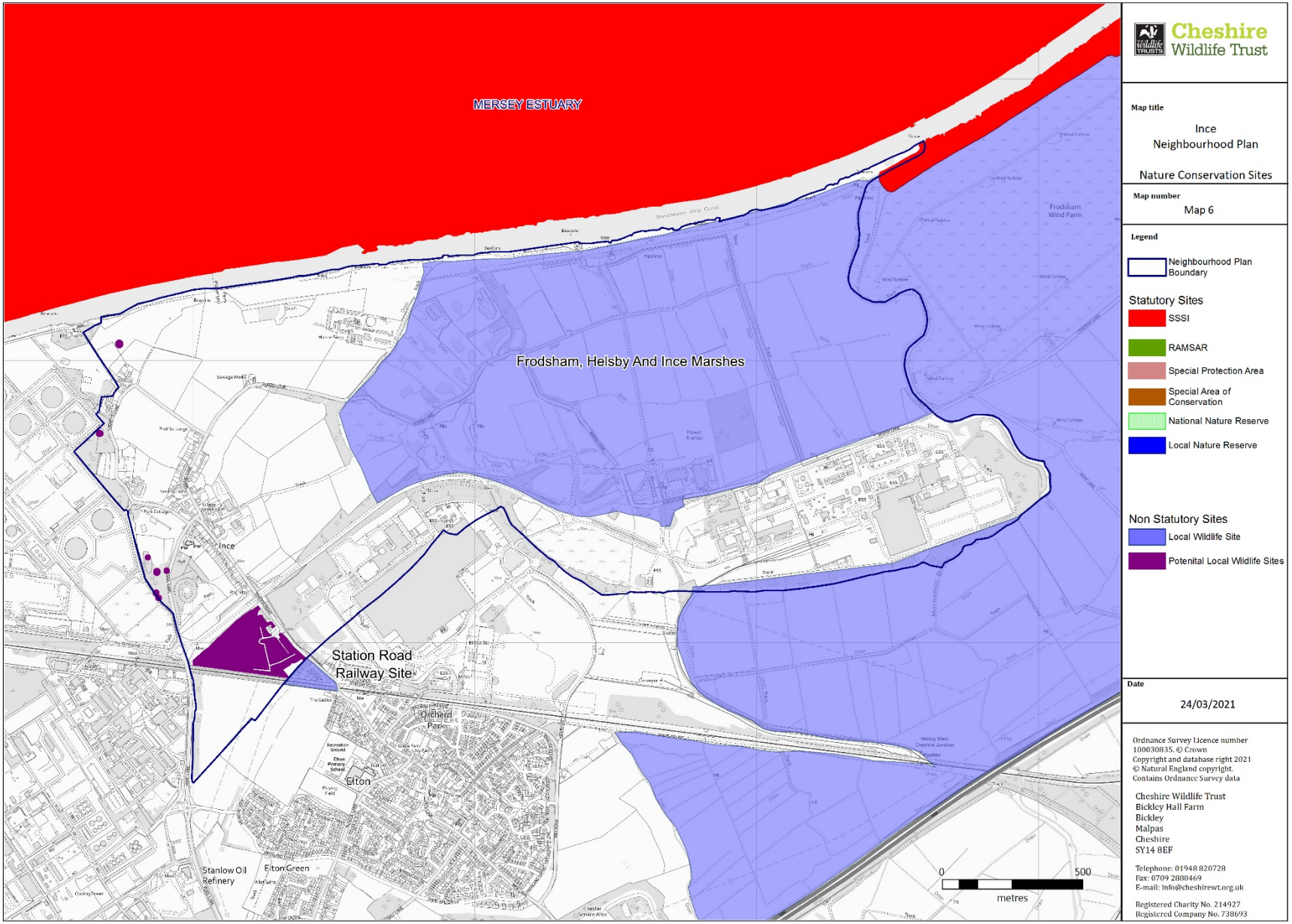
(LCM2007) parcel-based classification of satellite image data showing land cover for the entire United Kingdom derived from a computer classification of satellite scenes obtained mainly from the Landsat sensor



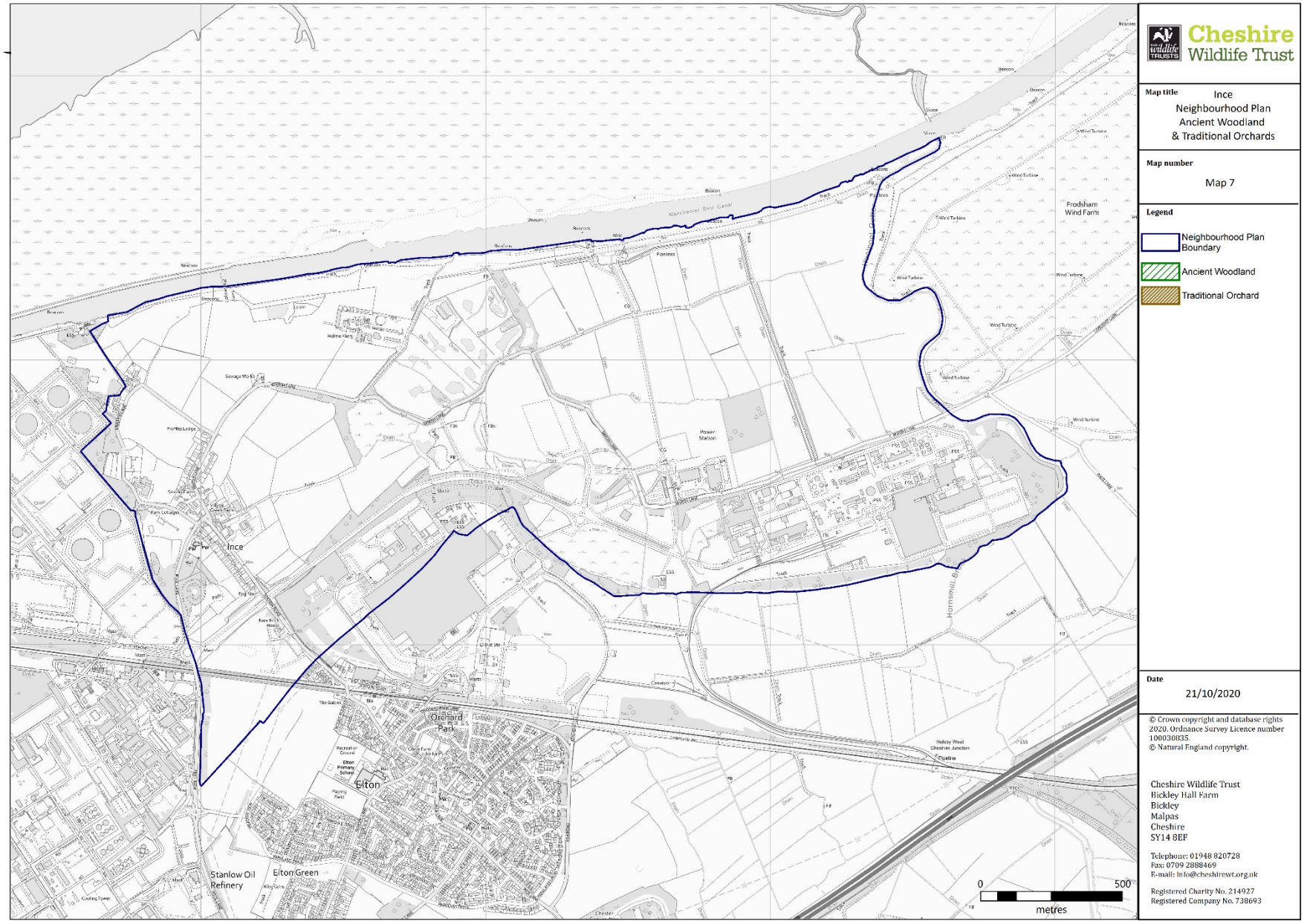
Map 5: Agricultural Land Grading – Natural England 2013



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

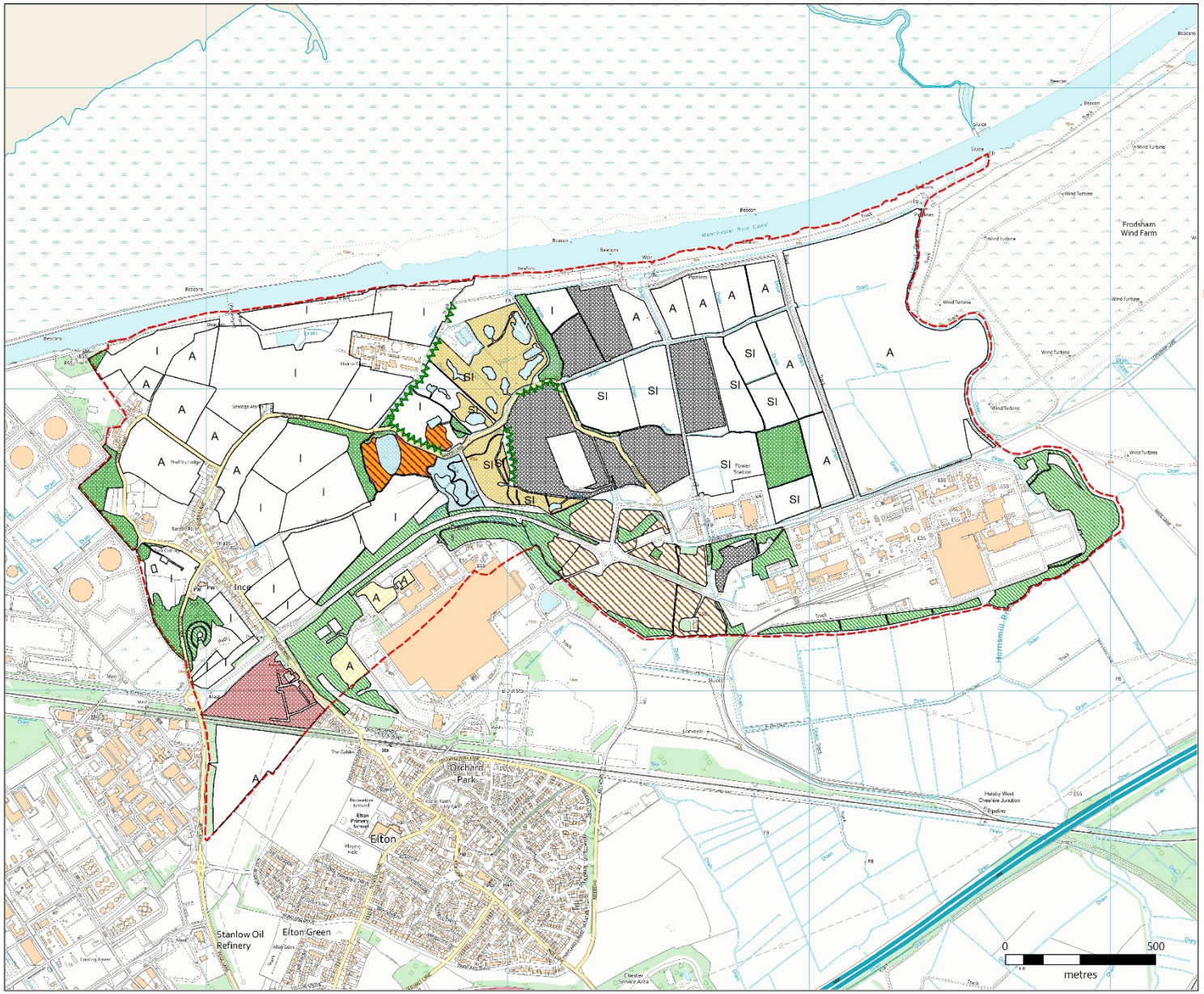


Map 7: Ancient woodland and traditional orchards – Natural England 2018



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

Map 9: Phase 1 Habitat Survey



Cheshire Wildlife Trust

Map title

Ince Phase 1 Habitats

Map number

Map 9

Legend

Ince Neighbourhood Plan Boundary

Phase 1 Habitats

- Broadleaved woodland -semi-natural
- Broadleaved woodland -plantation
- I Improved grassland
- SI Neutral grassland -semi-improved
- SI Semi-improved grassland -species poor
- Marshy grassland
- A Arable
- Tall Ruderal
- Swamp
- Standing water
- Other exposed rock (open mosaic habitat)
- Amenity grassland
- Bare ground
- Native mix planted hedgerows

Date

30/03/2021

Cheshire Wildlife Trust
Bickley Hall Farm
Bickley
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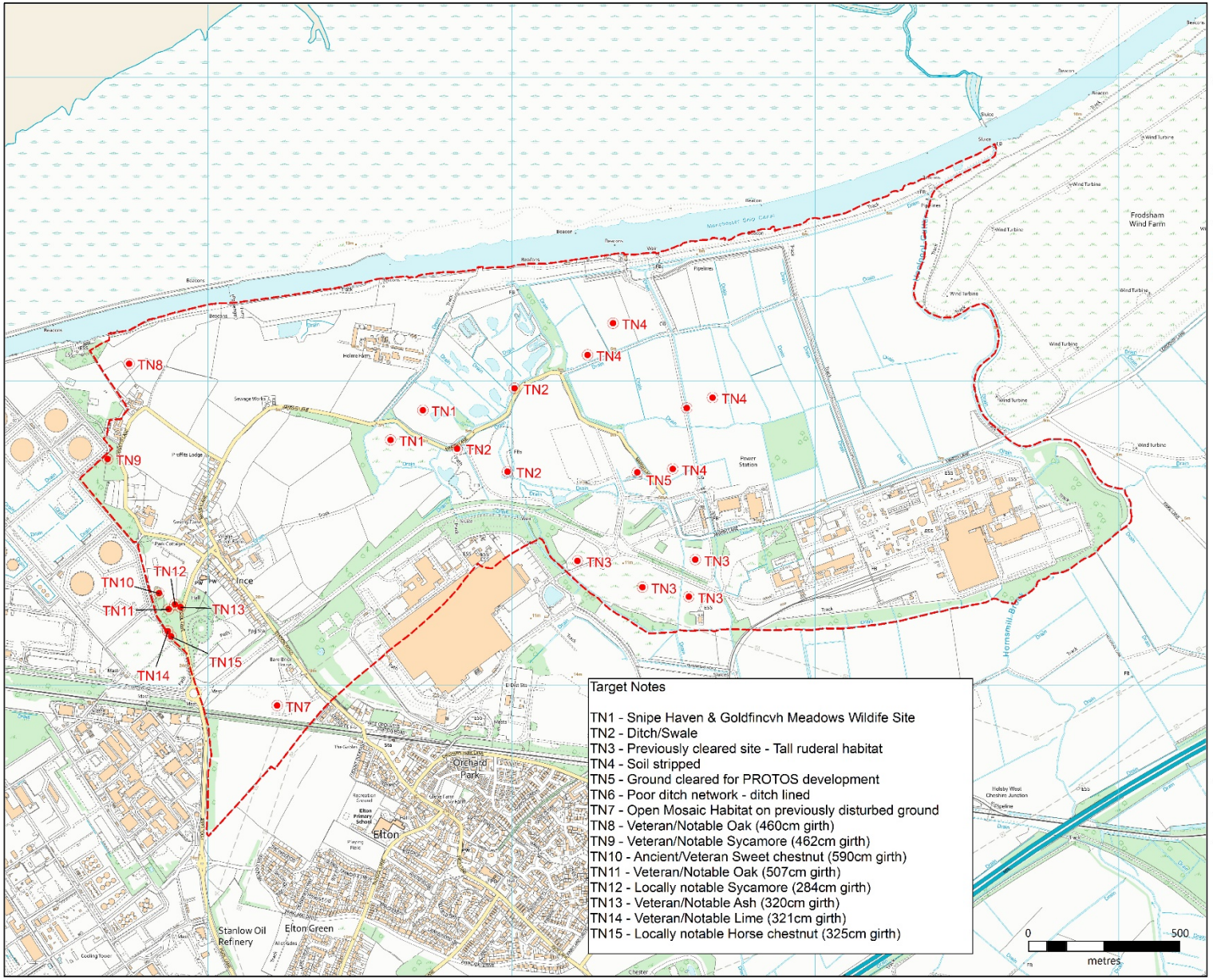
Cheshire
SY14 8EF
Telephone: 01948 820728
E-mail: info@cheshirewt.org.uk

Registered Charity No. 214927
Registered Company No. 738693

Map 10: Phase 1 Survey Target Notes



Cheshire Wildlife Trust

Map title

Ince Phase 1
Target Notes

Map number

Map 10

Legend

Ince Neighbourhood Plan Boundary

Target Notes

Date

24/03/2021

Cheshire Wildlife Trust
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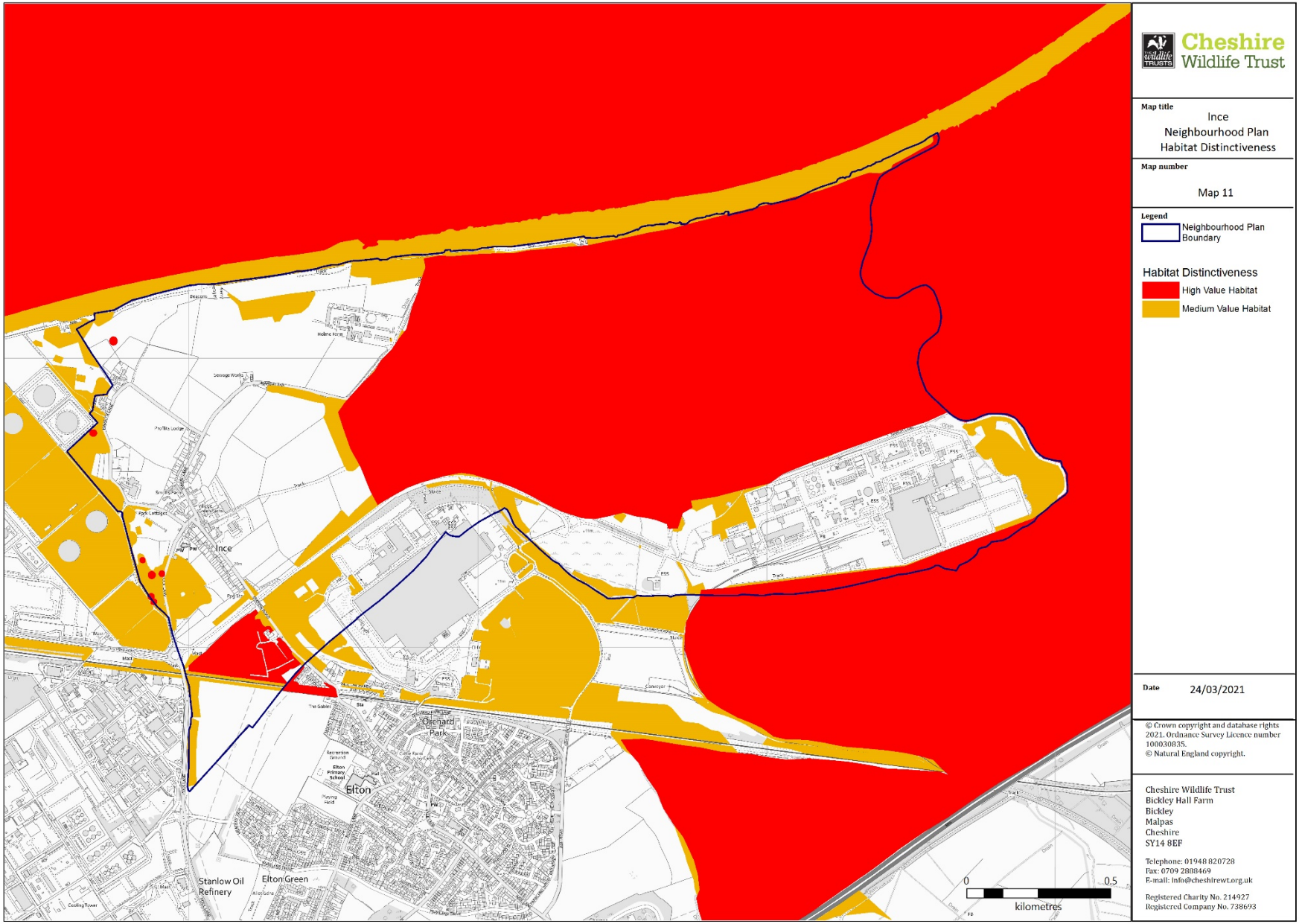
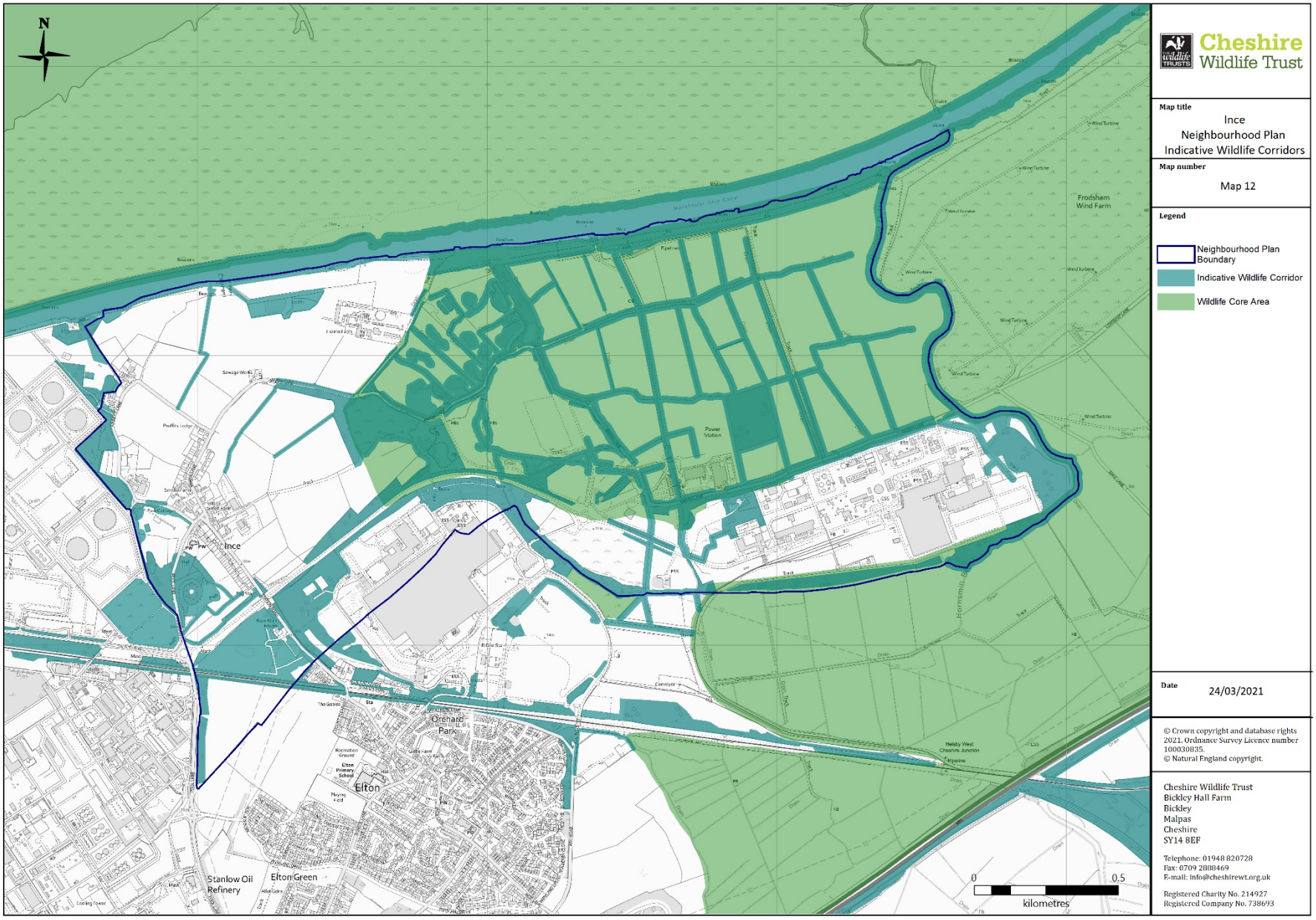
Map 11: Habitat Distinctiveness



Map 12: Indicative Wildlife Corridors



Results and Discussion

High Distinctiveness Habitat

Areas of high distinctiveness habitat are shown on Map 9 (displayed as red) and provide important wildlife habitats. These are natural or semi-natural habitats, which are of significant or critical importance to wildlife due to their high biodiversity and ecological values. They should be a priority for conservation and appropriately managed in order to maintain or enhance their ecological features.

Frodsham and Helsby and Ince Marshes LWS

An extensive area of over 1000 ha of coastal floodplain and grazing marsh, formerly designated as a SSSI, extends from Frodsham to Ince. Alongside this habitat, the LWS is also designated for its ornithological importance, its grassland and wetland habitats and its diverse flora and invertebrate interest. The site also features scattered blocks and linear strips of semi-natural broadleaved deciduous woodland.

Wetland and Wading Birds

The Mersey Estuary SPA and Ramsar site lies immediately adjacent to the Local Wildlife Site, north of the Manchester Ship Canal, just outside the Ince Boundary. The Mersey Estuary qualifies as an SPA for its ornithological species assemblages of international importance (notably assemblages of red listed[1] golden plover, lapwing, curlew, dunlin and black-tailed godwit). There is highly likely to be a functional link between the Mersey Estuary SPA and Ince Marshes LWS; with large populations of waterfowl that use the Estuary also using suitable habitats within the LWS.

Comprehensive records for Ince Marshes include Wildlife and Countryside Act Schedule 1 and UK red listed wader species with dunlin, redshank, black-tailed godwit, and curlew recorded in significant numbers. The breeding population of Curlew has displayed a worrying decline of their breeding population across the UK and Europe, as well as more widely across their global breeding range. Consequently, they are of international importance and their IUCN status is near threatened.

Grasslands

The majority of the Frodsham and Ince and Helsby Marshes LWS within the parish is mapped as priority coastal and floodplain grazing marsh on Map 3. Wet grasslands like these are important for red listed wetland birds and breeding waders such as the aforementioned curlew and black-tailed godwit, which have been recorded within the parish.

Floodplain grazing marsh is periodically inundated pasture or meadow, often flooded in winter and drier through summer, although many now lie behind flood defences. This habitat is frequently associated with ditches that are especially rich in plants and invertebrates, and remain wet all year round. Grass snake are also known to favour damp habitats such as those associated with grazing marshes.

[1] Birds of Conservation Concern 2015

Much of the UK's grazing marsh has been lost in the past century, via drainage and conversion of fields for silage or cereal production, over-deepening of ditches, and inevitable eutrophication from fertiliser run-off. Only a small proportion of the remaining floodplain grassland is unimproved, supporting a high diversity of native plant species.

There are also areas of semi-improved neutral grassland and marshy grassland identified on the Phase 1 Habitat Map within Ince Park Ecological Mitigation Area. These are discussed below.

Ince Park Ecological Mitigation Areas

Two Ecological Mitigation Areas have been created within Ince Park as part of the Protos development, either side of Marsh lane. The Ecological Areas comprise semi-improved neutral grassland, marshy grassland, swamp, agricultural fields and a few small pockets of deciduous broadleaved woodland. A series of ponds, ditches and scrapes have also been created to support wetland birds and water vole populations.

The areas are managed for their important wetland habitat features and associated botanical diversity, as well as; breeding and wintering wetland and farmland birds, water voles, barn owl, brown hare and bats. Recent records for the site include a comprehensive list of Wildlife and Countryside Act Schedule 1 and UK red listed birds, including farmland species such as; linnet, song thrush, starling and cuckoo, as well as wading birds such as black-tailed godwit and curlew. Water voles have recently been recorded using the ditches, whilst noctule, soprano and other pipistrelle bats have been recorded foraging along the hedgerows and over the waterbodies. Breeding barn owl have also been recorded within the installed nest boxes. There are no recent records for brown hare from the monitoring surveys despite the presence of suitable habitat for them within the site.

Marshy grassland and swamp are nationally important habitats due to their continued decline. The pockets of marshy grassland and swamp, along with wetland scrapes, ponds, drainage ditches and damper areas are likely to support a good diversity of plants and invertebrate populations including dragonflies and damselflies.

Black Poplar was also planted as part of the mitigation works for the Protos development. Despite being an important part of our culture for centuries, black poplars have declined massively through the UK's landscape and these trees are now a rarity both nationally and in Cheshire.

<u>Station Road Railway Site LWS</u>

Station Road Railway Site LWS is located along the railway sidings at Station Road, outside the south eastern edge of the parish boundary. When last surveyed in 2010, the site formerly comprised open mosaic habitat on previously developed land with piles of rubble, tall ruderal vegetation, expanses of bare ground interspersed with small patches of grassland. Part of the site was developed as a housing estate in 2011 and the habitat has since been lost. A population of common lizard, identified on the site as part of the ecological surveys, was translocated from the development area and moved to mitigation habitat north of the LWS boundary. If still extant, the remaining population potentially persists within retained habitat in the LWS along the railway sidings.

Immediately adjacent to Station Road LWS, between Station Road and Pool Lane (Map 3 and TN 7 on Map 10), is a large expanse of open mosaic habitat immediately adjacent the LWS that offers suitable habitat for reptiles such as common lizard. This site is selected as a potential Local Wildlife Site.

Open mosaic habitats on previously developed land are mainly found in urban and formerly industrial areas. Typically, a site will show evidence of previous disturbance, either through soil being removed or severely modified by previous use, or the addition of materials such as industrial spoil. The resulting variety in underlying ground conditions creates a patchwork of varied habitats, which can include areas of bare ground, flower rich grassland, short ephemeral habitat, heathland, scrub and successional woodland. The individual habitats may not be notable in their own right but in combination, they can create areas of high value for biodiversity and be rich in wildlife. Another key feature is the unusual groups of plants that are unique to these habitats and often include rare plant species. This mosaic of habitats in close proximity means they are particularly important to a large number of rare invertebrates, especially bees, wasps and beetles. Open mosaic habitats can also offer important habitat for birds that forage in grasslands and scrub as well as important assemblages of amphibians and reptiles.

The parcel of open mosaic habitat is immediately adjacent to the Station Road Railway Site LWS, which has a known population of common lizard. Although there are no records within the open mosaic habitat, due to its proximity, it is likely to offer important habitat used by this population.

Ancient, Veteran and Notable Trees

A number of Ancient, Veteran and Notable trees have been recorded within Old Ince Hall Parkland within the western extent of the parish. These trees are mapped as Target notes on map 10 and Ancient and veteran specimens are selected as potential Local Wildlife Sites on Map 6. Species include Lime, Sycamore, Horse Chestnut, Sweet Chestnut, Ash and Oak. Ancient trees may have a cultural or landscape value and are also important for the species they support, particularly bryophytes, invertebrates, lichens and fungi. Their crevices can also support bat populations. Oak trees support more biodiversity than any other native tree species in the UK and ancient oaks are of particular importance. One ancient oak can support as much diversity as up to 1000 standard oak trees.

Medium Distinctiveness Habitat

Areas of medium distinctiveness habitat are shown on Map 9 (displayed as orange) and provide important wildlife habitats in their own right, as well as acting as ecological stepping stones and corridors. Some of the habitats may have potentially been undervalued during the walkover Phase 1 habitat survey and a detailed ecological survey may indicate they should be mapped as 'medium value' or Priority habitat. Conversely, there may be areas of medium value habitat that have been overvalued; in which case these areas should be removed from the habitat distinctiveness map.

1. Woodland

The blocks and linear strips of woodland scattered throughout the parish comprise a mixture of pre-existing semi-natural woodland and those planted with native species to create new woodland as mitigation for industrial development within Ince Park. As the newer woodlands mature and develop

they provide habitats for wildlife, as well as connecting and buffering pre-existing woodlands. They also provide important ecosystem services, such as locking up carbon and reducing air pollution.

There are woodlands within the parish that may be ancient in origin but are not included on the ancient woodland inventory (Map 7). All the woodlands within the parish boundary that are mapped as broadleaved woodlands - semi-natural on the Phase 1 Habitats Map (Map 9) appear on old tithe maps for Ince dating back to 1892, indicating that they may be ancient in origin. These potential ancient woodlands (unless they are within the Frodsham and Ince and Helsby Marshes LWS where they are mapped as "high distinctiveness") have been mapped as medium distinctiveness due to a lack of detailed survey information or as a result of their small size (the Ancient Woodland Inventory has a minimum size threshold of 2 ha).

Most of Cheshire's woodland habitat has been lost; the percentage of woodland covering the county is now considered to be around 5%. As a result, the remaining areas of woodland are highly valuable and these long established habitats are considered irreplaceable. Ancient woodlands are our richest land-based habitat for biodiversity and are home to more threatened plants and animals than any other. If ancient in origin, the woodlands discussed above are likely to support important assemblages of woodland birds, including red listed woodland birds such as song and mistle thrush which have been recorded in the area in recent years. Song thrush are also Species of Principal Importance for conservation in England (S41 species)[2]. These woodlands are also highly likely to support several species of bat; which roost in trees, forage for insect prey and commute along the network of woodland edges, hedgerows and watercourses. Noctule, common pipistrelle and soprano pipistrelle have all been recorded within the parish.

2. Scattered Trees and Hedgerows

As part of the mitigation works for the Protos development, hedgerows with a mix of native species (including field maple, hazel, hawthorn, blackthorn, holly, guelder rose, field rose and dog rose) have been planted within the Ecological Mitigation Areas. These have been marked on the Phase 1 Habitat Map (Map 9).

The hedgerows throughout the rest of the parish are predominantly hawthorn and many are species poor and gappy in nature. Several hedgerows support mature trees that have been allowed to grow out, including mature oaks which sustain a highly diverse species assemblage. There are also several scattered field trees across the parish, which also include a number of mature oaks. Large stands of mature trees are also present, particularly along the fringe of the estuary in the north west of the parish.

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

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

3. Field Ponds

Fields ponds contribute to the permeability of the landscape for wildlife and provide important habitats for aquatic invertebrates as well as breeding habitat for amphibians including protected species such as great crested newt. Larger waterbodies are likely to be valuable for both breeding and overwintering birds as well as foraging bats and should always be retained and enhanced where possible when land is subject to development.

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 or reproduce. In conjunction with the results of the Natural Course Ecological Network for Cheshire and South Lancashire (Natural England 2020); National Habitat Network Mapping (Natural England 2018); and the Cheshire West and Chester Ecological Network Map (Local Authority 2016) this study has identified a number of wildlife corridors (shown in Map 11) with ecological connectivity throughout and beyond the Neighbourhood Planning area. The Natural Course Ecological Network, National Habitat Network map and the Cheshire West and Chester Ecological Network provide a broad map of the networks across England and the borough respectively. The wildlife corridors identified in Map 10 supplement these, while also being more specific to ecological networks that are important for conserving and enhancing biodiversity at a local scale. The indicative wildlife corridors within this report (Map 12) identify “primary habitat” or “core areas” for biodiversity across Ince Marshes, which is selected as part of Frodsham and Ince and Helsby Marshes LWS, and the areas of Open Mosaic Habitat in the South west of Ince.

The corridors that have been identified link valuable areas of habitat including woodlands, grasslands and riparian habitat. The series of ponds, wetland scrapes and ditches along with the pockets of marshy grassland and swamp within the Frodsham Helsby and Ince Marsh Local Wildlife Site support nationally and internationally important bird assemblages, populations of water voles and are also likely to support a diverse array of wetland flora and invertebrates. Tithe maps indicate that the semi-natural blocks of broadleaved woodland within the corridor are likely to be ancient in origin; if this is the case they would be considered irreplaceable habitat, demonstrating good existing connectivity through these areas. The corridors do however cross roads in some locations where connectivity will not be maintained, although the maximum gap is less than 30 metres enabling some more mobile species to cross. Some of the hedgerows within the identified corridors may not be species rich and some run through intensively farmed land; meaning likely high inputs of agrochemicals could potentially be affecting the species composition, especially at ground level. Increasing hedgerow diversity and changing management, as well as creating a buffer strip of rough grassland along its edge would help bolster ecological connectivity in this area. Similarly, some sections of the corridors run along watercourses immediately adjacent intensively farmed agricultural land. Introducing buffers in these locations would be beneficial.

Protection of the Wildlife Corridor and Other High and Medium Distinctiveness Habitats

Map 12 incorporates an indicative boundary for the wildlife corridor network however this may require refinement following detailed survey work. Corridors should be wide enough to protect the valuable habitats identified in Map 9; for this reason a 15 metre buffer zone has been incorporated around any high distinctiveness habitat. This buffer is necessary to protect vulnerable habitat from the effect of encroachment, resulting from external pressures such as light pollution, ground water pollution, predation by domestic pets and invasive alien or garden species.

Any potential development proposals should ensure high distinctiveness habitats, wildlife corridors or core areas for wildlife are avoided. Any development adjacent to high or medium distinctiveness habitats, wildlife corridors or core areas for wildlife should incorporate substantial mitigation to lessen impacts on wildlife while seeking to enhance their overall condition to achieve a net-gain for biodiversity, for example:

- 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.
- Given the functional link between the Mersey Estuary SPA and Ince Marshes LWS which support large populations of waterfowl and wading birds, measures to improve wetland bird habitat should be incorporated into any scheme that could impact the wetland bird population within the parish.
- Embedding out of bounds areas and dark corridors along watercourses, woodland edges and hedgerows into the environmental design of a scheme.
- Incorporating directional, low spillage (bat sensitive) lighting should be used on the outside of buildings or in car-parks and along pathways and watercourses.
- Installing hedgehog-friendly fencing as standard, purposely designed to allow the passage of hedgehogs from one area to another.
- Creating south facing banks or bunds for reptiles, butterflies and other invertebrates and the incorporation of bee bricks and bat/bird boxes into the design of buildings, ideally made of highly durable material such as woodcrete.
- Directing surface drainage water from developed areas away from sensitive locations, in particular habitats that are dependent on the hydrology of a site such as coastal and floodplain grazing marshes, due to the risk of pollution.
- Incorporating Sustainable Drainage Schemes (SuDS) which are useful in providing additional wildlife habitat and preventing flooding, although they may still hold polluted water so should not drain directly into existing wildlife habitat unless the filtration system is extensive. If designed well some SuDS can also enhance the biodiversity value of a site post-development.

Not all sections of the wildlife corridor provide high quality habitat and measures to enhance these habitats and improve its ability to support the movement of species is a priority[3]. Enhancement of the corridor may be facilitated by opportunities arising through the planning process (e.g. Section 106 agreements, planning conditions and biodiversity offsetting/compensation) or through the aspirations of the local community working with local landowners.

[3] Refer to Recommendations section

In addition to the ‘wildlife corridor network’ this study has identified additional areas of high or medium ‘habitat distinctiveness’ (Map 9) which, although outside the wildlife corridor network, may nevertheless provide important wildlife habitats and, acting as ecological stepping stones, facilitate the movement of more mobile species throughout the wider landscape. These areas comprise semi-natural grassland, ponds and semi-natural woodlands.

The network of field boundary hedgerows and farm drainage ditches within Ince provide connectivity between high distinctiveness areas. 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 parish’s ecological network, however, collectively these hedgerows provide linear connectivity through the neighbourhood and beyond. In addition to their intrinsic ecological value a good hedgerow network also adds to the landscape character value.

Old meadows supporting species-rich neutral or marshy semi-natural grassland such as the areas of grazing marsh are the fastest disappearing habitats in the UK. These grasslands are particularly important for pollinating insects, insectivorous 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 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, compensation may be required if these areas are lost to development, assuming avoidance and mitigation strategies have been applied in line with the guidance set out in the National Planning Policy Framework.

Conclusion

This study has highlighted that the important wildlife habitat in Ince is mainly associated with the floodplain grazing marsh and related habitats along the Manchester Ship Canal and within Ince Marshes. The Cheshire region has large areas that were once naturally inundated by both sea and fresh water. The demands of industry coupled with the perceived need for improvement of agricultural land, has led to the drainage of non-coastal areas along rivers, and sea defence works for land gain have caused further loss of coastal grazing marsh. Wetland fields and their associated ponds and scrapes are an important remnant of this former landscape, rich in plants and insects and supporting breeding waders and large assemblages of overwintering wetland birds. As well as numerous Section 41 and red listed Birds of Conservation Concern, the European curlew is also present, which is listed as 'near threatened' by the IUCN and is of international importance. Given the importance of the region for birds, particular consideration should be given to changes in management or development of agricultural fields that are not considered 'priority' habitats in themselves, but may support important bird assemblages.

Floodplain grazing marsh is included as a new priority habitat within DEFRA's new 'net gain' policy. 'Floodplain Wetland Mosaic' (FWM) including some or all of the following river and coastal floodplain habitats is defined as:

a) 'Mosaics of priority wetland habitats with natural / near-natural hydrological function and/or water quality;
b) Floodplain areas providing important refuges for wetland wildlife whose natural habitats have been lost including:
    i. Land with breeding waders and/or wintering waterfowl, or other terrestrial wetland priority species or assemblages.
    ii. Species currently dependent on ditches and other seasonal or permanent standing water within, or surrounding the land.'

The priority habitat woodlands, network of ditches, ponds, scrapes, wet grasslands, open mosaic habitats and newly planted species rich hedgerows, in combination with the existing hedgerows and trees, provide an important network that facilitates the movement of wildlife throughout the parish. The woodland and semi-natural grassland habitats are relatively few, highlighting the importance of those that are present. By attributing habitat distinctiveness values to all land parcels in the Neighbourhood Plan area the study has provided important evidence that should be taken into consideration when planning decisions are made. However, we strongly recommend that further (phase 1) habitat survey work is undertaken at the appropriate time of year, in particular to verify that 'medium value' habitats have not been over or more importantly under-valued.

Most notably the study has highlighted a 'wildlife corridor network' which provides ecological connectivity between woodland, grassland and wetland habitats within and beyond the Neighbourhood Planning area. The wildlife corridor network is likely to support a wide range of species including numerous birds, mammals (including priority bat species), plants and invertebrates that are in decline both locally and nationally. These species depend on the semi-natural habitats highlighted in the report.

We recommend that the corridor network shown in Map 12 is identified in the Neighbourhood Plan and protected from development, so that the guidance relating to ecological networks set out in the NPPF (paragraphs 170d, 171, 174a, 174b, and footnote 57) may be implemented at a local level. The wildlife corridor network includes a buffer zone of up to 15 m in places to protect the notable habitats shown in Map 9. If new areas of high distinctiveness habitat are subsequently identified, these should also be protected by a 15 m buffer zone exempt from development.

Proposals for development which affect areas of high or medium habitat distinctiveness identified on map 11 will require comprehensive surveys to fully evaluate biodiversity present at the site. Proposals should demonstrate a 'net gain in biodiversity' in accordance with local and national planning policies. This will involve applying the mitigation hierarchy and retaining the most valuable areas on site. To achieve 'net gain' further measures such as habitat enhancement or creation may be required. Achieving net gain should be demonstrated through the use of the recommended biodiversity metric.

The principal scheme design should seek to retain and enhance the important semi-natural habitats and key features for biodiversity, whilst 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 be supported with additional measures such as a sensitive lighting design, the installation of durable bat/bird boxes and ensuring surface water is directed away from sensitive areas and into SUDS schemes.

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

Recommendations for Improving and Protecting Habitat in order to Create a Coherent Ecological Network

Following adoption of the neighbourhood plan, Cheshire Wildlife Trust advises that the following recommendations should be actioned:

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

There is currently good connectivity between the habitats within the Core Areas for Wildlife and the floodplain, wetland, open mosaic and priority woodland habitats within. To increase connectivity across the whole of the parish it is recommended that the ecological value of the drainage ditches and hedgerows is enhanced to extend the corridors and join them together. To achieve this, hedgerows could be cut less frequently, perhaps on rotation, additional trees planted and hedgerows layed to increase diversity and some of the hedgerow trees not flailed and allowed to grow up as standards. Semi-natural woodlands could be left to expand and regenerate naturally, increasing the woodland coverage and connectivity across the neighbourhood while also providing biodiversity benefits from 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 highlighted as 'wildlife corridor network' in Map 12 incorporate two locally designated sites for nature conservation (Station Road Railway Line LWS and Frodsham Helsby and Ince Marshes LWS) however, it is likely that other land would also meet the criteria for Local Wildlife Site selection. These areas (such as the open mosaic habitat in Map 3 located adjacent to Station Road Railway Line LWS in Map 6) should be designated if the selection criteria[4] are met; as LWS designation is likely to provide a greater level of protection within the planning system.

The wildlife corridor network should be in 'favourable condition'[5] to provide breeding, foraging and commuting habitat for the native species that live there and native species which may subsequently colonise. Ideally these areas should be surveyed by a suitably qualified ecologist to identify management priorities.

Management priorities:

- Watercourses and ditches in intensively farmed land should be buffered by semi-natural areas to provide riparian habitat and help prevent pollution runoff (1 metre from the top of the bank of a watercourse is the minimum requirement under cross compliance regulations, however 4-6 metres is recommended). This will benefit water vole populations 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.

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

- Hedgerows that are not already in good condition (particularly those that form part of the wildlife corridor) should be restored or re-instated using locally native species such as hawthorn, blackthorn, hazel and holly (plant 60-90cm high 'whips' which have a good rate of survival and use tree guards to protect from rabbits and stock fence where necessary). New sections of hedgerow should ideally incorporate a tree every 30m (on average) which are demarked so as not to be inadvertently flailed. Non-native invasive plant species should be removed by a specialist contractor and a 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 wildlife 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 destruction of nests. Under the Wildlife and Countryside Act 1981 it is an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. Conversion of semi-natural grassland to arable land should be avoided.
- Leaving uncut margins and field corners in improved or mown grassland fields and arable fields would improve connectivity in the open landscape through more intensively farmed areas, whilst also increasing biodiversity and providing habitat for overwintering and breeding birds.
- Field ponds which have become overgrown and choked with vegetation should be cleared to allow light to penetrate, to provide areas of open water and allow a more diverse marginal flora to develop (tree/scrub cover should ideally be 10 - 15%). These measures will also benefit amphibians, 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 works to ponds, professional advice should be sought and ponds should be assessed to ensure existing wildlife is not impacted, such as; roosting bats which may be present in crevices in trees surrounding the ponds, great crested newts that may be in rank vegetation or under brash piles around the banks or rare aquatic species like the lesser silver water beetle which is recorded in ponds in Cheshire.
- Schedule 9 invasive species should be prevented from colonising Ince's natural habitats. Under the Wildlife and Countryside Act 1981 it is an offence to plant or otherwise cause these species to grow in the wild. This species colonises rapidly and will outcompete native woodland, grassland and wetland flora.
- It is likely that Schedule 9 species such as variegated yellow archangel, montbretia and Spanish hybrid bluebells are present within the parish as they easily spread from domestic gardens. If present they should be eradicated by, or under the supervision of, a specialist contractor. Of particular concern are non-native bluebells, which may spread into the parish's bluebell woodlands after being planted as a garden ornamental. Householders should be educated of

the problems with the encroachment of alien species into semi-natural habitats and avoid inadvertently planting any Schedule 9 invasive species within their gardens, especially where they adjoin open areas.

3. Protect, enhance, expand 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 valuable sites can be buffered. Larger areas of better connected habitat support larger and more resilient species populations and assemblages and help 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[6].

Woodland expansion is desirable to buffer Ince's existing woodlands. Planting woodland corridors between already existing woodland would create valuable habitat links for the dispersal of species. The creation, expansion or enhancement of wooded 'stepping stone' land parcels between existing woodland would also provide habitat within the landscape for more mobile species to colonise. The Mersey Forest Plan currently includes a target of increasing tree cover by 10% in the Agricultural Land around Chester and on the West Lowland Plain and opportunities to plant woodland may be available under this scheme. Trees should be planted away from the edges of watercourses including ditches and ponds. Professional advice should always be sought when creating new habitat particularly when designing the layout, position and composition of new woodland and how to use local woodlands as a 'reference'. Well-designed new woodlands contain up to 40% open space (glades and rides) and up to 25% shrub species. For maximum benefit biodiversity rides should be east-west oriented (so that sunlight is maximised) and at least 30 metres wide to avoid over-shading when the canopy closes. Where possible, natural regeneration should be utilised to expand woodlands on previously open ground, this has the added benefit of providing a diverse structure of natural tree growth and can increase woodland resilience. When planting woodland, 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).

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. Survey should be undertaken beforehand to establish which grassland species are present. The continued loss of a vast number of Cheshire's unimproved and semi-improved grasslands has made these grasslands uncommon within the county and every effort should be made to protect those that remain.

[6] 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. Removal of a hedgerow in contravention of *The Hedgerow Regulations* is a criminal offence. The criteria used to assess hedgerows relate to its value from an archaeological, historical, landscape or wildlife perspective. The regulations exclude hedgerows that have been in existence for less than 30 years, garden hedges and some hedgerows which are less than 20 metres in length. The aim of the regulations is to protect 'Important' hedgerows in the countryside by controlling their removal through a system of notification.

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

Any new sections of hedgerow should be created following the guidance provided above (point 1). Filling of gappy hedgerows will ensure 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 greater flowering and allows plants to fruit and/or set seed, providing a greater food resource for invertebrates, mammals and birds. Some butterfly and moth species overwinter as eggs on shoots and twigs and are therefore severely impacted by annual flailing.

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

Providing 'net gain' for biodiversity is embedded in the guidance in the NPPF (paragraphs 118a, 170d, 174b and 175d and local policy (part 2) DM 44. In order to protect local natural assets, it is recommended that 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.

6. Confirm the status of the areas of Open Mosaic Habitat on Previously Developed Land

National Planning Policy Framework states that Local authorities should 'encourage the effective use of land by reusing sites which have been previously developed (brownfield land), provided that it is not of **high environmental value.** Open Mosaic Habitats on Previously Developed Land have a high biodiversity value. Such sites are threatened by redevelopment (due to their common status as brownfield sites), inappropriate 'restoration', inappropriate management and natural succession.

The open mosaic habitat between Station Road and Poole Lane is located next to a population of common lizard and could potentially support habitat and species assemblages of high biodiversity

value. It is recommended that a detailed survey is carried out to confirm the status of this site and if appropriate designate it as a LWS.

7. **Increase connectivity along the Manchester Ship Canal between North Hall and Ince Marshes LWS**

The varied grassland swards, mature hedges and line of trees along the southern edge of the ship canal within Ince Marshes provides a wide corridor of habitats for wildlife, providing an important buffer along the edge of the canal. Connectivity could be improved by extending and widening this corridor between the Marshes LWS and North Hills. This would also improve connectivity to the important semi-natural broadleaved woodland habitats that support ancient, veteran and notable trees within Old Ince Hall Parkland. It could be achieved by creating buffer strips along field margins and/or restoring or re-instating hedgerows using locally native species.

Appendices

Appendix 1

Habitats, LCM2007 classes[7] **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

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

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

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

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

Appendix 2

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

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

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

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

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

Appendix 3

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

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

Appendix 4

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

Ecological Network Tool Interpretation – network classifications

The Ecological Network Tool output takes the form of a GIS layer with the following categories.

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 restoration or creation, as they represent	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 provide stepping stones between habitat patches. Where other associated habitats of conservation importance overlap with Wetland Buffer

	connecting areas within the network which could join existing primary habitat.	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.	Priority 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 2' 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.