

Liverpool City Region Ecological Network
Report
FINAL



LIVERPOOL CITY REGION
ECOLOGICAL
NETWORK

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LCR Ecological Network: Glossary

Term	Definition
Biodiversity	The variety of all living things.
Biodiversity 2020: A strategy for England's wildlife and ecosystem services	Government policy to protect and increase the amount and quality of biodiversity in England. It recognised the need to move from a loss to an increase of biodiversity.
Biodiversity Duty	A statutory duty on all public organisations to consider the impact of their decisions and actions on biodiversity.
Compensation	The protection of biodiversity assets should be achieved through avoidance and mitigation wherever possible. Compensation, the next step in the hierarchy, should only be used in exceptional circumstances and as a last resort, after all options for avoidance and mitigation have been fully considered. Compensatory measures should, therefore, only be used to address any residual impact that cannot be avoided or mitigated.
Core Biodiversity Area (CBA)	Comprises Designated Sites and Priority Habitats.
Designated Sites	Important sites for wildlife and geology. Designated sites can be Statutory or non-statutory. Statutory sites are: Special Areas of Conservation; Special Protection Areas; Ramsar sites; Sites of Special Scientific Interest; National Nature Reserves; Local Nature Reserves. Non-statutory sites are: Local Wildlife or Geological Sites.
Ecological Appraisal	An appraisal of ecological features, their value and importance. This includes identification of the impacts of development proposals, together with proposals for avoiding impacts, mitigating impacts or compensating for impacts.
Ecological Network	Ecological networks consist of sites containing diverse areas of habitat that support species and have ecological connections between them that enable species to move. They provide a

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	<p>range of ecosystem service benefits to society and in doing so underpin sustainable economic activity, allow biodiversity assets to recover from losses and provide resilience to climate change impacts.</p> <p>Maintaining and improving habitat connectivity is important in ensuring the long-term survival of biodiversity in a fragmented landscape and with a changing climate The National Planning Policy Framework specifically states that local authorities should '...identify and map components of the local ecological networks...' in their Local Plans.</p>
Ecology	The study of plants and animals and their interaction with the physical and biological environments.
European Protected Species	Plants or animals that are legally protected in the UK and Europe. They are listed on Annex II and IV of the Habitats Directive.
Green Infrastructure	A network of green and blue spaces and other environmental features that provides many benefits for health, wealth and the environment.
Habitats Regulations	Implements the Habitats Directive in UK law. The Conservation of Habitats and Species Regulations 2010, as amended, sets out the steps to consider when making decisions that affect internationally important sites and European Protected Species.
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse ¹ .
Landscape Character Assessment	This is the process of identifying and describing variation in the character of the landscape. It seeks to identify and explain the unique combination of elements and features (characteristics) that make landscapes distinctive. This process results in the production of a Landscape Character Assessment ² .
Linear features	Includes main rivers, species rich hedgerows, canals, transport corridors.
LCR	Liverpool City Region – may also be referred to as “the City

¹ Natural England. 2014. An approach to Landscape Character Assessment. Defra.

² Natural England. 2014. An approach to Landscape Character Assessment. Defra.

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	Region”
Liverpool City Region BAP priority habitats	These are the habitats identified for priority action in either the Cheshire region Biodiversity Action Plan (BAP) or the North Merseyside Biodiversity Action Plan.
Mitigation	Adverse effects that cannot be avoided should be adequately mitigated. Mitigation measures minimise the negative impact of a plan or project, during or after its completion. Ideally, mitigation measures should form part of the development proposal, but additional mitigation measures can be imposed by the decision-maker. All mitigation measures should be secured through the use of planning conditions or planning obligations ³ .
National Planning Policy Framework	The National Planning Policy Framework sets out Government planning policies for England and how these are expected to be applied. It sets out the Government’s requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so.
Natural Assets	The City Region’s designated sites, Priority Habitats (including BAP habitats), linear features and stepping stone sites.
Nature Connected	The City Region’s Government recognised Local Nature Partnership.
Nature Improvement Area (NIA)	Nature Improvement Areas are large, discrete areas that are intended to deliver a step change in nature conservation, offer significant improvements for wildlife and people through the sustainable use of natural resources, provide opportunities to restore and create wildlife habitats, and enhance connectivity between local sites.
NIA Focus Area	A part of the NIA that is focused around a particular habitat or strategic natural asset in the City Region. There are seventeen NIA Focus Areas in the City Region.
NIA Focus Area Profile	A description of the natural assets and opportunities for habitat management and creation within a Focus Area.
Offsetting	Biodiversity offsets are distinguished from other forms of ecological compensation by the formal requirements for measurable outcomes: the losses due to impact, and gains

³ BS42020:2013

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	achievable through the offset, are measured in the same way, even if the habitats concerned are different. ⁴
Priority Habitats	These are Habitats of Principal Importance in England and are listed in Section 41 Natural Environment and Rural Communities Act 2006. The list includes UK Biodiversity Action Plan habitats.
Priority Species	These are Species of Principal Importance in England and are listed in Section 41 Natural Environment and Rural Communities Act 2006. The list includes UK Biodiversity Action Plan species. Many of these species are also protected species.
Ramsar site	A wetland of international importance classified under the Ramsar Convention.
Stepping stone site	Existing habitat patches providing a functional link between Core Biodiversity Areas and the wider landscape.
Strategic Natural Assets	The most important strategic natural assets in the city region. These include: Coasts and estuaries including the land and water features; Water courses and wetland habitats such as bogs, mosses and ponds; Lowland heath; Ancient semi-natural woodland; Lowland meadows; and Agricultural land.
UK Protected Species	Listed on Schedules 5 and 8 of the Wildlife & Countryside Act.
Wildlife corridor	Existing linear features providing structural connectivity between Core Biodiversity Areas and the wider landscape.

⁴ Defra. March 2012. Biodiversity Offsetting Pilots. Technical Paper: the metric for the biodiversity offsetting pilot in England.

Summary

- S1. In response to changing Government policy on the natural environment (Lawton, 2010) and the publication of the National Planning Policy Framework, the districts of the Liverpool City Region have worked together over several years to prepare an ecological network.
- S2. The Liverpool City Region Ecological Network is an evidence base which comprises ecological and biodiversity information on the City Region's natural assets. It also identifies opportunities to enable better protection and management of those natural assets and at the same time, describes opportunities to create new natural assets.
- S3. The preparation of the Liverpool City Region Ecological Network has been overseen by the District Planning Officers and led by a joint Task and Finish Group of planning officers. It has been developed within the context of multiple land uses and increasing pressures on land resources. Work has been co-ordinated by Merseyside Environmental Advisory Service on behalf of the districts.
- S4. As an evidence base, the Liverpool City Region Ecological Network can help to inform the preparation of the districts' Local Plans. It is also well placed to help the wider partnership of local authorities, statutory agencies and developers to include consideration of ecology and biodiversity at plan, project, programme and land management levels. Examples include: the emerging Sustainable Urban Development strategy for the City Region; Atlantic Gateway Parklands; and asset management plans of statutory undertakers and local authorities.
- S5 The Liverpool City Region Ecological Network comprises:
- A Core Biodiversity Area;
 - Linear features;
 - Stepping Stone sites; and
 - A Nature Improvement Area
- S6 It draws on a range of robust evidence that is the best available at this time (Appendix 4) and includes proposals for monitoring and review. These natural assets were evaluated in accordance with planning and ecological guidance on their importance and relative weight within the context of multiple land uses of the City Region.
- S7. In preparing the Liverpool City Region Ecological Network, it has become abundantly clear that an evidence-based approach is essential to be able to demonstrate where land use and habitat change takes place, what that change is and what benefits our natural assets provide to the City Region. We have sought to achieve a proportionate, sound and reasonable approach. An approach where natural assets are integrated with other land uses, such as sustainable transport, housing and economic aspirations. An approach where opportunity is provided to help deliver multiple functions and more services for the benefit of the Liverpool City Region.

Background

1. Work began on a Liverpool City Region Ecological Framework in October 2008 and this final report reflects the evolution of the Ecological Network in the Liverpool City Region (LCR or City Region). Appendix 1 includes further information on the evolution over the last 7 years.

Why is an Ecological Network needed in the Liverpool City Region?

2. The City Region is uniquely located and provides us with a wealth of hugely important and often undervalued natural assets that underpin our economy, creates a strong sense of place and supports our health and well-being and provides us with significant economic and health opportunities. Government (H M Government, 2011) has set out its intentions for biodiversity across a wide range of sectors and has given its commitment to coherent ecological networks and well-functioning ecosystems as:

“Our 2020 mission 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.”

3. In particular, the Natural Environment White Paper (H M Government, 2011) recognises that local authorities possess the strategic overview, local knowledge and statutory powers required to make the 2020 mission a reality. The LCR Ecological Network provides the starting point for understanding where and how the most significant benefits can be achieved through a targeted approach within a Nature Improvement Area and where delivery will add to the overall stock of natural assets and connect with people and business at the local level.
4. The LCR Ecological Network has been prepared within the context of existing complex land uses within the City Region and increasing pressure on land and natural assets from a wide range of human activities including development and leisure. Strategic place making for housing, transport, business and the natural environment is embedded in guidance for Local Plans prepared by local planning authorities for their districts. Guidance (DCLG, 2012) specifically identifies, in paragraph 114, the need to plan for the natural environment at a landscape-scale and also sets out the components of ecological networks that will deliver landscape-scale benefits. The LCR Ecological Network meets the guidance set out in the National Planning Policy Framework (DCLG, 2012) by providing a strategic response and shared evidence base to inform Local Plans. It also meets the guidance in “Making space for nature” (Lawton, 2010).

What is the LCR Ecological Network?

5. The local authorities in the City Region have worked together to plan for biodiversity at a landscape-scale. The jointly prepared LCR Ecological Network is one outcome of this co-operation. It comprises a Core Biodiversity Area of designated nature and geological sites and Priority Habitats (including BAP priority habitats) and it also includes linking networks, together with strategic and district priorities for protection, management and enhancement of the City Region’s natural assets.

6. The strategic priorities for the City Region's natural assets are:
- To manage the City Region's natural assets better – to protect the integrity of the internationally important designated sites as well as the City Region's natural and geological assets.
 - To make sure that there is no net loss of these natural assets and to extend and enhance the City Region's natural assets and its Ecological Network wherever appropriate.
7. The **Core Biodiversity Area** (see Figure 1) covers some 32,940ha (Box 1) which is 36.5% of the total area of the Liverpool City Region (90,360ha with 72,380ha above mean high water). The Core Biodiversity Area is split between the land area above mean high water at 14,980ha and the area between mean high water and mean low water at 17,960ha. It is important to emphasise that just 20.5% of the land area of the Liverpool City Region is included in the Core Biodiversity Area. Many of the designated sites overlap and one site may have many designations; Priority Habitat may be within or outside of designated sites; simply adding the areas in Box 1 together would be misleading due to overlap and double-counting.⁵ See Appendix 2 for further detail.

Box 1: Core Biodiversity Area defined

Core Biodiversity Area includes:

Designated Sites

International = Ramsar (14,860ha), Special Protection Areas (SPAs) (16,560ha), Special Areas of Conservation (SACs) (10,260ha)

National = Sites of Special Scientific Interest (SSSIs) (17,070ha), National Nature Reserves (NNRs) (975ha)

Local = Local Nature Reserves (LNRs) (973ha), Local Wildlife Sites (LWSs) (15,470ha), Local Geological Sites (LGS) (6,884ha)

Priority Habitats

Habitats of Principle Importance in England (Section 41, NERC Act 2006), may be within or outside designated sites (28,428ha and 815km – linear habitats)

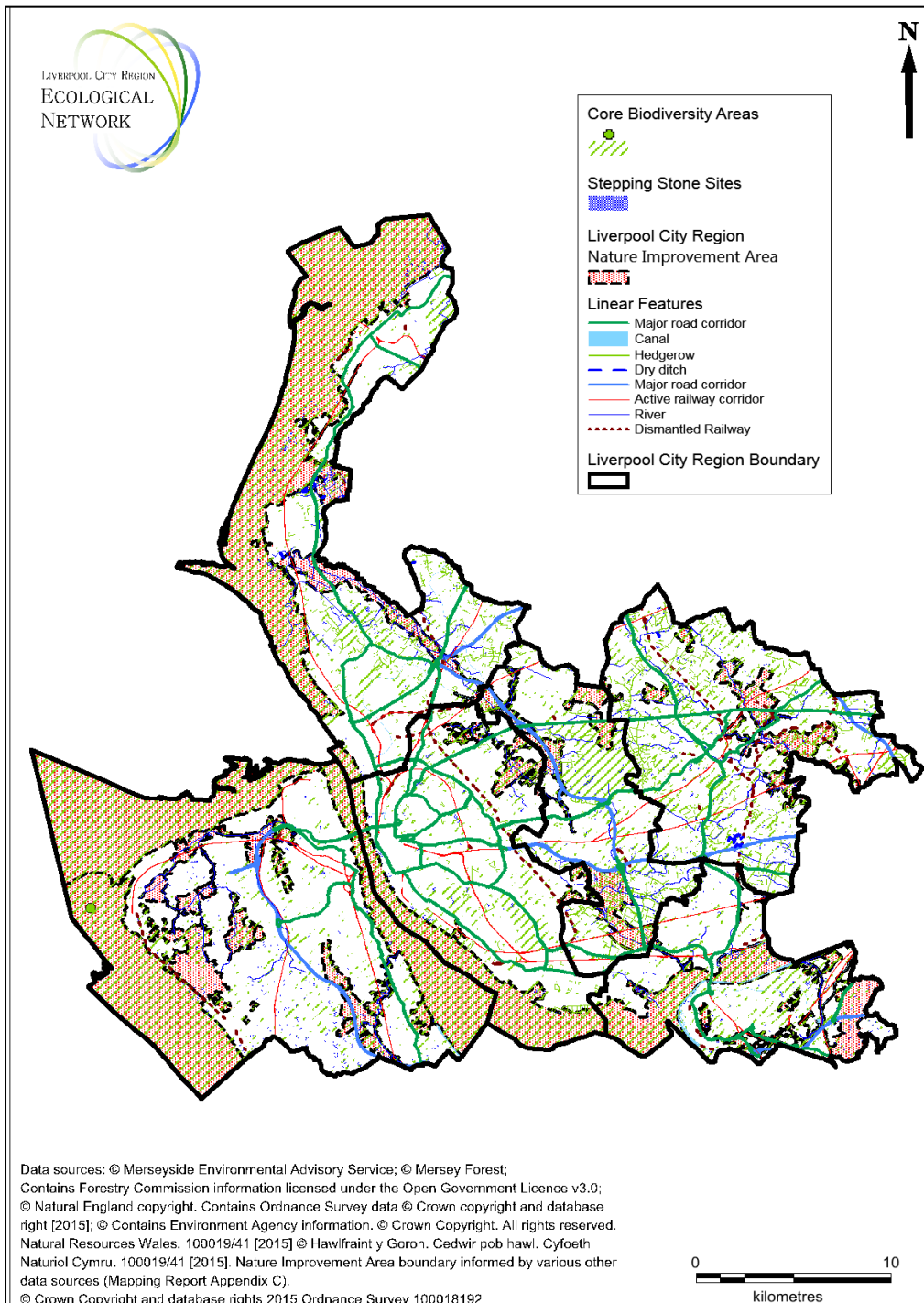
LCR BAP priority habitats, may be within or outside designated sites (7,153ha)

Note: Site boundaries and Priority Habitats often overlap.

⁵ HM Government. Natural Environment and Rural Communities Act 2006.

8. While the primary function of the designated sites and Priority Habitats that comprise the Core Biodiversity Area is as nature assets, they are not reserved for or are exclusively for biodiversity and nature conservation. These have multiple uses but also have clearly defined objectives for biodiversity and nature conservation. Appendix 3 includes information about existing multiple uses and their importance in the City Region.

Figure 1: LCR Ecological Network



Vision and Guiding Principles for the LCR Ecological Network

9. The 2011 Strategic Overview report set out the vision and guiding principles of an Ecological Framework to help guide its purpose, scope, development and what it might achieve. These have been refreshed during the intervening period in terms of the language and are presented in Boxes 2 and 3 below.
10. The Vision is aspirational and sits within the context of England's Biodiversity Strategy (Defra, 2011) which has at its heart "...*This strategy will guide our conservation efforts in England over the next decade, including setting our ambition to halt overall loss of England's biodiversity by 2020.*" A further national aspiration is that "*In the longer term, our ambition is to move progressively from a position of net biodiversity loss to net gain.*" There is a commitment to monitor progress towards achieving its priorities and key actions through annual reporting to government. It also recognises that delivery of the strategy will take longer than the end of the decade and establishes priorities for delivery by 2020.
11. The England Biodiversity Strategy includes commitments for key sectors, including Planning and Development, where "*Through its reforms of the planning system, we will take a strategic approach to planning for nature.*" This commitment was carried forward by government into the National Planning Policy Framework (DCLG, 2012), for example, in paragraphs 7, 17, 109, 113, 114, 117 & 118. The LCR Ecological Network is part of the City Region's response to the government's challenge and policy steer.
12. While the Vision reflects the City Region's aspirations for what the LCR Ecological Network might achieve by 2020, it is important to note that the LCR Ecological Network is primarily an evidence base resource, not a strategy in its own right, and delivery of the Vision will be achieved through the mechanisms discussed in paragraphs 44 to 54 below. The LCR Ecological Network is not intended to prevent or inhibit development, but provide a means by which land managers, businesses, Local Plans and individual development proposals can easily demonstrate and achieve compliance with national and local policy requirements and statutory obligations relating to biodiversity; and at the same time deliver benefits for biodiversity in the City Region.
13. At the same time as achieving delivery of the Vision and Guiding Principles, achieving the sustainable development of the City Region by using opportunities to deliver multiple benefits for our communities, businesses and visitors are part and parcel of strategic planning. Delivery of the LCR Ecological Network is an essential part of the City Region's sustainable development to support housing needs, economic regeneration and investment, transport, safe and desirable places to live, work and play.

Box 2: Updated LCR Ecological Network Vision

LCR Ecological Network – VISION

By 2020:

- ✓ The Liverpool City Region has explored opportunities to reconnect its strategic **core biodiversity areas** and is showing progress in the amount and quality of habitats provided in appropriate places, guided by the LCR Ecological Network.
- ✓ The strategic natural assets and their natural capital asset values are recognised and accepted. Strategic assets are being brought into positive conservation management through a combination of policy and protection, funding, provision of ecological advice and guidance, using a Nature Improvement Area.

Habitat losses have been reduced to a minimum. Using the ‘avoid, reduce, mitigate and compensate’ hierarchy, businesses are helped to plan for growth sustainably and are offered a range of ways to contribute towards securing and valuing our natural assets.

Box 3: Updated LCR Ecological Network Guiding Principles

LCR Ecological Network – Guiding Principles

- ✓ Protect and manage the quality of our natural assets (including designated sites, ecological network, Priority Habitats, City Region BAP priority habitats, Priority Species, protected species and green infrastructure);
- ✓ Restore, enhance and extend natural assets;
- ✓ Improve quality, linkages and habitat in the LCR Ecological Network and seek to work with neighbouring ecological networks;
- ✓ Create new habitats and green infrastructure; and
- ✓ Secure long-term management of natural assets.

By:

- ✓ Improving multiple benefits we receive from our natural assets and green infrastructure as a result of how we use and interact with them – with positive outcomes for both business and people;
- ✓ Considering how our decisions could deliver improvements; and
- ✓ Valuing our natural services.

Review of Evidence

14. Since 2011 work on nature improvement areas has been done nationally and the policy position has been clarified with the publication of the National Planning Policy Framework and its supporting planning guidance. The planning guidance sets out the expectations and content of an ecological network to assist local planning authorities in preparing 'landscape-scale biodiversity strategies' (DCLG, 2012).
15. A further significant consideration for review has been the effects of the recession and early recovery of the economy. The effects have been felt at different times and degree of severity across all stakeholders from business, land owners and land managers, public bodies such as local authorities, Environment Agency, and Natural England. It has also affected the levels and types of funding that public bodies have available to deliver on a range of government commitments. This is particularly apparent in the development sector where viability of development is now an even more important consideration for both land use planning and decision-taking on individual planning proposals.
16. There are a number of other reasons that support a review at this stage. The Common Agricultural Policy has been subject to review across Europe and a new land management grant scheme was launched in 2015. This new scheme (<https://www.gov.uk/government/collections/countryside-stewardship-get-paid-for-environmental-land-management>) targets grant payments to land managers to meet Biodiversity 2020 outcomes. Natural England (Natural England, 2013-2014) published revised National Character Area profiles which contain additional information on ecosystem services. DEFRA published through Natural England the first national map of Priority Habitats. Further nature sites (statutory and non-statutory) continue to be designated in the City Region. Merseyside BioBank⁶ and Cheshire rECOrd⁷, the local environmental record centres, are improving access to biodiversity data.
17. Keeping the data up-to-date is also important to inform the European Structural Investment Framework including the LEADER Rural Development Programme for England, the emerging Sustainable Urban Development Strategy and the City Region Green Infrastructure Framework. It therefore provides an evidence base to inform key and emerging City Region plans and strategies and partner activity in the City Region.
18. In response to feedback from the local authorities to remove ambiguities the term **Ecological Network** has been accepted and has replaced the term '*ecological framework*'. When reading earlier reports, '*ecological framework*' should be read as LCR Ecological Network as there are no technical differences between the two in this case.

⁶ <http://www.merseysidebiobank.org.uk/>

⁷ <http://www.record-lrc.co.uk/>

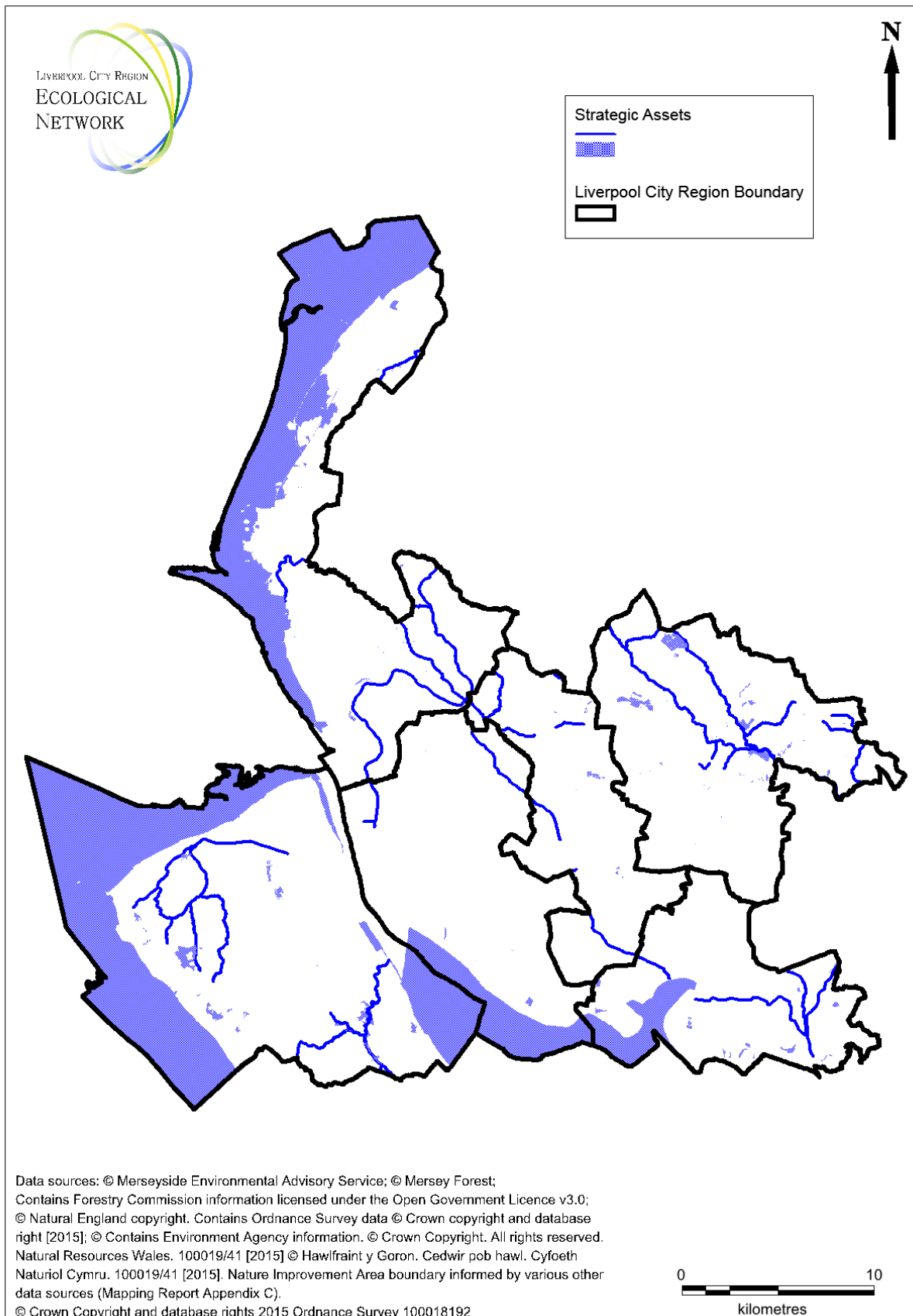
19. Taking these factors together, has led to a detailed review of the LCR Ecological Network. This work has been undertaken over the last 2 years, led by a LCR local authority Task & Finish Group, as part of a review of the evidence to support the preparation and implementation of the districts' Local Plans. Appendix 1 sets out the evidence review process.
20. An interactive map will be available for use, by land managers, land owners, local authorities, statutory agencies and developers, supported by this report. The interactive map is the next stage of development of the LCR Ecological Network and it is anticipated that it will be in place by end of March 2016.

The City Region's Natural Assets

21. The Strategic Overview report (Merseyside Environmental Advisory Service, 2011) described the importance of the City Region's natural assets which were also mapped. These strategic natural assets comprise:
 - Estuarine and coastal habitats and species;
 - Water courses and associated wet habitats such as ponds, bogs and mosses are crucial in linking habitats and species populations;
 - Lowland heath (on sandstone in Wirral and Halton, and sand in Sefton);
 - Ancient semi-natural woodlands (mainly in Wirral and St. Helens);
 - Lowland meadows of acidic and neutral grasslands (mainly in small patches, often highly fragmented); and
 - Agricultural hinterland.

22. These strategic natural assets are shown on Figure 2 and refreshed key messages about them are in Appendix 2 including uses and pressures that they are under and opportunities for action.

Figure 2: Strategic Natural Assets in the City Region



23. A compliance test of the ecological information within the LCR Ecological Network against the NPPF planning guidance (DCLG, 2012) was undertaken in 2014 and updated in July 2015. The outcome of the compliance test is set out in Appendix 5. The LCR Ecological Network is considered to be compliant with NPPF planning guidance.
24. From the evidence review and in accord with planning and ecological guidance, the LCR Ecological Network comprises the following natural assets of the City Region:
- A Core Biodiversity Area of designated sites and Priority Habitats (including LCR BAP priority habitats); and
 - Linear features and stepping stone sites.

Core Biodiversity Area

25. The Core Biodiversity Area includes the intertidal area to mean low water and totals 32,940ha. The Core Biodiversity Area is split between the land area above mean high water at 14,980ha and the area between mean high water and mean low water at 17,960ha. It is important to note that this equates to approximately 20% of the land area of the City Region. Further details can be found in Appendix 2.
26. Designated nature sites (see glossary) means sites that are designated at international, national or local level for their nature importance. The nature importance of the designated sites are listed on citations which are available for all sites – international site citations can be accessed at <http://jncc.defra.gov.uk/page-4>, national sites at <https://designatedsites.naturalengland.org.uk/> and local sites at <http://www.merseysidebiobank.org.uk/> and <http://www.cheshirewildlifetrust.org.uk/localwildlifesites>. The international and national nature sites are protected through their own legislation and Local Sites are protected through Local Plan policy.

Priority Habitats

27. Priority Habitats are habitats of principal importance (see glossary) that may be within designated sites or outside designated sites. The list of Priority Habitats is maintained by Natural England and is agreed with the Secretary of State under section 41 of the Natural Environment and Rural Communities Act (HM Government, 2006). Defra has also published the UK's first map of Priority Habitats which can be accessed on <http://magic.defra.gov.uk/>. The Defra Priority Habitats map is a 'work in progress' and not all Priority Habitats are currently included. The City Region includes examples of at least 29 Priority Habitats, 15 of which can be found on the national Priority Habitats map version 1 (Table 1). Appendix 2 provides details on the area of Priority Habitats within the City Region. Appendix 4 includes details of how updates to national and local data sets such as Priority Habitats have been taken into account and interpreted within the method for the LCR Ecological Network evidence base. The method described in Appendix 4 will also apply to future updates of the LCR Ecological Network.

Table 1: Priority Habitats present in the Liverpool City Region (July 2015)

Priority Habitat Name	On national Priority Habitat Map	Other data sources
Arable field margins		Y
Traditional orchards	Y	
Hedgerows		Y
Coastal saltmarsh	Y	
Coastal sand dunes	Y	
Coastal vegetated shingle		Y
Intertidal mudflats	Y	
Maritime cliff and slopes	Y	
Saline lagoons	Y	
Ponds		Y
Rivers		Y
Lowland calcareous grassland	Y	
Lowland dry acid grassland	Y	
Lowland meadows	Y	
Purple moor-grass and rush pastures	Y	
Lowland heathland	Y	
Inland rock outcrops and scree habitats		Y
Blue mussel beds		Y
Estuarine rocky habitats		Y
Peat and clay exposures		Y
<i>Sabellaria alveolata</i> reefs		Y
Subtidal sands and gravels		Y
Coastal and floodplain grazing marsh ⁸		Y
Lowlands fens	Y	
Lowland raised bog	Y	
Reedbeds	Y	
Lowland mixed deciduous woodland	Y	
Wet woodland		Y
Wood-pasture and parkland		Y
Total = 29 Priority Habitats in the City Region		

LCR BAP priority habitats

28. The City Region BAPs describe a range of county level priority habitats; some of these have now been included in the Defra's national Priority Habitat inventory and map. Due to the accuracy issues with Defra's national Priority Habitats and in recognising that it is a 'work in progress', these county-level priority habitats are part of the Core Biodiversity Area and have been used to help to inform the location of a nature improvement area and the Focus Area profiles (see Appendix 6). County level priority habitats are natural assets within the City Region and are important in preventing further fragmentation of our natural assets.

⁸ There are recognised accuracy issues with this data set nationally. Local data sources which have greater accuracy and reliability were used to supplement the national Priority Habitat map.

Linear Features

29. Linear features include natural and man-made or modified structures such as hedgerows, rivers (including estuaries), canals, transport routes such as railways and major roads. These features enable, for example, species of plants, birds, mammals and fish to move between breeding, feeding and resting habitats. Linear features may connect designated sites and Priority Habitats in the Core Biodiversity Area with natural assets both within and outside of the Core Biodiversity Area. Protection for these areas comes under Article 10 of the Habitats Directive (EC, 1992) and is implemented through the National Planning Policy Framework (DCLG, 2012).
30. The importance of linear features for biodiversity is often overlooked and undervalued, yet they are essential for connecting natural assets. Opportunities to improve management for biodiversity while improving recreation, flood prevention, sustainable movement for people or other functions of these linear features should be explored. Some of the links between these habitats has been severed or modified and this can create issues for biodiversity such as isolation of species populations or barriers to animal movement and plant dispersal.
31. The links between the marine and terrestrial habitats are dependent on a functioning water ecosystem based on the estuaries and coast. The estuaries within the City Region are linked and are interdependent in terms of the water habitat that they provide for a wide range of aquatic plants and animals. The Water Framework Directive⁹ requires the preparation of River Basin Management Plans¹⁰ and the estuaries and coastal waters of the City Region are included in the North West River Basin Management Plan. The overall aim of these Management Plans is to improve water quality and achieve 'good ecological status' or 'good ecological potential' in the long term. Good ecological status, together with good chemical status, is the requirement to be met by all designated water bodies (there are over 6000 in England and Wales) under the EU Water Framework Directive. Water bodies can be classified as "heavily modified" by man, in which case the Water Framework Directive requires that they initially be managed to achieve "good ecological potential" and good chemical status. Many of the waterbodies in the City Region are classed as "heavily modified" including the Mersey Estuary, and improvements to water quality are still needed.

Stepping Stone sites

32. Stepping stone sites (see glossary) are those habitat patches, such as ponds or woodland copses, which are isolated from the Core Biodiversity Area and / or linear features. At the same time, these sites provide a refuge for some species of plants and animals but unless connections to other suitable habitats can be made, there is a risk of the biodiversity of these stepping stone sites declining over time. Within the City Region, stepping stone sites for species reliant on wetlands have been identified, due to quality and type of data available. In the

⁹ <http://jncc.defra.gov.uk/page-1375>

¹⁰ <https://www.gov.uk/government/publications/north-west-district-river-basin-management-plan>

future, other important stepping stone sites may be identified from new and/or improved data availability (see Appendix 4).

Mapping Method

33. The LCR Ecological Network has brought together all available data sets to identify and evaluate natural assets in the City Region. It is based on the best available data and information at national and local levels. A total of 87 data sets that are capable of being mapped have been used to compile the LCR Ecological Network mapping supported by a range of descriptive sources such as Landscape Character Assessments (available on Districts' websites) and National Character Area profiles (Natural England, 2013-2014), Conservation Advice for Marine Sites (Natural England 2015) and Biodiversity Action Plans (MBG, 1999), (Cheshire Wildlife Trust, Various). These descriptive sources, amongst others, have been invaluable in guiding the landscape-scale approach to delivering the Vision of protecting, restoring and reconnecting biodiversity in the City Region. They have also informed the preparation of a nature improvement area (see paragraphs 35 to 43 below) by providing information on functional links between natural assets. Web links and references for data and information sources are set out in Appendix 4. This Appendix also includes a detailed mapping report that describes the method used to analyse these data sets and map the outputs of those analyses and how the outputs were interpreted. This work was undertaken using a Geographical Information System (GIS) which enables use of digitised data.
34. Biodiversity 2020 (Defra, 2011) recognises that as a whole there is a need to invest in improving our knowledge of biodiversity. This ambition to improve data quality, accessibility through existing and innovative approaches to biological recording is being delivered through a programme of investment in the National Biodiversity Network <http://www.nbn.org.uk/> and is important to halt or reverse the decline in biodiversity and resilience of habitats and species that we are experiencing. However, there are a number of limitations attached to the data used which are set out in Part 2 of the mapping report (Appendix 4). These limitations mirror those for national policy making and are not considered to be a significant risk to the robustness of the evidence. The National Planning Policy Framework (DCLG, 2012) advocates the use of the best available data and the LCR Ecological Network follows that guidance.

LCR Nature Improvement Area

35. The Strategic Overview report (Merseyside Environmental Advisory Service, 2011) also described strategic opportunity areas, provided key messages on the significance of the opportunity areas and suggested actions that could help to minimise loss of biodiversity and begin to move towards a net gain, where appropriate. As part of the evidence review, the usefulness of the strategic opportunity areas has been improved by providing greater detail on the locations and type of actions that would be appropriate. We describe these as a Nature Improvement Area (NIA) for the City Region I (Figure 1) in line in national guidance (H M Government, 2011), (DCLG, 2012).
36. More detailed opportunity analysis and mapping has also been completed and the term '*strategic opportunity areas*' has been replaced with the term **Liverpool City Region Nature Improvement Area (NIA)**. The NIA is City Region-wide (Defra, 2012) and is based on more detailed mapping of the former '*strategic opportunity areas*' to refine the area and target habitat management and habitat creation opportunities. The NIA forms part of the LCR Ecological Network evidence base and complements the Core Biodiversity Area, Linear features and stepping stone sites. Appendix 2 includes a breakdown of the LCR Ecological Network area for each district.
37. NIAs were proposed by Government as the principal mechanism for delivering wildlife restoration and management and this is the approach that has been adopted for the LCR Ecological Network. They are intended to achieve significant enhancements to ecological networks by improving existing wildlife sites and Priority Habitats, building ecological connections and restoring ecological processes. Delivering at a landscape-scale, NIAs should connect with their local economies and communities and also improve the overall resilience of an area.
38. The purpose of the City Region's NIA in line with paragraph 117 of the NPPF is:

"An integrated and prioritised framework for targeting habitat creation and enhancement where greatest gains can be achieved."
39. The NIA comprises elements of the Core Biodiversity Area (designated sites, Priority Habitats) together with habitats and features of strategic importance, linear features such as rivers and canals, stepping stone sites and City Region BAP priority habitats. It also includes land where targeted action can make a contribution to the delivery of the NIA purpose alongside and complementary to other land uses. The total area of the proposed NIA is 31,205ha of which approximately 23,000ha are within existing designated sites. The majority of the NIA (25,694ha) is considered as the most appropriate location for habitat management to improve existing conditions and helping to support other land uses such as leisure, housing, flood risk management and coastal defence. Approximately 18% (5,511ha) of the NIA is suitable for habitat creation which may provide areas for mitigation or compensatory provision required through the development and planning process. To be clear, this does not mean that

5,511ha of habitat creation is being sought. The LCR Ecological Network is shown on Figure 1.

40. Within the NIA there is a multiplicity of land uses which are complementary and appropriate to the objectives of the LCR Ecological Network. For example, many footpaths and cycle ways are within the NIA Focus Areas and these features can also be multifunctional green corridors connecting habitats and species. Together, these land uses help to define our sense of place and the LCR Ecological Network is one part of the “whole place approach” to a thriving and resilient Liverpool City Region.
41. Further work is likely on the NIA boundary following outcomes of the Districts’ land allocations. These requirements have been included as far as possible where known and while the area of the NIA may change, the principle of the NIA has been established but not the precise boundary. An integral part of the LCR Ecological Network is therefore monitoring and review (see paragraphs 55 to 57 below).
42. The NIA mapping is based on Defra’s and Natural England’s guidance on nature improvement areas (Defra, 2012) and reflects the challenging situation with regards to the amount of land available within the City Region and seeks to achieve multi-functioning land that can deliver the LCR Ecological Network Vision. An example of the multi-functional use of land is where land management for flood alleviation also provides biodiversity and recreation on the same parcel of land; these are wider ecosystem service benefits.
43. There are seventeen Focus Areas, each with its own profile, that together make up the proposed Liverpool City Region Nature Improvement Area. The Focus Area profiles are included in Appendix 6. Each Focus Area profile sets out the ecological priorities for habitat management and creation within that area, together with a location map. It continues by describing the existing ecological features of the Core Biodiversity Area, Linear features and brings in consideration of plants and animals that are dependent on the natural assets. The profile includes a brief description of the Focus Area and sets out opportunities for habitat creation and management that provide more information on the priorities for this part of the NIA. The ‘ecosystem services’ benefits (see glossary) highlight the wider economic and social benefits as well as biodiversity that investing in the NIA can deliver in each Focus Area. Within the NIA opportunities to improve linkages has also been identified which would deliver biodiversity benefits as well as improvements to accessibility and movement of people around the City Region. Finally, the profile sets a strategic planning and environmental context for the Focus Area such that land owners, land managers, developers, planners and their advisers can find out how their proposals for development together with potential mitigation and compensation fits within the City Region’s Ecological Network.

Implementation of the LCR Ecological Network

Delivery

44. To implement the LCR Ecological Network a robust monitoring and updating process will need to be in place that is able to measure progress towards the Vision and delivery of the Guiding Principles. This is fundamental to be able to monitor progress and demonstrate what success “looks like”. This section starts to explore delivery mechanisms and partner roles in quite broad terms although more detail on mechanisms of delivery may be required through, for example, Local Plan policy.
45. The main driver for preparing the LCR Ecological Network has been through the emerging Local Plan process. Delivery of the LCR Ecological Network is however wider than the Local Authorities, although there is a key role for them in terms of local planning and supporting economic regeneration of the City Region. Successful and effective implementation of the LCR Ecological Network will also need to engage with and inform the decisions of wider partners including land owners, land managers and organisations that provide grant funding such as Government’s Countryside Stewardship scheme and at the City Region level through, for example, the emerging Sustainable Urban Development strategy and calls for proposals under the European Regional Development Fund (ERDF).
46. Nature Connected, the City Region’s formally recognised Local Nature Partnership was established in September 2012. One of its key priorities is the implementation of the Liverpool City Region Green Infrastructure (GI) Framework. The GI Framework and Action Plan includes the ‘Ecological Framework’ as one of the six priorities and has drawn on the evidence that was available at that time. Nature Connected continues to support the development of the LCR Ecological Network, including its Guiding Principles and implementation through the action of its partners. Endorsement of the completed LCR Ecological Network by Nature Connected would assist in securing funding for implementation on the ground and also help to influence the setting of priorities for a range of land owners, land managers and organisations.
47. While updating and review of the evidence has taken place, a number of stakeholders that offered support and resources during the original work have already put the LCR Ecological Network to good use and have successfully drawn down funding resources for habitat management and creation over the last 4 – 5 years. Examples include: Knowsley Council, The Wildlife Trust for Lancashire, Greater Manchester and north Merseyside, The Mersey Forest and the Environment Agency. Public bodies are seeking ways to focus their resources to have the greatest benefits and this is particularly the case for those sponsored by Defra (Natural England, Environment Agency, and Forestry Commission).
48. The successful draw down of funding from wider stakeholders has demonstrated that, even while in draft form, the LCR Ecological Network can be delivered in challenging financial circumstances locally and nationally. How

quickly the LCR Ecological Network may be delivered could be affected by a wide range of financial and policy drivers. The LCR Ecological Network 2020 Vision is ambitious and aspirational and delivery towards it will be kept under review through a monitoring and review process which is set out below.

Relationship with Local Plans

49. The LCR Ecological Network is part of the Districts' evidence for Local Plans (core strategies, unitary development plans, development plan documents, supplementary planning documents and neighbourhood plans) and is capable of supporting decision-taking on individual planning proposals. To do so, a credible and workable model policy approach has been prepared by the Districts, see Appendix 7. The approach is split into a strategic model policy and two model development management policies, reflecting the different stages and approaches taken by the Districts, together with model policy explanatory text. A tailored approach would be required for each individual district to encompass the model policy intent. The model policies cover the principles and recognise that Districts may have discretion to modify the model policy and explanatory text to fit with existing adopted policy or in preparing future policy.
50. The model policy approach sets out how the LCR Ecological Network, including the NIA, complements the existing policy requirements in Local Plans (core strategies, unitary development plans, local plans). Where possible and appropriate, development proposals and Local Plans should enable the improvement of quality, linkages and habitat within the Ecological Network, including the NIA. A sequential targeting approach has been put forward for mitigation (see glossary) and possible compensatory provision to guide implementation and project-specific delivery. Mechanisms for delivery include site-specific policy requirements, use of planning obligations, unilateral undertakings, Community Infrastructure Levy (where appropriate). The most appropriate mechanism will be considered on a case-by-case basis. This approach enables delivery to be flexible and responsive to changing policy and legislation requirements. Each District may choose to provide additional guidance on how the LCR Ecological Network will be implemented at a local level. Sefton Council is currently preparing a Nature Conservation Supplementary Planning Document which will provide that local guidance for that district.
51. A key role that the LCR Ecological Network aims to fulfil is to provide an agreed evidence base across the entire Liverpool City Region to help guide and focus activity around potential land assets that could benefit from improvements through conservation management. These land assets are included within the NIA. This is a particularly important matter for Local Plans where land allocations for development e.g. housing, which may result in harm to Core Biodiversity Area assets including supporting habitat for Natura 2000 sites. These assets may need to be replaced according to the mitigation hierarchy and the NIA provides a mechanism to assist in doing so.

52. Work on the LCR Ecological Network has been undertaken in parallel with the preparation of Local Plans across the City Region. Each Local Plan has been subject to a range of statutory appraisals. One of these is an assessment of the likely significant effect on international nature sites which is known as Habitats Regulations Assessment.
53. Habitats Regulations Assessment of each of the Local Plans has considered that in order to ensure the integrity of the many international nature sites in the City Region, a means of joint working to provide locations where mitigation and compensatory provision may be delivered is essential. The LCR Ecological Network, including the NIA, offers a means to focus and target delivery of improved habitat management and creation across the City Region eventually leading to a coherent network.

Wider Stakeholders

54. The approach of how to consider the LCR Ecological Network is applicable to other stakeholders in terms of strategic and site-specific planning through for example, the Water Framework Directive, Shoreline Management Plans, the City Region's economic and environmental aspirations such as Atlantic Gateway, Sustainable Urban Development strategy and the Blue Green Economy, statutory organisations' alignment of budget to the support the City Region's aspirations e.g. Defra sponsored bodies such as Natural England, Environment Agency, Forestry Commission and partner organisations such as The Mersey Forest. Should the Combined Authority through devolution of strategic housing and planning powers to the Liverpool City Region prepare a City Region-wide statutory spatial plan, then the LCR Ecological Network would provide a robust and appropriately scaled evidence base to inform that process.

Monitoring and Review

55. The LCR Ecological Network is dependent on the quality of ecological information within it. With rapidly changing policy drivers, funding sources and priorities, it is important that the LCR Ecological Network is kept up to date. Appendix 4 describes in Part 4 proposals for updating the information base when new information is available and through monitoring implementation. When the LCR Ecological Network is implemented it will become increasingly important to know what is taking place and where. It will also be important to ensure that partner organisations are aware of completion of the LCR Ecological Network and any updates to its evidence base so that these changes can be taken into account within other evidence bases and strategies to ensure that they are ‘in-step’ and based upon the best available ecological and biodiversity information.
56. An initial two year period is envisaged prior to the first update of the information base for the LCR Ecological Network, together with information on delivery. Monitoring and review must be capable of being undertaken with minimum resource and therefore, the following are suggested as being reasonable, appropriate and relatively easy to collect and at the same time, will demonstrate delivery towards the LCR Ecological Network 2020 Vision. Many of the mechanisms identified are published data sets with the exception of the planning outcomes; this first two year period will consider what is needed in more detail and how that could be undertaken – in essence a phased approach to monitoring implementation. Accountability for delivery of these tasks lies with Merseyside Environmental Advisory Service.
57. Measuring success of the LCR Ecological Network against delivery of its Guiding Principles (*Box 3*) will, over time, provide a clear indication of trends for gains, losses, improved management, together with the collation of details of financial and resource investment that takes place. It is anticipated that much of that investment will be multi-functional, for example, provision of access routes for walking and cycling also delivering links between natural assets, as well as some that are specifically for biodiversity. A number of measures of success are set out in Table 2.

Table 2: Measures of Success for delivery of LCR Ecological Network

Theme	Measure	Mechanism
Land	Land brought into active conservation management (hectares)	Single Data List 160-00; Site of Special Scientific Interest – favourable condition assessment; Environmental Stewardship agreement; Planning outcome; Water Framework Directive outcome; Local Plan Authority Monitoring Reports.
	Change in area or length of natural assets	Local Site monitoring; Site of Special Scientific Interest – favourable condition assessment; Planning applications.

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	Linkages created / improved	Planning application outcomes; Environmental Stewardship
Value for Money	Amount of funding drawn down (£s)	Grant aid; Planning outcome; Defra body funding;
	Jobs created / maintained	Economic statistics for City Region.
People	Number of private landowners and businesses engaged	Grant aid; Planning outcome, Single Data List 160-00; Special Scientific Interest – favourable condition assessment.
Policy	Policy approach in Local Plans	Local Plan
	Policy approach in other plans and strategies	Shoreline Management Plans; Catchment Management Plans, River Basin Management Plans; Atlantic Gateway; LEP economic strategy.

Conclusions

58. The LCR Ecological Network has been compiled using the best available data. These data have been rigorously analysed to identify the natural assets within the City Region. These natural assets were evaluated in accordance with planning and ecological guidance on their importance and relative weight within the context of multiple land uses of the City Region.
59. The outputs are the identification of a Core Biodiversity Area, supported by linear features and stepping stone sites, together with a Nature Improvement Area (Figure 1). A model planning policy approach (Appendix 7) has been prepared, which is supported by a GIS evidence base, together with a series of 17 NIA Focus Area profiles (Appendix 6). These profiles set out the priorities for nature within the Focus Areas. An interactive map is the next step and should be available in spring 2016.
60. A number of measures of success (Table 2) have been identified with the intention of monitoring subject to available resources and capacity.
61. The LCR Ecological Network provides a robust and credible evidence base to inform policies, plans, strategies and actions of a wide number of organisations. Implementation of the LCR Ecological Network has the potential to deliver significant ecological and biodiversity benefit to the City Region as one part of a resilient and 'whole place' solution.

Appendix 1: Evolution of the LCR Ecological Network and Evidence Review Process

A1.1 Work began on an Ecological Framework in October 2008 and the outcomes were initially published in December 2011. These outcomes had been subject to a public consultation including key partners and stakeholders, via a web portal at each stage. The outcomes were:

- Ecological Framework & Strategic Overview;
- Interactive map;
- Metadata Report;
- District profiles for Halton, Knowsley, Liverpool, St. Helens, Sefton & Wirral;
- User Overview report; and
- Reports of Consultation.

A1.2 This final report supersedes these documents. The superseded documents will be archived as part of the audit trail and evidence of development of the LCR Ecological Network.

A1.3 Initial work on the Ecological Framework had followed early thinking on ecological networks and the direction of travel from Government (H M Government, 2011), (Defra, 2011) and (DCLG, 2012). In October 2013, an internal review process was established by the LCR Districts to enable the LCR Ecological Network evidence base to be updated in response to changes in policy, experience and additional information.

A1.4 A Task & Finish Group of senior planning officers, overseen by District Planning Officers has reviewed the following areas:

- Compliance Assessment with National Planning Policy Framework;
- Mapping Method, implementation and information used to inform the mapping;
- Offsetting, Mitigation and Compensation including proposed NIA;
- NIA Focus Area Profiles;
- Model Policy Response;
- Glossary; and
- Ecological Network Report.

A1.5 This has been an iterative process and was dependent on agreement of the ecological information to be included and updated. At each stage, outcomes were considered in light of previous work and amendments made where appropriate.

A1.6 The review considered the usefulness or not of the earlier 'Search Area for Potential Habitat Expansion' (SAPHE) and 'Connectivity Zone' tools which had formed part of the original work. Their purpose was to help land owners, land managers and development proposals to make better ecological connections within the landscape. However, after using these for a short period of time it became clear that the SAPHE and Connectivity Zone tools were not sufficiently

specific or targeted enough to be useful and resulted in confusion. A different approach was developed in line in national guidance (H M Government, 2011), (DCLG, 2012) that describes a Nature Improvement Area (NIA) for the City Region.

A1.7 Further work is likely on the NIA boundary following outcomes of Districts' land allocations. These requirements have been included as far as possible where known and while the area of the NIA may change, the principle of the NIA has been established but not the precise boundary.

A1.8 District Planning Officers have received regular reports on progress, together with a presentation on the proposed NIA in late 2013. Feedback has been incorporated in discussion with the Task & Finish Group.

A1.9 Merseyside Environmental Advisory Service has undertaken mapping of the LCR Ecological Network, NIA boundary mapping, preparing draft documents and incorporation of feedback from the Task & Finish Group and other planning colleagues among other aspects.

Appendix 2: LCR Ecological Network area statistics

Designated Sites

Designated site name ¹¹	Total area (ha)
Special Protection Area	16,560
Special Area of Conservation	10,260
Ramsar	14,860
Site of Special Scientific Interest	17,070
National Nature Reserve	975
Local Nature Reserve	973
Local Wildlife Sites	15,470
Local Geological Sites	6,884
Total area	83,052

Priority Habitats¹²

Priority Habitat Name	Total area (ha)	Length (km)
Arable field margins	No habitat data	
Traditional orchards	9.4	
Hedgerows		451.3
Coastal saltmarsh	4,945	
Coastal sand dunes	2,340	
Coastal vegetated shingle	0.3	
Intertidal mudflats	12,160	
Maritime cliff and slopes	76.4	
Saline lagoons	95.9	
Ponds	257.2	
Rivers		363.6
Lowland calcareous grassland	10.4	
Lowland dry acid grassland	233	
Lowland meadows	962.1	
Purple moor-grass and rush pastures	39.4	
Lowland heathland	261.3	
Inland rock outcrops and scree habitats	0.9	
Blue mussel beds	0.2	
Estuarine rocky habitats	No habitat data	
Peat and clay exposures	9.8	
<i>Sabellaria alveolata</i> reefs	No habitat data	
Subtidal sands and gravels	No habitat data	
Coastal and floodplain grazing marsh	243.1	
Lowland fens	184.4	
Lowland raised bog	92.3	
Reedbeds	331	
Lowland mixed deciduous woodland	5,987	

¹¹ Many of these designations overlap in the same locations; for example SACs, SPAs and Ramsar overlap the SSSIs with slight boundary differences. Hence, area total is greater than Core Biodiversity Area Designated Sites total.

¹² Many Priority Habitats overlap with designated sites; for example, coastal saltmarsh, coastal sand dunes, intertidal mudflats overlap SAC, SPA, Ramsar and SSSI designations. Hence, area total is greater than Core Biodiversity Area Priority Habitat total.

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Wet woodland	150.7	
Wood-pasture and parkland	46.8	
Total area and length	28,427.6	814.9

LCR BAP priority habitats

LCR BAP Priority Habitat	Total area (ha)
Lowland Mixed Broad-leaf Woodland ¹³	5,428
Lowland Wood-pasture and Parkland ¹⁴	341.2
Canals	115.1
Grasslands (inc. neutral semi-improved grassland, good quality semi-improved grassland, rough grass ¹⁵ and marshy grassland)	1,278
Total area	7,512.7

LCR Ecological Network by District

	Core Biodiversity Area ¹⁶ (ha)	Stepping Stone sites (ha)	Nature Improvement Area (ha)
Halton	2,615	29.2	2,832
Knowsley	2,304	39.5	1,529
Liverpool	3,602	24.1	2,976
Sefton	9,502	51.0	9,470
St. Helens	2,685	63.6	1,385
Wirral	12,231	59.8	13,013
Totals	32,939	267.2	31,025

¹³ Likely to be a large degree of overlap with Lowland mixed deciduous woodland Priority Habitat data but also likely to capture other broad-leaf woodland outside of Priority Habitat data sources e.g. Urban trees.

¹⁴ Likely to capture scattered Urban trees as well as wood-pasture and parkland

¹⁵ OS rough grass data included where intersects with other grassland datasets. Likely to capture Priority Habitat grasslands not recorded in the other Ecological Network data sources

¹⁶ Core Biodiversity Area and Nature Improvement Area overlap and these figures should not be added together.

Appendix 3: Strategic Natural Assets – key messages

Coast and Estuaries

Key messages – Coast and Estuaries

- Are of incredible intrinsic value and importance and form part of much larger connected coastal environment
- Are vulnerable to the ‘nibbles’ from development, coastal squeeze effects
- Provide a range of essential, functional and cost-effective natural services such as:
 - ✓ protecting the coast and hinterland from flooding and erosion;
 - ✓ the tourism offer – day trippers, recreational activities
 - ✓ the health offer – physical and mental well-being
 - ✓ significant role in helping the LCR to adapt to climate change
- Sand dunes and saltmarsh are threatened by inappropriate habitat management or by being ‘taken for granted’

Strategic Opportunities

- Improving management is essential to maintain the cost-effective natural services
- Recognising that we are reliant on healthy, resilient and well- functioning coastal and estuarine environments

Water and Wetlands

Key messages – Water and Wetlands

- Only tiny fragments of peat bogs and mosslands remain
- Nationally we are a ‘hotspot’ for water vole and home to many priority species
- Our watercourses are mostly classed as Heavy Modified under the Water Framework Directive and the network is under pressure; water quality continues to be an issue
- Agricultural land is maintained by active pumping with significant costs and environmental implications
- Management of watercourses and wetlands is patchy depending on ownership and use; loss of wetlands such as ponds is continuing through in-filling for agriculture or development
- Provide a range of essential and cost-effective natural services such as:
 - ✓ Helps manage risk flooding in urban and rural areas
 - ✓ Capacity to help the LCR adapt to climate change
 - ✓ Recreation activities – angling, canoeing

Strategic Opportunities

- Main challenge is in achieving **Good Ecological Status** under WFD
- Reconnecting the broken links through a programme of risk-assessing culvert removal and re-instating river channels
- Improving resilience of our ecological assets to adapt to current and future issues

Grasslands

Key Messages – Grasslands

- Grasslands are the most vulnerable of habitats to changes in use in the City Region – from development, changes in management, poor or inappropriate management
- Highly fragmented resource, with huge swathes of species-poor grasslands
- With woodlands, our grasslands are the habitat that most people directly experience, in parks, gardens, and natural spaces
- Grassland losses are continuing in the LCR (see Box 2)
- Provide a range of efficient and cost-effective natural services such as:
 - ✓ Significant storage of carbon helping to mitigate climate change
 - ✓ The health offer – physical and mental well-being through regular contact and direct experience with nature

Strategic Opportunities

- Changing management to improve quality of urban park / amenity grasslands
- Increasing the overall area of grassland in conservation management
- Provision of permanent grasslands in urban and rural areas

Woodlands

Key Messages – woodlands

- Area of woodland has increased to around 9% through the success of the Mersey Forest
- Existing woodlands would offer improved biodiversity by better management or being brought into management
- Provide a range of efficient and cost-effective natural services such as:
 - ✓ Products to support energy security e.g. biomass
 - ✓ Health and well-being benefits to individuals and communities
 - ✓ Mitigation of climate change through carbon storage

Strategic Opportunities

- Buffering our ancient semi-natural woodlands to increase their resilience and functionality
- Extending tree planting to help in adapting to climate change by improving cooling in urban areas
- Improving management of trees and woodlands
- Developing habitat mosaics

Agricultural land

Key Messages – agricultural land

- Approximately 50% of the LCR is rural / agricultural
- Significant areas of best and most versatile agricultural land occur throughout and is under pressure from renewable energy projects such as solar photovoltaic, wind turbines and leisure uses
- Range of agricultural businesses including agricultural contracting
- Provides a huge area and improving resource for a wide range of priority species e.g. brown hare, water vole, farmland birds
- Provides significant and essential feeding areas for Pink-footed Geese and other wintering and migratory birds
- A number of hotspots for farmland birds and priority species
- Good take up of Environmental Stewardship options
- Most stepping stones are in our farmland
- Provides a range of efficient and cost-effective natural services such as:
 - ✓ Local food production and security
 - ✓ Number of 'green' jobs

Strategic Opportunities

- Improve connection of stepping stones and linear features such as hedgerows and ditches
- Improve management to increase resilience of species to current and future changes
- Maintain and develop crop production and management in an environment- friendly manner

Linear features

Key Messages – linear features

- A significant and currently undervalued resource which is under pressure from fragmentation and breakage through development for new infrastructure such as road, but also from in-fill development
- Includes a range of habitats such as grassland, woodlands and wetlands (watercourses and floodplains)
- Helps spread of invasive species linked with inappropriate or poor management
- Links are often broken where one feature crosses another
-
- Provides a range of efficient and cost-effective natural services such as:
 - ✓ Managing flood risk in urban and rural areas
 - ✓ Physical access for health and well-being e.g. green gyms, walking and running
 - ✓ Transportation links other than roads

Strategic Opportunities

- Improve connections between linear features, stepping stone sites and Core Biodiversity Area
- Target management to treat and remove invasive species
- Improved management leading to improved resilience of the network

Appendix 4: Mapping

Appendix 4

Liverpool City Region Ecological Network
Mapping Report



LIVERPOOL CITY REGION
ECOLOGICAL
NETWORK

22 September 2015

Document Control

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Glossary

- A4.1 A glossary of terms for the Liverpool City Region Ecological Network is provided in the Main Report. Terms such 'Core Biodiversity Area' and 'Stepping Stone Site' are included in the Main Report glossary.
- A4.2 This glossary provides a definition of terms specific to mapping the Ecological Network.

Term	Definition
Attribute table	Table of information (text and numeric) similar to a spreadsheet which is attached to spatial data.
Base map	Refers to Ordnance Survey 1:2500, 1:10,000 and 1:50,000 digital maps used in a GIS.
Best available data	In this case best available data refers to GIS data available to map designated sites and habitats in the Liverpool City Region at the time of publication.
Data collation	Process of gathering existing data from various different sources within a GIS.
Easting	Refers to a latitudinal (horizontal) point in space to greater than 1m accuracy. Used alongside a 'northing' to pin point a location.
Geographic Information System (GIS)	Mapping software used for querying and managing spatial data. MapInfo Professional v12.5 was used for this project.
GIS layer	Spatial data. This includes point, line, polygon and image data referenced to a co-ordinate system such as British National Grid.
Grid reference	A 6-figure national grid reference (NGR) uses a grid based co-ordinate system to spatially reference a point in space to 100m accuracy.
Head-up digitisation	Process of manually capturing spatial data within a GIS to a base map.
INSPIRE compliant metadata	The INSPIRE (Infrastructure for Spatial Information in the European Community) Regulations 2009 require Local Authorities to publish metadata for their spatial environmental data.
Local data source	Refers to habitat surveys such as Phase 1 and National Vegetation Classification is District or site specific. This would also include Mersey Forest woodland data, for example. These local habitat data sources are typically more accurate.
National data source	Refers to data with national coverage.
Northing	Refers to a longitudinal (vertical) point in space to greater than 1m accuracy. Used alongside an 'easting' to pin point a location.
Overlay mapping	The process of overlaying layers of information within a GIS, usually on top of a base map and aerial photography.
Polygon	A polygon or region is an enclosed area which is

	made up of 3 or more joined up lines.
SQL Select	A data querying language used to interrogate spatial data in a GIS.

Introduction

- A4.3 The preparation of the Liverpool City Region Ecological Network, which covers both intertidal and terrestrial environments, has required mapping the diverse and dynamic natural assets found in our area – from estuaries, to lowland heath, ancient woodland and grassland meadows. The mapping has helped in identifying a Nature Improvement Area.
- A4.4 Our approach used best available techniques i.e. Geographic Information Systems (GIS) (see glossary) and best available data to establish a digital map of the City Region's Ecological Network. When analysed and informed by non-mappable information, a more holistic understanding of habitats and the links between was achieved.

Structure and purpose of the Mapping Report

- A4.5 The purpose of this Mapping Report is to set out, in a transparent way, the method and data sources used to assemble the Liverpool City Region Ecological Network, including the suite of GIS layers (see glossary), monitoring procedure and supporting information.
- A4.6 The mapping method used to define each of the GIS layers and from what data sources they are derived is described in Part 1. Appendix A explains the information attributed to the GIS attribute tables (see glossary) and Appendix B shows the criteria used to query the data sources.
- A4.7 In Part 2, known data limitations are described and how they may affect the Liverpool City Region Ecological Network. Copyright and data licencing matters are covered in Part 3.
- A4.8 Finally, a habitat monitoring and data updating protocol is set out in Part 4.

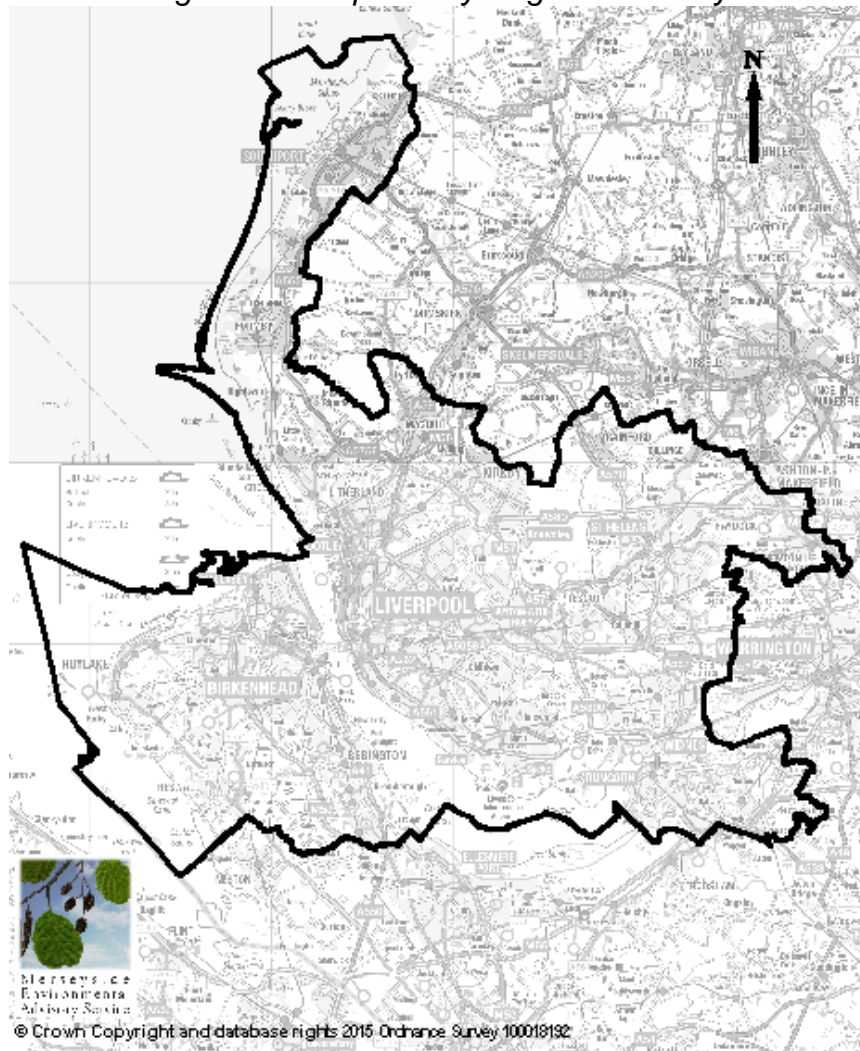
Part 1: Mapping method and data sources

A4.9 The Liverpool City Region Ecological Network comprises:

- [Core Biodiversity Area \(CBA\)](#);
- [Linear Features](#);
- [Stepping Stone Sites](#); and
- [Liverpool City Region Nature Improvement Area](#).

A4.10 Each of the above layers is mapped within a GIS – MapInfo Professional v12.5 (MapInfo). The ecological information is held as MapInfo Tables known as GIS layers which comprise points, lines and polygons. Only data within the Liverpool City Region (City Region) boundary, including to mean low water, was used (Figure 1). The interpretation of ecological data and information has ensured that ‘ecological sense’ has been embedded within the analyses and data queries set out below.

Figure.1: Liverpool City Region boundary



Core Biodiversity Area

Mapping Method

- A4.11 The Core Biodiversity Area (CBA) GIS layer was developed by combining a wide range of data (Table 1) to establish the core sites and habitat components of a functional ecological network.
- A4.12 The method involved an initial period of GIS data collation from local sources and national data hubs including Natural England, JNCC and the Environment Agency. This was followed by a data querying exercise using SQL Select (see glossary) in MapInfo which allowed site and habitat data to be selected according to pre-defined criteria. Data that met these criteria (see Appendix B) were included in the CBA layer.
- A4.13 In its raw form habitat data is attributed using various habitat classification systems such as Phase 1 Habitat Survey codes or in the case of other data, descriptive terms (e.g. broadleaved, reeds or marsh) for different habitat types.
- A4.14 The next stage of the mapping method was to match the habitat data attributes with the habitat types (Table 1) and record these in the attribute table (see glossary) attached to the GIS layer. Explanations of LCR Ecological Network attribute tables are set out in Appendix A.
- A4.15 In order to match habitat data with Priority Habitats and LCR BAP priority habitats, data sources were interpreted using national¹⁷ and local¹⁸ guidance. For example, Phase 1 habitat data codes E1.6 to E1.8 (Bogs and Mires) are matched to Priority Habitat type 'Lowland Raised Bog' and B2.1 (unimproved neutral grassland) is assigned to 'Lowland Meadow'.
- A4.16 The Core Biodiversity Area layer attribute table includes in the column titled "Interp_Ecological_Value" interpretation of ecological value (Appendix A). This is included to help users understand the ecological value of sites and habitats. Each polygon (see glossary) within the GIS layer was attributed with a value which was interpreted from the data source. These values are:
- Statutory Designated Site;
 - Non-Statutory Designated Site;
 - Irreplaceable Priority Habitat;
 - Priority Habitat; or
 - LCR BAP priority habitat.
- A4.17 The 'LCR BAP priority habitat' value includes grassland and woodland data which it is not currently possible to confirm whether or not it meets Priority Habitat criteria but does meet LCR BAP priority habitat criteria. This includes semi-improved neutral grasslands and woodland data derived from Forestry

¹⁷ JNCC (2011) *UK Biodiversity Action Plan Priority Habitat Descriptions*
http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf

¹⁸ North Merseyside BAP (2008) *Habitat Action Plans*
<http://www.merseysidebiodiversity.org.uk/index.asp?content=v2content\haps.xml>

Commission, Mersey Forest and Ordnance Survey sources. Natural England has taken a similar approach with their Priority Habitat Inventory which includes 'Good Quality Semi-Improved Grassland' to understand the extent and coherence of grassland within an ecological network. Inclusion of these data allows for a more holistic understanding of habitat extent within the City Region.

A4.18 A broad habitat type was then assigned to each polygon in line with national UK guidance¹⁹, this was necessary to inform ecological priorities set out in the Nature Improvement Area profiles. For the City Region the following broad habitat type categories were used:

- Woodland;
- Grassland;
- Geological;
- Wetland;
- Heathland;
- Coastland; or
- Mosaic.

A4.19 For designated sites, which can cover thousands of hectares and comprise all of these broad habitats, the dominant habitat is recorded in the attribute table. Where there is no clear broad habitat type 'Mosaic' is attributed. For example, the Sefton Coast designations are mainly 'Coastland', whereas Knowsley Park is classified as a 'Mosaic' since this site comprises a range of habitats, none of which dominate.

A4.20 The next step was to complete the rest of the attribute table as shown in Appendix A, and assign shading to polygons. To be consistent with existing survey methods, habitat shading is aligned to Phase 1 mapping colour codes²⁰. Once this was complete the Core Biodiversity Area layer was subjected to a period of testing and quality assurance.

A4.21 As data are continually being released and in view of the time elapsed during preparation a data refresh of all the GIS layers took place in July and August 2015. All updates have been recorded in accordance with the monitoring protocol set out in Part 4.

Data Sources

A4.22 The Core Biodiversity Area comprises the following features:

- Designated sites;
- Priority Habitats; and
- LCR BAP priority habitats.

A4.23 To map these features as comprehensively as possible within the constraints of the data a wide range of national and local data sources have been used.

¹⁹ JNCC (2015) *UK BAP broad habitats* <http://jncc.defra.gov.uk/page-5711>

²⁰ JNCC (2010) *Handbook for Phase habitat survey – a technique for environmental audit Appendix 1*

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These data are as advised by NPPF and NPPG (see NPPF Compliance Assessment). Table 1 summarises the data used to map each designated site and habitat type within the City Region.

Table 1: Core Biodiversity Area data sources

Broad Habitat Type	CBA designated sites/habitat type	Data source	Data version date	Data owner
Various	Special Protection Areas	Special Protection Area Inventory	13/03/2015	Natural England (JNCC maintained)
Various	Special Areas of Conservation	Special Areas of Conservation Inventory	18/09/2013	Natural England (JNCC maintained)
Various	Ramsar	Ramsar Inventory	12/07/2013	Natural England
Various	Site of Special Scientific Interest	SSSI Inventory	01/07/2015	Natural England
Various	National Nature Reserve	NNR Inventory	01/07/2015	Natural England
Various	Local Nature Reserve	LNR Inventory	11/06/2015	Natural England
Various	Local Wildlife Sites	Sites of Local Biological Interest; Site of Nature Conservation Value; Site of Community Wildlife Interest; Sites of Importance for Nature Conservation; Sites of Biological Importance	2006-2014	LCR Districts
Various	Local Geological Sites	Sites of Local Geological Interest; Sites of Earth Science Importance	Circa 2003	LCR Districts
Woodland	Lowland Mixed Deciduous Woodland (Priority Habitat and LCR BAP priority habitat)	Ancient Woodland Inventory v2.9	18/11/2014	Natural England
		OS MasterMap	01/04/2015	Ordnance Survey
		National Forest Inventory	2014	Forestry Commission
		Mersey Forest Land Management Areas	28/07/2015	The Mersey Forest
		Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		NVC Survey	2002-2014	LCR Districts (various commissioned surveys)
		Phase 1 Habitat Survey (district wide)	1996-2007	LCR Districts (various commissioned surveys)
	Phase 1 Habitat Survey (site specific surveys)	2011-2013	Various	
	Wet Woodland	BAP Habitat Inventory v1.1 (discontinued)	19/04/2004	Natural England
		NVC Survey	2002	LCR Districts (commissioned survey)

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Broad Habitat Type	CBA designated sites/habitat type	Data source	Data version date	Data owner
		MEAS field survey	08/04/2013	MEAS
	Wood-pasture & Parkland (Priority Habitat and LCR BAP priority habitat)	Phase 1 Habitat Survey (district wide)	1996-2007	Natural England
		OS MasterMap	01/04/2015	Ordnance Survey
		Single dataset Priority Habitat Inventory (v1)	2013	Natural England
	Traditional Orchards	Single dataset Priority Habitat Inventory (v1)	2013	Natural England
Grassland	Lowland Calcareous Grassland	Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		NVC Survey	2002-2014	LCR Districts (various commissioned surveys)
		Phase 1 Habitat Survey (district wide)	1996-2007	LCR Districts (various commissioned surveys)
		OS MasterMap	01/04/2015	Ordnance Survey
	Lowland Dry Acid Grassland	Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		NVC Survey	2002-2014	LCR Districts (various commissioned surveys)
		Phase 1 Habitat Survey (district wide)	1996-2007	LCR Districts (various commissioned surveys)
		OS MasterMap	01/04/2015	Ordnance Survey
	Lowland Meadows	Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		NVC Survey	2003-2014	LCR Districts (various commissioned surveys)
		Phase 1 Habitat Survey (district wide)	1996-2007	LCR Districts (various commissioned surveys)
		OS MasterMap	01/04/2015	Ordnance Survey
		Lunt Meadows site plan	2013	Lancashire Wildlife Trust
	Grasslands (LCR BAP priority habitat including: semi-improved neutral grassland, good quality semi-improved)	Phase 1 Habitat Survey (district wide)	1996-2007	LCR Districts (various commissioned surveys)
		OS MasterMap	01/04/2015	Ordnance Survey
		Single dataset Priority Habitat Inventory (v1)	2013	Natural England

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Broad Habitat Type	CBA designated sites/habitat type	Data source	Data version date	Data owner
	grassland, rough and marshy grassland)			
	Arable Field Margins	Likely to be captured within the Phase 1 Habitat Survey and LCR BAP priority habitat grasslands data. No published habitat data available at this time.		
Heath	Lowland Heath	Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		NVC Survey	2002	LCR Districts (various commissioned surveys)
		Phase 1 Habitat Survey (district wide)	1996-2006	LCR Districts (various commissioned surveys)
		OS MasterMap	01/04/2015	Ordnance Survey
Wetland	Lowland Fen	Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		Phase 1 Habitat Survey (district wide)	1996-1998	LCR Districts (various commissioned surveys)
		NVC Survey	2002-2014	LCR Districts (various commissioned surveys)
		OS MasterMap	01/04/2015	Ordnance Survey
	Lowland Raised Bog	Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		Phase 1 Habitat Survey (district wide)	1996-2000	LCR Districts (various commissioned surveys)
	Reedbeds	Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		Phase 1 Habitat Survey (district wide)	1996-2006	LCR Districts (various commissioned surveys)
		Phase 1 Habitat Survey (site specific survey)	10/2013	LCR Districts (various

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Broad Habitat Type	CBA designated sites/habitat type	Data source	Data version date	Data owner
				commissioned surveys)
		NVC Survey	2000-2007	LCR Districts (various commissioned surveys) and English Nature/Countryside Council for Wales
		OS MasterMap	01/04/2015	Ordnance Survey
		MEAS field survey	08/04/2013	MEAS
		Lunt Meadows site plan	2013	Lancashire Wildlife Trust
		Merseyside BioBank	10/01/2013	Merseyside BioBank (incorporates Lancashire Wildlife Trust data)
	Purple Moor Grass & Rush Pastures	Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		NVC Survey	2002	LCR Districts (commissioned survey)
		NVC Survey (site specific survey)	07/2014	LCR Districts (various commissioned surveys)
	Coastal	Intertidal Mudflats	Single dataset Priority Habitat Inventory (v1)	2013
Phase 1 Habitat Survey (district wide)			2006	Halton Council
Phase 1 Habitat Survey (site specific survey)			2013	RSK Environment Ltd
Priority BAP Habitats			17/02/2015	Natural Resources Wales
Subtidal Sands and Gravels		Likely to be captured within designated sites. No published habitat data available at this time.		
<i>Sabellaria alveolata</i> Reefs		Likely to be captured within designated sites. No published habitat data available at this time.		
Coastal Vegetated Shingle		Phase 1 Habitat Survey (district wide)	2006	Halton Council
Coastal Saltmarsh		Phase 1 Habitat Survey (district wide)	1999-2007	LCR Districts (various commissioned surveys)
		NVC survey	2000-2007	LCR Districts (various commissioned surveys) and English Nature/Countryside

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Broad Habitat Type	CBA designated sites/habitat type	Data source	Data version date	Data owner
				Council for Wales
		Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		Priority BAP Habitats	17/02/2015	Natural Resources Wales
	Coastal Sand Dunes	Phase 1 Habitat Survey (district wide)	1999-2000	Sefton Council
		NVC survey	2003-2004	Sefton Council (TEP)
		Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		OS MasterMap	01/04/2015	Ordnance Survey
	Maritime Cliff and Slopes	Phase 1 Habitat Survey (district wide)	1999-2000	LCR Districts
		NVC survey	2003-2007	LCR Districts (various commissioned surveys)
		Single dataset Priority Habitat Inventory (v1)	2013	Natural England
	Saline Lagoons	Single dataset Priority Habitat Inventory (v1)	2013	Natural England
		Phase 1 Habitat Survey (district wide)	2006	Halton Council
	Coastal Floodplain & Grazing Marsh	BAP Habitat Inventory v1.3 (discontinued)	Circa 2002	Natural England
		Lunt Meadows site plan	2013	Lancashire Wildlife Trust
		NVC survey	2000-2007	LCR Districts (various commissioned surveys) and English Nature/Countryside Council for Wales
	Blue Mussel Beds	Priority BAP Habitats	17/02/2015	Natural Resources Wales
	Peat and Clay Exposures	Priority BAP Habitats	17/02/2015	Natural Resources Wales
	Estuarine Rocky Habitats	Likely to be captured within designated sites. No published habitat data available at this time.		
Geological	Inland rock outcrops and scree habitats	Phase 1 Habitat Survey (district wide)	1996-2000	LCR Districts (various commissioned surveys)

Linear Features

Mapping method

A4.24 The Linear Features layer was created by combining data shown in Table 2. This GIS layer comprises the wildlife corridor element of a functional ecological network.

A4.25 The mapping method was similar to the approach taken for the Core Biodiversity Area and involved:

- An initial period of data collation (see glossary);
- A data querying exercise (see criteria for Linear Features in Appendix B);
- Matching of data to Priority Habitat, LCR BAP priority habitat and other linear wildlife corridors (see Table 2);
- Interpretation of ecological value;
- Completion of the attribute table;
- Assigning styles and colours to linear habitats using Phase 1 mapping colour codes²¹;
- Refresh of data; and
- Carrying out a period of testing and bug fixes.

Data sources

A4.26 This GIS layer comprises linear Priority Habitats (Hedgerows and Rivers), LCR BAP priority habitat (Canals) and other linear wildlife corridors as set out in Table 2.

Table 2: Linear Features data sources

Linear features	Data source	Data version date	Data owner
Hedgerows	Phase 1 Habitat Survey (district wide)	1996-2007	LCR Districts
Rivers	National Main Rivers	01/04/2015	Environment Agency
Canals	OS MasterMap	01/04/2015	Ordnance Survey
Ditches	Phase 1 Habitat Survey (district wide)	1996-2000	LCR Districts
Major road corridors	OS MasterMap Integrated Transport Network (ITN)	01/04/2015	Ordnance Survey
Dismantled railway	Dismantled railway	Circa 2011	MEAS
	Public Rights of Way (PROW) register	Circa 2007	LCR Districts
Active railway corridors	OS MasterMap	01/04/2015	LCR Districts

Stepping Stone Sites

Mapping method and data source

A4.27 Stepping Stone Sites are those habitat patches such as ponds or woodland copses that are isolated from the Core Biodiversity Area and / or linear features. Within the City Region, only stepping stone sites for species reliant on wetlands have been identified, at this stage due to the quality and type of

²¹ JNCC (2010) *Handbook for Phase habitat survey – a technique for environmental audit Appendix 1*

data available. In the future, other important stepping stone sites may be identified from new and/or improved data availability.

- A4.28 Unlike the other GIS layers, the Stepping Stone Sites layer is derived from a single data source: OS MasterMap (April 2015) ‘water_poly’ data. The mapping method followed the same broad approach set out for the Core Biodiversity Area and Linear Features layers. Inland water which matched the pond Priority Habitat criteria (Appendix B) was included in the Stepping Stone Sites layer.

Liverpool City Region Nature Improvement Area

Mapping method

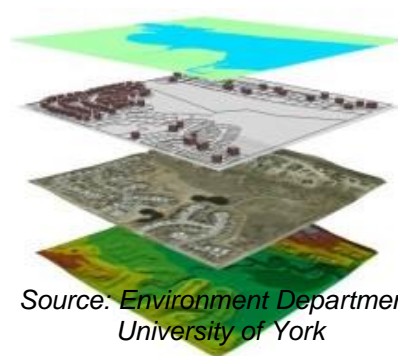
- A4.29 Mapping of the Nature Improvement Area took place initially between late 2013 and summer 2014, and was updated and then finalised in August 2015.
- A4.30 The method followed a 6 stage process agreed by the Task & Finish Group in January 2014. This process was used to prepare and map a Nature Improvement Area for the Liverpool City Region and is consistent with Defra’s guidance on what locally determined Nature Improvement Areas should contain²².
- A4.31 The six stages of the mapping method are:

Stage	
1	Selection of mapping solution
2	Strategic Opportunity Areas and priorities
3	Update evidence base and collate and identify additional datasets
4	Prepare and map Nature Improvement Area and profiles
5	Agree Nature Improvement Area, a mechanism for updating and a monitoring tool
6	Liaise with external partners

Stage 1: Selection of mapping solution

- A4.32 A GIS approach was selected as the best available technique for producing a digitised Nature Improvement Area boundary. This approach is proven to be the most effective and efficient way to identify, view, analyse and interpret multiple spatial datasets simultaneously. The mapping technique used involved GIS overlay mapping (Figure 2) using MapInfo to digitise the Nature Improvement

Figure 2: GIS overlay mapping



Source: Environment Department, University of York

²² Defra (2012) *Local Authorities, Local Nature Partnerships and others to apply when identifying Nature Improvement Areas*
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69600/pb13824-nia-criteria.pdf

Area boundaries on Ordnance Survey (OS) Vector Map Local 1:10,000 scale base maps (see glossary).

Stage 2: Strategic Opportunity Areas and priorities

A4.33 At an earlier stage of the LCR Ecological Network preparation, Strategic Assets and 18 Strategic Opportunity Areas were identified²³ along with ecological priorities for the City Region. A list of the Strategic Opportunity Areas and their priorities are shown in Table 3 which inform each NIA Focus Area Profile (Appendix 5, Main Report).

Table 3: Strategic Opportunity Areas

ID	Name	Priorities
1	Sefton Coast	Coast and estuaries, heath
2	Formby Mosslands	Water and wetlands
3	River Alt Corridor (Little Altcar to Sefton Meadows)	Water and wetlands
4	River Alt, Kirkby Brook, Knowsley Brook Croxteth Brook and Croxteth Park Corridor	Water and wetlands, grasslands, woodland, parkland
5	Simonswood Moss, Kirkby Moss, King's Moss and Holiday Moss	Water and wetlands (specifically mossland)
6	Blackbrook, Stanley Bank Meadows and Carr Mill Dam	Water and wetlands, grassland, woodland
7	Sankey Valley Corridor	Water and wetlands, grasslands, woodland
8	Netherley Brook and Ditton Brook Corridor	Water and wetlands
9	Bridgewater Canal, Halton Moss and Keckwick Brook	Water and wetlands, woodland
10	South Runcorn Ancient Woodland	Woodland
11	Runcorn Hill Heath	Heath
12	Mersey Estuary	Coast and estuaries
13	Dibbinsdale and Raby Mere	Water, wetlands and woodland
14	Bidston Hill to Clatterbridge	Heath
15	Caldy Hill and Thurstaston Common	Heath and woodland
16	Dee Estuary	Coast and estuaries
17	North Wirral Coast	Coast and estuaries
18	Birket Catchment	Water and wetlands

A4.34 The Strategic Assets and Strategic Opportunity Areas are mapped shown in Appendix D and were used as the starting point for mapping the Nature Improvement Area Focus Areas (Stage 4).

Stage 3: Update evidence base and collate and identify additional datasets

A4.35 Prior to digitising the Nature Improvement Area boundary, additional environmental and deliverability datasets such as development plan allocations and public sector land ownership data were added to enhance

²³ MEAS (2011) *Liverpool City Region Ecological Framework & Strategic Overview*

the evidence base. This helped define areas which are potentially more suitable for ecological management opportunities.

- A4.36 Appendix C is a list of the evidence used to prepare the Nature Improvement Area boundary. This comprises spatial data and non-spatial information such as the Mersey Forest Action Plan and National Character Areas.

Stage 4: Prepare and map Nature Improvement Area and profiles

- A4.37 This stage involved GIS overlay mapping and head-up digitisation (see glossary) of the Nature Improvement Area to take account of land use and real world features, such as field boundaries and roads. Professional judgement and local knowledge as well as landscape ecology principles were used to interpret the evidence base and inform the Nature Improvement Area boundary.

- A4.38 Local Plan aspirations were taken into account through meetings and correspondence with District planning officers over a 20 month period (December 2013 to August 2015). This involved consideration of existing Unitary Development Plan allocations and emerging Local Plan priorities.

- A4.39 Where Focus Areas are identified as having wetland priorities, such as the River Alt Corridor, the Environment Agency Flood Map which indicates floodplain extent was used to inform the boundary along with other key data and information.

- A4.40 A description of how the evidence base was interpreted and used is provided in Appendix C.

- A4.41 Due to the degree of urbanisation and fragmentation of natural assets across the City Region, the Nature Improvement Area has been split into 17 Focus Areas of opportunity. This will help to achieve delivery at a more local scale. Many of these areas cross District boundaries within the City Region. Some also extend in physical and ecological terms outside the City Region e.g. the Mersey Estuary, Sankey and Glaze catchment, the Alt catchment, the Dee Estuary, and the Ribble Estuary.

Stage 5: Agree Nature Improvement Area, a mechanism for updating and a monitoring tool

- A4.42 District planning officers have contributed to the development of the Nature Improvement Area providing comment and review of the emerging boundary.

- A4.43 In August 2015, meetings were held with Halton and St. Helens to discuss minor amendments to the Nature Improvement Area boundary which have been implemented. The remaining Districts confirmed that no further changes were required, at this time, in their administrative areas.

- A4.44 A key part of the Nature Improvement Area method agreed by the Districts' Task & Finish Group was a mechanism for updating and monitoring the LCR Ecological Network. This mechanism applies to all of the GIS layers and is discussed separately in Part 4.

Stage 6: Liaise with external partners

- A4.45 The Liverpool City Region Nature Improvement Area is landscape-scale therefore, it is important to liaise with external partners including statutory bodies such as the Environment Agency and Natural England; Local Wildlife Trusts, adjoining authorities as well as local wildlife experts. This is a recommendation of Defra's guidance for preparing NIAs²⁴.
- A4.46 Liaison with external partners took place at an early stage of the LCR Ecological Network through workshops and data sharing. As part of the evidence base for emerging Local Plans, the LCR Ecological Network will be considered along with other evidence base documents according to Districts' timescales and Local Plan arrangements. Joint working with statutory agencies and other key partners is envisaged to take place through each Local Plan process.

²⁴Defra (2012) *Local Authorities, Local Nature Partnerships and others to apply when identifying Nature Improvement Areas*
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69600/pb13824-nia-criteria.pdf

Part 2: Data limitations

A4.47 The Liverpool City Region Ecological Network GIS layers are derived from best available data. However, all these data are of different age, coverage, accuracy and precision. Known limitations of each main data source are discussed below. This limitation replicates the situation at the national level.

Local data sources

Phase 1 Habitat Survey

- A4.48 Each of the 6 districts within the City Region has a Phase 1 Habitat Survey of its area. Wirral's Phase 1 Habitat Survey has not been digitised and was carried out in 1986; it cannot be used to digitally map the LCR Ecological Network. To overcome this limitation, scanned images of the hand-drawn maps were used to inform Nature Improvement Area boundary discussions.
- A4.49 The other 5 districts (Halton, Knowsley, Liverpool, Sefton and St. Helens) have digitised Phase 1 surveys which were carried out between 1996 and 2007. Knowsley, Sefton and St. Helens' Phase 1 surveys were captured in the field so are considered to be accurate at the time of survey. However, they are now 15 years old and known to be affected by land use change particularly in the more urban areas.
- A4.50 Liverpool's Phase 1 survey was carried out in 2006 and 2007. This Phase 1 survey was targeted and based on aerial photography interpretation with limited field survey. It does not provide complete coverage of the City. Halton's Phase 1 (2006) is also desk-based and like Liverpool's Phase 1, suffers from limited habitat coverage. For example, grassland and wetland habitats are thought to be under-recorded, and no hedgerows are recorded in Halton.
- A4.51 Some of the LCR districts have commissioned site specific Phase 1 habitat survey to assist in Local Plan preparation e.g. Knowsley (2013) and Sefton (2012).

National Vegetation Classification survey (NVC)

- A4.52 National Vegetation Classification (NVC) is the most detailed survey data included in the Core Biodiversity Area layer and is digitised at a large scale (1:2500 or greater) so accuracy and precision are good.
- A4.53 City Region Districts commissioned NVC of priority areas as a follow up to district-wide Phase 1 Habitat Survey so coverage is not as widespread but accords with best practice. In Knowsley, Sefton, St. Helens and Wirral surveys are 11-15 years old so may be affected by land use change although probably not to the extent of the Phase 1 surveys²⁵. Liverpool's NVC survey is more up to date (2007) but coverage is targeted to priority areas. No coverage of Halton is available.

²⁵ Because they are surveys of selected areas including protected sites, which have existing ecological importance.

A4.54 Some of the LCR Districts (such as Knowsley and Sefton) have commissioned recent (2014 and 2012 respectively) NVC survey on a site specific basis to inform emerging Local Plans. Other sources include data from planning applications to help improve data currency and coverage.

National data sources

A4.55 National data sources have been used to help address gaps and limitations in local data and vice versa. Both local and national data sources complement each other.

Single dataset Priority Habitat Inventory

A4.56 The national Priority Habitat Inventory version 1 (2013) (version 2 full release expected later this year) brought together Natural England's separate BAP Habitat Inventories and combined them in a single layer. These inventories were based upon local Phase 1 and NVC survey and were subject to peer review during compilation.

A4.57 The Single Priority Habitat Inventory applies the Biodiversity Action Plan (BAP) inventories to Ordnance Survey (OS) MasterMap which gives a higher level of precision. However the accuracy of the BAP inventories is mixed. For example, an internal verification exercise²⁶ took small samples of the 17 Priority Habitats the inventory records in the City Region and rated 14 habitats as 'acceptable' in terms of their classification accuracy. Lowland Meadows and Purple Moor Grass and Rush Pastures were found to have the lowest level of accuracy. Coastal & Floodplain Grazing Marsh differs in that it identifies the existing resource and includes predictive modelling to identify potential locations for new marsh creation. This combination has led to low confidence in the mapping of the existing resource.

A4.58 To overcome the issues of predictive modelling, the original BAP Habitat Inventory data for Coastal & Floodplain Grazing Marsh was retained alongside local data and used to inform the LCR Ecological Network. Whilst this inventory also has limitations, it was found to have greater accuracy than the Single Priority Habitat Inventory data.

Ordnance Survey MasterMap

A4.59 Ordnance Survey MasterMap is a useful data source as it offers both high levels of spatial accuracy and complete City Region coverage, albeit with limited ecological information.

A4.60 The 'other_poly' layer has descriptive terms attributed which include habitat references. However, these terms are typically generic; therefore it is difficult to match the data to Priority Habitat types. For example, some of the polygons with terms 'rough grassland' and 'marsh' do not provide sufficient detail to be able to say definitively whether they are Priority Habitat, but equally there is nothing to say they are not. Therefore, based on the precautionary principle and to help bridge the gaps in the local data,

²⁶ MEAS (2013) internal document

polygons with these descriptive terms have been included. Those polygons which do provide sufficient detail (such as 'marsh' polygons below mean low water) have been interpreted to Priority Habitat 'Coastal Saltmarsh' following the process described in Part 1.

- A4.61 OS MasterMap also prioritises built features over natural features, so updates of habitat data are patchy and infrequent. To help address the issue of data age, the version date of each OS MasterMap polygon is included in the 'Data_Comments' field of the Core Biodiversity Area attribute table. See Appendix A.

Liverpool City Region Ecological Network GIS layers

- A4.62 Data sources used to map the Ecological Network are the best available. Limitations associated with these data are inherited by the GIS layers so care should be taken when using the data at a site specific level.
- A4.63 With regard to the Core Biodiversity Area layer, because habitat data is collated through a variety of different survey methods the attribute table includes interpretations of the data to match Priority Habitat types. These interpretations are based upon the national Priority Habitat descriptions²⁷, informed by local knowledge, professional judgement and subject to review by an Ecologist as work progressed.
- A4.64 In terms of the data interpretation process referred to in Part 1, it is important to note that not all data sources exactly match the Priority Habitat and LCR BAP priority habitat names i.e. broad-leaved semi-natural woodland (A1.1.1) and Lowland Mixed Deciduous Woodland and unimproved grassland and Lowland Meadows.
- A4.65 Gaps in the local data mean other data sources such as OS MasterMap, Forestry Commission and Mersey Forest have been used. These data have not been created to map Priority Habitats so cannot be used for this purpose, however sufficient detail is provided in the data attributes tables to allow classification to LCR BAP priority habitat types. Inclusion of this data helps to make the Ecological Network more resilient to habitat fragmentation.

²⁷ JNCC (2011) *UK Biodiversity Action Plan Priority Habitat Descriptions*
http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf

Part 3: Copyright restrictions and acknowledgments

A4.66 The suite of GIS layers are based mainly on third-party data therefore it is imperative that data owners are acknowledged on any internal or external publications including maps, reports, web mapping etc.

A4.67 INSPIRE compliant metadata (see glossary) for each of the 4 GIS layers is provided in xml format. This has been supplied to district IT and GIS managers for upload to www.data.gov.uk in accordance with INSPIRE requirements.

A4.68 The following data acknowledgement is to be attached to any publication which contains the GIS layers:

Data sources: © Merseyside Environmental Advisory Service; © Mersey Forest; Contains Forestry Commission information licensed under the Open Government Licence v3.0; © Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right [year]; © Contains Environment Agency information. © Crown Copyright. All rights reserved. Natural Resources Wales. 100019/41 [year] © Hawlfraint y Goron. Cedwir pob hawl. Cyfoeth Naturiol Cymru. 100019/41 [blwyddn]. Nature Improvement Area boundary informed by various other data sources (Mapping Report Appendix C).

A4.69 For information, the licence restrictions and permitted use of data are set out within the links provided in Table 4.

Table 4: Data source licences

Data owner	Licence
LCR Districts	https://www.ordnancesurvey.co.uk/business-and-government/public-sector/mapping-agreements/public-sector-mapping-agreement.html
Forestry Commission	http://www.forestry.gov.uk/website/oscompliance.nsf/licence
Natural England	http://www.gis.naturalengland.org.uk/pubs/gis/GIS_selection.asp?Type=2
Joint Nature Conservation Committee (Natural England)	http://jncc.defra.gov.uk/protectedsites/SACselection/gis_data/terms_conditions.asp
Ordnance Survey	https://www.ordnancesurvey.co.uk/business-and-government/public-sector/mapping-agreements/public-sector-mapping-agreement.html
Environment Agency	http://www.geostore.com/servicecontent/layerInfo/EA/EA_DataShare_SL_Public-Z31613.pdf
National Resources Wales	Special Licence - Commercial

A4.70 If you have any queries about appropriate use of the data and copyright restrictions then contact the data owner(s) direct or MEAS eas.info@eas.sefton.gov.uk who use the data as part of the Ecological Network evidence base.

Part 4: Monitoring and data updating protocol

- A4.71 A monitoring procedure was agreed by the Task & Finish Group as part of the Nature Improvement Area method in January 2014. This provided a mechanism for updating and tracking habitat change to the Ecological Network.
- A4.72 In September 2015, this procedure was reviewed and a final monitoring and data updating protocol is set out below.
- A4.73 In order to track data updates a log sheet '**LCREN_GIS_update_log**' has been created using Microsoft Excel (separate of this Report). This log sheet includes the following information:
- GIS layer updated;
 - Date changes implemented were made;
 - Type of update i.e. data update or habitat loss and gain;
 - Update summary describing the detail of the change e.g. habitat types included, purpose of update, site(s) or areas(s) affected;
 - Update source i.e. where the information has come from to justify a change to the GIS layers. New survey data, for example; and
 - Districts affected by the change.
- A4.74 This update log will be maintained by the LCR Ecological Network administrator – MEAS. New data will be logged when it becomes available from data sources, and updates made to the GIS layers to ensure the LCR Ecological Network is current.
- A4.75 Habitat loss and gain will be monitored based on planning applications on which MEAS is consulted. To reduce workload burden, an initial 2 year review of habitat change will be carried out by MEAS and could be fed biennially into the Districts' Authority Monitoring Reports.
- A4.76 The review will be informed by the data update log and a MEAS internal development management tracking system to capture hectares of designated sites, Priority Habitat and LCR BAP priority habitat gained or lost.
- A4.77 Natural England's Nature Improvement Area guidance²⁸ recommends using existing mechanisms to help monitor habitat change. The Districts' Task & Finish Group, the Local Sites Partnerships and the Local Environmental Record Centres will be involved as part of the initial review to gather new habitat survey information and identify any changes to Local Sites.
- A4.78 A refresh of the GIS layers will also be provided as part of the initial review.
- A4.79 Alongside the monitoring and data update protocol, the Main Report sets out wider socio-economic measures of success for delivery of the LCR Ecological Network, and existing mechanisms for reporting on these

²⁸Natural England (2012) *Nature Improvement Area Criteria*
http://www.naturalengland.org.uk/Images/NIA-criteria_tcm6-26964.pdf

measures. A summary reporting on these measures will be provided as part of the initial 2 year review.

- A4.80 It is anticipated that this protocol alongside the measures set out in the Main Report will adequately demonstrate the success of delivery of the Liverpool City Region Ecological Network.

Conclusions

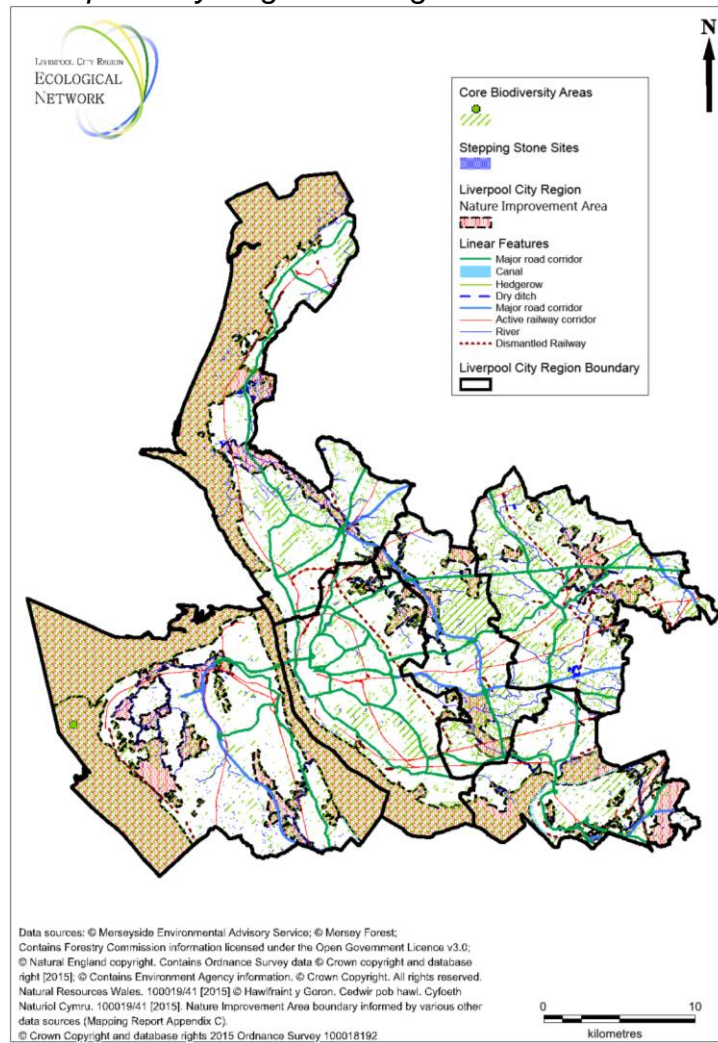
A4.81 Mapping of the Liverpool City Region Ecological Network has been an extensive process using a wide variety of best available data and information sources, and professional ecological input. The result is a mapped suite of GIS layers which represent the natural assets and ecological priority areas for nature improvement in the City Region.

A4.82 The LCR Ecological Network GIS layers comprise:

- [Core Biodiversity Area \(CBA\)](#);
- [Linear Features](#);
- [Stepping Stone Sites](#); and
- [LCR Nature Improvement Area](#).

A4.83 These GIS layers are mapped in Figure 3 and available separately for District partners.

Figure 3: Liverpool City Region Ecological Network



A4.84 Data have been interpreted to match designated sites, priority habitats and LCR BAP priority habitats as accurately as possible within the constraints of

the data. This approach provides a holistic understanding of habitat extent and opportunity to help address issues of habitat fragmentation.

- A4.85 The monitoring and data updating protocol alongside the measures set out in the Main Report; provide a suitable means of tracking performance of the LCR Ecological Network.

Appendices

Appendix A: Attribute tables

Core Biodiversity Areas

Field name	Type	Comments
Interp_CBA	Character[150]	CBA site or habitat type interpreted from the Data_Name and Data_Source
Interp_Ecological_Value	Character[50]	Ecological value assigned from the Data_Name and Data_Source. Value either: Statutory Designated Site Non-Statutory Designated Site Irreplaceable Priority Habitat Priority Habitat LCR BAP priority habitat
Interp_Priority_Habitat	Character[75]	Priority Habitat type assigned from the Data_Name and Data_Source using Priority Habitat descriptions ²⁹
Interp_Broad_Habitat_Type	Character[50]	Broad Habitat type assigned from the Data_Name and Data_Source. Value either: Woodland Grassland Geological Wetland Heathland Coastland Mosaic
Site_Name	Character[100]	Name of site or habitat type from Data_Source
Data_Name	Character[150]	Name of site or habitat type
Data_Source	Character[150]	Source of data. For example 'Liverpool 2006-2007 Phase 1 habitat survey'
Data_Scale	Character[25]	International; European; National or local Data_Source
Data_Owner	Character[75]	Owner. For example 'Liverpool Council'
Data_Comments	Character[254]	Comments about data. This includes additional information from the Data_Source attributes. For example version dates of OS MasterMap polygons are included in this field
Data_Verification	Character[254]	Details of any known verification by MEAS or by the Data_Owner
Data_Hyperlink	Character[254]	Weblink to additional information about the Data_Source
District	Character[25]	Halton, Knowsley, Liverpool, Sefton, St. Helens or Wirral
Label_Text	Character[25]	Includes Data_Name labels such as Phase 1 and NVC codes or Local Sites reference numbers
Area_Ha	Decimal[8,2]	Area in hectares to 2 decimal places
Added	Date	Date Data_Source added
Updated	Date	Date Data_Source updated
Administrator	Character[50]	Contact email for administrator
Custodian	Character[50]	TBC. Most suitable candidate would be a 'data champion' from the Data_Owner
Easting	Integer	6 figure grid reference to >1m accuracy
Northing	Integer	6 figure grid reference to >1m accuracy

²⁹ JNCC (2011) *UK Biodiversity Action Plan Priority Habitat Descriptions*
http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf

Linear Features

Field name	Type	Comments
Interp_LF	Character[150]	Habitat type assigned from the Data_Name and Data_Source
Interp_Ecological_Value	Character[50]	Ecological value assigned from the Data_Name and Data_Source. Value either: Statutory Designated Site Non-Statutory Designated Site Irreplaceable Priority Habitat Priority Habitat LCR BAP priority habitat
Interp_Priority_Habitat	Character[75]	Priority Habitat type assigned from the Data_Name and Data_Source using Priority Habitat descriptions ³⁰
Data_Name	Character[150]	Name of habitat type from Data_Source
Data_Source	Character[150]	Source of data. For example 'National Main Rivers'
Data_Scale	Character[25]	International; European; National or local Data_Source
Data_Owner	Character[75]	Owner. For example 'Environment Agency'
Data_Comments	Character[254]	Comments about data. This includes additional information from the Data_Source attributes. For example version dates of OS MasterMap polygons are included in this field
Data_Verification	Character[254]	Details of any known verification by MEAS or by the Data_Owner
Data_Hyperlink	Character[254]	Weblink to additional information about the Data_Source
District	Character[25]	Halton, Knowsley, Liverpool, Sefton, St. Helens or Wirral
Length	Decimal[8,1]	Length in kilometres to 1 decimal place
Added	Date	Date Data_Source added
Updated	Date	Date Data_Source updated
Administrator	Character[50]	Contact email for administrator
Custodian	Character[50]	TBC. Most suitable candidate would be a 'data champion' from the Data_Owner

Stepping Stone Sites

Field name	Type	Comments
Interp_SSS	Character[150]	Habitat type interpreted from the Data_Name and Data_Source
Interp_Ecological_Value	Character[50]	Ecological value assigned from the Data_Name and Data_Source. Value either: Statutory Designated Site Non-Statutory Designated Site Irreplaceable Priority Habitat Priority Habitat LCR BAP priority habitat
Interp_Priority_Habitat	Character[75]	Priority Habitat type assigned from the Data_Name and Data_Source using Priority Habitat descriptions ³¹

³⁰ JNCC (2011) *UK Biodiversity Action Plan Priority Habitat Descriptions*
http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf

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Field name	Type	Comments
Interp_Broad_Habitat_Type	Character[50]	Broad Habitat type interpreted from the Data_Name and Data_Source. Value either: Woodland Grassland Geological Wetland Heathland Coastland Mosaic
Data_Name	Character[150]	Name of habitat type from Data_Source. For example 'water_poly'
Data_Source	Character[150]	Source of data. For example 'OS MasterMap (April 2015)'
Data_Scale	Character[25]	International; European; National or local Data_Source
Data_Owner	Character[75]	Owner. For example "Ordnance Survey"
Data_Comments	Character[254]	Comments about data. This includes additional information from the Data_Source attributes. For example version dates of OS MasterMap polygons are included in this field
Data_Verification	Character[254]	Details of any known verification by MEAS or by the Data_Owner
Data_Hyperlink	Character[254]	Weblink to additional information about the Data_Source
District	Character[25]	Halton, Knowsley, Liverpool, Sefton, St. Helens or Wirral
Area_Ha	Decimal[8,2]	Area in hectares to 2 decimal places
Perimeter	Decimal[8,1]	Perimeter in kilometres to 1 decimal place
Added	Date	Date Data_Source added
Updated	Date	Date Data_Source updated
Administrator	Character[50]	Contact email for administrator
Custodian	Character[50]	TBC. Most suitable would be a 'data champion' from the Data_Owner
Easting	Integer	6 figure grid reference to >1m accuracy
Northing	Integer	6 figure grid reference to >1m accuracy

Liverpool City Region Nature Improvement Area

Field name	Type	Comments
NIA_Focus_Area_ID	Character[10]	Numeric ID for each NIA Focus Area (1-17)
NIA_Focus_Area_Name	Character[200]	Name for each NIA Focus Area
NIA_Focus_Area_Profile	Character[254]	Hyperlink to profile document
Area_Ha	Decimal[8,2]	Area in hectares
Created	Date	Date first created
Updated	Date	Date last amended
Administrator	Character[50]	Contact email for administrator
Easting	Integer	6 figure grid reference to >1m accuracy
Northing	Integer	6 figure grid reference to >1m accuracy

³¹ JNCC (2011) *UK Biodiversity Action Plan Priority Habitat Descriptions*
http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf

Appendix B: Data queries and criteria for GIS layers

A4.86 Data queries and specific criteria derived from national habitat descriptions³² were applied to the data polygons to identify the Ecological Network. Queries were carried out using SQL Select in MapInfo Professional v12.5. Data that met these criteria were included in the Ecological Network GIS layers.

Core Biodiversity Area (CBA)

Designated sites data

A4.87 Designated site boundaries were mapped as is from the data sources (shown in Table 1) and cropped to the Liverpool City Region.

A4.88 *Woodland data*

- For Lowland Mixed Deciduous Woodland select Phase 1 Habitat Survey habitat coded polygons: A1.1.1 and A1.1.2. For Wood-Pasture and Parkland Phase 1 codes A3.1 and A3.3 included where they intersect with Knowsley Park and Ince Blundell Estate. A3.1 and A3.3 codes outside of these areas classified as LCR BAP priority habitat;
- For Lowland Mixed Deciduous Woodland NVC codes: W8 a-d, W10 a-d, W16 a);
- Wet Woodland characterised by NVC codes: W1, W2, W3, W5, W6 and W7;
- 'Deciduous Woodland' and 'Traditional Orchards' from Natural England's Single dataset Priority Habitat Inventory;
- 'Broadleaved' and 'Mixed mainly broadleaved' from Forestry Commission's National Forest Inventory 2014 used to help define Lowland Mixed Deciduous Woodland. 'Low density' woodland classified as LCR BAP priority habitat Lowland Wood-pasture and Parkland;
- Activity category 'woodland managed' and species mix 'broadleaf' or 'mixed' from Mersey Forest's Land Management Areas 2015 classified as LCR BAP priority habitat Lowland Mixed Broad-leaf Woodland as unclear from the data whether this is Priority Habitat;
- OS MasterMap descriptive terms including 'Nonconiferous' and 'Nonconiferous Trees, Scrub' selected to help map LCR BAP priority habitat Lowland Mixed Broad-leaf Woodland. 'Nonconiferous Trees (Scattered)', and 'Nonconiferous Trees (Scattered), Scrub' selected to map LCR BAP priority habitat Lowland Wood-pasture and Parkland; and
- All Ancient Woodland within Natural England's Ancient Woodland Inventory v2.9 (verified against definitive NCC paper-based inventory held by MEAS).

³² JNCC (2011) *UK Biodiversity Action Plan Priority Habitat Descriptions*

http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf

JNCC (2010) *Handbook for Phase habitat survey – 2 Habitat definitions*

Rodwell et al. for JNCC (1991-2000) *British Plant Communities Volumes 1-5*

North Merseyside BAP (2008) *Habitat Action Plans*

<http://www.merseysidebiodiversity.org.uk/index.asp?content=v2content\haps.xml>

A4.89 Habitat data for coniferous woodland is excluded as it is not a Priority Habitat for the City Region.

A4.90 Grassland data

- Phase 1 Habitat Survey habitat code B1.1 and B1.2 selected to map Lowland Dry Acid Grassland. Phase 1 code: B3.1 and B3.2 are used for Lowland Calcareous Grassland. For Lowland Meadows use B2.1 code. Select B2.2 and B5 codes to help map LCR BAP priority habitat grasslands.

Neutral grassland (B2) codes are likely to include some arable field margins;

- For Lowland calcareous grassland the following NVC codes were applied: CG1, CG2 and CG10;
- Lowland Dry Acid Grassland NVC codes include: U1, U2, U3, U4, SD10b, SD11b;
- Lowland Meadow NVC codes: MG4, MG5, MG6, MG8;
- 'Lowland Dry Acid Grassland', 'Lowland Meadows', 'Good Quality Semi-Improved Grassland', 'Lowland Calcareous Grassland' and 'Purple Moor Grass & Rush Pastures' from Natural England's Single dataset Priority Habitat Inventory;
- 'Good Quality Semi-Improved Grassland', which is also included in Natural England's Priority Habitat Inventory, is not a Priority Habitat but does meet criteria for LCR BAP priority habitat grasslands; and
- OS MasterMap descriptive terms including 'Rough Grassland' and 'Rough Grassland, Scrub' selected where they intersect other grassland datasets included in the Core Biodiversity Area. This data is likely to include LCR BAP priority habitat and potentially some Priority Habitat grasslands which are under-recorded in the City Region. A similar approach is taken by Natural England in their national Single Priority Habitat Inventory which identifies Good Quality Semi-Improved Grassland to provide a holistic understanding of grassland extent.

A4.91 Heathland data

- Phase 1 Habitat Survey habitat codes: D1.1, D1.2, D2, D3, D5, D6;
- All heathland community NVC codes: H1-H22, M15-M16;
- 'Lowland Heathland' from Natural England's Single data Priority Habitat Inventory; and
- OS MasterMap descriptive terms like 'heath'.

A4.92 Wetland datasets

- For Lowland Raised Bog Phase 1 Habitat Survey habitat codes: E1.6.2, E1.7, E1.8, E2.1, E2.2 and E2.3 are used. Phase 1 codes: E3.1, E3.2 and E3.3 selected for Lowland Fens. Swamp, marginal and inundation vegetation codes F1, F2.1 and F2.2 used to help map Reedbeds. Phase 1 code G1.6 selected for Saline Lagoons. Other standing water codes not used as ponds mapped separately in Stepping Stone Sites layer using OS MasterMap which is more comprehensive;

- NVC survey codes: S24, S25, S26, S27, S28, M22, M24 selected for Lowland Fens;
- Lowland Raised Bog mapped using NVC codes: M1-M14, M17-M21, M25-M38;
- Purple Moor Grass and Rush Pastures NVC codes: MG10, M23;
- Reedbeds NVC code: S1-S23 (includes swamp codes);
- 'Reedbeds' 'Purple Moor Grass & Rush Pastures' and 'Lowland Raised Bog' from Natural England's Single data Priority Habitat Inventory; and
- OS MasterMap descriptive term 'marsh reeds or saltmarsh' selected. Polygons with this descriptive term located above mean high water mark are classified as Priority Habitat Reedbeds and below mean high water as Coastal Saltmarsh.

A4.93 *Coastland data*

- Phase 1 Habitat Survey code H1.1 selected to map Intertidal Mudflats. H1.2 and H3 used to map Coastal Vegetated Shingle. All H2 codes used to help map Coastal Saltmarsh. H6 codes selected to map Coastal Sand Dunes, and H8.2 code used to map Maritime Cliff and Slope;
- All maritime community NVC codes for Coastal Saltmarsh (SM1-28) selected, Coastal Vegetated Shingle (codes SD1-SD3), Coastal Sand Dune (codes SD4-19), Coastal and Floodplain Grazing Marsh (codes MG11-13) and Maritime Cliff and Slope (MC1-MC12);
- For Wirral coastal areas, Natural Resources Wales BAP Priority Habitat data for Intertidal Mudflats, Blue Mussel Beds, Coastal Saltmarsh and Peat and Clay Exposures selected;
- 'Coastal Sand Dunes' 'Maritime Cliff & Slope' 'Mudflats' 'Saline Lagoon' and 'Saltmarsh' from Natural England's Single data Priority Habitat Inventory;
- Remove Maritime Cliff and Slope polygons which are not on or adjacent to mean high water;
- All Maritime Cliff and Slope data cropped to exclude polygons significantly inland of mean high water; and
- OS MasterMap descriptive term 'marsh reeds or saltmarsh' selected. Polygons with this descriptive term located below mean high water mark are classified as Priority Habitat Coastal Saltmarsh.

A4.94 *Geological data*

- Phase 1 Habitat Survey habitat codes: inland cliff I1.1 and I1.2.

Linear Features

A4.95 The following criteria were used to define Linear Features:

- All hedgerow Phase 1 codes;
- Environment Agency National Main Rivers used to define CBA and Priority Habitat type 'Rivers';
- Canals extracted from OS MasterMap 'water_poly' layer;
- Phase 1 dry ditch code (J2.6); and

- Motorways and primary routes from OS MasterMap ITN, dismantled railway lines from PROW data and railway line from OS MasterMap representing vegetated embankments and grass verges.

Stepping Stone Sites

A4.97 The following criteria were used to define Stepping Stone Sites:

- Select descriptive group 'inland water' bodies from OS MasterMap 'water_poly' layer;
- Select polygons with area ≤ 2.0 ha (BAP Priority Habitat definition for ponds³³);
- Remove 'Marsh Reeds Or Saltmarsh';
- To identify standing water bodies only remove drains, canal, brooks and rivers by selecting polygons which intersect the Environment Agency's Detailed River Network (DRN). Check output before deleting polygons to ensure ponds adjacent DRN are not removed in error; and
- Remove polygons within the port estate using OS base maps.

³³ JNCC (2011) *UK Biodiversity Action Plan Priority Habitat Descriptions*
http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf

Appendix C: Nature Improvement Area data sources

A4.98 Spatial data and non-spatial information sources used to inform the Nature Improvement Area (NIA) boundary are listed below. Their 'application' as part of the NIA mapping method (Part 1) is described in the final column.

Evidence	Created/managed by	Source (intellectual property rights)	Application
Strategic Assets	MEAS	Various	The Strategic Assets identify the most important natural assets in the City Region and are the backbone of the Ecological Network. As such they are prioritised in mapping of the NIA Focus Areas.
Strategic Opportunities Areas	MEAS	MEAS	The Strategic Opportunity Areas are high level fuzzy boundaries of opportunity to reconnect and make the Strategic Assets more resilient. The opportunity areas will be used as a starting point for the NIA boundaries.
Core Biodiversity Areas	MEAS	Various (see Table 1)	The Core Biodiversity Area (CBA) identifies an ecological network of designated sites and priority habitats. This layer is important in defining the shape of the NIA and type of intervention/opportunity for each Focus Area. Undigitised Phase 1 Habitat Survey data for Wirral was also used to inform the NIA boundaries.
Linear Features	MEAS	Various (see Table 2)	Linear features identify the linear habitat aspect of the Ecological Network. This layer is important to inform connectivity between habitats and type of intervention/opportunity for each Focus Area.
Search Area for Habitat Expansion	MEAS	MEAS	The search area for habitat expansion (SAPHE) is a 50m buffer or 'trigger zone' of the CBA for potential habitat creation and restoration. This approach is no longer appropriate for identifying an NIA therefore little weight will be given to this dataset. It is included for indicative purposes only to help identify clusters of habitats.
Connectivity Zone	MEAS	MEAS	The connectivity zone is a 100m buffer of the CBA. This approach is no longer appropriate for identifying an NIA therefore little weight will be given to this dataset. It is included for indicative purposes only to help identify connectivity of habitats.
Stepping Stone Sites	MEAS	Ordnance Survey	Data used to identify pond clusters and stepping stone habitats between the CBA and Linear Features. This is important data for informing wetland opportunities for each Focus Area.
Species of principle importance	Biobank/ rECOrd/Wirral Biodiversity Audit (Penny Anderson Associates)	Biobank/rECOrd/Biological recorders	Each NIA Focus Area was informed by species of principle importance which helps guide the type of ecological enhancement opportunity.

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Evidence	Created/managed by	Source (intellectual property rights)	Application
WeBS – Wetland Bird Survey	British Trust for Ornithology	British Trust for Ornithology	Wetland bird survey data is useful to identify key areas of supporting habitat and identify priority areas for ecological intervention. This is particularly relevant for the estuarine, coastal and inland supporting habitat areas.
Green Infrastructure Framework typology/functionality mapping	Mersey Forest	Mersey Forest/Ordnance Survey	The Green Infrastructure (GI) habitat typology and assigned functionality values indicate the extent of benefit a habitat is delivering. They were used to inform the type of ecological enhancement/intervention required on the NIA Focus Area profiles. This data is mapped at 1:1250 scale so can be used to target opportunities.
GI Framework needs mapping	Mersey Forest	Various	The GI needs mapping was used to understand how a particular ecological intervention could fulfil multiple (other) needs that are currently unfulfilled. For example, creating a new woodland in a particular location might be particularly valuable in terms of connecting existing woodland habitats to allow woodland species more room to move, but it can also help to fulfil need for water management and recreation too. Conversely, the proposed location for new woodland might currently be fulfilling other needs, so it could be more appropriate to select a different location instead or try to ensure that the new woodland continues to perform the relevant functions through intelligent design.
Biological Heritage Sites	Lancashire County Council	Lancashire County Council	Lancashire's Biological Heritage Sites were used to inform cross-boundary links and opportunities for ecological intervention.
Local Nature Conservation Sites	West Lancashire District Council	Lancashire County Council	West Lancashire's Local Nature Conservation Sites were used to inform cross-boundary links and opportunities for ecological intervention.
Living Landscapes boundaries	Cheshire Wildlife Trust	Cheshire Wildlife Trust	The living landscapes boundaries which fall within and adjoin the City Region were used to inform the NIA. Ensuring that NIA and Living Landscapes boundaries match up will help maximise resources through joint working and facilitate cross-boundary working.
UDP proposal maps	LCR districts	LCR districts	Identification of UDP allocations and designations that fall within or intersect the NIA. This is important to understand the level of compatibility with existing planning policy.
Local Plan Core Strategy key diagrams and planning aspirations	LCR districts	LCR districts	Where available, key diagram and Core Strategy Local Plan policy aspirations was used to inform the NIA. This is particularly relevant in built up areas and key areas of change.

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Evidence	Created/managed by	Source (intellectual property rights)	Application
Agricultural Land Classification	Natural England	Natural England/Defra	Data used to identify what the type and quality of agricultural land is within the NIA. This helped inform the appropriateness and deliverability of ecological interventions for each Focus Area.
Environmental Stewardship schemes, including historic data, where available	Natural England	Natural England	Data used to identify whether agricultural land is under environmental stewardship. This could be a delivery mechanism for providing ecological enhancements in each Focus Area through existing management agreements.
Flood Map including SFRA data where available	LCR districts /Environment Agency	LCR districts /Environment Agency	The Flood Map layers were used to assess whether an area is within Flood Zone 2 and/or 3. This is useful for defining wetland management and creation areas within the NIA Focus Areas. SFRA data has also been used to refine the NIA boundary in Halton.
Water Framework Directive	Environment Agency	Environment Agency	The WFD layers were used to identify the status of water-bodies falling within the Focus Areas. This includes the ecological and chemical status if known. This is an important consideration as the WFD sets a target for all water bodies to be in at least “good” status by 2015.
Council owned land	LCR districts	LCR districts	Council ownership data was used to identify those sites within the NIA which may be more deliverable than privately owned sites so could be targeted as ‘early wins’ for delivery in the Focus Area profiles.
Woodland Grant Schemes	Forestry Commission	Forestry Commission	Like environmental stewardship schemes, woodland grant schemes are potential delivery mechanisms for providing ecological enhancements through existing management agreements and will be used to inform the Focus Area profiles.
Forestry Commission ownership data	Forestry Commission	Forestry Commission	Forestry Commission ownership data was used to identify those sites within the NIA which may be more deliverable than privately owned sites so could be targeted as ‘early wins’ for delivery in the Focus Area profiles.
Environment Agency ownership	Environment Agency	Environment Agency	Environment Agency ownership data was used to identify those sites within the NIA which may be more deliverable than privately owned sites so could be targeted as ‘early wins’ for delivery in the Focus Area profiles.
Minerals resources	British Geological Survey	British Geological Survey	The mineral resource layers were used to identify sub-surface conditions suitable for different types of habitat restoration and creation. For example areas of peat are important criteria for identifying mossland restoration opportunities.
DigiMap 50k	British Geological Survey	British Geological	The bedrock layers were used to identify the underlying geological

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Evidence	Created/managed by	Source (intellectual property rights)	Application
bedrock and superficial deposits		Survey	characteristics. For example sandstone ridges provide suitable subterranean conditions for dry heath which requires free draining strata.
Soilscapes	Cranfield University	NSRI	Indicates broad soil characteristics which underpin the type of habitat/vegetation which can occur above ground. Note that Soilscapes will not be used as a means for supporting detailed assessments, such as land planning applications or site investigations; nor will it be used to support commercial activities.
2005/6 & 2010 aerial photography	Local Authority consortium	Cities Revealed	Aerial photographs were used throughout the process to do ad hoc checks on habitat data and interpret connectivity on the ground.
MasterMap	Ordnance Survey	Ordnance Survey	Used to validate the positional accuracy of habitat data and identify land use at a large scale.
VectorMapLocal (1:10,000)	Ordnance Survey	Ordnance Survey	Base map upon which the NIA boundaries were digitised.
1:50,000	Ordnance Survey	Ordnance Survey	Used to identify cross-boundary opportunities at a landscape scale.

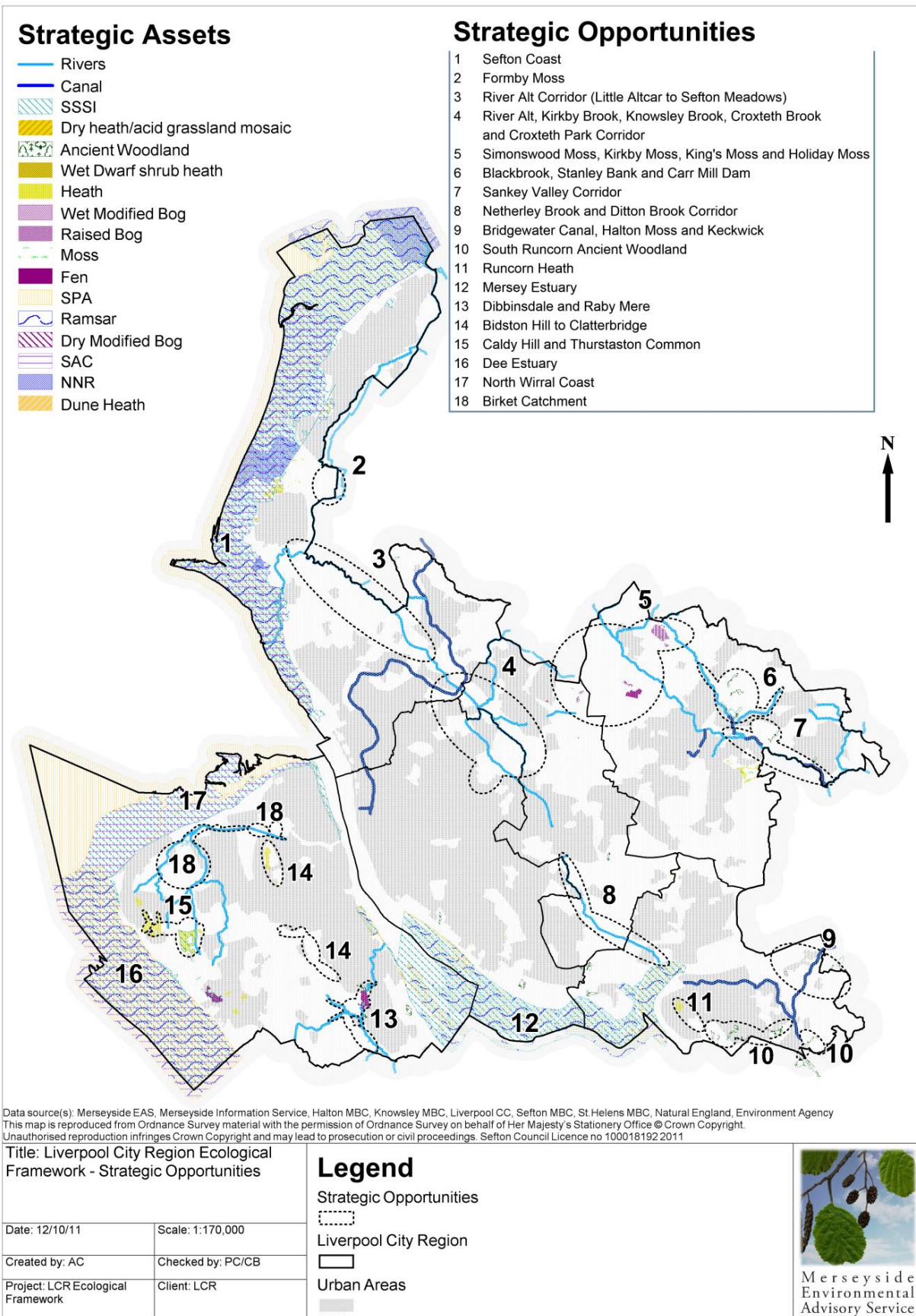
A4.99 Non-spatial information was also used in identifying the LCR Nature Improvement Area. Sources included:

- Cheshire Wildlife Trust (2015) *Biodiversity Action Plans for Priority Species and Habitats in Cheshire* <http://www.cheshirewildlifetrust.org.uk/biodiversity> Accessed: 22/09/2015;
- District Landscape Character Areas – various Local Authority sources;
- Environment Agency (2015) *North West District River Basin Management Plan* <https://www.gov.uk/government/publications/north-west-district-river-basin-management-plan> Accessed: 22/09/2015;
- Joint Nature Conservation Committee (2015) *The UK Biodiversity Action Plan* <http://jncc.defra.gov.uk/ukbap> Accessed: 22/09/2015;
- Merseyside Biodiversity Group (2015) *North Merseyside Biodiversity Action Plan* <http://www.merseysidebiodiversity.org.uk/> Accessed: 22/09/2015;
- Natural England (2015) *National Character Areas in North West England* <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles#ncas-in-north-west-england> Accessed: 22/09/2015;
- Natural England (2015) *Conservation Advice for European Sites* <http://publications.naturalengland.org.uk/category/3212324> Accessed: 22/09/2015;
- North West & North Wales Coastal Group (2015) *North West England and North Wales Shoreline Management Plan SMP2* http://www.allerdale.gov.uk/downloads/nw_shoreline_management_plan_2.pdf Accessed: 22/09/2015;

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- North West Biodiversity Steering Group (1999) *Wild about the North West: A Biodiversity Audit of North West England*
<http://adlib.eversite.co.uk/adlib/defra/content.aspx?id=000IL3890W.16NTBZ6N3R624D> Accessed: 22/09/2015;
- Penny Anderson Associates Ltd (2009) *A Biodiversity Audit of Wirral*
<http://democracy.wirral.gov.uk/ecSDDisplay.aspx?NAME=SD397&ID=397&RPID=193718&sch=doc&cat=13006&path=12848,13003,13006> Accessed: 22/09/2015;
- The Mersey Forest (2014) *More from trees The Mersey Forest Plan*
http://www.merseyforest.org.uk/The_Mersey_Forest_Plan_web_version_single_new.pdf Accessed: 22/09/2015.

Appendix D: Strategic Assets and Opportunity Areas



Appendix 5: National Planning Policy Framework Compliance Assessment
LCR Ecological Network compliance with NPPF

NPPF Paragraph Number / On-line Planning Guidance	NPPF Bullet Point (BP)	Compliance (assessed 17 July 2015)	Update required for compliance
9 – Pursuing SD involves seeking positive improvements in the quality of built, natural and historic environment, as well as in people’s quality of life, including (but not limited to):	Bp2 – moving from a net loss of bio-diversity to achieving net gains for nature.	Yes – provides clear assessment of natural asset, core biodiversity areas and strategic opportunities.	None.
17 – Core planning principles.	Bp7 – contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser environmental value, where consistent with other policies in this Framework.	Yes – identifies natural environmental value of land.	None.
109 Conserving and enhancing the natural environment.	BP1 protecting and enhancing valued landscapes, geological conservation interests and soils.	Yes – identifies natural environmental value of land.	None.
	BP2 recognising the wider benefits of ecosystem services.	Yes – in report “Liverpool City Region Ecological Framework & Strategic Overview – October 2011”.	None.
	BP3 minimising impacts on biodiversity and providing net gains	Yes – provides a coherent ecological network, identifies	None.

NPPF Paragraph Number / On-line Planning Guidance	NPPF Bullet Point (BP)	Compliance (assessed 17 July 2015)	Update required for compliance
	in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.	biodiversity assets and where net gains could be delivered.	
	BP4 relates to unacceptable risk for pollution or land instability.	Not applicable.	None.
	BP5 relates to remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.	Yes – identifies where such land is of biodiversity value to inform remediation opportunities.	None.
113 Criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites, so that protection is commensurate		Criteria based policy for protecting wildlife and geodiversity sites forms part of Local Plan (Core Strategy) policy. Yes – identifies the contribution wildlife and geodiversity sites to wider ecological network.	None.

NPPF Paragraph Number / On-line Planning Guidance	NPPF Bullet Point (BP)	Compliance (assessed 17 July 2015)	Update required for compliance
with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.			
114 LPAs should	BP1 set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure.	Yes – as evidence base.	None.
	BP2 maintain character of the undeveloped coast, protecting and enhancing its distinctive landscapes, particularly in areas of Heritage Coast and improve public access to and enjoyment of the coast.	Yes – as evidence base.	None.
117 To minimise impacts on biodiversity and geodiversity, planning policies should	BP1 plan for biodiversity at a landscape-scale across local authority boundaries.	Yes – evidence base extends across LCR. Duty to cooperate statement demonstrates working across boundaries.	None.
	BP2 identify and map components of the local ecological networks, including the hierarchy of	Yes – evidence base.	None.

NPPF Paragraph Number / On-line Planning Guidance	NPPF Bullet Point (BP)	Compliance (assessed 17 July 2015)	Update required for compliance
	international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;		
	BP 3 promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan;	Yes – evidence base for priority habitats. Required: Identification and agreement of indicators for monitoring biodiversity.	Indicators for monitoring biodiversity.
	BP4 aim to prevent harm to geological conservation interests;	Yes – evidence base.	None.
	BP5 where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas.	LCR Nature Improvement Area identified in evidence base.	None.
118 When determining planning applications, local planning	BP1 if significant harm resulting from a development cannot be avoided (through locating on	Yes – evidence base includes location, type and importance of biodiversity	None.

NPPF Paragraph Number / On-line Planning Guidance	NPPF Bullet Point (BP)	Compliance (assessed 17 July 2015)	Update required for compliance
authorities should aim to conserve and enhance biodiversity by applying the following principles:	an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;	features.	
	BP2 proposed development on land within or outside a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts of the national network of Sites of Special Scientific Interest;	Yes – evidence base includes location, type and importance of biodiversity features.	None.
	BP3 development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;	Yes – evidence base includes location, type and importance of biodiversity features.	None.

NPPF Paragraph Number / On-line Planning Guidance	NPPF Bullet Point (BP)	Compliance (assessed 17 July 2015)	Update required for compliance
	BP4 opportunities to incorporate biodiversity in and around developments should be encouraged;	Yes – evidence base includes location, type and importance of biodiversity features.	None.
	BP5 planning permission should be refused for development resulting in loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of the development in that locations clearly outweigh the loss; and	Yes – evidence base includes location, type and importance of biodiversity features including ancient woodland, aged or veteran trees outside of ancient woodland among other such habitats.	None.
	BP6 the following wildlife sites should be given the same protection as European sites: Potential Special Protection Areas and possible Special Areas of Conservation; listed or proposed Ramsar sites; and sites identifies, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of	Yes – evidence base includes location, type and importance of biodiversity features.	None.

NPPF Paragraph Number / On-line Planning Guidance	NPPF Bullet Point (BP)	Compliance (assessed 17 July 2015)	Update required for compliance
	Conservation, and listed or proposed Ramsar sites.		
119 The presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined		Yes – evidence base includes location, type and importance of biodiversity features.	None.
156 Local planning authorities should set out the strategic priorities for the area in the Local Plan. This should include strategic policies to deliver:	BP1 the homes and jobs needed in the area;	Not applicable.	None.
	BP2 the provision of retail, leisure and other commercial development;	Not applicable.	None.
	BP3 the provision of infrastructure for transport, telecommunications, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat);	Yes – evidence base includes location, type and importance of biodiversity features.	None.

NPPF Paragraph Number / On-line Planning Guidance	NPPF Bullet Point (BP)	Compliance (assessed 17 July 2015)	Update required for compliance
	BP4 the provision of health, security, community and cultural infrastructure and other local facilities; and	Yes – evidence base includes location, type and importance of biodiversity features. Relates to mental, emotional and physical health and well-being; and informal recreational space.	None.
	BP5 climate change mitigation and adaptation, conservation and enhancement of the natural and historic environment, including landscape.	Yes – evidence base includes location, type and importance of biodiversity features.	None.
157 Crucially, Local Plans should:	BP1 plan positively for the development and infrastructure to meet the objectives, principles and policies of this Framework;	Yes – evidence base. Required: Infrastructure Plans may require future revision.	Infrastructure Plans may require future revision.
	BP2 be drawn up over an appropriate time scale, preferably a 15-year time horizon, take account of longer term requirements and be kept up to date;	Yes – evidence base.	None.
	BP3 be based on co-operation with neighbouring authorities, public, voluntary and private sector organisations;	Yes – see duty to co-operate statement.	None.
	BP4 indicate broad locations for	Yes – evidence base.	None.

NPPF Paragraph Number / On-line Planning Guidance	NPPF Bullet Point (BP)	Compliance (assessed 17 July 2015)	Update required for compliance
	strategic development on a key diagram and land-use designations on a proposals map;		
	BP5 allocate sites to promote development and flexible use of land, bringing forward new land where necessary, and provide detail on form, scale, access and quantum of development;	Yes – evidence base. Informing decisions on site allocations	None.
	BP6 identify areas where it may be necessary to limit freedom to change the uses of buildings, and support restrictions with a clear explanation;	Not applicable.	None.
	BP7 identify land where development would be inappropriate, for instance because of its environmental or historic significance;	Yes – evidence base includes location, type and importance of biodiversity features.	None.
	BP8 contain a clear strategy for enhancing the natural, built and historic environment, and supporting Nature Improvement Areas where they have been designated.	Yes – evidence base includes location, type and importance of biodiversity features.	None.
158 Each local planning authority should ensure that the Local		Yes – evidence base includes location, type and importance of	None.

NPPF Paragraph Number / On-line Planning Guidance	NPPF Bullet Point (BP)	Compliance (assessed 17 July 2015)	Update required for compliance
Plan is based on adequate, up-to-date and relevant evidence about the economic, social and environmental characteristics and prospects of the area. Local planning authorities should ensure that their assessment of and strategies for housing, employment and other uses are integrated, and that they take full account of relevant market and economic signals.		<p>biodiversity features.</p> <p>Environmental information is supported by the Local Environmental Record Centres (Merseyside BioBank and Cheshire rECOrd) and the information that is collated and verified.</p> <p>Some investment in environmental information to support Local Plans is required.</p>	

Table 2: LCR Ecological Network with National Planning Practice Guidance assessment completed 17 July 2015

National Planning Practice Guidance	LCR Ecological Network Compliance
<p><i>Ref ID: 12-009-20140306</i> Relevant evidence in identifying and mapping local ecological networks includes: BP1 the broad geological, geomorphological and bio-geographical character of the area, creating its main landscape types;</p>	Yes – broad information included.
BP2 key natural systems and processes within the area, including fluvial and coastal;	Yes – coastal change, rivers, groundwater and surface water, flood risk zones which are the key natural systems and processes within the LCR; climate change mitigation e.g. carbon capture; Also taken into account Green Infrastructure data sets.
BP3 the location and extent of	Yes.

internationally, nationally and locally designated sites;	
BP4 the distribution of protected and priority habitats and species;	Yes – priority habitats mapped; additional data sets inform distributions of priority species; a proportionate response to priority species has been taken.
BP5 areas of irreplaceable natural habitat, such as ancient woodland or limestone pavement, the significance of which may be derived habitat age, uniqueness, species diversity and / or the impossibilities of re-creation;	Yes – mapped ancient woodlands; estuarine and coastal habitats.
BP6 habitats where specific land management practices are required for their conservation;	Yes – mapped range of habitats.
BP7 main landscape features which, due to their linear or continuous nature, are important for the migration, dispersal and genetic exchanges of plants and animals, including any potential for new habitat corridors to link any isolated sites that hold nature conservation value, and therefore improve species dispersal;	Yes – linear features are mapped.
BP8 areas with potential for habitat enhancement or restoration, including those necessary to help biodiversity adapt to climate change or which could assist with the habitat shifts and species migrations arising from climate change;	Yes – NIA focus areas mapped.
BP9 an audit of green space within built areas and where new development is proposed;	Partly – green space information from Green Infrastructure data sets used; District open space / green space audits added when undertaken.
BP10 information of the biodiversity and geodiversity value of previously developed sites and the opportunities for incorporating this in developments;	Yes – evidence base – proportionate response; LCR Ecological Framework User Guide; monitoring and updating of a range of data sets will be needed over time subject an agreed protocol and resource availability.
BP11 areas of geological value which would benefit from enhancement and management.	Yes, embedded within overall approach.

Appendix 6: NIA Focus Area Profiles

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 01: Sefton Coast

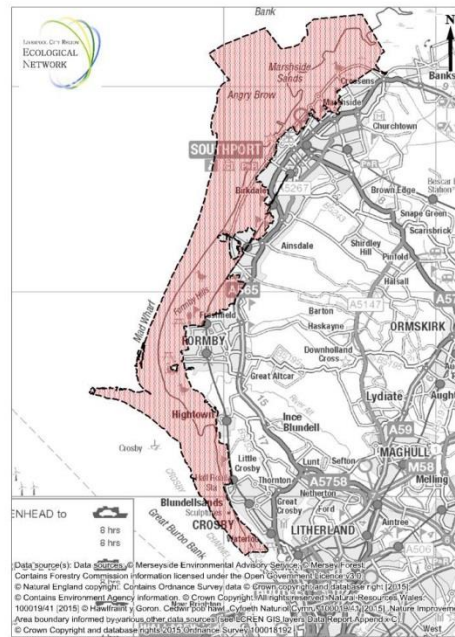
District(s): Sefton

Area 8,148 hectares

Ecological priorities are:

Habitat creation

- Dune heathland, adjacent to the existing at Freshfield Dune heath



Habitat management

- Management of the designated sites, especially where it will ensure the resilience of the sites to natural and climate change.

Existing ecological features:

1. There are 7,983ha of existing habitat.
2. Core Biodiversity Area: 5 International designated sites; 4 SSSIs; 3 NNRs; 2 LNRs; 37 Local Sites, and woodland, grassland, coastal, heathland, wetland Priority Habitats.
3. Linear features: Watercourses; hedgerows; and railway lines.
4. Species: The Focus Area contains a large number of important species. These include sand lizard, natterjack toad, isle of man cabbage, red squirrel, petalwort, dune tiger beetle, breeding, passage and overwintering birds.



Focus area description:

The Focus Area is drawn around the designated sites of the Sefton Coast. This includes the intertidal mud- and sand-flats from the Ribble Estuary to the Mersey Narrows and the sand dune hinterland. The Sefton Coast is the largest extent of sand dunes within the UK and contains 40% of the country's dune slacks.

The Focus Area is already protected through a range of legislation and provides a significant contribution towards the City Region's natural assets and green infrastructure. It is the largest area of continuous terrestrial wildlife habitat and open recreational space in the City Region.

There are limited opportunities for habitat creation given the site's tight boundary with the urban areas and the change in geology when travelling inland. Some habitats are naturally expanding seawards at Southport and Crosby, increasing the extent of dune system and in places, developing saltmarsh.

Much of the Focus Area is Priority Habitat. Large areas within the dunes are under pressure because of limited habitat management and this is resulting in changes in vegetation structure and the resilience of the dune system to climate change. Fundamentally, the dunes are becoming overgrown and this is affecting the ecological value to the detriment of the coastal rare and important species and habitats.

Ecological opportunities

Habitat creation:

- **Dune heathland:** There is potential as a long term aim to create dune heathland. However, this is limited in deliverability at present. Areas adjacent to Freshfield Dune Heath provide the prime opportunity to deliver habitat creation.

Habitat management priorities:

- Nearly all of the Focus Area is covered by site designations that include nature conservation objectives i.e. SAC, SPA, Ramsar. Management of the internationally designated sites is carried out with from Natural England in line with advice provided under Regulation 35 of the Habitats Regulations.
- **Sand Dunes:** There is a significant need to increase the amount and types of management as a many habitats could be in better condition. They could then provide more benefits to the environment and social and economic activities and could increase resilience to climate change e.g. increased storminess.
- Improvements in visitor facilities, including access routes, would benefit habitats and species by managing trampling and disturbance. The economic aspirations in the City Region and the ageing population have the potential to increase the pressure on the Sefton Coast visitor facilities. Increasing the management of the Visitor Economy in the Sefton Coast could provide opportunities to ensure the environment of the coast benefits and continues to support the visitor economy.

Ecosystem Services Benefits

The Sefton Coast is a prime draw for ecotourism within the City Region, a significant recreational facility and provides a distinctive sense of place for residents within the wider area. The biggest benefit from the identified ecological opportunities would be through managing, maintaining and enhancing the existing designated sites. This could ensure that the area continues to provide ecological benefits and enhances them where needed. The maintenance of the Focus Area could

therefore continue to provide the benefits of climate change mitigation, tourism, recreation and leisure, quality of place and health and wellbeing to the local and wider population.

Management activities would benefit ecological features but could also expand the benefits this area provides to economic growth and resilience. The provision of visitor facilities in line with the Sefton Tourism Strategy could improve recreation facilities and therefore increase the visitor economy. These could include the provision of facilities such as paths, toilets and cafes in areas where they are currently lacking. This could reduce visitor pressure in certain locations and would strengthen the whole coast's attraction for visitors.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Flood Catchment Management Plans & Sefton Coastal Strategy – the prevention of flooding and coastal erosion measures vary along the Sefton coastline. The ecological opportunities would be in line with the identified measures and could help to deliver coastal protection through improvements to coastal habitats, such as sand dunes, that reduce coastal erosion and flooding.

River Basin Management Plans – The designated sites would be impacted by water quality from the surrounding rivers and some management practices. The ecological opportunities of managing the sites could support them to be more resilient and to remove some of the limiting factors.

National Character Areas –the ecological opportunities are in line with the five 'Statements of Environmental Opportunity' identified in the Sefton Coast NCA 57 profile. Delivery of the Focus Area ecological opportunities would strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected – implementation the Focus Area's ecological opportunities will work towards the LNP's Key Action D and would also support the delivery of its other Key Actions.

LCR LEP – the identified ecological opportunities could help to support the LEP's Priority for Visitor Economy such as at Formby Point and Ainsdale, and for sustainable transport. The Focus Area could also help support the LEP's Priority for Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work

placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability. The ecological opportunities could also support the investment opportunities of the Sustainability priority (landscape park, grey to green).

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 02: Formby Mosslands

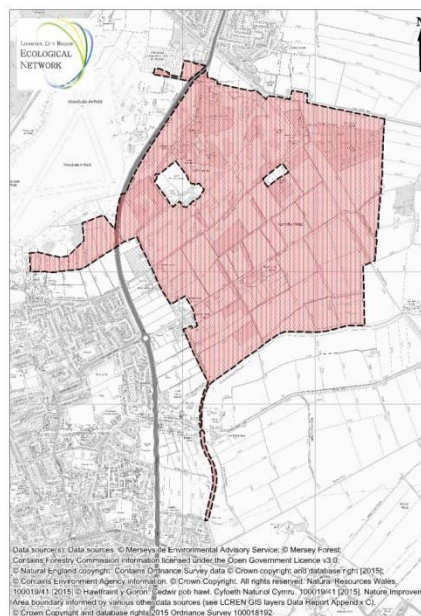
District(s): Sefton

Area 324 hectares

Ecological priorities are:

Habitat creation

- Ponds, building upon the existing concentration;
- Reedbed, swamp and fen, which could be small scale in existing ditches or larger by managing surface water;
- Wet heathland;
- Grassland, mainly wet grasslands; and
- Wet woodland, around the existing woodlands or hedgerows.



Habitat management

- Enhancing the agricultural land and grasslands for breeding birds and overwintering feeding birds;
- Maintaining and enhancing the ponds, reedbeds and swamps;
- Maintaining the wet heathland;
- Enhancing the watercourses; and
- Managing and enhancing the existing woodlands and hedgerows.

Existing ecological features:

5. There are 80ha of existing habitat.
6. Core Biodiversity Area: 2 Local Sites and part of another; together with heathland, wetland, grassland and woodland Priority Habitats.
7. Linear features: River; ditches; hedgerows; and a dismantled railway.
8. Species: Red squirrel; water vole; dragonflies and damselflies; brown hare; bats; breeding birds and farmland birds (e.g. tree sparrow and linnet); passage and overwintering birds.



Formby Hall Golf Course, www.golfingdays.co.uk

Focus area description:

The Focus Area is drawn around the important wetland habitats of Formby Hall and Formby Moss, which includes an important concentration of ponds, particularly within Formby Hall Golf Course. The ponds are important for insect species and also provide habitat for amphibians and water voles, while the grazing land provides habitat for breeding birds. There is an extensive network of ditches that drain the grazing land within the Focus Area, which is naturally wet. Passage and overwintering birds use the Focus Area for feeding.

The Focus Area includes Wham Dyke Meadows and parts of Willowbank Holiday Park as these sites contain a population of water voles and important wetland habitats. Downholland Brook runs along the south of the area and provides a benefit of flood alleviation by transporting water. The Trans Pennine Trail that travels from Halewood via Maghull/Aintree to Southport runs along the eastern side of the Focus Area.

Ecological opportunities

Habitat creation:

- **Ponds:** The Focus Area is significant for the concentration of ponds. These support a large number of insect species. Further ponds would support the populations of insects, as well as providing habitat for amphibians and breeding birds. They would also provide important habitat for water voles and otters. Ponds could be created around the edges of fields to maintain the land use.
- **Reedbed and Swamp:** Swamp habitats exist mostly along the rivers and brooks. Further naturalisation of the ditches would provide one opportunity to create this habitat. The Focus Area is naturally wet and potential exists to create small pockets of habitat where existing pooling occurs. Large areas could be created by managing the drain network to increase the wetness of the fields, for example at Wham Dyke Meadows. This could benefit species such as water voles.
- **Fen:** Parts of the Focus Area may contain degraded peat. As the fields are prone to wetness some peat may remain. There is some opportunity to create fen habitats if the peat is present. Areas are likely to be small and form part of a habitat mosaic with other wetland habitats.
- **Grassland:** A key habitat is 'wet grassland'. The ground is naturally wet and enhancing the existing areas of grassland by planting appropriate species and altering management could result in habitat enhancements relatively quickly. Fields prone to flooding or close to brooks that would enable flooding could be wetted further and managed as grazing marsh. Alternatively small habitat areas could be created where water pooling already occurs. This could provide feeding resources for passage and overwintering birds.
- **Wet heathland:** A small pocket of wet heathland habitat is present at Willowbank Holiday Park. There are limited opportunities to expand the habitat but some potential could exist within the green spaces within the Holiday Park.
- **Wet woodland:** Wet woodland would be appropriate adjacent to existing woodlands or hedgerows. Small areas around field edges could help to retain the land use. Wetting or increasing the wetness of existing woodlands, combined with tree planting could provide the quickest results for habitat creation.

Habitat management priorities:

- **Agricultural land/Grassland:** The current use of agricultural land is mainly grazing land or in golf course management. Increases in the plant diversity of the grasslands would improve the potential for farmland species, passage and overwintering birds to use the area. The alteration of management practices in both grazing and golf course use could act as a mechanism to ensure feeding areas are maintained for birds that are qualifying species of the coastal protected sites, such as the Ribble and Alt Estuaries. This management would retain the existing land use.
- **Rivers and ditches:** Downholland Brook is controlled in places due to flood protection. The channels and banks are maintained to ensure the flow of water is not impeded. Similar management is in place for the ditches within the farmland. This results in linear swamp and tall grassland habitats, which are important for water vole, otter, fish, breeding birds and insects. Management should aim to maintain the habitats and allowing them to expand where possible. A maintenance programme that is sensitive to ecology, such as rotational bankside cutting, is important to balance flood defence and ecology matters.
- **Ponds:** A significant concentration of ponds exists within the Focus Area. The ponds differ in the habitats they provide, being at various stages of succession and this is important as it provides habitat for a large number of species. Management can maintain the range of habitats and also prevent ponds drying out and being too shaded. Protection of ponds from pollution inputs such as nutrient enrichment is important to ensure the habitat can support important species.
- **Wet heathland:** The small fragment is affected by tree growth. Removal of some of the trees to allow heathland plants to expand is vital to maintain the habitat. Tree removal could also help with maintaining water levels. It is important to maintain an appropriate landscape screen between the A565 and the Holiday Park.
- **Woodland:** The existing woodlands are important for red squirrels. Maintaining a feeding resource and control of grey squirrels is vital to maintain the red squirrel populations. Traditional management, such as coppicing, could be used to maintain or increase species diversity.
- **Hedgerows:** Traditional management of the hedgerows, such as laying, would strengthen the structure. Measures such as filling gaps in existing hedges and cutting every 3 years would improve the function of the hedgerow. Maintaining tall trees along the route would maintain the existing character.

Ecosystem Services Benefits

The Focus Area's watercourses, wetlands and floodplain areas act to store water. Improvement in the function of the habitats will help to store more water, while further habitat creation will add to the storage capacity. This could help to make properties and land more secure outside the Focus Area and is linked to property values. The watercourses are also in poor condition under the Water Framework Directive. Improvements and expansion to habitats such as swamps could help to filter water and improve the quality. Initiatives such as the Water Framework Directive could help to support landowners to deliver wetland habitat creation and management.

Grasslands, reedbeds and woodlands all store carbon.

The arable land is predominantly grazing land. The identified ecological opportunities could

maintain the current land use and support the agri-businesses to produce high quality and high value sustainable meat and dairy products. Wetland creation, such as ponds, provides alternative leisure opportunities such as fishing. This compliments the existing recreational activities at Formby Hall Golf Course and Willowbank Holiday Park.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Catchment Flood Management Plans –the ecological opportunities could store flood waters and release them slowly. This is in line with the approach the Environment Agency is taking to deal with surface water within the Alt/Crossens catchment.

River Basin Management Plans (Water Framework Directive) - the ecological opportunities would help to deliver improvements to water quality and morphology. This would help improve the ecological condition of the watercourses.

Mersey Forest Plan – wet woodland and hedgerow creation is in line with Policies for this area in the Plan. The protection, expansion and management of other habitats are a Plan wide policy which the ecological opportunities would help to deliver.

National Character Areas –the ecological opportunities are in line with the four 'Statements of Environmental Opportunity' identified in the Sefton Coast NCA 57 profile. Delivery of the Focus Area ecological opportunities would strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected – implementation the Focus Area's ecological opportunities would work towards the LCR LNP's Key Action D and would also support the delivery of its other Key Actions.

LCR LEP – the identified ecological opportunities could help to support the LEP's Priorities for Low Carbon Economy, and Visitor Economy, such as at Formby Hall Golf Course and the Willowbank Holiday Park, including sustainable transport. The Focus Area could also help to support the LEP's Priority for Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability.

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 03: River Alt Corridor

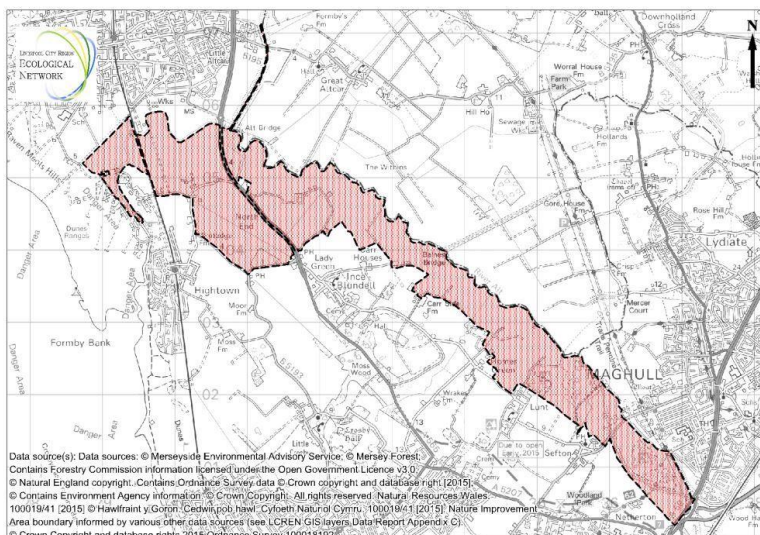
District(s): Sefton

Area: 751 hectares

Ecological priorities are:

Habitat creation

- Reedbed, swamp and fen, which could be small scale in existing ditches or large scale by managing surface water;
- Grassland, mainly wet grasslands;
- Wet woodland, only around the existing woodlands or hedgerows; and
- Hedgerows, only adjacent to existing hedgerows around Hightown.



Habitat management

- Enhancing the agricultural land for breeding birds, passage and overwintering birds;
- Maintaining and enhancing the reedbeds and swamps;
- Enhancing the watercourses; and
- Managing and enhancing the existing grasslands, woodlands and hedgerows.

Existing ecological features:

1. There are 174ha of existing habitat.
2. Core Biodiversity Area: 4 Local Sites; together with grassland, woodland and wetland Priority Habitats.
3. Linear features: Rivers; brooks; ditches; hedgerows; roads; and a dismantled railway.
4. Species: Red squirrel; brown hare; water vole; otter; passage and wintering birds (e.g. pink footed goose, golden plover); farmland birds (e.g. grey partridge, corn bunting).



The Wildlife Trusts

Focus Area description:

The area is predominantly productive farmland within the River Alt flood plain. The Focus Area retains pockets of important habitats that support important and significant populations of Priority Species, such as water vole and dragonflies. However, these habitats are highly fragmented and isolated from each other. The fragmentation and isolation limits the quality and quantity of biodiversity.

Current land use is maintained by a pumped system which requires financial capital and revenue investment that will need to be maintained to a degree in the future. The Focus Area is drawn around the River Alt, its tributaries, the extensive ditch/drain network and those areas around existing habitats and / or within Flood Zones 3 and 2 which are currently protected by earth embankments.

The north of the Focus Area is distinctive by being open and flat, which is important for landscape distinctiveness. The agricultural land is also important for feeding over-wintering birds, breeding farmland birds and farmland mammals such as brown hare. The agricultural land is key area of functionally-linked habitat for feeding bird species of the designated coastal sites; cropping patterns influence bird use.

The southern section of the Focus Area contains areas of historic landfill (Sefton Meadows) which have been restored as extensive areas of grassland and woodland. The Environment Agency and Lancashire Wildlife Trust have created 70 hectares of wetland habitat at Lunt Meadows.

Ecological opportunities

Habitat creation:

- **Reedbeds and Swamp:** The Focus Area provides a significant opportunity within the City Region to recreate reedbed and swamp. This would complement work at Lunt Meadows. Large scale habitat creation is key to providing sufficient habitat for rare species, such as marsh harrier, that breed at Altcar Withins, one of only two areas in Lancashire and immediately adjacent to the Focus Area. Small areas could be created within ditches as part of maintaining a pumped catchment. Larger areas could be created in the farmland north of Ince Blundell where an extensive ditch network drains the land.
- **Fen:** The Focus Area contain small pockets of degraded peat. There is some opportunity to create fen habitats where the peat is present. Areas are likely to be small and form as part of a habitat mosaic with other wetland habitats.
- **Ponds:** A small number of ponds exist in the Focus Area. Further ponds would support the populations of insects, amphibians and breeding birds. They would also provide important habitat for water vole and otter. Ponds could be created at the edges of fields to support the agricultural use.
- **Grassland:** a key habitat is 'wet grassland' where the ground is naturally wet. Fields prone to flooding or close to ditches that would enable flooding could be converted to wet grassland. Alternatively small habitat areas could be created adjacent to ditches/ponds or where water pooling already occurs. 'Dry' grasslands in other areas will complement the wetland habitats and could be created at field edges.
- **Wet woodland:** This habitat would only be appropriate for small scale creation adjacent to existing woodlands or hedgerows. Small areas around field edges would continue to

support the agricultural use.

- **Hedgerows:** This habitat is present in small amounts near Hightown. The wider landscape is characterised by open views with little tall structures or vegetation. It would be inappropriate to plant extensive hedgerows as this would create enclosed fields not in keeping with the landscape. Some small infilling could be conducted between Orrell Hill Wood and Hightown to allow red squirrels to migrate and provide breeding habitat for farmland birds such as corn buntings and grey partridge, provided sufficient open views for passage and overwintering birds are retained.

Habitat management priorities:

- **Agricultural land:** The current use of agricultural land is mainly arable. Changes in management to spring sown crops, leaving stubble overwinter and/or rotating cropping cycles to include root vegetables would improve the potential for farmland species, passage and overwintering birds to use the area. The alteration of arable practices could act as a mechanism to ensure feeding areas are maintained for birds that are qualifying species of the coastal protected sites, such as the Ribble and Alt Estuaries.
- **Reedbed and Swamp:** The largest extent of reedbed is at Lunt Meadows. This is recently planted and currently developing. Management would be needed in future to ensure the reedbed does not dry out or become overgrown. Small pockets of reedbed exist along ditches and drains and appropriate management can maintain and extend the area. Management could also be used to increase species diversity of plants and animals.
- **Rivers, brooks and ditches:** The river corridors are narrow in places due to flood protection. The channels and banks are maintained to ensure the flow of water is not impeded. This results in linear swamp and tall grassland habitats, which are important for water vole, otter, fish, breeding birds, including owls, and insects. Management should aim to maintain the habitats and allow them to expand where possible. A maintenance programme that is sensitive to ecology, such as rotational bankside cutting, is important to deliver flood defence and ecology benefits. Where possible, i.e. near woodlands or hedgerows, allowing trees to grow alongside the banks would introduce more habitats to the watercourses that would benefit the species using the watercourses.
- **Grassland:** Large areas of grasslands are present at, and south of, Sefton Meadows. Management needs include maintaining the extent of grasslands and preventing them from developing into scrub/woodland. This could include annual cutting for hay and conservation grazing. Projects could be taken forward quickly with the Public Body owner.
- **Woodland:** Plantations around Sefton Meadows require management to thin trees; introduce shrubs and ground plants to allow the woodlands to develop into natural habitats. This is the next stage in woodland establishment in these plantation woodlands. A number of these sites are within Public Ownership (Forestry Commission) and projects could be taken forward quickly. Mature woodlands in the north of the area would benefit from traditional management, such as coppicing, to maintain or increase species diversity. Woods, such as Orrell Hill, are important for red squirrels and maintaining a feeding resource and control of grey squirrels is vital to maintain the red populations.
- **Hedgerows:** The small sections of hedgerow contain gaps and are overgrown. Traditional management of the hedgerows, such as laying, would strengthen the structure. Measures such as filling gaps in existing hedges and cutting every 3 years would improve the

function of the hedgerow. Maintaining tall trees along the route would maintain the existing character.

Ecosystem Services Benefits

The Focus Area is an important area for feeding passage and overwintering birds that are qualifying species for the designated coastal sites. The identified ecological opportunities present options for habitat improvements to ensure that impacts from land use change or development, just outside of the Focus Area are mitigated or could be compensated.

The River Alt is a pumped catchment with a complex network of ditches and artificial structures maintaining water levels. This may be financially unsustainable in the future and discussions are taking place at present (2015). The ecological opportunities provide for a long term financially and ecologically sustainable method to manage flooding. Small scale intervention such as swamp, pond and wet woodland habitat creation can store water which would protect adjacent fields. This is set out in the *Alt Crossens Catchment Flood Management Plan, Environment Agency, 2009* "opportunities for habitat enhancement through 'wetting up' of land and promotion of ecological networks".

The watercourses are also in poor condition under the Water Framework Directive. The River Alt is an Environment Agency priority for action. Improvements and expansion to habitats such as swamps would help to filter water and improve the quality. Initiatives such as the Water Framework Directive could help support landowners to deliver wetland habitat creation and management.

The grasslands, reedbeds and woodlands all store carbon and contribute to a low carbon economy. Habitat creation could act to improve air quality through filtering. The management of these habitats could then provide economic opportunities in relation to renewable energy such as biomass. This could recoup resources and introduce and strengthen management of the sites and provide additional resilience to the landscape for local communities.

The Focus Area is predominantly agricultural land. The ecological opportunities maintain this land use, with some limited alteration in management to benefit ecology. Some of the ecological opportunities could result in changes from arable to more grazing land and meadows, providing opportunities for expanded grazing which could support expansion of local dairy and meat production. It could also provide hay resources to be sold to farmers in the wider area. Grassland creation or management could be supported financially by schemes such as the Countryside Stewardship schemes.

The ecological opportunities could provide facilities for recreation, leisure, tourism and education including angling facilities. All of which are in line with the LEP's Priorities for the 'Visitor Economy' and 'Knowledge Economy'. This would build upon Lunt Meadows where one of the objectives is for a recreation and education facility.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Catchment Flood Management Plans – the ecological opportunities could be used to store flood waters and release them slowly. This is in line with the approach the Environment Agency is taking to help deal with surface water management within the Alt and Crossens catchment.

River Basin Management Plans (Water Framework Directive) - the ecological opportunities would help to deliver improvements to water quality and morphology. This would help to improve the ecological condition of the watercourses.

Mersey Forest Plan – The Plan considers the existing landscape and the identified ecological opportunities are in line with the policy. The protection, expansion and management of other habitat is a Plan wide policy which the ecological opportunities could deliver.

National Character Areas –the ecological opportunities are in line with the four 'Statements of Environmental Opportunity' identified in the Sefton Coast NCA 57 profile and the Lancashire and Amounderness Plain NCA 32 profile. Delivery of the Focus Area ecological opportunities would strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected – implementation the Focus Area's ecological opportunities would work towards the LCR LNP's Key Action D and would also support the delivery of its other Key Actions.

LCR LEP – the ecological opportunities could help to support the LEP's Priorities for Low Carbon Economy and Visitor Economy such as at Lunt Meadows. The Focus Area could also support the LEP's Priority for Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway - the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability.

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 04: River Alt and M57 Corridor

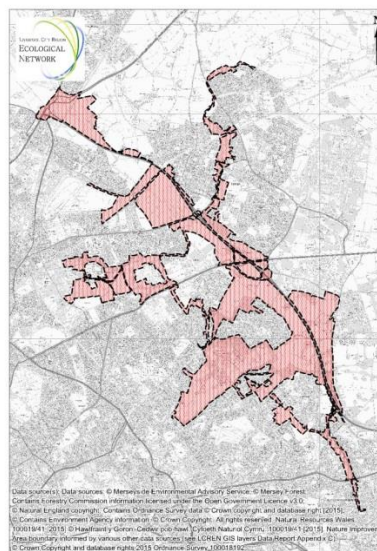
District(s): Knowsley, Liverpool and Sefton

Area 1,131 hectares

Ecological priorities are:

Habitat creation

- Wetlands, opportunities to re-naturalise the rivers and brooks. Also, habitats such as swamp, open water and ponds;
- Grassland; and
- Woodland, including Parkland.



Habitat management

- Enhancing the watercourses, especially in-channel habitat and naturalised banks;
- Maintaining and enhancing the existing woodlands;
- Maintaining and enhancing the Wood-pasture and Parkland;
- Maintaining the extent and increasing the species diversity of the existing grasslands; and
- Maintaining and enhancing the ponds present

Existing ecological features:

1. There are 563ha of existing habitat.
2. Core Biodiversity Area: 1 LNR; 28 Local Sites; together with grassland, woodland and wetland Priority Habitats.
3. Linear features: Rivers; brooks; canal; railway lines; roads; and hedgerows.
4. Species: Water vole; red squirrel; bats; dragonflies/damselflies; brown hare; lesser spotted woodpecker; farmland birds (e.g. grey partridge, sky lark and lapwing).



Old Rough, Kirkby - Landlife

Focus area description:

This Focus Area follows the course of the River Alt and its tributaries. It is predominantly within the Green Belt along the M57 corridor and includes the large public parks of Croxteth Park and Valley Park, Kirkby. It is an important 'greenway' linking and providing drainage for the adjacent urban areas. The Focus Area boundary has been drawn tight to the urban area in places to reflect the interaction between the ecological network and the built environment. The ecological network is narrow in places, such as along the rivers and some of the links with Croxteth Park. However, key links have been retained through the historic development in the area.

The area is predominantly farmland, but a significant proportion is currently unused (2015). Grassland has developed in this area and it is developing into a significant grassland resource within the City Region because of its scale. This complements the grasslands present in other places of the Focus Area, such as Valley Park and around Fazakerley. Some areas of grassland are managed for biodiversity and people, such as at Woolfall Heath and in Valley Park. The area includes a large amount of woodland, particularly within and close to Croxteth Park. The woodlands are important for species such as red squirrel.

The rivers support populations of water vole. However, all are heavily modified and impacted by built development and land use, including historic land use. The river corridors, including the flood plain, are narrow in places and this impacts the ecological potential and the flood storage potential. Schemes have been undertaken to re-naturalise stretches of the rivers, such as Tue Brook and River Alt at Woolfall Heath.

Ecological opportunities

Habitat creation:

- **Ponds and Open Water:** The Focus Area already contains a large number of water bodies particularly around Croxteth Park and Fazakerley. The expansion of the pond network across the Focus Area, particularly into areas around Kirkby and Aintree is important to support amphibian and insect populations. Small water bodies could be created around the edges of fields, within existing green spaces, within developments and could act as sustainable drainage features.
- **Rivers and brooks:** The brooks are heavily modified and there is limited potential to alter this. Priorities are to introduce in-channel habitat variation and remove artificial banks. This would encourage more species in the watercourses and improve the ability for species to move along the habitat corridors. Tue Brook in Fazakerley was de-culverted as part of the Environment Agency's drive to de-culvert watercourses through the Water Framework Directive. Other re-naturalisation could occur on the watercourses within the disused farmland. Habitat improvements could benefit the water vole population.
- **Wetlands:** Swamp habitats exist along the rivers and brooks. There are also some areas within Fazakerley, Stonebridge Cross and at Wango Lane. The recent de-culverting of Tue Brook, Fazakerley created the largest area of swamp in Liverpool. Further naturalisation of the watercourses provides an opportunity to create this habitat. The Focus Area is naturally wet and potential exists to create swamp where existing pooling occurs. There are also a number of drains in the grasslands between Croxteth and Knowsley village where water levels could be managed to retain sufficient water to support swamp habitats.
- **Grasslands:** A key habitat is 'wet grassland' where the ground is naturally wet. Fields prone to flooding or close to brooks that would enable flooding could be converted to wet grassland. Alternatively small habitat areas could be created where water pooling already

occurs, such as in the fields adjacent to the M57. The ground is naturally wet and enhancing the existing areas of wet grassland by planting appropriate species could be a simple project that would enhance the habitat. 'Dry' grasslands in other areas would complement the other habitats; opportunities for this exist through Valley Park. Wet and dry grassland would form a mosaic because of the localised water logging.

- **Woodland:** This would form a mosaic with wet woodland. Significant natural woodland regeneration is occurring on the unused fields adjacent to the M57. Managing and supporting the regeneration provides the best opportunities for biodiversity. Additional planting would buffer the existing sites and allow species populations to be more resilient and expand into new woodland and between sites. Woodland or hedgerow planting that links the woodlands would also enable species to move between the currently isolated sites. The planting could create blocks to fill in gaps, such as between Howard's Pits and Meakin's Pits, or could create woodland belts to connect the woodlands across longer distances such as between Knowsley Wood and Craven Wood.
- **Wet woodland:** Some woods such as Little Wood, Howard's Pits and Willow Bed Plantation contain wet areas. Management could enhance the existing areas and drainage features within and adjacent to the woods could be altered to increase the coverage of wet woodland. Water tolerant species such as alder, could be planted to assist the habitats to develop.

Habitat management priorities:

- **Rivers and brooks:** The river corridors are narrow in places and the management options are limited. Maintaining the diversity of habitats, including trees, grassed banks and emergent vegetation is vital. This would support important species such as water vole and feeding bats. Dense vegetation is present in areas and this limits the species diversity on the banks and within the watercourse. Removing small areas would allow more species to establish.
- **Woodland:** Some of the existing woodlands, such as at Little Wood, are in management. Management ranges from amenity to some habitat works. Some sites, such as Croxteth Country Park are managed in areas, but due to the size and resources there are gaps in management. Further targeting the habitat works would improve the ecological value of the woodlands. Fazakerley woodlands contain one of the few confirmed breeding sites for lesser spotted woodpecker in Lancashire and North Merseyside. Maintenance of the habitat and expansion into other woodlands is vital to ensure the rare species population is maintained. Himalayan balsam and rhododendron are significant issues, requiring management, within many woods which affects the ground flora.
- **Grassland:** Extensive grasslands occur in the Focus Area such as along the M57 motorway, within Croxteth Park and around Fazakerley. Some grasslands have lots of species present and are important, such as Woolfall Heath, while others are managed as amenity grassland such as along Valley Park. A number of grassland areas are within public ownership. Changes in management, such as reduced cutting regime or introducing species would help areas to develop. Areas such as at Valley Park and Woolfall Heath contain species rich grasslands that could act as green hay donor sites for adjacent amenity grasslands. The areas adjacent to the M57 are in private ownership, some areas are used for horse grazing. This grazing can help to develop flower rich meadows if carried out sensitively.

- **Hedgerow:** Hedgerows within the Focus Area are scattered throughout. Traditional management of the hedgerows, such as laying, would strengthen the structure. Measures such as filling gaps in existing hedges and cutting every 3 years would improve the function of the hedgerow. Planting and allowing tree species such as oak, ash and rowan to grow taller than the hedge would provide a diversity of height and expand the tree cover of the area. Hedgerow management allows the existing uses of fields to be maintained while linking habitats. (Please note – planting of ash should follow Forestry Commission guidelines to prevent spread of disease from new plants to existing trees).
- **Ponds:** A significant concentration of ponds exists within Croxteth Country Park, the associated open fields and the neighbouring woodlands. The ponds differ in the habitats they provide, being at various stages of succession and this is important as it provides habitat for a large number of species. Management can maintain the range of habitats and also prevent ponds drying out and being too shaded. Protection of ponds from pollution inputs, such as nutrient enrichment, is important to ensure the habitat can support important species. The ponds in Croxteth Country Park are at risk from shading and projects to manage them could be delivered relatively cheaply, landowner support would be required.
- **Wood Pasture and Parkland:** This habitat is maintained by grazing. However, a reduction of grazing levels would allow more plant species to thrive. Planting of new parkland trees is required to maintain the habitat into the future. Inclusion of the Pasture and Parkland in countryside stewardship type schemes would be ideal. The Lancashire Wildlife Trust manages part of the Country Park and could provide the management body if support was provided.

Ecosystem Services Benefits

The Focus Area along the M57 and through Croxteth Country Park has been identified as an important green transport route between Kirkby, Knowsley, Liverpool and Huyton. Improvements to the environment will help deliver a vibrant corridor that is well used and valued by the local residents. Parts of Knowsley and Liverpool have issues with poor health and the Focus Area can provide the opportunity to increase outdoor activities that help improve mental and physical health. Recent investments in sustainable transport such as footpath and cycle routes in the Focus Area for health and well-being as well as transport would be supported.

The Focus Area's watercourses, wetlands and floodplain areas act to store water. Improvement in the function of the habitats will help to store more water, while further habitat creation will add to the storage capacity. This helps to make properties and land more secure outside the Focus Area within the densely urban areas and is linked to increases in property value. The watercourses are also in poor condition under the Water Framework Directive. Some stretches, such as the River Alt through Gilmoor, are Environment Agency priorities for action. Improvements and expansion to habitats such as swamps would help to filter water and improve the quality. Initiatives such as the Water Framework Directive could help support landowners to deliver wetland habitat creation and management.

Management of the woodlands, in particular, could provide economic opportunities in relation to renewable energy. The woodlands act as a carbon store and provide a renewable fuel. Many of the woodlands are managed by Knowsley or Liverpool Councils and opportunities to recoup resources would strengthen management through sustainable biomass for renewable energy. Expansion of woodlands could over time provide further economic opportunities and could be used to support agricultural diversification. The expansion of woodland along the M57 could

provide an opportunity for this.

Woodlands provide opportunities to store carbon. Grasslands are also a significant store of carbon if managed correctly and this management can also increase the resilience of the habitat to climate change. Habitat creation could act to filter air quality, which is impacted by the proximity of the M57 and the road network adjacent to the Focus Area. This would help to improve respiratory health issues.

There is a mixture of arable and grazing land in the Focus Area. Many of the existing important grasslands are unmanaged or have limited management. The potential ecological opportunities would provide opportunities for expanded grazing which could support the local horsiculture industry and potentially expand local dairy and meat production. It could also provide a higher value crop such as hay to be sold to farmers and stables in the wider area. Grassland creation or management could be supported financially by the countryside stewardship scheme.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Catchment Flood Management Plans – the ecological opportunities could help to store flood waters and release them slowly. This would support the Environment Agency's approach for dealing with flooding in the urban areas.

River Basin Management Plans (Water Framework Directive) - the ecological opportunities would help deliver improvements to water quality and morphology. This would help improve the ecological condition of the watercourses.

Mersey Forest Plan – woodland and hedgerow creation is in line with Policies for this area in the Plan which seek to increase the woodland cover in this area. The protection, expansion and management of other habitats is a Plan wide policy which the ecological opportunities could help to deliver.

National Character Areas –the ecological opportunities are in line with the four 'Statements of Environmental Opportunity' identified in the Merseyside Conurbation NCA 58 profile. Delivery of the Focus Area ecological opportunities would strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected – implementation the Focus Area’s ecological opportunities would work towards the LCR LNP’s Key Action D and would also support the delivery of its other Key Actions.

LCR LEP – the ecological opportunities could help to support the LEP’s Priorities for the Low Carbon Economy and Visitor Economy such as at Aintree Racecourse, Croxteth Country Park and Knowsley Estate and through sustainable transport. The Focus Area could also support the LEP’s Priority for the Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway - the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability.

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 05: Knowsley and St. Helens Mosslands

District(s): Knowsley and St. Helens

Area 666hectares

Ecological priorities are:

Habitat creation

- Wetlands, specifically lowland bog and fen on areas that contain degraded/drained peat; and
- Wet grassland and wet woodland.



Habitat management

- Manage the small areas of lowland bog that remains, including Kings Moss and Acornfield Plantation;
- Manage the existing woodlands that are planted on degraded peat to allow lowland bog species to establish;
- Maintaining the extent and enhancing the species diversity of existing grasslands, ponds, ditches and other wetland habitats present;
- Maintaining the extent and enhancing the condition of habitats used by breeding and wintering birds; and
- Manage recently planted woods to encourage them to develop into natural woodlands.

Existing ecological features:

1. There are 476ha of existing habitat.
2. Core Biodiversity Area: Highfield Moss SSSI; 2 LNRs; 13 Local Sites; together with grassland, woodland, wetland and heathland Priority Habitats.
3. Linear features: Rivers; ditches; railway lines; and roads.
4. Species: Pink footed goose; water vole; red squirrel; brown hare; farmland birds (e.g. grey partridge, sky lark and lapwing).



Acornfield Plantation, Philip Hurst

Focus area description:

The Focus Area has been mapped tightly to the existing ecological features on the predominantly degraded peat. By drawing the boundary of the Focus Area tightly, risks to existing agri-businesses have been minimised and the habitat creation and management opportunities reflect the actions that landowners have been undertaking in the Focus Area. The Focus Area is building on this activity.

The remaining sites with peat present are spread widely across Knowsley and St. Helens. Historically, the area would have had extensive lowland bog habitat, which has been drained and ploughed for agriculture. Drains are present and are used to lower ground water levels to allow the land to be cultivated.

Many of the remaining peat sites are now woodland plantations of pine with extensive rhododendron present, surrounded by agricultural land. The Focus Area also contains a number of former lowland bogs that have been altered by industry. These still contain small remnant bogs and are now also important for other habitats.

The farmland associated with the Focus Area has a very high diversity and abundance of breeding birds, including many rare or threatened species. It is important as a supporting habitat for feeding wintering birds that are qualifying features of the coastal designed sites, including pink-footed goose.

Ecological opportunities

Habitat creation:

- **Lowland bog/fen:** This is the biggest priority for habitat creation, and it is accepted that it is likely to be the most difficult. Any opportunities to re-wet the peat and allow lowland bog to regenerate are important. Areas such as Kings Moss Plantation/Kings Moss, Reeds Moss/Moss Plantation and Colliers Moss are known to be wet; further wetting may be easier to achieve on those sites. The condition of Highfield Moss SSSI is affected by drainage, rewetting the neighbouring field could help protect the SSSI. Kirkby Moss area has been heavily modified and the peat destroyed. It contains a large number of drains that were installed to drain Simonswood Moss, West Lancashire but now peat extraction has finished it may be possible to block these drains and produce fen habitats in Kirkby Moss. This would complement the restoration of Simonswood Moss across the administrative boundary in Lancashire.
- **Wet grasslands:** Species rich grasslands would complement the existing habitats and could be used as to buffer important sites including re-wetted areas of peat. Wet grasslands could be created where there is existing flooding or by re-wetting fields. Small habitat areas could be created where water pooling already occurs. The Focus Area is important for a large number of priority bird species that have been recorded breeding, including lapwing, curlew and grey partridge. Grassland creation aimed at improving the breeding success of the farmland birds would be a significant contribution to the Focus Area priorities. Grassland creation would also benefit meadow pipits and would provide breeding opportunities for cuckoo, which has a breeding stronghold around Brown Birches.
- **Wet woodland:** There are limited areas of wet woodland due to drainage. Some of the existing woodlands could be re-wetted and wet woodland created. This would retain the sites as woodland, but also restore a natural mossland landscape. New woodlands, located adjacent to existing woods or hedgerows, could be created in areas that are wet or areas that drain management could re-wet.

Habitat management priorities:

- **Lowland bog:** Existing lowland bogs exist at Highfield Moss SSSI, Acornfield Plantation LNR, Reeds Moss and Moss Plantation, Kings Moss and Kings Moss Plantation, and Colliers Moss LNR. Acornfield Plantation, owned by Knowsley Council, is an actively growing lowland bog. Water level management and rhododendron control is vital to allow the bog to continue to thrive. Kings Moss is currently dry but the Lancashire Wildlife Trust as landowner is actively rewetting the site. Further wetting and management would be beneficial. Opportunities exist to enhance the small area of bog at Colliers Moss LNR which would complement the rest of the bog in Warrington (Burtonwood Moss).
- **Woodland:** Many of the existing woodlands are plantations, mainly pine trees of similar age, and are an important resource for red squirrels. Management that encourages pine regeneration could benefit red squirrels in the long term and would also open the canopy and allow ground flora to establish. The woodlands are dominated by the invasive plant, rhododendron, and its eradication is vital to ensuring the woodlands contribute a greater ecological diversity. The removal of the rhododendron would then allow native shrub species to establish. Management is a priority in Brown Birches. Mossborough Moss is more open and may provide the best opportunity to enhance management for biodiversity in the short term.
- **Heathland:** Has been recorded at Colliers Moss LNR. The habitat is threatened by shrub and tree encroachment. Management of the trees, shrub and dense vegetation would encourage heathland to regenerate.
- **Ditches:** The ditch and drain network supports the farming practices in the Focus Area. Ditches could be enhanced for species such as water vole, breeding birds and invertebrates by appropriately timed management such as vegetation cutting or dredging. In some ditches restoration cutting could be used to remove thick vegetation growth and dead plant matter to allow more species to establish.
- **Grassland:** Extensive areas of grassland exist at Holiday Moss and Colliers Moss north and south. The management of the grassland extent at Holiday Moss is vital to maintain the biodiversity interest. Grasslands at Colliers Moss are some of the most diverse in St. Helens. They suffer from lack of management and areas are being lost to woodland regeneration. Grassland maintenance and restoration work could be undertaken.
- **Ponds:** Colliers Moss LNR contains many ponds that are important for dragonflies. The site suffers from a lack of management and some ponds are being lost to woodland regeneration. Management could remove the shading of some ponds and manage emergent vegetation to provide open water. Protection of ponds from pollution inputs, such as nutrient enrichment, is important to ensure the habitat can support important species.

Ecosystem Services Benefits

The sites within the Focus Area are at the headwaters of the River Alt and Sankey Brook. By re-wetting the peat the sites could act as a store for water again. This would help to alleviate existing and future flooding downstream within the urban areas of Liverpool, Kirkby and St. Helens. Many of the brooks that flow out of the focus area are in poor condition as identified by the Water Framework Directive. Re-wetting the peat would also help to improve the quality of the water. Peat provides a significant contribution to carbon storage.

Delivery of the ecological opportunities could mean changes in the management of the arable and grazing land. With this change comes a range of economic and rural economy benefits, for example the storage of water protects other areas from flooding. This helps to make properties and land more secure outside the Focus Area and is linked to property values.

Management of the woodlands, in particular, could provide economic opportunities in relation to renewable fuels such as biomass. Many of the woodlands are currently used for game rearing. The potential ecological opportunities would allow this practice to continue but would provide additional resources to manage the woodlands.

There are opportunities for land management schemes to deliver habitat creation and ongoing management. For example, funding through the Water Framework Directive initiative could deliver re-wetting projects. Re-wetting projects could then be supported in the future by schemes such as the government's environmental management schemes, which could also be used to support landowners to change management of fields and introduce ecologically beneficial woodland management.

There is a mixture of arable and grazing land in the agricultural fields around the focus area. The potential ecological opportunities would result in changes from arable to grazing land. This would provide opportunities for expanded grazing which could support expansion of local dairy and meat production.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Catchment Flood Management Plans – the ecological opportunities could be used to help store flood waters and release them slowly, particularly as they are in the headwaters of the main brooks. This is in line with the approach the Environment Agency is taking to deal with flooding along the Sankey Valley and would support measures to protect areas along Simonswood Brook and the River Alt.

River Basin Management Plans (Water Framework Directive) - the ecological opportunities would help to deliver improvements to water quality by storing and filtering water. This would help to improve the ecological condition of the watercourses.

Mersey Forest Plan – The Focus Area covers a number of Policy Units with varying approaches. The ecological opportunities are in line with policies to maintain and manage existing hedgerows and woodlands where present. The protection, expansion and management of other habitats are a Plan wide policy which the ecological opportunities would help deliver.

National Character Areas –the ecological opportunities are in line with the four 'Statements of

Environmental Opportunity' identified in the Lancashire Coal Measures NCA 56 profile. Delivery of the Focus Area ecological opportunities would strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected – implementation the Focus Area's ecological opportunities would work towards the LCR LNP's Key Action D and would also support the delivery of its other Key Actions.

LCR LEP – the identified ecological opportunities could help to support the LEP's Priority for Low Carbon Economy through the mosslands storing carbon. The Focus Area could also support the LEP's Priority for Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability.

Liverpool City Region Ecological Network Nature Improvement Area focus area

NIA Focus Area 06: Black Brook and Sankey Valley Corridor

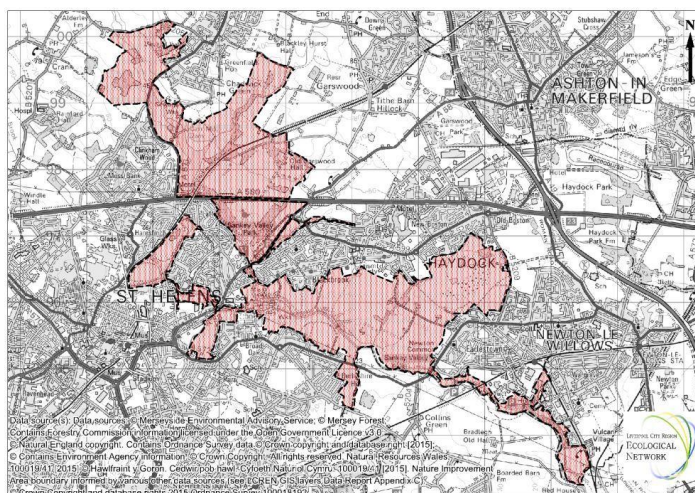
District(s): St. Helens

Area 1,023 hectares

Ecological priorities are:

Habitat creation

- Grassland, especially around the existing grasslands sites;
- Woodland, specifically around the existing ancient woodlands; and
- Wetlands, supporting the existing habitats such as swamp, open water and ponds. Also, opportunities to re-naturalise the rivers and brooks.



Habitat management

- Maintaining Stanley Bank Meadow SSSI in favourable status;
- Maintaining and enhancing the existing ancient woodlands
- Enhancing the semi-natural woodlands;
- Enhancing the watercourses (Sankey Brook, Black Brook, Clipsley Brook, The Goyt and St. Helens Canal/Sankey Canal);
- Maintaining and enhancing the bird interest at Carr Mill Dam;
- Maintaining the extent and increasing the species diversity of the existing grasslands; and
- Maintaining and enhancing ponds.

Existing ecological features:

1. There are 514ha of existing habitat.
2. Core Biodiversity Area: Stanley Bank Meadow SSSI; 2 LNRs; 34 Local Sites; together with 8 ancient woodlands, and grassland, woodland and wetland Priority Habitats.
3. Linear features: Rivers and brooks; canal; railway lines; roads; and hedges.
4. Species: Great crested newt; water vole; brown hare; willow tit; bats; farmland birds (e.g. grey partridge, tree sparrow and lapwing).



Stanley Bank Wood, St Helens Council website 2014

Focus Area description:

The Focus Area is drawn around the existing ecological assets, such as the designated sites and rivers. The Sankey Valley is a significant corridor stretching from Spike Island, Widnes through Warrington, St. Helens and into the rural areas of north St. Helens, Knowsley and West Lancashire. The Sankey Valley has been identified as an important wildlife corridor by Warrington Council.

Large areas have been altered by industry. This has resulted in ecologically interesting sites, such as the Burgy Banks and Mucky Mountains. Other sites are currently under restoration such as Lyme and Wood Pits landfill. Existing land uses within the Focus Area, including agri-businesses have been active to restore the landscape to benefit the local residents, economy and environment. The opportunities identified within the Focus Area would build upon this existing work.

The Focus Area contains a significant collection of high quality grasslands, including Stanley Bank Meadow SSSI. The largest concentration of ancient woodland north of the Mersey is also present. Wet woodland is scattered along the rivers and streams. The Focus Area, drawn along the watercourses through the urban area, means the corridors are narrow in places. Just outside the Focus Area is Crank Caverns, which is one of the most significant bat roosting sites within the City Region. The roost is a winter hibernation roost and the bats use the Focus Area for summer roost and migration along the Sankey Valley. Improvements to habitats would benefit local bat populations.

Ecological opportunities

Habitat creation:

- **Grasslands:** The Focus Area is significant for a range of grassland types. Designated sites contain valuable wet grasslands and further creation adjacent would act as a buffer. One possible site is the Council owned farmland adjacent to Stanley Bank Meadow SSSI to help support the SSSI. Additional grassland creation along the Sankey Brook would increase the habitat connectivity. 'Dry' grassland creation would complement existing grasslands and could be created where ground conditions are drier; choice of grassland type would reflect local site conditions. Opportunities exist where there are existing green spaces, such as at Parr.
- **Woodland:** Planting woodland around the existing ancient woodlands would buffer the important sites and allow species populations to be more resilient and expand into the new woodland. Woodland or hedgerow planting that links the ancient woodlands would also enable species to move between the currently isolated sites. The planting could fill in gaps, such as at Crock Hey Wood, or create woodland belts to connect woodlands across longer distances. Expanding woodlands and strengthening hedgerows around Carr Mill Dam would buffer the existing woods and make them more resilient.
- **Wet woodland:** This is a separate opportunity from other woodlands because the Focus Area and parts of Greater Manchester and Lancashire hold around 6% of the British population of Willow Tit, which has seen over 50% drop in population since the 1960s. Opportunities exist along the watercourses to plant new wet woodlands or to wet existing woodlands by managing surface water. Creation of wet woodland is vital to ensure willow tit population can be retained. It is also a Priority Habitat in its own right and vulnerable to changes in water flow and condition.
- **Rivers and brooks:** The brooks, except Sankey Brook, are classed as heavily modified

under the Water Framework Directive and there is limited potential to alter this. Priorities in the heavily modified areas are to introduce in-channel habitat variation and remove artificial banks. This would encourage more species in the watercourses and improve the ability for species to move along the habitat corridors. Where space allows there is potential to create new natural channels or significantly alter existing channels.

- **Wetland:** Opportunities to expand these areas out from the watercourses are key to increasing the habitat area. Naturalisation of the watercourses provides one opportunity to create this habitat. Larger swamp areas could be created in discrete sites in fields where water could be stored as part of water management through the Focus Area.
- **Ponds:** Additional ponds would support the existing and improve habitat for important species such as dragonflies and amphibians. A small population of great crested newt is present at Newton Common and more ponds would support the population at a wider scale. The Focus Area is narrow in places and ponds provide opportunities to create habitat in small discrete spaces.

Habitat management priorities:

- **Grassland:** Stanley Bank Meadow SSSI is currently managed by St. Helens Council and this should continue. A large concentration of grassland types exist at Lyme and Wood Pit Country Park and management to maintain the extent and species diversity will be needed after the site restoration is finished and the Country Park opens. There is also a collection of grasslands along the Sankey Valley, including Ashton's Green and Mucky Mountains. The two Burgy Banks (Islands Brow and Haresfinch Bank) contain an interesting mosaic of grasslands due to the industrial history of the sites. Island's Brown has a significant woodland component and management to maintain the extent and improve the species diversity, must take management of the woodland management into account.
- **Woodland:** The existing ancient woodlands are under management. This ranges from amenity to some habitat works. Further targeting the habitat works would improve the ecological value of the woodlands. Sites such as Red Brow Wood would benefit from works to improve the structure, i.e. improve the shrub layer. Himalayan balsam, an invasive species, is a significant issue within many woods and affects the diversity of ground flora.
- **Wet woodland:** Existing habitat includes parts of Glasshouse Close Wood, Stanley Bank Wood and Goyt Hey Wood. Maintaining the habitat extent by tree thinning and water level management is important. Tree thinning will also encourage ground flora and provide improved habitat for willow tits.
- **Wetland:** The largest areas of swamp are at Islands Brow Burgy and Havannah Flash, while Carr Mill Dam is the largest lake in the City Region. Scattered patches of swamp also exist along the rivers and canal. Management of existing swamp should maintain the extent and prevent too much scrub growth, but maintain some scrub as wet woodland. Some areas may require cutting to prevent drying out. Any cutting should be undertaken on a rotational basis. Management of the open water at Carr Mill Dam should be aimed at managing the uses of the lake sustainably. The area around the confluence of The Goyt is an important area for wetland birds. This should continue to be protected and the wetland habitats enhanced to allow them to expand.
- **Rivers and brooks:** The river corridors are narrow in places and are managed for flood

defence. A maintenance programme that is sensitive to ecology, such as rotational bankside cutting, is important to maintain flood defence and deliver improvements. Maintaining the diversity of habitats, including trees, grassed banks and emergent vegetation is vital to support important species, such as water vole and feeding bats. Dense vegetation is present in areas and this limits the species diversity on the banks and within the watercourse. Removing small areas of dense vegetation would allow more species to establish.

- **Hedgerows:** Traditional management of the hedgerows, such as laying, would strengthen the structure. Measures such as filling gaps in existing hedges and cutting every 3 years would improve the function of the hedgerow. Planting and allowing large tree species to grow tall would provide a diversity of height and expand the tree cover of the area. Hedgerow management allows existing agricultural uses of fields to be maintained while providing significant improvements to important habitats.
- **Ponds:** Ponds at Stanley Bank, Newton Common and Cambourne Road pond are designated sites for the pond habitats and species they support. Fish management is a priority at Newton Common to increase the breeding success of great crested newt. Other ponds require management to prevent complete shading by trees and drying out. A mixture of ponds in different conditions, such as completely open - some shading – complete shading, provides a range of habitat diversity. Protection of ponds from pollution inputs such as nutrient enrichment is important to ensure the habitat can support important species.

Ecosystem Services Benefits

The Focus Area covers the Sankey Valley Park. This has been identified as an important green transport route through St. Helens and into Warrington. Improvements to the environment, especially in areas that have been affected by previous industries, will help deliver a vibrant corridor that is well used and valued by the local residents. Well designed new and improved access would help to support healthy active communities by providing space for outdoor exercise and activities. Improving the ecology of sites affected by industry could also help to remediate sites and possibly reduce environmental risks. This could help to ensure sites do not pose a significant threat to human health.

The Focus Area's watercourses, wetlands and floodplain areas act to store water. Improvement in the function of the habitats will help to store more water, while further habitat creation will add to the storage capacity. This is important as there are significant flooding issues in St. Helens and it has been identified as a priority by the Environment Agency in the Catchment Flood Management Plan. This helps to make properties and land more secure outside the Focus Area and is linked to property values. The watercourses are also in poor condition under the Water Framework Directive. Some stretches such as the Sankey Brook and Black Brook are Environment Agency priorities for action. Improvements and expansion to habitats, such as swamps, would help to filter water, improve quality and help manage water flow across the catchment. Initiatives, such as the Water Framework Directive, could help support landowners to deliver wetland habitat creation and management.

Management of the woodlands, in particular, could provide economic opportunities in relation to renewable energy and microgeneration. Existing woodlands act as a carbon store and any new woodlands would also help store carbon. Many woodlands are managed by the Council and any opportunities to recoup resources would strengthen management. For example, woodland was planted and is developing around the Black Brook bypass and could be put into short rotation

coppice for fuel production as biomass. Expansion of woodlands could over time provide further economic opportunities and could be used to offset agricultural incomes in line with The Mersey Forest Plan.

There is a mixture of arable and grazing land in the Focus Area. Many of the existing important grasslands are managed as hay meadows and are supported by environmental management schemes. The potential ecological opportunities could result in changes from arable to more grazing land/hay meadows. This could provide opportunities for expanded grazing which could support expansion of local dairy and meat production. There is a need for good quality hay resources for sale to stables and farmers in the wider area. Grassland creation or management could be supported financially by schemes such as environmental management schemes.

Existing sites at Stanley Bank and Carr Mill Dam provide attractions to a range of visitors, while Lyme and Wood Pit will once it is complete and fully open. Enhancement of the visitor facilities can increase revenue for local businesses and support the identified opportunities for habitat creation and management.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Catchment Flood Management Plans – the ecological opportunities could be used to help store flood waters and release them slowly. This is in line with the approach the Environment Agency is taking to deal with flooding along the Sankey Valley.

River Basin Management Plans (Water Framework Directive) - the ecological opportunities would help deliver improvements to water quality and morphology. This would help to improve the ecological condition of the watercourses.

Mersey Forest Plan – woodland and hedgerow creation is in line with Policies for this area in the Plan. The protection, expansion and management of other habitats is a Plan wide policy which the ecological opportunities would help to deliver.

National Character Areas –the ecological opportunities are in line with the four 'Statements of Environmental Opportunity' identified in the Lancashire Coal Measures NCA 56 profile. Delivery of the Focus Area ecological opportunities would strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding

benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected – implementation of the Focus Area’s ecological opportunities would work towards the LCR LNP’s Key Action D and would also support the delivery of its other Key Actions.

LCR LEP – the identified ecological opportunities could help to support the LEP’s Priorities for Low Carbon Economy; and Visitor Economy, such as at Carr Mill Dam, and sustainable transport. The Focus Area could also support the LEP’s Priority for the Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway - the Nature Improvement Area ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability.

Liverpool City Region Ecological Network Nature Improvement Area focus area

NIA Focus Area 07: Netherley Brook and Ditton Brook Corridor

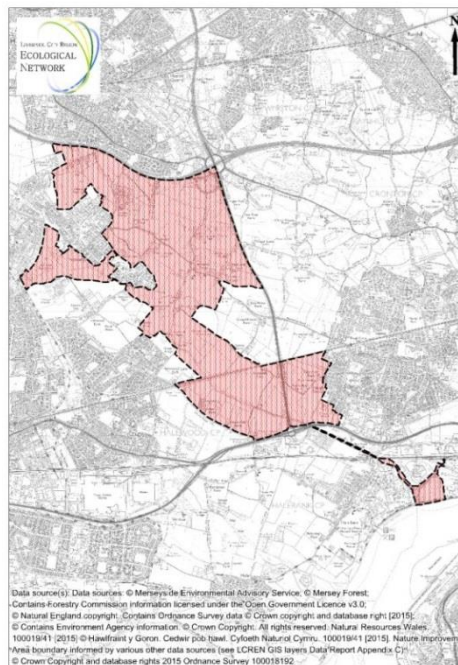
District(s): Halton, Knowsley and Liverpool

Area: 871 hectares

Ecological priorities are:

Habitat creation

- Grassland, especially around the existing grasslands sites;
- Woodland, specifically around the existing woodlands; and
- Wetlands, supporting the existing habitats such as swamp, open water and ponds. Also, opportunities to re-naturalise the rivers and brooks.



Habitat management

- Enhancing the watercourses, especially in-channel habitat and naturalised banks;
- Maintaining and enhancing the existing woodlands;
- Maintaining the extent and increasing the species diversity of the existing grasslands; and
- Maintaining and enhancing the ponds present

Existing ecological features:

1. There are 281ha of existing habitat.
2. Core Biodiversity Area: Rivers; 2 LNRs; 19 Local Sites; together with woodland, wetland and grassland Priority Habitats.
3. Linear features: Hedgerows; rivers; roads; and railway lines.
4. Species: Water vole; brown hare; great crested newt; farmland birds (e.g. linnet, redpoll); barn owl.



Clinton Wood, www.geograph.org.uk

Focus area description:

The Focus Area is drawn around the existing ecological assets, such as the designated sites and rivers. Ditton and Netherley Brooks are a significant corridor that connects the Mersey Estuary with the farmland of south Liverpool, Halton and Knowsley.

The land to the north of the A561 is agricultural and has been so since medieval times. The land to the south has been affected by industry located along the banks of Ditton and Steward's Brooks. Existing land uses within the Focus Area, including agri-businesses, have been actively managing the landscape to benefit the local residents, economy and environment. The opportunities identified within the Focus Area would build upon this existing work.

Ecological opportunities

Habitat creation:

- **Rivers and brooks:** The brooks are heavily modified, but the old courses of the rivers north of Foxhill Farm are still present. These could be reconnected to the main river to allow more water to flow. This would re-establish some natural processes within the river channels. The main channel of the watercourses could then be used as flood conveyance with habitat improvements, such as in-channel habitat variation and removing artificial banks. This would encourage more species in the watercourses and improve the ability for species to move along the habitat corridors. Habitat improvements could benefit water vole and barn owl populations.
- **Wetlands:** Swamp habitats exist along the rivers and brooks. There are also areas of wetland within the flood plain and expanding the existing habitats would increase the habitat area. There is potential to create new habitats where existing pooling of water occurs. Further naturalisation of the watercourses provides one opportunity to create this habitat. The network of drains and old river channels around Netherley could be managed to retain sufficient water to support swamp habitats.
- **Ponds and Open Water:** The Focus Area already contains field ponds throughout. Ponds near the Knowsley Expressway are ecologically interesting as they are unique and historic features. The expansion of the pond network across the Focus Area is important to support amphibian and insect populations. Small water bodies could be created around the edges of fields, within existing green spaces, within developments and could act as sustainable drainage features.
- **Grasslands:** There are some grassland habitats within the Focus Area. Additional grassland creation would increase the habitat connectivity. Fields prone to flooding or close to brooks that would enable flooding could be converted to wet grassland. Alternatively small habitat areas could be created where water pooling already occurs. 'Dry' grassland creation would complement existing grasslands and could be created where ground conditions are drier.
- **Woodland:** Pockets of woodland are spread across the Focus Area and many are important ecologically. Additional planting would buffer the existing sites and allow species populations to be more resilient and expand into new woodland and between sites. Woodland or hedgerow planting that links the woodlands would also enable species to move between the currently isolated sites. The planting could create woodland belts to connect the woodlands with linear features, such as connecting Green's Bridge Plantation with the railway corridor.

Habitat management priorities:

- **Rivers and brooks:** The river corridors are narrow in places and the management options are limited. Maintaining the diversity of habitats, including trees, grassed banks and emergent vegetation is important. This would support important species such as water vole, barn owl and feeding bats. Dense vegetation is present in areas and this limits the species diversity on the banks and within the watercourse. Removing small areas would allow more species to establish.
- **Agricultural land:** The current use of agricultural land is mainly arable. Changes in management to spring sown crops, leaving stubble overwinter and/or rotating cropping cycles including a fallow year would improve the potential for farmland species to use the area.
- **Hedgerow:** Hedgerows are present throughout the Focus Area and are important links across the landscape. Traditional management of the hedgerows, such as laying, would strengthen the structure. Measures such as filling gaps in existing hedges and cutting every 3 years would improve the function of the hedgerow. Planting and allowing tree species such as oak, ash and field maple to grow taller than the hedge would provide a diversity of height and expand the tree cover of the area. Hedgerow management allows the existing uses of fields to be maintained while linking habitats. (Please note – planting of ash should follow Forestry Commission guidelines to prevent spread of disease from new plants to existing trees).
- **Woodland:** There are only a small number of mature woodlands in the Focus Area. Extensive areas of plantation woodland existing around Tarbock Hall, New Pale Wood and within Widnes. Management for ecological benefit is limited. Introducing and targeting management would improve the ecological value of the woodlands. Introducing shrub species and ground flora, where necessary, would ensure woodlands are simulating natural woodlands. Traditional management, such as coppicing, to maintain or increase species diversity.
- **Grassland:** Where grasslands are present management can include maintaining the extent of and preventing them from developing into scrub or woodland. This could include annual cutting for hay and conservation grazing. Areas such as the grassland adjacent to Mill Brook would benefit from management to maintain the habitat and the naturalised setting for the brook.
- **Ponds:** Ponds across the Focus Area differ in the habitats they provide, being at various stages of succession and this is important as it provides habitat for a large number of species. Management could maintain the range of habitats and also prevent ponds drying out and being too shaded. Protection of ponds from pollution inputs such as nutrient enrichment is important to ensure the habitat could support important species. Populations of great crested newt exist across the Focus Area and in the wider landscape. The known pond is isolated and provides poor breeding habitat. Enhancements to the pond and linking it to terrestrial habitats are important.

Ecosystem Services Benefits

The Focus Area is adjacent to the urban area of south Liverpool and Knowsley. There are a number of recreational facilities such as paths, golf courses and nature reserves. Improvements

to the environment would help deliver a vibrant corridor that is well used and valued by the local residents. Parts of Knowsley, Liverpool and Halton have issues with poor health and the Focus Area could provide the opportunity to increase outdoor activities that help improve mental and physical health.

The Focus Area's watercourses, wetlands and floodplain areas act to store water. Improvement in the function of the habitats would help to store more water, while further habitat creation could add to the storage capacity. The watercourses are also in poor condition under the Water Framework Directive. Ditton Brook from Netherley to the Mersey Estuary is an Environment Agency priority for action. Improvements and expansion to habitats such as swamps would help to filter water and improve the quality. Initiatives such as the Water Framework Directive could help support landowners to deliver wetland habitat creation and management.

Management of the woodlands, in particular, could provide economic opportunities in relation to renewable energy through biomass. The woodlands act as a carbon store and provide a renewable fuel. This could provide opportunities to recoup resources and would strengthen management. Expansion of woodlands would over time provide further economic opportunities and could be used to support agricultural diversification. The plantation woodlands in New Pale Wood and within Widnes could be used for this sustainably.

Woodlands provide opportunities to store carbon. Grasslands can also be a significant store of carbon if managed correctly and this management can also increase the resilience of the habitat to climate change. Habitat creation could act to filter air quality, which is impacted by the proximity of the urban areas. This 'green lung' would help to improve respiratory health issues in the nearby residential areas.

There is a mixture of arable and grazing land in the Focus Area. The potential ecological opportunities would provide opportunities for expanded grazing which could support the local horticulture industry and potentially expand local dairy and meat production. It could also provide a higher value crop such as hay to be sold to farmers and stables in the wider area. Grassland creation or management could be supported financially by government environmental management schemes.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Catchment Flood Management Plans – the ecological opportunities could be used to store flood waters and release them slowly. This is in line with the approach the Environment Agency is taking to deal with flooding within the Ditton catchment.

River Basin Management Plans (Water Framework Directive) - the ecological opportunities would help deliver improvements to water quality and morphology. This would help to improve the ecological condition of the watercourses.

Mersey Forest Plan – woodland and hedgerow creation is in line with Policies for this area in the Plan. The protection, expansion and management of other habitats is a Plan wide policy which the ecological opportunities could deliver.

National Character Areas –the ecological opportunities are in line with the four ‘Statements of Environmental Opportunity’ identified in the Mersey Valley NCA 60 profile. Delivery of the Focus Area ecological opportunities would strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected – implementation the Focus Area’s ecological opportunities would work towards the LCR LNP’s Key Action D and would also support the delivery of its other Key Actions.

LCR LEP – the ecological opportunities could help support the LEP’s Priority for Low Carbon Economy. The Focus Area could also help to support the LEP’s Priority for Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway - the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability.

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 08: Bridgewater Canal, Keckwick Brook and Runcorn Ancient Woodland Corridor

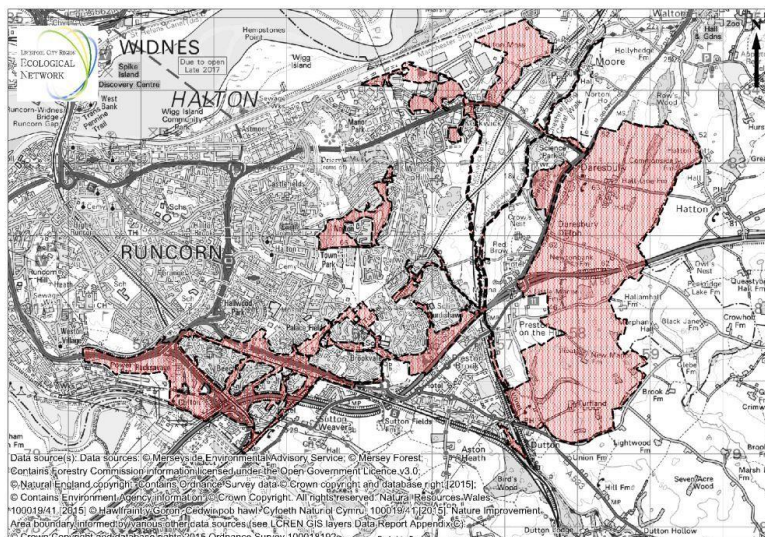
District(s): Halton

Area 1,004 hectares

Ecological priorities are:

Habitat creation

- Woodland, specifically around the existing ancient woodlands and hedgerows connecting woodlands; and
- Wetlands including rivers and the canal, supporting the existing habitats such as swamp, open water and ponds.



Habitat management

- Maintaining Flood Brook Clough and Red Brow Cutting SSSIs in favourable status;
- Maintaining and enhancing the existing ancient woodlands and enhancing the semi-natural woodlands;
- Enhancing the watercourses such as Keckwick Brook, including sustainable storage of surface water;
- Maintaining the extent and increasing the species diversity of the existing grasslands; and
- Maintaining and strengthening the habitat links through the urban landscape.

Existing ecological features:

1. There are 333ha of existing habitat.
2. Core Biodiversity Area: 2 SSSIs; 3 LNRs; 24 Local Sites; together with 11 ancient woodlands, and woodland, wetland and grassland Priority Habitats.
3. Linear features: Canal; railway; and roads.
4. Species: brown hare; amphibians; bats; farmland birds (yellowhammer, lapwing, grasshopper warbler).



Big Wood and Bridgewater Canal, The Woodland Trust

Focus area description:

The Focus Area is drawn around the existing ecological assets in Runcorn, such as the ancient woodlands that are dispersed through the urban area and which connect with larger areas within Cheshire. This is one of the largest areas of ancient woodland within the City Region. There is also a string of important wetland and grassland sites along Keckwick Brook, which connects the Mersey Estuary with rural Runcorn, Cheshire and the Bridgewater Canal that runs towards Manchester and also the Trent and Mersey Canal.

As part of the Runcorn New Town layout, there are significant areas of new and retained open space and planted or semi-natural woodland throughout the urban area. The roads are also lined with woodland and grassland. The woodland links and road corridors are important as they link the existing ancient and other important woodlands. Keckwick Brook and the Bridgewater Canal also run through the urban environment and add to the habitat links. Maintaining and strengthening these linking linear features is very important.

The Focus Area east of Runcorn is predominantly within the agricultural land and greenbelt. The area is characterised by having pockets of woodland spread across the landscape connected by hedgerows and tree lines. The area around Daresbury and Sandymoor is proposed for housing development and employment land; it is one of the key areas for the City Region.

Ecological opportunities

Habitat creation:

- **Woodland:** Planting woodland around the existing ancient woodland would buffer the important sites and allow species populations to be more resilient and expand into the new woodland. The existing woodlands are separated by roads and development. Woodland or hedgerow planting that links and strengthens links between the ancient woodlands would also enable species to move across the area. Planting could fill in gaps, such as at Rocksavage, or could create woodland belts to connect woodlands across longer distances.
- **Hedgerows:** The woodlands in the east of the Focus Area are dispersed across the landscape. Ancient woodland is present at the north, including in Warrington, and the south including in Cheshire West and Chester. Creating new hedgerows and tree lines that connect the existing woodlands would create a landscape that woodland species can move across.
- **Rivers and Bridgewater Canal:** The brooks are heavily modified and there is limited potential to alter this. The canal is in active use for navigation which it is important to maintain. Priorities include introducing in-channel habitat variation and removing artificial banks, which can be replaced by green engineering solutions to maintain the function of the watercourse. This would encourage more species in the watercourses and improve the ability for species to move along the habitat corridors.
- **Wetland:** The river corridors are narrow and wetland creation, as part of flood defence works, has been undertaken in the Daresbury and Sandymoor area. Opportunities to expand these areas out from the watercourses are limited but could provide multiple benefits including surface water storage and water filtering.
- **Ponds:** A network of ponds is present in the agricultural land of the Focus Area. Creating more would support the existing and improve habitat for important species, such as dragonflies and amphibians. Ponds provide the opportunity to create wetland habitats

within the urban landscape in small areas discrete spaces, especially where the Focus Area is narrow and to maintain the existing land use.

Habitat management priorities:

- **Woodland:** Areas of the woodland resource are within public and third sector ownership. There is some management that ranges from amenity to some habitat works. Within the ancient woodland, management should be targeted to ensure that there are key features present such as deadwood, mature trees and a diverse ground flora. Management could enhance the structure of the woodland to allow species to move across the area and populations to expand from the ancient woodland sites. Habitat works that create glades/rides, increase the amount of deadwood, and encourage mature trees would benefit these woodlands. Improving the structure of the woodlands by ensuring there is a suitable scrub layer and ground flora will also improve the ecological value.
- **Rivers and Bridgewater Canal:** The river corridors are narrow in places and are managed for flood defence, the Canal is managed for navigation. A maintenance programme that is sensitive to ecology, such as rotational bankside cutting, is important to maintain flood defence/navigation and deliver ecology improvements. Maintaining the diversity of habitats, including trees, grassed banks and emergent vegetation is vital to support important species, such as water vole and feeding bats. Dense vegetation is present in areas and this limits the species diversity on the banks and within the watercourse. Removing small areas of dense vegetation would allow more species to establish.
- **Ponds:** The ponds within the Focus Area are important for invertebrate and amphibian populations. Management to prevent complete shading by trees and drying out is required. A mixture of ponds in different conditions, such as completely open - some shading – complete shading, provides a range of habitat diversity. Protection of ponds from pollution inputs, such as nutrient enrichment, is important to ensure the habitat can support important species.
- **Wetland:** Sites such as Norbury Wood and Marsh and the flood defence features along Keckwick Brook are the prime areas of wetland. Scattered patches of swamp habitats also exist along the rivers and canal. Management of the existing swamp should maintain the extent and prevent too much scrub growth, but maintain some scrub as wet woodland. Some areas may require cutting to prevent drying out. Any cutting should be undertaken on a rotational basis.
- **Grassland:** Some areas of grassland are present within the Focus Area, mainly within the LWSs. Management to maintain the extent and improve the species diversity, such as annual cutting or grazing, would be beneficial. Some existing grasslands are managed as amenity grassland such as around Murdishaw. A number of grassland areas are within public ownership. Changes in management, such as reduced cutting regime or introducing species would help new areas of species rich grassland to develop and help strengthen habitat links through the urban area.
- **Hedgerows:** Traditional management of the hedgerows, such as laying, would strengthen the structure. Measures such as filling gaps in existing hedges and cutting every 3 years would improve the function of the hedgerow. Planting and allowing large tree species to grow tall would provide a diversity of height and expand the tree cover of the area. Hedgerow management allows the existing agricultural uses of fields to be maintained

while providing significant improvements to important habitats.

Ecosystem Services Benefits

The Focus Area's watercourses, wetlands and floodplain areas act to store water. Improvement in the function of the habitats would help to store more water, while further habitat creation could add to the storage capacity. This helps to make properties and land more secure inside and outside the Focus Area and is linked to property values. Keckwith Brook is in poor condition under the Water Framework Directive, while the Bridgewater Canal is in overall good condition. Wider opportunities at a catchment scale, such as beneficial land management change and upstream flood storage, could also play a part in ensuring there is no increase in the level of flood risk in Keckwith Brook area.

Management of the woodlands, in particular, could provide economic opportunities in relation to renewable energy and microgeneration through biomass. Existing woodlands act as a carbon store and any new woodland would also help to store carbon. In line with The Mersey Forest Plan, the creation and management of appropriate habitats, such as woodland including wet woodland and grasslands, could provide a quality landscape setting for new development.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Catchment Flood Management Plans – the ecological opportunities could be used to store flood waters and release them slowly. This is in line with the approach the Environment Agency is taking to deal with flooding along the Keckwick Brook.

River Basin Management Plans (Water Framework Directive) - the ecological opportunities would help to deliver improvements to water quality and morphology. This would help improve the ecological condition of the watercourses.

Mersey Forest Plan – woodland and hedgerow creation is in line with Policies for this area in the Plan. The protection, expansion and management of other habitats is a Plan wide policy which the ecological opportunities would help to deliver.

National Character Areas –the ecological opportunities are in line with the four 'Statements of Environmental Opportunity' identified in the Mersey Valley NCA 60 profile. Delivery of the Focus Area ecological opportunities would strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery

of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected and Cheshire LNP – implementation the Focus Area’s ecological opportunities would work towards the LCR LNP’s Key Action D and would also support the delivery of its other Key Actions. They would also contribute to the ‘living landscape’ proposals of Cheshire LNP.

LCR LEP – The Focus Area could help to support the expansion of Sci-Tech Daresbury Park and enterprise zone, by contributing towards sustainable development and the green spaces creating a productive working environment. The ecological opportunities could help support the LEP’s Priority for Low Carbon Economy through woodland management. The Focus Area could also support the LEPS’s Priority for Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway - the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability.

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 09: Runcorn Hill Heath

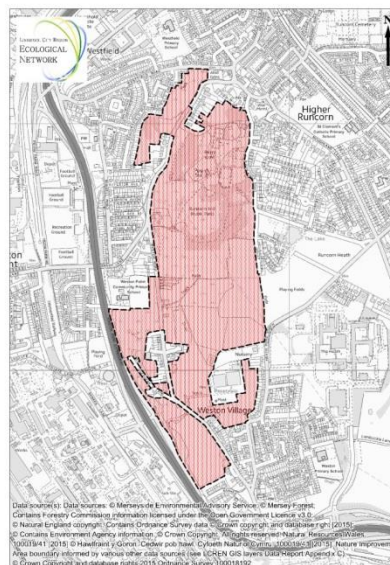
District(s): Halton

Area 56 hectares

Ecological priorities are:

Habitat creation

- Heathland, where the geology allows especially around the existing habitat area; and
- Grassland, to support the heathland where heathland restoration would be difficult.



Habitat management

- Restoring, maintaining and enhancing the heathland habitats;
- Maintaining the extent and increasing the species diversity of the existing grasslands to support the heathland; and

Enhancing the existing woodland to support the heathland.

Existing ecological features:

1. There are 23ha of existing habitat.
2. Core Biodiversity Area: 1 LNR; 1 Local Site; together with heathland, woodland and grassland Priority Habitats.
3. Species: common lizard; moths and butterflies; and breeding birds.



Runcorn Hill, Peter I. Vardy, wikipedia

Focus area description:

The Focus Area is drawn around Runcorn Hill and the adjacent land that has similar sandstone geology. The Focus Area is important for the remnant lowland heathland present. Heathland in the UK has experienced over 80% habitat loss across the country, while retaining 20% of the world's heathland habitat. The Focus Area is small and naturally isolated from other heathland as the habitat is dependent upon geology and soil type.

The site was a quarry in the past, but is now a recreational space. The site contains old quarry workings now covered with sycamore woodland and a mosaic of lowland heath, acid grassland, regenerating woodland and scrub.

The south of the Focus Area is agricultural land predominantly used for horse grazing. The sandstone rock outcrops along the Runcorn Expressway road are also included.

Ecological opportunities

Habitat creation:

- **Heathland:** Where geology and soil conditions are favourable it may be possible to recreate small areas of heathland. Prime locations for this will be within Runcorn Hill where the sandstone rock is closest to the surface. Clearance and control of small areas of trees and scrub adjacent to existing heathland habitat can allow the habitat to expand naturally. In other areas, such as grasslands, planting heathland species and altering management will create new habitat.
- **Grassland:** The south of the Focus Area is likely to be where this habitat can be created. Acid grasslands are a natural part of a heathland and expansion of this habitat will support and buffer the heather dominated areas. Successful habitat creation would occur if the removal of the topsoil to remove excess nutrients on some sites was appropriate. The topsoil can then be used for landscaping elsewhere. In the longer term, intensive grassland cutting and removal of the arisings results in a lowering of the nutrients, which allows acid grassland species to establish.

Habitat management priorities:

- **Heathland:** Historic management of heathland would have involved the removal of some trees and large heather and gorse shrubs for firewood and other uses. The removal of trees within the heathland will reduce shading and allow the heather and other species to grow. Removing old growth of heather and gorse is also important as the new grow is important for many invertebrates and helps in reducing risks of fire. Maintaining discrete blocks of old growth is important will retain nesting habitat for birds. Management undertaken in rotation to maintain areas of suitable habitat would provide these benefits.
- **Grassland:** The grasslands were used for grazing horses. Horse grazing can be a useful tool to develop species rich grassland and manage scrub encroachment. For example, horses are the predominant grazing animals within the New Forest heathland and grasslands. Horse grazing in this area is under review; if grazing is found to be inappropriate, a low intensity grassland cutting regime (e.g. once every two years) would be sufficient ecologically. Species can be introduced and protected from grazing until they have established to create a wider diversity of species and structure.
- **Woodland:** Trees are an important part of the heathland habitat and form a mosaic with heath and grassland. Woodland growing on sandstone based soils can provide an opportunity to increase species diversity using more acid-loving plants into the ground

flora and shrub layer.

Ecosystem Services Benefits

Runcorn Hill Heath provides significant biodiversity benefits in terms of quality and quantity of lowland heath, a declining Priority Habitat type. Other benefits are based on the recreational use of the Hill and adjacent public park. The sandstone exposures and heathland habitats provide a range of educational opportunities.

Focus Area support to wider priorities and strategies

Local Plans – the local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Mersey Forest Plan – restoring heathland, grassland and managing woodland is in line with Policies for this area in the Plan. The protection, expansion and management of other habitats is a Plan wide policy which the ecological opportunities would help to deliver.

National Character Areas – the ecological opportunities are in line with two of the four 'Statements of Environmental Opportunity' identified in the Mersey Valley NCA 60 profile. Delivery of the Focus Area ecological opportunities would strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – the scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected and Cheshire LNP - implementation of the Focus Area's ecological opportunities will work towards the LCR LNP's Key Action D and will also support the delivery of its other Key Actions. They would also contribute to the 'living landscape' proposals of Cheshire LNP.

LCR LEP – The Focus Area could help to support the LEP's Priority for Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of the Sustainability priority (landscape park, grey to green).

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 10: Mersey Estuary

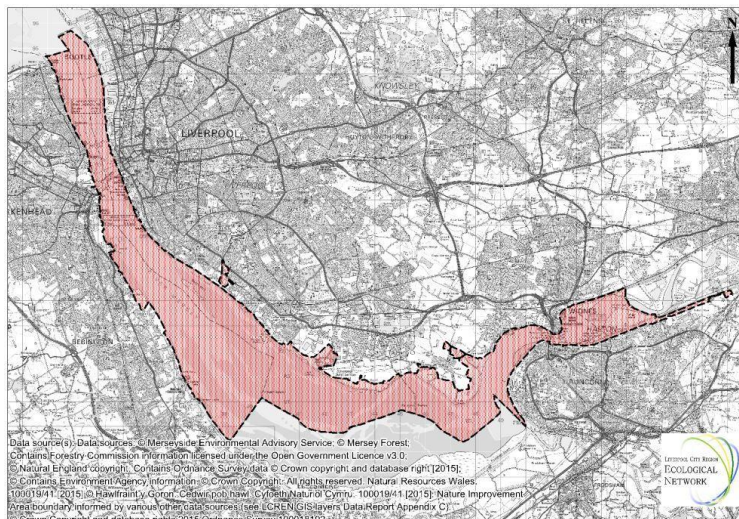
District(s): Halton, Liverpool, Sefton and Wirral

Area 6,438 hectares

Ecological priorities are:

Habitat creation

- there are limited opportunities for habitat creation. Habitats are establishing naturally;
- grassland, especially around the existing grasslands sites; and
- woodland, specifically around the existing ancient woodlands.



Habitat management

- The biggest priority for the Focus Area is management of the designated sites, especially where it will ensure the resilience of the sites to natural and climate change;
- maintaining and enhancing the existing ancient woodlands;
- enhancing the semi-natural woodlands; and
- maintaining the extent and increasing the species diversity of the existing grasslands, particularly to support breeding birds, passage birds and overwintering birds.

Existing ecological features:

1. There are 6,085ha of existing habitat.
2. Core Biodiversity Area: 4 internationally designated sites; 3 SSSIs; 3 LNR; 19 Local Sites; together with ancient woodland, grassland, wetland, woodland and coastal Priority Habitats.
3. Linear features: river; canal; hedgerows; railway line; and roads.
4. Species: The Focus Area contains a large number of important species, mainly breeding farmland birds, particularly yellow wagtail, passage and overwintering birds but also including fish and aquatic mammals.



Focus area description:

The Focus Area is drawn around the numerous designated sites and includes the entire Estuary within the City Region, including areas upstream of the Runcorn Gap. The Focus Area also includes the Mersey Narrows to high tide mark because it forms a link with Liverpool Bay. It complements the 'Living Landscapes' area which Cheshire Wildlife Trust is proposing. The Estuary is of major importance for ducks and waders. The site is also important during the spring and autumn migration periods, particularly for wader populations moving along the west coast of Britain. Grasslands and fields have been included in the Focus Area as they are important sites for roosting and feeding for birds.

The City Region has a very limited resource of ancient woodland and any opportunity to protect, enhance and expand the woodlands is vital. Due to their importance, the adjacent ancient woodlands in Halton and Liverpool have been included in this Focus Area.

The area is already heavily protected through legislation and provides a significant contribution towards the City Region's natural assets and green infrastructure. It is one of the largest areas of continuous wildlife habitat in the City Region. Compared to the other 'coastal' areas of the City Region the Focus Area is used less for recreation but this is offset by the presence of economically significant industry along substantial lengths of the banks.

There has been continuous investment along the River Mersey catchment to improve water quality after the industrial revolution resulted in the estuary becoming one of the most polluted sites in Europe. Further investment would build upon the existing investment and further enhance the Estuary for the local residents and businesses.

Ecological opportunities

Habitat creation:

Due to the nature of the Estuary and the development along the foreshore, there are limited opportunities to create additional habitat. Habitats within the Estuary naturally fluctuate as the main channel(s) migrate.

- **Grasslands:** The north bank contains important grasslands particularly along the cliffs and around Speke Hall. New grassland adjacent to the existing would act as a buffer as well as increase the size of the habitat. The grasslands and farmland are important for breeding birds, including Yellow Wagtail and as a high tide roost for passage and overwintering birds. Additional grasslands would provide the opportunity for more breeding, roosting and feeding sites for birds.
- **Woodland:** The existing ancient woodlands are isolated and relatively small. Planting native woodland around the existing ancient woodland would buffer the important sites and allow species populations to be more resilient and expand into the new woodland.

Habitat management priorities:

- Nearly all of the Focus Area is covered by site designations that include management prescriptions, e.g. SSSI. Management should be in line with established management objectives.
- There is limited scope to enhance the intertidal sand- and mud-flats apart from ensuring they are protected and damaging practices are limited.

- The majority of the saltmarsh resource is on the south bank of the estuary within Cheshire; saltmarsh is naturally eroding east of Hale on the north bank. Management to improve the condition of the saltmarsh at Hale would help support the habitat to adapt to natural change. Upstream of the Runcorn Gap, additional saltmarsh is present at Wigg Island and Widnes Warth; management is being put in place at these locations as part of the Mersey Gateway project and further investment would strengthen the existing management.
- The Mersey Estuary is used less extensively for recreation than the other coastal sites within the City Region and there is limited access onto the mud/sandflats. The Estuary is important for sailing and other water sports and there are a number of important walking routes especially along the north bank. Wigg Island, Otterspool Promenade, Eastham Country Park, Port Sunlight River Park and Speke Hall are important recreation facilities. Further investment in access along the north bank would ensure the protection of the cliffs at Speke and the important habitats present. Improvements to the visitor facilities across the whole Estuary would support the local visitor economy. This could help to broaden the coastal access available for the population of the City Region and reduce the pressure on other areas such as the Sefton Coast or North Wirral Foreshore.
- The Estuary is heavily urbanised with a large amount of industry located on both banks. This means the species and habitats within the estuary need to be resilient to pressures such as noise, water and air quality. Management that could enhance coastal habitats by increasing plant diversity would enable the estuary to be more resilient to pressures and maintain support for important animal species.
- **Grasslands/Agricultural Land:** Many of the grasslands close to the estuary provide supporting habitat for passage and overwintering birds. Adding to the plant diversity of the grasslands would improve the potential for breeding farmland bird species to use the area. The alteration of arable practices could act as a mechanism to ensure supporting habitat, such as feeding areas, are maintained for birds that are qualifying species of the Mersey Estuary. This management would help retain existing farmland.
- **Woodland:** The existing ancient woodlands are subject to management which ranges from amenity to some habitat works. Further targeting of habitat management would improve the ecological value of the woodlands. Additional investment in management would ensure the ecology and recreation value of the sites is maintained into the future.

Ecosystem Services Benefits

The Mersey Estuary is an iconic feature of the City Region. Further enhancement to the ecology, social and economic aspects of the Estuary would build upon existing work undertaken by the Mersey Basin Campaign and the River Mersey Task Force. The biggest potential benefit from the identified ecological opportunities is through managing, maintaining and enhancing the existing designated sites. This should ensure that the area continues to provide the ecological benefits and enhances them where needed. The future management of the habitats within the Focus Area should therefore continue to provide the benefits of climate change mitigation, tourism, recreation and leisure, quality of place and health and wellbeing to the local/wider population.

Some management activities which benefit ecological features could also expand the benefits this area provides to economic growth and resilience. Supporting the ecological aspects of the

site ensures that the adjacent industry and employment is maintained. The provision or improvement of appropriate visitor facilities would enhance the Estuary as a recreation resource and help the visitor economy. These could include the provision of facilities such as paths, toilets and cafes in areas where they are currently lacking and which are compatible with nature conservation objectives. This could reduce visitor pressure in other locations more sensitive to visitor pressure and would strengthen the City Region coastal attraction for visitors.

The Mersey Estuary's potential as a resource for the Low Carbon Economy is the subject of ongoing assessment and investigation.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the City Region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and priority habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Flood Catchment Management Plans/Shoreline Management Plans – the flooding and coastal erosion measures vary along the north and south banks of the Estuary. The ecological opportunities are in line with the identified measures and could help deliver coastal protection through enhanced saltmarsh that reduced coastal erosion and flooding.

River Basin Management Plans (Water Framework Directive) – The designated sites are impacted by water quality from the River Mersey and some management practices. The ecological opportunities of managing the sites will support them to be more resilient, to remove some of the limiting factors and to work towards achieving good ecological potential.

National Character Areas –the ecological opportunities are in line with the four 'Statements of Environmental Opportunity' identified in the Merseyside Conurbation NCA 58 profile. Delivery of the Focus Area ecological opportunities would strengthen landscape resilience and adaptation to climate change. This will help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity through wetland and forestry proposals. The scheme could also contribute towards the delivery of our water quality and forestry objectives.

Nature Connected and Cheshire LNP – implementation of the Focus Area's ecological opportunities could work towards the LCR LNP's Key Action D and would also support the delivery of its other agreed Key Actions. They would also contribute to the 'living landscape' proposals of Cheshire LNP.

LCR LEP – the ecological opportunities could help support the LEP's Priorities for the Low

Carbon Economy and the Visitor Economy such as at Speke Hall. The Focus Area could also support the LEP priorities for the Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability. The ecological opportunities could also support the investment priority in the Low Carbon Economy.

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 11: Dibbinsdale, Raby Mere and Eastham Country Park

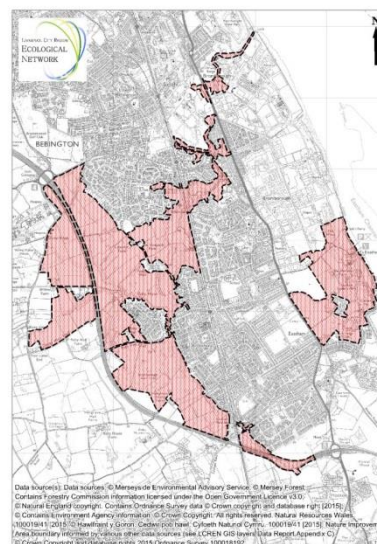
District(s): Wirral

Area 603 hectares

Ecological priorities are:

Habitat creation

- Opportunity to create new woodland to buffer ancient woodland, to the west of the main Dibbinsdale woodland complex.



Habitat management

- Woodland management to improve structure and quality of ancient woodland, wet woodland and river;
- Both Japanese knotweed and Himalayan balsam pose significant threats to woodland and wetland habitats; management to eradicate these species is required.

Existing ecological features:

1. There are 325 ha of existing habitat.
2. Core Biodiversity Area: 1 SSSI; 1 LNR; 11 Local Sites; Deciduous Woodland including wet woodland and 10 ancient woodland sites; together with reedbed and ponds Priority Habitats;
3. Linear features: river; railway line, motorway and primary route; hedgerow and streams.
4. Species: European eel; white-letter hairstreak; black poplar; holm oak; English bluebell; brown hare; bullfinch; dingy skipper; great crested newt; harvest mouse; noctule; Daubenton's bat; spotted flycatcher; water vole; pipistrelle; skylark and possibly otter.



Focus area description:

The Focus Area is drawn tightly on its eastern boundary as the designated sites are bounded by residential or employment areas. The western boundary is less tight, where opportunities exist to buffer the existing ancient woodland areas. The Focus Area is based on the river Dibbin and its catchment area and the extent of ancient woodland, the largest contiguous extent on the Wirral.

The Focus Area includes Eastham Country Park where significant opportunities exist to improve woodland quality and attractiveness as a visitor resource for the City Region.

Ecological opportunities

Habitat creation:

- Much of the Focus Area is covered by site designations that include nature conservation objectives, e.g. SSSI. Management should be in line with established management plans.
- **Woodland:** Planting woodland around the existing ancient woodland would buffer these important sites and allow species populations to be more resilient and expand into the new woodland. The existing woodlands are separated by roads and development. Woodland or hedgerow planting that links and strengthens links between the ancient woodlands could also enable species to move more easily across the area. The planting could fill in gaps in tree cover, or could create woodland belts to connect woodlands across longer distances.
- **Hedgerows:** Creating new hedgerows and tree lines that connect the existing woodlands will create a landscape that could facilitate the easier movement of woodland species.
- **Ponds:** A network of ponds is present in the rural portion of the Focus Area. Creating more ponds would support the existing network and improve habitat for important species such as dragonflies and amphibians. Ponds also provide the opportunity to create wetland habitats within the urban landscape where space is limited, especially where the Focus Area is narrow.

Habitat management priorities:

- **Woodland:** Areas of the woodland resource are mainly within public and third sector ownership. Management ranges from amenity to some habitat works. Within the ancient woodland, management should be targeted to ensure key features such as deadwood, mature trees, glades and rides, together with a diverse ground flora are present. Management can enhance the structure of the woodland by ensuring that there are suitable shrub and ground layers, to allow species to move across the area and populations to expand from the ancient woodland sites. A priority is the eradication of Japanese knotweed and Himalayan balsam.
- **Ponds:** The ponds within the Focus Area are important for invertebrate and amphibian populations. Management to prevent complete shading by trees and drying out is required in some cases. However, a mix of ponds in different conditions, such as completely open - some shading – complete shading, provides a range of habitat diversity. Protection of ponds from pollution inputs, such as nutrient enrichment, is important to ensure the habitat can support important species.
- **Wetland:** Along the river Dibbin are small areas of reedbed and swamp wetlands.

Scattered patches of swamp habitats also exist along the brooks. Management of the existing swamp should maintain the extent and prevent too much scrub growth, but maintain some scrub as wet woodland. Some areas may require cutting to prevent drying out. Any cutting should be undertaken on a rotational basis.

- **Hedgerows:** Traditional management of the hedgerows, such as laying, would strengthen the structure. Measures such as filling gaps in existing hedges and cutting every 3 years would improve the function of the hedgerow. Planting and allowing large tree species to grow tall would provide a diversity of height and expand the tree cover of the area. Hedgerow management allows the existing agricultural uses of fields to be maintained while providing significant improvements to important habitats.

Ecosystem Services Benefits

The Focus Area's watercourses, wetlands and floodplain areas act to store water. Improvement in the function of the habitats would help to store more water, while further habitat creation could add to the storage capacity. This helps to make properties and land more secure inside and outside the Focus Area and could benefit property value. The river Dibbin and its tributaries are in poor condition under the Water Framework Directive.

Management of the woodlands, in particular, could provide economic opportunities in relation to renewable energy and microgeneration such as through biomass or coppicing. Existing woodlands act as a carbon store and any new woodland would also help store carbon.

The wider area, including Brotherton Park, Dibbinsdale Local Nature Reserve and Eastham Country Park, provides a significant recreational resource for local residents and visitors. The parks also generate a significant number of volunteer days input to site management.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and priority habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Flood Catchment Management Plans - the ecological opportunities can be used to help manage water flows, store flood waters and release them slowly. This is in line with the Policy the Environment Agency is taking to deal with flood risk along the river Dibbin.

River Basin Management Plans (Water Framework Directive) - the ecological opportunities identified could help deliver improvements to water quality and morphology. This could help improve the ecological condition of the watercourses which is key objective of the North West River Basin Management Plan.

National Character Areas - the ecological opportunities are in line with two of the four

'Statements of Environmental Opportunity' identified in the Merseyside Conurbation NCA 58. Delivery of the Focus Area ecological opportunities could strengthen landscape resilience and adaptation to climate change. This will help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, wetland and forestry proposals. The scheme could also contribute towards the delivery of water quality and forestry objectives.

Nature Connected and Cheshire LNP- implementation of the Focus Area's ecological opportunities could work towards the LCR LNP's Key Action D and would also support the delivery of its other Key Actions. They would also contribute to the 'living landscape' proposals of Cheshire LNP.

LCR LEP – The Focus Area could support the LEP's priority for the Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of the Sustainability priority (landscape park, grey to green).

Liverpool City Region Ecological Network Nature Improvement Area focus area

NIA Focus Area 12: East Wirral Heathlands

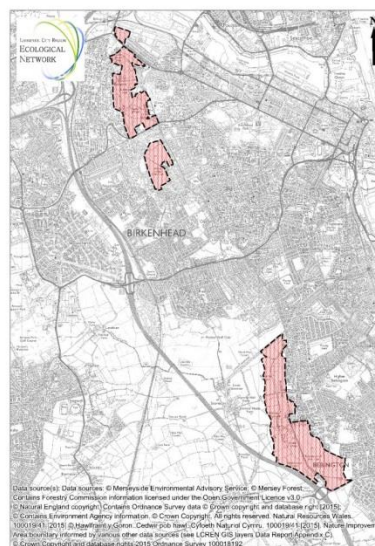
District(s): Wirral

Area 223 hectares

Ecological priorities are:

Habitat creation

- Heathland, where the geology allows especially around the existing habitat area; and
- Grassland, to support the heathland where heathland restoration would be difficult.



Habitat management

- Restoring, maintaining and enhancing the heathland habitats;
- Maintaining the extent and increasing the species diversity of the existing grasslands to support the heathland; and
- Enhancing the existing woodland to support the heathland.

Existing ecological features:

1. There are 114 ha of existing habitat.
2. Core Biodiversity Area: 6 Local Sites; together with lowland heath, ponds, deciduous woodland, dry acid grassland, reedbed and marsh Priority Habitats.
3. Linear features: Hedgerow and motorway verge.
4. Species: Great crested newt; house sparrow; brown long-eared bat; bluebell; bullfinch; lapwing; linnet; skylark; reed bunting; pipistrelle; song thrush; and heather.



Focus area description:

The Focus Area is drawn tightly to the sandstone ridge along east Wirral. Heathland in the UK has experienced over 80% habitat loss across the country, while retaining 20% of the world's heathland habitat. The Focus Area is small and naturally isolated from other heathland as the habitat is dependent upon geology and soil type. The heathland within the Focus Area is highly fragmented.

The northern section (Bidston Hill) is owned by Wirral Council and has an active "Friends of" group. The middle section is privately owned (Wirral Ladies Golf Club). The southern section is in private ownership while the northern section is partly owned by The Woodland Trust (Storeton Woods) and has an active "Friends of" group.

Ecological opportunities

Habitat creation:

- **Heathland:** Where geology and soil conditions are favourable it may be possible to recreate small areas of heathland. Prime locations for this will be within Bidston Hill and Wirral Ladies Golf Club where the sandstone rock is closest to the surface. Within the golf course, heathland can also function as rough of differing heights and structure. Clearance and control of small areas of trees and scrub adjacent to existing heathland habitat can allow the habitat to expand naturally. In other areas, such as grasslands, planting heathland species and altering management will create new habitat.
- **Grasslands:** Acid grasslands are a natural part of a heathland and expansion of this habitat will support and buffer the heather dominated areas. In the longer term, intensive grassland cutting and removal of the arisings results in a lowering of the nutrients, which allows acid grassland species to establish.

Habitat management priorities:

- **Heathland:** Historic management of heathland would have involved the removal of some trees and large heather and gorse shrubs for firewood and other uses. The removal of trees within the heathland will reduce shading and allow the heather and other species to grow. Removing old growth of heather and gorse is also important as the new grow is important for many invertebrates and helps in reducing risks of fire. Maintaining discrete blocks of old growth is important to retain nesting habitat for birds. Management undertaken in rotation to maintain areas of suitable habitat would provide these benefits.
- **Grassland:** A low intensity grassland cutting regime (e.g. once every two years) would be sufficient to manage acid grasslands to benefit biodiversity. Plants species can be introduced and protected from cutting until they have established to create a wider diversity of grassland species and structure.
- **Woodland:** Trees are an important part of the heathland habitat and form a mosaic with heath and grassland. Woodland growing on sandstone based soils can provide an opportunity to increase species diversity using more acid-loving plants into the ground flora and shrub layer. The woodland is important for birds and woodland management that benefits plants and birds would be appropriate.

Ecosystem Services Benefits

The heath, grasslands and woodland along the sandstone ridge provide significant biodiversity benefits in terms of quality and quantity of lowland heath, a declining priority habitat type. Other benefits are based on the recreational use of Bidston Hill and adjacent public spaces. The sandstone exposures and heathland habitats provide a range of educational opportunities. Storeton Woods is also open to the public.

Views of the wider landscape are afforded from Bidston Hill due to the open nature of the heathland habitat.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

National Character Areas - the ecological opportunities are in line with two of the four 'Statements of Environmental Opportunity' identified in the Merseyside Conurbation NCA 58. Delivery of the Focus Area ecological opportunities could strengthen landscape resilience and adaptation to climate change. This will help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected and Cheshire LNP – implementation of the Focus Area's ecological opportunities could work towards the LCR LNP's Key Action D and would also support the delivery of its other Key Actions. They would also contribute to the 'living landscape' proposals of Cheshire LNP.

LCR LEP – The Focus Area could help to support the LEP's priority for the Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of the Sustainability priority (landscape park, grey to green).

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 13: West Wirral Heathlands and Arrowe Park

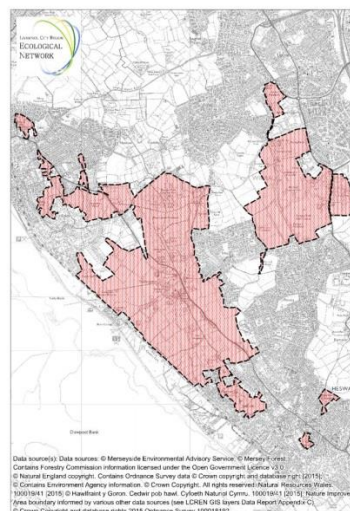
District(s): Wirral

Area 1,008 hectares

Ecological priorities are:

Habitat creation

- Heathland, where the geology allows especially around the existing habitat area; and
- Grassland, to support the heathland where heathland restoration would be difficult.



Habitat management

- Restoring, maintaining and enhancing the heathland habitats;
- Maintaining the extent and increasing the species diversity of the existing grasslands to support the heathland; and
- Enhancing the existing woodland to support the heathland.

Existing ecological features:

1. There are 425 ha of existing habitat.
2. Core Biodiversity Area: 3 SSSI; 2 LNR; 26 Local Sites; together with traditional orchard, purple moor grass & rush pastures, deciduous woodland, lowland heath, lowland meadows, reedbed / marsh, ponds, fen and dry acid grassland Priority Habitats.
3. Linear features: River, hedgerow and dismantled railway.
4. Species: Farmland birds such as grasshopper warbler, great crested newt, house sparrow, common lizard, black poplar, bluebell, brown hare, bullfinch, dingy skipper, bats and song thrush.



Focus area description:

The Focus Area is drawn around the underlying geology of the sandstone ridge along the west of Wirral; it includes areas such as Thurstaston Hill, Heswall Dales, Caldly Hill and Arrowse Park. Land ownership is fragmented between Wirral Council and private land owners including the National Trust.

The Focus Area is important for the remnant lowland heathland present. Heathland in the UK has experienced over 80% habitat loss across the country, while retaining 20% of the world's heathland habitat. The Focus Area is one of the largest areas of heathland in the City Region and naturally isolated from other heathland as the habitat is dependent upon geology and soil type. Heswall Dales SSSI is in 'unfavourable recovering' condition (Natural England 1 April 2014).

The Focus Area contains a mosaic of lowland heath, acid grassland, established woodland, regenerating woodland and scrub. Large gardens of some properties do have potential for heathland creation as a buffer to the open heathland.

Ecological opportunities

Habitat creation:

- **Heathland:** Where geology and soil conditions are favourable it may be possible to recreate small areas of heathland. The prime locations for this will be on Caldly Hill where the sandstone rock is closest to the surface. Clearance and control of small areas of trees and scrub adjacent to existing heathland habitat can allow the habitat to expand naturally. In other areas, such as grasslands, planting heathland species and altering management could create new habitat.
- **Grasslands:** Acid grasslands are a natural part of a heathland and expansion of this habitat will support and buffer the heather-dominated areas. Successful habitat creation would occur if the removal of the topsoil to remove excess nutrients on some sites was appropriate. The topsoil can then be used for landscaping elsewhere. In the longer term, intensive grassland cutting and removal of the arisings results in a lowering of the nutrients, which allows acid grassland species to establish.

Habitat management priorities:

- **Heathland:** Historic management of heathland would have involved the removal of some trees and large heather and gorse shrubs for firewood and other uses. The removal of trees within the heathland will reduce shading and allow the heather and other species to grow. Removing old growth of heather and gorse is also important as the new grow is important for many invertebrates and helps in reducing risks of fire. Maintaining discrete blocks of old growth is important and would retain nesting habitat for birds. Management undertaken in rotation to maintain areas of suitable habitat would provide these benefits.
- **Grassland:** Horse grazing can be a useful tool to develop species rich grassland and manage scrub encroachment. For example, horses are the predominant grazing animals within the New Forest heathland and grasslands. If grazing is found to be inappropriate, a low intensity grassland cutting regime (e.g. once every two years) would be sufficient to benefit biodiversity. Species can be introduced and protected from grazing until they have established to create a wider diversity of species and structure.

- **Woodland:** Trees are an important part of the heathland habitat and form a mosaic with heath and grassland. Woodland growing on sandstone based soils can provide an opportunity to increase species diversity using more acid-loving plants into the ground flora and shrub layer. Woodland management to provide less shade on existing heath or acid grasslands would be a significant benefit, as part of rotational heathland management.

Ecosystem Services Benefits

The West Wirral Heathlands provide significant biodiversity benefits in terms of quality and quantity of lowland heath, a declining Priority Habitat type.

Other benefits are based on the recreational use of the heathlands and the adjacent Arrowe Park. The sandstone exposures and heathland habitats provide a range of educational opportunities.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

National Character Areas - The ecological opportunities are in line with 'Statements of Environmental Opportunity' identified in the Wirral NCA 59. Delivery of the Focus Area ecological opportunities could strengthen landscape resilience and adaptation to climate change. This will help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected and Cheshire LNP – implementation of the Focus Area's ecological opportunities will work towards the LCR LNP's Key Action D and will also support the delivery of its other Key Actions. They would also contribute to the 'living landscape' proposals of Cheshire LNP.

LCR LEP – the ecological opportunities could help to support the LEP's Priority for the Visitor Economy, such as at Arrowe Park and Thurstaston Hill. The Focus Area could also help to support the LEP's priority for the Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of the Sustainability priority (landscape park, grey to green).

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 14: Dee Estuary

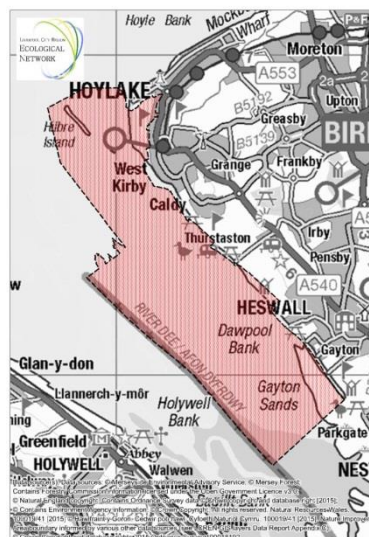
District(s): Wirral

Area 3,911 hectares

Ecological priorities are:

Habitat creation

- There are limited opportunities for habitat creation. Habitats are subject to natural change.



Habitat management

The biggest priority for the Focus Area is management of the designated sites, especially where it will ensure the resilience of the sites to natural and climate change.

Existing ecological features:

1. There are 3,893ha of existing habitat.
2. Core Biodiversity Area: 3 International designated sites; 3 SSSIs; 1 LNR; 5 Local Sites; together with coastal and wetland Priority Habitats
3. Linear features: River; and disused railway.
4. Species: The Focus Area contains a large number of important species, mainly breeding, passage and over-wintering birds, also including natterjack toad and lamprey.



Hilbre Island www.cheshirelife.co.uk

Focus area description:

The Focus Area is drawn around the designated sites and includes the mud- and sand-flats of the outer estuary, the salt marshes of the west Wirral coast, the sand dunes at Red Rocks, Hilbre Island and clay boulder cliffs. The area is already heavily protected through legislation and provides a significant contribution towards the City Region's natural assets and green infrastructure. It is one of the largest areas of continuous wildlife habitat and public recreational space in the City Region.

Through coastal processes, accretion is taking place and saltmarsh is developing on the Wirral shoreline. The estuary also contains the only natural hard rock coastal habitat (Hilbre Island) in a stretch between Llandudno and St Bees, Cumbria. Several wading bird species also make extensive use of the coastal grazing marshes and fields adjoining the estuary for feeding, roosting and breeding.

The area is popular with recreational craft and there are a number of mooring points along the coastline. The Estuary is also an important cockle fishery. This is regulated by the Natural Resources Wales.

There are limited opportunities for habitat creation given the site's tight boundary with the urban areas. There are some areas of arable land along the coast, including at Thurstaston, which have functional links with the Estuary due to feeding waders.

Ecological opportunities**Habitat creation:**

Due to the nature of the Estuary and the development along the foreshore, there are limited opportunities to create additional habitat. The Estuary has naturally had an increase in the area of saltmarsh primarily along the Wirral shoreline.

Habitat management priorities:

- Nearly all of the Focus Area is covered by site designations that include nature conservation objectives i.e. SAC, SPA, Ramsar. Management of the internationally designated sites is carried out with from Natural England in line with advice provided under Regulation 35 of the Habitats Regulations.
- There is limited work that can be done to enhance the intertidal sand- and mud-flats apart from ensuring they are protected and damaging practises are limited. Management effort should be focused in the dune areas around Red Rocks, which is in poor condition (Natural England, 2011/12). The habitats are migrating seawards and management should enable the natural progression of this. Management is also required to control the invasive species, Japanese rose.
- The saltmarshes are split into two parts. The old established saltmarsh has had traditional management of grazing by sheep and cattle. This is essential to maintain the existing agri-business as well as the vegetation structure. The new saltmarshes that have established have not been subject to grazing and are a different type of saltmarsh. These areas should be encouraged to develop naturally and accommodate existing recreational activities.
- Improvements in visitor facilities, including access routes, would benefit habitats and species by reducing trampling and disturbance. Economic aspirations and the ageing population have the potential to increase the pressure on the Dee Estuary visitor facilities.

Increased management of the Visitor Economy in the Dee Estuary would provide opportunities to ensure the environment of the Estuary is resilient to increases in recreational activity.

- The sandflats, especially around West Kirby, are heavily used for recreational purposes. This is an important facility for the local population and visitors from outside the City Region. The majority of this area is under the ownership and management of Wirral Council. Zoning is in place to balance and maintain recreational and ecological interest. Resources could be used to establish a Beach Management Plan.
- The Dee Estuary Voluntary Wardens, a voluntary group supported by Wirral Council, monitor and help to manage bird disturbance at West Kirby during the winter months.

Ecosystem Services Benefits

The Dee Estuary is a prime draw for ecotourism within the City Region, a significant recreational facility and provides a distinctive sense of place for residents within the wider area. The biggest benefit from the identified ecological opportunities is through managing, maintaining and enhancing the existing designated sites. This should ensure that the Area continues to provide the ecological benefits and enhances them where needed. The maintenance of the Focus Area should continue to provide benefits for climate change mitigation, tourism, recreation and leisure, quality of place and health and wellbeing to the local and wider population.

Management activities would benefit ecological features but could also extend the benefits this area provides to economic growth and resilience. The Wirral Coastal Path allows visitors to circumnavigate the Wirral Peninsular. The improvement of visitor facilities would enhance the Coastal Path as a recreation facility and help the visitor economy. These could include the provision of facilities such as paths, toilets and cafes in areas where they are currently lacking. This could reduce visitor pressure in certain locations and would strengthen the whole coast's attraction for visitors. Wirral Council's coastal ranger service, with bases at Thurstaston and Hilbre, increases the educational attraction of the Estuary and provides a beneficial resource for schools, colleges and universities.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Flood Catchment Management Plans/Wirral Coastal Strategy – the flooding and coastal erosion measures vary along the Wirral coastline. The ecological opportunities are in line with the identified measures and could help deliver coastal protection by working with natural processes to enable development of saltmarsh that reduces coastal erosion and flooding and spend on hard coastal defences (construction and maintenance).

River Basin Management Plans (Water Framework Directive) – The designated sites are impacted by water quality from the River Dee and some management practices. The ecological opportunities of managing the sites would support them to be more resilient and to remove some of the limiting factors.

National Character Areas –the ecological opportunities are in line with the five ‘Statements of Environmental Opportunity’ identified in the Wirral NCA 59 profile. Delivery of the Focus Area ecological opportunities could strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected and Cheshire LNP – implementation the Focus Area’s ecological opportunities will work towards the LCR LNP’s Key Action D and will also support the delivery of its other Key Actions. They would also contribute to the ‘living landscape’ proposals of Cheshire LNP.

LCR LEP – the ecological opportunities could help support the LEP’s Priorities for Visitor Economy, such as at Hilbre Island. The Focus Area could also help to support the LEP’s priority for the Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability.

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 15: North Wirral Foreshore and Liverpool Bay

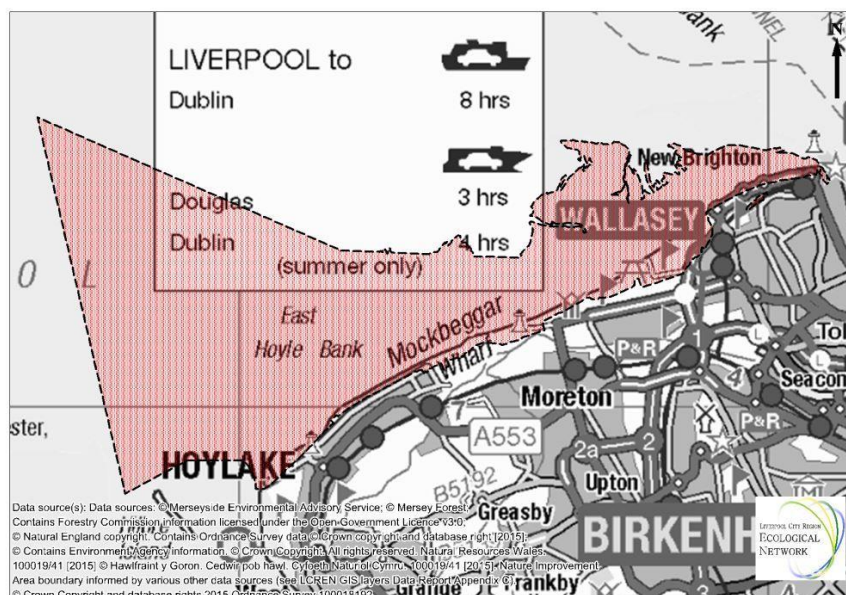
District(s) Wirral

Area 4,265 hectares

Ecological priorities are:

Habitat creation

- There are limited opportunities for habitat creation within the designated sites;
- There are some opportunities for habitat restoration within the sand dune areas at Leasowe Common, Wallasey Golf Course and Leasowe Gun site.



Habitat management

- Management of the designated sites, especially where it will ensure the resilience of the sites to natural and climate change; and
- Enhancing the remnant dune areas.

Existing ecological features:

1. There are 4,230ha of existing habitat.
2. Core Biodiversity Area: 4 Internationally designated sites; 1 SSSI; 5 Local Sites; together with coastal and wetland Priority Habitats
3. Species: The Focus Area contains a large number of important species, mainly breeding and overwintering birds.



Leasowe Bay - merseySights

Focus area description:

The Focus Area is drawn around the designated sites and includes the remnant sand dunes at Leasowe. The area is already heavily protected through legislation and provides a significant contribution towards the City Region's natural assets and green infrastructure. It is one of the largest areas of continuous wildlife habitat and public recreational space in the City Region.

Historic coastal protection has altered the nature and shape of the coastline and has met the objective of retaining a sandy foreshore. The quality of the sand and mud-flats has also improved and the foreshore is now important for a number of feeding and roosting wading bird species. Very high tides see wading birds leave the foreshore for other roosting sites in the City Region.

The area is popular as a recreational facility and in particular activities such as sand yachting. There are limited opportunities for habitat creation given the Focus Area's tight boundary with the urban areas.

Ecological opportunities

Habitat creation:

- **Dune grasslands:** There is some potential to recreate this habitat at Leasowe Common and the golf courses adjacent. The geology is sand and the removal of topsoil and seeding with appropriate species would allow dune grasslands to develop. The rough areas of the golf courses present an opportunity for this without compromising the use and value of the golf course. This would complement the existing habitats present.

Habitat management priorities:

- Nearly all of the Focus Area is covered by site designations that nature conservation objectives i.e. SSSI, SPA, SAC and Ramsar. Management of the internationally designated sites should be carried out with guidance from Natural England.
- There is limited work that can be done to enhance the intertidal sand- and mud-flats apart from ensuring that they are protected and limit damaging practices. Management requirements can be focused in the dune areas around Leasowe. Remnant dune is present that could be enhanced through management and habitat restoration. Green beach (a mix of sand dune and salt marsh habitats) is also developing in front of the hard defences and consideration could be given to management that would allow this to continue to provide for soft coastal defences in front of the existing hard defences.
- Improvements in visitor facilities, including access routes, would benefit habitats and species by reducing trampling and disturbance. Economic aspirations and the ageing population have the potential to increase the pressure on the visitor facilities along the Foreshore. Continued management of the Visitor Economy would provide opportunities to ensure the environment of the foreshore is supported.
- The sandflats are heavily used for recreational purposes, including sporting activities. This is an important facility for the local population and visitors from outside the City Region. Continued management of these activities should ensure that recreation use is balanced with nature conservation objectives for the site.

Ecosystem Services Benefits

The North Wirral Foreshore is a prime draw for ecotourism within the City Region, a significant recreational facility and provides a distinctive sense of place for residents within the wider area. It is also a prime site for outdoor activities such as sand yachting. The biggest benefit from the identified ecological opportunities is through managing, maintaining and enhancing the existing designated sites. This should ensure that the Area continues to provide the ecological benefits and enhances them where needed. The maintenance of the Focus Area should therefore continue to provide benefits for climate change mitigation, tourism, recreation and leisure, quality of place and health and wellbeing to the local and wider population.

Some management activities would benefit ecological features but could also extend the benefits this area provides to economic growth and resilience. The Wirral Coastal Path allows visitors to circumnavigate the Wirral Peninsular. The provision or improvement of visitor facilities would enhance the Coastal Path as a recreation facility and help the visitor economy. These could include the provision of facilities such as paths, toilets and cafes in areas where they are currently lacking. This could reduce visitor pressure in certain locations and would strengthen the whole coast's attraction for visitors. Wirral Council provides a management service for the area, which includes lifeguarding and a coastal ranger service, offering a beneficial resource for schools, colleges and universities. Leasowe Lighthouse, occupied by an active Friends group, also provides a valuable educational and visitor resource.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Flood Catchment Management Plans/Wirral Coastal Strategy – the flooding and coastal erosion measures vary along the Wirral coastline. The ecological opportunities are in line with the identified measures and could help deliver coastal protection through improvements to coastal habitats, such as sand dunes, to reduce coastal erosion and flooding.

River Basin Management Plans (Water Framework Directive) – The designated sites will be impacted by water quality from the River Dee and River Mersey and some management practices. The ecological opportunities of managing the sites could help to support them to be more resilient and to remove some of the limiting factors identified in the North West River Basin Management Plan.

National Character Areas –the ecological opportunities are in line with the five 'Statements of Environmental Opportunity' identified in the Wirral NCA 59 profile and the four 'Statements of Environmental Opportunity' in the Merseyside Conurbation NCA 58 profile. Delivery of the Focus Area ecological opportunities could strengthen landscape resilience and adaptation to climate change. This would help the Character Area achieve sustainable growth and a more secure environmental future.

Countryside Stewardship Scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits together. The scheme could also contribute towards the delivery of a proportion of our water quality objectives.

Nature Connected and Cheshire LNP – implementation of the Focus Area’s ecological opportunities could work towards the LCR LNP’s Key Action D and will also support the delivery of its other Key Actions. They would also contribute to the ‘living landscape’ proposals of Cheshire LNP.

LCR LEP – the ecological opportunities could help to support the LEP’s Priority for Visitor Economy such as at New Brighton and sustainable transport. The Focus Area could also help to support the LEP’s Priority for the Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainable transport.

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 16: River Birket Corridor

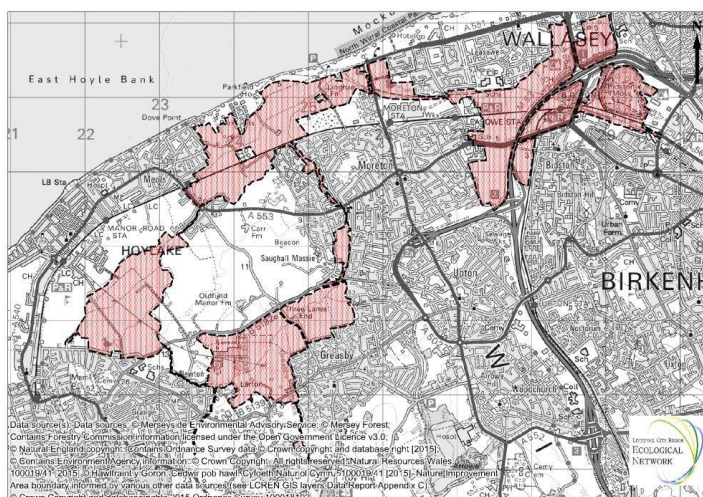
District(s): Wirral

Area 758 hectares

Ecological priorities are:

Habitat creation

- Wetlands including rivers, supporting the existing habitats such as swamp, open water and ponds.
- New hedgerows and tree lines that connect to the existing will create a landscape that woodland species can move across.



Habitat management

- Enhancing the watercourses such as the River Birket, including sustainable storage of surface water;
- Maintaining the value of the supporting habitat for overwintering, passage and breeding birds at Hoylake, Saughall Massie and Leasowe;
- Maintaining the extent and increasing the species diversity of the existing wetlands and grasslands; and
- Maintaining and strengthening the habitat links through the rural and urban landscape while retaining open views which are important for birds.

Existing ecological features:

1. There are 185 ha of existing habitat.
2. Core Biodiversity Area: 1 SSSI, 1 LNR; 8 Local Sites; together with reedbed, ponds, deciduous woodland and grassland Priority Habitats.
3. Linear features: River, motorway and primary route (verges), railway line, dismantled railway, hedgerow.
4. Species: includes Bats; barn owl; otter; water vole; farmland birds, passage and overwintering birds; Great crested newt; ivy-leaved crowfoot; and brown hare.



Focus area description:

The Focus Area includes the rivers Birket and Fender and some tributaries such as Arrowe Brook. It extends from Bidston Moss through Moreton, Leasowe and behind Hoylake. This forms the larger part of a self-contained river catchment that flows into the Mersey Estuary.

The inland wetland areas south of Hoylake and Saughall Massie provide supporting feeding and roosting habitat for overwintering, passage and breeding birds that are part of the internationally important sites along the Wirral coast and beyond.

There is also a string of important wetland and grassland sites along both the Birket and Fender which connects the Mersey Estuary with rural Wirral.

The Focus Area west of Birkenhead is predominantly agricultural land and is Green Belt. The area is characterised by having a number of different wetlands, brooks, streams, drainage ditches and ponds with hedgerows and tree lines. The area south of Hoylake is being considered for a major golf resort; it is a key project for the City Region. The area east of Bidston Moss is part of Wirral Waters, a strategic priority for the City Region in terms of housing and employment.

Ecological opportunities**Habitat creation:**

- **Rivers and Brooks:** Priorities include introducing in-channel habitat variation and removing artificial banks, which can be replaced by green engineering solutions to maintain the function of the watercourse. This would encourage more species in the watercourses and improve the ability for species to move along the habitat corridors.
- **Wetland:** The river corridors are narrow and wetland creation, possibly as part of flood defence works, could be undertaken along both the Birket and Fender. Opportunities to expand these areas out from the watercourses are limited but would provide multiple benefits including surface water storage and water filtering.
- **Ponds:** A network of ponds is present in the Focus Area. Creating more would support the existing and improve habitat for important species such as dragonflies and amphibians. Ponds provide the opportunity to create wetland habitats within the rural and urban landscape in small discrete spaces, especially where the Focus Area is narrow and to maintain the existing land use.
- **Hedgerows:** Creating new hedgerows and tree lines that connect the existing woodlands will create a landscape that woodland species can move across while retaining open views and provides additional links to the watercourses.

Habitat management priorities:

- **Rivers:** The river corridors are narrow in places and are managed for flood defence. A maintenance programme that is sensitive to ecology, such as rotational bankside cutting, could maintain flood defence and deliver ecology improvements. Maintaining the diversity of habitats, including trees, grassed banks and emergent vegetation would support important species such as water vole, otter and feeding bats. Dense vegetation is present in some areas and limits the species diversity on the banks and within the watercourse. Removing small areas of dense vegetation could allow more species to establish.

- **Wetland:** Patches of swamp habitats of varying size exist along the rivers. Management of the existing swamp could prevent too much scrub growth, while maintaining some scrub as wet woodland. Some areas may require cutting to prevent drying out. Any cutting should be undertaken on a rotational basis.
- **Ponds:** The ponds within the Focus Area are important for invertebrate and amphibian populations. Management to prevent complete shading by trees and drying out is required. A mixture of ponds in different conditions, such as completely open - some shading – complete shading, provides a range of habitat diversity. Protection of ponds from pollution inputs, such as nutrient enrichment, is important to ensure the habitat can continue to support important species.
- **Hedgerows:** Traditional management of the hedgerows, such as laying, would strengthen the structure. Measures such as filling gaps in existing hedges and cutting every 3 years would improve the function of the hedgerow. Planting and allowing large tree species to grow tall would provide a diversity of height and expand the tree cover of the area. Hedgerow management would allow the use of fields to be maintained while providing significant improvements to important habitats. Open views should be maintained where necessary for the benefit of breeding, passage and overwintering birds.
- **Woodland:** Management of the Bidston Moss woodlands to improve structure and quality would be required in the near future as the plantation woodland has established well. Management could be targeted to introduce glades, ground flora and woodland rides along the paths, and has the potential to generate an economic output.

Ecosystem Services Benefits

The Focus Area's watercourses, wetlands and floodplain areas act to store water. Improvement in the function of the habitats will help to store more water, while further habitat creation could add to the storage capacity. This helps to make properties and land more secure inside and outside the Focus Area and could benefit property values. The rivers Birket and Fender are in poor condition under the Water Framework Directive. Wider opportunities at a catchment scale such as beneficial land management change and upstream flood storage could also play a part in ensuring there is no increase in the level of flood risk in Birket and Fender areas.

Management of the woodlands, in particular as a source of biomass, could provide economic opportunities in relation to renewable energy and microgeneration. Existing woodlands act as a carbon store. In line with The Wirral Waters MasterPlan, the creation and management of appropriate habitats, such as woodland including wet woodland and grasslands, could provide a quality landscape setting for new development.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the city region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and strategic

priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

Flood Catchment Management Plans - the ecological opportunities identified could be used to store flood waters and release them slowly. This is in line with the approach the Environment Agency is taking to deal with flood risk management along the rivers Birket and Fender.

River Basin Management Plans (Water Framework Directive) - the ecological opportunities could help to deliver improvements to water quality and morphology. This could help improve the ecological condition of the watercourses.

National Character Areas - the ecological opportunities are in line with two of the four 'Statements of Environmental Opportunity' identified in the Merseyside Conurbation NCA 58 profile. Delivery of the Focus Area ecological opportunities could strengthen landscape resilience and adaptation to climate change. This will help the Character Area achieve sustainable growth and a more secure environmental future

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity, water quality and flooding benefits. The scheme could also contribute towards the delivery of our water quality objectives.

Nature Connected - implementation of the Focus Area's ecological opportunities could work towards the LCR LNP's Key Action D and would also support the delivery of its other Key Actions.

LCR LEP – The Focus Area could help support the delivery of the Wirral Waters Masterplan and inform the design and delivery of the proposed golf resort at Hoylake by contributing towards sustainable development creating a more productive working environment. The ecological opportunities could also help support the LEP's Priority for the Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – The Focus Area supports the delivery of 3 of the 4 priorities: Sustainability (landscape park, grey to green), Infrastructure (flooding) and Growth.

Liverpool City Region Ecological Network

Nature Improvement Area focus area

NIA Focus Area 17: North Widnes Corridor

District(s): Halton

Area 25 hectares

Ecological priorities are:

Habitat creation

- There are limited opportunities for habitat creation in sections 01 and 02. Section 03 offers opportunity for linear woodland and grassland habitats;
- Grassland, especially around the existing grassland areas; and
- Regeneration of Sunnybank Woodland Park;



Habitat management

- The biggest priority for the Focus Area is to improve management of the designated site in section 03, especially where it would ensure the resilience of the site to natural and climate change and deliver sustainable transport improvements to link with St Helens' Bold Forest Park to the north;
- Maintaining, enhancing and increase areas of grassland (calcareous and neutral) in sections 01 and 02;
- Enhancing the planted broadleaf woodland through woodland management to provide woodland structure; and
- Maintaining the extent and increasing the species diversity of the existing grasslands and woodlands and linear features, particularly to support breeding birds; and
- Improve the river corridor along Bower's Brook.

Existing ecological features:

1. There are 10ha of existing habitat.
2. Core Biodiversity Area: 1 Local Sites; together with grassland, wetland and woodland Priority Habitats.
3. Linear features: river, hedgerows; disused and active railway lines; and roads.
4. Species: The Focus Area contains a number of important species, including yellowhammer, hedgehog and house sparrow passage



Focus area description:

The Focus Area is drawn around three linked sites alongside linear features which include 2 major transport routes, Watkinson Way and an active railway. The Focus Area is split into three sections to reflect this which are: 01) Land east of Watkinson Way, 02) Sunnybank Woodland Park and 03) disused Runcorn Gap mineral line which links to St. Helens Bold Forest Park.

The three sections have been identified as priorities for action by Halton in terms of improving landscape character and providing an improved ecological link between St. Helens and Halton. The three sections are distinct from each other:

Section 01 – located east of Watkinson Way which was previously part of the disused Runcorn Gap mineral line, the area provides a significant buffer between Watkinson Way and the residential area of Crow Wood. Bower's Brook flows north to south through the area and is considered to be main river by the Environment Agency. Tree planting along the road corridor has been undertaken which would benefit from restructuring and potentially restocking with appropriate trees and shrubs. The lowland mixed deciduous woodland is considered to be Priority Habitat.

Section 02 – Sunnybank Woodland Park has examples of two Priority Habitats, lowland calcareous grassland and lowland mixed deciduous woodland. The park currently does not meet Green Flag criteria and there are significant opportunities to improve this asset and contribute to improving quality ecological links along the transport corridor.

Section 03 – This is the remaining part of the former Runcorn Gap mineral line that linked St. Helens to Runcorn and it lies within a relatively flat agricultural landscape characterised by hedgerows, ditches and ponds. This part of the Focus Area is a designated Local Wildlife Site because it is an important refuge for wildlife in an arable area. There is a mix of wetland and drier habitats of scrub, bare ground, ponds, hedgerow and broadleaved woodland. These provide habitats for a range of birds and invertebrates. Recently, work has been undertaken to improve the bed of the disused railway to form a cycle path. These works were informed by ecological surveys and undertaken sensitively to improve the ecological function of the linear feature.

Ecological opportunities

Habitat creation:

- **Grasslands:** The examples of calcareous and neutral grasslands that are present could be extended in Section 02 Sunnybank Woodland Park. This could provide additional habitat for invertebrates such as bees and butterflies. It could also help in delivery of a small part of the National Pollinator Strategy. Grasslands in sections 01 could be improved in terms of species diversity by the creation of wildflower grasslands.
- **Woodland:** The existing woodland areas in all sections could be extended and tree and shrub species diversity improved through appropriate planting.

Habitat management priorities:

- Management in all sections to retain larger areas of open ground for wildflower grassland and early stages of vegetation establishment could significantly improve the biodiversity contribution of the Focus Area;
- **Bower's Brook** provides opportunities to enhance wetland area within section 01 and provide stepping stone habitats linking with section 03 and north into St. Helens;
- Woodland structure and diversity can be enhanced in all sections to provide improved

habitat for breeding birds, bats, woodland plants and invertebrates;

- **Agricultural Land:** Many of the grasslands close to the section 03 provide supporting habitat for breeding farmland bird species and farmland mammals such as brown hare, providing a buffer to the disused railway by altering arable practices could act as a mechanism to ensure supporting habitat. This management would help retain existing farmland.

Ecosystem Services Benefits

The creation and management activities which benefit ecological features could also expand the benefits this area provides to economic growth and resilience through providing sustainable transport and movement between residential and economic areas. Supporting the ecological aspects of the site ensures that the adjacent industry and employment is maintained. The Focus Area links directly to the Bold Forest Park in St. Helens and strengthening the ecological linkage along this sustainable transport corridor could help to reduce visitor pressure in other locations that are more sensitive to visitor pressure and would strengthen the City Region's attraction for visitors. This could also assist in delivering the City Region's Low Carbon Economy and sustainable transport aspirations.

Focus Area support to wider priorities and strategies

Local Plans – The local authorities in the City Region have worked together to prepare the LCR Ecological Network as a joint evidence base and to help plan for biodiversity at a landscape-scale in line with the National Planning Policy Framework. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the City Region to be made. In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and priority habitats, linking networks and strategic priorities for habitat creation or enhancement. This is one of seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area. Although not a Proposals Map designation, further refinement of NIA boundaries and land uses may occur as part of each district's Local Plan processes.

River Basin Management Plans (Water Framework Directive) –The ecological opportunities of creating additional habitat and managing the Focus Area would support the wetlands and brook to be more resilient, to remove some of the limiting factors and to work towards achieving good ecological potential. These also could help in regulating water quality.

National Character Areas –the ecological opportunities are in line with the four 'Statements of Environmental Opportunity' identified in the Mersey Valley NCA 60 profile. Delivery of the Focus Area ecological opportunities will strengthen landscape resilience and adaptation to climate change. This will help the Character Area achieve sustainable growth and transport and a more secure environmental future.

Countryside Stewardship scheme – The scheme could support land managers in the delivery of multiple public benefits. Overall, biodiversity should be the priority for the scheme but synergies also exist to maximise opportunities to deliver biodiversity through wetland and forestry proposals. The scheme could also contribute towards the delivery of a proportion of our water quality and forestry objectives.

Nature Connected and Cheshire LNP – implementation of the Focus Area's ecological opportunities could work towards the LCR LNP's Key Action D and would also support the delivery

of its other agreed Key Actions. They would also contribute to the 'living landscape' proposals of Cheshire LNP.

LCR LEP – the ecological opportunities could help support the LEP's Priorities for the Low Carbon Economy, particularly wind and tidal energy and sustainable transport; and the Visitor Economy such as at Speke Hall. The Focus Area could also support the LEP priority for the Knowledge Economy and Skills by enhancing and inspiring learning for school and higher education students, including work placements/training in the natural environment.

Atlantic Gateway – the NIA ecological opportunities fit with the investment opportunities of infrastructure through flood control and sustainability. The ecological opportunities could also support the investment priority in the Low Carbon Economy, particularly wind and tidal energy.

Appendix 7: Model Policy Approach

LCR Ecological Framework: draft Model Policy response

Prepared: 17 January 2014, further amendments 20 January 2014; 21 January 2014; 29 April 2014; 8 May 2014 GW & AOC; 15 May 2014 – CB; 19 May 2014 CB; Aug 2015 (T&F Group, CB – edit); 12 August 2015 STH & CB edit

By: Task and Finish Group, amendments MEAS

Version: 12

Status: FINAL – Approved 6 November 2015

A7.1 *Insert District's* natural assets should continue to contribute to the Borough's sense of place, local distinctiveness and quality of life for those living, working, investing and spending their leisure time in the Borough. Development proposals and other initiatives should help achieve this. *Insert District's* natural assets are the designated nature sites, Priority Habitats and include linear features and stepping stone sites, together with the species dependent on these.

MODEL STRATEGIC POLICY

S1 Natural Assets

A hierarchical approach will be taken to the protection and enhancement of *insert District's* natural assets, according to their designation and significance.

Development should seek to protect and manage the natural assets (including natural habitats, sites and ecological network and green infrastructure) and where possible:

- Restore, enhance or extend natural assets;
- Create new habitats and green infrastructure; and
- Secure their long-term management.

Where it has been demonstrated that appropriate protection or retention of natural assets cannot be achieved, and there are no alternatives, mitigation and/or as a last resort compensatory provision will be required.

Priority should be given to improving the quality, linkages and habitat within the Liverpool City Region Ecological Network, including the Liverpool City Region Nature Improvement Area.

Nature conservation and enhancement

A7.2 *Insert District's* natural assets include the designated nature sites and Priority Habitats which comprise the Core Biodiversity Area that underpin the Liverpool City Region (LCR) Ecological Network. Paragraph 9 of the Framework recognises that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, in line with wider Government policy set out in 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' (2011). Other national policy for nature conservation is set out in paragraphs 109 to 119 of the Framework. This complements legal duties and requirements for nature conservation set out in a range of legislation including the Natural Environment and Rural Communities (NERC) Act 2006 and the Habitats Regulations 2010 (as amended).

- A7.3 The hierarchy of designated sites is:
- a) Sites of international nature importance;
 - b) Sites of national nature and geological importance; and
 - c) Sites of local nature and geological importance.
- [T&F Group agreed that districts preparing a separate Core Strategy would leave this in]*
- A7.4 The internationally important nature sites are the most important features of the City Region's outstanding natural environment and network of green infrastructure as set out in the LCR Ecological Network. In line with the hierarchical approach, these sites have rigorous policy and legal protection and should only be developed where there are no alternative solutions, there are imperative reasons of overriding public interest and where there has been appropriate mitigation and / or compensatory provision.
- A7.5 The key priorities for nature and geology in the City Region are:
- To manage our natural assets better – to protect the integrity of nature sites of international importance in the City Region, and to protect the City Region's nature and geodiversity assets; and
 - To make sure there is no net loss of these natural assets and to extend and enhance the City Region's Ecological Network and natural assets.
- A7.6 The LCR Ecological Network draws together the evidence (for example, nature site designations and Priority Habitats) and indicates strategic priorities and opportunities in *insert District* and across the City Region. Many natural assets occur at a landscape-scale and cross local authority boundaries. Neighbouring areas of Lancashire, Greater Manchester and Cheshire are currently preparing Ecological Networks, which will allow a more integrated approach between *insert District* and adjacent local authorities.
- A7.7 The local authorities in the City Region have worked together to prepare the LCR Ecological Network as joint evidence and to help plan for biodiversity at a landscape-scale. Discussions with neighbouring areas through Nature Connected, the Government-recognised Local Nature Partnership, have enabled wider connections beyond the City Region to be made. See *Insert web link* for more information.
- A7.8 The LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats. It also includes linking networks and opportunities for further habitat creation and enhancement. The linking networks and opportunities for further habitat creation and enhancement are set out in seventeen Nature Improvement Focus Areas which together make up the LCR Nature Improvement Area which can be found {*insert web link to Local Plan evidence*}.
- A7.9 The local authorities in the City Region continue to work together, and are committed, to helping manage visitor pressure on the internationally important designated sites. This is a response to the ongoing Habitats Regulations Assessment process for their respective development plans. The opportunities

identified in the LCR Nature Improvement Area provide a mechanism that helps focus and manage visitor pressure appropriately.

- A7.10 More information about the hierarchical approach to the protection and enhancement of *insert District's* designated sites, Priority Habitats, Priority Species and protected species, according to their designation and significance, is set out in {*Development Management Policies*}.

MODEL DEVELOPMENT MANAGEMENT POLICIES

DM1 – Protection and Enhancement of Nature Sites, Priority Habitats and Species

1. Development which may result in a likely significant effect on an internationally important site must be accompanied by sufficient evidence to enable the Council to make a Habitats Regulations Assessment. Adverse effects should be avoided and/or mitigated to ensure that the integrity of internationally important sites is protected. Development which may adversely affect the integrity of internationally important sites will only be permitted where there are no alternative solutions and there are imperative reasons of overriding public interest and suitable compensatory provision is secured. This also applies to sites and habitats outside the designated boundaries that support species listed as being important in the designations of the internationally important sites.
2. Development which may affect other designated sites of nature or geological conservation importance, Priority Habitats, legally protected species and / or Priority Species will be assessed as follows:
3. Development which may cause significant harm will only be permitted for:
 - *National sites (including Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs))*: where there are no alternatives and where the reasons for and the benefits of development clearly outweigh the impact on the nature conservation value of the site and its broader contribution to the national network;
 - *Local Sites (including Local Nature Reserves (LNRs), Local Wildlife Site (LWS) and Local Geological Sites (LGS))*: where the reasons for and the benefits of development clearly outweigh the impact on the nature conservation value of the site and its broader contribution to the LCR Ecological Network; and
 - *Priority Habitats*: where the reasons for and the benefits of development on balance clearly outweigh the impact on the nature conservation value of the habitat and its broader contribution to the LCR Ecological Network
 - *Protected and Priority Species*: where it is demonstrated that no significant harm will result.
4. Where it has been demonstrated that significant harm cannot be avoided, appropriate mitigation, replacement or other compensatory provision may be required, to accord with the hierarchy of sites. The location of appropriate mitigation, replacement or other compensatory measures will be targeted, using a sequential approach as follows:
 - On site;
 - Immediate locality and / or within the Core Biodiversity Area;
 - LCR Nature Improvement Area within the Borough; and lastly
 - LCR Nature Improvement Area outside the Borough.
5. Where significant harm resulting from development cannot be avoided, adequately mitigated or, as a last resort, compensated, then planning permission will be refused.
6. Development proposals which affect sites of nature conservation importance, Priority Habitats, legally protected species or Priority Species must be supported by an Ecological Appraisal and include details of avoidance, mitigation and / or compensation, and management, where appropriate.
7. Plan policies apply to other sites recognised during the Plan period as being of nature conservation importance, including land provided as compensation.

Protection

- A7.11 In line with paragraph 117 of the National Planning Policy Framework, the LCR Ecological Network includes a Core Biodiversity Area of designated nature and geological sites and Priority Habitats, linking networks and opportunities for further habitat creation or enhancement. There are seventeen Nature Improvement Area Focus Areas which together make up the LCR Nature Improvement Area.
- A7.12 Within the Core Biodiversity Area in *insert District*, there is a hierarchy of designated sites and habitats (see [appendix, SPD or Information Note at District's discretion]):
- a) Sites of international nature importance;
 - b) Sites of national nature and geological importance; and
 - c) Sites of local nature and geological importance.
- A7.13 The Core Biodiversity Area also include Priority Habitats and Species, which are 'habitats and species of principal importance' for the conservation of biodiversity in England. They are identified as being the most threatened and in need of conservation action.
- A7.14 The Council, together with other public bodies (such as the Environment Agency), has a duty under section 40 of the Natural Environment and Rural Communities Act (NERC) Act 2006 to conserve biodiversity when carrying out its normal functions. This 'biodiversity duty' includes Priority Habitats and Species. Priority Habitats sit outside the designated site hierarchy and may be of national (e.g. Ancient woodlands) or, sometimes, local importance. Legally protected species are those which have specific protection under legislation (e.g. badgers, bats). Box AA [or appendix, SPD, list or Information Note at District's discretion] provides examples of priority and protected species in *insert District*.
- A7.15 An Ecological Appraisal, which should be carried out by a suitably competent ecologist must support planning applications which affect sites of nature importance and / or Priority Habitats and Species. The details required are set out in [appendix, SPD or information Note at District's discretion].
- A7.16 Policy DM1 sets out the hierarchical approach to the protection and enhancement of *insert District's* designated nature and geodiversity sites, Priority Habitats and Species and legally protected species. It also sets out how the strategic priorities of managing the natural assets better and making sure there is no net loss of these assets will be achieved.
- A7.17 For each level of the hierarchy, where there may be potential adverse effects for internationally important nature sites, or significant harm for other sites and Priority Habitats; the policy also sets out the relative weight which will be given to the reasons for and the benefits of development and the impact on the nature conservation value of the site and its broader contribution to the LCR Ecological Network. In such cases, the policy also sets out the approach to appropriate mitigation, replacement or other compensatory provision. The advice of suitably competent persons, such as ecologists, should be sought by applicants and the decision maker in relation to this policy.

- A7.18 Policy DM1 also sets out the stringent requirements for development which affect internationally important nature sites. It is expected that very few development schemes would meet these requirements.
- A7.19 Development proposals and the decision making process on planning applications should also take into consideration the fact that some habitats, such as ancient woodland and veteran trees, are irreplaceable because of their age and complexity and cannot be recreated once they are lost.

Mitigation and compensation

- A7.20 Policy DM1 sets out the approach to mitigation, and as a last resort, compensation in (*insert section or bullet point within policy*). Here, compensation means compensatory provision, and may include financial compensation, where appropriate. It is crucial to the priority of no net loss that appropriate mitigation or, as a last resort, compensatory provision is made.
- A7.21 It is important that the location of appropriate mitigation, replacement or other compensatory provision follows the sequential approach set out in the policy. This seeks to target such measures as close as possible to the development site. [In some instances the immediate locality of the site may include nearby sites in West Lancashire or another district *location specific examples to be inserted at District's discretion*].
- A7.22 More information about how compensatory habitat provision and management could be delivered where proposed development sites have been identified as supporting species listed as being important in the designations of the internationally important sites are set out in [appendix , SPD or information Note at District's discretion]. For example in [District Name] they include feeding areas for pink-footed goose, swans and a range of wading birds, taking into account this sequential approach.
- A7.23 To comply with the Habitats Regulations 2010 (as amended), compensatory provision for internationally important sites must be made prior to the development commencing. For other sites or species, mitigation /compensation can be delivered as part of the development (during the development process). This compensation may be provided by the applicant directly, or through an organisation which is a land manager locally.

Enhancement

- A7.24 The sequential approach for the location of appropriate mitigation, replacement or other compensatory provision should also be followed for other enhancements.
- A7.25 Policy DM2 'Development in LCR Nature Improvement Areas' below, provides more information about the LCR Nature Improvement Area (NIA) and NIA Focus Areas.
- A7.26 The Council will encourage opportunities for habitat enhancement within development proposals within the NIAs. These opportunities may be linked to, but should be additional to or include biodiversity provision, within wider green infrastructure provision or to the provision of water quality measures or sustainable

drainage systems. These opportunities range, for example, from larger scale habitat creation within larger sites (such as wetland habitat linked to surface water management (SuDS) or flood risk storage areas) to smaller sites (such as 'bat boxes', bulb planting).

- A7.27 *Insert name* Council owns or manages a number of sites. Other key partners who own or manage nature sites in *insert District* include (*insert list of key partners and site names if in public ownership*). Other landowners and farmers also play a local role in managing land which includes important habitats, principally for a range of farmland birds and overwintering birds, such as lapwing, curlew and pink-footed goose and animals, such as bats, water vole, brown hare and otter, amphibians and reptiles.
- A7.28 Additionally, there will be opportunities for the Council, together with its partners, to enhance *insert District's* natural assets, and with it, the green infrastructure network. The Council will also encourage other opportunities arising from development to enhance appropriate areas focusing on the LCR Nature Improvement Area (NIA) which is part of LCR Ecological Network. This could be through changes to land management practices for land in their control as well as habitat creation at a larger scale. It is anticipated that funding would come from a variety of sources.

DM2 - LCR Nature Improvement Area

Development within the Nature Improvement Area will be permitted where it:

- enables the functioning of the Nature Improvement Area;
- contributes to the opportunities for habitat creation and / or habitat management as set out in the NIA Focus Area profiles; and
- is consistent with other policies in the Plan.

- A7.29 The LCR Nature Improvement Area, in line with paragraph 117 of the National Planning Policy Framework, is an integrated and prioritised framework for targeting opportunities for habitat creation and enhancement in the area where the greatest gains are likely to be achieved. This may include biodiversity offsetting, mitigation, compensation or changes in land management. Thus the LCR NIA offers solutions which enables sustainable growth and housing needs to be met without compromising the *insert District's* or the City Region's natural assets.
- A7.30 NIAs have been proposed by Government as the principal mechanism for delivering wildlife restoration and management. They are intended to achieve significant enhancements to ecological networks by improving existing wildlife sites, building ecological connections and restoring ecological processes. Delivering at a landscape-scale, these areas should connect with their local economies and communities.
- A7.31 There are 17 NIA Focus Areas across the City Region [list the ones in the District? see appendix, SPD or information Note at District's discretion]. When taken together they combine to form the LCR NIA.

A7.34 Each NIA Focus Area has been mapped and is also supported by a detailed NIA Focus Area profile which can be used to inform and guide use of the development management policies as well as the activities of other landowners, managers and other interests. Both the NIA Focus Area maps and profiles will be included within the Ecological Network evidence base *insert web link here*. The NIA boundary will be kept up-to-date as part of the Local Plan evidence. This will enable future opportunities to be taken account of. Future reviews of the LCR Ecological Network will be in accordance with an agreed monitoring process *{insert web link to monitoring document}*

Information to be presented in an Appendix, SPD, Information Note or other document, at District's discretion

A7.35 Information showing the district specific hierarchy of sites

A7.36 Requirements for an Ecological Appraisal

Requirements for an Ecological Appraisal

The Ecological Appraisal must:

- A desktop study and consultation with **Merseyside BioBank Local Record Centre/Cheshire rECOrd/LERN/Greater Manchester LCR** following CIEEM guidelines (*Guidelines for Preliminary Ecological Appraisal, April 2013*), identifying any records for designated site(s), protected and Priority Species and Habitats on site or within a reasonable distance, depending upon local factors. However, a data search of between 500m and 1km radius is expected as a minimum; Include an Extended Phase 1 Habitat survey to identify the habitats present on and adjoining the site, with maps and target notes appended to the report, in accordance with methods set out in the JNCC Handbook for Phase 1 Habitat Survey 2010;
- Identify the potential for protected and/or notable species and any requirements for specialist surveys e.g. breeding birds, bats, and water vole. Where specialist surveys are required, the report should identify when these surveys will be undertaken;
- Identify any ecological impacts, notably on for designation of the internationally important sites, as a result of construction work or future site use and suggest measures for avoidance and/or mitigation in order to inform consideration under the Habitats Regulations, if required. Include an Ecological Constraints and Opportunities plan -
- Identify opportunities to make the most of the contribution of the proposed development to biodiversity in line with the requirements of NPPF paragraphs 117 and 118 and would contribute towards the biodiversity duty set out in Sections 40 and 41 of the Natural Environment and Rural Communities Act (NERC) 2006.
- Identify any invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 as amended, present on the site or within 7m of the site boundary. The location and extent of any invasive species should be shown on a scaled plan included with the survey report.

A7.37 Box ZZ: How compensatory habitat provision and management could be delivered

Example: How compensatory habitat provision and management could be delivered for overwintering birds

For example in, or offsite from allocations which are Green Belt sites and are supporting habitat for overwintering birds such as lapwing, curlew, black-tailed godwit and pink-footed goose, sequentially through:

How to do it:

Within the site (and hence within the control of the landowner or developer):

- habitat management, for example no shooting, changes to cropping (such as growing crops or maintain grassland types which geese and swans prefer to feed on), some food source crop provision).

In the immediate locality of the site and / or within the Core Biodiversity Area within the control of the landowner or developer):

- habitat management, for example no shooting, changes to cropping (such as growing

crops or maintain grassland types which geese and swans prefer to feed on), some food source crop provision).

In the LCR Nature Improvement Area Focus Area:

- Use of the NIA focus areas to provide improved management and compensation – usually by the developer or landowner leasing land to manage or managing it in agreement or partnership with the landowner using an agreed legal or financial mechanism. Benefit of a joint approach across the LCR to help meet development needs and HRA compliance.
- Habitat management, for example no shooting, changes to cropping (such as growing crops or maintain grassland types which geese and swans prefer to feed on), some food source crop provision).

A7.38 Insert Box AA – Examples of protected and Priority Species specific to District (details from LCR Ecological Network district profiles (2011))

A7.39 List of Nature Improvement Area Focus Areas within the LCR which, together, form the NIA.

LCR Nature Improvement Area Focus Area	District
01 Sefton Coast	Sefton
02 Formby Mosslands	Sefton
03 River Alt Corridor	Sefton
04 River Alt and M57 Corridor	Knowsley, Liverpool, Sefton
05 Knowsley and St. Helens Mosslands	Knowsley, St. Helens
06 Black Brook and Sankey Valley Corridor	St. Helens
07 Netherley Brook and Ditton Brook Corridor	Knowsley, Halton, Liverpool
08 Bridgewater Canal, Keckwick Brook and Runcorn Ancient Woodland Corridor	Halton
09 Runcorn Hill Heath	Halton
10 Mersey Estuary	Halton, Liverpool, Sefton, Wirral
11 Dibbinsdale, Raby Mere and Eastham Country Park	Wirral
12 East Wirral Heathlands	Wirral
13 West Wirral Heathlands and Arrowe Park	Wirral
14 Dee Estuary	Wirral
15 North Wirral Foreshore and Liverpool Bay	Wirral
16 River Birket Corridor	Wirral
17 North Widnes Corridor	Halton