



# The Carbon Landscape

## Landscape Conservation Action Plan

Part 1  
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# The Carbon Landscape

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# 1 Executive Summary

Between Liverpool and Manchester lies an area of mixed wetland habitats that form an ecologically rich home for wildlife that also provides an important corridor for the north-south movement of species. It is surrounded by a dense urban population and as such it provides a significant 'green lung' with many benefits for local people.

It has a fascinating history. The area is famous for its carbon based resources, coal and peat, and the exploitation of these during the industrial revolution had a major, destructive effect on the landscape. Since then a remarkable transformation of the land is underway to the benefit of both people and wildlife. This Carbon Landscape has a powerful story to tell, in the area that once fuelled an explosion of innovation, a story which can shape our approach to a more sustainable future.

The area is in transition and the natural, industrial and social heritage of the area is constantly under threat. Locally, there is high social deprivation, and knowledge and appreciation of the landscape is relatively low. There are also pressures to use the land for development. The Carbon Landscape is at the heart of a wider Great Manchester Wetlands. To help protect and enhance its natural and industrial heritage, the area was designated a Local Nature Improvement Area in 2013. The vision for the Great Manchester Wetlands is:

By 2025, Great Manchester Wetlands will be a thriving, resilient and inspirational landscape that delivers real benefits to local communities and the local economy

To help achieve this vision, and to address the landscape scale challenges that the area faces, an ambitious Heritage Lottery supported Carbon Landscape Partnership Scheme has been established. A Steering Group of 12 local organisations has developed a 5 year plan to provide a step change in the restoration of the land and the appreciation and use of it by local people and visitors. Three aims have been agreed:

1. **To restore a derelict landscape**, ensuring connectivity and resilience in an area facing significant threats
2. **To reconnect people with their landscape** through improved access, increased learning and volunteering opportunities
3. **To instil pride and engender community ownership in our Carbon Landscape**, providing skills for local people, groups and beneficiaries to become custodians for our future

Implemented by 10 delivery partners, a range of 22 interlinked projects will provide a coherent and effective programme that will have lasting benefits for local residents and wildlife. From the outset the scheme's legacy has been a key consideration, and all of the projects have been planned with long term sustainability in mind. As such, the Partnership can continue to enhance both the area's heritage and people's understanding and appreciation of it well beyond the life of the HLF funded scheme.

## 2 Introduction

### 2.1 The Carbon Landscape

The Carbon Landscape is a landscape scale initiative with the ambition to make a step change in the restoration of an ancient landscape once devastated by industry. The heritage that this project focuses on is the natural and man-made heritage left behind after the closure of the Lancashire Coalfields and other extractive industries, such as peat and clay extraction. Collectively, we refer to this once devastated landscape as the Carbon Landscape.



Map 1. The location of the Carbon Landscape

Nestled between two city regions, it lies west of Manchester and east of Liverpool, and is virtually the only significant gap in the Merseyside to Manchester urban belt, making it a vital corridor for the gradual south to north migration of species as the climate becomes warmer. It covers an area of some 107 sq. km stretching from Wigan in the west to the mosslands in the east, and falls within the areas of three local authorities: Salford, Wigan and Warrington. The southern boundary of the area is for a large part bounded by the historic Manchester Ship Canal.

Our area was at the heart of the Industrial Revolution, and it was the climate of the region, together with energy from water and coal, that made it an ideal location to modernise and expand the textile industry. However, the Industrial Revolution left behind a physically scarred and desolate landscape. Whilst social conditions have improved enormously since the Industrial Revolution, the landscape still includes, and is surrounded by, areas with some of the highest levels of social deprivation in the UK. We need to look at ways in which our landscape and local communities can work together to create a better place for people to live, work and enjoy.

A key task for our Partnership, the Great Manchester Wetlands Partnership, is to create a step change in the rate and the nature of the recovery of the landscape. Historic efforts have led to a somewhat piecemeal recovery, and areas of valuable biodiversity are fragmented. It is only by thinking of the landscape on a much bigger and integrated scale that we can ensure that key ecological corridors and stepping stones are created in the right places. Crucially, we recognise that we can't do this effectively without engaging local communities in this process.



*Wigan Flashes looking north towards Wigan town centre*

The Carbon Landscape will enhance and connect up the restoration of this landscape scarred by industry, creating and improving nationally significant habitats and reconnecting local people with the heritage and wealth of opportunities for enjoyment and learning on their doorstep. This landscape's heritage has been profoundly influenced by its geology and the vast stores of carbon in the form of coal and peat that lie beneath the visible surface, and the way humans have exploited these resources to fuel the Industrial Revolution. The green shoots of restoration and habitat creation emerging from the extreme despoliation in this post-industrial landscape provides inspiration that we can create more positive connections between people and nature.

Whilst this area undoubtedly has a rich heritage, both natural and man-made, the opportunities that this landscape can provide within a heavily urbanised area are largely missed. With many of the local communities living in poverty as a result of unemployment and poor health, the opportunity to use the landscape as a tool to help address these gaps is not being realised as much as it could. Our aim is to unify this landscape so that it can be perceived as something to be proud of, and as a destination for "nature and heritage tourism", rather than a neglected wasteland as a result of historic industrial activity.

One of the key objectives of the Partnership is to engage local communities by providing opportunities for training, volunteering, healthy activities and education enhancement, which in turn, will ensure that they can really benefit from the high quality of the natural environment on their doorsteps

Community workshops and educational programmes in schools will increase understanding of local heritage and everyone's role in creating a better future. The Carbon Trail will provide a link across the whole of this currently fragmented landscape, promoting access and new understandings through the innovative Carbon Loops in each of the three character areas – each of which will tell the story of the Carbon Landscape in different ways. As people walk the Carbon Loops, they will take a journey back in time to the formation of that landscape, through the exploitation of its natural resources and forward in time to explore its possible, sustainable futures.

Together, the story of the Carbon Landscape and the Carbon Trail and Loops, providing a physical way to access and connect the landscape, provide a golden thread. They tie together the project in a way that will inspire new thinking about our heritage, connection to the landscape and future directions for positive restoration and sustainability.

## 2.2 The Landscape Conservation Action Plan

This is the Landscape Conservation Action Plan (LCAP) for the Carbon Landscape Partnership Scheme (CLPS) promoted by the Great Manchester Wetlands Partnership (GMWP). It forms the main part of the Round 2 submission to the Heritage Lottery Fund (HLF) Landscape Partnership programme. The LCAP is the culmination of the Development Stage of the bid undertaken between March 2015 and August 2016, and it has been overseen by a Steering Group of 12 organisations drawn from the Partnership. The work was coordinated by the Carbon Landscape Development Manager, who was employed by Lancashire Wildlife Trust on behalf of the Partnership.

Very much a participatory and collaborative effort, the plan is a shared aspiration for addressing the threats to the heritage of the Carbon Landscape and the opportunities that exist to conserve and enhance this heritage for future generations.

The LCAP is primarily aimed at meeting HLF requirements for a strategic framework for the area and a clear vision to take the Carbon Landscape forward. It is also a practical, working document that will be used throughout the implementation phase of the CLPS. It will establish the approach by which all projects will be delivered and it will act as the central reference point against which the success of the CLPS will be judged. The LCAP is in 3 parts:

Part 1: the main programme narrative and supporting documentation

Part 2: short Project Summaries

Part 3: detailed Project Delivery Plans

The content of the plan is based on 22 programmes and projects developed by 10 project lead organisations. Each of these local organisations has experienced many years of activity within the Carbon Landscape, and proposals feature an exciting balance of best practice and innovation.

## 2.3 The Development Stage

A Development Stage Plan was approved at Round 1 and it comprised the following:

- Recruitment of a Development Manager
- Production of a Landscape Character Assessment
- Development of the scheme and individual project proposals
- Securing of match funding for delivery
- Production of the LCAP

A focus during the period has been the development of projects. The Steering Group had selected the most inspiring and effective projects in Round 1 and partner organisations leading the projects adopted and pursued Development Stage activity plans. The Development Stage provided the opportunity for the Steering Group to conduct a thorough review of project proposals, and the links between projects were consolidated and overlaps removed. The process also increased the sense of shared ownership of the scheme by the Steering Group members.

The development of proposals was informed by a series of analyses at the project level and also at the programme level, such as the *Landscape Character Assessment*<sup>1</sup>. This assessment provided useful information on the unique heritage of the landscape and the threats and opportunities it faces. Three initial community workshops at the start of the period also informed the development approach taken by various projects. These workshops as detailed in the *Carbon Landscape Community Workshops Report*<sup>2</sup>, together with subsequent workshops undertaken by projects such as the RoundView, also formed the basis for the production of the *Audience Development Plan*<sup>3</sup>. Two sub-groups were established to look at the issues and opportunities for communications and community engagement.





*Community workshop at Hawkley Hall School March 2105, utilising the Ketso engagement tool.*

The changes to the programme since the Round 1 bid are summarised as follows:

Round 1	Round 2	Notes
Surveying and baseline information	R1 Citizen Science	Name change
Riverine corridor restoration	R2. Hey Brook Revival	Name change. The focus is on a pilot project with potential for replication.
Chat Moss Restoration	R4 Pestfurlong Moss	Chat Moss became unavailable for restoration. Pestfurlong Moss is an excellent site that was held in reserve.
Worsley woods	C3 Mosslands Gateway	A change in site improvement priorities.
The Twiggeries	-	Removed as work progressed prior to the Delivery Stage. Outputs increased through other projects to compensate.
Carbon Trail gateway - the Port Salford Greenway	C3 Mosslands Gateway	A change in site improvement priorities. Work on the Port Salford Greenway was progressed faster than anticipated.
The Carbon Landscape virtual visitor experience	-	Website development – delivered via other means.
Stories of the Carbon Landscape- Heritage Education and Events Programme	Part of C5 Carbon Connections and C6 Carbon Clever	The education, culture and events programmes have been re-focussed and refined with the latter to be coordinated by the programme team
Our Precious Resources	Part of C2 Carbon Volunteers	Partners preferred the less confrontational Landscape Champions
Risley Moss VC update	C8 Carbon Digital	A review of feasibility has resulted in a name change and refined proposals

Round 1	Round 2	Notes
Apprenticeships	13 Carbon Trainees	The programme has adopted the latest best practice following evaluation and research.
landscape ecology AQA award scheme	Part of 12 Carbon Skills	A component of the coordinated training programme
Reaching Out	12 Carbon Skills	Name change and shift from coordination by City of Trees to the programme team
Health Champions	15 Outdoor Champions	Name change
Port Salford Greenway - Natural Links Project	-	Site activity not now a priority. Additional activity being undertaken as part of C5 Carbon Connections
-	R12 Carbon Restoration	The development of additional restoration projects via the Restoration Officer
-	C2 Carbon Volunteers	Added as a project to clarify purpose and outputs
Programme Team		
Living Landscapes Project officer	Restoration Officer	Clarification of role in relation to restoration projects and future development opportunities' Coordination of volunteer hub.
Sense of Place Project Officer	Community Officer	0.8 FTE to 1.0 FTE with extra day financed by a contribution from the former Reaching Out budget. Adoption of training programme coordination
Reconnecting Project Officer	Access Officer	0.6 FTE over 5 years to 1.0 FTE over 3 years with fundraising as required for years 4 and 5. Adoption of events programme coordination
Placement Coordinator	-	Role undertaken through the Carbon Trainees project.
Support Officer	Support Officer	0.5 FTE to 1.0 FTE

The modifications reflect a range of priority and organisational changes since 2014. The overall balance between the three themes as proposed in Round 1, has been largely maintained, as has the overall budget and the percentage of HLF contribution. There is also an effective mix of prescribed projects and programmes that incorporate an element of flexibility, such as the events programme where the delivery process will generate ideas and initiatives that will contribute to the success of the overall programme.

As part of the project review, there has been a clarification of the roles of the programme team and the extent and nature of the support provided to projects. The nature and role of the team is set out in the *Carbon Landscape Programme Team Plan*.<sup>4</sup>

### Gaps and limitations

The proposals in the plan are in part a reflection of the amount of time and money available to develop initiatives and implement them. As such, there will be gaps in addressing the many opportunities presented within the landscape. However, the proposals have been chosen to address the main priorities, to provide value for money and to have a lasting benefit. For example, the opportunities for natural habitat enhancement are widespread across the area. In this case, proposals have been chosen for being exemplar in their focus on good practice, for being ecologically strategic, maximising benefits to flora and fauna and for being good value for money. As such they can also act as pilot projects on which to build longer term programmes of work.

Experience during the development stage underlined the fact that different projects require differing development activity and at different rates. This has resulted in a few proposals requiring further development work as part of their project delivery plan. An example is the Carbon Trail where the wide range of stakeholders, route conditions, ownerships and future maintenance considerations necessitates the completion of development work before firm proposals are agreed. The five year timescale provides an ideal opportunity to realise aspirations and objectives for this type of project.

## 2.4 Using this document

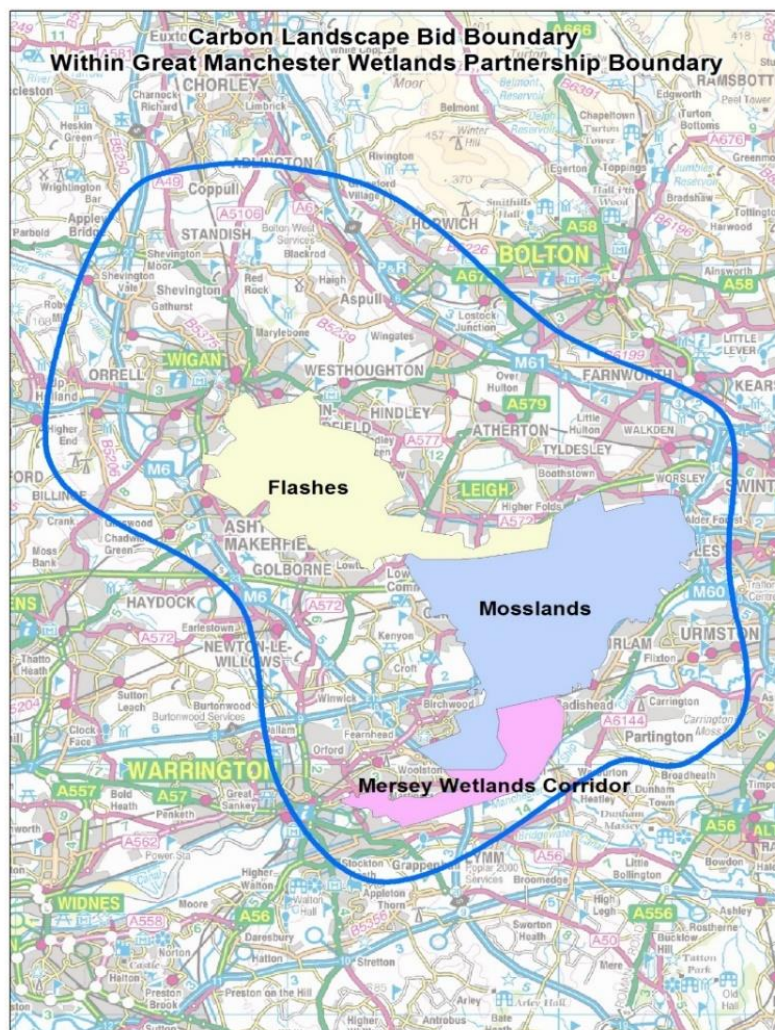
The LCAP is set out to allow quick navigation to different aspects of the Landscape Conservation Action Plan, as follows:

- **The Landscape Partnership** (Section 3) explains the derivation of the programme, the Great Manchester Wetlands Steering Group and its relationship with the CLPS Steering Group.
- **Understanding the Carbon Landscape** (Section 4) provides a description of the project area's heritage landscape, building up a picture of the physical landscape, biodiversity, historic environment and cultural heritage that together characterise the area. This section also sets out the rationale for the area that is included in the Landscape Partnership and reviews the management of this area from a local, regional and national perspective.
- **Statement of Significance** (Section 5) describes the importance of the Carbon Landscape's heritage landscape in terms of its overall significance and also in more detail in terms of its natural and cultural heritage.
- **A Landscape Under Threat** (Section 6) looks at the risks to the area's heritage and identifies opportunities to address these risks.
- **Our Vision, Aims and Objectives** (Section 7) sets out how the Landscape Partnership will work to conserve the Carbon Landscape's heritage through a series of aims and objectives that deliver the HLF Landscape Partnership outcomes.
- **The Scheme Plan** (Section 8) is a description of the suite of projects that the Partnership will deliver in order to achieve the aims and objectives. The programmes focus on wildlife habitat restoration; providing increased opportunities to access, understand and enjoy the Carbon landscape's heritage landscape; and skills training to ensure the future sustainability of the area's heritage assets.
- **Sustainability, Evaluation and Review** (Section 9) describes how the Partnership will ensure the long-term legacy and sustainability of the different projects; and how the success of the scheme will be monitored and reviewed during and after the delivery period.
- **Sources of Information** (Section 10) outlines the various reports, policies and plans that have fed into the preparation of the LCAP, or that complement its delivery. Important supporting documentation, for example the detailed landscape character assessments for the area, are included as annexes to the LCAP.

## 3.0 The Landscape Partnership

### 3.1 The Great Manchester Wetlands Partnership

The Carbon Landscape Partnership Scheme is driven by the Great Manchester Wetlands Partnership (GMWP) which was formed to manage the Great Manchester Wetlands Nature Improvement Area (NIA). The NIA was locally designated in 2013 by the Greater Manchester Natural Capital Group and by Cheshire Local Nature Partnership. The GMWP, made up of local authorities, statutory organisations, environmental charities and community groups first came together in 2011 to deliver improvements to nature and wildlife for the benefit of local communities.



Map 2. The Great Manchester Wetlands Nature Improvement Area boundary and Carbon Landscape boundary showing the three landscape character areas.

The NIA comprises a landscape scale community and natural heritage area of some 480 km<sup>2</sup> focusing on the Flashes of Wigan, the Mosslands of Chat Moss and Risley Moss to the west and southwest of Manchester and Salford, and the Mersey Wetlands corridor stretching from Rixton to Warrington. The area extends southwards as far as the Manchester Ship Canal and the northern part of the area includes a substantial corridor (The Pondscape), which is the watershed area between the River Mersey and the River Douglas catchment. The area includes many valuable wildlife sites. The surrounding communities often have high levels of social deprivation.

The GMWP has set out a *Strategic Plan for 2016-2025*<sup>5</sup>. The Vision is:

*By 2025, Great Manchester Wetlands will be a thriving, resilient and inspirational landscape that delivers real benefits to local communities and the local economy*

Since its creation, the GMWP has overseen a range of coordinated activities aimed at enhancing habitats within the NIA and improving the prospects for people and wildlife. The aims of the Partnership match well those of the HLF Landscape Partnership Programme and so a primary focus became the development of a bid for Landscape Partnership Scheme funding.

In progressing a bid, all stakeholders in the Partnership were asked initially to propose projects that would achieve the required HLF outcomes and proposals amounted to over double the funding likely to be available. A process of selection and refinement followed based on set criteria derived from other Landscape Partnerships. All partners were asked to rank the projects and provide comments. The results were then assessed by two independent people who were not involved in any potential project delivery but knew the LPS criteria well and could make valued and informed judgements on the proposed projects. The Round 1 bid was coordinated on behalf of the Partnership by Lancashire Wildlife Trust and was submitted in May 2014 - it gained approval in November of the same year.

### 3.2. The Carbon Landscape Steering Group

The CLPS will operate at the heart of the NIA and is viewed by the Partnership as offering step change in the conservation and enhancement of the unique natural and cultural heritage of the NIA. A Steering Group reporting to the GMWP was formed principally from the 10 partners leading projects.

- City of Trees
- Environment Agency
- Greater Manchester Ecology Unit
- Healthy Rivers Trust
- Inspiring Healthy Lifestyles
- Lancashire Wildlife Trust
- Natural England
- Salford City Council
- University of Manchester
- Warrington Borough Council
- Wigan Council
- Woolston Eyes Conservation Group

*The Carbon Landscape Steering Group*

The Steering Group is currently chaired by Natural England, which has successfully steered the Group through the Development Stage to develop the Round 2 bid. It is the intention of the Steering Group to recruit an independent and influential Chair to take the Steering Group forward as the CLPS broadens its appeal during the Delivery Stage.

In assessing the threats to the Carbon Landscape and the opportunities it provides to address HLF and GMWP objectives, it became clear that there are three main themes to tackle in conserving, enhancing and celebrating the heritage of the Carbon Landscape. These are improving the land itself, helping people to access and appreciate it and enabling people to engage with it to help secure its future. This led to the three aims of the CLPS:

### **Aim 1:**

**To restore a derelict landscape**, ensuring connectivity and resilience in an area facing significant threats

### **Aim 2:**

**To reconnect people with their landscape** through improved access, increased learning and volunteering opportunities

### **Aim 3:**

**To instil pride and engender community ownership in our Carbon Landscape**, providing skills for local people, groups and beneficiaries to become custodians for our future

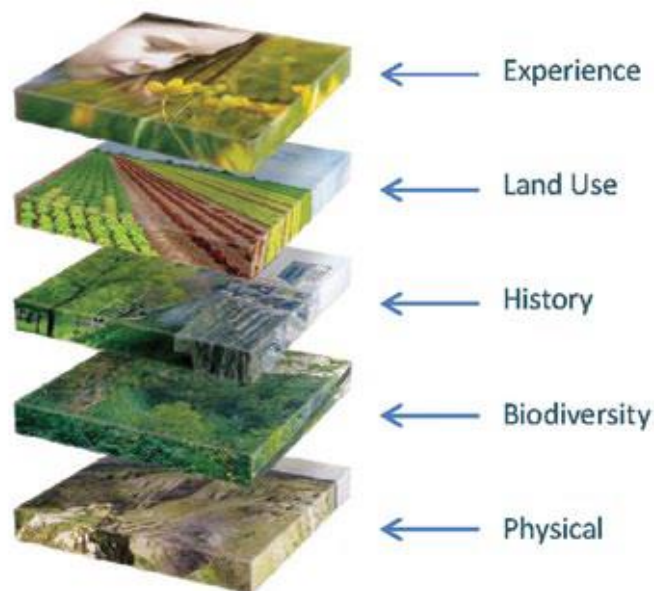
A balanced and interconnected range of projects addressing these aims was developed by members of the Steering Group and is set out in Section 8. The result is a coherent and ambitious programme that will provide the required step change in the conservation and enhancement of the Carbon Landscape's natural and cultural heritage for future generations. It will also form the basis for local people and visitors to appreciate and engage with a landscape that has a long and recently troubled past, and which is undergoing a remarkable and positive transition.

## 4 Understanding the Carbon Landscape

### 4.1 Introduction

So what is the Carbon Landscape, and why is it so called? The following section describes the area and how it has evolved to what we see today.

This evolution has been influenced by a wide range of factors over many centuries. As demonstrated by Figure 3, landscape is shaped by a combination of many different physical characteristics and human influences, from the underlying geology through to how people use and experience it.



*Fig 1. The Components of Landscape (Countryside)*

This way of looking at landscape is particularly relevant to the Carbon Landscape because, as will be explained, the landscape has a special story to tell about these influences. This story is so strong that it has been used to directly shape both the overall approach taken by the CLPS as well as the nature of the projects to be delivered.

## 4.2 Landscape Character Assessment

A Landscape Character Assessment (LCA) is a way to describe the contribution of the various factors that make up a landscape to explain how it has changed over time to become what we see today. A comprehensive LCA for the Carbon Landscape area was commissioned at the start of the Development Stage<sup>1</sup>. The report takes a thematic look at the Carbon Landscape as a whole, its historical context and the significance of the natural environment including habitats and species. Drivers of landscape change are also considered and it finally assesses in detail the three major landscape elements of the Carbon Landscape. It is worthwhile reading the LCA in conjunction with this LCAP, as a distillation of its findings is given here.

### 4.2.1 The three Landscape Character Areas

Whilst the Carbon Landscape can be seen as a singular, low lying, largely open space between Wigan, Salford and Warrington the LCA confirms that there are three distinct character areas:

#### The Flashes



*Wigan Flashes looking North West with Wigan town centre top right*



Situated in the north-west of the Great Manchester Wetlands and stretching south west from near Wigan town centre, the Flashes are an area profoundly influenced by its geology and industrial past. The area is remarkable for its industrial heritage and the individual flashes actually formed as a result of ground subsidence associated with deep mining for coal. Former mineral workings and spoil heaps have left a legacy of polluted sites but in recent decades conditions have improved and an area that was once heavily polluted has become important for people and wildlife.

Today, many areas of former industrial activity have been reclaimed, resulting in a network of lowland wetland habitats and open water-bodies. This area boasts a mosaic of reedbed, open water, wet meadows, lowland fen and carr scrub that together support an array of wetland specialist species such as Bittern, Willow Tit, Water Vole and an array of invertebrates including 15 species of dragonfly. Surrounding this is a matrix of farmland that provides habitat for farmland birds and Brown Hare

### **The Mosslands**



*Risley Moss looking east towards Chat Moss, Salford and Manchester*

The Mosslands area is bordered by Salford to the east, Irlam and Cadishead to the south and Leigh to the north. This is an area defined largely by its generally low-relief topography, with an average elevation of just 23 m. Its past has been defined by the peaty soils and the flat topography associated with the former lowland bogs.

The peat was formed over a period of c.10,000 years since the last Ice Age and supports internationally important lowland raised bog habitat and many species such as Common Lizard, Brown Hare, Black Darter Dragonfly and Sundew. The high agricultural quality of this land has resulted in much of it being converted to farmland following drainage. In the 19<sup>th</sup> century, this area was renowned for its production of high quality salad and vegetable crops, which fed Manchester's burgeoning population. Peat extraction for compost has impacted the remaining areas of lowland raised bog, which are now severely degraded. In total, 96% of mosslands in Greater Manchester have been destroyed, with the rest suffering significantly, due chiefly to drainage. The remnant lowland raised bogs are highly valued for their plants and wildlife as well as their current and potential contribution to ecosystem services such as carbon storage. Restoration and management are underway on a number of sites, with attempts being made to reintroduce bog-building Sphagnum moss species and to manage water levels to aid their recovery.

### **The Mersey Corridor**



*The southern toe of the Carbon Landscape stretching west towards Warrington town centre*

The River Mersey flows from east to west, forming a central, low lying area. The River Mersey is a defining element in the landscape, having created the valley landform and contributed to the area's industrial and settlement history. Throughout the area the river is heavily controlled with high levee banks and course straightening. Downstream of Howley Weir in Warrington, the Mersey is tidally influenced, flowing into a large sheltered estuary on the Irish Sea coast. The Mersey Estuary has extensive intertidal mudflats and sand flats, which are exposed at low tide, and fringing salt marshes.

The rising and falling of the tide make this a dynamic landscape, as the nature of views is constantly changing. The River Mersey itself, however, is often obscured, inaccessible, and blocked from view by industry. Areas of past human industrial activity have developed into more natural habitats through re-colonisation and management - for example, the former brickwork quarry at Rixton Clay Pits now supports a large population of Great Crested Newts. Within the area there are a variety of habitats that support a rich assortment of plants and animals. Wet grassland, lowland fens and a network of ponds all feature and are predominantly man-made. Woolston Eyes receives the dredging material from the Manchester Ship Canal into its lagoons and this has become an important site for wintering wildfowl and a breeding site for summer visitors, such as Black-necked Grebes and an assortment of warblers.

### One landscape

Despite the presence of these different character areas there is a strong unifying theme that brings these areas together. From the Flashes in the north to the River Mersey in the south, water dominates the landscape. Due to the topography of the land, one needs a bird's eye view to get a sense of the whole area. To do this and to strip away the man made interventions of the last 200 years would reveal a landscape that is defined by open water, wet woodland, raised fen and blanket mire that once stretched from the Mersey far to the north below the escarpment of the Pennine hills.

## 4.2.2 Why a Carbon Landscape?

Today's landscape has developed from a Carbon base - coal measures and peat deposits - and it has been dominated by the devastation of the extractive industries. These industries have left their mark on the landscape, but part of the legacy is an extraordinarily rich and diverse natural heritage. Today, this landscape is primarily wetland in its form, characterised by open water, fen, wet grassland, wet woodland and lowland raised bog.

This is a Carbon Landscape, not just because of the powerful influence of the underlying geology and peat deposits created in the **past**. It is also because the exploitation of this carbon resource has shaped this landscape so dramatically. At **present** we have a remarkable renaissance in this scarred landscape through recolonization and ecological restoration. Furthermore, this landscape has the capacity to adapt to and mitigate the impacts of climate change - the restoration of the peatlands to thriving lowland raised bog provides an excellent opportunity for carbon sequestration and storage, in the **future**.



*Bog Oaks on Little Woolden Moss. Photo: Beth Attwood*

## 4.3 Physical and natural evolution

### 4.3.1 Geology, hydrology and topography

#### Geology

There are no rocks older than the Carboniferous in South Lancashire. Irregular deposits of boulder clay, the tough clays formed by glaciers which came from the North, over-rode most of Lancashire during the glacial period. In the north of the area lie the Carboniferous coal measures, which were formed between 315 and 307 million years ago in an equatorial environment characterised by fluctuating sea levels. Terrestrial phases saw the land colonised by dense rainforest, which later died and were buried by sediments as sea levels rose. These eventually became the coal seams regularly seen at the surface. As the tectonic plates shifted northwards over the next 100 million years, they moved through sub-tropical latitudes which then - as now - are characterised by hot desert conditions. These are reflected in the predominantly red, iron-rich sandstones which overlie the Carboniferous rocks.

The area has been subjected to periodic glaciations, of which the last is the only one with any detailed data. This lasted from about 27,000 to 18,000 years ago and apart from one short return to a cold climate, has been followed by fluctuating but generally warm conditions. It is the effects of these events which have done most to create the landscape that we see today.

The glacial and meltwater deposits left by the retreating glaciers did not form a flat surface. In places, detached blocks of melting ice led to the creation of kettle holes, which gradually filled with peat. The depressions that initiated the development of Chat, Risley and Ince Moss appear to have been larger, though by no means as extensive as the peat cover that came eventually. Early peat development began in the deeper pockets but the main development phase occurred from 7,500 years ago. The climate at this time was wet and mild, which probably led to groundwater flooding and the creation of more extensive areas of open water. Drift material was deposited during the Ice Age. Within the clay deposits were left lenses of gravel and sand, together with outwash deposits and meltwater channels. Sand and gravel extraction has taken place locally wherever these materials were exposed.<sup>6</sup>

#### Hydrology

Although the Mersey dominates the area and is the eventual destination of the Hollin Brook and latterly the Glazebrook, the hydrology of the area is not simple. The low lying area known as the Makerfield Basin is drained to the north-west by the River Douglas and to the south-east by Hey Brook. It has historically been associated with mossland and wet meadow land with the Ince Mosses forming extensive areas of peat bog before the end of the 19th century. Hey Brook originally flowed through the low-lying land and was liable to flooding. The north of the Carbon Landscape is drained by the River Glaze which flows south to the Mersey. In turn, it is fed from the north by the Hey Brook. Hey Brook ran through a shallow valley with water meadows along its length until the late 19th century, when flashes started to form as a result of subsidence from coal mining. Hey Brook flooded these depressions, creating the large and distinctive chain of wetlands running from close to Wigan town centre out to the east to Pennington Flash, Leigh. Hey Brook is joined by Borsdane Brook and Westleigh Brook from the north and Hindsford Brook from the east.

## The River Mersey

At only seventy miles the Mersey is a short, but highly significant river. There are really three rivers of the Mersey Basin: the Mersey, the Irwell and the Tame. The Tame, joined by the Goyt near Stockport, forms the Mersey which flows past Stretford and Warrington to its great and important estuary. The Mersey joins the Manchester Ship Canal at Irlam over a foaming lock. The Mersey Basin has a huge tidal variation. For two centuries salmon was a staple food from the Mersey.

The course of the River Mersey has been adapted and altered considerably to allow navigation and for agricultural drainage. At times it is difficult to make out the true course of the river, let alone any connection to a flood plain. These are far from natural systems, but are highly managed water courses. For example, the Glazebrook flows south into the River Mersey where the Mersey and Manchester Ship Canal is a highly regulated water course in what would have been a network of channels and wet areas.

Pollution had a dramatic impact on most of the wildlife in and around the Mersey. From the early 19th century onwards the lowland stretches of the river were surrounded by some of the most unforgiving chemical industries in the world. DDT was manufactured on the banks of the Mersey in the 1940s. Sewage used up any dissolved oxygen. Even as recently as 1980 the soap suds of Warrington's chemical industry were a common sight. In 1982, water quality in the River Mersey had become so bad that one UK Government Minister called the river "an affront to the standards a civilised society should demand from its environment", prompting two decades of concentrated effort to improve water quality. The river has made a miraculous recovery. Perhaps what was the most polluted estuary in Europe now has at least fifty fish species, with salmon the most iconic amongst them.

The inter-tidal areas and mudflats on the River Mersey have been a hazard for navigation for hundreds of years. The construction of the Manchester Ship Canal meant that at least for the upper reaches of the river, this hazard ceased to be such a problem. Following the Canal's construction, the river was allowed to return to something close to its natural form.

### Topography

The topography of the area is a direct result of the influences of geology and hydrology. The Carbon Landscape is almost universally characterised by low land that rarely exceeds 25 to 30 metres. The Makerfield Basin forms the northern part of the Carbon Landscape, characterised by the chain of flashes and wetlands extending from the Wigan Flashes along the Hey Brook to Pennington Flash. Through the mosslands, the ground is almost flat with resulting marshy ground and an extensive area of the mosslands at Chat Moss. The Mersey Floodplain includes undulating land gently falling to the Mersey.

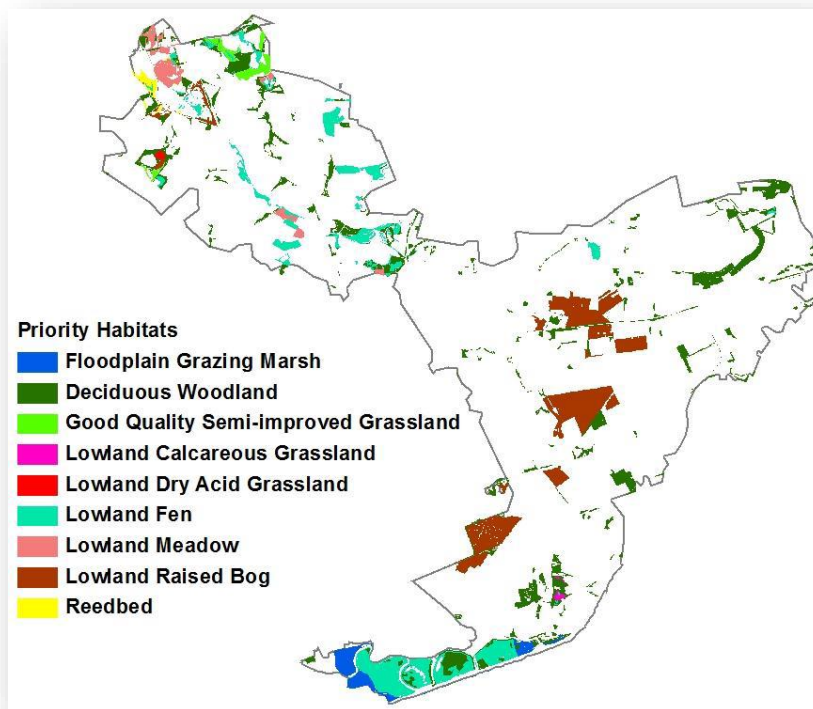
## 4.3.2 Biodiversity

The value attributed to the Carbon Landscape and the wider GM Wetlands is largely based on the diverse natural habitats, predominantly wetlands that have evolved in the area. It is characterised by open water, fen, wet grassland, wet woodland and lowland raised bog. Nine SSSIs have been designated in the Carbon Landscape, all for their botanical interest. They are Abram Flashes, Astley and Bedford Mosses, Bryn Marsh and Ince Moss, Highfield Moss, Holcroft Moss, Risley Moss, Rixton Clay Pits, Woolston Eyes and Red Moss. Astley and Bedford Moss, Holcroft Moss and Risley Moss form the Manchester Mosses Special Area of Conservation. There are also 46 Local Wildlife Sites (LWS) found across the Carbon Landscape area.

## Habitats

A unique mosaic of habitat types make up a remarkable landscape. To the north-west are areas of open water surrounded by wet woodland and a mixture of grassland, reedbed and lowland fen. A vast expanse of peat with patches of lowland raised bog, one of the rarest habitats globally, occupies the central Mosslands area. In the south are predominantly open wetland habitats, such as lowland fen and floodplain grazing marsh, with areas of wet deciduous woodland scattered in between. The resultant biodiversity is considerable.

In addition, farmland, small areas of woodland, restored landscapes, and transport corridors, such as the Leeds Liverpool canal provide additional heterogeneity and contribute to species mobility.



Map 3. Priority habitats in the Carbon Landscape

## Sites

Key sites both for wildlife and for visitors within the three character areas include:

### The Flashes

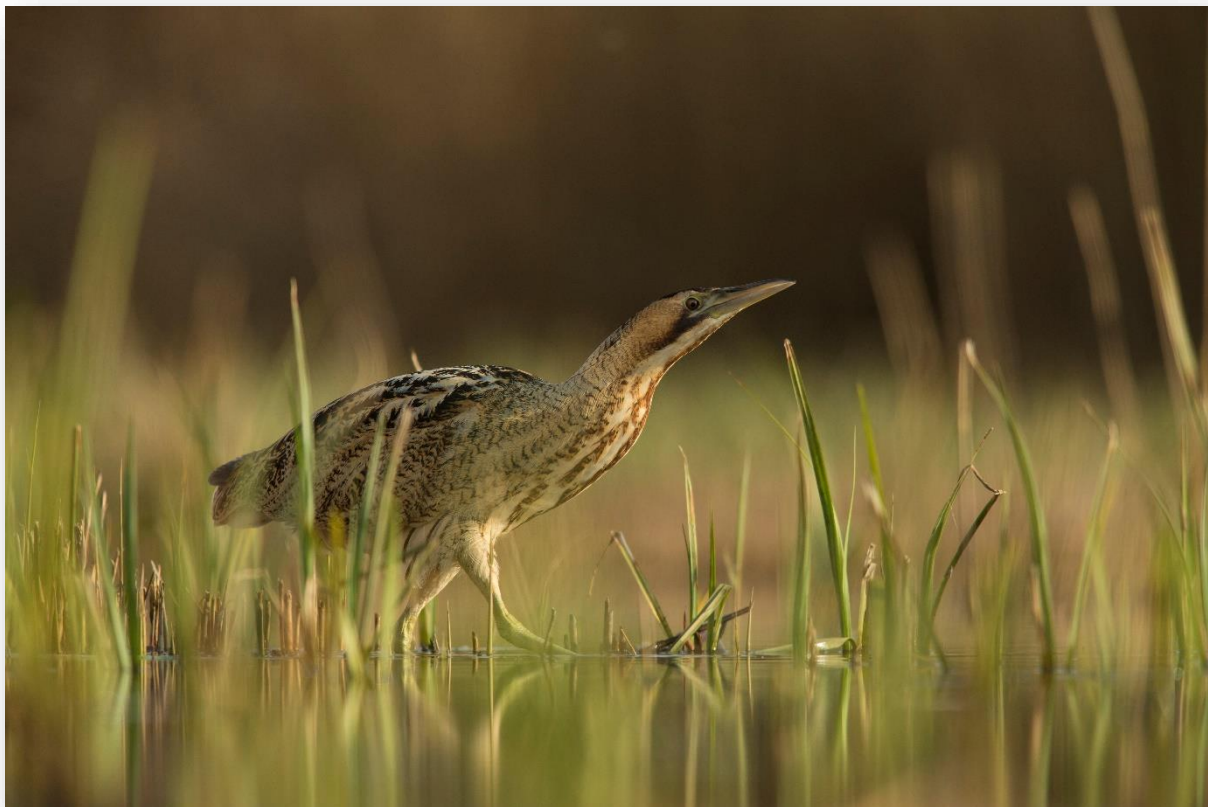
- Abram Flashes SSSI: open water, swamp, fen and wet grassland supports breeding waterfowl
- Bryn Marsh & Ince Moss SSSI: swamp and fen habitats support dragonfly populations and breeding birds
- Wigan Flashes SBIs/LNR: mixed wetland habitats, notable for wintering Bittern and Water Vole populations
- Low Hall Park LNR & Amberswood Common SBI: wetland, mixed woodland and grassland habitats
- River Glaze: important connecting river corridor

### The Mosslands

- Astley & Bedford Mosses SSSI/Manchester Mosses SAC (MMSAC): 90ha of modified mire communities, particularly important for wintering raptors, Amphibians, Dragonflies & Common Lizard
- Holcroft Moss MMSAC/SSSI: degraded mire with an intact dome
- Risley Moss MMSAC/SSSI: mosaic of mire communities under restoration
- Botany Bay Wood SBI: largest continuous woodland block in region supporting a major Heronry
- Little Woolden Moss: Large scale restoration project underway to restore the biodiversity value of this site
- Chat Moss – currently bare peat where peat extraction has stopped as a result of a public campaign to stop further extraction.

### Mersey Wetlands Corridor

- Paddington Meadows LWS/LNR: important wet grassland site for its associated plant and animal species
- Woolston Eyes SSSI: network of lagoons, reedbeds and scrub vegetation important for wintering wildfowl
- Rixton Clay Pits SAC/SSSI/LNR: clay extraction has left a mosaic of fen, swamp, meadow and wet woodland. Holds the largest breeding population of Great Crested Newts in Cheshire.



*The Bittern. Experts consider that a breeding pair was probably present on Wigan Flashes for the first time in 2015. Photo: Jamie Hall.*

## Species

Together, the area's habitats are recognised as being nationally important for a number of Section 41 Species (threatened or declining). Connectivity on a landscape scale is key to their survival.

Priority animal species include:

- **Willow Tit:** inhabit wet woodland in the north-west of the area. Tracts of woodland are actively managed for willow tits, with woodland thinning and scrub and ground flora development encouraged.
- **Lapwing:** this charismatic wading bird has declined in numbers but continues to breed in the area. It relies on short vegetation and rough grassland for foraging. Agricultural intensification threatens this species, causing losses of both foraging and nesting habitat
- **Grey Partridge:** this species has undergone a severe decline. Inhabiting lowland farmland, the Mosslands are particularly important in the local region for grey partridge. The intensification of agricultural practices is one of their biggest threats
- **Water Vole:** reliant on wetland habitats, water voles have experienced a sharp decline in numbers due to habitat loss, predation and climate change. The Wigan Flashes and Red Moss remains an important stronghold for the species.
- **Tree Sparrow:** the Great Manchester Wetlands are of regional importance for this species, which is beginning to increase in numbers after massive declines due to agricultural intensification and hedgerow removal.

## 4.4 The Carbon Landscape's people and places

### 4.4.1 Pre-industrial times

In prehistoric times settlements were confined to moorland edges to the north of the area. The expanding population during the warm Bronze Age started to move down from the moors into the lowlands. The extensive wet mosslands in the south-east of the area were seen as sites to be avoided, although the drier edges of these may have been attractive since they would offer fuel and in the Iron Age, ritual sites. Wet clayey soils were not attractive until the heavy metal plough allowed their cultivation. Conversely, well-drained soils could be cultivated easily and were favoured along with low hills within the glacial till. In ancient times the mosses were regarded as dangerous wildernesses; with deep dark pools of acidic water; treacherous areas of boggy ground; mists and fogs; and the haunt of wild animals. The name Little Woolden is derived from Vuluedene meaning "Wolf Valley", suggesting the wildlife that would have been present. As such, these areas were good for hunting (on foot) but were to be avoided at other times. The spiritual dread with which these wildernesses were regarded may readily be guessed at with the discovery of a corpse known as the 'Druid Prince', whose amazingly well preserved remains were dug out of the peat at Lindow Moss to the south-east. The fact that he appears to have been possibly drugged and then ritually sacrificed gives some indication of how Iron Age man may have regarded the mosses. In 1958, the severed head of what was believed to be a local Celt was found in Chat Moss near Worsley.



In 1726, the writer Daniel Defoe passed through the area, journeying from Warrington along Manchester Road, recording his visit in a book published a year later:

*'From hence, on the road to Manchester, we passed the great bog or waste called Chatmos, the first of that kind that we see in England, from any of the south parts hither. It extends on the left-hand of the road for five or six miles east and west, and they told us it was, in some places, seven or eight miles from north to south. The nature of these mosses, for we found there were many of them in this country, is this, and you will take this for a description of all the rest. The surface, at a distance, looks black and dirty, and is indeed frightful to think of, for it will bear neither horse or man, unless in an extremely dry season, and then not so as to be passable, or that any one should travel over them. What nature meant by such a useless production, tis hard to imagine; but the land is entirely waste, except for the poor cottager's fuel, and the quantity used for that is very small.'*

Defoe, Daniel 'A Tour Through The Whole Island of Great Britain', 1724 –1726.

Defoe's opinion of the mosses shows that perhaps little had changed in nearly 2,000 years. The mosses were still dreadful places to be avoided at all costs. Defoe mentions the 'poor cottager's fuel' and this is perhaps a reference to peat, which was widely used as a low quality fuel. In the C19th and early C20th, peat was dug at Risley for fuel and a small narrow gauge railway was used to transport it to horse-drawn carts. Medieval and post Medieval farmers tried to drain some of the mosslands around the fringes in order to cultivate the rich peaty soils. Clearly, unless the 'valley bog' - the original depression in which the peat formed - could be drained then any efforts to drain the perimeter would be fraught with difficulty. For this reason many of the original peripheral field shapes were in plan like the slices of a pie, cutting into the moss. The large chain of mosses along the Mersey effectively channelled many of the roads through the area into the gaps between them.

A characteristic feature of the mossland landscape is the moss cottage. These are simple brick buildings, standing alone amid the wide fields, and were built by speculating squires to house the labourers on the new farms. Flagstones were imported to act as foundations, and with the shrinkage of the peat many stand at an angle. Occasionally these buildings are built in terraces.

The strategic importance of this string of mosses was extremely high. Added to the formidable obstacle of the River Mersey, the mosses acted as a further barrier to forces moving north or south through north-west England. For example, in 1745, the Jacobite army of Bonnie Prince Charlie marched south through Carlisle and Preston towards Warrington, but at Wigan the army turned east towards Manchester, unable to pass through the mossland after the bridge at Warrington had been demolished by Brigadier Douglas and the Liverpool Blues (a militia unit).

There are a number of medieval manors, often moated, scattered throughout the area. Parts of these manorial holdings reached into the adjacent mosslands and it is probable that the mosses were exploited for hunting and for fuel. These include Holcroft, Pestfurlong and Risley. Both Rixton and Glazebrook were mentioned in 13th Century records. Further north, Abram Hall, Lightshaw Hall (both still standing), Mossley Hall, Urmston in the Meadows and Hopecarr Hall were built just above the floodplain and the extensive river meadows either side of the Hey Brook / River Glaze.

## 4.4.2 The industrial era

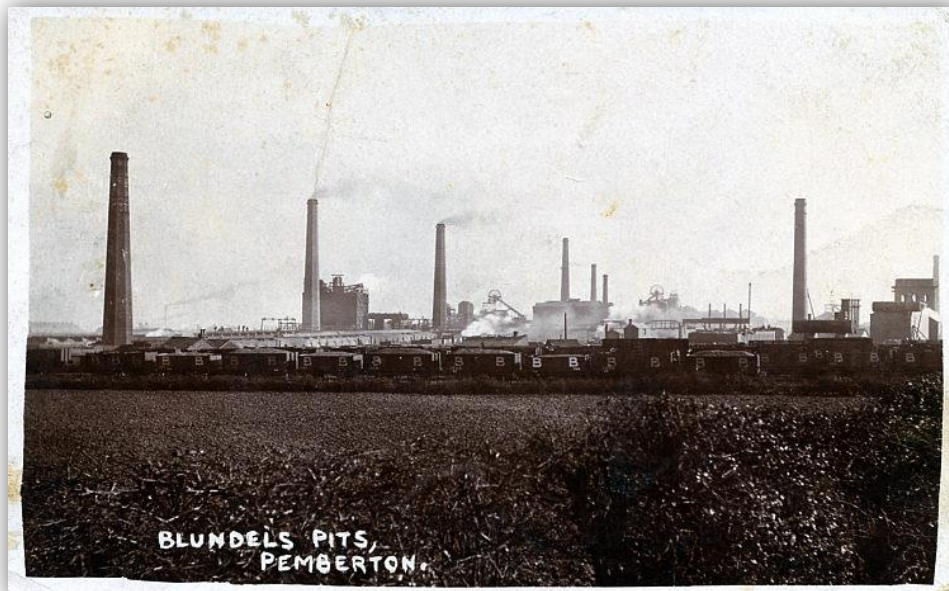
The area is special and distinctive as a landscape not least because of its industrial heritage. The exploitation of the high levels of natural carbon resources throughout the landscape, in the form of coal and peat, helped fuel the Industrial Revolution from the late C18th. Extractive industries continued to shape the landscape significantly up to the mid C20th, with coalfields in the north and east and peat, clay and sand extraction sites in the south.

### Coal

Coal mining began to develop as early as Roman times. During the late Middle Ages it developed more widely, leading to large growth in the population. By 1660, Wigan was the third largest town in South Lancashire, with important brass and pewter industries.

Some of the region's key historic transport routes cross the landscape. The Bridgewater Canal, built in 1761, was the first canal not to follow an existing watercourse and was used to transport coal from Worsley to Manchester.

During the Industrial Revolution the small towns and villages in the coal belt expanded as more mines were opened, linked by the canal system to Manchester and Liverpool. The construction of the Leeds and Liverpool Canal and its linkage to the Bridgewater Canal in 1820 transformed the area. This enabled coal to be exported from the Wigan area on a large scale to the major industrial cities adjacent and collieries sprang up all the way along its course through the Wigan coalfield. This resulted in massive areas of underground colliery workings and subsequent large-scale subsidence of the surrounding land as mines began to collapse when coal had been extracted from the seams below.



## Peat

Peat has been extensively cut for fuel in the past and it continued until recently to be harvested for horticultural purposes in the area, for example at Chat and Little Woolden Mosses. In the medieval period people had 'rights of turbarry' i.e. the right to cut peat for fuel. Mosses were therefore divided into long, thin strips known as moss rooms, from which turfs were cut. This pattern is fossilised in most of the larger mosses as hedgerows were introduced to enclose this former open area.

Older roads and tracks tend to fringe the mosses and these were used by farmers for access to cultivate the mossland edges. The advent of large scale mechanisation enabled farmers to undertake substantial drainage and 'reclamation' schemes, resulting in the straight drainage ditches and tracks seen today. Commercial peat extraction dates back to at least the early 1960s. Previously, extraction was conducted by cutting blocks of peat which left some vegetation intact. However, in more recent decades the particularly destructive 'milling' method has been used on the large peat extraction sites, creating a barren landscape.

During the C19th the population of the area expanded fivefold, drawing in immigrants from other parts of the country and Ireland. Large areas of agriculture were also developed on the fertile peats of the mosslands that helped supply Manchester with its vegetable produce. After 1845 Manchester Council took responsibility for removing refuse, including night soil and slaughter house refuse. At night, men removed the 'night soil' by horse and cart. The sheer scale of the task led to the purchase of Carrington Moss by the City in 1886, as a place for the disposal of refuse, whilst at the same time reclaiming the land for agricultural purposes.

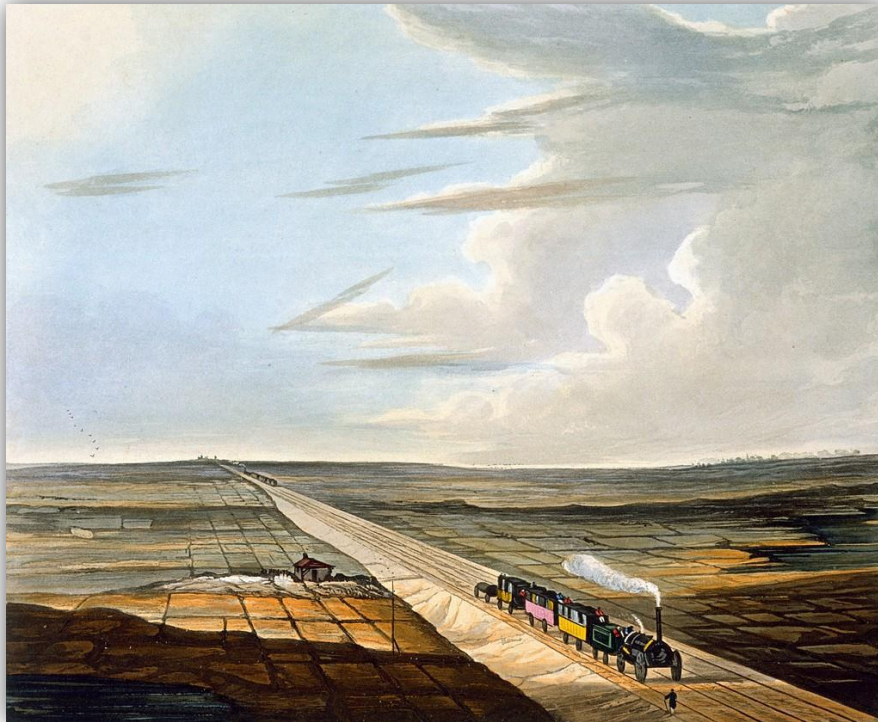


*Peat Extraction on Chat Moss*

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## Transport

The Liverpool-Manchester railway, built by George Stephenson and opened in 1830, was the first inter-urban passenger railway and bisects the mosslands, innovatively crossing the unstable peat of Chat Moss by being floated on birch wood bundles and tar barrels. It was the first public transport system which did not use animal traction power. To this day, the track across Chat Moss floats on the hurdles that Stephenson's men laid, and it is possible to feel the ground move as a train passes if stood alongside the track. It is worth noting that the line now supports trains 25 times the weight of the Rocket, which hauled the first experimental train over the Moss in January 1830.



*'View of the Railway Across Chat Moss', by Henry Pyall (1831)*

The introduction of the railway meant that by the mid-to-late C19th most of the mossland areas of Wigan were reclaimed. The use of light railways with lightweight steam locomotives meant that material could be moved with ease to and from the mosses. Drainage ditches were dug through most of the mosses, although their construction was still based on human labour, which was a limiting factor.

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## Dereliction



*Pemberton Colliery - early 1970s*

As the mining and textile industries declined, large tracts of land were left disused and derelict, especially in relation to the collieries around Wigan. This left a familiar post-industrial landscape which suffered from:

- **Water pollution:** water was heavily polluted following dereliction of sites. Underused and undervalued, toxic refuse was regularly dumped in open water causing negative environmental impacts.
- **Spoil heaps:** large heaps of toxic spoil were left at derelict sites, creating an environmental problem. The lack of perceived value for this land delayed restoration.
- **Habitat loss:** habitats were lost as a result of pollution and change of land-use.
- **Habitat fragmentation:** former continuous tracts of habitat were broken up by transport routes and alternative land-uses, creating barriers for species movement through the landscape.
- **Associated social deprivation:** closure of industrial sites led to high levels of unemployment, worsening health levels and poorer levels of education.

### 4.4.3 Today's Carbon Landscape

The huge scale of dereliction created by the coal industry and its demise, together with a growing movement towards environmental protection in the second half of the 20<sup>th</sup> century, led to significant resources being channelled to improve the environment during the 1970s. Progressive environmental planning led to major land reclamation projects. At one point the civil engineering team within the local authority comprised in the order of a dozen staff. This momentum continued and the restoration process has led to the remarkable natural habitats we see today.



*Wigan Flashes in the 1970s and in 2013*

A striking feature of the Carbon Landscape is its substantial collar of urbanisation. Its growth has slowed but it continues to evolve. Most of our treasured landscapes in England are valued in part for their isolation and distance from towns and cities. The reverse is true for the Carbon Landscape – its proximity to residential areas elevates its value and importance. Not only is it an ecologically rich network of benefit to wildlife, it is also a 'green lung' providing a range of ecosystem services.

Due in part to this proximity, after the major land reclamation work completed, local people have become progressively involved in their local environment. Initiatives like Wigan's Greenheart have enabled further environmental improvement and community engagement to occur.



*Habitat management work at Three Sisters recreation area. A guided walk along the Leeds Liverpool canal.*

Related to the broad shift in more recent years in favour of environmental protection, peat extraction on the mosses is set to end. The impact on the mosslands of peat extraction has been profound, with a legacy of many hectares of flat, sterile, brown wasteland several metres below the original ground level. The growth in environmentalism and increasing concern over the loss of lowland raised bog habitat has led to a reluctance to tolerate further extraction.

This change in approach in favour of conservation, reversing hundreds of years of exploitation of the mosslands, was manifest in a campaign by local people in 2012 in support of the local authority decision to decline planning permission for a company to extend its extraction rights on Chat Moss for another 15 years. The decision was appealed, and so it went to Public Inquiry. The Inspector's report was submitted to the Secretary of State whose decision was to reject the appeals in line with the inspector's recommendation.



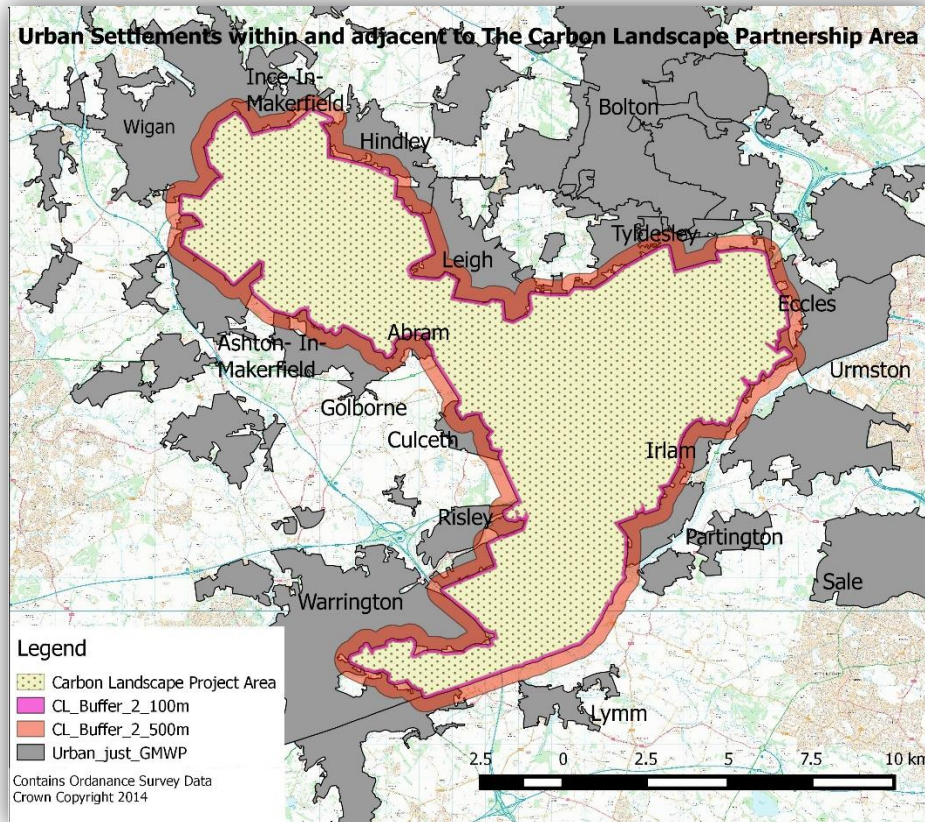
*Campaigners on Chat Moss in 2012*

Peat extraction ceased at Chat Moss in 2011 and Astley Moss East in 2015. It continues at a reduced rate at Little Woolden Moss but this will come to an end in 2017. That will mark the end of peat extraction within the whole GM wetlands area.

Overall, the direction of travel over the last few decades towards an environmental renaissance for the Carbon Landscape is very encouraging. The improvements in the landscape of today reflects a general rise in economic and social prosperity for the NorthWest. However, there is still much to do, and as explained in Section 6, there are significant ongoing threats that might adversely affect this process.

#### 4.4.4 Residents and visitors

A primary feature of the CLPS is the nature of its 'audience' - it is both very large and very close.



Map 4

Map 4 illustrates the extent of the large population on the doorstep of the Carbon Landscape. An analysis of population data reveals that there are approximately 18,700 people living directly adjacent to the area (within 100m) and 93,700 within easy walking distance (within 500m). Taking the wards closest to the boundary, there are 144,800 people close to the Carbon Landscape in Wigan (26 wards), 79,000 in Warrington 9 wards and 39,900 in Salford (7 wards), giving a total of just over a quarter of a million. If we take the population of the three local authorities whose land constitutes the Carbon Landscape, Wigan (300,000), Salford (242,000) and Warrington (202,000) and add those settlements in the three other local authorities that have satellite towns close to the Carbon Landscape, whose residents would probably consider a visit as relatively convenient, such as Westhoughton in Bolton, Urmston in Trafford and Newton le Willows in St Helens, then the number of people rises to around 1 million.



Such a large urban population creates a diverse and complex audience for the CLPS. In order to understand this complexity and agree the most effective approach to meeting GMWP and HLF objectives in relation to community involvement, the CLPS has developed and adopted an *Audience Development Plan (ADP)*<sup>3</sup>. The primary research source for this plan has been the study undertaken by Manchester University in 2013 – *'Mapping Community Engagement in the Great Manchester Wetlands.'*<sup>7</sup> Further work has complimented this report including *'Carbon Landscape Community Workshops'*,<sup>2</sup> a report by Countryside May 2015 and findings from the development stage activity of the Sense of Place project.

The research shows that the local urban population has a higher level of unemployment than the national average and the proportion of ethnic minorities in Warrington, Salford and particularly Wigan is less than the national average. Indices of multiple deprivation indicate that in certain local wards deprivation is particularly high, and authority wide levels of deprivation are above the national average.

The University of Manchester study notes that many of the partners already engage with a lot of people, and there are healthy levels of participation in general terms with the Carbon Landscape. It is also discovered that there is a reasonable diversity of people engaged. The exact nature of that diversity, however, is hard to ascertain from existing data, which largely only mentions gender, and whether the participants are children or adults, as well as in many instances, giving post codes. Given that people living in areas considered amongst the 20 percent most deprived neighbourhoods are considered 'hard to reach', having a total of roughly 10 percent of Wigan Leisure and Culture Trust (now Inspiring healthy Lifestyles) volunteer visits and 20 percent of Lancashire Wildlife Trust's volunteers drawn from this population shows that quite a bit has already been done to engage with people living in such neighbourhoods.

The main barriers to more involvement in the Carbon Landscape were noted to be:

- **A lack of information and awareness about what is available and accessible**
- **A lack of skills and confidence**
- **A perception of sites being uninviting due to rundown appearance and anti-social behaviour**
- **A lack of transport and high cost of access**

The Partnership has used these barriers to establish four aims to engage larger and more diverse audiences, as outlined in Section 8.

## 4.5 The Landscape Partnership Area

### 4.5.1 Defining the Carbon Landscape boundary

To establish the Landscape Partnership Scheme project boundary, an assessment of the Great Manchester Wetlands was made in relation to its geology, soils, hydrology, topography and the distribution of priority habitats, designated sites and urban areas. This method embraced the rationale of the National Character Areas, creating a boundary based on landscape features rather than administrative lines.

A core area of 107km<sup>2</sup> was identified for wetland biodiversity, from Wigan in the north through the Manchester Mosses to Warrington in the south. This broadly follows the Wigan Flashes complex and the Hey Brook and River Glaze corridors, although the eastern boundary is defined by the distribution of peat soils and urban areas. Whilst the boundary spans two National Character Areas, the arc of priority wetland habitats is unified by two common themes: carbon and water. Both the natural and cultural heritage of the landscape has been shaped by these two elements, creating distinct and unique landscape characters within the region. The Carbon Landscape as defined can be seen as three overlapping broad landscapes as shown in Map 1, with smaller elements at the finer grain, ranging from the large scale undulating arable land of the mosslands to the intimate scale of the Glazebrook flood plain.

### 4.5.2 Managing the Carbon Landscape's Heritage

Unlike many Landscape Partnerships across the county, there is no single planning authority responsible for overseeing the CLPS area. There are three Local Authorities each with differing approaches and resources. Wigan and Salford are members of the Greater Manchester Combined Authority, so they are party to planning policy agreements arising from Greater Manchester, but Warrington sits outside it. It is true to say, however, that despite these differences there is an overall consensus on the environment generally, and on the importance of this area between Manchester and Merseyside. This is manifest in the establishment of the GM Wetlands Local Nature Improvement Area. Furthermore, Warrington, Salford and Wigan are active partners on the Carbon Landscape Steering Group and each is leading projects in the proposed programme.

The CLPS is founded on a strong partnership, and there are clear benefits arising from the joint working between the authorities. An example is the proposed Outdoor Champions project where respective leisure services sections are working together for the first time, to create a cohesive health activities project enabling the landscape of the three character areas to be utilised for public benefit.

The planning context within which the Carbon Landscape resides has had a direct influence on the decisions of the Local and Highways Authorities and is outlined below.

## European Policy Framework

The CLPS aligns significantly with the UK's commitment to implementation of the European Landscape Convention. Landscape Partnerships should be considered as one part of a wider ambition to improve the landscape's management and help people connect with it. The European Landscape Convention defines 'landscape' as 'an area, as perceived by people, whose character is the result of action and interaction of natural and human factors'. The Convention is not the only relevant policy, with the Water Framework Directive and Biodiversity 2020 being important drivers to improve our waterbodies and reduce the decline in biodiversity respectively.

## UK Policy Framework

The *Natural Choice: securing the value of nature* White Paper (2011)<sup>8</sup> contains the UK Government's vision for the natural environment over the next 50 years. Many of its key themes, such as 'Protecting and improving our natural environment' and 'Reconnecting people and nature' are also reflected in the CLPS's objectives. The wildlife habitat enhancement projects that will be delivered as part of the CLPS align with the priorities for habitat creation identified in Biodiversity 2020 (the England Biodiversity Strategy). Habitat conservation work in the Carbon landscape is supported through the Environmental Stewardship agri-environment scheme which is part of the Rural Development Programme for England delivered through Natural England.

## Local Policy Framework

*Core Strategies* - Each of the three Local Authority partners has its own Core Strategy to guide the nature and extent of future developments. An aim of the wider GMWP is to ensure that its objectives are recognised in the strategies and associated policies so that so far as possible, future developments will contribute towards the objectives rather than being seen as a threat to them. The need for increased housing allocations is a good example of an obvious potential threat to wildlife interests, but one which can be effectively mitigated by early engagement and by a robust understanding of the ecological network that underpins the Carbon Landscape.

*Local Nature Partnerships (LNP) and Local Economic Partnerships (LEP)* – GM Wetlands has been adopted as a locally designated NIA by both the Cheshire LNP and the Greater Manchester LNP (Natural Capital Group). Local Authorities have a "duty to co-operate" with LNPs in preparing local development plans and the GMWP has a clear role to support the LNPs with detailed knowledge of the GM Wetland area.

*Greater Manchester Spatial Strategy* – This is just one example, albeit a very crucial one, of the type of strategy that it is essential that the partnership engages with if we wish to protect the GM Wetlands area, and look for opportunities to develop effective mitigation. We must however recognise that not all the GM Wetlands partners will view proposals from the same perspective, and there may be occasions where it is not possible to get a consensus view, or insufficient time to try to obtain one. What we can do however is to articulate the fundamental principles and areas of common ground, and seek for the Spatial Strategy to reflect the GM Wetlands objectives.

*Atlantic Gateway* – There can be few initiatives in the UK with the scope and ambition of Peel's Atlantic Gateway. It is good to know that GM Wetlands are recognised as one of the six environmental initiatives that are at the heart of the Atlantic Gateway Parklands prospectus.

*Catchment Partnerships* – Defra’s initiative, the Catchment Based Approach, has led to the Environment Agency funding a number of Catchment Partnerships across the country. The aim of these partnerships is to help the Environment Agency to deliver the requirements of the Water Framework Directive. Within the GMW there is a good fit with the Glaze sub catchment which forms part of the Lower Mersey Catchment Partnership. The Healthy Rivers Trust, who host the partnership, is a CLPS partner and will be leading the Hey Brook Revival project.

*Mosslands Park initiative* – From time to time opportunities to improve habitats or create new habitat arise as a result of biodiversity offsetting agreements associated with major new developments. Peel have suggested that there might be just such an opportunity to protect and enhance the Mossland area associated with forthcoming proposals for large housing developments in the next five years, effectively implementing the Mossland Vision.

*Greenheart* – based around the Wigan Flashes, the Greenheart initiative led by the Council has objectives wholly compatible with those of the CLPS. Greenheart is delivering innovative and effective grass-roots community engagement and the CLPS has been designed to complement the activity of the Greenheart Partnership.



## 5. Statement of Significance

There are two prominent features in the heritage of the Carbon Landscape: Industry and Carbon. The Industrial Revolution, centred in Greater Manchester, profoundly changed the world. The immense geological reserves of carbon in the Carbon Landscape fuelled much of this early explosion of creativity and manufacture.

The social, ecological and cultural heritage in the region has been shaped by people's engagement with Industry. But this is not just a local story: the Carbon Landscape is the story of the modern world, set right where it began. To understand the significance of this story – the role of Industry, its global and social impact and its legacy – requires a step back to take in the bigger picture. Looking at this through the 'lens' of the RoundView, a tool to help us navigate towards sustainability, and adopted by the CLPS in establishing projects, reveals how ecosystems and ecological cycles work to provide our 'Global Life Support System' – the very basis for life as we know it on Earth. This is our '**Big Heritage**' – the heritage of our species, globally; the fundamental basis of our society, culture and economy.

The Carbon Landscape story highlights the role of carbon, weaving together the threads to form a fascinating tapestry that illustrates how industry and society have led us to the current time in which we can learn from our past to protect our heritage, and move towards a sustainable future. This area is uniquely placed to explore and showcase these ideas in a landscape setting, offering the potential for this to be a world leading example of interpreting heritage within a much deeper timeline of the formation of natural resources, through to their exploitation and into the future of our relationship with this Big Heritage. As confirmed during the Development Stage, inviting community members to take a bigger picture view of the local landscape helped people gain a new appreciation of its heritage and significance and their potential role in a more sustainable future. The findings of this research are recorded in the *RoundView development stage final report*<sup>9</sup>.

The three main character areas within the project each have unique histories and characteristics that lend themselves to the telling of different aspects of this Carbon Landscape story. The story is formed from the different elements of the area's geological, natural, industrial and cultural heritage. Key aspects of the significance of each are outlined below.

### 5.1 Geological Heritage

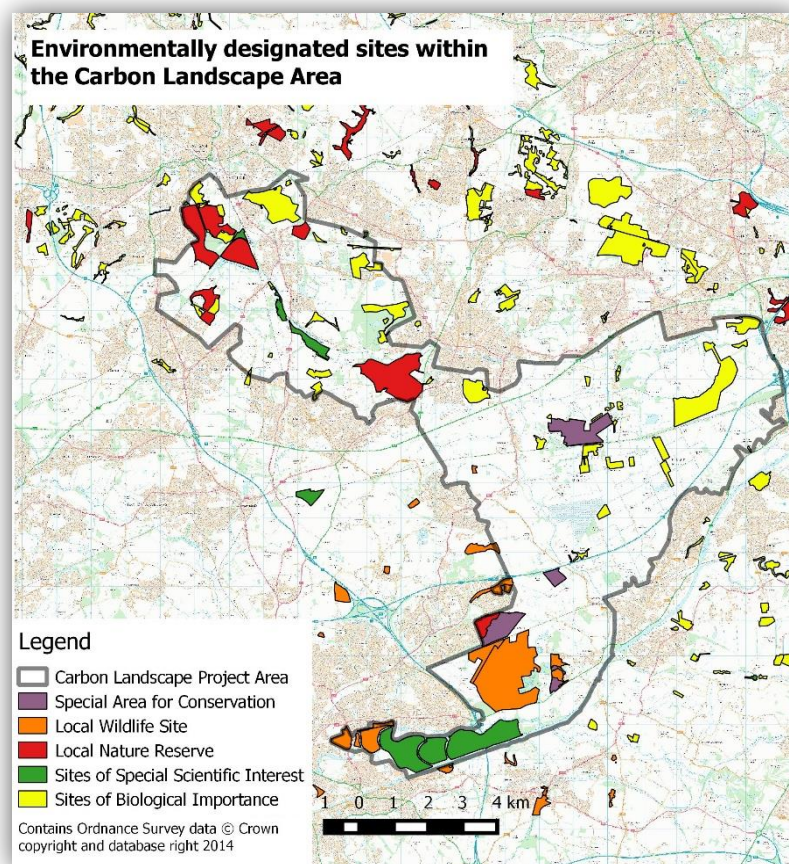
It is an interesting observation that a primary determinant of the Carbon Landscape is not visible. As outlined in Chapter 4.3.1, virtually the whole of the area is devoid of solid rock outcrops due to the bedrock being overlain by an almost continuous layer of glacial and recent unconsolidated deposits. Unsurprisingly, there are no current designations based on the solid geology of the area since bedrock is exposed at only a very few locations.

However, a compelling element of the Carbon Landscape story is that the invisible geology of the area has had a startling impact on the landscape of today through its industrial exploitation. The damage wrought by the mining industry, with the extensive mix of subsidence and waste tips outlined earlier, has led to the rich network of wetland and terrestrial habitats in close proximity to the towns that grew as part of the industrial upheaval. This combination of natural and industrial heritage is of significant historical importance.

If this heritage is to be understood and celebrated then the story needs to be exposed and shared in a range of different ways and at different times – the Carbon Landscape programme through its varied projects and processes will do just that.

## 5.2 Natural Heritage

The principal driver behind the movement in modern times to protect and enhance the Carbon Landscape is the significance of its natural heritage. It is an extraordinarily rich and diverse landscape that is primarily wetland in form. To the north-west are areas of open water surrounded by wet woodland and a mixture of grassland, reedbed and lowland fen. A vast expanse of peat with patches of lowland raised bog, one of the rarest habitats globally, occupies the central area. In the south are predominantly open wetland habitats such as lowland fen and floodplain grazing marsh, with areas of wet deciduous woodland scattered in between. Nine SSSIs have been designated in the Carbon Landscape, all for their botanical interest. They are shown on Map 5.



Map 5

Together, the area's habitats are recognised as being nationally important a range of Section 41 Species (threatened or declining), including: Willow Tit, Lapwing, Grey Partridge, Water Vole and Tree Sparrow. Increased connectivity on a landscape scale is key to their survival, especially in a context of likely climate change induced species range shifts. Consultations have shown that for many of the volunteers and community groups, these important species form a significant link to the environment, with people motivated to save and protect their threatened habitats.

## 5.3 Industrial and Built Heritage

As the Carbon Landscape story explains, the principal industrial heritage feature for the area is the landscape itself. The Industrial Revolution left behind a physically scarred and desolate landscape which, through a combination of human land reclamation work and natural succession, is in the process of transformation into an inspiring series of varied natural habitats. Many of the historic features remaining from the industrial age provide an excellent resource to showcase an area that was at the centre of fundamental social change.

The major local industries of coal mining and textiles have left a legacy on the landscape such as the large former cotton mills striking in distant views, the headgear and engine house at Astley Green Colliery Museum, and occasional, sometimes overgrown pit ventilation shafts. Connecting all these industrial developments are the associated railways, canals and roads which bisect the landscape. Some of the most historically significant transport arteries in the country cross this landscape. One of these, the Bridgewater Canal that opened in 1759-60, was the first commercial canal in Britain and the first to be built without following an existing water course. It is an important piece of industrial heritage as well as now being a valuable ecological corridor through the heart of the area and a significant recreational resource. Other important transport routes include:

- Leeds & Liverpool Canal: The Leigh branch opened in 1820. Now a recreational route for boating, cycling and walking
- Liverpool to Manchester Railway Line: the first inter-urban passenger railway line in the world. Opened in 1830
- Manchester Ship Canal: 36 miles of canal navigable by ocean-going ships allowing them direct access to Manchester. Completed in 1893.

In contrast to the extensive surrounding cities and towns, the landscape is punctuated by small settlements, occasional farms and terraces, and a few medieval manors, as detailed in Section 4, giving a surprisingly rural atmosphere. In such close proximity to major urban centres, this historical pattern of settlement and rural character offers a striking contrast and forms part of the unique appeal and potential to draw more people into the area.

## 5.4 Cultural Heritage

The cultural life of the population within and on the doorstep of the Carbon Landscape has had many and varied influences over the centuries. The phase in history that has had the most profound influence on the culture and social life in the area is that of the industrial revolution. To this day, the identity and character of the towns of Wigan, Leigh, Warrington, Irlam and Cadishead have been defined by their experiences of the industrial age. For Wigan, Leigh and their satellite settlements in particular the geology of the landscape has had a significant bearing on cultural development and a rich heritage of artistic and journalistic expression has resulted from the mining period.

Significant works set in the area about the nature of industry and the social conditions it spawned were written by George Orwell, among others. 'The Road to Wigan Pier' survives not only as a significant commentary on the social conditions of the time, but also a widely recognised metaphor for the problems of social deprivation linked to the rapid expansion of industry.

A remarkable shift in cultural appreciation of the Carbon Landscape is taking place that reflects the transition from industrial despoliation to vibrant natural habitats. Since the 1960s and 70s society has attributed increasing importance to environmental issues. Environmental protection and enhancement has become more of a priority in society generally and there has been a growth in the use of the Carbon Landscape for recreation. Furthermore, there has been a growth in recent years of 'grassroots' community groups that are beginning to express their love and appreciation for this new landscape by forming 'Friends' groups to help care for the newly designated SSSIs and LNRs. There are 15 such groups in the Wigan borough alone.

An example of this new culture, contrasting sharply with the situation during the industrial era, is Risley Moss. Now a SSSI and SAC due to its high nature conservation value as a rare lowland raised bog, it includes a visitor centre which houses exhibitions and it has an energetic volunteer group, the Risley Moss Action Group.

A large number of people have lived in the area all of their lives, with older generations who made a living from the land and mining. For a population that has developed and prospered through the use of the landscape's natural resources, a strong attachment to the land and a desire to protect it is apparent both in the activities of volunteers and from the feedback we have received through the Sense of Place groups and community workshops during the Development Stage.

A significant benefit of the recreational and volunteer conservation work on these sites is the sense of local pride and increase in health and wellbeing reported by volunteers and community groups. The landscape is a major resource for recreation and the promotion of wellbeing and it has great potential to be better used and enjoyed. Participants valued the opportunity to "discuss our project and its relevance in the carbon landscape and to generate ideas around sustainability and our visions" –showing the potential for much more to be made of this unique heritage in the future.<sup>9</sup>



*Artist: Tracy Hill. Image taken from Sensorium - 2015*

*Inspired by walking on the mosses, this work is based on a panoramic 360 degree camera shot of the Mossland landscape*





## 6.0 A Landscape under Threat

### 6.1 Introduction

The Carbon landscape we experience today is the product of a very long evolution and it is still in transition. Much of what we attach importance to is linked to how the land is managed. Just as the combination of the Carbon Landscape's special qualities define the significance of the area's heritage landscape, so the cumulative effect of many, often seemingly unconnected, changes can lead to a long-term decline in the very landscape qualities that are valued.

This chapter looks at the risks to the Carbon Landscape's heritage landscape, charting where the area is vulnerable to changes that will cause negative effects. Alongside this risk analysis, opportunities for positive action are identified. Some of these actions are already taking place; others have become the basis for the projects that the Landscape Partnership will deliver.

### 6.2 Development pressures

The proximity of the Carbon Landscape to relatively disadvantaged urbanisation results in a continuous pressure to use the landscape to support development opportunities and economic growth. While many sites in the landscape have environmental designations and added protection, there is great and ongoing pressure on the greenbelt which forms the remainder of the area. Initiatives like the High Speed 2 rail link, and plans for housing schemes, new road links and associated infrastructure form significant threats to the Carbon Landscape as the two adjacent City Regions evolve.

The Great Manchester Wetlands NIA is now embedded within the new Greater Manchester Spatial Framework, which is setting the strategic approach to housing and employment land. There are important drivers for development and change such as local developer Peel Holding's Mosslands Park proposal and the Atlantic Gateway initiative. Both of these examples could enhance the fortunes of the Carbon Landscape, but only if the value of the landscape is promoted and celebrated.

There are great benefits that arise from the Carbon Landscape being adjacent to areas of high population. It forms a 'green lung' that provides important Green Infrastructure services including health and wellbeing benefits for local residents. The GMWP commissioned a report by ARUP that highlighted the natural capital provided by the Mosslands<sup>10</sup>. The CLPS recognises the importance of this approach to valuing the environment and the insight it gives into the many benefits provided by of the Carbon Landscape. The CLPS will support continued research with partners to further understand its true value. Equally, the Carbon Landscape will provide a good case study over the next few years to contribute to learning on ecosystem services and natural capital.

A central purpose of the wider GMWP is to raise profile of the area and to communicate its importance and role in future social and economic prosperity to key decision makers for this part of the Northwest. In two examples just prior to the Round 2 submission, key elected representatives, such as the Greater Manchester mayoral candidates, and other senior officials, visited Little Woollen Moss to see the benefits a thriving GM Wetland can bring to the local community and the local economy. These visits have been very successful and there are plans to continue them into the future as an important component of the GM Wetlands Communication Strategy.

The CLPS is set to be the primary mechanism over the next few years to ensure the message is successfully delivered and the social and natural heritage safeguarded for future generations.

### 6.3 Neglect and disconnection from the landscape

A central tenet of the CLPS is that the long term prosperity of the Carbon Landscape will depend in part on local people defending and promoting it and playing a role in its future management. Whilst there is a remarkable shift in the attitude to the landscape from one of neglect and disinterest to that of appreciation and care, it is fair to note that this currently applies to a relatively small proportion of the local population.

Recent national studies by organisations such as the National Trust have highlighted the disconnection between many people, particularly urban, young people, and the natural world. Although the Carbon Landscape is on the doorstep of major centres of population, many people are unaware of what its heritage landscape has to offer. This means that many people do not understand:

- How they can explore, enjoy and benefit from the Carbon landscape;
- How the landscape is managed by farmers and other land owners;
- That the area provides important national resources, such as food, space for recreation and carbon sequestration (the area's 'ecosystem services');
- The significance of the area's industrial and cultural heritage, and how this can help them appreciate today's Carbon Landscape; and
- The area's biodiversity and the importance of conserving and enhancing habitats.

Without this awareness, it is impossible for people to enjoy, appreciate and ultimately value the landscape. This, together with the socio-economic issues facing the area, form an ongoing threat. Employment levels are below the average, as are skills levels and educational attainment. With the downturn in the economy the area is being hit harder than most and further economic decline will lead to further physical and social decline in the area. Anti-social behaviour is directly affecting the heritage and landscape of the area, through vandalism, off road biking and other similar negative activities. People may feel it is unsafe to use the area, therefore reducing legitimate leisure activities. There is a lack of connection for many local people, where there used to be a very strong link from people who have lived in the area all of their lives.

Educational programmes, both formally within schools and informally for people of all ages through workshops and training events, is one approach to raising awareness about the area's heritage landscape. Equally important is a wider interpretative strategy that can explain to people in an engaging way the many different facets of the area's heritage. This will reach people through way-marked trails, events, leaflets, interpretation panels at important sites and online via the web and social media. A crucial aspect of all these approaches is not only to increase access and learning among existing visitors to the Carbon Landscape, but also to find ways to engage new audiences as detailed in the *Audience Development Plan*.

## 6.4 People and skills

A positive feature of the Carbon Landscape is the growth in recent years of grassroots community organisations emerging to help care for certain sites. It is clear from the work of Lancashire Wildlife Trust and Inspiring Healthy Lifestyles and others that volunteers are keen to be involved. However, as the *Mapping Community Engagement in the Great Manchester Wetlands Partnership report*<sup>7</sup> and development activities during the Development Stage show, there is a lack of consistency of support, frustration with regard to limited opportunities, and lack of landscape wide co-ordination. There is a wealth of skills within local groups, but they are keen to develop further, share ideas with other groups, and feel more involved in decision making and part of the bigger picture. The research found that most of our volunteers across the partnership, although diverse, are not representative of the demographics of the local population, and thus there is scope to engage with a more diverse cross-section of the population. There is also clearly scope to increase engagement with sectors outside of nature conservation, such as health and wellbeing and skills and employment.

Volunteers are an extremely important part of the solution to heritage landscape conservation. They are enriched by their voluntary experience, while making a real and lasting impact on the landscape. To be able to succeed, volunteers need training, support and resources. Without this, volunteers' enthusiasm may be lost and successful voluntary groups may fade away as they are unable to attract new members. There is a constant need therefore to coordinate and support existing and new volunteering effort in the Carbon Landscape, translating the pride for the area among local residents into voluntary action. There is a need to reach more people who are not yet engaged, often through a lack of awareness of opportunities or confidence that they have something to offer<sup>7</sup>.

## 6.5 Resources

Funding for public sector bodies has been significantly reduced over recent years. The impact on organisations which help conserve the heritage landscape has been significant. Local Authorities and major government agencies, including Natural England, English Heritage and the Environment Agency, now have less resource in terms of staff and budget. Inevitably the pressure of reduced resources means these organisations are unable to contribute to the management of the natural and historic environment as they did in the past.

There is a knock-on effect too for other sources of funding like charitable grants and landfill tax schemes. Competition for these sources has increased and so finances available to Friends Groups who play a management role on some of the SSSIs and LNRs have been reduced. Landowners too may not always have sufficient resources to maintain all of the heritage assets on their land. Where a heritage feature no longer has a direct economic benefit for the landowner, they may not wish or be able to justify spending money on maintenance. The economic downturn has exacerbated this situation.

The reduction in funding availability has a direct impact on the fortunes of the natural heritage in the Carbon Landscape. This underlines the need to establish habitats that are naturally stable and largely self-sustaining. In this respect, the larger and more connected these habitats are across the Carbon Landscape, the more resilient they will be in the longer term.

## 6.6 Climate change

The main impact of climate change in the UK has been an increase in extreme weather events and this trend is projected to continue. Heavy rainfall, late snowfalls, extended periods of drought – all are becoming more common, with one often coming shortly after the other. For example, in 2012 the driest spring for over a century gave way to the wettest April to June on record. In December 2015, heavy rainfall caused houses in north Manchester to flood. These changes give rise to difficulties for the natural environment, historic structures and people.

The less immediately noticeable effects of climate change, such as the gradual long-term temperature rise, will also have an impact on biodiversity. Defra's climate change projections estimate that the most likely increase in average annual temperature in the area by the end of the century will be 3°C, assuming a medium greenhouse gas emissions scenario. The geographical range of species will change in response to these changing temperatures, so over the coming century. The Carbon Landscape may lose some species but may gain others.

The threat from invasive species is also exacerbated with a changing climate and it is particularly prevalent along water courses and in wetland habitats.

As global temperatures rise, there is a corresponding northward movement of species seeking to find conditions that are most suitable for them. Threats to species whose range is affected by climate change are exacerbated by a fragmented landscape, and the peri-urban areas between the pinch points of Merseyside and Manchester are key corridors for northwards migration of species (Gilchrist et al, 2015)<sup>11</sup>

There is a real concern that this passage to the north will be blocked to many species. This project has identified key pinch points and the programme includes work to protect and improve these areas, creating and maintaining north-south corridors of movement, and making them more resilient to the impact of climate change, with hydrological management in the face of increased drought a particular concern.

Efforts to reduce the fragmentation of wildlife habitats are also important. By creating more habitats, which are better interlinked, for different species of flora and fauna, we will provide the space for nature to move and adapt to a changing climate. Flood risk can also be reduced by creating wetland Sustainable Drainage Systems (SuDS) that can provide storm water attenuation. Part of our holistic approach is to work with partners through visioning workshops that will also encourage people to think of what actions they can take in their own gardens / landscapes they manage within the Carbon Landscape.

The peat based soils in the Mosslands reach several metres in depth in places. Where hydrological conditions are suitable, peat actively accumulates, locking away carbon. However, when the peat is allowed to dry out, the peat can erode and degrade releasing this important carbon store. As well as preventing the release of carbon, peatland restoration can help to regulate river flow and reduce water colouration. Some areas of peatland urgently require rewetting and restoration to stabilise and grow the carbon store as well as finally reversing the almost terminal decline in lowland raised bog habitat. The response to climate change is taking place across all levels of society. Specific action in the Carbon Landscape needs to address adaptation to the changes that are likely to occur, as well as seeking where possible to mitigate activities that produce greenhouse gas emissions

## 6.7 Agriculture and land use

Environmental Stewardship, the Common Agricultural Policy National Agri-environment Scheme has been a primary mechanism to incentivise land managers to protect the natural and historic environment, for example paying farmers to maintain species-rich wildflower meadows or habitat suitable for breeding birds. A continuation of these schemes once they end their 10 year programme is uncertain at this moment following the Brexit vote in June 2016. There are numerous sites across the Carbon Landscape that utilise this mechanism, so the future for these land management payment schemes is uncertain. If there is a replacement scheme it may not provide the same levels of support, or may have different priorities. The risk in the long term is that habitats maintained via Environmental Stewardship may no longer be managed through such mechanisms. However, there is also a risk that farm businesses may not be able to survive without the financial support provided by CAP subsidy if an alternative isn't provided. Much of the Carbon Landscape is a farmed landscape, and the loss of farming businesses could lead to a dramatic landscape change.

Agricultural trends have been recognised as having a bearing on the Carbon Landscape:

- The damage done to mossland habitats by peat extraction is substantial and although this is now reducing in part due to public campaigns to prevent extraction, the case for prevention needs to continually be made in the midst of changing priorities and planning pressures in the future.
- There are large tracts of underused and neglected land - mostly as a result of historical coal mining activities, which can lead to a poor perception of the landscape, but with some careful improvements could lead to improved opportunities for both heritage and local people.
- There has been a continuing loss of hedgerows. Where hedgerows are no longer needed for stock control they have been removed in order to achieve larger fields and increase mechanisation. Those that remain are often flailed rather than managed through traditional hedge laying. Individual hedgerow trees or, where they exist, individual specimens in fields are reaching maturity without replacement
- In tandem with the growth of intensive agriculture there are also areas of horse grazing with the inevitable replacement or gapping up of hedgerows with barbed wire or post and rail fencing. Poached ground and removal of bark from trees are two other adverse impacts of horse grazing.

## 6.8 Risks and opportunities

The three character areas within the Carbon Landscape have common threats but their distinctive environments also create site specific risks too. In assessing the nature of these threats it is possible to see opportunities to remove or mitigate these risks.

### The Flashes

- Cultural heritage of The Flashes' industrial past is at risk of being lost
- Heritage features are surrounded by large urban populations which contain high levels of multiple deprivation
- Although popular and well used, there is a lack of visitor infrastructure such as car parks and visitor amenities
- Large tracts of underused and neglected land are present as a result of historical coal mining activities
- Invasive species pose a risk to the environment, particularly along water courses and in wetland habitats
- There is limited reedbed of the correct type to enable Bitterns, a key wetland species, to breed
- Invasion of unmanaged scrub has degraded some habitats, forming a barrier to species movement
- Encroaching development including new transport links, housing and business development.
- There are still many links between sites that have not been restored – although these derelict and underused areas of land can have nature conservation benefits, in themselves, they can also appear as eyesores and reduce the sense of a well-managed and accessible site.

### The Mosslands

- There is a perceived lack of access routes into this area, potentially restricting local communities' opportunities to benefit from the natural and cultural heritage
- Cultural and natural heritage are abundant but are not publicised enough to the local communities
- Continued mineral exploitation occurs in parts of the mosslands, degrading the natural and cultural heritage
- The remaining mosslands are fragmented and have been impacted by previous land uses, such as peat extraction
- Intensive drainage surrounding existing mosslands sites is causing significant damage and hydrologically isolating them
- Adverse changes to hydrology affecting existing mossland sites, which are very sensitive to water levels and drying out, which makes them prone to wind blow and erosion.
- There are patches of wet woodland that require restoration to support the ecosystem function of this mossland mosaic and its natural capital values
- Further loss of hedgerows and trees
- The Mosslands are a landscape of open, unrestricted views. However, landfill sites have been located in this area. The flatness of the landscape is very prone to the impact of large scale mounding as occurs within landfill development, as evidenced by the very large site at Silver Lane, Risley
- Mossland woodlands are a haven for wildlife but sensitive to disturbance.

## The Mersey Wetlands Corridor

- The wealth of natural heritage in this area is not well known
- Little effort has been made historically to 'join up' the wetland sites to create an ecologically functional network
- There are physical barriers to aquatic and riparian species migration, such as the motorways which span the area
- There are some redundant structures and disused land (with some areas of historical contamination) in the area
- There has been a decline in quality and quantity of hedgerows and wildflower meadows
- Great Crested Newt populations are important in this area and any potential to increase their distribution and abundance should be explored
- There are significant intrusions into the floodplain landscape including various landfill site with potential future developments including fracking and infrastructure which may further fragment the integrity of the landscape.
- The flood plain has been extensively developed and altered without consideration to its landscape sensitivity. Much of its character is now heavily influenced by industry and communication links.
- Important areas of wildlife and habitat are sensitive to disturbance
- Continued development of building in the flood plain
- Future infrastructure (sewage treatment works and fracking) have the potential to intrude on already sensitive landscape features



## 7 Our Vision, Aims and Objectives

### 7.1 The Vision for the Carbon Landscape

The Carbon Landscape is at the heart of the Great Manchester Wetlands Nature Improvement Area the vision for which is:

*By 2025, Great Manchester Wetlands will be a thriving, resilient and inspirational landscape that delivers real benefits to local communities and the local economy*

The Carbon Landscape is an ambitious project that will make a step change in the restoration of an ancient landscape once devastated by industry. Working together, we will deliver significant landscape restoration and improvements, and enable community engagement in delivering and sustaining these for the future. The result will be a more integrated network of important wetland sites, ensuring maximum impact for the local community, building on local passion and pride, and improving access to this network for the local communities and visitors.

Without action now, we will miss critical opportunities for improvement, and even more pressingly, current threats to the landscape could see areas of this natural heritage damaged or lost forever. We will reconnect local communities with a landscape rich in natural, industrial and cultural history through access, participation and learning activities.

### 7.2 Our Programme Aims and Objectives

To achieve this vision the NIA Partnership has adopted a Strategic Plan for the period 2016 to 2025<sup>5</sup>. This provides the strategic context within which the Carbon Landscape programme has been developed. In accordance with this Strategy and with HLF Landscape Partnership Scheme objectives, the Carbon Landscape Partnership Scheme aims to conserve and enhance the physical fabric of the landscape and promote the benefits arising from helping people connect with it. In addressing this aspiration, the Partnership agreed 3 main aims:

**Aim 1: To restore a derelict landscape, ensuring connectivity and resilience in an area facing significant threats**

The capital restoration programme has prioritised work from recommendations made in the *Interpretation Report*<sup>12</sup>, focusing on land restoration and connectivity, creating and improving 500ha of high quality natural habitats.

**Aim 2: To reconnect people with their landscape through improved access, increased learning and volunteering opportunities**

This aim addresses the need to make it easier for people to access the landscape with improvements to key sites and the establishment of a Carbon Trail and Loops connecting up the landscape and providing opportunities for interpretation. There will be a programme of education and learning to raise awareness and appreciation of the area, complemented by a programme of events, community activities and volunteering.



**Aim 3: To instil pride and engender community ownership in our Carbon Landscape, providing skills for local people, groups and beneficiaries to become custodians for our future**

The future of the Carbon Landscape depends in part on the role taken by local people and this theme provides the inspiration, support, training and skills to enable meaningful involvement and decision making by local people.

In addressing these aims the Partnership established a range of 12 primary objectives which form the drivers for the projects.

Aim	Objective
Aim 1: To restore a derelict landscape, ensuring connectivity and resilience in an area facing significant threats	1.1 Improve 5 flagship sites to create 120 ha of high quality priority habitats
	1.2 Work in partnership with landowners/ managers to improve an additional 380 ha of high quality natural habitats
	1.3 Enhance connectivity with a focus on watercourses and reducing diffuse pollution.
	1.4 Establish ecological baselines to inform decisions leading to the protection of the natural heritage
Aim 2: To reconnect people with their landscape through improved access, increased learning and volunteering opportunities	2.1 Improve 3 Carbon Landscape gateway sites and improve and promote 20km of access routes with a focus on the formation of a Carbon Trail and 3 Carbon loops, with signposting, way marking, and interpretation.
	2.2 Improve the interpretation of the landscape with new facilities at Wigan Flashes and a digital landscape created online.
	2.3 Deliver events and education programmes that build on the themes that inspire 2500 adults and 1200 children about their Carbon Landscape
	2.4 Provide a Volunteer Hub coordinating 500 high quality opportunities and managing 20 Landscape Champions
Aim 3: To instil pride and engender community ownership in our Carbon Landscape, providing skills for local people, groups and beneficiaries to become custodians of our future	3.1 Engage target communities and groups in the Carbon Landscape through 20 projects involving 6000 people.
	3.2 Deliver a training programme for 200 people per year giving at least 50 members the confidence to continue activities long term
	3.3 Employ 9 Landscape Trainees that will help deliver our landscape vision, engaging local people in activity and supporting key local organisations, groups and businesses.
	3.4 Deliver 4 Cultural heritage programmes that will involve 500 people and 10 community groups.



## 8 The Scheme Plan

### 8.1 Introduction

This section describes the different projects that together will deliver the Partnership's aims and objectives. As outlined in 3.1, projects in the Round 1 bid were derived from a selection process using criteria that focussed on aspects including value for money, greatest impact, deliverability and lasting influence. During the development stage these projects were further developed to provide a balanced and deliverable programme that is designed to provide the step change in care and appreciation of the landscape as aspired to by the GMWP.

### 8.2 Projects Overview

The project programme tackles the 3 aims and 12 primary objectives agreed by the partnership. In doing so, a number of important themes and approaches have been adopted that ensure that the proposals are coherent and effective.

#### **Aim 1 Restoring Landscape**

The Carbon Landscape is remarkable in its resilience and in the way it is bouncing back from devastation. Whilst there are many examples of where natural habitats are now prospering, it is true to say that there are many opportunities to further improve environments across the area and to enhance resilience in the face of the threats identified in Chapter 6. Therefore, to ensure proposals are effective and have long lasting benefits, restoration projects have been chosen that feature the following attributes:

##### *Ecologically strategic*

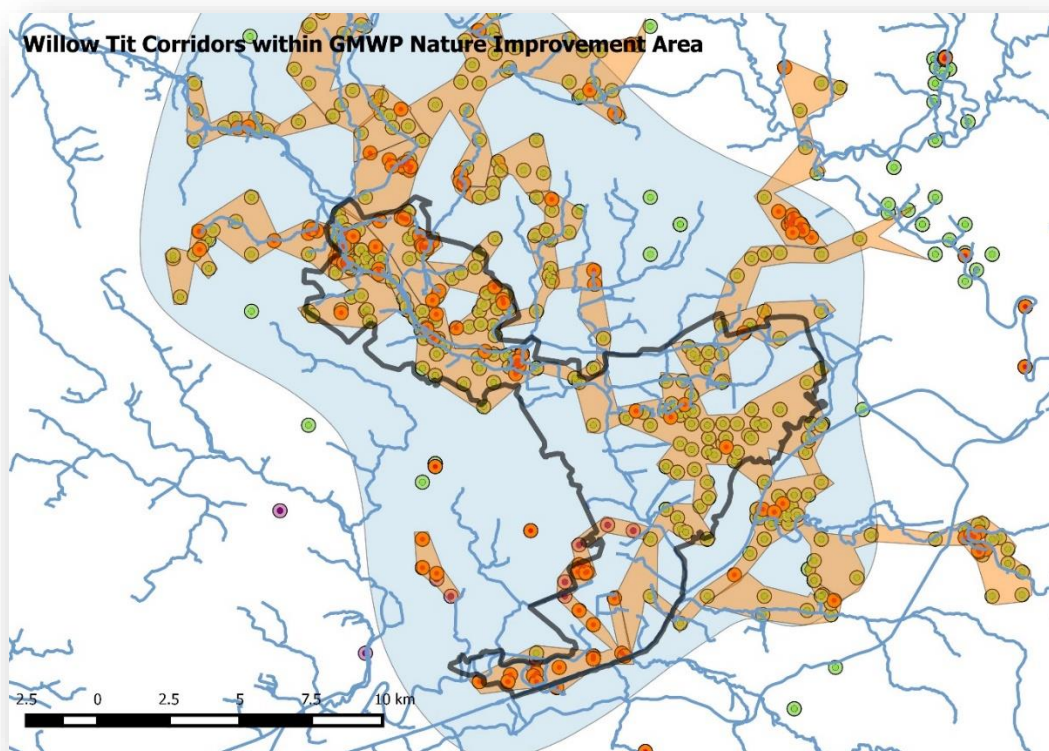
Important work has been carried out by the Technical Group of the GMWP to identify key issues in the landscape relating to ecological connectivity, the threats to habitats and their resilience. This has been achieved by bringing together regional expertise and commissioning activity, such as spatial analysis of LIDAR and soil type data<sup>13</sup>. The proposed projects respond to this work, and as we are able to monitor the outcomes through the Citizen Science project, will further inform our understanding of changes in the ecology and hydrology through our actions.

There is a need to further develop a quantified understanding of the ecological network that underpins the Carbon Landscape area, and this will be achieved during the delivery of the Citizen Science programme and sharing of information that arises. This in turn will help develop a more detailed understanding, and to identify further interventions to continue the trajectory towards ecological resilience.

##### *Improving connectivity*

Increasing the connectivity between sites is important for species movement and growth, and addressing pinch points where this growth is hampered. The work of the GMWP Technical Group is again relevant here, and the designs of the restoration projects have responded to work on priority species.

An example is the analysis of willow tit activity in the area. This species has had one of the largest declines of any British bird and there are now only 3,400 pairs of the endemic sub species in the UK, of which approximately 10% are found within the Great Manchester Wetlands NIA. The movement of the willow tit via corridors is vitally important as they are using the wider landscape as well as the more traditional nature reserves, where much of the land is managed by the Great Manchester Wetlands Partnership organisations. These corridor links can be seen on Map 6.



Map 6

Understanding the location of the best opportunities to improve nesting habitats and movement patterns for the willow tit and other key species is key to making the most effective and investments. The post-industrial nature of much of the landscape means that there are suitable patches of habitat for willow tit found regularly within the landscape. Simple buffering of the known nesting pairs at 250 metres, based on an average territory size of 500 metres, and comparing this to a map of suitable habitat, illustrates where the optimum location for habitat improvement may lie. The Fenscape project will maintain develop wet willow carr in appropriate locations to protect and enhance preferred willow tit habitat. The work of the other restoration projects will also improve conditions for the willow tit.

Work by the partners to date has made enormous progress in repairing the ravages of the past and protecting threatened habitats. Over the longer term, there are now real opportunities to integrate these wetland sites into one unified landscape. This will improve the quality of individual sites, provide stepping stones between sites and create or enhance new sites and wildlife corridors.

### *Achieving sustainability*

There is little point in making cosmetic changes to the landscape that might look impressive initially only to see this change disappear as the habitat reverts back to the starting point after a few seasons. Projects will achieve sustainable change through operations like permanently improving hydrological conditions through altering the drainage system on a given site.

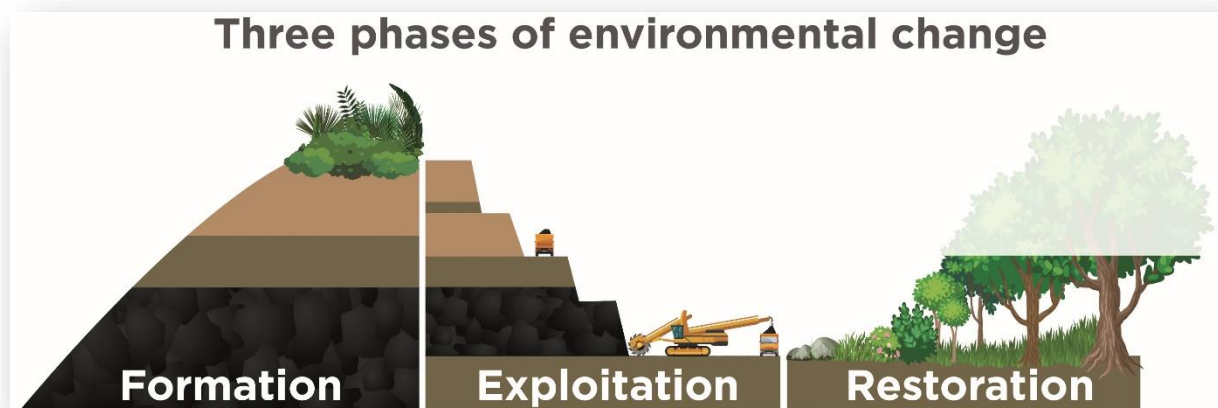
It is recognised that the amount of work on land restoration is limited by available funding and the CLPS will endeavour, through the leadership of the Programme Team, to build on the restoration delivered by the scheme to continue the momentum of improvement. The approach and objectives of this area of work is set out in the R12. Carbon Restoration Delivery Plan.<sup>14</sup>

### **Aim 2 Reconnecting people**

As outlined in 4.4.3, one of the principal attributes of the Carbon Landscape is not its remoteness but rather the close proximity of its high quality natural habitats and wide open spaces to very large numbers of people. However, it is clear that more can be done, firstly to improve the ease with which people can access the area and secondly to raise the awareness, understanding and appreciation of it.

In terms of the former, projects to improve access to the landscape are based on those sites that are recognised locally as priorities for improvement and those that maximise the numbers of people benefitting from those improvements.

For the latter, as outlined in Section 5, through the work of one of the partners, the University of Manchester, it became clear to the Steering Group that the identity and story of the Carbon Landscape is best understood by taking the long term view of the area. By understanding the three phases of environmental change, the landscape's ancient geological **formation**, its subsequent **exploitation** and now its progressive **restoration**, its true value can be appreciated more readily. Through the lens of the RoundView, learning about the industrial and natural heritage of the landscape has powerful implications for the sustainability of the environment and wider society in general.



*Fig 2. Three Phases of Environmental Change*

Utilising the RoundView in the development of projects has provided a clear and unifying narrative throughout the programme which will help to raise awareness, improve understanding and foster appreciation of the Carbon Landscape. Examples using this framework include the education programme, Carbon Clever, and the cultural programme, Carbon Creative and the Carbon Trail.

Using an appreciation of the 'Big Heritage', the three character areas provide different aspects of the Carbon Landscape story, as summarised below.

Mosslands		
Formation	Exploitation	Restoration
<p>All of life depends on the fact that plant can make food out of thin air and sunlight.</p> <p>This landscape has the most extraordinary example of a simple plant form being able to take air and make soil – metres high soil - from nothing but moss.</p> <p>Globally, peatlands store as much as 500 billion times the amount of carbon as all the world's forests". <a href="http://www.scientificamerican.com/article/peat-and-repeat-re-wetting-carbon-sinks/">http://www.scientificamerican.com/article/peat-and-repeat-re-wetting-carbon-sinks/</a></p>	<p>The peat created by sphagnum moss is very rich soil and once drained makes excellent agricultural lands. This area helped feed Manchester during the Industrial revolution as well as during World War Two.</p> <p>Extracting peat has led to significant changes in the landscape, and the interaction of changes to the physical form of the landscape (drainage, roads) and the chemical flows through the landscape (in particular fertilizers) reduces the ability of the peatlands to regenerate.</p>	<p>Re-wetting the peat bogs allows carbon to be captured through photosynthesis (life itself creating the conditions for life to continue). We can sink carbon through life.</p> <p>Restoration involves physical changes as well as reducing the run off of fertilizers and pesticides from surrounding land.</p>
Flashes		
Formation	Exploitation	Restoration
<p>The coal fields in the Flashes are an extraordinary example of fossilised carbon in the landscape. Huge amounts of carbon were sunk out of the atmosphere in the form of coal during the carboniferous period, helping to keep the temperature of the planet cool and appropriate for life. All of this happened in the last blink of an eye within the story of the Earth – but still long before the end of the dinosaurs.</p>	<p>The coal of this area fuelled the industrial revolution, brought in to Manchester on the Bridgewater canal.</p> <p>As the coal was extracted—adding to the overall carbon dioxide in the atmosphere (and hence climate change)—there was subsidence in the area, leading to the formation of the Flashes.</p>	<p>A thriving wetland environment has been created in the area changed by the industrial exploitation of the landscape.</p> <p>Looking forwards, it is time to find alternatives to fossil fuels (such as renewables) for our energy needs. How do we want our future energy generation methods to affect the Carbon Landscape?</p>

Mersey Wetlands Corridor		
Formation	Exploitation	Restoration
Most of the chemicals used in living processes were 'developed' by microbes, long before complex life appeared. Only keratin (the protein of skin and hair), a few plant hallucinogens and snake venom have been created since the early periods of life when only microbes existed.	The Manchester Ship Canal, running through this character area, was used to bring cotton from Americas and India into Manchester. As a plant, cotton is carbon based. New dyestuffs were developed in the industrial revolution to colour this cotton, including many synthetic chemicals based on benzene and dyes using heavy metals – all of which have contributed to land and water contamination. The Rivers Irk and Irwell, which drain into the Mersey, used to run different colours depending on the dye lot that was being used.	There is much still to learn about bio-remediation and managing contaminated land. This continues to be an issue in Risley Moss, where bombs were tested during World War II contaminating the land with heavy metals.  How do we manage without persistent synthetic compounds and heavy metals?  What is the future of innovation and 'green' chemistry?

### Aim 3 Instilling pride

The outcomes of this Aim have a direct influence on the future of the Carbon Landscape. Its long term sustainability and future prosperity depends in part on the level of care and ownership afforded to the landscape by the people on its doorstep. Projects selected within this theme are chosen and developed for their effectiveness to engender the understanding and appreciation of the varied benefits that the landscape provides as well as providing the skills and capacity to become involved in its management and use.

A key task for the Partnership is to create a step change in the rate and the nature of the recovery of the landscape. Historic efforts have led to significant, but in places somewhat piecemeal, recovery. This in turn has led to the areas of valuable biodiversity becoming fragmented. It is only by thinking of the landscape on a much bigger and integrated scale that we can ensure that key ecological corridors and stepping stones, as well as improvements to access, are created in the right places. Crucially, it is recognised that the conservation and enhancement of the natural heritage cannot be done effectively without engaging local communities in this process.

The Sense of Place project builds on the community spirit and enthusiasm in the area to engage people actively in restoration of the landscape, developing connections across the landscape through site level restoration and habitat creation projects. For example, the Sense of Place project has already supported cycling groups in exploring existing paths and access to inform the Carbon Trail project. Working with the friends group in Woolston Eyes has helped develop an innovative, dynamic wetlands project that not only meets local needs for recreation, but has attracted the support of the RSPB due to its innovative nature. This interdependency between community engagement and the development of proposals is a fundamental component of the CLPS approach.

Education activity on Little Woolden Moss



*Species recording with community volunteers*

A primary role of the Partnership is to further engage these communities by providing opportunities for training, volunteering, healthy activities and education enhancement. At the heart of

community engagement is volunteering, and the CLPS will support a volunteer hub. The aims and objectives are set out set out in the *Carbon Volunteers Delivery Plan*.<sup>15</sup>

The unique approach to telling the story of the Carbon Landscape through the Big Heritage of the global life support systems, and linking our understanding of the past to decisions on proposals and actions for the future, has been shown to inspire community members with ideas of what they can do themselves, in their own gardens, schools and through their purchasing. Their actions at home and work as well as in volunteering can help add up to a more coherent and environmentally viable future Carbon Landscape.

## 8.3 Target Audience

The Carbon Landscape is not just a set of natural habitats, but also a functioning amenity that provides a wide range of benefits for local residents and visitors. The value to an urbanised area of a vibrant Green Infrastructure is now well understood and accepted –the Carbon Landscape is a prime example of Green Infrastructure at work. A central purpose of the CLPS is to further develop these functions so that the connections people have with their landscape heritage are strengthened thereby helping to protect the landscape into the future.

As the interrelationship of the Carbon Landscape with its local population is a central feature of the programme then it has been important to establish a clearer understanding of the composition of that population and how to increase awareness and use of the landscape. The *Audience Development Plan*<sup>3</sup> was established during the Development Stage to set out the approach to maximising the benefits of the programme for local people and visitors from further afield. It identifies four areas to address as follows:

1. **Awareness** - about what the Carbon Landscape is and what opportunities it provides for local people and other visitors
2. **Learning** - about the nature of the landscape and the skills and knowledge to participate in its care
3. **Access** – to the landscape and its interpretation
4. **Engagement** – in the conservation and enhancement of the landscape

Eight broad objectives, shown below, have been agreed in relation to these activity areas. Each project has been developed with these objectives in mind and they are reflected in a project’s own objectives where possible and appropriate.

<b>Awareness</b>	
1	Improve communications
2	Provide and support activities and events
<b>Learning</b>	
3	Facilitate education
4	Provide training
<b>Access</b>	
5	Improve gateways, route ways and signage
6	Provide visitor facilities
<b>Participation</b>	
7	Improve opportunities for volunteering in the landscape
8	Provide greater opportunities to engage in cultural heritage activities

Part of the approach has been to identify and respond to real issues and concerns about possible beneficiaries as arising from the consultations during the development stage. These are summarised as:

- High levels of worklessness and benefit dependency. Projects will work with training providers and job support agencies to look at referral process for volunteering, training, the traineeships and practical experiences.
- Low attainment of children and young people, especially in key subjects. Projects will work with local schools to enable them to identify ways in which they can utilise their landscape to teach key subjects.
- Low level of aspiration and low parental attainment. Projects will be targeted at families, as a way for them to appreciate organised activity together and in their own time. Projects will also support ways in which organised activity can continue long term.
- High levels of disability and ill-health. Projects will promote the value of our landscape for health benefits, and how participation in our activities can help address health problems. Our Outdoor Champions project will ensure that activities can continue long term.



## 8.4 Project Detail

### 8.4.1 Table of projects

Outline descriptions of the projects are set out in the table below. Further detail is provided in the 2 page project summaries in Part 2 of the LCAP and in the Project Delivery Plans in Part 3.

Name	Description	Principal Outputs	Total Budget	Lead Partner
<b>Aim 1 Restoring Landscape</b>				
R1 Citizen Science	A major species and habitat surveying project for the whole carbon Landscape area, using innovative software. Spread over 3 years, the project will use volunteer recorders to undertake the monitoring works, using structured survey methods, allowing repeatable and comparable surveillance to be undertaken year on year. In addition to providing comprehensive and detailed data, using volunteer recorders, or Citizen Scientists, provides an important mechanism for involving and immersing people within the Landscape and providing a feeling of ownership of the Landscape, as well providing a cost effective, robust and sustainable monitoring method.	<ul style="list-style-type: none"> <li>-56 volunteers trained</li> <li>-15 Training Workshops delivered</li> <li>-370 surveys completed and submitted <i>and analysed</i></li> <li>-1 sustainable and repeatable survey system and online resources shared for the Carbon Landscape</li> </ul>	£212k	Greater Manchester Ecology Unit
R2 Hey Brook Revival	To deliver a pilot restoration of the riparian habitat within the Low Hall Local Nature Reserve between through the creation of a Sustainable Drainage System (SuDS) during 2017 and 2018. The project will reconnect local people with their landscape by offering opportunities for volunteers to survey the Hey Brook and to deliver a series of practical habitat creation projects. Once the pilot is complete a second wetland project will be delivered in the Carbon Landscape area during 2019 and 2020. The installation of a reed bed will increase the resilience of the landscape by providing additional storm-water attenuation to communities down-stream of the Low Hall reserve.	<ul style="list-style-type: none"> <li>-2 wetland SuDS facilities created</li> <li>-1.3 ha improvements to riparian habitat</li> <li>-2 water quality improvement projects delivered</li> <li>-8 people established as citizen scientists to monitor water quality within the Carbon Landscape</li> </ul>	£36k	Healthy Rivers Trust

Name	Description	Principal Outputs	Total Budget	Lead Partner
R3 Fenscape	Fenscape will create, improve and connect a corridor of fen habitats and other similar wetlands within the urban area of Wigan and Leigh. Through essential capital works and volunteer engagement, the project will improve the area for wildlife and for everyone to enjoy. A programme of bed lowering, ditch creation and blocking, and scrub removal will address this fragmentation creating a connected ecosystem service essential in such a threatened environment. The priority area for a first phase of work is the arc-shaped mosaic of priority wetland habitats between Wigan Flashes and Pennington Flash that follows the Hey Brook Corridor. This forms a conduit that can facilitate wetland species movement through the landscape.	<p>-12 ha fen habitat restored and improved by lowering the reedbed and creating 1500m of new ditching</p> <p>-27 ha of fen habitat restored and improved by scrub removal at sites across Greenheart through volunteer engagement</p> <p>-3 training courses, 2 events and talks to 5 local groups, encouraging involvement from 100 people who will gain understanding and skills in surveying, condition assessment, monitoring, practical action</p>	£167k	Wigan Council
R4 Pestfurlong Moss	The restoration of a rare lowland raised bog habitat through rewetting and scrub and woodland management. The site forms a significant ecological stepping stone between the larger Risley and Holdcroft mosses that it sits between. The site is managed by a local community volunteer group (Friends of Gorse Covert Mounds) and the restoration process will provide an excellent way to engage local residents in the Carbon Landscape. Improvements will feature access path enhancements and boardwalk construction that will simultaneously improve access and protect sensitive areas of the site.	<p>-22 pile dams installed totalling 20m in length</p> <p>-130 m Plygene/peat bund created</p> <p>-200 m boardwalk constructed</p> <p>-230 m access path enhanced</p> <p>-1.9 ha mossland habitat improved</p>	£34k	Carbon Landscape project Team
R6 Risley Moss	A significant project to enhance accessibility within the Mini-Moss bog education area. This will include a raised and fenced boardwalk to replace the existing path made impassable by essential bog restoration work and a formalised walkway within the only section of easily accessible mossland in the area. A raised viewing platform will be installed overlooking newly restored habitat. Another aspect of the project is to complete the rewetting of Risley Moss by blocking the last remaining drainage outlets from the site.	<p>-179 m of fenced raised timber boardwalk created</p> <p>-140 m of pathway created</p> <p>-14 channels blocked</p> <p>-210 m channels rewetted</p> <p>-1.9 ha of priority habitat improved</p>	£47k	Warrington Borough Council

Name	Description	Principal Outputs	Total Budget	Lead Partner
R7 Rixton Clay Pits	The project will link two important but currently isolated areas of Special Area of Conservation. This will be possible by creating a habitat corridor by carrying out practical conservation including tree, scrub and vegetation clearance. The increased wet grassland and linked sites will combine to safeguard the Great Crested Newt Population with the addition of dams for water retention, increasing the wet grassland area by 1.3ha. By improving the public accessibility to desired areas, the visitor experience will be improved without detriment to the Great Crested Newt population. To maintain the projects long term sustainability conservation grazing will be increased.	<ul style="list-style-type: none"> <li>-1.3 ha of species rich wet grassland fen improved</li> <li>-170 m wide habitat corridor opened</li> <li>-2 ponds created</li> </ul>	£44k	Warrington Borough Council
R8 Woolston Eyes Dynamic Wetlands	A new dynamic wetland will be created within a working dredging site—including two new wetland lagoons—resulting in a total of four wetland “cells”. The cells will be managed by controlling water levels in a rotational manner that mimics the historic usage of the site by Manchester Ship Canal Company, as this site straddles this historic Canal. Each cell will be operating at one of the different stages of the lifecycle of a wetland, thus creating a site rich in habitat diversity, including scrub, willow, wet scrub woodland, reedbeds and open water. Taking such an innovative approach to wetland creation and management will ensure the long term sustainability of these wetlands, and provide a long term refuge for the large populations of birds which use and inhabit this site.	<ul style="list-style-type: none"> <li>-40 hectares dynamic wetland</li> <li>-2 wetland lagoons</li> <li>-2 new hides created</li> <li>-2 existing hide refurbished</li> <li>-Site signage</li> <li>-Improved visitor trails and access</li> </ul>	£353k	Woolston Eyes Conservation Group
R10 Paddington Meadows	This site is one of the few remaining areas of historic riverside meadow in Warrington. This project will re-instate the original riverside path and clear scrub and rank vegetation. Key infrastructure features will be secured for an improved visitor experience. Site interpretation will be installed and the creation of zoned areas for reduced disturbance to wildlife whilst maintaining public use will be created. Improved access with seated areas offering riverside views will be provided.	<ul style="list-style-type: none"> <li>-7 ha habitat restored</li> <li>-480 m footpath improved</li> <li>-Site infrastructure and interpretation improvements</li> <li>-Development of a long-term management plan</li> </ul>	£44k	Warrington Borough Council

Name	Description	Principal Outputs	Total Budget	Lead Partner
R12 Carbon Restoration	The project will employ a Landscape Restoration officer who can co-ordinate and promote all landscape restoration projects within the Carbon Landscape and work with partners and other land managers to develop further physical landscape improvements as identified through the Steering Group and Technical Group. The project will provide opportunities for volunteers to be involved in practical conservation work and student placements will support the delivery	-6 projects identified and delivered -£100k funding secured -200 volunteers engaged -5 student placements created	120k	Carbon Landscape Programme Team

Aim 2 Reconnecting People				
C1 Carbon Trail	A programme of physical access improvements to the Carbon Landscape improving gateway sites and developing a 'Carbon Trail' linking key sites between the three landscape character areas. A series three shorter Carbon Trails or 'Loops' will be established that will provide interpretative features and tell the Carbon Landscape story in different ways in each area. Three gateway sites have been prioritised for improvement, based on public and partnership consultation and analysis.	-3 gateway sites improved -1 Trail developed and established -3 Trail loops created -Interpretation features provided -3 planning trail development groups established.	£67k	Carbon Landscape Programme Team
C2 Carbon Volunteers	This project will drive forward essential action for a bigger, better more joined up Carbon Landscape that puts volunteers at its forefront by upskilling, supporting, and enabling local action. It will give local people a voice for their landscape, raising awareness of its importance within the wider community by celebrating its heritage, and developing a sense of pride and place. We have a wide range of landscape scale projects and we believe effective co-ordination of volunteer effort is crucial to the restoration of important habitats addressing areas where connectivity is its priority aim.	-500 volunteers registered and benefitting from rewards and recognition package -20 volunteers trained as Landscape Champions, who directly inspire 500 participants -1 volunteer promotion campaign -500 ha of landscape enhanced as a direct result of volunteer activity	£24k	Carbon Landscape Project Team

Name	Description	Principal Outputs	Total Budget	Lead Partner
C3 Mosslands Gateway	To improve pedestrian and cyclist accessibility to Chat Moss and the wider landscape. The ambition of the plan is to establish cycle routes from the A57 (Cadishead Way) via Irlam Station to New Moss Road (access to Chat Moss). It is widely recognised that the Chat Moss area is poorly connected to the surrounding communities and areas. The recreational possibilities of this project are substantial. The project is dependent in part on the findings of an access feasibility study completed at the end of the Development Stage. The next stage is to confirm proposals.	-Feasibility Study completed July 2016  -Proposals are to be confirmed in Q1 2017	£170k	Salford City Council
C4 Wigan Flashes Visitor Centre	The provision of innovative interpretation materials and signage for the proposed Wigan Flashes Visitor Centre. The Centre will provide a significant visitor attraction where the Carbon Landscape story will be able to be told in an inspiring way. The natural and cultural heritage of the landscape will provide an engaging visitor experience and the Centre will provide a lasting legacy for the CLPS.	-Design and delivery of interpretation materials and signage.  -Proposals are to be confirmed Q2 2018	£110k	Wigan Council
C5 Carbon Connections	A comprehensive events programme to enjoy and celebrate the unique natural and cultural heritage of the Carbon Landscape. The project will interpret, disseminate and promote key messages about the Carbon Landscape project through accessible, relevant and enjoyable activities and events. The programme of events will inspire members of the community within and around the Carbon Landscape to get involved with other aspects of the project and help to link the restoration elements of the programme to the wider social and cultural heritage of the Carbon Landscape.	-Programme of events and activities delivered throughout the 5-years of the Carbon Landscape programme including end celebration  -2,500 participants in the programme of events delivered through Discover the Carbon Landscape  -20 local groups engaged in the programme and contributing to the delivery of the programme  -4 local museums and historical institutions involved in delivering the programme	£62k	Carbon Landscape Programme Team

Name	Description	Principal Outputs	Total Budget	Lead Partner
C6 Carbon Clever	Carbon Clever will provide a variety of learning and engagement activities for children of primary school age. The project will help the project partners instil local pride, connect children with their landscape and increase awareness and interest in the restoration of the Carbon Landscape. It will also enable teachers to deliver the curriculum in an interesting and exciting way that draws on the unique characteristic of the local environment. 40 RoundView and outdoor learning sessions will be delivered to targeted schools in and around the Carbon Landscape.	<ul style="list-style-type: none"> <li>-40 school learning programmes arranged</li> <li>-1,200 pupils engaged in the project</li> <li>-6 sites accessed by local school children</li> <li>-40 teachers trained to use the resource boxes and RoundView materials</li> </ul>	£52k	City of Trees
C7 RoundView	The project will empower the varied 'Custodians of the Future Carbon Landscape' through delivering training, facilitating multi-stakeholder dialogues, gathering and making available the ideas, inspiration and messages generated during these dialogues, and building capacity within the Carbon Landscape to sustain these activities. It will inspire new ways to understand the 'Big Heritage' of the Carbon Landscape and possible futures for this post-industrial area.	<ul style="list-style-type: none"> <li>-16 RoundView in the Carbon Landscape workshops</li> <li>-8 Visioning workshops building upon the first RoundView workshops</li> <li>-8 Facilitators trained and tools and resources provided</li> <li>-1 full day 'RoundView and Interpretation of the Carbon Landscape' event and 5 'The future of the Carbon Landscape with the RoundView'</li> <li>-8 reports on ideas generated, linked with wider CLPS digital resources accessible to all</li> </ul>	£50k	University of Manchester
C8 Carbon Digital	The project will plan and develop a virtual platform for the Carbon Landscape, building educational resources, interpretation material, and an interactive RoundView Game, which will be supportable across multiple platforms from tablet, phone and laptop. These will be housed both virtually, through the Carbon Landscape website, and also within Risley Moss and Flashes Visitor Centres. The project will plan an over-arching virtual experience, of which this HLF project will deliver a component – initial educational resources and early development of the RoundView Game.	<ul style="list-style-type: none"> <li>-1 Virtual Resource Centre – materials developed to support community groups and schools</li> <li>-1 digital interactive RoundView Game</li> </ul>	£96k	Carbon Landscape Programme Team

Name	Description	Principal Outputs	Total Budget	Lead Partner
Aim 3 Instilling pride				
11 Sense of Place	Through supporting community groups to conserve and enhance their local environment, the Sense of Place project will instil pride and engender community ownership in our Carbon Landscape project area. Through conserving natural and cultural heritage the project will engage local people, groups and beneficiaries to become the Custodians of our Future.	<ul style="list-style-type: none"> <li>-1 expanded and supported network – develop existing network of Sense of Place groups</li> <li>-5 new projects developed per annum</li> <li>-12 new groups supported per annum</li> <li>-12 information bulletins per annum</li> <li>-4 networking events per annum</li> </ul>	£131k	Carbon Landscape Programme Team
12 Carbon Skills	The Training programme will deliver two strands of training needs, 'organisational' and 'practical', for community members, volunteers, staff and partner organisations. This training will build on, and complement workshops trialled in the development stage within the Carbon Landscape area, and it will involve community members and partners in shaping the type of training offered. The training programme will enable staff and volunteers to deliver training events themselves.	<ul style="list-style-type: none"> <li>-200 people trained per annum.</li> <li>-20 different training courses and activities per annum</li> <li>-40 people mentored to deliver supported community led events from Y2</li> <li>-1 training network maintained</li> </ul>	£49 K	Carbon Landscape Programme Team
13 Carbon Trainees	Carbon Trainees project offers unemployed people the opportunity to learn traditional heritage and conservation management skills whilst undertaking a traineeship in Environment Conservation. Together with volunteers, they will work alongside, and gain knowledge from, a variety of experts from across the Partnership. They will carry out landscape conservation work in the scheme area by delivering the practical outcomes for all natural heritage and access projects throughout the programme.	<ul style="list-style-type: none"> <li>-9 trainees employed, 3 per year for 3 years</li> <li>-100% success rate of trainees gaining employment</li> <li>-75 Ha of land improved</li> <li>-250 people benefiting from the project that have been supported by the Trainees</li> <li>-170 trained through knowledge sharing workshops</li> <li>-1 analysis and reporting on the ecosystem services delivered by the Trainees</li> </ul>	£194k	Lancashire Wildlife Trust

Name	Description	Principal Outputs	Total Budget	Lead Partner
I4 Carbon Creative	City of Trees will commission at least 4 artists to interpret the unique characteristics and sense of place of the Carbon Landscape. The artists will work alongside members of the community to tell the story of the formation, exploitation and restoration of the Carbon Landscape with a variety of media in different ways to create materials that can be displayed and exhibited within and outside the Carbon Landscape.	<ul style="list-style-type: none"> <li>-4 arts and cultural initiatives delivered</li> <li>-10 community groups engaged in the project</li> <li>-500 members of the community engaged in Carbon Landscape artistic and cultural activities</li> <li>-1 temporary landscape installation created</li> <li>-1 book of creative writing pieces created</li> <li>-1 book of photography and associated exhibition</li> </ul>	£52k	City Of Trees
I5 Outdoor Champions	The Outdoor Champions programme will engage with the natural and cultural heritage of the Carbon Landscape through a structured programme of health walks. The rationale for supporting a 'health walks' focus, reflects both the findings from national and local evidence of effectiveness. As part of the referral programme participants will receive an outdoor exercise offer and behaviour change support over an initial period of 12 weeks as well as monitoring support for up to 6 months after completion. Exercise and health programmes are tailored to fit both health limitations and personal choice. The programme will be delivered within the Flashes, Mosslands and Wetlands Corridor of the Carbon Landscape locality. Activities will also be organised to reflect the ease of access from targeted communities.	<ul style="list-style-type: none"> <li>-6 weekly sessions x 48 weeks per annum</li> <li>-485 new participants per annum (1,455 over 3 years)</li> <li>-30 new volunteers to support the programme over 3 years</li> </ul>	£82k	Inspiring healthy lifestyles



## 8.5 Connections between Projects

The Steering Group has recognised that a successful Landscape Partnership Scheme operates so that the results of its activities are greater than the sum of the parts. During the Development Stage efforts have been made to strengthen the links between projects and remove overlaps in proposed activity. In sharing elements between organisations and projects such as research into species data or liaison and agreements with community organisations and local authorities, additional benefits have arisen such as efficient use of resources and the cross fertilisation of ideas for project development and delivery.

A key result from the Development Stage has been the development, wider understanding and acceptance of the Carbon Landscape story across the Partnership, which has helped to communicate the area's unique heritage and identity. This in turn has influenced the development of the projects by using common approaches and themes such as the Formation/Exploitation/Restoration narrative outlined in 8.2. This has led to a real sense of cohesion and common purpose amongst the project leads and the Steering Group, which was previously in embryonic form.

The Programme Team will perform an important role in maximising the benefits resulting from links between projects. As well as overseeing administration and progress, the team will promote coherence and shared benefits for projects in delivering the following work areas:

- **Communications** - coordination of external promotion and adherence to the *Carbon Landscape Communications and Interpretation Guidelines*<sup>16</sup>
- **Carbon Restoration** – developing priorities shared by the partnership for further habitat improvements
- **Carbon Trail** – developing the proposal for the trail and opportunities for various projects to contribute in its development and use
- **Carbon Volunteers** – establishing and promoting a volunteer hub that coordinates volunteering in its varied forms across the Carbon Landscape
- **Carbon Connections** – overseeing events and community activities in the CLPS so that there is full awareness of opportunities for joint working and support
- **A Sense of Place** – coordination of networking and support for community groups. Facilitation of group sustainability.
- **Carbon Skills** – coordination of the training programme to maximise awareness, participation and reach.

The three aims of the CLPS are closely linked such that, for instance, the cultural programme Carbon Creative is able to help connect people to the landscape as much as instilling pride and increased ownership. It is also true that the projects have interdependences and links. Figure 3 below summarises these links.

	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	R4 Pestfurlong Moss	R6 Risley Mini Moss	R7 Rixton Claypits	R8 Woolston Eyes	R10 Paddington Meadows	R3 Carbon Fenscape	R12 Carbon Restoration	R2 Heybrook Revival	R1 Citizen Science	C1 Carbon Trail	C3 Mosslands Gateway	C4 Wigan Flashes Visitor Centre	C8 Digital Carbon Landscape	C5 Carbon Connections	C6 Carbon Clever	C7 Roundview	C2 Carbon Volunteers	I1 Sense of Place	I2 Carbon Trainees	I5 Outdoor Champions	I3 Carbon Trainees	I4 Carbon Creative	
R4 Pestfurlong Moss	Dark Grey	Orange	Orange	Orange	Orange	Orange	Red	Orange	Red	Red	Orange	Orange	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
R6 Risley Mini Moss	Orange	Dark Grey	Orange	Orange	Orange	Orange	Red	Orange	Red	Red	Orange	Orange	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
R7 Rixton Claypits	Orange	Orange	Dark Grey	Orange	Orange	Orange	Red	Orange	Red	Red	Orange	Orange	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
R8 Woolston Eyes	Orange	Orange	Orange	Dark Grey	Orange	Orange	Red	Orange	Red	Red	Orange	Orange	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
R10 Paddington Meadows	Orange	Orange	Orange	Orange	Dark Grey	Orange	Red	Orange	Red	Red	Orange	Orange	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
R3 Carbon Fenscape	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Red	Red	Orange	Orange	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
R12 Carbon Restoration	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Red	Red	Orange	Orange	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
R2 Heybrook Revival	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Red	Orange	Orange	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
R1 Citizen Science	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Red	Orange	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
C1 Carbon Trail	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
C3 Mosslands Gateway	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
C4 Wigan Flashes Visitor Centre	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
C8 Digital Carbon Landscape	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
C5 Carbon Connections	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
C6 Carbon Clever	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Orange	Orange	Orange	Orange	Orange	Orange
C7 Roundview	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Orange	Orange	Orange	Orange	Orange
C2 Carbon Volunteers	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Orange	Orange	Orange	Orange
I1 Sense of Place	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Orange	Orange	Orange
I2 Carbon Trainees	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Orange	Orange
I5 Outdoor Champions	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange	Orange
I3 Carbon Trainees	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red	Orange
I4 Carbon Creative	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Dark Grey	Red
Direct linkages	Dark Grey																						
Potential linkages, possibly later in the project	Orange																						
Some linkage or reference required	Light Orange																						
Very minimal linkages	Lightest Orange																						

Fig.3. The relative strengths of project links

## 8.6 Programme Delivery

In establishing the most effective way to deliver the CLPS, the Steering Group has maintained the aim to maximise the role of partners in leading projects and to minimise the dependence on a central coordinating team. In developing project proposals during the Development Stage, clarity has been achieved on the roles of project leads and how the programme team will support them. This process has led to confirmation of the optimum Programme Team composition and the nature and role of the team is set out in the *Carbon Landscape Programme Team Plan*<sup>4</sup>

The CLPS will be coordinated by the Programme Team made up of a Programme Manager, 3 project officers, and a support officer. The focus of the 3 project officers links directly to the 3 aims of the programme. The lead partner within the Steering Group, Lancashire Wildlife Trust, will employ the team on behalf of the Group. The Programme Manager will be line managed by the Head of People and Wildlife within the Trust.

The team will report to the Steering Group. The role of each partner within the Group is set out in the *Carbon Landscape Partnership Agreement*<sup>17</sup>. The Programme Manager will be responsible for providing the Steering group with the reports and assessments necessary for the Group to undertake its oversight role. The Programme Manager will also provide regular updates to the Great Manchester Wetlands Partnership.



Fig 4. Proposed Management Structure

## 8.7 Delivering HLF Landscape Partnership Outcomes

All projects delivered through the scheme will achieve more than one of the 9 HLF Landscape Partnership outcomes. These are the nationally defined outcomes that HLF uses to set out what all Landscape Partnerships need to accomplish in terms of heritage, people and communities.

Figure 5 demonstrates the contribution to these outcomes made by the various projects within the scheme, by setting each project against the relevant HLF Landscape Partnership outcome. Where a project contributes to an outcome in some other way (not measured directly by the project outputs), this is also highlighted. The information shows that the projects are delivering a balanced programme across the 9 outcomes.

		HLF Objectives								
		Heritage			People			Communities		
Code	Projects	better managed	in better condition	identified/recorded	developed skills	learnt about heritage	volunteered time	impacts reduced	more engaged	better place to live
<b>Restoring</b>										
R1	Citizen Science									
R2	Hey Brook Revival									
R3	Fenscape									
R4	Pestfurlong Moss									
R6	Risley Moss									
R7	Rixton Claypits									
R8	Woolston Eyes									
R10	Paddington Meadows									
R12	Carbon Restoration									
<b>Reconnecting</b>										
C1	Carbon Trail									
C2	Carbon Volunteers									
C3	Mosslands Gateway									
C4	Wigan Flashes Visitor Centre									
C5	Carbon Connections									
C6	Carbon Clever									
C7	Roundview									
C8	Carbon Digital									
<b>Instilling</b>										
I1	A Sense of Place									
I2	Carbon Skills									
I3	Carbon Trainees									
I4	Carbon Creative									
I5	Outdoor Champions									
		Strong delivery						No delivery		

Fig. 5 Achieving HLF Outcomes

The following table outlines how the programme addresses each of the 9 HLF outcomes:

<p><b>Heritage - Better Managed</b></p> <p>The Great Manchester Wetlands Partnership will become firmly established through this proposal, providing us with a springboard for further activity that can only sustain and increase activity into the long term. We will be able to review the management of individual sites and how they can be connected, improving wildlife corridors and increasing connectivity that is an important part of the NIA concept. The partnership will work with adjacent landowners to ensure connectivity and effective economies of scale through a coordinated programme of activities to ensure we make the most of diminishing resources. We will look at ways to bring neglected and underused land into better management.</p> <p>Wildlife will be surveyed and monitored by recruiting teams of volunteers and Local Naturalist Groups to ensure key sites are regularly monitored. Data will be analysed and the partnership will identify any adaptations required for the protection and enhancement of key species. Research projects will be developed with partners and local education establishments ensuring that key species monitoring will continue long term.</p> <p>Volunteers are at the heart of all of our activities and we need to make sure that good practice is shared, opportunities are better co-ordinated and promoted, so that the volunteer experience can be enhanced, and increased, helping to ensure more effective management of our sites. Throughout the project we will employ Traineeships, sourced from the local population, who can help manage our landscape more effectively. We will explore ways to expand and continue a Traineeship programme, and focus on continued professional development, and retaining the skills developed locally.</p> <p>Although threats from development will never go away, we will develop the ability to influence developments at an early stage and take advantage of any compensation funding that may be available which ensures that our landscape continues to be protected and enhanced. Any development will incorporate alternative and sustainable approaches to land management.</p> <p>Our programme of activities will involve local people to engender ownership of the landscape, and will continue to look after it longer term.</p>
<p><b>Heritage - In better condition</b></p> <p>Our capital works programme in Objective 1 focuses on large sites that are currently underused, neglected, derelict or damaged, which through the Capital Restoration Programme will make an enormous difference for the quality of the landscape. Major restoration works will take place at Rixton Clay Pits, Pestfurlong Moss, Risley Moss, Paddington Meadows and Woolston Eyes, as well as sites throughout our 'Fenscape'. We will be working with adjacent landowners to ensure that restoration works aren't undertaken in isolation and where possible our wetland sites are 'joined-up' to create an ecological corridor.</p> <p>We will expand on the excellent work produced through the Stories of Chat Moss and Lightshaw Meadows, and roll out activities across the landscape, ensuring that all stories collected are used in meaningful and lasting ways so that our cultural heritage will not be forgotten. Our programme looks both back and forward in the story of the Carbon Landscape, exploring how the landscape was formed, how the landscape was been exploited and used over years since the Industrial Revolution, and how the landscape is used, or can be used today for local people.</p>
<p><b>Heritage – Identified/recorded</b></p> <p>Citizen Science is a major species recording project using structured surveying methodology and digital innovation. Working with volunteers, priority species will be surveyed alongside habitat data. The results will provide a clearer understanding of the ecological dynamics of the carbon Landscape and provide an ongoing rationale for habitat management decisions.</p> <p>The physical restoration projects will undertake species and habitat condition recording before the start of the work in order to compare data after works are complete. The Carbon Trail and Loops will provide a mechanism to record and explain the industrial and natural heritage of the 3 character areas.</p> <p>Carbon Creative will capture a wide variety of cultural and industrial heritage through artistic and journalistic activity. The Carbon Digital project will provide the capacity to record and share a broad range of heritage data and stories.</p>

**People - Developed skills**

We recognise that to ensure our landscape heritage is better managed and looked after in the long term, key individuals living and working within the landscape need to acquire the skills in which they can have a continued role within their landscape. We see skilling up individual, groups, local businesses, entrepreneurs and key organisations as an essential part of every activity that the project will undertake.

A Training Programme will include practical land management, animal husbandry, species monitoring, site surveys, data recording, water level monitoring and site inspections, all of which can help volunteers work towards a Landscape Ecology AQA that will be developed through the project. We will train key community groups and local organisation members to continue activities beyond the lifetime of the project. We will recruit, train and support Landscape and Outdoor Champions, skilling up key individuals to become ambassadors for our landscape, helping them to engage with a wider audience.

Our Traineeship Programme will give 9 individuals the opportunity to gain 9 months of experience in landscape ecology and land management, giving local people keen to get a career in conservation a valuable first step on the career ladder.

Sense of Place will provide support to groups and local businesses who want to take an active role on their landscape. Starting with ideas coming directly from the community we will provide support and training to develop the skills of these groups that turn their ideas into reality and possess the skills to ensure activities are sustained.

**People - Learnt about heritage**

We appreciate that key messages, both simple and complex, need different methods that target specific audiences. We will trial out innovative community engagement activities that maximise the opportunities for learning, interaction and involvement with the landscape. A virtual visitor experience will be developed on our website, highlighting the key features and where they can be found, and also some virtual tours to help people get a good understanding of what they can find on each of the sites.

A Schools and Family events programme will be developed that increases use of the key sites across the landscape, and raises awareness and knowledge about how important our landscape is.

The 'Carbon Trail' will be our focus for interpretation and activities about the Carbon Landscape. The Trail and various Loops will stretch across the landscape taking in key features that illustrate their particular influence on the landscape. This trail will be fully waymarked and signposted, with interpretation.

New facilities will be built at the Wigan Flashes, one of the key features on the trail, much needed as lack of facilities is cited as the main reason why more people do not visit the area. We will look at ways to bring new interpretation to life through creative interpretations and digital technology.

**People - Volunteered time**

The development of our landscape vision would not have been possible without the dedication from volunteers that have supported our activities. The level of volunteering on a site by site basis demonstrates the level of interest, however, people are keen to get involved and to get an understanding on how their activity contributes to the bigger picture. Volunteer co-ordination will be essential to ensure we make the most out of our volunteers and recruit new people who can support our vision. We will ensure effective co-ordination and promotion, and ensure there is consistency, and high quality activities provided, while also providing a rewards and recognition programme. Evaluation will help us to evaluate the benefits that people gain from volunteering, as well as providing a mechanism for review so that we can constantly improve on the volunteering experience.

**Community - Impacts reduced**

We are working alongside partners at a national and international level to demonstrate the value that mosslands have for carbon capture. We will be carrying out research work to help demonstrate how this project has a positive carbon footprint.

As a Wetland Partnership our priorities focus on how we can save water, control water storage through natural systems, use natural methods for purifying water e.g. through the extension of reedbeds, and how key sites can be improved for key flood prevention schemes.

With regard to visitor transport, we are keen to target local people to visit the landscape, and make more use of the local facilities rather than travelling further afield for recreational pursuits. Within such an urban area, the ability to travel around the landscape on public transport is very good, and we will be promoting public transport.

Any capital restoration work will undergo an environmental impact assessment, taking the use of sustainable and locally produced resources into account when planning capital works.

**Community - More engaged**

Our community mapping exercise gave us an indication of our current audience profile, and compared with the population demographics for the local area, highlights that improvements can be made to the diversity of people that could take part in our activities. Our consultation has helped us to ensure project activity directly addresses the ideas, concerns and interests put forward by local people and The Sense of Place programme will help target a wide range of groups who represent and involve local people living in and adjacent to our landscape.

Our activities will target those groups that have not experienced their landscape before for whatever barrier there is whether physical, social or psychological. This will be regularly analysed throughout our activities to demonstrate the step-change our activities are making to local communities, in comparison to the baseline data collected during development stage.

**Community – Better place to live**

Our ultimate aim is to create a restored and connected landscape, that is accessible and a better place for people to live, work and visit. At the heart of our activities there is the fact that ideas have come from local people. When developing these ideas we have considered what local group, or local business can be supported and trained to continue these activities longer term.

At least 20 groups will take forward activities that they deliver with minimal support.

Our major capital restoration programme will create a landscape that is cared for and appreciated, taking away any stigma that greenspace can often look derelict, unmanaged or neglected by restoring or improving 500 ha of land.

The Carbon Trail will provide increased and promoted opportunities for accessing the landscape. New and improved visitor facilities that are fun and interactive will ensure people can learn and have fun while enjoying their local landscape.

Stories from our landscape told through creative interpretation, and available on the website, will help people remember how our landscape has been changed and why it is important.

We will ensure that community participation leads to a pride in the area, with the efforts and achievements driven by local people receiving enormous promotional support, and celebrations that involve the wider community.

## 9 Sustainability, Evaluation and Review

### 9.1 The Landscape Partnership's Legacy

Planning the long term legacy of the CLPS's work has been an important component of the development phase. During the project planning process, consideration has been given to how each project can deliver sustainable outcomes that will continue to resonate beyond the 5 years of HLF investment, as summarised below.

Project Aim	Principal Legacy
Aim 1 Restoring Land	<ul style="list-style-type: none"> <li>- Important degraded habitats within the landscape restored and resilience improved for future generations</li> <li>- Delivery methodology for enhancing pilot priority habitat sites established to build on in future years</li> <li>- Ecological connectivity between habitats improved to support species diversification and growth</li> <li>- Water courses improved for biodiversity and diffuse pollution reduced</li> <li>- Ecological baseline data established to inform decisions leading to the protection of natural heritage</li> </ul>
Aim 2 Reconnecting people	<ul style="list-style-type: none"> <li>- Access to the landscape permanently improved and routes through the environment enhanced</li> <li>- The Carbon Landscape story shared and celebrated through a new visitor centre on the Flashes</li> <li>- A schools activity programme established to deliver learning activities in the Carbon Landscape</li> <li>- Establish a volunteering network to enable sustainable community activity</li> <li>- Interpretation – on the ground at key sites, in publications and online – enabling a deeper understanding of the Carbon Landscape's heritage</li> </ul>
Aim 3 Instilling Pride	<ul style="list-style-type: none"> <li>- A sustainable network of active and effective community groups caring for the landscape</li> <li>- A wide variety of adults trained to contribute to the ongoing care of the landscape heritage</li> <li>- Life chances improved of trainees drawn from the local population through vocational heritage skills training</li> <li>- Historic environment better recorded and 'at risk' features prioritised for future investment</li> <li>- Cultural responses to the landscape developed and shared and first-hand accounts life in the landscape recorded and available for public to read and listen to online</li> </ul>



### *Partnership*

The physical restoration programme will provide sustainable habitat improvements that create a more connected and resilient environment. Alongside this improvement, the existence of the Nature Improvement Area and its Great Manchester Wetlands Partnership provides the strategic support for the delivery of CLPS objectives into the future. Over the next 5 years the partnership will have become firmly established, with partners confident in each other's abilities, and looking for ways in which we can work jointly on particular schemes. Partners will have achieved a significant improvement to our landscape that relevant partners are committed to maintaining and we will continue to work together to improve the landscape. Development will continue to threaten the landscape but we will be in a stronger position as a partnership to secure compensation, and work with developers to incorporate sensitive land management practices into any future developments.

The CLPS will attract wider membership and commitment from more landowners to ensure that our sites of special wildlife importance are more joined up and in better condition. Pinch points that will ensure climate change resilience will be improved and protected.

### *Local engagement*

A central theme in the programme will be to engage people in learning about and participating in the landscape. At the end of the project, volunteers will be more committed, confident and competent to help monitor and manage the landscape. Opportunities will continue to be better co-ordinated and promoted. Tasks such as monitoring key species will have teams of volunteers and Local Naturalist Groups fully equipped to build on the important baseline surveying completed during the scheme. Throughout the partnership we explore ways in which we continue a Trainee programme, looking at ways in which their activity can be sustained through contract work.

Our programme of activities will involve local people to engender ownership of the landscape, who will continue to look after it longer term. This includes providing skills for individuals, groups, local businesses, entrepreneurs and key organisations as an essential part of every activity that the project will undertake. Our key ambassadors will have received all necessary training to continue to support activities. Everyone that leads group activities will be encouraged to join the Carbon Landscape network that will continue to ensure groups support each other, sharing best practice. The Trainee Programme will have given 9 individuals the skills and experience necessary to continue a career in conservation, ideally continuing to support activity within the Carbon Landscape.

We will have reached 10,000 people through activities and workshops, giving every person we meet some key message, new story or amazing fact that we hope will stay with them forever. The Carbon Trail and the Virtual Carbon Landscape will continue to provide interpretation about the Carbon Landscape, and we will continue to explore ways to help people to learn about our landscape, expanding our interpretation facilities.

From a cultural heritage perspective, the history of our landscape will be captured through stories and art features. We will explore ways in which these stories will continue to be promoted and remembered by our communities. The website will continue to be maintained by the GMWP, with updates of ongoing events and activity. Social media will continue to be regularly updated through volunteer contributions. By the end of the project we will have encouraged more people and a wider range of people to access, enjoy and appreciate our landscape. We are confident that once people know how to gain access to particular sites, they will continue to do so. All partners will continue to promote key sites, events and volunteering opportunities.

## 9.2 Monitoring and Evaluating the Partnership

Monitoring the progress of the programme and evaluating its effectiveness are fundamental to achieving success. A clear methodology is therefore required and this is set out in the *Monitoring and Evaluation Plan*<sup>18</sup>.

### 9.2.1 Monitoring

Monitoring is the process of gathering data so that evaluation can be undertaken. Monitoring measures the outputs of the projects through a series of indicators. All projects are therefore required to set out the following elements in project delivery plans:

- The aims of the project
- The project activities
- The outputs
- The output indicators
- The outcomes
- The outcome evidence
- The LP outcomes achieved

Each project has been required to set out these elements in the project plans and to provide quarterly monitoring reports during the delivery stage. Good records of what has been done are essential and projects are required to assemble baseline data and explain how the data is to be collected before the project starts.

Outputs on each activity will be monitored on a spreadsheet that will show a running total of outputs achieved since the start of the project, alongside target figures for each activity. Photographs and other recording information will be assembled at all activities where consent has been provided by all participants. This will provide a portfolio of all activity and will contribute to end of year reports and promotional work.

The Programme Manager will ensure that any potential slippage is identified at an early stage. Direct support, partner and team meetings, one to ones, and continuous review every month will ensure that the project can be adapted as required.

#### National Output Data Collection

The Programme Team will be required to assemble programme wide outputs from projects at the start of the delivery stage, at the mid-point and at the end of the delivery stage. Pre-determined output categories are set out in standard spreadsheets supplied to the team.

## 9.2.2 Evaluation

Evaluation will be conducted by external consultants who will be appointed on a two stage basis as set out in the *Monitoring and Evaluation Plan*. Projects themselves will be undertaking their own monitoring and the data will be utilised in overall CLPS evaluation. Examples include the Sense of Place and RoundView projects, which will be measuring changes in appreciation and understanding of the Carbon Landscape over the lifetime of the programme.

Review and assessment will also be undertaken on a quarterly basis by the Programme Manager in order to allow appropriate adjustments in the programme to ensure successful delivery of the agreed outputs and outcomes.

## 9.3 Adoption and Review

The Carbon Landscape Steering Group reviewed the draft Landscape Conservation Action Plan at their meeting on 4<sup>th</sup> August 2016. After due consideration, the Group formally adopted the Plan. The final version of the LCAP is held by the lead partner, Lancashire Wildlife Trust and all Steering Group members and GMWP members have a copy. Part 1 of the LCAP will be published on the Landscape Partnership website and will be available to download to any interested individuals and organisations.

The LCAP, in particular the project plans, will provide the basis for the work programmes of the project officers and lead partners, coordinated by the Programme Manager. So as to be able to react to changing circumstances, either because of issues relating to project delivery or external factors, the LCAP will be reviewed annually. The Programme Manager will be responsible for preparing the review and proposing any changes, which will then be scrutinised and approved by the Steering Group.

## 10 Sources of Information

### 10.1 References and supporting documents

Ref	Title	Author	Date
1	Carbon Landscape - Landscape Character Assessment	Robin Gray CMLI	Mar 2016
2	Carbon Landscape Community Workshops Report	Paul Mahony, Countryside	May 2015
3	Carbon Landscape Audience Development Plan	Carbon Landscape Steering Group	August 2016
4	Carbon Landscape Programme Team Plan	Carbon Landscape Steering Group	August 2016
5	GM Wetlands Strategic Plan 2016-2025	Great Manchester Wetlands Partnership	April 2016
6	Geodiversity and the Carbon Landscape	GeoLancashire and the Greater Manchester RIGS Group	May 2014
7	Mapping Community Engagement in the Great Manchester Wetlands Partnership	Dr. Joanne Tippett and Dr. Angela Connelly. Manchester University	Dec 2013
8	The Natural Choice-securing the value of nature	Department for Environment, Food and Rural Affairs	June 2011
9	RoundView Development Stage Final Report	Joanne Tippett, The University of Manchester and Fraser How	August 2016
10	Arup Research Report - 'A natural capital led evaluation of The Mosslands'	Phillip Aspden – ARUP Consulting Engineers	August 2016
11	Pathways through the Landscape in a Changing Climate: The Role of Landscape Structure in Facilitating Species Range Expansion through an Urbanised Region.	Gilchrist, et al, A., Barker, A., & Handley, J. F.	2015
12	The Carbon Landscape Interpretation Report	Tom Squires. Natural England. GMWP Technical Group	May 2014
13	"Mapping Potential wetland habitat in Greater Manchester"	Tom Higginbottom et al, Manchester Metropolitan University	May 2016
14	Carbon Restoration Delivery Plan	Carbon Landscape Steering Group	August 2016
15	GM Wetlands Volunteer Strategy	Carbon Landscape Steering Group	August 2016
16	Carbon Landscape Communications and Interpretation Guidelines	Carbon Landscape Steering Group	August 2016
17	Carbon Landscape Partnership Agreement	Carbon Landscape Steering Group	August 2016
18	Carbon Landscape Monitoring and Evaluation Plan	Carbon Landscape Steering Group	August 2016



*Puddle reflection. Little Woollen Moss. Photo: Rob McDonald*