

# The Big Green City

The Green Infrastructure Strategy for Carlisle City  
and District

Rebanks Consulting Ltd

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# EXECUTIVE SUMMARY

## The Big Green City Vision

**To make Carlisle one of the best places in the UK to live, work, invest, visit and enjoy life, and to do this by creating a green and sustainable city region that is distinctly its own place and not a clone of everywhere else.**

**By capitalizing on the great landscapes in the city region, the quality of its open green spaces, and its other environmental assets the city region will create communities with an exceptional quality of life, and robust health and wellbeing. It will be an excellent place for business, communities and wildlife.**

**Through adopting a progressive approach to green infrastructure, the city region will face future economic, social and environmental challenges and risks confident in its own distinctiveness, strength and resilience.**

## Why Carlisle needs this strategy

This document seeks to present a new vision and strategy for the City and the District that builds on the uniqueness and distinctiveness of Carlisle, the abundance of environmental and landscape assets it has, and the potential for it to more effectively attract and retain talent, trade and tourism in the future. This strategy is about how the city region can grow effectively and appropriately whilst avoiding some key pitfalls. It will contribute to effective spatial planning and place shaping by ensuring that new development takes account of its relationship to existing and proposed green spaces in the District.

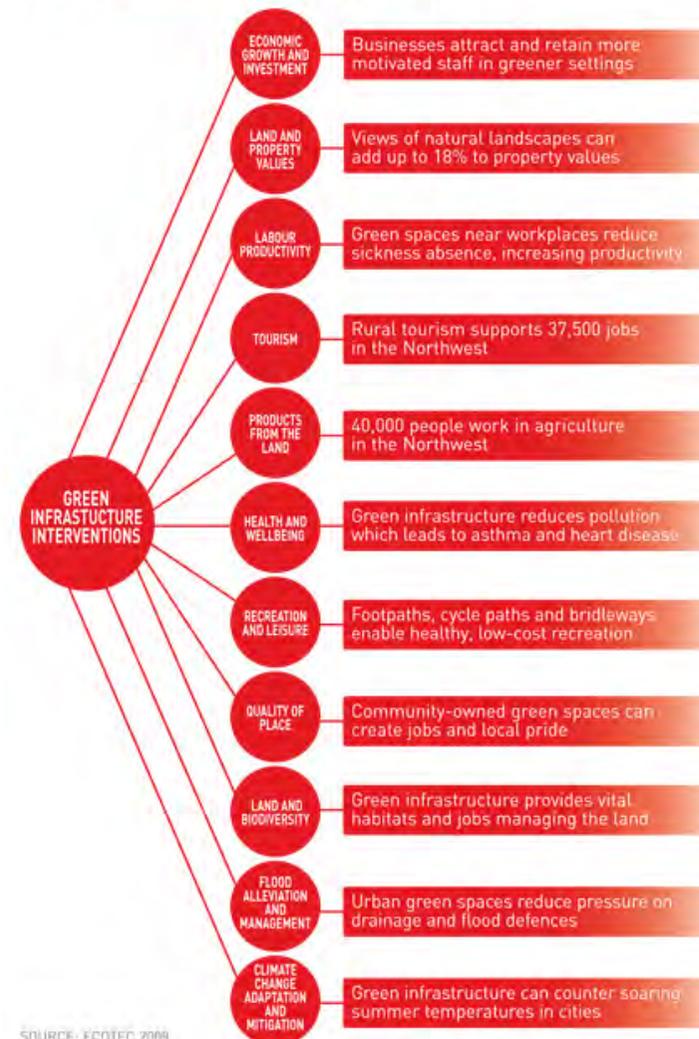
The growth of Carlisle in decades to come presents an opportunity to create healthy, active, cohesive, sustainable and bio-diverse communities, with a high quality of life and wellbeing. This requires a vision and strategy for how to ensure that all the stakeholders responsible for the growth and evolution of the communities understand the vision, the strategy and key principles that need to guide that evolution and development. This strategy is about managing the process of growth and evolution to ensure it is high quality, effective and sustainable. This strategy seeks to set out a road map for moving from the vision to a city region where it is realised.

## What is green infrastructure?

Green infrastructure is a term used to describe the living network of green spaces water and other environmental features in both urban and rural areas. It is often used in an urban context to cover benefits provided by trees, parks, gardens, road verges, allotments, cemeteries, woodlands, rivers and wetlands. Green infrastructure is also relevant in a rural context, where it might refer to the use of farmland, woodland, wetlands or other natural features to provide services such as flood protection, carbon storage or water purification. Green infrastructure maintains critical ecological links between town and country. Green infrastructure strategic analysis is about creating a holistic approach to understanding and developing networks of natural assets within their landscape context that are maintained, enhanced or created to fulfill identified economic, social and environmental needs within an area.

Increasingly it is recognised that green infrastructure is a key mechanism for driving economic growth and regeneration, and to improve public health, wellbeing and quality of life. It can also support biodiversity and the effective functioning of natural systems such as rivers and flood plains to help reduce the vulnerability of communities to negative events like climate change and flooding. The type and quality of such benefits will be affected by the size, quality, location, physical characteristics and connectivity of such assets to intended beneficiaries. This is why having a coherent strategy is critical.

Figure 1: The economic benefits of green infrastructure



## **A fusion of economic and environmental aspirations**

This vision should be a fusion of environmental and socio-economic aspirations. The future of Carlisle should be about a city that is both sustainable and resilient with high quality habitats and biodiversity, but it should also be about improving the quality of place of Carlisle's communities. Despite the potential for tensions these aspirations can be mutually compatible, with a greener city creating the setting and context for new development and regeneration of communities that need support. The environmental changes that can make Carlisle attractive to inward investment, tourism and economic development can also make the city region more resilient to future challenges.

**There are four benefits of a progressive approach to green infrastructure for Carlisle. Below we list them, with the core message emerging from our research and analysis:**

## **Four key benefits for Carlisle**

### **ONE**

#### **Image and Perception**

Carlisle needs a more positive quality-of-life-based inward investment message, and to focus on the aesthetic impression it creates. This is partly about celebrating and communicating Carlisle's existing environmental assets, and partly about investing strategically in improving perceptions of the urban communities through improving the aesthetics and environmental quality of key areas over time. This new narrative can provide Carlisle with its unique selling point – the Big Green City - and the catalyst for creating a great place to live, work, invest or play.

### **TWO**

#### **Growth - spatial and economic**

Carlisle must ensure that its growth and development is fit-for-purpose, adds value, and is considered strategically. The growth of the city contains great opportunities but also potential risks, with the impacts of current decisions likely to be experienced for many decades. The spatial growth of the city offers an opportunity to create sustainable and integrated communities with a high quality of life. To grow effectively Carlisle also needs to add value to its land-based products and tourism experiences. Green infrastructure can be used effectively to create the setting and stimulus for economic growth, as well as making it sustainable.

### **THREE**

#### **Quality of life**

Quality of life is critical to Carlisle's socio-economic future, potentially providing Carlisle with a green competitive advantage. Carlisle's wealth of open green spaces and its high quality surrounding landscapes are a key tool for enhancing quality of life (particularly for the poorest residents). Green infrastructure is a key tool for tackling health (including mental health) and wellbeing inequalities and deprivation across the city region – it should be sustained and enhanced to deliver on key public health objectives.

### **FOUR**

#### **Sustainability and resilience**

At the same time as pursuing its socio-economic objectives Carlisle can make itself a more sustainable, bio-diverse, and resilient city region. Green infrastructure can deliver against these other benefits whilst simultaneously creating habitat, increasing biodiversity, adapting to climate change and mitigating the risks of flooding and urban heat island effect. A growing city region creates challenges, but also opportunities to future-proof the city to meet future environmental, social and economic challenges.

The strategy takes each of these themes and makes a series of recommendations for how green infrastructure can enable and support the growth of the Big Green City.

#### **The need for intelligent design**

In each of these four benefit areas a key message emerges, which is that a growing city is as good or as bad as its design. The past decade has seen a raft of new evidence that has demonstrated that the urban (and rural) environments we create play a major part in determining how we live. Everything from whether we cycle or walk to work, play sports, interact with our neighbours, feel safe, eat healthily, our CO2 emissions, our cost of living, our risk of heart attacks or diabetes, and even our sense of wellbeing and ability to cope psychologically with our daily lives, can be shaped and influenced by the design of our communities and degree of green infrastructure that surrounds us. The social, economic and environmental cost of bad design is too high to ignore. If Carlisle is to realise its potential then it will need a commitment from stakeholders to a strategic approach to its future development.

#### **Turning the vision into reality?**

There is a lot of work to take this strategy and turn it into commitment and buy-in from the wider range of stakeholders who would need to support it to make the vision a reality. If this strategy is to have a lasting and sustainable impact it will need to be adopted and championed by a committed group of champions. Its supporters need to identify and enlist high profile champions of the Big Green City vision as the future narrative for Carlisle, and develop a grass roots ambassador scheme to champion it in communities.

## Conclusion

We are living through the most severe financial crisis since the 1930s. Public spending cuts, being implemented at present, are the deepest in living memory. Some people will question this strategy, and imply that the 'environment' is effectively a luxury item fundable in the good times but a luxury when the going gets tough. This view is mistaken. There has never been a better time to take stock of realities and look to the future with a clear vision of progressive change. This report encourages stakeholders to consider green infrastructure as important not just for environmental reasons, but also for social, cultural and economic reasons as well. It seeks to champion the idea that green infrastructure can be central to the economic recovery, and future growth of Carlisle as a community and an economy. It places green infrastructure at the heart of 'placemaking'.

**Carlisle can secure real comparative advantages over its competitors by focusing on creating a great, green, dynamic and confident northern community. In doing this it can avoid the sad fate of being just another 'clone city'.**

**In short, getting smart and strategic about green infrastructure can be good for business, as well as biodiversity.**

# Headline Statistics

## Image and perception

**65% of international inward-investment decision-makers say they are increasingly finding it hard to differentiate between different locations – with many places becoming indistinguishable ‘clone towns’**

**Of these, 92% of the inward investment decision makers surveyed stated that the ‘image and profile’ and ‘quality of life’ of a location is becoming more influential in their decision-making.**

**‘Agreeable climate and environment’ has been rated the second highest factor determining inward investment decisions (67% of respondents).**

**Carlisle district is 97% green infrastructure (within the urban settlement 70% is green infrastructure).**

## Growth – spatial and economic

**The evidence shows that green infrastructure is a core economic development issue - creating the setting for investment.**

**Proximity to parks and other open green spaces adds 3-11% to property prices, views of trees add up to 7% to property prices.**

**Carlisle’s current green infrastructure will provide c. £25.6 billion of total benefit in the next 50 years: c. £3.8 billion contribution to Carlisle’s GVA, and £21.8 billion of other economic value.**

**The Carlisle of the future is being created now – it may grow by between 450 and 600 dwellings per year in future.**

**Over the next 50 years existing green infrastructure will result in c. £77 million of residential land and property value uplift.**

## Quality of Life

**Lack of physical exercise costs the NHS 2-3% of its budget. Establishing universal and equitable access to green infrastructure would save England £2.1 billion per annum.**

**Green spaces encourage activity that reduces obesity, type 2 diabetes, coronary heart disease, and reduce respiratory disorders.**

**The existing green infrastructure in Carlisle city region will provide £10.8 billion of benefit in reduced mortality from provision of attractive opportunities for exercise in the next 50 years.**

**Just looking at green spaces or natural views improves mental health and wellbeing, and reduces stress even in the most deprived communities.**

**The 10 most deprived super output areas in Carlisle have on average 27% less green infrastructure cover than the 10 least deprived areas.**

**There will be 40% more people over 65 in Carlisle in 20 years time.**

## Sustainability and Resilience

**Existing green infrastructure in Carlisle city region will provide £1.6 billion in energy and carbon emission savings from reduced storm water volume entering sewers over the next 50 years.**

**Existing green infrastructure could save Carlisle city region £79 million in avoided costs for air pollution control measures in the next 50 years.**

**Green infrastructure can play a significant role in reducing flooding; a 10% increase in green cover in urban areas can reduce water run off by 5%.**

**Existing trees and woodland will in Carlisle city region could store £249 million in carbon stored and sequestered in the next 50 years. Street trees can filter out up to 70% of air pollution and can reduce childhood asthma by as much as 29%.**

**If tree cover in Carlisle were increased by 10% on all green spaces, an additional £25 million in carbon stored and sequestered could be realised in the next 50 years.**

# Assets - a simple overview analysis

	Whole district	Inside Carlisle settlement boundary	Outside Carlisle settlement boundary
Agricultural land	53.87%	20.48%	54.99%
Allotment, community garden or urban farm	0.02%	0.63%	0.00%
Cemetery, churchyard or burial ground	0.03%	0.94%	0.00%
Coastal habitat	0.98%	0.00%	1.01%
Derelict land	0.05%	0.80%	0.02%
General amenity space	1.23%	4.84%	1.11%
Grassland, heathland, moorland or scrubland	18.98%	7.92%	19.35%
Institutional grounds	0.27%	2.83%	0.19%
<b>Not GI</b>	<b>3.20%</b>	<b>29.15%</b>	<b>2.33%</b>
Orchard	0.01%	0.01%	0.01%
Outdoor sports facility	0.39%	6.53%	0.18%
Park or public garden	0.08%	2.29%	0.01%
Private domestic garden	1.39%	17.06%	0.87%
Street trees	0.07%	1.52%	0.03%
Water body	0.17%	0.13%	0.18%
Water course	0.84%	1.44%	0.82%
Wetland	1.21%	0.01%	1.25%
Woodland	17.20%	3.40%	17.66%

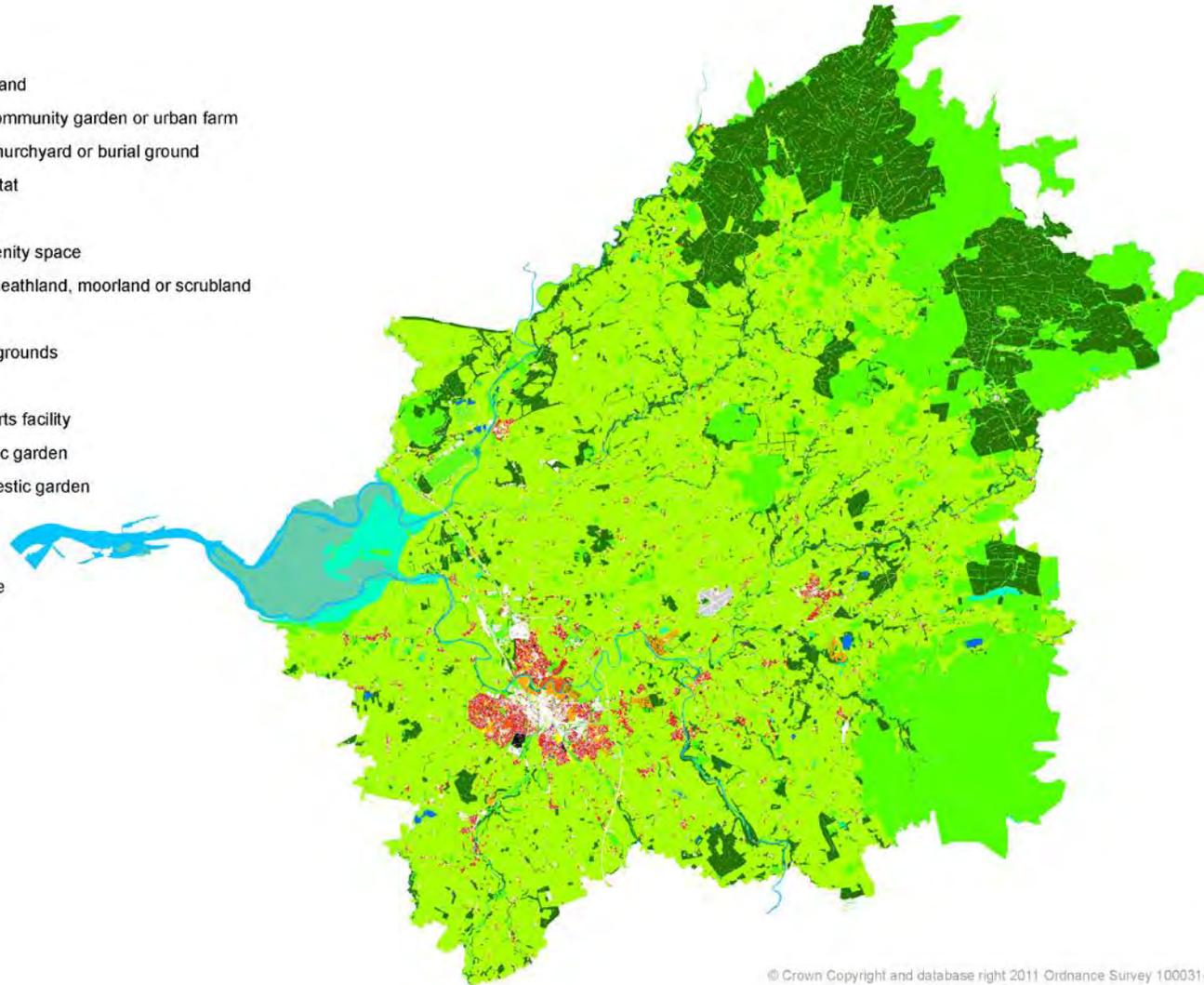
Analysis of the different types of green infrastructure highlights the wealth of green infrastructure in Carlisle.



# Master typology map for Carlisle District

## Typology

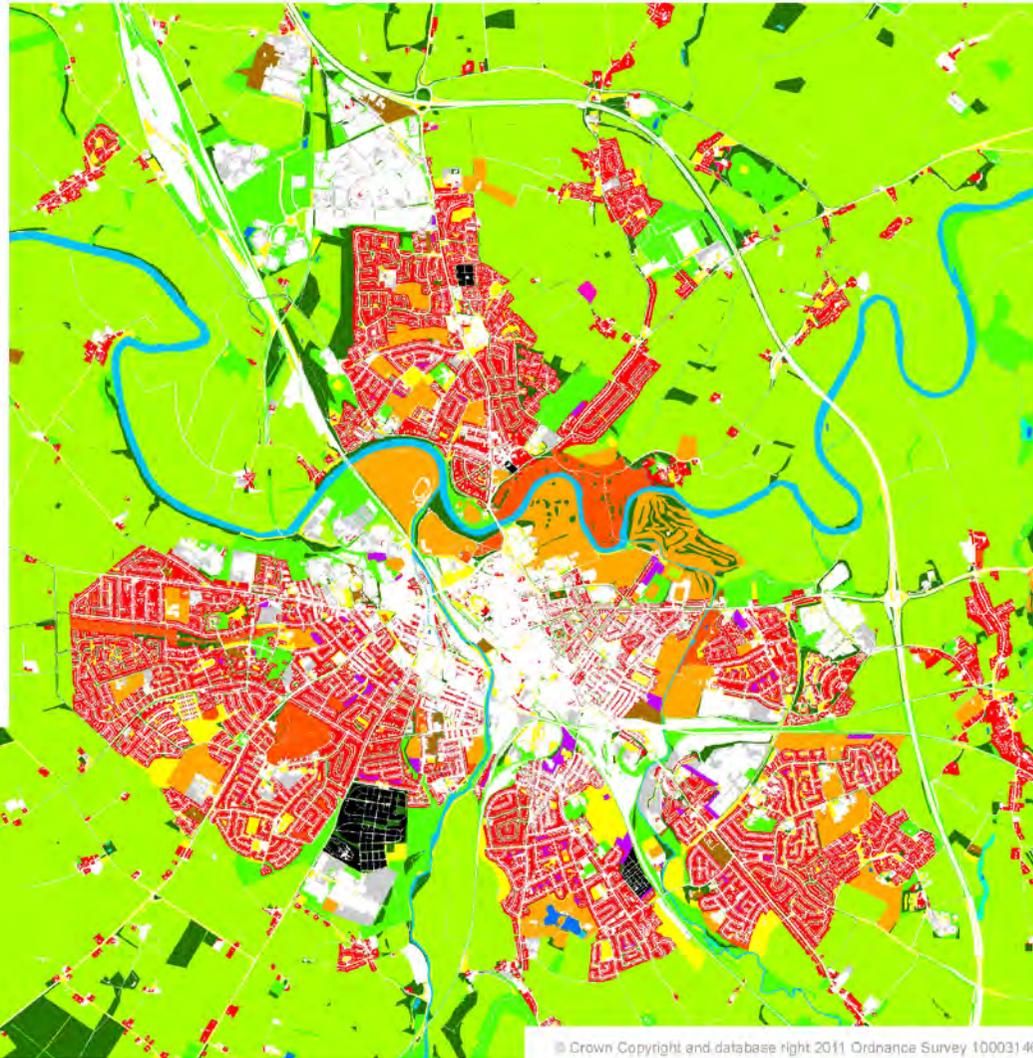
- Agricultural land
- Allotment, community garden or urban farm
- Cemetery, churchyard or burial ground
- Coastal habitat
- Derelict land
- General amenity space
- Grassland, heathland, moorland or scrubland
- Green roof
- Institutional grounds
- Orchard
- Outdoor sports facility
- Park or public garden
- Private domestic garden
- Street trees
- Water body
- Water course
- Wetland
- Woodland



# Master typology map for Carlisle city area

## Typology

- Agricultural land
- Allotment, community garden or urban farm
- Cemetery, churchyard or burial ground
- Coastal habitat
- Derelict land
- General amenity space
- Grassland, heathland, moorland or scrubland
- Green roof
- Institutional grounds
- Orchard
- Outdoor sports facility
- Park or public garden
- Private domestic garden
- Street trees
- Water body
- Water course
- Wetland
- Woodland



# SECTION ONE

# Introduction: Who commissioned this work? And why?

Rebanks Consulting Ltd (in association with Mersey Forest Partnership) were commissioned by Carlisle City Council in March 2011. The strategy was commissioned as part of the Local Development Framework process. The strategy provides some of the Evidence Base required for the identification of issues, options and opportunities in the District.

The strategy will contribute to effective spatial planning and place shaping through influencing policy formulation and thus ensuring that new development takes account of its relationship to existing and proposed green spaces in the District and connections to it.

Another key function of the strategy is to guide the management of the City's parks and green spaces over the next two decades, but it is also a strategy for communicating a collective commitment from stakeholders to some core principles and strategic outcomes that can deliver strategic solutions to enable Carlisle to meet current and future challenges.

The strategy was created independently for the City Council and represents an external objective approach to the challenges. And provides a working strategy that the City Council and other stakeholders can use as the starting point for future developments.

This is a difficult economic climate, and a difficult time for stakeholders to make long-term commitments. But we hope this report will encourage stakeholders to have faith in the value of green infrastructure in Carlisle's future, to see that it is more important for Carlisle's future than it is for many other communities, and to recognise that a joined-up and strategic approach to delivering solutions is in everyone's interests.

We present the strategy as a working document that can be updated and revised to reflect future changes. Some of its recommendations can be pinpointed to specific spatial areas, and are relevant in the short-term (1-4 years), others have a longer timescale and require ongoing research, specialist input from partners and stakeholders, and an inclusive approach to development.



## Definition: 'Green Infrastructure'

The 2011 Government White Paper *'The Natural Choice'* defines green infrastructure as follows:

**"Green infrastructure" is a term used to refer to the living network of green spaces, water and other environmental features in both urban and rural areas. It is often used in an urban context to cover benefits provided by trees, parks, gardens, road verges, allotments, cemeteries, woodlands, rivers and wetlands. Green infrastructure is also relevant in a rural context, where it might refer to the use of farmland, woodland, wetlands or other natural features to provide services such as flood protection, carbon storage or water purification. Green infrastructure maintains critical ecological links between town and country. Around the country local partnerships are seeking to use green infrastructure to drive economic growth and regeneration and improve public health, wellbeing and quality of life. It can also support biodiversity and the functioning of natural systems such as rivers and flood plains and help reduce the negative impacts of climate change."**

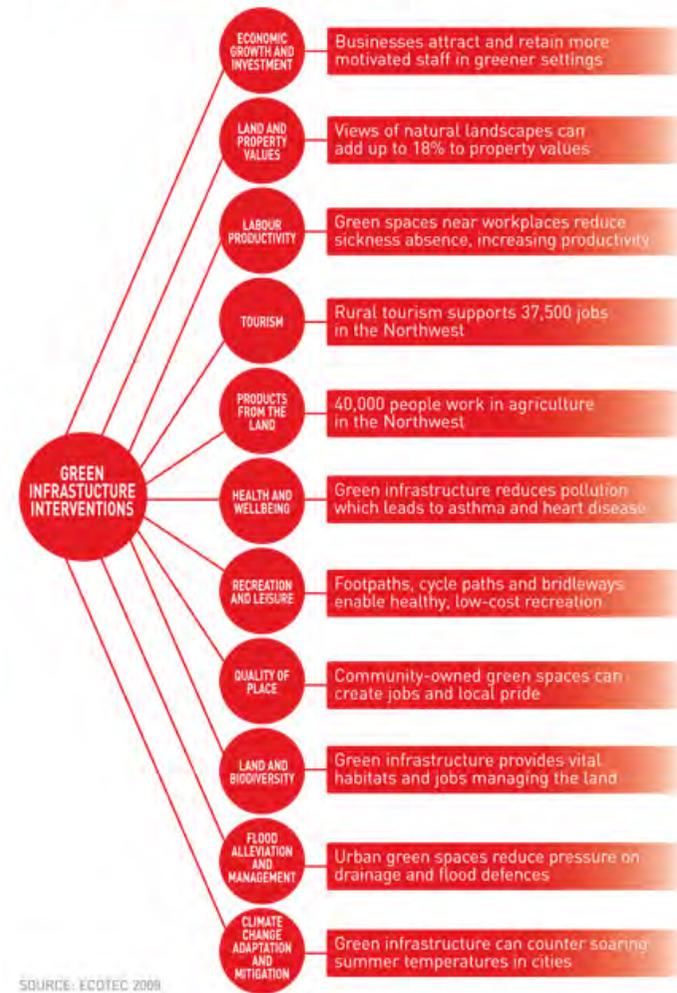
It goes on to say that the Government **"...will support local areas to improve the provision and state of green infrastructure. We will work with local authorities and civil society organisations to demonstrate the social, economic and environmental benefits that green infrastructure can provide"**.

# Green infrastructure?

Green Infrastructure (GI) is a holistic approach to understanding and developing networks of natural assets within their landscape context that are maintained, enhanced or created to fulfill identified economic, social and environmental needs within an area. GI assets include a variety of open and green spaces and other smaller scale environmental components such as street trees. These assets can be considered at a landscape scale, such as within the context of a National Park; or at more local scales such as within the urban fabric of towns and cities like Carlisle. Green Infrastructure can deliver a suite of benefits. The type and quality of such benefits will be affected by the size, location, physical characteristics and connectivity of such assets to intended beneficiaries.

The natural environment provides a range of social, cultural and economic benefits. These benefits are derived from investment to maintain and/or enhance the green infrastructure of an area in order to sustain or boost its ability to deliver ecosystem services. The Natural Economy NW project has developed a checklist of 11 themes used to help communicate the economic benefits that green infrastructure can deliver<sup>1</sup>. This checklist is useful as a basis for setting out a strategy for Carlisle that explains the role of green infrastructure not as a virtuous 'add-on' but as actually a key driver at the heart of a dynamic vision. Carlisle deserves to be a great green city.

Figure 1: The economic benefits of green infrastructure



<sup>1</sup> North West Green Infrastructure Guide ([www.greeninfrastructurenw.org.uk](http://www.greeninfrastructurenw.org.uk)).

## The approach explained

The biggest challenge we faced was the sheer complexity and multi-faceted nature of green infrastructure in Carlisle. Unlike early green infrastructure strategies that tended to have a focus on the greening of predominantly urban spaces, Carlisle is actually a very large overwhelmingly rural piece of geography. The result is a quite different kind of GI strategy. It is relatively easy, and relatively formulaic, to create a green infrastructure strategy for the already converted. It is much harder, riskier and challenging to create such a strategy for a wider audience.

**A comprehensive analysis of every individual GI asset in Carlisle City and District; this would have been impossible and too detailed to create a clear strategy**

**The duplication, replication or replacement of existing strategies for every element of green infrastructure in Carlisle City and District is not attempted.**

**The recommendations are suggestive until further research is undertaken and a partnership approach taken to implementation.**

It is important to be clear about this, as the need in Carlisle is to make the case and provide a vision for how green infrastructure can be repositioned as an issue, and stakeholders are united in agreeing that a highly technical green infrastructure strategy which was overburdened with site-specific detail would not achieve these aims. The need is for a clear strategic vision and

strategy for Carlisle District, the detailed implications for individual sites and communities will be the result of the broad-brush strategy being supported by stakeholders. It is also important to note that there are myriad strategic documents that this strategy relates to; this document seeks to pull key strands from many of these without unravelling what are often complex specialist subject fields. The ambition is for this document to enable many of the other strategic documents more effective, but readers looking for a comprehensive assessment of some of the issues should look to these existing strategic documents as a parallel resource.

Our interviews with the client group at inception, and our early interviews with external stakeholders made it clear to us that numbers alone would not suffice. This work has to be at least in part about making the case for green infrastructure as part of Carlisle's growth and evolution. Our approach has instead been to provide an overview analysis of the green infrastructure assets and issues in Carlisle City and District and from that to provide a strategy which stakeholders can coalesce around for future action. This will inevitably mean simplification and focus on core issues at the expense of comprehensive detail on every individual site. The methodology was to use every mechanism to identify the issues, challenges and to identify the scope for progressive strategic solutions. Our work had ten steps or stages;

# The 10 steps in the approach

## **STEP ONE UNDERSTANDING THE ISSUES**

Interviewing, listening to, and understanding the views and perspectives of stakeholders (and particularly communities of interest and users) on key green infrastructure issues. To 'get inside their heads' about whether they understand, or value, green infrastructure<sup>2</sup>. As part of this we had meetings with some representatives of the allotment associations, friends groups for parks, residents associations, parish councils and other relevant organisations. We consulted face to face with more than 50 residents and organisational stakeholders.

## **STEP TWO UNDERSTANDING/OBSERVING THE COMMUNITIES USE OF ITS GREEN INFRASTRUCTURE**

Site visits, and observing how the communities use their green infrastructure. We took the great Jane Jacob's advice was that the only way to understand a place is to walk it. We spent a week walking around, through and between Carlisle's green spaces.

## **STEP THREE DESK-BASED RESEARCH**

Extensive desk-based research of all the relevant analysis, strategies and policies concerning Carlisle's green infrastructure took place. The wide-ranging scope of green infrastructure analysis means that it touches on many policy and strategic objectives and makes this a daunting task.

## **STEP FOUR ONLINE CONSULTATION**

It was recognised that not everyone who wished to engage with the consultation process could meet, one-on-one, or would be able to attend the stakeholder event, so an online consultation platform with an online survey was set up to enable people to comment and input.

## **STEP FIVE ACCESSING THE BEST DATA AVAILABLE AND ANALYSING IT**

Stakeholders were contacted to access the data on green infrastructure and related variables. This was a surprisingly difficult process that took many weeks, but which enabled our analysis to be as accurate as is possible using current green infrastructure GIS analysis.

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<sup>2</sup> We would be the first to acknowledge that we were not able in a piece of work with ambitious objectives and a finite budget to speak to everyone one-on-one. We hope stakeholders will recognise that we managed to speak to a remarkable number of people given the resources available. We would also suggest that this work is the beginning of a more progressive strategic approach to managing green infrastructure and that it should have a future life of its own which will require strong relationships between stakeholders.

## **STEP SIX STAKEHOLDER CONSULTATION ON THE EMERGING ISSUES**

A stakeholder event was held for approximately 50 stakeholders at Morton Manor community centre on July 15 2011. Where we asked stakeholders to think strategically about interventions through green infrastructure to deliver strategic objectives like improved health or an improved image for the city. This session was extremely helpful in influencing the finished strategy.

## **STEP SEVEN ECONOMIC MODELLING/ANALYSIS**

Economic modeling of Carlisle's green infrastructure was undertaken using the Green Infrastructure Economic Valuation Toolkit developed by Economy North West, the leading evaluation toolkit of its kind in the UK.

## **STEP EIGHT GIS MAPPING OF ASSETS, FUNCTIONS, TYPES, AND NEEDS**

Extensive GIS-based mapping analysis of the green infrastructure issues in Carlisle took place. This provides the necessary data to highlight the spatial nature of the issues, and identify areas of greatest need for interventions.

## **STEP NINE CONSULTING WITH DELIVERY PROFESSIONALS**

Discussions were held with Carlisle City Council managers and members to explain the initial findings of research, and to test initial hypotheses, and to explore the implications of recommendations with members involved in the development of the Local Development Framework, and in Development, Management; also with officers whose professional lives relate to the issues this strategy will touch upon.

## **STEP TEN DEVELOPING THE RECOMMENDATIONS**

Making recommendations to Carlisle City Council and other stakeholders about how to implement the strategy with appropriate champions and partnerships.

The above stages culminate in this report (**the Big Green City Strategy**), which is designed to capture the process and the evidence base.

This report has provided the raw material for a **short advocacy document** to distribute to external stakeholders.

The GIS maps and data we have created will enable Carlisle City Council and partners to take this first step and progress beyond it in the future. Stakeholders should take this strategy as a starting point not an end in itself.

## Which area does this strategy cover?

This strategy covers the full area of Carlisle District including the city itself, but also the satellite communities and the very large rural hinterlands and open countryside that it covers. More often than not green infrastructure strategies are for largely urban areas and this gives them a certain focus; the uniqueness of this city that is overwhelmingly rural posed challenges to the analysis.

On some key points the city is the natural object of focus, so when discussing quality of life for deprived communities, or commercial development then it is legitimate because of the socio-economic realities to focus on the settlement are of the city. So at times we have zoomed in and unashamedly focused on the areas where the majority of the impact of a given measure would be most significantly realised. Where we have done this it is because the issue is disproportionately weighted for some reason to the urban settlement area.

On other key points the wider District is the natural object of focus, so when discussing the connectivity of the wildlife sites, or adding value to food produced on the District's farms then we have zoomed out and taken a wider look at the issues. It is recognised that there are no perfect solutions to such dilemmas and the reader may occasionally be frustrated by the geographical focus.

We would urge tolerance as we recognise that whilst we may illuminate or demonstrate some of the key themes with reference to one geographical area more often than not the lessons and solutions can, and should, be applied, to other communities. For example, many of the issues that will affect communities due to the growth of the city by potentially several thousand homes in the next decade or two, are best demonstrated with reference to the growing urban settlement of the city. But the issues highlighted will be equally relevant and applicable in some cases, to smaller developments in other communities in the District. Where possible we have tried to draw attention to this, but our goal has been to make the point most effectively.

Sometimes this has meant a focus on the urban areas of the city, and at other times on the wider District and surrounding landscapes. The work has created tools that stakeholders can use in the future to focus on specific issues and specific spatial areas.

## This is a strategy that tries to reach new audiences

This document tries to do something very difficult. To create a green infrastructure strategy that inspires and engages a lay audience (by which we mean those people who are not professionally engaged in 'environmental' or 'green' management and issues).

There are some technically accomplished green infrastructure strategies which perhaps do not have the impact they might have because they are written and presented in terms which work very well for those people familiar with the language and concepts of green infrastructure, but which are difficult to digest for the non-specialist.

Approximately 100 community and organisational stakeholders across Carlisle and beyond were consulted: local councillors, local business people, officers from funding organisations and local authorities<sup>3</sup>. We learnt something fairly simple to grasp but very difficult to address: namely that many people don't understand the terminology and jargon of green infrastructure. We believe that people cannot value or champion something if they don't understand it – so we have tried to create a strategy that works for someone coming across these issues for the first time (this is particularly true of the shorter advocacy document).

This approach reflects an acknowledgment from stakeholders that fundamental decisions about the future of green spaces in

and around Carlisle are taking place, and are likely to take place increasingly in the next few years and that some form of macros strategy needs to inform those decisions. Sometimes stakeholders will not all agree, and will reach different conclusions about specific sites or issues. Sometimes in the development of the city region there will be choices, trade offs and compromises and those people engaged in decision making will face difficult choices about green infrastructure. This strategy will not solve or prevent all of these tensions, but we hope that it may stimulate a debate about the future of the area, and result in a degree of consensus on core principles and objectives. This process may take some time after the completion of this strategy, and will always be a work in progress.

Central to winning over new audiences is, making the case for how green infrastructure can deliver for communities a better socio-economic future. Too often external stakeholders see this as a peripheral issue, or a luxury item, rather than something at the heart of economic development. The thematic chapters marshal, where necessary, the evidence and best practice examples that will need to be understood if people are to accept and 'buy into' this case making.

In the pages that follow analysis is presented that is necessarily complicated at times as clear recommendations are presented on a range of complex issues. The key messages, conclusions and recommendations can be scan read by the reader with limited time. The opening and closing sections of each chapter summarise the key information.

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<sup>3</sup> We have also recently undertaken parallel research for Culture Cumbria that involved similar interviews on the same subject, which took in another 30-40 external stakeholders.

## What does this strategy result in? What are the outcomes from this work?

The world is full of strategies that gather dust on shelves and achieve precious little despite the resources invested in their creation. Our intention is that this strategy avoids this fate by being very clear about the outcomes it is supposed to deliver. In summary, this strategy tries to do the following things:

**Increase understanding of the socio-economic value of green infrastructure to the communities of Carlisle**

**Meet the City Council's obligation to consider green infrastructure in the development of the emerging Local Development Framework**

**Provide a vision and strategy for green infrastructure in the current and future city region**

**Develop recommendations for stakeholders to ensure that Carlisle meets its legal, policy and strategic objectives through effective management and enhancement of green infrastructure**

**Provide technical tools and know-how to empower stakeholders to run with our initial analysis and implement recommendations**

**Initial guidance on how the recommendations can be implemented**

**Starting to build a consensus about the future of Carlisle's green infrastructure**

How will we know if it works or not? It may not be easy to measure the outcomes of some of these aims, as they are partly subjective. For example, we have already witnessed a change in the rhetoric of some stakeholders due to the 6 months or so of events and consultation we have undertaken, with councillors and officers showing a greater sense of confidence in Carlisle's strengths and its future, but this is very difficult to evidence or 'prove'. Increasing understanding will always be relatively subjective. The measure of success for the vision and strategy is how many of its recommendations are adopted by key stakeholders in the months following its completion. The aspiration is that the recommendations within this strategy become part of the Local Development Framework informing the development of the District for the next decade or longer. It is proposed that this document will result in a supplementary planning note and other guidance which will make it clear to developers and other stakeholders what the vision and aspirations are, giving people a clear framework for a growing city region. But the bigger picture of whether this strategy is effective or not will be judged most effectively in a decade's time. If Carlisle embraces best practice with green infrastructure then it will be a bigger and better place than it is today. If it doesn't it may pay the price of the mistakes for decades to come. Our work has delivered the following outputs:

**Collection of existing assets/data**  
**A strategy and vision document**  
**A shorter advocacy document**  
**Provisional GI economic analysis**

**GIS mapping/data tools and methods**

# The structure of the strategy

This strategy follows a relatively simple structure.

## **Executive Summary**

See above. This forms the heart of the short published Big Green City strategy. It necessarily focuses on those elements that we judge to be the most important for key audiences.

## **Section One**

Introduction to the strategy, and green infrastructure, explaining where this work came from, the aspirations and drivers behind it, the work it builds upon, who it is aimed at, and what it aims to achieve. This section explains the methodology, definitions, and approach of the report.

## **Section Two**

Is made of the four thematic chapters: Image and Perception, Growth, Quality of Life, and Sustainability and Resilience. Each chapter takes the same format: starting with a summary of the key points, then an exploration of the issue, then a brief description of Carlisle's relevant green infrastructure assets, then an explanation of how those assets can address the issue, then a summary of the recommendations with maps where appropriate.

## **Section Three**

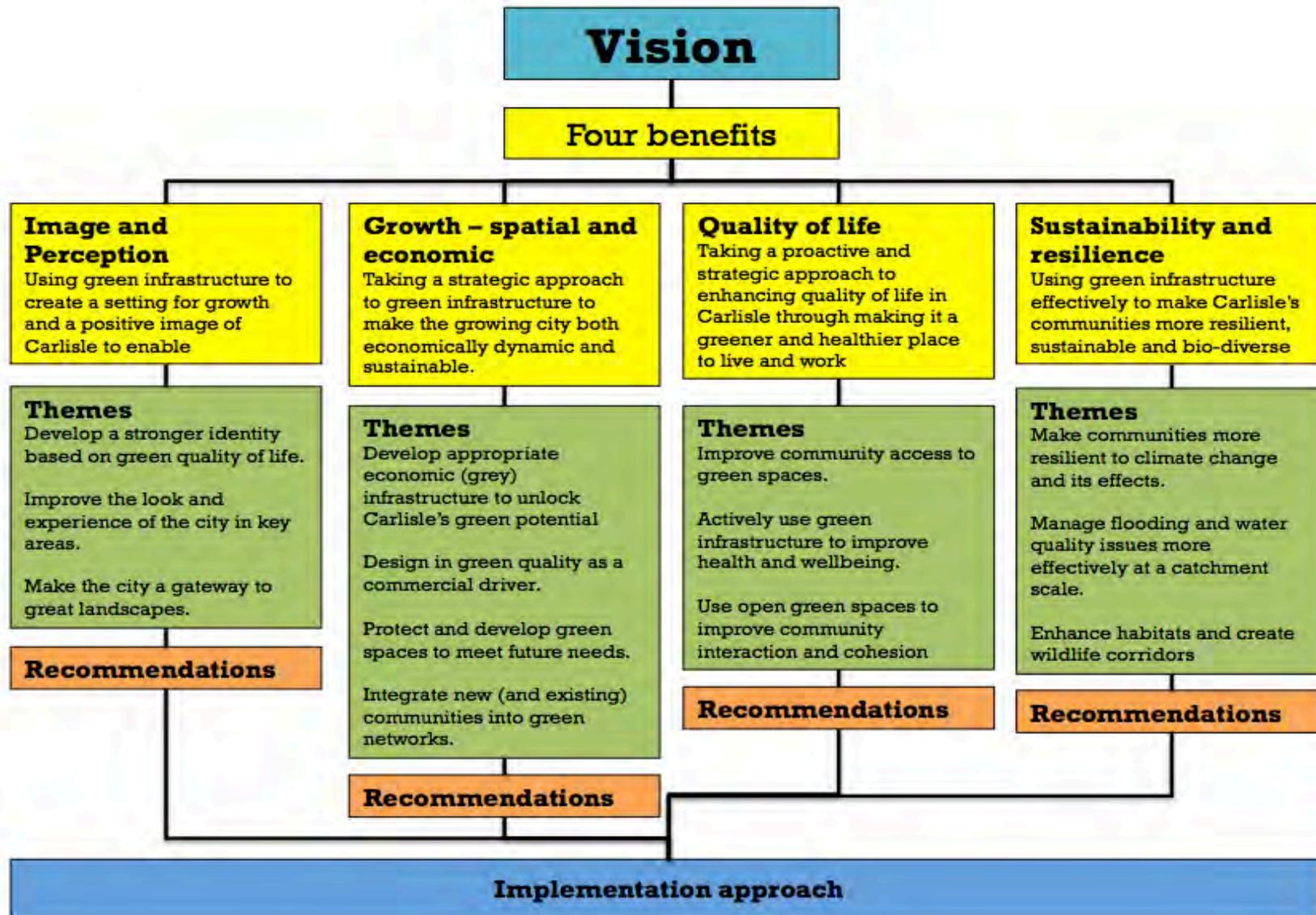
Is the conclusion and suggests ways in which the aspirations in this strategy can be turned into actions and delivery.

## **Section Four**

Is the Appendices A and B and supporting information, though some of the data and maps that were used to develop this strategy are too numerous and lengthy to lend themselves to reproduction in this document. These will be handed over to Carlisle City Council. The GIS mapping used to support this report is a useable process not a finite outcome, and is a tool for future use.

Dividing the strategy under these four thematic headings was done to explain the value and future potential of green infrastructure in a contextual framework that is understandable and relevant to the core stakeholder groups.

An effective green infrastructure strategy needs to be effective needs to be understandable to stakeholders whose primary concerns are not purely environmental, but about the growth of a city which earns its keep through a range of economic sectors, and which has many day-to-day social and economic concerns. However, before moving into the thematic chapters there is an important point to be made, namely that these thematic benefits do not exist in isolation, inspired and progressive green infrastructure interventions often deliver against multiple social and economic objectives. The diagram below shows the structure:



# Prototype Economic Impact Assessment – a £25.6 billion issue?

The strategy benefits from economic impact analysis undertaken by the Mersey Forest Partnership using their prototype Green Infrastructure Valuation Toolkit. The toolkit was developed since 2008 by a project steering group including Natural Economy Northwest, the Northern Way, Natural England, the Commission for Architecture and the Built Environment (CABE), Design for London, and Tees Valley Unlimited, working with consultants (Genecon LLP) and with support from the Department for Environment, Food and Rural Affairs, the Regional Development Agencies in the North of England<sup>4</sup>. Like any other prototype in a difficult field it has significant margins of error that can compound at scale, but until other models evolve it is a useful way to illustrate the scale of economic value possible.

The toolkit was developed to provide a valuation framework for assessing the potential economic and wider returns from investment in green infrastructure and environmental improvements. The toolkit was developed to create the economic valuation tools required by stakeholders who are increasingly having to deliver vital public services in the face of severe

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<sup>4</sup> See the project's website for more detailed explanation of its methodology, limits and constraints:  
<http://www.greeninfrastructurenw.co.uk/html/index.php?page=projects&GreenInfrastructureValuationToolkit=true>

austerity measures and who are under pressure to make every penny of investment from the public purse count. The key findings of the economic toolkit are as follows: Over the next 50 years, if its functionality is preserved, Carlisle's green infrastructure will provide the following benefits:

## **A £3.8 billion contribution to GVA including**

- £1.8 billion in tourism expenditure and employment generated by tourism
- £1.6 billion in energy and carbon emissions savings from reduced stormwater volume entering sewers
- £285 million in employment supported by land management
- £77 million in residential land and property values uplift
- £8 million in reduced absenteeism from work, and

## **£21.8 billion of other economic value including:**

- £10.8 billion in reduced mortality from provision of attractive opportunities for exercise

- £10.8 billion in willingness to pay for protection or enhancement of biodiversity
- £249 million in carbon stored and sequestered in woodland and forests
- £79 million in avoided costs for air pollution control measures

The green infrastructure valuation toolkit also enables us to illuminate the value of potential scenarios to ascertain their economic value. For example:

**If tree cover in Carlisle District were to be increased by 10% on all existing green space, an additional £25 million in carbon stored and sequestered would be realised, along with many other benefits that aren't valued in the toolkit.**

**If 50km of new footpaths were created, an additional £700 million in reduced mortality from provision of attractive opportunities for exercise would be realised, along with many other benefits that aren't currently valued in the toolkit.**

**If 100 hectare of new green space was created, an additional £1.6 million in energy and carbon emissions savings from reduced stormwater volume entering combined sewers and an additional £4.4 million in willingness to pay for protection or enhancement of biodiversity would be realised, along with many other benefits that aren't currently valued in the toolkit.**

The Green Infrastructure Valuation Toolkit is one of the best available models for valuing the complex social and environmental goods created by green infrastructure in the UK. We would, however, highlight the fact that it is a prototype, providing only 'indicative values' and does not yet fully value some environmental goods and services due to lack of, or incomplete data. What the toolkit does count is designed to be robust enough for initial project appraisal, providing a range of figures indicating the potential impacts or impacts of existing assets.

It is also important at the outset to highlight that valuations such as this also need to be seen as part of a much bigger picture. Although there are dangers of using "market mimicking" techniques, other non-market but positive benefits need to be kept in mind. The benefits it measures are felt over a 50-year period, and are 'net additional benefits (there is no double-counting of benefits). The final monetized statistics are indicative only. A single figure does not reflect the range of sensitivities and values that the toolkit creates. Interventions need to be strategic and not driven by a simplistic potential economic gain figure. Future work on toolkits like this will address some of these issues. The detailed spreadsheet analysis that underpins the findings will be held by Carlisle District Council as a tool to be revisited and refined in the future. On the following page the summary results for the economic valuation are presented:

<b>BENEFITS</b>			<b>BENEFIT MONETISATION</b>		<b>BENEFIT QUANTIFICATION</b>	
<b>Benefits groups</b>	<b>Functions</b>	<b>Tools</b>	<b>GVA value</b>	<b>Other economic value</b>		
<b>1 Climate Change Adaptation &amp; Mitigation</b>	Shelter from wind	1.1 Reduced building energy consumption for heating	£550,440	n.a.	2664480	kWh/yr energy saved
		1.2 Avoided carbon emissions from building energy saving for heating	n.a.	£129,595	540,889	kgCO <sub>2</sub> /yr not emitted
	Carbon storage and sequestration	1.7 Carbon stored and sequestered in woodland and forests	n.a.	£248,986,858	57,696	kgCO <sub>2</sub> sequestered
			<b>£550,440</b>	<b>£249,116,453</b>		
<b>2 Water management &amp; Flood Alleviation</b>	Interception, storage and infiltration of rainwater	2.1 Energy and carbon emissions savings from reduced stormwater volume entering combined sewers	£1,617,006,992	n.a.	241,653,600,000	L/yr water diverted from sewers
			<b>£1,617,006,992</b>	<b>n.a.</b>		
<b>4 Health &amp; Well-being</b>	Provision of attractive opportunities for exercise	4.2 Reduced mortality from increased walking and cycling	n.a.	£10,756,197,535	518	lives saved per yr
	Air pollution removal	4.6 Avoided costs for air pollution control measures	n.a.	£78,896,657	80.55	t/yr of carbon monoxide removed
					281.93	t/yr of sulfur dioxide removed
					251.72	t/yr of nitrogen dioxide

					634.34 714.89	removed t/yr of PM10 removed t/yr of ozone removed
			n.a.	£10,835,094,192		
<b>5 Land &amp; Property Values</b>	Setting for higher value residential and commercial properties	5.1 Residential land and property values uplift	£77,463,965	n.a.		n.a.
			£77,463,965			
<b>7 Labour Productivity</b>	Attraction and retention of high quality staff	7.3 Savings from reduced absenteeism from work	£7,844,202	n.a.	Between 2,637 14,062	and work days lost avoided per yr
			£7,844,202	n.a.		
<b>8 Tourism</b>	Tourism attraction	8.1 Tourism expenditure	£1,430,788,781	n.a.	7400000	Visitor days
		8.2 Employment supported by tourism	£386,698,706	n.a.	2542	FTE jobs
			£1,817,487,487	n.a.		
<b>10 Biodiversity</b>	Provision, protection and enhancement of natural habitats	10.1 Willingness to pay for protection or enhancement of biodiversity	n.a.	£10,756,560,183	34796	Ha of land w/ biodiversity value added
			n.a.	£10,756,560,183		

<b>11 Land Management</b>	Land management	11.2 Employment supported by land management	£284,759,623	n.a.	1601 FTE jobs
			£284,759,623	n.a.	
<b>TOTAL ECONOMIC VALUE OF BENEFITS (NPV)</b>			£3,805,112,708	£21,840,770,828	
<b>TOTAL</b>			£25,645,883,536		

# SECTION TWO

# IMAGE AND PERCEPTION

# DEVELOP A STRONGER IDENTITY BASED ON GREEN QUALITY OF LIFE

## Summary

**If Carlisle is to counter negative and outdated perceptions then it needs to focus tourism and inward investment marketing on the Big Green City strengths. Carlisle needs a powerful inward investment message that ‘sells’ its green quality of life as a commercial advantage when married to its potential space for commercial growth.**

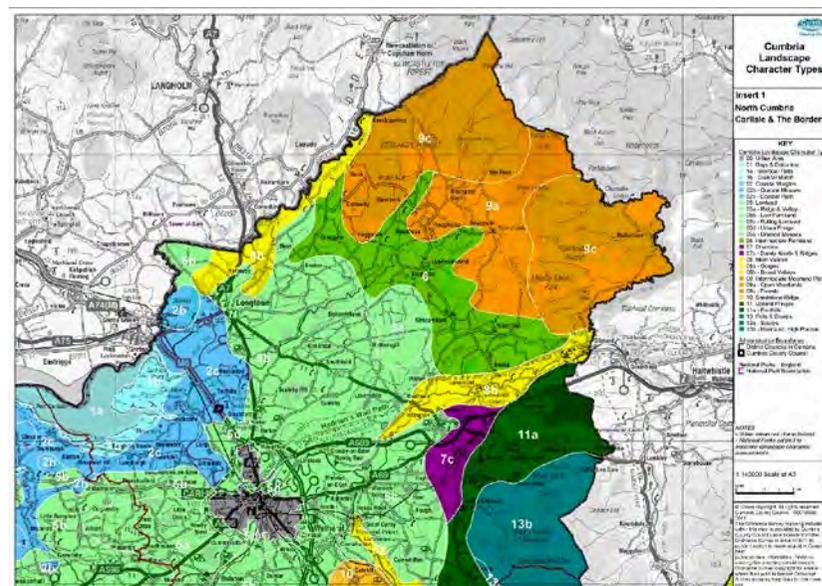
## Introduction and evidence

The evidence suggests that a new vision for the City and the District is required that builds on the uniqueness and distinctiveness of Carlisle and the abundance of environmental and landscape assets it has. Cities around the world are seeking to create more positive external perceptions by adding new green infrastructure, or enhancing their existing environmental assets; it would be unfortunate if Carlisle, a city blessed with great landscapes and a wealth of green infrastructure didn't make the most of it. This theme has a simple message:

**Carlisle could better communicate to others its wealth of green infrastructure assets as a means to changing perceptions to attract and retain talent, trade investment and tourism.**

Carlisle District This is already a greener place than people think it is. ‘Growing Carlisle: An Economic Strategy for Carlisle’ identifies as a core issue that the city region has an external image problem; for many people it is perceived as a rather grim and post-industrial northern city: a ‘clone town’ like lots of others north of Manchester and Liverpool, but stuck in people’s imaginations alone in the far north above the Lake

District<sup>5</sup>. Despite being overwhelmingly rural, the city region is widely perceived as being grimy, grey and post-industrial<sup>6</sup>. Somehow the city has become divorced in people's minds from the landscapes that surround it and run through it. This perception is particularly frustrating when our analysis shows that the Carlisle city region is actually 96.8% green infrastructure. Carlisle is blessed with an abundance of environmental assets, or green infrastructure, both in the city and in the wider district. The city exists where it does because of the historic advantages of its geography, sitting at a major bridging point of the River Eden at the confluence of three rivers, the Eden, Petteril, and Caldew. The City itself is actually a relatively small urban area, and even including the satellite market towns and villages the non-green infrastructure only adds up to 3% of the spatial area. Approximately 70% of the population of Carlisle live in the urban settlement areas (which includes Brampton and Longtown), 30% live in 'rural' wards<sup>7</sup>. Carlisle has the smallest population of any English city but is the largest in land area<sup>8</sup>.



**Figure 1 Carlisle District is a patchwork of different landscape character areas. See full scale map from Cumbria Landscape Character Guidance and Toolkit in Appendix A.**

More than 70% of the city region is productive agricultural land or moorland, with another 17% woodland. Even in the heart of the city (itself 70% green infrastructure) residents are rarely more than a few minutes drive from the open countryside, never more than a short walk from a park, sports field, play area or allotment, and are less than half an hour from the Solway Coast Area of Outstanding Natural Beauty, the Roman Frontier (Hadrian's Wall) UNESCO World Heritage Site, the North Pennines Area of Outstanding Natural Beauty and EU and Global Geopark, the southern Scotland and the Borders, the Eden valley, and the Lake District's Caldew Fells. In addition, the Northumberland National

<sup>5</sup> According to Carlisle Tourism Partnership non-visitors perceive Carlisle as 'an industrial city, or as a gateway to Scotland, the Lake District, and Hadrian's Wall'. See <http://www.discovercarlisle.co.uk/carlisle-tourism-partnership.aspx>

<sup>6</sup> This was a recurring theme in our interviews with stakeholders on this project, and over the past 5 years whilst working on similar research in Cumbria. The author has lived and worked in Carlisle and has been shocked for many years at how unjust this external perception is, and how necessary it is to counter this with a different narrative.

<sup>7</sup> Growing Carlisle: An Economic Strategy for the Carlisle City Region (March 2008)

<sup>8</sup> Public Health Report (2010)

Park borders the district to the North East. That the 'grimy and grey' stereotype is inaccurate does not lessen its negative impact.

Almost all stakeholders interviewed agreed that the image of the city did not do it justice. The living experience of many residents is affected positively by the quality of its green infrastructure and landscapes, and this is a matter of real significance because it is known from international research what drives the growth of dynamic cities, is environmental quality and quality of life which are more important than was previously understood. It is now well-documented and evidenced that inward investment is strongly influenced by the quality of environment a place has to offer:



**Figure 2 People still have outdated and negative stereotypes about the urban north**

Research undertaken by the Communications Group Plc. has shown that as more and more cities and regions meet the basic 'hard' criteria for investment and relocation decisions, inward investors and relocaters are increasingly influenced by 'soft' or 'quality of life' factors<sup>9</sup>. Their research was based upon survey work of 102 members of YouGov's Think-tank panel of business leaders, and 22 senior executives of companies that employed over 500,000 individuals in up to 140 countries. The study went on to state that successful destinations needed to have a clear and authentic identity that set them apart from other competing places. Too many places are 'clone towns', indistinguishable from each other and with few 'attractors' in the form of iconic architecture, green infrastructure, cultural facilities, and events<sup>10</sup>. The Communications Group research revealed that 65% of inward investment decision makers were 'finding it increasingly difficult to differentiate between investment locations; of these 92% said that as a result, the image and profile of a location is becoming more and more influential in their decision making'. 60% of interviewees stated that soft factors like architecture and culture have become more important in the past 5-10 years. The most successful destinations, marry the softer factors with the hard, to create images and perceptions of a place where it is fun and interesting to live, work and play. It is worth looking for a moment at the how the

<sup>9</sup> See The Power of Destinations and Cities: The Destination Identity, Communications Group Plc. (2008) and Cities: The Destination Identity (2010)

<sup>10</sup> See Sean Young, Locum Consulting, page 11, Power of Destinations

decision makers in the Communications Group study rated the different factors for business 'destinations',

Strong economy - 68%

**Agreeable climate and environment – 67%**

Friendly local people – 66%

Strong tradition in culture/arts – 60%

Widely available entertainment/leisure – 60%

Skills base/educated workforce – 58%

Exceptional architecture – 50%

Good public services – 46%

Attractive labour legislation -32%

Strong currency – 30%

Attractive employer legislation – 30%

Affordable housing – 28%

Sporting excellence – 26%

Celebrities in music, film and fashion – 22%

Other 6%

These findings are powerful, because they suggest that green infrastructure is not a luxury or peripheral item, but a fundamental ingredient in how places attract talent, trade and tourism<sup>11</sup>. An 'agreeable climate and environment' ranked higher than public services or affordable housing. There are, obviously, some factors in the above list that apply with more relevance to countries than sub-regions like Carlisle District, but the key message is that if you can compete in terms of hard infrastructure then a great deal comes down to softer

<sup>11</sup> Surveys on the potential for attracting creative commercial businesses to Cumbria, undertaken in 2006 by B2B International, revealed that many respondents thought Cumbria was a place where 'nothing much happened'.

factors. A city with such great environmental assets and so much green infrastructure would be wise to make more than it currently does of this comparative advantage.

The argument here is not that hard infrastructure does not matter, quite the contrary, it is well evidenced that attracting inward investment requires the right 'hard' infrastructure (buildings, roads, railways, fast broadband, etc.) and access to markets, but crucially, once a destination has these 'hard' elements businesses also demand certain 'softer' items, like whether this is a place with a special environment.



**Figure 3 Wildlife area at Burgh by Sands - one of countless beautiful, bio-diverse and green spaces in Carlisle's communities.**

Fascinatingly, even sectors that would seem to have only weak connections to green infrastructure make inward investment decisions based on the quality of the environment and quality of life. Why? Because businesses need to attract people to work for them, and smart businesses know that people want an interesting and rewarding lifestyle. A recent Wall Street Journal survey of 4000 recent college graduates found that three quarters thought location was more important than availability of a job in selecting a place to live<sup>12</sup>. OECD research supports this,

**“What different destinations have to offer depends not just on economic factors, e.g. standards of living or locational factors such as accessibility, but also on intangible factors such as the “atmosphere” of a place or its general quality of life<sup>13</sup>”.**

Increasingly cities around the world are being ranked on their ‘green credentials’ through high profile systems like the Siemen Green City Index<sup>14</sup> that forms the basis of extensive media coverage worldwide. New technologies, including social media, are combing to make the live-ability and sustainability of cities a matter of global and local public debate<sup>15</sup> – what might once

<sup>12</sup> Quoted in ‘Is green space a strategic issue?’ Presentation by Ian Wray Head of Planning, Transport and Housing Northwest Regional Development Agency, 5th December 2008

<sup>13</sup> The Impact of Culture on Tourism – ISBN- 978-92-64-05648-0 © OECD 2009, P. 27

<sup>14</sup> See <http://www.siemens.com/entry/cc/en/greencityindex.htm>

<sup>15</sup> The PricewaterhouseCooper’s Cities of Opportunity Report which ranks 26 leading global cities against economic and social indicators including: intellectual capital and innovation; cultural vibrancy; health, safety and security; ease of doing business; technology readiness; and demographics and livability.

have been an academic debate now results in damaging newspaper headlines. See, for example, Scientific American’s Top 10 Cities for Green Living which ranks cities on their ‘green thinking’, ‘energy efficient buildings’, ‘transportation systems’, ‘bike-ability’ and ‘walk-ability’<sup>16</sup>. The world’s business and travel media are already full of ‘Best’ and ‘Worst’ places to live, work and visit. The spotlight is likely to become even more intensive in the years to come.

WHERE IT'S GRIM ... THE TOP 20	
1 Middlesbrough	11 Blackpool
2 Hull	12 Hackney, E. London
3 Newham, E. London	13 Stoke-on-Trent
4 Nottingham	14 Barking & Dagenham, London
5 Merthyr Tydfil, S. Wales	15 Doncaster
6 North East Lincolnshire	16 Cannock Chase, Staffordshire
7 Islington, N. London	17 Manchester
8 Blaenau Gwent, S. Wales	18 Haringey, N. London
9 Mansfield, E. Midlands	19 Burnley, Lancashire
10 Knowsley, Merseyside	20 Hartlepool

**Figure 4 'The Worst Places to Live in Britain', Daily Mail 2007. Carlisle was not on this unfortunate list, and if it plays to its strengths it can avoid such potential reputational damage.**

The 2010 Mercer Quality of Living Index which covers 221 cities based on 39 criteria including safety, education, hygiene, health care, culture, environment, recreation, political-economic stability and public transportation.

The Economist Intelligence Unit’s World’s Most Liveable Cities 2011 which uses similar data and focuses on availability of goods and services, personal safety and effective infrastructure.

Lifestyle magazine Monocle’s ‘Most Liveable Cities Index’ uses slightly different criteria including safety/crime, international connectivity, climate/sunshine, quality of architecture, public transportation, tolerance, environmental issues and access to nature, urban design, business conditions, pro active policy developments and medical care. For a more critical view of such indices see <http://www.ft.com/cms/s/2/dd9bba18-769c-11e0-bd5d-00144feabdc0.html#axzz1Lc5fKcAn>

These indices receive considerable coverage in the business media. E.g.

<http://expertiseinlabourmobility.wordpress.com/2011/03/31/2011-top-cities-to-live-and-work-abroad-in>

<sup>16</sup> See <http://www.scientificamerican.com/article.cfm?id=top-10-cities-green-living>

In summary, the evidence suggests that Carlisle needs a powerful inward investment narrative that sells its green quality of life as a commercial advantage when married to its space for commercial and residential growth. Given that the future of the city region depends on its ability to retain and attract talent, trade, investment and tourism then the city needs to identify its strongest potential placemaking assets and focus on these to develop them to strengthen the performance and identity of the city region. Carlisle's environmental assets, or green infrastructure, are perhaps its greatest physical asset (matched in importance only by the potential of its human capital) and the source of its future effectiveness. Green infrastructure is a critical social and economic issue for the future of Carlisle. Carlisle is a better place to live and work than people think it is, and it is time to get this important message out – through a new, more positive, narrative – this may be partly a marketing and PR activity, but it may also require work to turn communities into the champions and salespeople for the emerging Carlisle.

To achieve the aspirations outlined above Carlisle should use its green infrastructure in inspired ways to change the way people within and without the city think about it and the quality of life it offers families. Below we will address how green infrastructure can be enhanced to better support improved quality of life, and health objectives in particular, but here it is pertinent to highlight how Carlisle can use those same places to promote all that is good about the city region. We believe that Carlisle's green spaces offer spaces where

remarkable things can take place – that make life better for residents and which attract other people to visit. The Radio 1 'Big Weekend' did arguably more to raise Carlisle's national and international profile in the past year, than any other single factor; it resulted in an estimated economic benefit of £1.7 million, with accommodation up 20-30% on the year, with approximately 40,000 visitors<sup>17</sup>. Of these 43% said they might return in the next 12 months, and 21% said they would definitely return for another visit. The PR value of the event has been estimated at a further £2 million<sup>18</sup> as the event had a global audience of many millions. The success of the 'Illuminating Hadrian's Wall' event in 2010 created a £3 million economic impact, and also had a global media impact<sup>19</sup>. The events demonstrates what Carlisle can achieve when it plays to its strengths, and invests to unlock the potential value of its green infrastructure.

Other inspiring projects are taking place in the District's communities to enhance green infrastructure to improve the quality of life, like the Heritage Lottery Fund's Our Green Space project which supported the community of Burgh by Sands to create a new village green and wildlife areas as a new 'heart for the village'. Another example of note is the excellent restoration of Chances Park, thanks to investment from the Heritage Lottery Fund and Big Lottery. The Love Parks Week programme

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<sup>17</sup> <http://www.bbc.co.uk/news/uk-england-cumbria-13408441>

<sup>18</sup> <http://www.in-cumbria.com/bbc-set-to-back-radio-1-big-weekend-follow-up-event-in-carlisle-1.876531?referrerPath=home>

<sup>19</sup> Source: Hadrian's Wall Heritage Ltd

is another example of real energy and imagination applied to engaging communities with their public green spaces, raising awareness, and encouraging new users and activities in the parks. Likewise Carlisle has some excellent Friends' groups supporting its parks, and allotment associations. This collective commitment to making places better is a powerful tool indeed if supported and encouraged by local authorities.

Carlisle will struggle to beat competitor cities by aping their strategies; even with its proposed growth, Carlisle

will still be a modestly sized northern city with the challenge of being distant from other major population centres. In addition to growing physically and developing its hard infrastructure, Carlisle needs to focus on developing its green comparative advantages to attract and retain talent, trade, investment and tourism. The core selling point for Carlisle in the future should be its quality of life and the quality of the environment it offers people who live and work here.

## Recommended actions to secure benefit

**Stakeholders should commission research to enable greater understanding of external perceptions of Carlisle and how these can best be improved, and how it can best sell its green quality of life. This will require better data and analysis than exist at present about which landscapes have the most powerful potential to drive a wider perception change<sup>20</sup>.**

**Stakeholders should work in partnership to develop a new narrative to ‘sell’ Carlisle to inward investors and relocaters, and young people in the city, that focuses on the green quality of life that exists in Carlisle, and how this can benefit businesses investing in the future of the city; a high quality inward investment prospectus for the Big Green City.**

**Stakeholders should work in partnership to ‘animate’ Carlisle’s landscapes through major cultural and creative projects, events and festivals that enhance and publicise the liveability of the city to the wider world – events like the Radio 1 Big Weekend and Illuminating Hadrian’s Wall should be supported for the role they can play in raising the national profile of Carlisle.**

**Stakeholders should ensure that green infrastructure is a central element of the Evidence base of the Development Framework, to avoid it becoming a fragmented or peripheral issue.**

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<sup>20</sup> Previous research has shown that the UNESCO World Heritage designation is a powerful driver of high value cultural tourism and can be part of inward investment place making – see World Heritage Status: Is there Opportunity for Economic Gain? (2009) praised by UNESCO as the ‘seminal research on the subject’.

# IMPROVE THE LOOK AND EXPERIENCE OF THE CITY IN KEY AREAS

## Summary

**If the city is to secure the socio-economic benefits of its green infrastructure then it needs to change the way it looks, and how it is experienced. Carlisle needs to develop a new aesthetic for the key routes in and out of the urban areas (particularly London Road), and the city centre, that reflects its vision as a Big Green City and its aspiration to be a gateway to great landscapes. Some other key areas are disproportionately important in terms of public value and shaping perceptions of places, and these should be priorities for high quality enhancements. Inspired landscaping and planting (particularly on key sites and in parks) can make a major impact on the identity of the city and other communities.**

## Introduction and evidence

If the city region is to make claims about its quality of life and how green it is, then the reality will need to reflect these claims, and that means ensuring that the key places where perceptions are formed create the right visual and intellectual impression. This is a logic that runs through previous analysis undertaken in Carlisle including the Economic Strategy which had as a key challenge making Carlisle a **'more attractive place to live, work, study, visit and invest'**.



**Figure 5** The quality of Carlisle's open green spaces will play a role in perceptions of the city in the future.

Current government policies like Planning Policy Statement (PPS) 17 - Planning for open space, sport and recreation tasked local authorities with supporting and enabling an 'urban' and 'rural renaissance', to make communities more attractive and distinctive. There is a growing body of evidence and analysis which suggests that communities like Carlisle can, if they don't make concerted efforts to avoid it, morph into 'clone cities' – indistinguishable from everywhere else with a lack of 'distinctiveness' and few 'points of differentiation' (an economic disaster for reasons demonstrated in the previous section)<sup>21</sup>. As much of the population and much of the economic activity in the city region is based in the urban areas this poses a challenge; the beautiful landscapes and high quality environmental assets are often not seen or experienced where their visual value might be most beneficial.

The need for improved quality of public spaces was highlighted in the Urban Design Guide and Public Realm Framework for Carlisle (2009). It found that the city required 'inspirational, high quality public realm patches to readdress the balance between people and vehicles and help 'redefine a new image for the city'. The Framework found that 'key city assets' like Carlisle Castle, Bitts Park and the surrounding countryside needed to be stitched back into the City Centre by improvements to Castle Way and Georgian Way. The River Caldew, a 'hidden gem', in stakeholders' words,

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<sup>21</sup> See The Power of Destinations and Cities: The Destination Identity, Communications Group Plc. (2008) and Cities: The Destination Identity (2010)

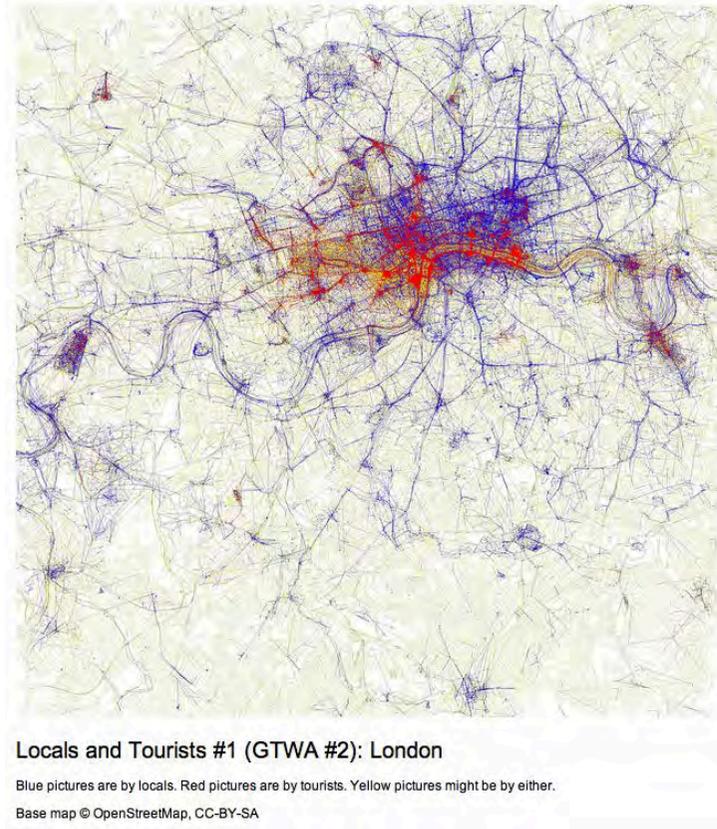
was identified as needing to be reconnected to the City through new top class development. The Local Development Framework document Planning Carlisle's Future: Issues and Option Paper Consultation (October 2011) already contains this vision:

**“By 2030 Carlisle will be a more sustainable District providing those who wish to live, work in or visit the area with a vibrant University City surrounded by a high quality rural landscape with prosperous Market Towns and thriving villages. There will be a strong sense of community with a good variety of decent homes, businesses, accessible services and a wide cultural offer...”**

**Carlisle District will offer a green, healthy, safe and environmentally-friendly living environment which will encourage a healthy lifestyle with recreational opportunities for walking and cycling”.**

The evidence from elsewhere increasingly suggests that visitors and potential investors form their impressions of cities and regions in very narrowly focused ways; some of the perceptions are formed by the external reputation of places (word of mouth et al.), some by what can be gleaned from public sources (Google et al.), and some

from what people see in the first few moments when they first visit (the impression gleaned from plane, train or car windows, or what is first seen when one emerges from the car park or railway station). New data visualisation tools are revealing what people look at and photograph when they visit places; the results are perhaps predictable but educational nonetheless – a handful of sites and routes at the centre of cities are critically important and are the ones which are shared between people<sup>22</sup>. If communities want to influence how the wider world perceives their place then it would seem obvious that they ensure that these core areas are where they focus their efforts to improve the aesthetics of their built and natural environment. If the Carlisle that people experience in decades to come looks grey and grimy, then marketing alone will not change perceptions. Case studies of the transformative effect of inspired green infrastructure projects are available such as; Local Green Infrastructure: Helping communities make the most of their landscape (Landscape Institute, 2011).



**Figure 6 This map is a 'mash up' showing the pictures people take in London and their geo-tagged locations, the blue dots represent images taken and shared by 'locals', the red dots show the images created and shared by 'tourists' and the yellow dots might be either. Other such analysis can reveal which words people are using to describe places on Twitter, providing insights never before available.**

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<sup>22</sup> See the excellent and ground-braking work of Eric Fischer posted for comment on Flickr - <http://www.flickr.com/photos/walkingsf/>

There is not yet comprehensive data visualization of this kind for Carlisle District, but in the next couple of years it may become available. This kind of intelligence needs to shape the focus of efforts to make the city look better to justify its ambition to be perceived as higher quality and greener. More research is required in Carlisle to get a fuller understanding of external (and residents') perceptions, but it would seem reasonable at this stage to suggest that perceptions of Carlisle are probably formed (as they are for many other places) by the city seen and experienced from the three principal M6 junctions to the centre of the city (and to a lesser extent by other routes into the city from elsewhere), by the city centre itself, and by the city as experienced by rail travellers as they enter the city and leave the railway station forecourt. Whilst more Carlisle-specific research is required on this subject, a progressive approach would be to prioritise addressing the character, aesthetic, design quality and degree of green infrastructure seen and experienced on those routes. Clearly there are limits to what can be done on busy highways, and in built-up areas where many people live, and many businesses operate. It is suggested that changes can be incremental over a long period of time and could have a significant impact on how people view the city region.

One solution would be to take a long-term approach to improving the visual impression of key routes and sites; London Road will never, of course, have views of the Solway Estuary, but it can better reflect a green progressive and high quality city. Many stakeholders

interviewed in the course of the research also felt that the city region should seek to preserve the distinct character of satellite communities and prevent 'urban sprawl' swallowing up communities on the fringes in a way that detracts from their character and that of the City. Where growth is deemed appropriate or necessary on the urban fringes then its visual character and impact on the identity and wellbeing of the city should be a matter of serious consideration (see below for more analysis of this issue).



**Figure 7 Land at Morton south of the city where development is planned. The aesthetic impression these communities create as people enter the city will determine perceptions for decades to come.**



**Figure 8 Carlisle's urban settlement contains river corridors of real beauty, but which remain frustratingly hidden from general view.**

Some small areas of green infrastructure like those near the Cathedral, the city's parks or children's play areas are disproportionately important in terms of footfall and public value and these should be priorities for high quality enhancements. The map below (page 49) shows the shortage of accessible and visible green spaces in the city centre and thus how needed this is. Inspired landscaping and planting (particularly on key sites and in parks) can make a major impact on the identity of the city, as can opening up views and vistas of the rivers running through the city. Major cities around the world use their parks and open green spaces to create spaces and generate images that promote their quality of life,

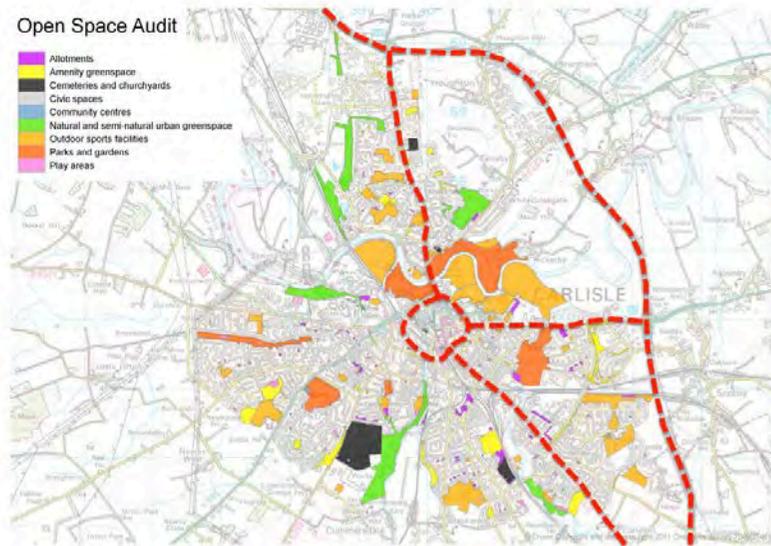
and counter negative urban perceptions<sup>23</sup>(for example in Japan several cities and towns have built their whole public identities around 'hanami' – or cherry blossom viewing festivals). Carlisle's parks offer the space to create something inspired and beautiful over a longer period of time but this would require careful design consideration and ultimately investment.

Carlisle is almost blessed with an overabundance of environmental assets, or green infrastructure. This abundance is almost too obvious to be noticed and understood as being valuable and distinctive – it is somehow taken for granted and not understood as a thing of value and distinctiveness. It is hard to think of another UK city that has such a wealth of environmental assets - that is so green and so rural. But the city of Carlisle stands aesthetically and architecturally slightly outside its geography because of its industrial history; it is a small area of urban industrial and commercial city in the heart of high quality landscapes. Carlisle should be proud of its industrial heritage, as this gave it a unique identity and role, and it may well continue to have a proud and effective role as a home for industry and manufactures. But in terms of future development, it needs to escape this industrial aesthetic paradigm, and start thinking about itself as a city that existed long before industrialisation, and which will exist long afterwards. Like other provincial cities in the UK and elsewhere, it has perhaps been easier to follow the

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<sup>23</sup> See for example, <http://www.environmentalgraffiti.com/news-most-beautiful-parks-earth>)

development model of other cities (major cities) than imagine a bespoke development trajectory that is appropriate for such a uniquely non-urban area. The city needs to work out a new way of thinking, a new paradigm, a new aesthetic perception of itself as a green city that reflects its situation.



**Figure 9 Perceptions of the city are largely defined for non-residents (which includes inward investors and people potentially relocating to the city) by the aesthetic impression of the key entrance routes. Raising the quality of design and greening these routes (e.g. with measures like street trees) can improve perceptions.**

In short, Carlisle’s stakeholders need to focus on its green ‘comparative advantage’ both in terms of the marketing of the City to address the perception issue, but also, crucially in terms of prioritizing investment in the future to make Carlisle a great place to live, work, invest or play. Carlisle can work, over time, to change

perceptions of Carlisle by focusing on those places and routes which have the potential to have the greatest impact on people’s perceptions of the city and city region. Marketing alone might change people’s perceptions that have not yet visited, but at some point they will get in a car or board a train and arrive in the City and its surrounding areas. Perhaps the best way to change perceptions of the city and city region is to ensure that the routes that have the greatest footfall or traffic volume create the right visual impression.



**Figure 10 The entrance to the city from the South East from the M6 along London Road, for example, appears to have a real deficit of green infrastructure, creating a quite misleading impression of the wider city. (See ‘Aesthetic’ map below). There is also a lack of accessible green spaces in the city centre, which makes that which does exist such as the lawns around the cathedral extremely important.**

## Recommended actions to secure benefit

**Stakeholders should consider seriously the need in future to collect better data on perceptions of the quality of different areas of Carlisle (The use of social media techniques is revolutionizing what this can reveal).**

**Stakeholders should make the aesthetics of the main entrance routes to the city (particularly those from the three principal M6 junctions to the city centre) a strategic priority for higher quality design (particularly but not exclusively of the public realm) and greening with measures like street trees (this also has a critical role in reducing air and noise pollution).**

**Following the perception research, stakeholders should identify and agree those areas like London Road, the Cathedral or the Citadel that define visitor perceptions and improve interpretation, signage, and quality of public realm.**

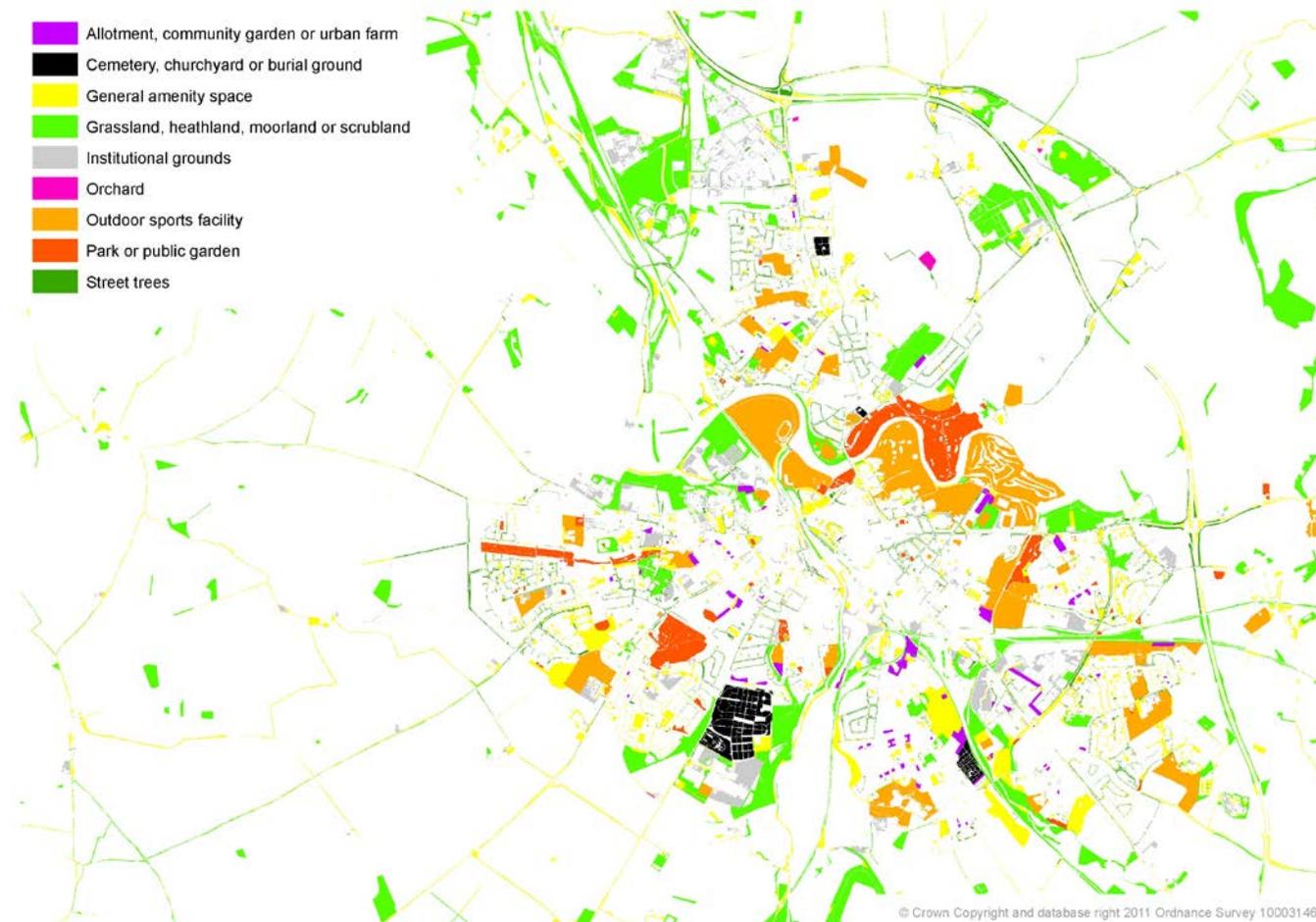
**Stakeholders should explore through the Green Spaces Strategy the long-term potential for a high quality planting and landscaping approach to the city's parks and open spaces that would attract regional, national and even international attention – stakeholders should investigate global best practice for models of how this might be delivered.**

**Stakeholders should seek to preserve the distinct character of satellite communities, like Cummersdale and Dalston, and prevent urban sprawl swallowing up communities on the urban fringes in a way that detracts from their character and that of the city. Where growth is deemed appropriate or necessary its visual character and impact on the identity of city should be critically appraised for its contribution to urban design and distinctiveness.**

**Stakeholders should explore the potential of schemes that would re-engage the city centre with the river corridors to make those part of the aesthetic and experience of the city – some river features like Holme Head Weir have the potential to be developed and this should be explored and encouraged. Views of and access to the river corridors, particularly the Caldew and Eden should be protected, enhanced and animated where possible.**

**Stakeholders should support communities outside of the urban settlement (like Brampton and Dalston) that are enhancing their green infrastructure and raising their quality of public realm design.**

## Map of accessible and aesthetic green spaces in city area



**Figure 11** By filtering the green infrastructure GIS-based data we can show how the green infrastructure of various types exists in the city centre and on key routes. There is a dearth of accessible and visible green infrastructure in the city centre, particularly as that which does exist like the river corridors is often marginalised by the nature of the built environment. Note the lack of green infrastructure in the center of the city.

# MAKE THE CITY A GATEWAY TO GREAT LANDSCAPES

## Summary

**Carlisle can secure major advantages by making the city and satellite communities function as effective gateways to attractive and important landscapes. To succeed in this the gateway functions need to be developed; it will require excellent routes, signage and interpretation from the city outwards.**

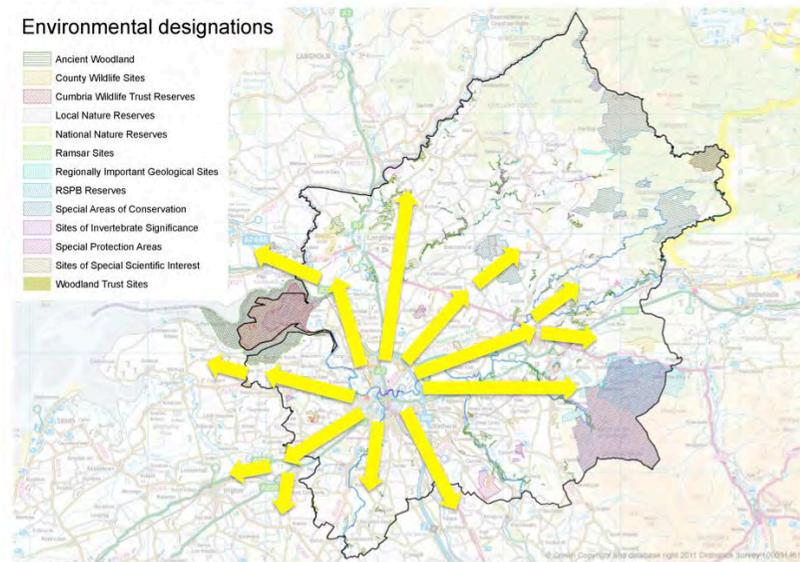
## Introduction and evidence

Carlisle will never secure the full potential benefit of its geographic relationship with the Solway Coast AONB, the Roman Frontier (Hadrian's Wall) UNESCO World Heritage Site, the North Pennines AONB, southern Scotland and the Borders, the Eden valley, the Lake District, or the Northumberland National Park until residents and visitors genuinely experience it as the urban hub that provides the services and access infrastructure to compliment these landscapes. This was identified in the Carlisle Development Framework and Movement Strategy (2007), which highlighted the need for 'a new network of green pedestrian and cycle routes connecting to an enhanced pedestrian heart' and 'new City Centre accommodation appropriate for future needs'. Unfortunately, the reality of Carlisle's urban spaces does not make it easy to get off a train with your bike or on foot, find a hotel, and then launch outwards into world-class landscapes. The potential is there<sup>24</sup>, but the structural reality has not quite emerged. The solution is partly about access and tourism infrastructure and partly a change of perception – but until this is resolved Carlisle's landscape tourism potential will remain

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<sup>24</sup> It is quite possible to do this if you are very motivated and knowledgeable, of course, but our point is that it is not nearly easy enough, or the chance to do it well enough communicated, to make the city a thriving gateway for larger numbers of visitors to surrounding landscapes.

largely hypothetical. Visitor research undertaken by Carlisle Tourism Partnership and Cumbria Tourism shows that perceptions of the accommodation, retail and scenery are poor. There is little by way of interpretation in the city centre of the landscapes, parks or green spaces that can be experienced in the wider city region (something addressed in Love Parks week, but missing the rest of the year).



**Figure 12 Carlisle can benefit more from its high quality landscapes and wildlife sites if it can better connect the urban areas and city gateway to them. At present connections to places like the Solway Coast AONB need improvements to both access and infrastructure to make it appealing to visitors and residents.**

Stakeholders in Carlisle working in tourism and other related fields have long acknowledged the need to develop Carlisle as a more effective 'gateway' or 'hub'

for its surrounding landscapes. The single biggest challenge, as we have already seen, is that the high quality designated landscapes are often somewhat divorced by geography and the built environment from the city centre. Walkers and cyclists who were travelling through Carlisle on established routes were interviewed, particularly by the river Eden, who did not realise they were in the middle of the city of Carlisle and who were clearly going to pass right through without giving it a thought.



**Figure 13 The cycle route from Carlisle to Dalston is a good example of how communities can be connected by green corridors that encourage active travel.**

Stakeholders feel there is insufficient signage and interpretation, and the access infrastructure does not at

present make it easy for the visitor to disperse outwards from the city. It is suggested that this is necessary for both tourists and residents. With improvements to the city's infrastructure, interpretation and support services (including public transport), Carlisle can better benefit from existing walking and cycle routes like the Hadrian's Wall National Trail and Cycleway (National Route 72), Cumbria Way, Cumbria Coastal Way, and Miller's Way.

**The point is a simple one, when the realities of Carlisle make it a genuine gateway to great landscapes its reputation and the social and economic benefit it unlocks from its green infrastructure will grow.**

Interpreting and making accessible (both intellectually and physically) the landscape character of the region is particularly important in this context. This strategy should be read as complimenting Cumbria County Council's Landscape Character Guidance and Toolkit, which effectively highlights the different landscape character areas in Carlisle. (See Appendix A for Landscape character map for North Cumbria, Carlisle and the Borders).

Carlisle has some great examples of green connectivity that can be learnt from in other locations. The cycle route from Carlisle to Dalston following the river corridor of the Caldew, for example, is just one example of how communities (Denton Holme, Cummersdale, and

Dalston) benefit from access to high quality public green space that also has high biodiversity value (with otters and barn owls regularly seen). That this example is perhaps more due to circumstance (being land that floods fairly regularly) than design doesn't make it any less powerful as a best practice case study. The challenge is to learn from what works best in Carlisle (whether designed or fortuitous) and take that learning to inform-by-design other emerging communities. The second challenge is to make sure that residents and visitors alike know about these routes and use them<sup>25</sup>. It is unfortunate that the Connect2 project was ultimately not fully implemented because the city will require the kind of interventions it included for connecting communities to each other and key routes.

Many stakeholders interviewed in the research felt that cycling in the city was still an unattractive option because of insufficient cycle-only routes, support infrastructure and a sense of the existing shared routes being dangerous and not family friendly. Cumbria County Council is currently working on an update for the Cycle Strategy for Carlisle that offers an opportunity to address these issues strategically. Evidence from elsewhere would suggest that quite often these routes simultaneously deliver green corridors with other sustainability and biodiversity benefits. By making the

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<sup>25</sup> Lack of knowledge is often not because the information does not exist, but that for some reason the message has not got across to communities. There are some really promising efforts underway in Carlisle to make communities aware of their parks, and maps and other tools exist to enable people to find cycle routes through the city or out from the city. But there is still a lot of work to be done, as the problem is partly structural. See [http://www.carlisle.gov.uk/downloads/carlisle\\_cycle\\_and\\_walking\\_map.pdf](http://www.carlisle.gov.uk/downloads/carlisle_cycle_and_walking_map.pdf)

city genuinely connected to its wider landscape stakeholders can start to unlock the value of its wider green infrastructure and create an experience that would justify its Big Green City ambition.

and these communities is critical, as is the availability of public transport. This relationship has to work for both the city and the rural communities if it is to be effective.



**Figure 14 The relationship of Carlisle to surrounding landscapes can be much improved.**

Key to achieving this ambition will be a progressive relationship between Carlisle's urban settlement/s and its satellite communities so that each play their role in the process – the visitor infrastructure needs to enable people to leave Carlisle confident that the services and functions they require will be available in other communities like Dalston, Brampton, Longtown, or the communities of the Solway Coast, and the existence of high quality walking and cycling routes between the city

## **Recommended actions to secure benefit**

**Stakeholders should seek to improve the spatial relationship of the city to its river corridors, with measures required to make the rivers and their accompanying routes a greater part of the visual and physical experience of life in the city.**

**Stakeholders should explore how visitors and residents can better access surrounding landscapes from the city centre and key gateway points like the railway station, bus station, or main car parks or accommodation providers. This will require a mixture of improving routes, interpretation, signage, ensuring that sufficient public transport is available and other measures.**

**Stakeholders should support efforts to create new routes where appropriate, and enhance existing routes so that walkers and cyclists engage and interact (culturally and**

**economically) with the city rather than simply passing through it, an example being the recent Roman Gateway project. Stakeholders should support efforts to use the international recognition associated with surrounding landscapes, particularly the UNESCO World Heritage status designation held by Hadrian's Wall as this has been shown to attract high value cultural tourists and international visitors.**

**Stakeholders should commission research to ensure that the visitor radiating outwards from Carlisle experiences the appropriate interpretation, signage, and is catered for with high quality accommodation, retail, food and drink, and public transport – as these are the means by which the economic value of surrounding landscapes is unlocked.**

# GROWTH: SPATIAL AND ECONOMIC

## The growth context

Carlisle is growing, and it will continue to grow. The key strategies enshrine the idea of growth (e.g. Growing Carlisle: An Economic Strategy for the Carlisle City Region). The map showing potential growth areas on page 74 also illustrates this. The UK government's Draft National Planning Policy Framework (July 2011) also puts an emphasis on using the planning system to 'protect and enhance our natural, built and historic environment to use natural resources prudently and to mitigate and adapt to climate change, including moving to a low carbon economy'<sup>26</sup>.

The requirement for a 'design and access statement' to comply with planning law (Planning and Compulsory Purchase Act 2004) gives the opportunity to integrate green infrastructure in development through Section 106 Agreements. Defra guidance specifies that green infrastructure should be integrated into development plans to deliver social, economic and environmental benefits<sup>27</sup>. Carlisle also was awarded UK Government 'growth point' status, and is projected to have population growth of between 10,000 and 20,000 people

over the next few decades<sup>28</sup>. The analysis suggests that there is a very real risk that without a coherent vision for sustainable growth the city will be left with long-term structural problems relating to health, activity levels, wellbeing, community cohesion and quality of place.

Carlisle, in short, requires 'good growth' not 'bad growth' (or badly-thought-through-growth). The Local Development Framework will make provision for growth in the next couple of decades through policies and planned land allocations. It emphasizes the need to think ahead spatially and design a city that meets future needs and challenges. If the city region gets this growth right strategically then it may well create a more dynamic and effective city that meets the future demands of its residents and which is capable of attracting and retaining talent, trade, investment and tourism.

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<sup>26</sup> Draft National Planning Policy Framework, Department for Communities and Local Government (July 2011)

<sup>27</sup> See Guidance for Local Authorities on Implementing the Biodiversity Duty; Department for Environment, Food and Rural Affairs, May 2007, An introductory guide to valuing ecosystem services (2007), Securing a healthy natural environment: an action plan for embedding an ecosystems approach (2007), A strategy for England's trees, woods and forests (2007), UK Climate change programme (2006), DEFRA Sustainable Development Action Plan (2005), Rural Strategy (2004), UK Biodiversity Action Plan (2004), Working with the Grain of Nature, England Biodiversity Strategy (2002) etc.

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<sup>28</sup> Carlisle Growth Point Programme of Development 2008

# DEVELOP APPROPRIATE ECONOMIC (GREY) INFRASTRUCTURE TO CAPITALISE ON CARLISLE'S GREEN POTENTIAL

## Summary

**The evidence from around the world suggests that the key determinant of whether a community unlocks the potential economic value of its green infrastructure is the relationship between its environment and its economic (hard) infrastructure.**

## Introduction and evidence

Much of this report is about how social and economic development requires green infrastructure but the relationship is actually symbiotic; unlocking the economic and social value of green infrastructure requires sufficient grey infrastructure (see diagram below)<sup>29</sup> The Cumbria Green Infrastructure Strategy highlighted this relationship, which increasingly is the focus of national policy. Current policies like Planning Policy Statement (PPS) 7 Sustainable Rural Development, for example, tasks local authorities with raising the quality of life and the environment in rural areas through the promotion of:

**Thriving, inclusive and sustainable rural communities, ensuring people have decent places to live by improving the quality and sustainability of local environments and neighbourhoods**

**Sustainable economic growth and diversification**

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<sup>29</sup> This is, for example, the basis of UNESCO's Sustainable Tourism programme.

**Good quality, sustainable development that respects and, where possible, enhances local distinctiveness and the intrinsic qualities of the countryside; and**

**Continued protection of the open countryside for the benefit of all, with the highest level of protection for our most valued landscapes and environmental resources**

This policy specifically mentions promoting more sustainable patterns of development by:

**Promoting a range of uses to maximise the potential benefits of the countryside fringing urban areas**

**Developing competitive, diverse and thriving rural enterprise that provides a range of jobs and underpins strong economies**

And is clear that this relates specifically to promoting a sustainable, diverse and adaptable agricultural sector where:

**Farming achieves high environmental standards, minimising impact on natural resources, and manages valued landscapes and biodiversity; contributes both directly and indirectly to rural economic diversity; is itself competitive and profitable; and provides high quality products that the public wants**

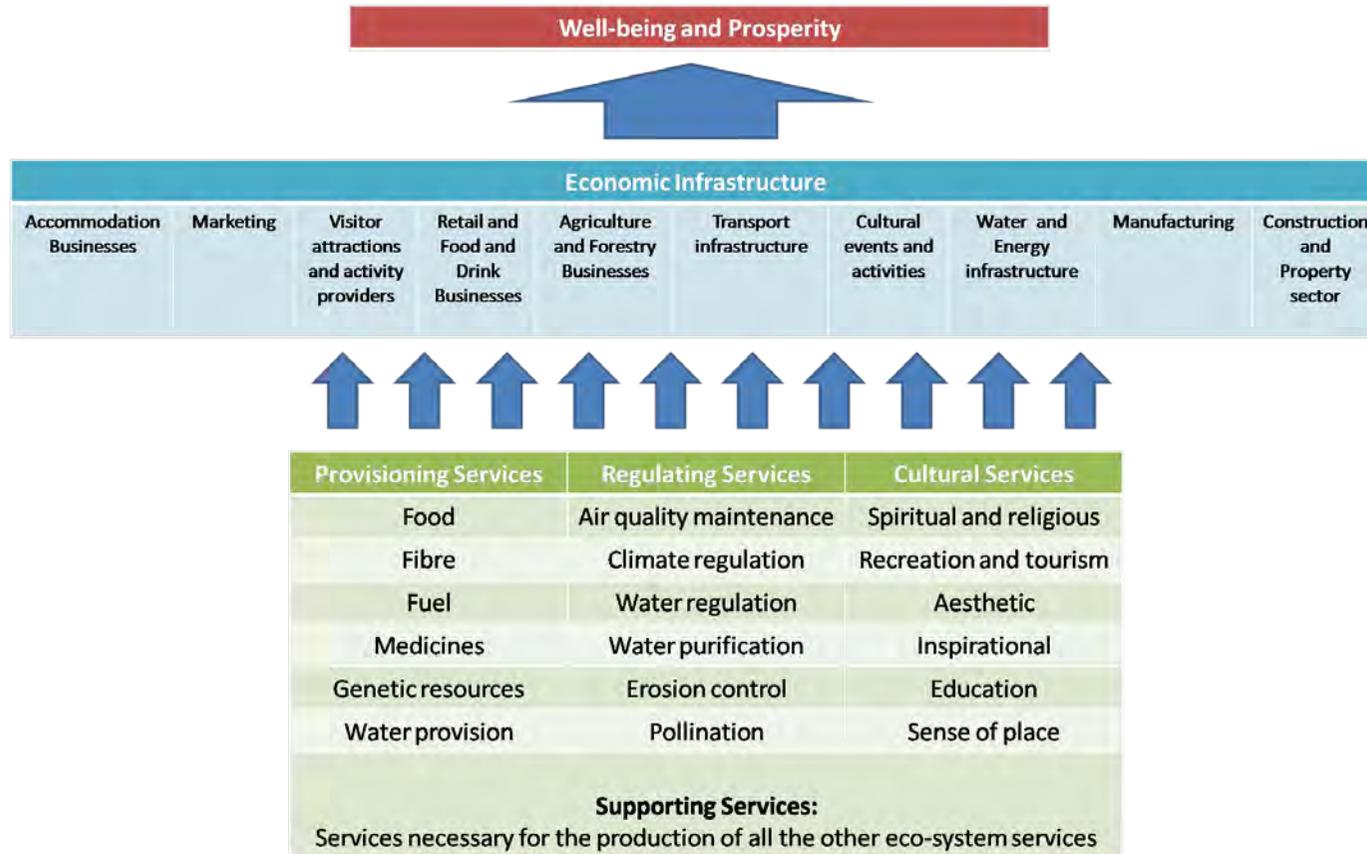
It is not yet clear whether this emphasis on the urban fringe will remain in future planning policy. The draft National Planning Policy Framework (July 2011) emphasises the need to

**Set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure**

**Give great weight to protecting landscape and scenic beauty in National Parks, and Areas of Outstanding Natural Beauty.**

This section seeks to draw attention to this critical relationship between sectors like agriculture and tourism that can, if done sustainably and efficiently, sustain much of the city region's green infrastructure. Here it is necessary to highlight the need for Carlisle to think strategically about how its communities can most effectively benefit economically from its GI assets and target investment to ensure that potential value is translated into social and economic realities through effective planning and infrastructure. Carlisle's location, rural character and green infrastructure are often seen as negatives (e.g. distance-to-market and flooding) but its wealth of green infrastructure should also be seen as an asset and a source of 'comparative advantage' (e.g. driving quality of life, providing space to grow, producing land-based products and experiences, and as an attractor of talent).

The profitability of agriculture and tourism, and other sectors, is often built upon green infrastructure assets, but it is the scale, capacity and quality of the economic infrastructure that determines whether it translates effectively into profitability and skilled and well-paid jobs. Or to put it more simply, Carlisle city region is overwhelmingly made up of productive land (see maps on page 66 and 67 which illustrate this) and its distinctive character can be best sustained by ensuring that the agricultural and forestry sectors remain competitive as producers of commercial products.



**Figure 15 How value is added to land-based products and landscape itself through tourism needs to be understood, if stakeholders are to support sustainable businesses that in turn can sustain the character of our rural and urban landscapes.**

### **Secure the full potential value of land-based products**

The Carlisle Local Plan (2001-2016) defined the landscape character of the different areas of Carlisle District (see, for example, Policy CP1 – Landscape Character or Policy DP10 Landscapes of County Importance) and urged that this be sustained; proposals for development in the rural areas are to ‘seek to conserve and enhance the special features and diversity of the different landscape areas’. Part of conserving this is to have regard for landscape features including elements like field boundaries and traditional landscape patterns shaped by farming.

The Local Plan recognises that the landscape character of the region is largely shaped by the human activities that have taken place over many hundreds of years. One of the ways in which Carlisle’s growth can be ‘sustainable’ is to focus on creating a dynamic rural economy with the urban commercial areas supporting this by utilizing and adding value to the products from the land – as an indirect way of sustaining the landscape character (viable agricultural businesses producing market goods, but encouraged to self-sustain the biodiversity and landscape character of the landscape through agri-environmental incentives). In a sense this is what the communities of Carlisle have always done, but the need to sustain the productive rural economy should be highlighted because in a world of financial austerity productive land managers are likely to be the only affordable source of land management.

If agriculture in the rural area remains competitive and economically viable then this has a major impact on sustaining the six distinct landscape character types identified in the Local Plan (or indeed whatever landscape types/classifications are developed in the future). It will probably never be economically viable for local, or central government, to independently sustain the myriad of distinctive landscape features that have emerged organically as a result of productive agriculture, forestry and other land-based industries (walls, dykes, hedges, field boundaries, drains, etc.), and it should be all stakeholders’ priority to sustain the socio-economic system that supports these (See maps on page 66-67 for an idea of the scale of the agriculturally managed land and this how important sustaining its current land management system is). To that end we suggest a strategic priority is to support the private sector with initiatives that can add value to local agricultural and land-based products, by retaining, developing and enhancing the manufacturing and processing capacity of Carlisle as a hub and logistical centre for the food, fibre and fuel of the region, and developing the capacity of other communities like Longtown to add value to land-based products.

Efforts to encourage the consumption of local food through better education and engagement should also be encouraged and supported both for health reasons as much as to reduce food miles and the carbon footprint of the region. Carlisle has some important agricultural, food, and forestry-based businesses. The District’s wealth of agricultural and forestry land, and a thriving

agricultural sector currently sustains an impressive range of ancillary industries and services including the largest livestock auction mart in Europe and some high quality food manufacturers, processors and retailers. Rural regions across Europe can provide valuable best practice on this issue; areas like Cinque Terre in Italy that have invested in product development, marketing and lowering the cost of production for producers to sustain their unique landscape<sup>30</sup>.

The current global financial crisis has reminded many stakeholders of Carlisle's environmental assets and how they sustain much of its economy – much of the city region's economy is reliant upon agriculture, food, timber, tourism, and other land-based or land-related products. Whilst in times of rapid economic growth commentators often highlight the sluggishness of areas that are heavily reliant upon agriculture, forestry, traditional manufacturing and tourism these sectors can be more robust in times of risk and uncertainty. It was noticeable that at the time of researching and writing this report the local press reported that Border's based timber company BSW Timber was investing £6.6 million to revamp its city sawmill. It is not a coincidence that the sawmill is located in Carlisle; it reflects the amount of timber available in the region, and accessibility to markets. So in the midst of a global financial crisis

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<sup>30</sup> See research by the author on Cinque Terre – See <http://rebanksconsultingltd.com/resources/WHSTheEconomicGainFinalReport.pdf> or article in UNESCO's World Heritage Review - <http://www.pfdheritage.com/wh58/index.html?pageNumber=79>

Carlisle's recovery is being partly driven by businesses that are entirely reliant upon its green infrastructure.

This kind of investment in efficient plant to add value to land-based products will be essential to ensuring that the potential value of Carlisle's environmental assets is realised. The loss of such facilities can have a profound impact on places like Carlisle as it can result in the value-adding part of the food chain being lost to other areas. The productive land in Carlisle District is providing a range of 'eco-system services' and by working in partnership farmers, foresters, land managers and statutory bodies can sustain, enhance and increase the public benefit from this landscape. Secure the full potential value of landscape tourism  
The argument we have just made for focusing on supporting the development of appropriate economic infrastructure for agriculture applies equally to tourism (something we have already considered in 'Make Carlisle a Gateway to great Landscapes, see above). To effectively benefit from its gateway function for surrounding landscapes Carlisle needs to have the quality accommodation, transport, food and drink, retail and leisure facilities provision that can translate this into economic benefit. This was recognised in the Carlisle Local Plan in Policy EC16 Tourism Development, which highlighted the link between 'tourism effectiveness' and infrastructure like public transport. Stakeholders have undertaken considerable work on this subject, through measures like the capital investment and wider development programmes of Hadrian's Wall Heritage Ltd for the Hadrian's Wall corridor.

	Allerdale	Barrow	Carlisle	Copeland	Eden	S Lakes	LDNPA	Cumbria
Tourism Revenue (£m)	378.8	87.3	358.0	131.2	217.2	919.9	934.9	2092.5
Tourist Days (m)	9.6	3.0	8.5	4.1	6.7	21.0	22.0	52.9
Tourist Numbers (m)	6.8	2.7	7.7	3.1	4.3	15.6	15.8	40.1
Employment (FTEs)	6,307	1,405	5,332	2,059	3,551	13,919	14,865	32,573

Figure 16 STEAM data from Cumbria Tourism showing the volume and value of tourism in Carlisle city region.

As shown above (see Image and Perception - Make Carlisle a Gateway to Great Landscapes), Carlisle needs to work hard to unlock the potential tourism value of its historic and natural landscapes. Arkenford visitor segmentation analysis from 2006 commissioned by Cumbria Tourism shows that those motivated by simply viewing scenery in a traditional way (described as 'Wilderness Couples' of 'Old Scenery Watchers' segments) spend in the region of £539-£557 per trip. But cultural visitors (described as 'Cultured Families'), the kinds of people attracted by an imaginative fusion of landscape, culture, heritage and high quality food and drink, high quality retail and accommodation spend £955 per trip. The message is simple: destinations have to create the kinds of experiences and products which can secure greater value from their visitors. Simply relying upon the landscape alone will not secure this potential economic benefit. The Cumbria Tourism Destination Management Plan 2010-11 champions a more strategic approach:

### The Vision

**In 2018 Cumbria, as well as being known for world-class landscapes, will have an unrivalled reputation for outdoor adventure, heritage and culture with a year-round programme of events. Our accommodation, our food, our public realm and our customer service will reinforce our reputation as the number one rural destination in the UK.**

If this Cumbria-wide vision is to be achieved then Carlisle city region needs to play a powerful role in delivering a stronger and more attractive tourism experience. Too often in the past environmental and commercial initiatives and projects have suffered from a lack of wider engagement or understanding and existed in silos. The success of this strategy relies on building a common understanding between the economic and environmental stakeholders in Carlisle about the shape of the future city. Whether Carlisle secures the potential value of its green infrastructure will depend on its ability to plan strategically and from this to work in partnership with the private sector to secure significant investment for development.

## **Recommended actions to secure benefit**

**Stakeholders should support urban and rural development that can add value to products from the land through value-adding infrastructure as an indirect mechanism for enhancing the landscape – the future of the city region’s distinctive landscapes may depend on the ability to add value to its agricultural and forestry products which in turn sustain the traditional land management practices.**

**Stakeholders should support initiatives to reduce food miles through local production, manufacturing and consumption – domestic gardens, allotments, and parks can be vital elements in educating and engaging people to produce and consume local high quality foods. Temporarily vacant or derelict land should also be used for food or fuel growing or recreation for the immediate community. Management can be community-led.**

**Stakeholders should ensure that its productive green infrastructure assets are protected for the future. The Local Development Framework should take a similar approach to the Local Plan in protecting agricultural land (see Local Plan Policy CP4).**

## Map showing agricultural land - District

Agricultural land

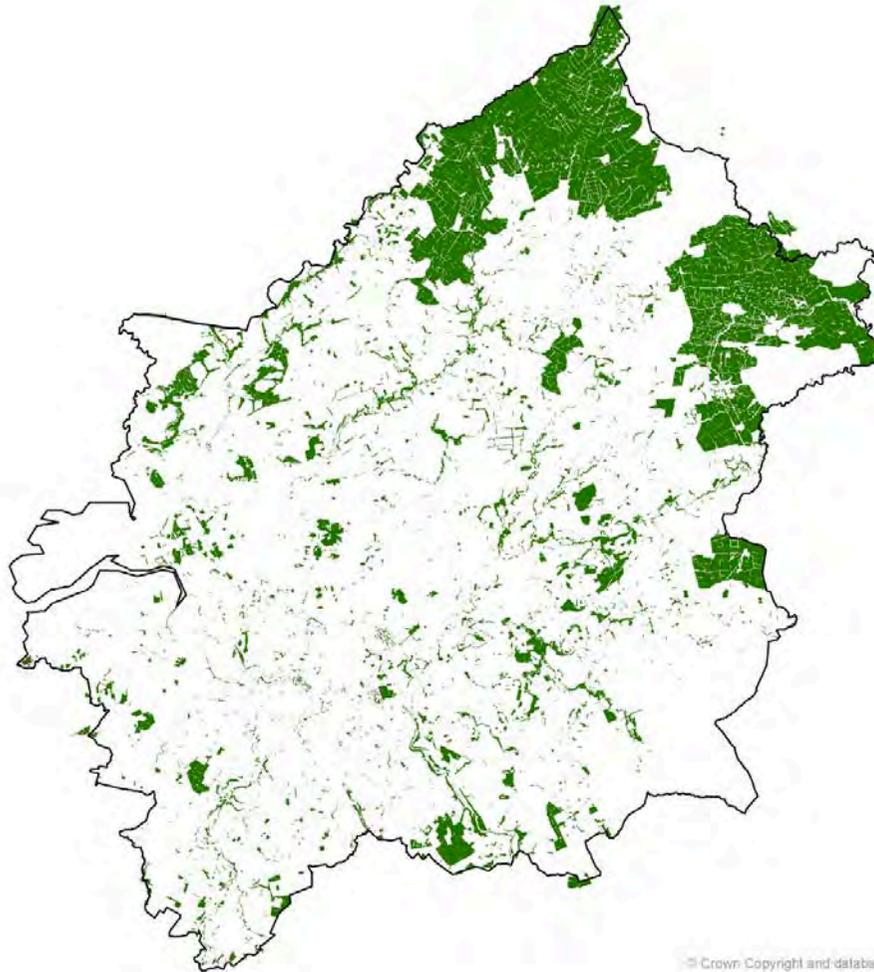


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**Figure 17 This map shows agricultural land as determined by the typology mapping process, which gives an approximately 80% accurate classification of green infrastructure. The majority of the land area of the city region is productive land, and is managed by private landowners and businesses. Finding ways to support these sectors, and to encourage the creation of wider public benefits should be a priority of this strategy. The ‘farmed’ or ‘managed’ area is of course much bigger when the moorland, heath and grassland of the uplands is included.**

## Map showing woodland - District

Woodland



**Figure 18 This map shows woodland as determined by the typology mapping process, which gives an approximately 80% accurate classification of green infrastructure. This suggests that 17% of the District is woodland, providing both an important source of commercial revenue but also an opportunity to increase biodiversity value. The challenge will be to strike a balance between commercial production and biodiversity and other ecosystem services.**

# DESIGN IN GREEN QUALITY

## **Summary**

**Enhance major commercial and residential developments with high quality GI.**

**Detailed green infrastructure and landscape plans should be required for all major developments taking into consideration the wider strategic role of green infrastructure.**

**New communities should be of the highest design quality with green infrastructure, biodiversity and sustainability as core design values.**

**The quality and design of housing and commercial developments needs to reflect this green quality of life, vision and ambition.**

**Development should design in healthiness and wellbeing, encouraging walking, with easily accessible green spaces for daily physical activity.**

**Development should also design in sustainability and risk mitigation.**

## Introduction and evidence

We know from evidence around the world that the design of the urban environment plays a major role in how people live, and that better and a more sustainable design of communities can positively determine a range of social and economic issues from health and wellbeing to Co2 emissions per capita.

Many of the findings and the vision of the Urban Design Guide and Public Realm Framework for Carlisle (2009) are endorsed. This study highlighted the potential to make Carlisle 'one of the UK's great liveable cities'. The realities of the city increasingly need to reflect the ambitious growth targets, with high quality housing and commercial development that meets the highest standards of design, sustainability and aesthetics. Green infrastructure should be seen as a key ingredient in creating the conditions and setting for growth. Commercial developments need to reflect the Big Green City aspiration. If people in future are sold a big green city with a great quality of life and then find themselves working in soulless copycat commercial buildings that look onto ugly unimaginative concrete sprawl then the narrative will lack credibility and will fail. So the physical and aesthetic realities of working in Carlisle need, over time, to capitalize on its environmental assets by offering people inspired workspaces in green and pleasant surroundings. A key part of this will be ensuring that future commercial development is designed in ways that meet this aspiration. The good

news is that Carlisle has the space to create some really inspired sustainable commercial and residential sites – the privately owned cluster of sites around Kingmoor Park and other commercial sites identified by the recent Employment Land Review (2011) already provide some of these advantages and are key to the future green quality of Carlisle's commercial spaces. New development of employment sites should be of the green infrastructure, biodiversity and sustainability as core design values not an afterthought.

There is a growing body of evidence from the rest of the UK and the world that high quality green infrastructure can add value to commercial sites by improving the aesthetics of sites and making them attractive environments for investment and for attracting high value workers<sup>31</sup>. As we explained in Section One - Image and Perception, the evidence suggests the higher the value and quality of the worker the greater the need for aspirational, green, sustainable and walking/cycling friendly work spaces and residential areas. The effect of green infrastructure on people's working lives can be significant. Studies have shown that as little as 3-4 minutes exposure to green space brings measurable stress relief. Progressive employers look for higher quality and greener sites because they are aware that

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<sup>31</sup> See the excellent summary of this in Benefits of Green Infrastructure, report created by Forest research for Defra and CLG (October 2010) – Chapter 2., for a summary of this international research.

over 10 million workdays are lost each year in the UK because of stress.



**Figure 19 A groundbreaking 4,400m sq2 distribution centre for Adnams, the Suffolk-based brewer with green roof. Projects like this could help transform the commercial profile and identity of Carlisle.**

The evidence also suggests that greener settings result in longer tenancies, lower turnover of staff, and higher rents. The benefits of urban vegetation on air quality are wide-reaching, for example, trees can reduce building energy use by reducing conductive heat loss and by sheltering buildings with the result that less energy is consumed. Examples include: the greening of Riverside Park Industrial Estate, Middlesbrough, (over 1800 trees were planted) to create a setting for stimulating business growth and

investment – the development saw occupancy grow from 40% to 78%, with leverage of over £1 million of private sector investment, 28 new businesses started up and over 60FTE jobs created<sup>32</sup>.

It is also widely believed that greening commercial sites positively affects perceptions of sites and thus leads to increased property values<sup>33</sup>. Other studies have shown that properties surrounding green infrastructure projects benefit from price rises and have stimulated new development<sup>34</sup>. These are complicated issues and difficult to prove categorically, but several respected studies have shown that proximity to, or views of, green spaces (particularly parks) correlates to higher property prices. Research in the North West recently showed that a view of natural landscape added up to 18% to property values<sup>35</sup>. Research by CABI in 2005 revealed a premium on property prices of 11% for houses ‘on’ parks and 7% for those in close proximity to parks<sup>36</sup>. Research from the Netherlands showcased by CABI in 2004 showed that a view of a park raised property prices by 8% and being in close proximity to a park by 6%. A study of London’s 760 wards in 2003 suggested that a 1%

<sup>32</sup> Readers wishing to better understand the latest evidence on the impact of GI on economic performance should see Benefits of Green Infrastructure, report to Defra and CLG (October 2010).

<sup>33</sup> See, for example, Economic Benefits of Green Infrastructure, Natural Economy North West (2008)

<sup>34</sup> See, for example, <http://www.propertywire.com/news/north-america/us-green-home-advantages-201004074024.html>

<sup>35</sup> The economic value of green infrastructure. Natural Economy Northwest (2008). Available at: <http://www.naturaleconomynorthwest.co.uk/resources+reports.php>

<sup>36</sup> CABI (2005). Does money grow on trees? Commission for Architecture and the Built Environment (CABI). London. Available at: <http://www.cabi.org.uk/publications/does-money-grow-on-trees>

increase in open green space (with all other factors held constant) was associated with a 0.3-0.5% increase in the average house price in the ward<sup>37</sup>. Recent studies have shown that trees add 15% to 25% to the total value of property, depending upon the size, condition, location and species rating<sup>38</sup>. Research by CABE has shown that properties increase in price by an average of 7% in environments landscaped with trees. A recent summary of the impacts of green infrastructure gives a value added impact range of 2.6% to 11.3% for properties in close proximity to well-managed green spaces. Initial analysis (see map on page 73) suggests that there is a strong correlation in Carlisle between property prices and proximity to green spaces; something further detailed research would likely prove<sup>39</sup>. But the key point is that whether anyone believes in the Big Green City concept in 20 years time will be entirely dependent upon the quality of design and environment where they live and work.

The evidence shows that most people want to look, whether at home or at work, at green spaces and trees not at low quality urban views (research has shown that a woodland view adds more than 7% to a house price, whereas an urban view would reduce the price by almost 6%). Looking at green features out of the window

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<sup>37</sup> GLA Economics (2003). Working paper 3: valuing greenness. Is there a segmented preference for housing attributes in London? June 2003. Greater London Authority (GLA), London.

Available at: [www.london.gov.uk/mayor/economic\\_unit/docs/valuing\\_greenness\\_paper.pdf](http://www.london.gov.uk/mayor/economic_unit/docs/valuing_greenness_paper.pdf)

<sup>38</sup> CTLA Summary of tree valuation based on CTLA approach. Council of Tree and Landscape Appraisers (2003).

<sup>39</sup> Benefits of Green Infrastructure, Report to Defra and CLG, (October 2010)

improves people's health and wellbeing<sup>40</sup>. Previous studies of green space have also shown that 'positive effects can come about through visual interaction evoking feelings of well-being and reducing stress'<sup>41</sup>.

These findings also highlight an important element, namely that the views of green spaces experienced from current residential and commercial properties are more than a pleasant happenstance; they are actually of some social and economic significance and need to be protected and where possible enhanced. Analysis of the value of landscape views in Scotland has shown that views of green infrastructure are worth many millions<sup>42</sup>. By ensuring that at least some of its new commercial developments meet this ambition for green quality Carlisle can make a statement to the wider world that will be powerful signal of its commercial ambition.

Carlisle already has a powerful tool for securing these outcomes in Policy CP5 – Design in the Local Plan, which states that design should be well-designed, complements the existing environment, encourages a healthy lifestyle through provision of walking and cycling and creates safe places to play where appropriate. This policy states that landscaping schemes should be 'an essential consideration in the design

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<sup>40</sup> Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A. and Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology* 11, 201 – 230.

<sup>41</sup> See, for example, East Midlands Regional Assembly (2006) Green Infrastructure – Phase One Scoping Study.

<sup>42</sup> Forest Research (2008). A valuation of the economic and social contribution of forestry for people in Scotland. Final report for Forestry Commission Scotland. Forest Research, Farnham.

process, not an afterthought', and that new developments, particularly on the edge of the city, should be integrated through design into the existing settlements.



**Figure 20** The Ford Dearborn Assembly Plant in Michigan, USA, with green roof. Many of the world's leading companies have embraced green infrastructure solutions for their workspaces and properties.

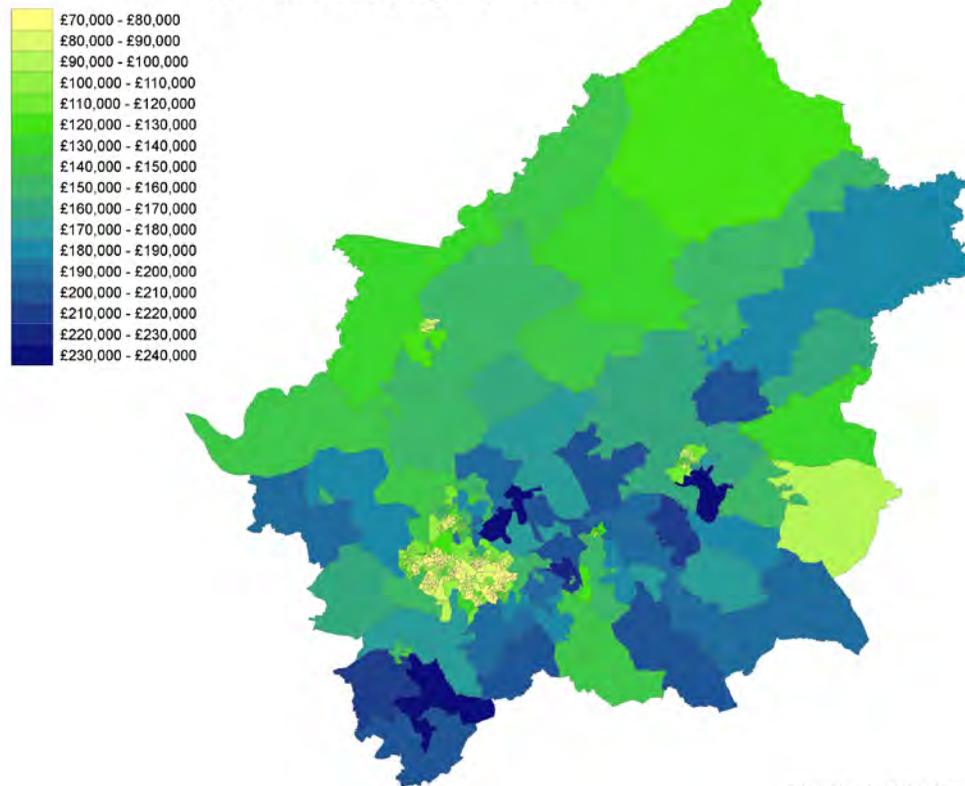
## **Recommended actions to secure benefit**

**Stakeholders should ensure that the Local Development Framework encourages developments to integrate design and access plans that incorporate high quality, sustainability, green infrastructure, and connectivity to the wider green infrastructure network. The Local Plan had a policy of this kind of policy in CP5 – Design, which the Local Development Framework should build upon with an increased focus on high quality green design, including elements like green roofs.**

**Stakeholders should seriously consider the need for an over-arching master plan for the future growth of the city that looks at strategic spatial solutions to its many needs, including green infrastructure. We would suggest that only by having such a masterplan (taking seriously both commercial and green infrastructure needs and aspirations) can the growth of the city be strategically effective.**

## Map showing average domestic property price - District

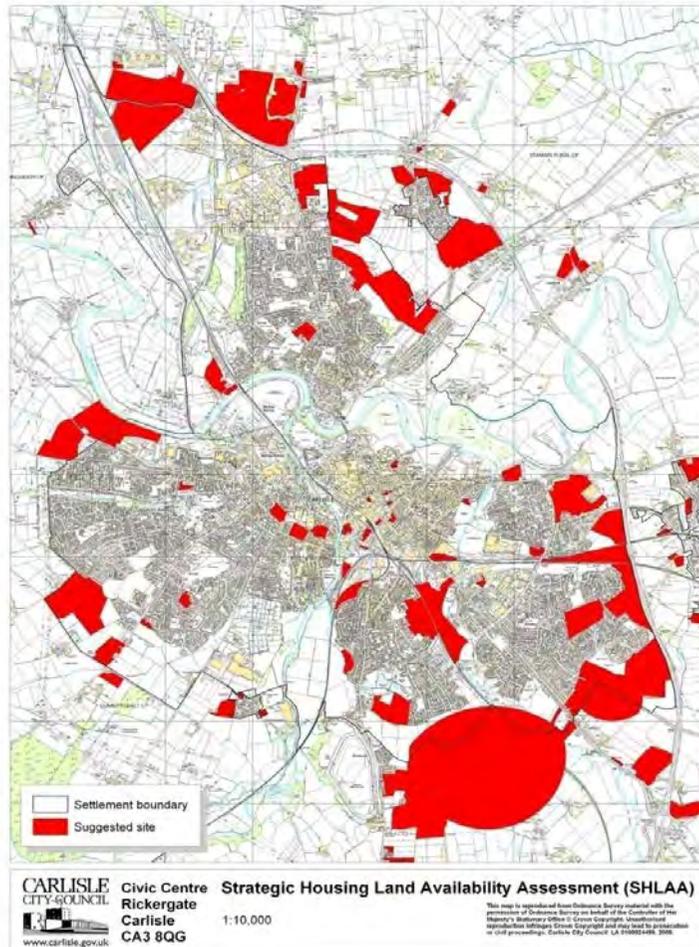
Estimated average domestic property value



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**Figure 21** This map shows estimates of the average value of domestic properties in each Census Output Area. The estimates are derived from data on the numbers of dwellings in each Council Tax band from the Office for National Statistics. Since Council Tax bands relate to property values as of 1991, the figures have been scaled up to take into account the increase in average property values in the intervening years. Our initial analysis suggests a strong correlation between property prices and proximity to high quality green spaces. The market already makes clear that people in Carlisle value properties closer to higher quality landscapes, with natural views, or in proximity to green spaces. The challenge is design a future city that capitalizes on its potential space for growth and the wealth of green assets.

## Map showing the areas Carlisle could grow into – city area



**Figure 22** The area that Carlisle could be expanding into, as identified by the Strategic Housing Land Availability Assessment. These areas can contribute to the economic viability of the wider landscapes if development includes the infrastructure to add value to land-based products, and is of a sufficiently high quality of design to take advantage of the green infrastructure that exists in the urban settlement.

# INTEGRATE NEW (AND EXISTING) COMMUNITIES INTO GREEN NETWORKS

## Summary

**New communities must be well connected and integrated into the existing city, and wider landscape. Carlisle needs safe, attractive and green cycle and walking routes connecting its communities to each other, employment and retail sites, to parks and open green spaces and to wider landscapes. There is a need to raise the strategic weight of connectivity.**

**Development in self-contained blocks of car-reliant housing is unsustainable so stakeholders should work towards the creation of safe and attractive cycle and walking routes connecting communities to each other, employment and retail sites, parks and other open green spaces, and to the surrounding countryside.**

## Introduction and evidence

UK Government policies increasingly require local authorities to think about the integration and connectivity of new developments. The Draft National Planning Policy Framework (July 2011) emphasises the need to plan positively for the creation, protection, enhancement and management of networks of green infrastructure<sup>43</sup>. This is a continuation of current policy. Planning Policy Statement 1 (PPS1) – Delivering Sustainable Development includes an obligation to address wider global issues of sustainability, including encouraging reductions in car use, encouraging active transport alternatives or public transport. If the growth of the city is to comply with Planning Policy Statement 1 (PPS1) – Delivering Sustainable Development then careful thought is required about the areas to be developed.

**'The condition of our surroundings has a direct impact on the quality of life and the conservation and improvement of the natural and built environment**

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<sup>43</sup> Draft National Planning Policy Framework, Department of Communities and Local Government (July 2011) pp. 46

**brings social and economic benefit for local communities.'**

But given the fact that Carlisle's future growth is likely to be on the edge of the urban settlement where it meets the countryside other policies also require careful consideration. The Draft National Planning Policy Framework (July 2011) encourages planning strategies to protect and exploit opportunities for the use of sustainable transport modes to reduce greenhouse gas emissions and reduce the need for major transport infrastructure<sup>44</sup>.



**Figure 23 Where developments have not anticipated the public demand for accessing open green spaces people make their own access. This example is on the north side of Heysham Park.**

<sup>44</sup> Draft National Planning Policy Framework, Department of Communities and Local Government (July 2011) pp. 21-22

The new communities that are emerging around Carlisle will neither feel like part of the historic city, be genuinely sustainable, or compliant with the national policies summarised above unless they too are effectively connected to the existing city and the surrounding countryside. Our observation is that some recent developments have underestimated the demand from future residents for accessing the public green spaces and the wider countryside. There is a need to raise the strategic weight of connectivity. Development in isolated and self-contained blocks of car-reliant housing is inherently unsustainable. New communities need to be well connected and integrated into the existing city, and wider landscape.



**Figure 24 Communities at the other side of Heysham Park have much better access designed into the urban fabric.**

Site observations, reinforced by consultation with stakeholders, about the historic growth of Carlisle is that whilst individual developments (within the red line of planning application) are often of an acceptable or even good standard, the cumulative effect and the wider strategic impact of these individual new sites in total is often more problematic. Many stakeholders feel that there is a lack of wider spatial vision for the City that would inform how new development sites relate to the whole. This lack of clear vision makes it difficult for developers to design the future of the city and its communities in ways that are coherent.

Some of the recent development at the edges of the city has impressive amounts of green infrastructure, with gardens, public green spaces, preservation of existing environmental features like trees, hedges or streams, and even creating habitat for biodiversity. Within what would have been the 'red line' of the planning applications these were no doubt relatively enlightened applications from responsible developers. The problem is that sustainable communities do not exist in isolation within a tightly drawn red line –it has been observed that recent developments have design flaws when it comes to connectivity to the rest of the city (poor cycle or walking routes, or green corridors).

Some recent developments are to all extents and purposes designed in a such a way as to encourage car use, and discourage walking or cycling, because the development effectively sits within a ring fence which makes walking and cycling from home to the city centre

difficult or even dangerous. It is suspected that these developments actively encourage residents to travel by car because wider connectivity was not designed in, and was not given the prominence in decision-making that it might have been. It appears from our interviews with stakeholders that sometimes other issues, like security (requiring a boundary fence), override the necessity of access to green spaces or walking and cycling connectivity. There also appears to be an underestimation of the future demand from communities to access open green spaces and the wider countryside. There is a sense that some of these communities are effectively separate villages added to the edge of the city, rather than incorporated effectively into the whole. Given that there is now a wealth of robust evidence about how healthiness can be designed in, or out of, communities, this has to be a concern in terms of public health and sustainability.

At present many of the communities on the urban fringe of Carlisle are effectively fighting the historic design of the city, and creating their own access to green spaces through holes in fences and hedges. All around Carlisle at perhaps a hundred different places the people are breaking through the fences, barriers and dykes that history has placed between them and green spaces. Strictly speaking much of it is trespass, but in many cases it is hard not to sympathise with what people are doing; they are voting with their feet for more, or different, access to green spaces from that which has been provided by the historic design of the city, and they are making access so they can do things which are

socially desirable (walking, cycling, watching wildlife, spending time as families, and walking dogs) Sometimes they are simply creating access where common sense would dictate that it should ideally have been provided by developers or by planners in the first place. And even if this access is not formally sanctioned if future development removes it, there is the potential for a loss of health and wellbeing benefit.



**Figure 25 All around the urban fringe fences are broken where people access the wider landscape.**

One of the most interesting green spaces in Carlisle is in Raffles (see image on page 96) where land allocated in the past for housing has effectively turned into an open meadow or unofficial and largely unmanaged park. When visited this was a space with all sorts of social

activities taking place on it, and a range of flora and fauna was witnessed. This space is a powerful reminder that green spaces that are valued by communities are not always those that exist in an official sense. A strategy like this cannot remedy all of these situations, but it can draw attention to them as a means to ensure better decisions are made in future.

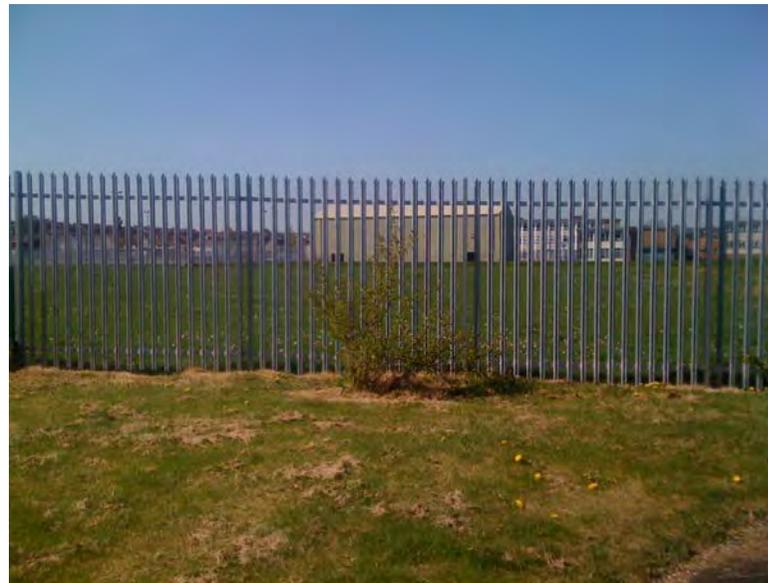


**Figure 26 Where access to the wider countryside is denied fences get broken.**

People are making their own access to better connect their homes and communities to the landscapes that surround and run through Carlisle. Whilst it will always be legitimate and proper to keep people out of some private property to protect them from livestock, or for

security, there are lots of places around Carlisle where it would be a more productive investment of effort to enable better access to these spaces. Future development should be done with a consideration of the inevitable demand for access to the surrounding green spaces – new housing will create new demands for access to surrounding countryside, and it is in the interests of everyone (including landowners) that this demand is carefully considered and designed in, because to ignore it simply leads to unofficial access routes being created and an urban fringe which is dominated by a clash between the desires of the community and the fences, and ultimately fences come off worse than man in these encounters. The more one looks at this issue the more one starts to come to the conclusion that this is a problem of a failure in the design of Carlisle.

Carlisle has an abundance of green infrastructure assets (see map on page 82 showing the open spaces in the city, and that on page 83 for the surrounding land which people are accessing, often unofficially), but has real issues about access and connectivity between the mass of the population (particularly those suffering from the worst deprivation and ill health) and the world-class green infrastructure. It is believed that this is a result of an industrial pattern of urban development that was entirely understandable and functional in its day, but which looks like it needs redesigning to meet the needs of the current and future populations.



**Figure 27 In the name of security, new communities are sometimes fenced off from green spaces or the rest of the city**

In better-designed communities this entirely predictable demand will be recognised and designed in from the start. Stakeholders in the development process need to ask themselves what future residents will demand in terms of access to the surrounding landscape and to cater for that demand in development plans. Carlisle has some great examples of green connectivity that can be learnt from in other locations. The cycle route from Carlisle to Dalston following the river corridor of the Caldew, for example, is just one example of how communities (Denton Holme, Cummersdale, and Dalston) benefit from access to high quality public green space that also has high biodiversity value (with otters

and barn owls regularly seen). It is also providing car free access to and from the city.



**Figure 28 A myriad of small green routes run throughout the urban settlement linking communities and providing habitat for wildlife.**

The challenge is to learn from what works best in Carlisle (whether designed or fortuitous) and take that learning to inform-by-design other emerging communities. The connectivity of the city to and from satellite communities can be improved through creation of new paths and enhancement of existing ones. Carlisle has some excellent examples of good practice such as . the Caldew River corridor which is a much used, much loved and much valued case study in how green infrastructure can enhance people’s lives in Carlisle. Many hundreds of people regularly use that green

space. The lesson is a simple one, communities benefit greatly from, and will utilise, accessible green spaces in ways that are good not just for them as individuals, but also for the good of the wider community. The challenge in Carlisle is to ensure that everyone has access to open green spaces like this, and this is a real challenge that will require long-term vision, and strategic planning. By stark comparison the communities the other side of the railway line from the Caldew have a very different relationship with that space, and have much greater barriers placed in their way to accessing it.



**Figure 29 School playing fields are important green infrastructure. Ways can be found to increase the public benefit and access without compromising security.**

## **Recommended actions to secure benefit**

**Stakeholders will, through the development of the Local Development Framework, define the spatial focus for commercial and residential growth in the city region. Depending upon the decisions made there will need to be a slightly different approach to green infrastructure implementation:**

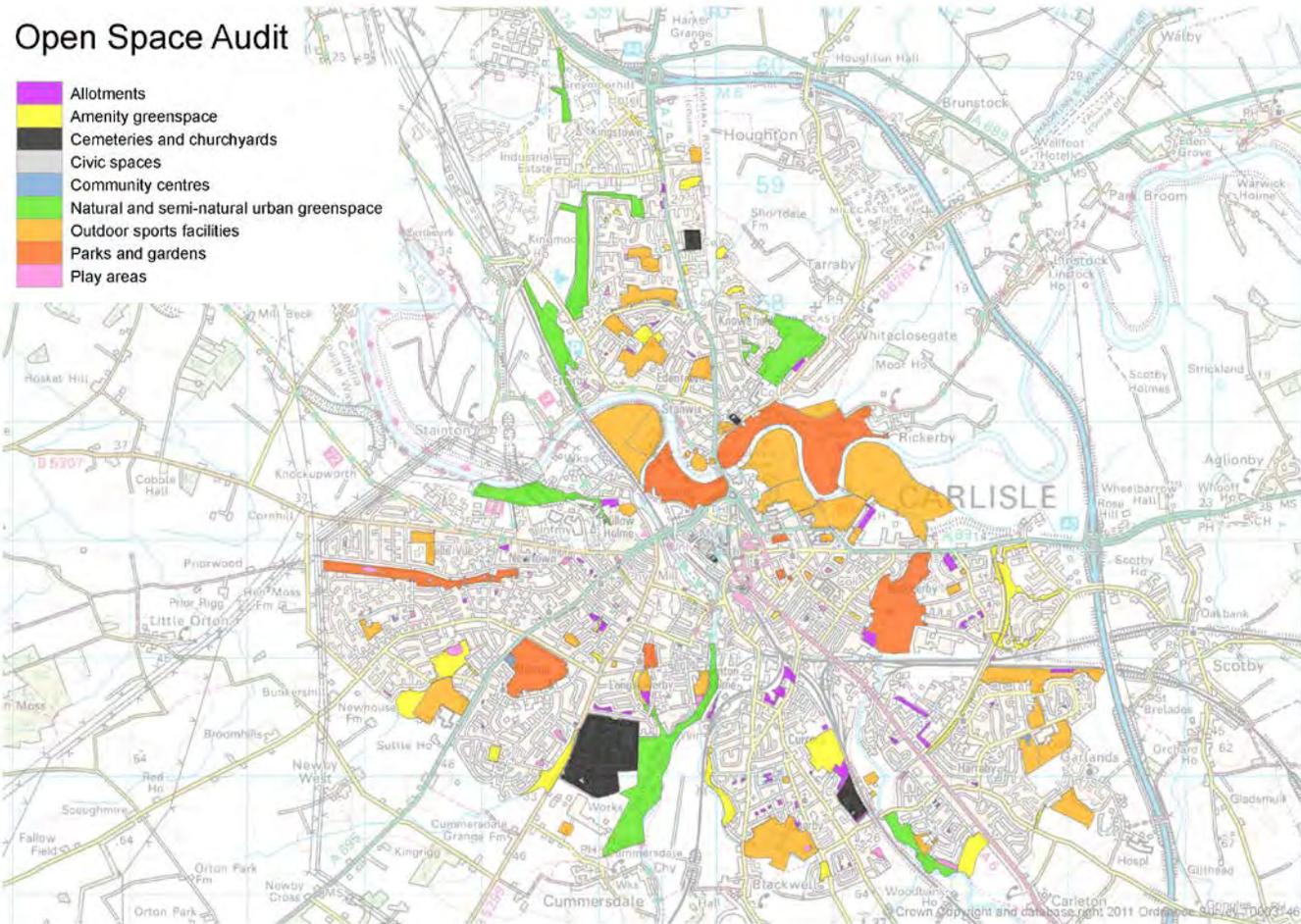
**If growth is focused on the existing urban area then the challenge is to protect the green infrastructure in that area with the highest social and environmental value: it is suggested that this is often derelict land with high biodiversity value, the existing green spaces (parks, allotments, playing fields, green routes) and the river corridors and flood plains.**

**If the growth is on the urban fringes then the challenge is to ensure that the social and environmental benefits of the urban fringe are not destroyed by isolating existing communities from green infrastructure and the wider countryside.**

**Stakeholders should ensure that development on the urban fringe anticipates the likely demand of residents for access to surrounding landscapes and open green spaces and seeks to meet this demand both for residents of development itself, and for neighbouring communities.**

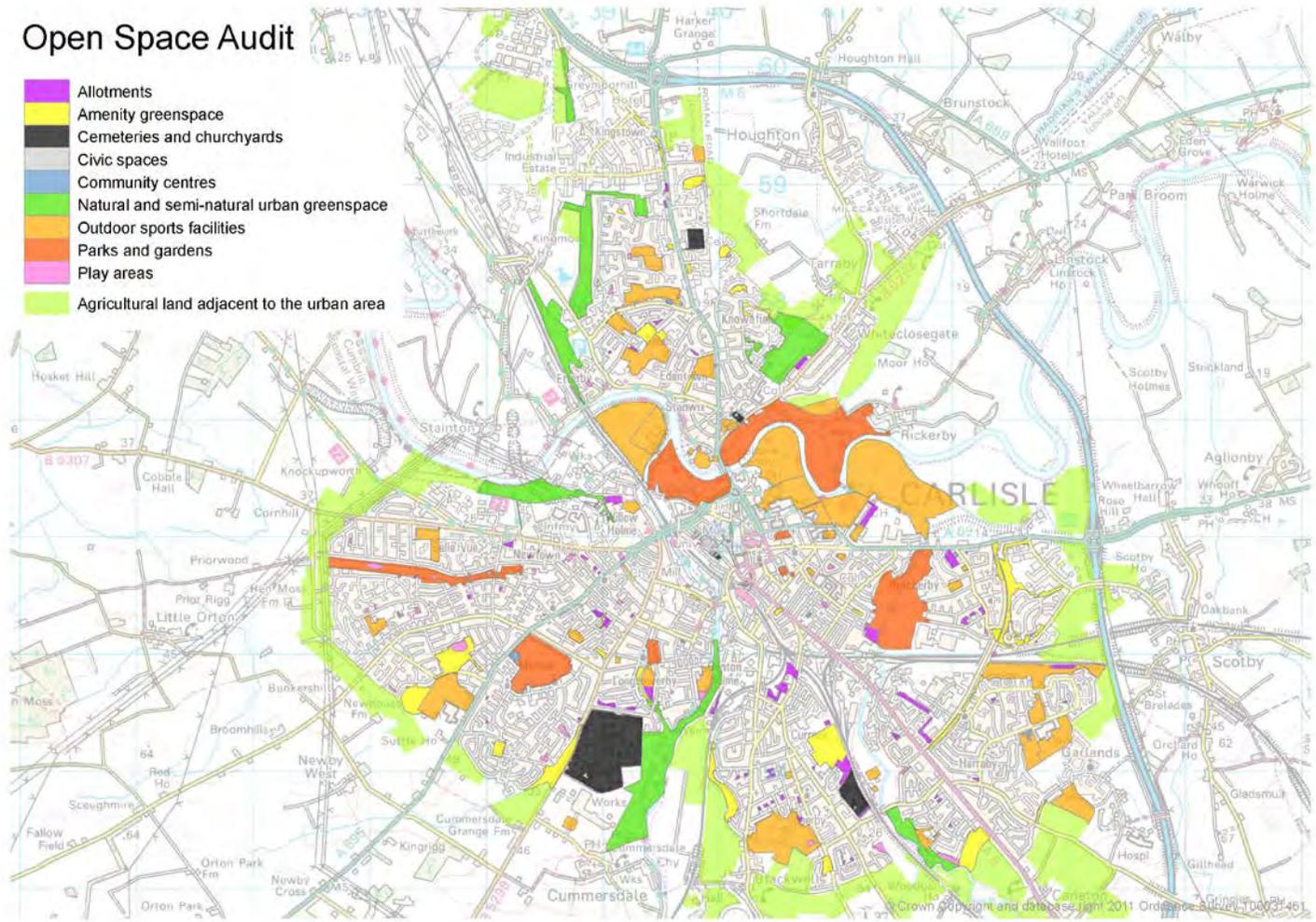
**Stakeholders should ensure that the Local Development Framework builds on previous policy in the Local Plan (Policy CP6) which protected 'amenity value' to, in future, protect green views, to the extent that suitable mitigation or compensation measures are delivered to sustain the wellbeing of communities.**

## Map showing open space audit – city area



**Figure 30** The existing open green spaces within Carlisle are critical to sustaining its current quality of life, and will be valuable assets in future initiatives to improve it. They need to be protected, and developed where possible to enhance their values.

# Map showing open space audit and 'green halo' – city area



**Figure 31** This map shows the city Open Space Audit plus agricultural land (as determined by the typology mapping process) adjacent to the urban area. The land (largely agricultural) around the fringes of the urban settlement has a role in sustaining the health and wellbeing of the existing communities. Development on these sites poses challenges about loss of public benefit and may necessitate careful landscaping and design to mitigate and compensate for the loss of green spaces.

# PROTECT AND DEVELOP GREEN SPACES TO MEET FUTURE NEEDS

## Summary

**Prioritise the protection of existing green spaces of value and identify alternative sites for meeting deficits in provision. Ensure that developers and other stakeholders provide green infrastructure and connectivity to surrounding landscapes to pre-empt the ‘broken fences’ issue. New development should include green corridors and high quality habitat creation that contribute to strategic GI objectives/networks<sup>45</sup>.**

## Introduction and evidence

The Draft National Planning Framework (July 2011) includes the following objectives for the natural environment

**Planning should help to deliver a healthy natural environment for the benefit of everyone and safe places which promote wellbeing.**

To achieve this objective, the planning system should aim to conserve and enhance the natural and local environment by:

**Protecting valued landscapes**

**Minimising impacts on biodiversity and providing net gains in biodiversity, where possible; and**

**Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of land, air, water or noise pollution or land instability.**

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<sup>45</sup> Below we explain some of these networks – see for example the sections below on wildlife corridors, in Sustainability and Resilience.

**In preparing plans to meet development requirements, the aim should be to minimise adverse effects on the local and natural environment.**

**Plans should allocate land with the least environmental or amenity value where practical, having regard to other policies in the Framework including the presumption in favour of sustainable development.**

**Plans should be prepared on the basis that objectively assessed development needs should be met, unless the adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the Framework taken as a whole.**

To this end, local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife sites or landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites<sup>46</sup>. The Framework states that planning policies should take account of,

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<sup>46</sup> National sites comprise Sites of Special Scientific Interest, which should be given a high degree of protection. Circular 06/2005 provides further guidance in respect of statutory obligations for biological conservation and their impact within the planning system.

**The need to plan for biodiversity at a landscape-scale across local authority boundaries**

**Identifying and mapping components of the local ecological networks, including: international, national and local sites of importance for biodiversity, and areas identified by local partnerships for habitat restoration or creation**

**Promoting the preservation, restoration and re-creation of priority habitats, ecological networks and the recovery of priority species populations, linked to national and local targets<sup>47</sup>; and identify suitable indicators for monitoring biodiversity in the plan; and**

**Aiming to prevent harm to geological conservation interests.**

**Which green spaces are the most important to protect and develop?**

A key issue that emerges in conversations about the sustainability of Carlisle's growth is where that growth should take place, or the importance of the master planning of the city. Here the answers are not black and white, and different stakeholders will come to different conclusions; what is good for biodiversity is not necessarily the most sustainable option. The biodiversity value of some of the improved farmland

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<sup>47</sup> Including those identified by local biodiversity partnerships.

around the city is often far lower than the biodiversity value of some of the derelict or brownfield land within the older industrial areas. In terms of sustainability, there is a lot to be said for development of those derelict or brownfield sites. So the growth of Carlisle requires careful compromises and trade offs; new green field development to the north or south of the city invariably means more car-dependent communities, with all of the social and environmental consequences that entails.

The world's leading city economist, Edward Glaeser, has illustrated how density of population has a major impact on sustainability. At its simplest, as cities spread their populations across greater areas the people who live there are more likely to use cars and consume more energy, and cars and homes account for approximately 40% of household energy use. Holding family income and size constant, fuel consumption per family per year declines by 106 gallons as the number of residents per square mile doubles<sup>48</sup>. The transition from walking to car usage has major effects on urban spaces, with a fortyfold increase in space required per worker (at its simplest, a parking space takes up more room than a person's work space, and a vehicle requires significant road space). Density of population in areas closer to work, retail and leisure locations reduces the need to travel, makes walking and biking more feasible, and makes public transport more viable. Taking this into account rather poses a challenge to Carlisle, how can the city grow and

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<sup>48</sup> All statistics in this passage from Edward Glaeser, *Triumph of the City*, Pan Macmillan, 2011, p 208.

expand as it intends to without becoming less sustainable, more car-reliant, more polluted, and with a lower quality of life? Will the anticipated growth be the making or the breaking of Carlisle? The answer, as so often in these things, is 'it depends'. It depends on whether the growth of the city is done in a managed way that does not worsen the quality of life for existing communities, and it doesn't have to with inspired green infrastructure design and an awareness of the issues.

The solutions are complex and final recommendations will require engagement with a range of stakeholders before being agreed, but creating an effective, accessible, green and safe active transport network for walking and biking is critical to the sustainability of new communities, particularly those proposed to the North and South of city. Cumbria County Council has a key role to play here in working with developers and other stakeholders to create such a network of routes, and they will need the support of stakeholders to ensure these are of sufficient scale and quality to be effective.

### **A strategic approach to green infrastructure**

In the other sections of this report we have seen the multiple benefits of green infrastructure and a great deal of evidence for why protecting, enhancing or creating new green infrastructure is beneficial for social, economic or environmental reasons. In this section the need to think about green infrastructure needs for the future of Carlisle's communities is highlighted. This is an obligation placed on local authorities through UK government policy (see above). Our initial analysis

shows that for Carlisle to comply with this legislation stakeholders will need to take a strategic approach to green infrastructure planning – and this will require considerable detailed work above and beyond what is possible through this commission alone. The need is to take this strategy as a starting point and then to implement it with a detailed spatial focus once stakeholders are brought into the core approach and vision.

### **Deficits in provision of green infrastructure**

A first step in this is the detailed analysis of existing green spaces in different kinds in communities. Depending on the social or economic focus of future initiatives, different kinds of auditing will be required (as shown in other sections of this report, like that on health in the city). At a superficial level it is easy to identify (as we have done using GIS modelling of data) those wards with the least amounts of green infrastructure. The top 10 wards with the least GI are as follows (descending order):

- 1. Currock**
- 2. St Aidan's**
- 3. Castle**
- 4. Harraby**
- 5. Denton Holme**
- 6. Belah**
- 7. Upperby**
- 8. Botcherby**
- 9. Yewdale**
- 10. Morton**

But there are significant variations in people's access to green infrastructure even within these wards. For example, some residents of St Aidan's have great access to open green spaces like Rickerby Park, but many others are the wrong side of the physical or psychological barrier to access that is the A69. It also needs to be noted that the kind of green infrastructure interventions required will depend upon whether the strategic focus is, for example, improving health, improving the aesthetics of a community, or addressing air pollution from roads. There is no simple way of analysing what is required, all solutions are bespoke and require knowledge of the specifics of a given community and its issues. It also needs to be understood that development on existing green spaces changes the situation, potentially adding or removing existing green spaces of value.

Stakeholders will also need to agree what future needs are likely to be, a focus on flood alleviation would require one kind of response, a focus on health another kind. Elsewhere in this report it is shown how protecting and developing existing green spaces can meet the future need for a city with a better image and perception, and in later sections basic analysis of how this can improve quality of life, and make the city more sustainable; in this section the critical issues relating to the growth of the city are highlighted:

**Ensuring that growth in the existing communities does not worsen green infrastructure inequalities by developing on valued green spaces (like allotments, parks, playing field, and river corridors) that are performing valuable social, economic and environmental functions.**

**Ensuring that the creation of new communities does not significantly reduce the benefits of existing green spaces for existing communities (e.g. by removing views of nature/green space on the urban fringe which affect wellbeing).**

**Ensuring that new communities have sufficient green infrastructure to meet future needs and are fully integrated into green networks.**

In this section the first two of these issues are addressed, the third issue is addressed in the previous section. GIS-based analysis reveals the inequalities of green infrastructure provision (particularly in the urban settlement). Other sections of this report detail how these spaces are performing a complex range of functions (see, the health section for example, which compliments this section). Whilst there are sustainability arguments for increasing the density of housing in the urban settlement this would be a mistake if it were achieved at the cost of losing the limited number of green spaces that already exist. The green spaces that exist in the urban areas need to be understood as valuable assets that require investment and management. Fortunately UK government legislation

protects many of these green spaces<sup>49</sup>. But simply protecting them is not enough to secure their full benefits, stakeholders need to enhance these places to secure the optimum environmental, social or economic outcomes (see below, Quality of Life - Improved Community Access to Green Spaces).

**Raising the quality of green spaces to unlock their potential value**

The evidence overwhelmingly shows that quality of greens spaces makes a major difference to people's desire to access and utilise these places for their own and other people's benefit. Quality landscaping with features like trees, ponds, etc. appears to encourage people to use parks and open spaces in more diverse ways<sup>50</sup>. The Urban Green Spaces Task Force (2002) reported six main social barriers to the use of open green spaces:

**Lack of, or poor condition of, facilities, especially seats, toilets and play opportunities for children.**

**The incidence of anti-social behaviour. The potential for conflict between children and adults is often cited, but there are increasing concerns over the**

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<sup>49</sup> See 'An Introduction to their Legal Status and Protection' an Our Green Spaces guide that explains simply the laws that protect registered village greens and common land and gives suggestions of where to go for more information. Copies are available from the OGS website [www.ourgreenspace.org.uk](http://www.ourgreenspace.org.uk)

<sup>50</sup> Giles-Corti, B., Broomhall, M. H., Knuiman, M., Collins, C., Douglas, K., Ng, K., Lange, A. and Donovan, R. J. (2005). Increasing walking: how important is distance to, attractiveness, and size of public open space? *American Journal of Preventative Medicine* 28 (2 suppl 2), 169–176.

**presence of drug and alcohol users, undesirable characters and ‘stranger danger’.**

**Concerns about dogs and dog mess.**

**Safety and other ‘psychological’ issues including feelings of fear and vulnerability based on real experiences and perceived concerns. This applies not only to people’s own personal fears, but also especially to fears for their children.**

**Environmental quality issues such as litter, graffiti and vandalism.**

**Loss of variety and too much ‘old hat’, especially for young people for whom Victorian parks do not always represent an exciting or attractive environment.**

The message is clear, socially effective green infrastructure requires good access, variety, quality design, high levels of maintenance, and an understanding of how and why people value that space. Parallel efforts are also required to ensure that the most deprived communities are encouraged and supported to use green spaces, as often they have the greatest needs for its benefits. The existence of green spaces encourages many people to use them, but other people may have a lack of knowledge, motivation or the physical fitness to access such spaces, other may feel unwelcome or unsafe, so efforts to reach out and engage people who may not use these spaces, like the Love

Parks week in Carlisle, are essential. It is encouraging that eight of Carlisle’s parks already have green flag status. The Carlisle Green Spaces Strategy to be created by the City Council needs to develop an implementation plan to ensure that the quality of experience in all of Carlisle’s green spaces is excellent, with a rolling plan of investment.



**Figure 32 Some green spaces like this one in Raffles exist more by accident than by design, but still perform valuable social and ecological functions.**

### **Green views affect wellbeing**

The evidence (see Quality of life sections) also suggests that views of nature and of green spaces, even when not accessible, play a role in people’s sense of wellbeing. This poses a difficult challenge to a growing city, because the areas at the edge of the city that existing

communities either currently have access to, or which they may be benefitting psychologically from, simply by looking at, have a public health value. In our site visits and community consultation it became apparent that Carlisle is surrounded by green spaces, some of which run into the city itself with the river corridors, which are performing an important health and wellbeing function. These spaces are often not meant to be publically accessible (i.e. people are in many cases trespassing) and are often in private ownership and productive land, and are in some cases identified as being where the growth of Carlisle will take place. The map above suggests where this 'green halo' is (see map on page 83).



**Figure 33** Some privately owned land around the city is heavily used and accessed by communities, and as such has a social value.

It forms something of an informal green belt and provides many of the benefits of one. Whilst in UK planning policy the viewer does not, and perhaps should not, 'own the view' but there is a case for taking very seriously the wellbeing value of a green view (even one of relatively uninspired agricultural land) where its loss would negatively impact on the quality of life and wellbeing of communities. The challenge is to allow and enable growth and new development without reducing the social and economic benefits that flow from having access to, and looking at, green spaces. New residential and commercial development needs to compensate and mitigate for the loss of these functions, where possible, by retaining, enhancing or creating green infrastructure which provides the public goods lost by the development – particularly the loss of access and loss of wellbeing from green views.

### **Manage public green spaces efficiently**

Stakeholders should investigate the potential for cost reduction and additional funding through improved management of green spaces. There is a growing body of evidence that suggests that the management approach taken to parks and other open green spaces determines the cost of management. As illustrated elsewhere in this report most of the evidence suggests that greater investment is required to unlock the potential benefit of Carlisle's green infrastructure, but part of the solution may also be redistribution of existing resources by making efficiencies and investing current resources in changes which can reduce future management costs, and/or result in the benefits for

Carlisle's communities being greater than they are now. There are a range of options and choices to be made, but there is a growing body of evidence which shows that less intensive management (enabling grass to grow more naturally, letting meadows establish, and increased woodland or tree cover) of parks and other green spaces can result in both greater biodiversity, but also, critically reduced costs.



**Figure 34. Even some of Carlisle best green spaces, are rather hidden from view. More can be done to make such spaces more visible.**

Research undertaken by the Woodland Trust (Trees or Turf, The Woodland Trust, 2011) looked at three timescales, 1-4 years, 5-9 years and 10-50 years<sup>51</sup>. Given the scale of the open green spaces managed by the Carlisle City Council savings could be considerable.

<sup>51</sup> See - <http://www.woodlandtrust.org.uk/en/campaigning/our-views-and-policy/woods-for-people/Documents/trees-or-turf-summary.pdf>

The Woodland Trust findings demonstrate that naturally colonising woodland and pioneer style woodland can be considerably cheaper to maintain than all types of grassland.

Regime	Average annual costs (£/ha)	
	Years 1-9	Years 10-50
Amenity grassland 50 per cent mown by hand	£2,280	£2,280
Amenity grassland 10 per cent mown by hand	£1,750	£1,750
Amenity grassland 100 per cent gang mown	£1,620	£1,620
Complex mixed woodland planting	£1,425	£2,750
Woodland in managed green space	£1,065	£1,050
Meadow grassland	£710	£710
Rough grassland	£580	£580
Pioneer style woodland	£250	£400
Naturally colonising woodland	£200	£350

**Summary of the average annual maintenance costs for each landscape type**

**Source: Trees or Turf, Woodland Trust, (2011)**

The maintenance costs of land management for woodland in managed green spaces is more expensive during the establishment phase than informal woodland but is still less costly to manage than the maintenance of amenity grassland. Changing the mowing regime in some of Carlisle's parks and open green spaces can deliver cost savings, as it has done already in other parks. This should be taken in the context of our other recommendations, as the cost savings are only relevant where greater tree cover or changed grassland management is a desired desirable strategic outcome, and does not adversely affect the way communities use their open green spaces.

## **Recommended actions to secure benefit**

**Stakeholders should focus on the quality of children's play and recreation areas to ensure these are of the highest possible standard. It is recommended that the Local Development Framework should prioritise (as the Local Plan did through Policy LC4) that such facilities are created in new communities, and maintained appropriately in existing ones.**

**Stakeholders should ensure that allotments and other socially beneficial green spaces are protected through the Local Development Framework (in a similar way to Policy LC7 in the Local Plan). The Green Spaces Strategy which will be created after this strategy needs to provide an inspired solution to their future management and development in the light of the fiscal challenges faced by local authorities. Where new communities are created the likely demand for allotments should be anticipated and the demand met with new provision.**

**Stakeholders should work in partnership to protect and enhance green spaces in smaller settlements, as these often play a major role in the character of those communities.**

**Stakeholders should develop mechanisms to implement ideas in the Natural Environment White**

**Paper of giving communities the opportunity to protect green spaces that matter to them. This may well include green spaces that have not been formally recognised previously – enhancing future quality of life surveys may provide an opportunity to get greater insight into the community's perspective of different green spaces. Communities should be involved in which green spaces are improved and how they are enhanced.**

**Stakeholders should develop a more nuanced approach to providing green infrastructure than that in the Local Plan. The value of green infrastructure is determined by such complex variables that simple benchmarks like those in Local Plan Policy LC2 are not enough – a more sophisticated approach is needed which takes account of the factors which affect how communities use and value green infrastructure, including travel times, walkability, barriers to access and attitudes to different green spaces.**

**Stakeholders could explore the potential for cost reductions through finding new ways of managing open green spaces, specialist advice is available from specialists like the Woodland Trust or Groundwork.**

# QUALITY OF LIFE

# Introduction

Quality of life is critical to Carlisle's socio-economic future and the wealth of green infrastructure in Carlisle District it is a vital resource that can be exploited to improve quality of life for all. Green infrastructure should be used as a means to create or protect tranquility and absence of noise, to ameliorate air and light pollution and to sustain or improve the quality of life and health and wellbeing of residents. Green infrastructure should be used to make the city region more robust to cope with future environmental challenges. Encouraging more wildlife in the city and rural areas will enhance quality of life, and improve access, enhancement and recreation.

Historically many communities have often taken a rather passive approach to creating a good quality of life; depending on the pattern of development and the resulting urban or rural environment. There was little a sense that little could be done about it. Today it is increasingly recognised that effective use of green infrastructure, and other measures, can actually change quality of life markedly and needs to be pro-active.

This section suggests that that Carlisle can take an active well-managed approach to improving the quality of life of residents and that green infrastructure is one of the most effective tools for doing this. Below we look at how high quality and accessible green infrastructure can be used to improve the health and wellbeing of Carlisle's communities, can be used to support learning and personal development, and can improve community interaction and cohesion; here it will be outlined how improving the environmental quality of communities can make them better places to live.

# IMPROVING COMMUNITY HEALTH AND WELLBEING BY IMPROVING ACCESS TO GREEN SPACES

## Summary

**Communities with a deficit of high quality green space or with the greatest need should be a priority in terms of local connections to GI. Protecting the existing networks of access routes to green spaces is critical, some networks of access are dependent upon key links (like the Memorial Bridge) that should be preserved and sustained at all costs. These access networks should be added to and enhanced where possible by developing new network links (particularly to bridge the rivers which sometimes divide the city's communities).**

## Introduction and evidence

Green space is most effective for physical activity when it is accessible to residential areas on foot, by bike and by public transport. Research has shown that social ties were stronger the greener the neighborhood<sup>52</sup>.

The benefits of green infrastructure are often lost or drastically reduced because of barriers to access. The analysis suggests that the river corridors, main roads, and railways pose the greatest barriers to effective community interaction and cohesion in green spaces. The objectives of Carlisle's key strategic documents need a progressive approach to the existing green spaces within the communities. The words in the Carlisle Partnership Community Plan are worth considering

**“We want Carlisle to be a healthy place where people enjoy long, happy and healthy lives and are able to contribute fully and support Carlisle's growth. We want to continuously raise the aspirations of our young people and allow them to look forward to a positive future. We want to make**

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<sup>52</sup> See, for example, Davies, P. and Deaville, J. (2008). *Natural heritage: a pathway to health*. Countryside Council for Wales.

**sure that Carlisle is a safe place to live where people feel part of their community and are able to influence the decisions that affect them...In short, we want to reduce the health and socio-economic inequalities that too often exist across our district by narrowing the gaps between best and worst”.**

Equality of access to open green spaces is critical to achieving this ambition. If Carlisle is to comply with National Planning Policies then how these barriers impact on people’s access to green infrastructure is a critical issue. National planning policies have a ‘golden thread’ running through them of a ‘presumption in favour of sustainable development’. It is UK government policy that development plans should:

**Ensure that the impact of development on the social fabric of communities is considered and taken into account**

**Seek to reduce social inequalities**

**Address accessibility (both in terms of location and physical access) for all members of the community to jobs, health, housing, education, shops, leisure and community facilities**

**Take into account the needs of all the community, including particular requirements relating to age, sex, ethnic background, religion, disability or income**

**Deliver safe, healthy and attractive places to live**

**Support the promotion of health and well being by making provision for physical activity**

This is relatively straightforward if you are designing a new community from scratch but a complex challenge in an existing built environment. The benefits of green infrastructure are often unevenly distributed throughout communities like those of Carlisle. Our research has shown that the 10 most deprived super output areas in Carlisle have on average 27% less green infrastructure cover than the 10 least deprived areas. People elsewhere in the UK living in deprived areas, particularly ethnic minorities, the elderly, women and people with disabilities often suffer from poorer access to green spaces. Barriers can be both physical and psychological. In Carlisle at present it is possible to live in close proximity to open green spaces but be physically divorced from them by busy roads (Wigton Road or Warwick Road being two prominent examples), railway lines (Currock particularly suffers from the barrier of the West Coast main line divorcing it from the Caldew river corridor), rivers or other barriers.

In earlier sections of this report the value and benefit of connecting the city to surrounding landscapes was highlighted, particularly for tourism. Attention is drawn to the importance of something more modest but even more important for some communities in Carlisle – ensuring that they have good access to green spaces closer to home to ensure their quality of life is enhanced.

Site visits, stakeholder interviews and mapping analysis suggests that how people in Carlisle access their local green spaces is reliant upon a complex network of formal and informal routes. This network needs to be better understood if they are to be better protected, enhanced and added to. Sometimes Carlisle's communities are divorced from green spaces in close proximity to their homes by busy roads, railway lines, rivers or by security fences (See map diagram on page 99 for illustration of these barriers). It is worth looking at some of these barriers to access briefly:



**Figure 35** Even some of the most effective open green spaces around Carlisle, like the Caldew river corridor, have rather unwelcoming entrance points that could be improved.

**Roads** – The main roads in and out of the city have the busiest traffic and, unless careful thought is given to how

communities on the ‘wrong side’ of these roads can cross them to access parks and other green spaces then this will exacerbate inequalities in health and wellbeing. More can be done in Carlisle to improve the visibility of parks (Chances Park in particular) from the roads and beyond to encourage people to access and use these spaces. Communities should be consulted about the barriers they perceive are restricting access to green spaces – this consultation may reveal that further safe pedestrian crossings are required. New development needs to design in safe, easy access to open green spaces. It would be a serious mistake to create a city land-locked by a busy ring road without carefully integrating pedestrian and cycle access to the surrounding landscapes with long-term health and well-being consequences.

**Railway lines** – The railway lines running in and out of Carlisle pose a significant challenge because they often form impenetrable barriers between communities with the greatest need of open green spaces. Even where bridges or underpasses exist they can be intimidating or unattractive links which are then under-used. The railway dividing Currock from the Caldew river corridor and its open green spaces is a classic example (see map diagram on page 99 for illustration of this issue). Development that isolates communities from green spaces by not providing design solutions to overcome such barriers should be prevented.



**Figure 36** Busy roads pose a significant deterrent to communities using even high quality green spaces, like Chances Park.

**Rivers** – The Rivers that run through Carlisle which often provide elements of green infrastructure in their own right can divorce communities from other open green spaces and from each other. This makes the bridges critical to sustaining community access and interaction, and sustaining a network of green infrastructure that delivers the social and economic benefits explained elsewhere in this report. The urban settlement between the M6 to the East and the new Northern Development Route Bridge to the West has just three bridges that span the Eden (See map diagram on page 102 for illustration of this issue). One is a railway bridge with no pedestrian or bike access, the second is the Eden Bridge, which is one of the busiest traffic routes in the city and perceived by many to be intimidating to bikes, and the third is the

Memorial Bridge, which plays a key role in connecting for pedestrians and cyclists the communities North and South of the river to each other and to high quality green spaces like Rickerby Park. The maintenance and repair of this bridge must be a high priority as it forms a critical link. In the future a new bridge link for pedestrians and walkers could be created with great public benefit in the vicinity of the Waverley Bridge.



**Figure 37** The Memorial Bridge over the Eden is a critical link point between communities and their green spaces. It should be maintained as a link.

**Security fences/field boundaries** – Aerial photographs of Carlisle give a misleading impression about the availability of open green space within the communities. Site visits revealed something else of concern, namely a significant number of potentially important open green spaces with restricted access or no public access at all.

This is particularly true with regard to many of the school playing fields that appear to have been security fenced in the past decade as part of the security measures relating to development and investment in schools. The desire and need for security is entirely understandable but the net result for communities is often a lack of access to green spaces which could, with a slightly different approach, enhance their lives. It is suggested that stakeholders engage with schools, other education providers, and businesses that have large areas of open green space, to explore how communities can secure greater access and benefit from at such spaces.



**Figure 38** The potential renovation of Waverley Bridge poses many challenges, not least of cost, but some means of connecting communities in that section of the city is desirable to ensure that the growing city is properly integrated with an active transport network.

Further research is required, particularly in the most deprived, and most health deprived communities, about specific engineered solutions to ensure that access to green infrastructure is as good as it can be. There are

some key barriers (perhaps half a dozen, including the example illustrated below) where some of the communities that most need good access to green infrastructure, suffer from poor or limiting access because of barriers (see health tables on pages 109-110).



**Figure 39** Quality of access is critical to the extent to which people benefit from green infrastructure: The Caldew green corridor as an example. The residents of Richardson Street, Denton Holme (1) have excellent and attractive access to the Caldew River and its open green spaces. The residents of Currock (2) almost certainly benefit less from this space because the access they have is more difficult, is perceived as less safe, involves crossing a railway bridge with steps, and is generally less appealing. Both communities have access to this green space, but one community has much better access than the other. A classic example of how poor urban design or lack of forethought about the importance of green infrastructure affects peoples lives for decades to come.

# Recommended actions to secure benefit

**Stakeholders should work in partnership to do a comprehensive audit of the different communities' green infrastructure access so that the priority areas can be identified where people have the poorest access to open green spaces<sup>53</sup>**

**Stakeholders should shortlist the key barriers to green infrastructure accessibility around the city for existing communities and overcoming these barriers should be a priority with either pragmatic engineered solutions or alternative provision of open green spaces.**

**Stakeholders need to ensure that new development does not further isolate any of the most health-deprived communities (listed below) from vital green infrastructure, and where possible new development should include new accessible and viewable green infrastructure to improve the health and wellbeing of neighboring communities**

**Stakeholders should prioritise the maintenance of key linkages between communities and their green infrastructure (like the Memorial Bridge over the**

**Eden) and should look over time to enhance these with additional linkages (like a bridge in the vicinity of old Waverley Bridge)**

**Stakeholders should work in partnership to encourage and support new users of open green spaces by communicating their whereabouts and encouraging a sense of community 'ownership'**

**Stakeholders need to ensure that the quality of green spaces is sufficiently high to act as an 'attractor' for communities as this partly counters the negative perceptions of crossing a busy road or making a journey to reach the green space. To achieve this will require a new approach to attracting fundraising.**

**Stakeholders need to engage with other owners of green spaces that could provide greater community access than they do at present. This applies particularly to schools around the city urban settlement whose sizeable playing fields are increasingly surrounded by security fences – we believe that this can be partly resolved by better communication of the public value of green spaces, and better solutions reached in future.**

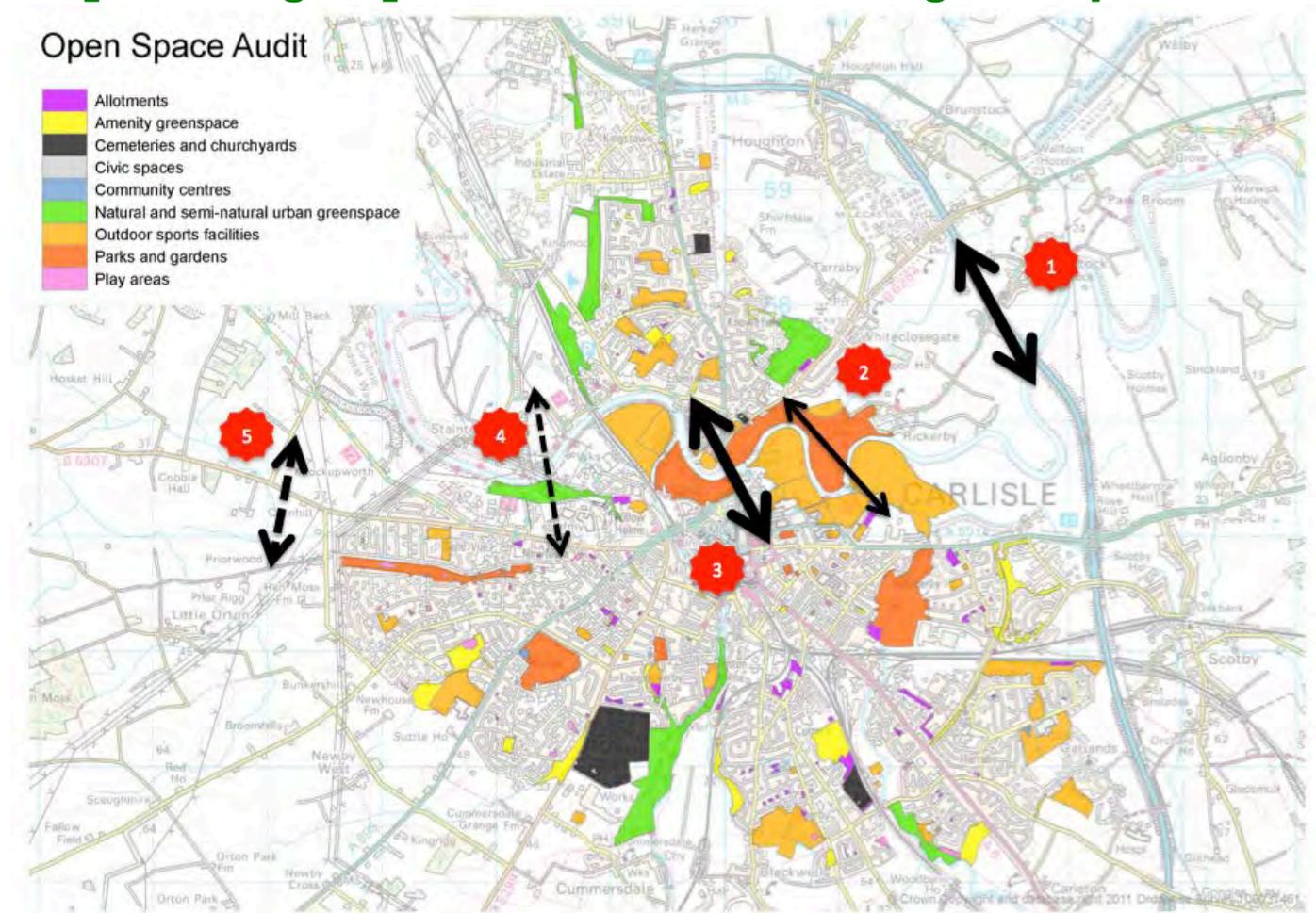
**Stakeholders should be aware that the issues are very similar in communities other than the Carlisle**

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<sup>53</sup> The Open Green Spaces Audit and GIS data provides the basis for this but this needs to be complimented by an understanding of community perceptions, and the experience of key barriers for people who live in different communities. Stakeholders should utilize emerging data analysis tools to assess the walkability of different communities to green spaces.

**urban settlement and should support other communities in their attempts to enhance their access to the surrounding landscapes (See Chapter One – Image and Perception, Gateway to Great Landscapes).**

## Map showing importance of river crossings – City area



**Figure 40** The bridges provide critical linkages for the communities of Carlisle to each other and to open green spaces. At present, between the M6 (1) and the bridge on the Northern Development Route (5) there is only the Eden Bridge (3), and the pedestrian Memorial Bridge (2) that pedestrians or cyclists can use to connect with green spaces across the River Eden. As the commercial and residential area to the North West develop it would be extremely beneficial to have a pedestrian and bike bridge connecting these areas to the populations south of the river (4).

# Map illustrating barriers to access – South West of City

## Typology

- Agricultural land
- Allotment, community garden or urban farm
- Cemetery, churchyard or burial ground
- Coastal habitat
- Derelict land
- General amenity space
- Grassland, heathland, moorland or scrubland
- Green roof
- Institutional grounds
- Orchard
- Outdoor sports facility
- Park or public garden
- Private domestic garden
- Street trees
- Water body
- Water course
- Wetland
- Woodland



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**Figure 41 Four ways that people face barriers to accessing open green spaces using the South West of the city as an example: 1) Some of residential development north of Heysham Park provides insufficient access to the park, and has resulted in an ongoing problem with broken fences as people create their own access 2) The end of Heysham Park and the western edge of the city is a classic example of the design of the city not taking account of people's desire to access the wider countryside, and has resulted in broken fences and trespass 3) There are still places where the main road passing Chances Park, in Morton forms a fairly intimidating barrier (particularly for the elderly or to young families) effectively discouraging access, and the lack of views into the park from the road makes it easy to not see for a driver 4) The West Coast rail line effectively divides Currock and Harraby from the high quality open green space that is so close to them alongside the Caldew, despite the presence of a pedestrian bridge**

# ACTIVELY USE GI TO IMPROVE HEALTH AND WELLBEING

## Summary

**Green infrastructure is a key tool for tackling health (including mental health) and wellbeing inequalities and deprivation across the city region – it should be sustained and enhanced to deliver key public health objectives in both rural and urban areas. The maintenance and enhancement of green infrastructure should be supported to increase activity and recreation levels to impact in a targeted manner on coronary heart disease, obesity, and diabetes and to help to reduce numbers of premature deaths. Street trees in areas with little or no GI can be used to enhance wellbeing. Adequate provision of publically accessible and functional green spaces is a way to future-proof the city region for an ageing population.**

## Introduction and evidence

The cost of the National Health Service to the UK rose to £110 billion in 2010-11<sup>54</sup>. It is now accepted by most authorities that the design of the communities we live in has a major effect on health and wellbeing. Lack of physical exercise is estimated to cost the NHS 2-3% of its budget, so around £2-3 billion per year. CABE cites the costs to the NHS of obesity are £4.2 million per year, a figure set to double by 2050<sup>55</sup>. DCMS have estimated that a 10% increase in physical activity would benefit England by £500m per year. The Forestry Commission has estimated that a reduction of 1% in 'sedentary behaviour' in the UK would prevent as many as 1063 deaths per year, or if people over 75 are excluded because they are less likely to exercise then the figure is 343 lives per year. The economic value of reducing sedentary behaviour in the UK by 1% is estimated to have a value of £1.44 billion (or £479 million if over 75s are excluded as above). Reducing coronary heart disease makes up much of this benefit. The 'Walking for Health initiative' created through a partnership between Natural England and the Department for Health suggests that establishing universal and equitable access to green space would save England £2.1 billion per

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<sup>54</sup> Benefits of Green Infrastructure, Report to Defra and CLG (October 2010)– page 36

<sup>55</sup> Benefits of Green Infrastructure, Report to Defra and CLG (October 2010)– page 39

annum<sup>56</sup>. A comprehensive recent summary of the evidence on green infrastructure stated that the **‘evidence suggests that there is a positive relationship between green space and the general health of the population and studies indicate that better health is linked to green space provision, regardless of the socio-economic status of the people who use it’**<sup>57</sup>. A recent study of over 350,000 people published in the Lancet found that people who lived near to green space lived longer, with significantly reduced health inequalities, even when all other factors were accounted for<sup>58</sup>. Planning Policy Statement (PPS) 17 Planning for open space, sport and recreation tasks local authorities with ensuring that development enhances health and wellbeing,

**“Open spaces, sports and recreational facilities have a vital role to play in promoting healthy living and preventing illness, and in the social development of children of all ages through play, sporting activities and interaction with others”.**

This is also an economic issue: businesses know that absenteeism because of ill health is a major cost, and

<sup>56</sup> Benefits of Green Infrastructure, Report to Defra and CLG (October 2010)– p41

<sup>57</sup> Benefits of Green Infrastructure, Report to Defra and CLG (October 2010)– p39

<sup>58</sup> Study quoted as part of launch of Defra’s green infrastructure partnership – see <http://www.defra.gov.uk/environment/natural/green-infrastructure/>

that healthy communities can save them a great deal of money (The economic valuation we undertook provided an indicative figure of £8 million for the existing economic value of absenteeism being reduced by Carlisle’s green infrastructure in the next 50 years. This does not of course reflect the benefit of what might be saved in a greener and better designed city in the future, but it gives an indication of scale and value – see summary of this work on pages 29-33).



**Figure 42 Green spaces like parks need to be fun, interesting and fresh. The work in Chances Park provides a case study in what can be achieved.**

Urban areas in particular if badly designed with poor infrastructure and a lack of accessible open spaces exacerbate health problems: respiratory disorders and obesity are, for example deeply affected by factors like vehicle emissions, high population densities, poor housing and lack of good quality green spaces. It is now widely accepted that regular exercise, for example walking, reduces the negative effects of many major health threats such as obesity, type 2 diabetes, coronary heart disease and respiratory disorders<sup>59</sup>. According to the Cumbria 2010 The Annual Report of the Director of Public Health Carlisle City Council is in the lowest one fifth of local authorities in England for four of five given health indicators and as such is a designated Spearhead authority, with targets to see faster progress towards reducing inequalities in the health of the local population. There are large inequalities in the health of the population within Carlisle with men in the least deprived areas living seven years longer than those in the most deprived areas<sup>60</sup>. The Carlisle Partnership Community Plan (2011-16) puts considerable emphasis on the future quality of life of residents and highlights the clear need for healthier, more affluent, safer and stronger communities.

**Creating communities with sufficient high quality accessible green infrastructure is part of the solution to these critical health and wellbeing issues. Research from around the world shows that green space enhances**

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<sup>59</sup> Benefits of Green Infrastructure, Report to Defra and CLG (October 2010) – p36

<sup>60</sup> Annual Report of the Director of Public Health, Cumbria, Carlisle overview, 2010

social wellbeing, social inclusion and encourages people to interact with each other, and form deeper attachments with the places where they live<sup>61</sup>. Green infrastructure encourages people to exercise, and can be used to encourage active travel through integrated cycling and walking to promote cardiovascular health. The higher the proportion of green space in a community, the better (in general) the health of that community<sup>62</sup>. International studies have shown a positive relationship between walk-able green space availability and physical activity and the longevity of older citizens<sup>63</sup>. Other studies have shown a relationship between proximity to parks or recreation/leisure facilities and levels of physical activity and body mass index (BMI), in particular the further under-25 year olds lived from parks the more likely they were to be obese<sup>64</sup>. Just as importantly, people report feeling healthier when they live in close proximity to green spaces<sup>65</sup>. In summary, as the recent 'Benefits of Green Infrastructure' report makes clear, green spaces have the following four effects:

## **Inducing physical activity.**

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<sup>61</sup> Benefits of Green Infrastructure, Report to Defra and CLG (October 2010) p 49

<sup>62</sup> Mitchell, R. and Popham, F. (2008). Effect of exposure to natural environment on health inequalities: an observational population study. *Lancet* **372**, 1655–1660.

<sup>63</sup> Takano, T. Nakamura, K. and Watanabe, M. (2002). Urban residential environments and senior citizens' longevity in megacity areas: the importance of walkable green spaces. *Journal of Epidemiology and Community Health* **56** (12), 913–918.

<sup>64</sup> See page 38 benefits of Green Infrastructure, report to Defra and CLG (October 2010) for a summary of these issues and the source papers.

<sup>65</sup> This sections borrows from the excellent Benefits of Green Infrastructure, report to Defra and CLG (October 2010)

## **Making physical activity particularly beneficial because it has a greater psychological benefit than physical activity in other settings.**

## **Ameliorating the stress response – helping people to relax.**

## **Encouraging social interaction and inclusion – an important element of wellbeing.**

However the health and wellbeing benefits of green infrastructure are greater than simply increased exercise, they also include the benefits of social interaction, community cohesion, increasing productivity, and perhaps most important of all contributing to the mental and psychological wellbeing of individuals and communities. One in six adults have mental health problems at any one time, with an estimated one in four people suffering mental illness at some point in their lives<sup>66</sup>. Stress has a major impact on psychological wellbeing and is a contributing factor to anxiety and depression. The World Health Organisation estimates that by 2020 depression will be the largest

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<sup>66</sup> Department for Health Statistics 2009

single cause of ill health. The Department of Health recognises that mental health is linked to physical health, educational attainment, employment opportunities, social inclusion, criminality, and health inequalities. It also has a major cost to the UK exchequer, with its total costs estimated at £76 billion a year<sup>67</sup>.

Physical exercise in open green spaces (even more so than in other environments) can enhance moods, reduce stress, create more positive self-perceptions, and provides a high quality of life<sup>68</sup>. Simply being able to see trees seems to reduce stress, and American research suggests that people are even able to better cope with the effects of poverty when they had more green surroundings<sup>69</sup>. The evidence suggests that open green spaces provide spaces that people want to use and experience, which means they meet and engage with other people in their communities, have a greater attachment to, and pride in, their community, which in turn helps reduce crime rates, improves activity levels and health, enhances mental wellbeing, and increase feelings of safety and resilience<sup>70</sup>. Physical and mental health initiatives that take place in green spaces have

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<sup>67</sup> Department for Health Statistics 2009

<sup>68</sup> See summary of research on this subject in Benefits of Green Infrastructure, report to Defra and CLG (October 2010)

<sup>69</sup> Kuo, F. E. (2001). Coping with poverty: impacts of environment and attention in the inner city. *Environment and Behaviour* 33, 5–34.

<sup>70</sup> See Wooley, H. and Rose, S. (2004). *The value of public space: how high quality parks and public spaces create economic, social and environmental value*. CABE Space, London, and Weldon, S. and Bailey, C. in collaboration with O'Brien, L. (2007). *New pathways to health and wellbeing: summary of research to understand and overcome barriers to accessing woodland*. Forestry Commission, Scotland.

additional social well-being benefits and effects above and beyond those in other settings<sup>71</sup>. Researchers have also shown that the availability of high quality, well-managed and accessible green infrastructure correlates to lower violent and property crime rates.

There is strong evidence to suggest that green spaces have a beneficial impact on mental wellbeing and psychological health<sup>72</sup>. Green spaces can help alleviate stress and mental fatigue, and interestingly, the causation appears to be looking at, and contact with, nature that has the greatest effect and not simply the exercise people undertake in open spaces. There is a great deal of research, and a lively debate, about how natural settings or views can help with healing and stress alleviation<sup>73</sup>. Swedish research demonstrated that the more often someone visits an urban green space the less often they are to experience stress-related illnesses<sup>74</sup>. The work of Rachel and Stephen Kaplan has illuminated the ways in which humans use green spaces to support their wellbeing: through, for example, by using these spaces to break away from daily routines. Other research has shown that green spaces can have a

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<sup>71</sup> Bell, S., Hamilton, V., Montarzino, A., Rothnie, H., Travlou, P. and Alves, S. (2008). *Greenspace and quality of life: a critical literature review*. Greenspace Scotland, Stirling.

<sup>72</sup> See, for example, Whitelaw, S., Swift, J., Goodwin, A. and Clark, D. (2008). *Physical activity and mental health: the role of physical activity in promoting mental wellbeing and preventing mental health problems*. NHS Scotland, Edinburgh.

<sup>73</sup> See Kaplan, R. (1985). Nature at the doorstep – residential satisfaction and the nearby environment. *Journal of Architectural Planning Research* 2, 115–127; Kaplan, S. (1995). The restorative benefits of nature – toward an integrative framework. *Journal of Environmental Psychology* 15, 93 169–182, and, Kaplan, R. and Kaplan, S. (1989). *The experience of nature: a psychological perspective*. Cambridge University Press, Cambridge.

<sup>74</sup> Grahn, P. and Stigsdotter, U. A. (2003). Landscape planning and stress. *Urban Forestry and Urban Greening* 2 (1), 1–18.

major impact on children’s wellbeing and even their ability to concentrate. Several studies have shown that contact with the natural world can positively affect mood, and reduce aggression. People use green spaces for more than exercise: The Royal Parks Survey (2006) shows that major uses are dog walking, informal games, and the highest response rate was for ‘peace and quiet’.

The Cumbria 2010 Annual Report of the Director of Public Health identifies inequalities in health as a key challenge that needs to be addressed (and one way to do this is to reduce inequalities in access to open green spaces). Projections show that Cumbrian communities need to future proof themselves for growing and ageing population – as by 2031 there will be 13% more people, and 69,800 people aged 65 or over, and a decrease of 5,600 under 65. Some areas of Cumbria will have some of the highest levels of over-65s in the UK. Carlisle is one of these areas: the current proportion of residents over the age of 65 is 19 per cent, similar to the rest of England. However the population of older people is projected to rise to 29.4 per cent by 2014 and to 39.4 per cent by 2029, compared to 18 per cent and 22 per cent respectively for the rest of England and Wales. If this ageing population is to lead active, healthy, meaningful lives, then the city will need to future-proof itself to ensure they can access suitable green spaces.

Our analysis shows a strong correlation between the degree of green infrastructure a community has and the levels of deprivation and health deprivation. Of the 10 wards with the least green infrastructure cover, eight

are in the top ten most health deprived wards in the District (the exceptions being Belah and Yewdale; two of the top ten least deprived wards in the District):

<b>10 wards with the least green infrastructure cover</b>	<b>10 most health deprived wards</b>
1. Currock	1. Upperby
2. St Aidans	2. Castle
3. Castle	3. Botcherby
4. Harraby	4. Morton
5. Denton Holme	5. Belle Vue
6. Belah	6. St Aidans
7. Upperby	7. Harraby
8. Botcherby	8. Denton Holme
9. Yewdale	9. Currock
10. Morton	10. Brampton

**Figure 43 Tables listed in descending order i.e. Currock has the least green infrastructure cover, and Upperby has the worst health deprivation**

Seven of the wards with the most green infrastructure cover are in the top 10 wards for least health deprivation. The analysis suggests that the communities in Carlisle District with the worst health status live with the least amount of green infrastructure cover: the most affluent communities have the greatest degree of green infrastructure cover. And by using maps like those below (see page 112) which highlight the spatial concentration of different health conditions green infrastructure initiatives can be targeted to deliver the required health benefits where most needed.

The top 10 least deprived Super Output Areas have on average 27% more GI cover than the top 10 most deprived areas.

<b>10 wards with the most green infrastructure cover</b>	<b>10 least health deprived wards</b>
1. Irthing	1. Great Corby and Geltsdale
2. Lyne	2. Burgh
3. Great Corby and Geltsdale	3. Wetheral
4. Burgh	4. Stanwix Rural
5. Longtown & Rockcliffe	5. Irthing
6. Hayton	6. Stanwix Urban
7. Wetheral	7. Hayton
8. Dalston	8. Lyne
9. Brampton	9. Dalston
10. Stanwix Rural	10. Longtown & Rockcliffe

There are, of course, other powerful causal factors which explain some of this correlation: It is widely recognised that deprivation is the single biggest causal factor in health deprivation, and comparing the health deprivation rankings with the most deprived ward rankings is informative in this regard:

<b>10 wards with the least green infrastructure cover</b>	<b>10 most health deprived wards</b>	<b>10 wards with highest levels of deprivation</b>
1. Currock	1. Upperby	1. Upperby
2. St Aidans	2. Castle	2. Botcherby
3. Castle	3. Botcherby	3. Castle
4. Harraby	4. Morton	4. Morton
5. Denton Holme	5. Belle Vue	5. Currock
6. Belah	6. St Aidans	6. Belle Vue
7. Upperby	7. Harraby	7. Harraby
8. Botcherby	8. Denton Holme	8. Denton Holme
9. Yewdale	9. Currock	9. St Aidans
10. Morton	10. Brampton	10. Lyne

Whether the correlation between green infrastructure and health deprivation shows a cause or a correlation of health deprivation, and to what degree it contributes are complicated questions beyond the scope of this current work. The key variable affecting ill health is, probably, deprivation. In other words, these findings are what one might expect in a society that puts a house price premium on proximity to the countryside, in that the most deprived people are perhaps over time selected into the least green communities in the urban settlement. But given the evidence we have considered elsewhere in this section about how green infrastructure can positively affect physical and mental health and

wellbeing then these green infrastructure inequalities are a matter of concern that need to be addressed. Improving access and use of existing green infrastructure and providing new green infrastructure in the deprived areas offers a highly effective means of addressing current health issues. These are complex issues and we would suggest that they are worthy of further research and investigation and that ultimately a spatial masterplan should design in health and wellbeing into the growing city as a priority.

**Greening these communities, or better connecting them to existing green spaces should be a priority.**

## **Recommended actions to secure benefit**

**Stakeholders should seek to address the inequalities in green infrastructure cover as a key part of addressing health inequalities in Carlisle's communities. This will require an evidence-based approach and should be highly targeted – this should include retro fitting of green infrastructure to the communities with the greatest need (see list above)**

**Stakeholders should seek to develop new partnerships to integrate public health improvement measures and the management of, and creation of, green infrastructure in targeted communities – this can learn from projects like the Harraby Together We Can initiative.**

**Stakeholders should seek to use emerging tools for measuring the 'social return' on investment of green infrastructure interventions (see, for example, Greenspace Scotland's Health Impact Assessments (2008))**

**Stakeholders need to ensure that effective measures are taken to meaningfully engage young people in open green spaces like parks and allotments to lay the foundations for a healthier, more active life – particularly through learning about food, physical**

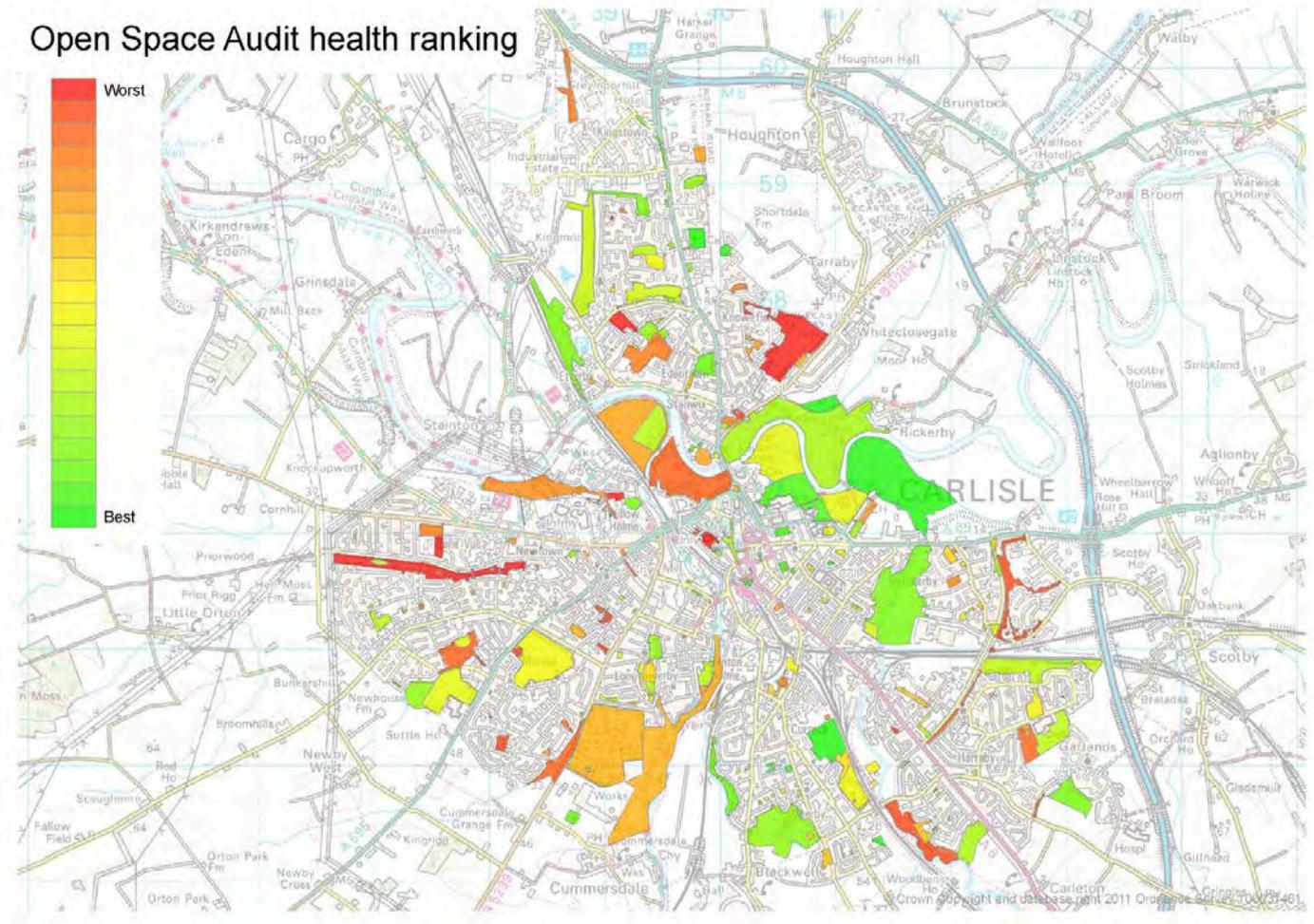
**exercise and environmental issues – measures like Love Parks week are critical to ensuring that existing and future green spaces are appreciated and 'owned' by communities.**

**Stakeholders need to ensure that new development does not further isolate any of the most health-deprived communities (listed above) from vital green infrastructure, and where possible new development should include new accessible and viewable green infrastructure to improve the health and wellbeing of neighboring communities**

**Stakeholders should do an assessment of the needs of an ageing population and start to enhance and improve those facilities like allotments and parks that can make a major contribution to keeping that demographic active, healthy and with a high quality of life**

**Whilst the core focus may well be on the most health-deprived communities, more affluent and healthier communities are also benefitting from their green infrastructure and this should be sustained and enhanced where possible to maintain and sustain their health and wellbeing.**

# Map showing open spaces ranked in health deprivation order



**Figure 44** This map shows the open spaces from the city Open Space Audit ranked according to the levels of various health issues in their immediate vicinity. The health issues considered are hospitalised incidence of coronary heart disease, hospitalised prevalence of asthma, hospitalised prevalence of diabetes, hospitalised prevalence of mental health conditions, obesity, and health deprivation as included in the Indices of Multiple Deprivation. The 'worst' health ranking is given where there are high levels of many of these issues.

# USE OPEN GREEN SPACES TO IMPROVE COMMUNITY INTERACTION AND COHESION

## Summary

**Ensure that existing and future communities have a sense of community and place by providing public green spaces for interaction and play, with programmes of events and activities to encourage this.**

**Connectivity is also important between members of communities by creating social green spaces for exercise and interaction (particularly for an aging population). Carlisle's parks are particularly important as existing for this very purpose.**

## Introduction and Evidence

Studies of why people benefit from being in green spaces suggest that at least part of the benefit comes from the fact that they meet and speak to other people, and form acquaintances with people in their own and neighbouring communities<sup>75</sup>. International research has shown that social ties are stronger in communities with a greater degree of green infrastructure. Studies have shown that the degree of vegetation (particularly the presence of trees) plays a strong role in attracting people to use green spaces and interact with other people<sup>76</sup>. Open green spaces are particularly important for addressing social exclusion; which affects by definition groups like the elderly, young people, ethnic minorities, people with disabilities and those of lower socio-economic standing<sup>77</sup>. The Cumbria 2010 Annual Report of the Director of Public Health identifies that people with a stronger sense of belonging to their immediate neighbourhood, who have strong networks, and a sense that they can affect decisions about their

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<sup>75</sup> Dawson, J., Boller, I., Foster, C. and Hillsdon, M. (2006). *National evaluation of health walk schemes*.

<http://www.whi.org.uk/uploads/documents/2335/NatEvalresearchnote.pdf> accessed 12/02/10

<sup>76</sup> Benefits of Green Infrastructure, Report to Defra and CLG (October 2010) p 50

<sup>77</sup> Benefits of Green Infrastructure, Report to Defra and CLG (October 2010) p 52

area, and feel safe in their local area tend to have higher levels of wellbeing.

This evidence will not come as a surprise to the allotment or park communities in Carlisle who are already aware of the beneficial impact on their lives and their communities<sup>78</sup>. The quality of Carlisle's green spaces is a matter of some importance to the cohesion of its communities – if stakeholders can ensure that these spaces are heavily used the opportunities for people to meet and interact are much greater. Low quality open green spaces where people do not want to spend time, have quite the opposite effect of isolating people.

Carlisle's urban and rural open green spaces offer spaces and opportunities to drive community renewal. The Our Green Spaces project (funded by the Heritage Lottery Fund) provides a local example of this in action at Burgh by Sands with a range of community initiatives focused on the creation of a village green, wildlife areas, local history interpretation and a sports field. This shows the power of open green spaces in urban wards with comparable multiple deprivation scores to Carlisle's communities. Public green spaces like these (parks and allotments particularly) represent an ideal tool for engaging communities in critical issues like their relationship with food, biodiversity, landscape, and sustainability. Sustained efforts should be made to develop a ladder of engagement with critical green

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<sup>78</sup> Thanks to Rodney Whelan, St Aidan's Allotment Association for sharing his experiences on this matter.

infrastructure issues starting locally with familiar green spaces and working towards engagement with the wider world.

Projects like Our Green Spaces show that engaging people in learning activities in green spaces engages people who might find formal classroom learning unattractive or intimidating, or simply inaccessible. The interviews and site visits revealed that schools and colleges in Carlisle are already benefitting from their green infrastructure: one example will make the point,

St Peter's Pre-School, Kingstown Road, has been praised by Ofsted for its use of its new outdoor play area and allotment garden: A '**fantastic**' environment according to the Ofsted report, where... '**Children now experience exceptional play opportunities in a fantastic environment where they learn about caring for living things, nature, growth, exercise and healthy lifestyles**<sup>79</sup>'. The facilities at St Peter's are an excellent example of what other institutions and organisations can achieve by using green infrastructure effectively and imaginatively.

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<sup>79</sup> Ofsted Inspection report for early years provision (Ref No 3176607), Inspector: Carys Millican (15/03/2011)

## **Recommended actions to secure benefit**

**Stakeholders should protect social green spaces, even where these currently have low biodiversity value, to encourage and facilitate community interaction, cohesion, civic pride and a sense of belonging. This applies particularly to open green spaces in Upperby, Botcherby, Castle, Harraby, Morton, Currock, Denton Holme, and St Aidans.**

**Stakeholders should find ways to make some of the rather uninspiring existing open green spaces in these target communities more attractive places to meet, talk and engage with other people.**

**Stakeholders need to ensure that new communities (particularly those planned for Morton and Crindledyke in the near future) have adequate provision of open green spaces where people can meet, talk, play and interact in ways which shape a sense of belonging and community these should be part of the design plans submitted by developers.**

**Stakeholders should support existing green space community groups (Friends of parks, Allotment Associations, Resident's Associations, etc.) in ways that enable them to continue with their current roles, but also to grow their capacity to do new things, and take on, when (or if) appropriate, more responsibilities over time for their local environment, and engage with new members of the community to lessen the burden on a handful of committed champions.**

**Stakeholders should develop over time a programme of initiatives to create a stronger sense of shared community across the District by engaging different communities through the environmental features which connect them – for example urban schoolchildren could start a learning journey about food or other environmental issues in the familiar green spaces in their community before engaging with issues relating to the wider environment of the District**

# SUSTAINABILITY AND RESILIENCE

# Introduction

Much of this strategy has been about making Carlisle a more effective place for people and business, but there are, of course, very powerful environmental and ecological imperatives for getting the green infrastructure network of Carlisle right. This thematic chapter focuses on the following benefits of a green infrastructure strategy and summarises the evidence for their impact:

**Amelioration of high summer temperatures caused by urban heat island effect and climate change**

**Reducing air pollution**

**Working in partnership to manage flooding and water quality at a catchment-scale**

**Reducing flood risks by using sustainable urban drainage systems (SUDS)**

**Habitat creation to meet UK Biodiversity Action Plan (BAP) targets**

**Creating an effective ecological network with green corridors and patches or refuges for wildlife**

**Making Carlisle a more sustainable and resilient community**

These benefits can often be delivered simultaneously, alongside other socio-economic benefits, by well-designed and well-managed green infrastructure at a landscape scale. For Carlisle to meet challenges like extreme weather events like flooding, changes in climate, development pressures, or changing demands from communities and visitors it needs to have a landscape-scale approach to these issues. Ecologically resilient landscapes can cope with these pressures and produce the necessary eco-system services whilst also protecting core sites, buffering sensitive habitats from damage and providing corridors for wildlife.

The Draft National Planning Framework (July 2011) tasks local authorities with ensuring that new development is planned to avoid ‘increased vulnerability to climate change’. This includes using the opportunity offered by new development to ‘reduce the causes and impacts of flooding’ and using green infrastructure strategically to mitigate and adapt to future risks<sup>80</sup>. The Framework states that the planning system should aim, at a ‘landscape-scale’ to conserve and enhance the natural and local environment by:

**Protecting valued landscapes**

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<sup>80</sup> Draft National Planning Framework, Department of Communities and Local Government (July 2011) pp. 44

**Minimising impacts on biodiversity and providing net gains in biodiversity, where possible; and**

**Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of land, air, water or noise pollution or land instability.**

It goes on to state that local policies and decisions should ensure that:

**New development is appropriate for its location, having regard to the effects of pollution on health, the natural environment or general amenity, taking account of the potential sensitivity of the area or proposed development to adverse effects from pollution; and**

**The site is suitable for its new use taking account of ground conditions, pollution arising from previous uses and any proposals for land remediation<sup>81</sup>.**

Even when green infrastructure is not the primary consideration in a spatial area, it can still be designed to deliver these benefits with some careful forethought. We will briefly consider each of these issues in relation to Carlisle. We would also stress that true sustainability also needs to consider the ability of human communities to sustain such green infrastructure and therefore later in this report we look at new models for generating new investment into green infrastructure in Carlisle city region. If Carlisle is to become the dynamic and growing city that the strategy documents envisage then it needs to improve the functionality and effectiveness of its green infrastructure so it can provide the necessary ecosystem services.

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<sup>81</sup> As a minimum, the land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990.

# MAKE COMMUNITIES MORE RESILIENT TO CLIMATE CHANGE AND ITS EFFECTS

## Summary

**If Carlisle's communities are to adapt to future challenges like climate change then green infrastructure will be a critical ingredient in the solution. Green infrastructure can be used in the growing city to manage urban heat island effect<sup>82</sup>, particularly as it affects vulnerable communities. Stakeholders should identify those communities where it is a priority to retrofit green infrastructure; this will be particularly important in the city centre and on key routes, and providing shade, passive cooling and pollution mitigation. Green roofs provide another powerful solution to urban heat island effect, especially for new developments in the city centre, where there is little space for other types of green infrastructure.**

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<sup>82</sup> Urban heat island effect is the name given to the process by which urban areas have higher temperatures (1-2°C daily maxima and 1-9°C daily minima) above that of surrounding rural areas. It results from changes in moisture levels due to a critical mass of impermeable surfaces decreased humidity, or alteration in heat balance.

## Introduction and evidence

The evidence of the past suggests that we cannot be entirely sure what environmental, social and economic challenges we face in the future, but we can create communities and eco-systems that have the built-in resilience and adaptability to cope with changes. We have focused here on two key issues:

### **Amelioration of high summer temperatures caused by urban heat island effect and climate change**

Urban areas tend to be a degree or two warmer than surrounding areas due to 'urban heat island effect'. With the potential prospect of climate change this is predicted to be a significant issue for urban communities causing discomfort, affecting people's quality of life, and increasing energy consumption as air conditioning use increases. Urban heat island effect results from solar radiation absorbed by hard surfaces through the day and released to warm the air at night, and through urban areas having insufficient vegetation to provide shading of buildings and outdoor spaces, evotranspiration reducing solar energy to latent heat, and generally by reducing the heat that is absorbed by hard urban surfaces<sup>83</sup>. This is an important issue for a

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<sup>83</sup> See the excellent Benefits of Green Infrastructure Report to Defra and CLG (October 2010).

growing city, as increasing the mass of hard surfaces is likely to increase the warming effects of the city. Green infrastructure in urban areas has an important role to play in ameliorating the warming effects of climate change and the UHI. A detailed modelling study carried out in Greater Manchester suggested that increasing the current area of green infrastructure by 10% in areas with little or no green cover would result in a cooling of the surface temperature by up to 2.5c under the high emissions scenarios based on the UK Climate Impacts Programme (UKCIP02) predictions<sup>84</sup>.

In terms of focus the areas where efforts should be focused to ameliorating, or managing the effects of, urban heat island effect are areas of high density housing or development, areas with low amounts of GI, communities with high levels of people with long-term limiting illnesses (who are susceptible to heat stress) and communities with higher levels of very young or very old people (due to limited ability to change behavior during an event<sup>85</sup>). Targeting these areas will require further work with partners. Parks and other green spaces that break up the mass of hard surfaces and which include trees and other significant vegetation can also have a significant impact on urban heat island effect. A study of two large parks in Singapore monitored temperatures both inside and up to 500 m from the park boundary within the surrounding urban

areas<sup>86</sup>. The authors found that temperatures outside the park's boundary gradually increased as they moved further away from the green area, suggesting that the cooling effect of the park extended beyond its boundary. A second study of three parks found a similar effect at night. The largest of the three parks (156 ha) showed the strongest relationship between temperature and distance. This science from elsewhere on these functions of green infrastructure suggests that Carlisle is benefiting in this way from its open green spaces and vegetation; the challenge is to retain these functions, enhance them where required and beneficial, and to ensure that areas where these functions are not fulfilled are remedied by new green spaces or vegetation<sup>87</sup>.



**Figure 45 'Green lungs' can have a whole range of positive effects for communities, not least in improving air quality.**

<sup>84</sup> Gill, S.E., Handley, J.F., Ennos, A.R. and Pauleit, S. (2007). Adapting cities for climate change: the role of the green infrastructure. *Built Environment*

<sup>85</sup> Thanks to Martin Moss, Natural England for his contributions and challenges to this section.

<sup>86</sup> Yu, C. and W. N. Hien (2006). Thermal benefits of city parks. *Energy and Buildings*

<sup>87</sup> The science on this subject is evolving and complex, and it should be monitored to understand the implications for implementation through design in Carlisle.

### **Reducing air, light and noise pollution**

Air pollution is a major environmental problem in most major cities, and as Carlisle grows stakeholders need to ensure that it does so in ways that do not increase air pollution. The major pollutants in urban areas are carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), ozone (O<sub>3</sub>), volatile organic compounds (VOCs), sulphur dioxides (SO<sub>2</sub>) and particulate matter<sup>88</sup>. The sources of these pollutants are primarily vehicle emissions, power production, industry and aviation. Air quality is better in UK cities than it was in the 1950s, but remains a problem that can trigger health conditions like asthma or respiratory diseases. Estimates suggest that 24,000 people die prematurely each year in the UK as a result of air pollution, and hospital admissions linked to air pollution cost the NHS between £17 and £60 million a year. It is estimated that 1.1 million children suffer from asthma in the UK. The point is a simple one, urban communities should use green infrastructure as part of their solutions to air pollution, and building this into a growing city with increasing vehicle volume is essential. Trees and woodlands absorb significant quantities of gaseous pollutants such as SO<sub>2</sub>, NO<sub>x</sub> and ozone from the atmosphere. For example, research in Chicago suggests that green infrastructure removes over 6000t of pollution from that city each year<sup>89</sup>. Green infrastructure can provide physical processes like filtering. It has been estimated that the economic value of removing a tonne

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<sup>88</sup> This section benefits greatly from the Benefits of Green Infrastructure Report to Defra and CLG (October 2010). Readers wishing to learn more about the evidence for the claims in this section should read the critical review in that document and explore the sources.

<sup>89</sup> See Benefit of Green Infrastructure Report to Defra and CLG (October 2010). P

of pollutant is between \$540 and thousands of dollars per tonne depending upon the pollutant. Some research has suggested that street trees can reduce the incidence of asthma in children<sup>90</sup>. Research has suggested that street trees can reduce childhood asthma by as much as 29%. Trees can also reduce the build up of ozone through transpiration. Green roofs can reduce air and noise pollution in heavily built up areas. Street trees can filter out up to 70% of air pollution<sup>91</sup>.

The Draft National Planning Policy Framework (July 2011) states that planning policies and decisions should aim to:

**Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development**

**Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions, while recognising that many developments will create some noise; and**

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<sup>90</sup> See Sustainable Development Commission (2008). *Health, place and nature. How outdoor environments influence health and well-being: a knowledge base*. <http://www.sd-commission.org.uk/publications.php?id=712>; or, Tzoulas, K., Korpela, K., Venn, S., Yli-Pelkonen, V., Kaźmierczak, Niemela, J. and James, P. (2007). Promoting ecosystem and human health in urban areas using green infrastructure: a literature review. *Landscape and Urban Planning* **81** (3), 167–178.

<sup>91</sup> Bernatzky, A. (1983). The effects of trees on the urban climate. In: *Trees in the 21st century*. Academic Publishers, Berkhamsted, 59–76. Based on the first International Arboricultural Conference.

**Identify and protect areas of tranquillity, which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.**

The Draft National Planning Policy Framework (July 2011) also emphasises that planning policies should 'sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan'. The Framework suggests that good design and clear planning policies are critical to limiting the impact of pollution from new development.

Government policies have, for some years, recognised the role that green infrastructure can play in mitigating light or noise pollution by creating natural barriers. Curiously the evidence suggests that green infrastructure may not reduce the amount of sound in a location, so much as affecting people's awareness of it<sup>92</sup>. This may mean that green infrastructure is part of the way that the impact of sound on local communities is managed. But green infrastructure is not just to mitigate the effects of air, light or sound pollution, if it creates well connected transport routes for walking and biking

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<sup>92</sup> Martin Moss, Natural England kindly explained the focus on emerging and as yet unpublished studies which is helping the understanding of this issue which is still not well understood.

it can encourage and stimulate people to make choices in favour of active travel (particularly to work), which can play a major part in reducing emissions in the first place. Many of the world's leading cities, have accepted the logic of this and are creating the infrastructure for walking and biking to provide a safe and useable alternative to the car. Some of the cities have done so with great success, in the face of deep skepticism about whether people would ever choose to leave their cars behind.

The solution is to make a commitment to pedestrian and bike friendly routes, even if this sometimes is at the expense of drivers. Effective green infrastructure measures are necessary for local authorities to meet their legal requirements (LAQM) for air quality. Air quality is 'good' for most of Carlisle city region (Air Quality Progress Report, Carlisle City Council, 2011) but there are pockets in the city where annual mean level for nitrogen dioxide is exceeded due to road traffic. Our initial mapping of the greatest need for trapping air pollutants is presented below on page 125 and 126) Further research is required to ascertain whether additional green infrastructure like street trees can help address the areas in question, and whether the increased traffic which is likely to result from a growing city requires other green infrastructure interventions throughout the city at key points. Our initial mapping of the areas with the greatest need for street trees is presented below (see map on page 127).

## **Recommended actions to secure benefit**

**The Local Development Framework provides an opportunity to ensure that the future of Carlisle's communities includes sufficient green spaces and vegetation to break up the mass of the urban area and its hard surfaces to mitigate urban heat island effect. Priority areas for consideration are:**

**Areas of high-density housing or development,**

**Areas with low amounts of existing GI,**

**Communities with high levels of people with long term limiting illnesses (with susceptibility to heat stress).**

**Communities with higher levels of very young or very old people (due to limited ability to change behaviour during an event).**

**Existing green spaces that provide this function in areas with low levels of green cover should also be protected, and new urban areas should be broken up with green spaces and vegetation.**

**Green spaces that are fulfilling multiple functions, including mitigating urban heat island effect and reducing air pollution need to be protected to sustain and enhance these functions. Where traffic is projected to increase this should be anticipated and measures taken to retain, enhance or create the green infrastructure to fulfill the functions.**

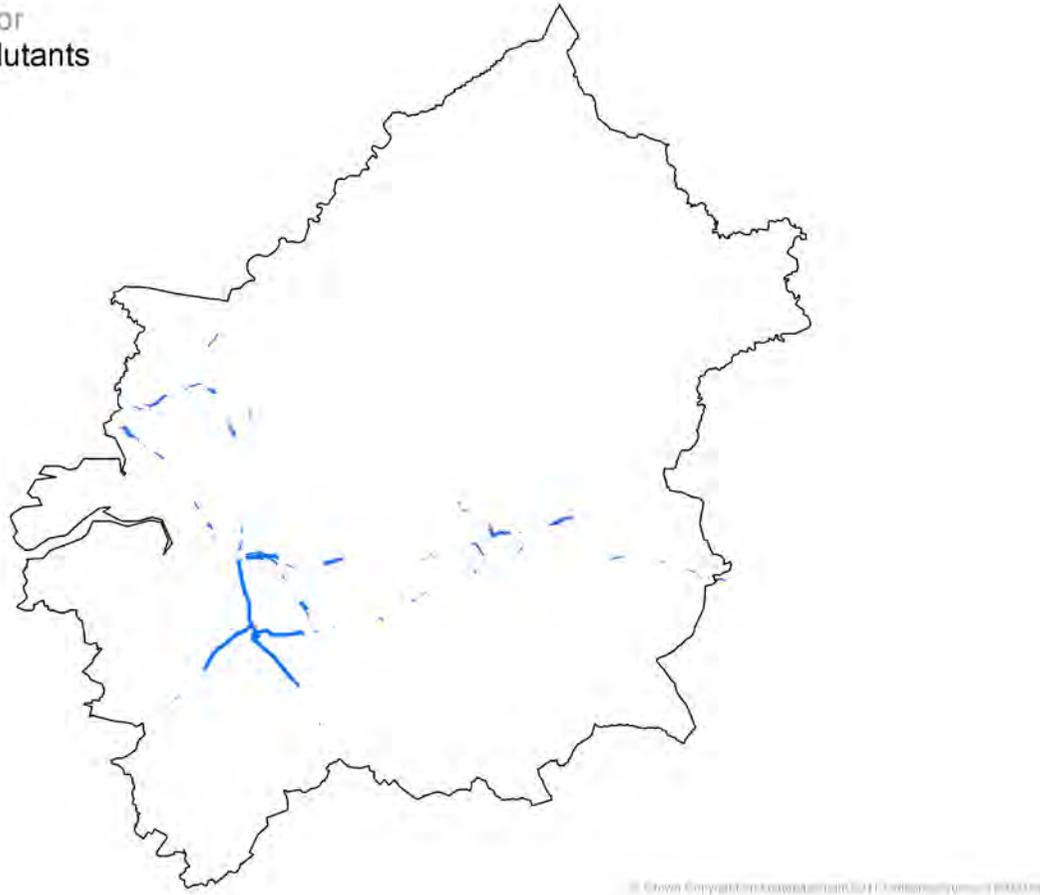
**Stakeholders should seek specialist support to identify those areas that currently have an issue with poor air quality created by traffic and work to ensure that street trees and other appropriate vegetation is retrofitted to contribute to resolving the issue.**

**Stakeholders should work together to ensure that routes that are likely to create additional air pollution as a result of the growing city and increased traffic are the focus of efforts to add new green spaces, street trees and vegetation.**

**Stakeholders should actively seek to create an active transport network to reduce traffic and reliance on private cars, and encourage walking, biking and use of public transport. These transport corridors can also provide invaluable green corridors for wildlife and other ecosystem services.**

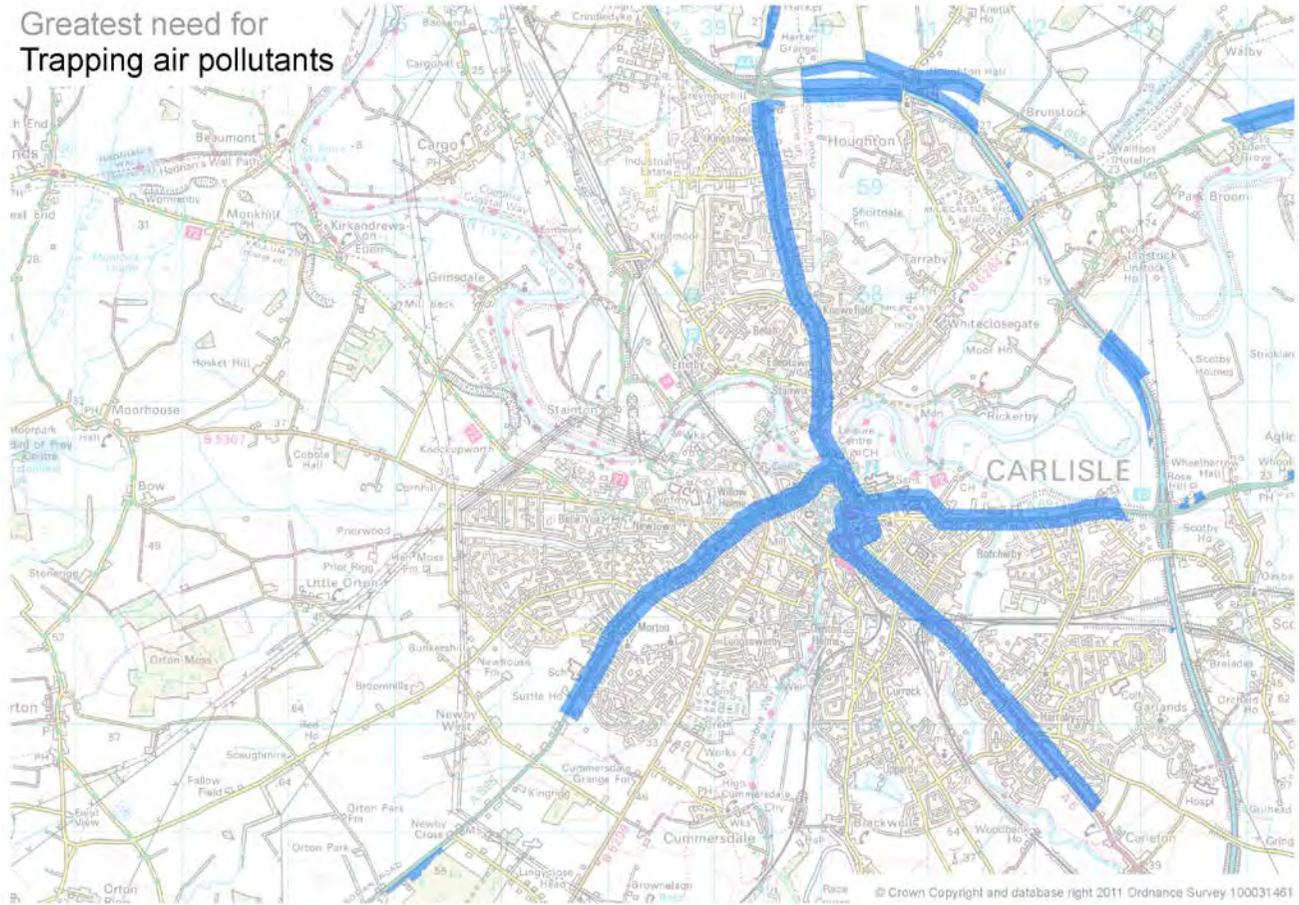
## Map showing the greatest need for trapping air pollutants - District

Greatest need for  
Trapping air pollutants



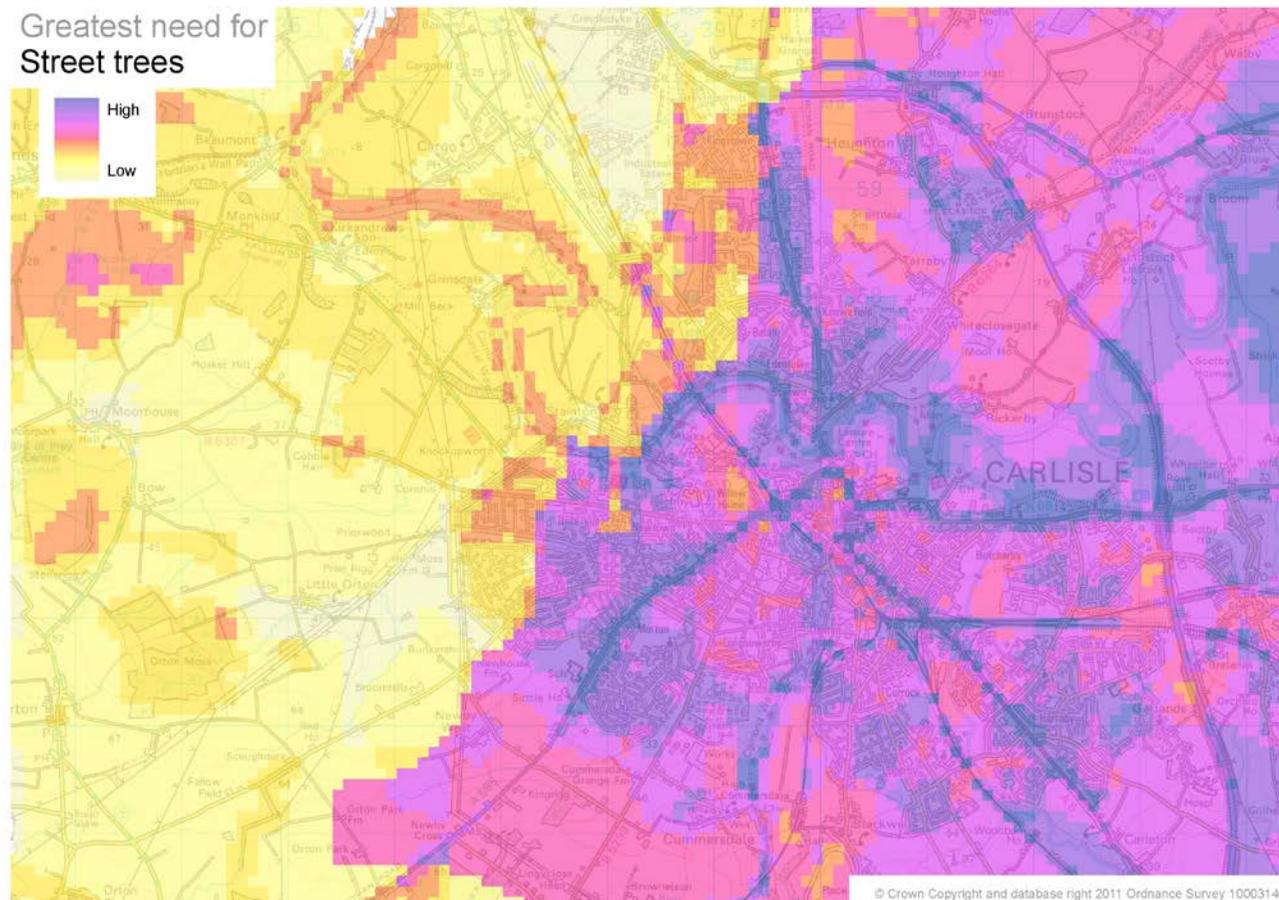
**Figure 46** This map shows where there is the greatest need for the trapping air pollutants function of green infrastructure (primarily on the roads with heaviest traffic). Like all of the greatest need maps, this does not take into account provision or lack of provision of the function (which is covered by the corresponding function map), but instead only considers other factors. The overriding factors in this case are considered to be present and future population density, the existence of habitat designations, and proximity to major roads. Note that lower levels of need for this function will exist elsewhere.

## Map showing the greatest need for trapping air pollutants – city area



**Figure 47** This map shows where there is the greatest need for the trapping air pollutants function of green infrastructure (primarily on the roads with heaviest traffic). Like all of the greatest need maps, this does not take into account provision or lack of provision of the function (which is covered by the corresponding function map), but instead only considers other factors. The overriding factors in this case are considered to be present and future population density, the existence of habitat designations, and proximity to major roads. Note that lower levels of need for this function will exist elsewhere.

## Map showing the greatest need for street trees – city area



**Figure 48** This map shows where there is the greatest need for the functions that can be performed by street trees. Like all of the greatest need maps, this does not take into account provision or lack of provision of the functions (which is covered by the corresponding function maps), but instead only considers other factors. The functions that can be performed by street trees are: green travel route, aesthetic, shading from the sun, evaporative cooling, trapping air pollutants, noise absorption, habitat for wildlife, corridor for wildlife, soil stabilisation, heritage, carbon storage, wind shelter, inaccessible water storage, water interception, water infiltration and pollutant removal from soil/water.

# MANAGE FLOODING AND WATER QUALITY ISSUES MORE EFFECTIVELY AT A CATCHMENT SCALE

## Summary

**Carlisle stakeholders should start to think about the long-term management of the river catchments and the utility of flood mitigation and water quality measures upstream and in the wider catchment. In the urban settlement area the focus should be on actively encouraging sustainable drainage systems (SuDS) to reduce flood risk and impact without the need for additional grey infrastructure. Surface water management measures are the front line of defence for reducing the risk of diffuse pollution entering watercourses<sup>93</sup>.**

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<sup>93</sup> The Special Area of Conservation (SAC) Status of Several of Carlisle's rivers makes this a priority for water management.

## Introduction and evidence

The population of Carlisle is well aware of the social and economic costs of flooding, after experiencing the January 2005 floods, the worst flooding to affect the city since 1822. The floods, described as an event likely to happen less than every 200 years, saw 180mm of rainfall in one day. Around 1800 properties were flooded and three people lost their lives, and more than 70 people sustained injuries<sup>94</sup>. The economic cost was estimated at approximately £250 million<sup>95</sup>. Since the Environment Agency has implemented a flood alleviation scheme that protects nearly 1,500 properties, using four kilometers of raised flood defences<sup>96</sup>. A second phase of the scheme (costing in the region of £25 million) was completed in 2010 as a result of new information on flooding levels and projections of climate change. The flood alleviation techniques ranged from earth bank flood embankments, to a pump station, to reopening the natural floodplain downstream of Carlisle and creating four improved areas for habitat for wildlife. However, it is increasingly recognised by specialists in flood management and alleviation that sustainable long-term solutions, which

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<sup>94</sup> See Defra website - <http://www.defra.gov.uk/environment/flooding/>

<sup>95</sup> Defra and the Environment Agency use a figure of £250 million

<sup>96</sup> See Defra website - <http://www.defra.gov.uk/environment/flooding/>

future-proof against possible climate change require more than engineering works in urban areas, and increasingly require catchment-scale solutions. By looking at both the urban settlements and wider catchments a partnership approach can impact on flood risk and water quality through measures like increasing water storage, reducing flow through surface roughness, pollutant removal, and infiltration. Our initial analysis of these issues is presented in the map on page 133, and in a series of maps on water related management issues in Appendix A)

The risks of future flooding are likely to increase if projections of climate change are correct. In England, 5.2 million properties are at risk of flooding: 1.4 million are at risk from rivers or the sea, 2.8 million are at risk from surface water and 1 million are at risk from both<sup>97</sup>. Some 212,500 properties in the Northwest are already assessed as 'at risk', without the increased sea and river levels threatened by climate change<sup>98</sup>. Carlisle has another pressing reason to think very carefully about water management and water quality, as its water supply comes from the Eden upstream of the city. A catchment scale approach looks to change land-management to store floodwater and control negative impacts on water quality on farmland to reduce downstream flood risks, slow down flood peaks and ensure that our rivers meet the standards of the EU Water Framework Directive. The mapping analysis

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<sup>97</sup> See Defra website - <http://www.defra.gov.uk/environment/flooding/>

<sup>98</sup> Figure quoted in the Economic Value of Green Infrastructure, natural Economy North West, taken from the Environment Agency (2008)

(which is solely of Carlisle District) on this should be seen as complimentary to a great deal of specialist work done by other partners on flood alleviation and mitigation in Cumbria. The 2006 Stage 1 Strategic Flood Risk Assessment supported the Local Plan policy for river corridors (Policy LE4), as does the updated Draft Strategic Flood Risk Assessment (July 2011). The Water Cycle Strategy Scoping Study for the North West Growth Areas including Carlisle looked at the water cycle constraints and opportunities for growth areas like Carlisle.

Critically, existing national planning policies task local authorities with appraising the risk of flooding, through preparing Regional Flood Risk Appraisals (RFRAs) or Strategic Flood Risk Assessments (SFRAs) to contribute to Sustainability Appraisals of plans. It also tasks local authorities with managing the risks by controlling development in flood plains, safeguarding land that is required for future flood management e.g. conveyance and storage of floodwater<sup>99</sup>, flood defences, and through reducing flood risks by incorporating sustainable urban drainage systems (SUDS) in to new development. Current planning policies (including, Planning Policy Statement 25) currently also encourage surface water management plans, and using green infrastructure for flood storage, conveyance, creating functional floodplains, and setting-back defences. All solutions on this issue require close partnership working with both

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<sup>99</sup> See Appendix A for explanations of these functions and initial GIS-based maps suggesting where these functions are most valuable.

statutory organisations like Natural England, Defra, and the Environment Agency, third sector organisations like Eden Rivers Trust and private landowners and managers, particularly in the agricultural sector. We think Carlisle should focus its efforts on two priority approaches:

### **Working in partnership to manage flooding and water quality at a catchment-scale**

The challenge for Carlisle is that the catchments for its three rivers cover a huge geographical area that reaches well beyond the administrative boundaries of Carlisle District. The River Eden alone has a 2400 km<sup>2</sup> catchment that stretches as far afield as Mallerstang, and even includes some of the Lake District valleys<sup>100</sup>. This vast geography means that catchment-scale solutions require coordinated partnership efforts to change land and water management practices. This effectively means working with farmers and other landowners to encourage and incentivize land management techniques through agri-environment schemes or other incentives. In future these ecosystem services may well result in financial rewards through some form of market mechanism. As the place where flooding can do the greatest damage in the catchments, Carlisle has a vested interest in working with partners to address this issue and find solutions to reduce the risks in future. If done in an inspired way then flood management and

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<sup>100</sup> See Defra's GIS-based mapping analysis of the catchment management issues for the River Eden, available at <http://www.edendtc.org.uk/2011/09/river-eden-catchment-maps/>

alleviation can also deliver on a range of other objectives.

### **Reducing flood risks by using sustainable urban drainage systems (SUDS)**

Green infrastructure performs a number of functions relating to managing and alleviating flooding that are relevant to Carlisle. These functions 'include conveyance, infiltration and natural drainage, interception, pollutant removal from soil and water, coastal storm protection, surface flow reduction through surface roughness, water capture with no reuse potential and, finally, water storage with potential for reuse<sup>101</sup>'. At its simplest, creating additional areas of impervious surfaces creates higher levels of run off which in an extreme weather event overwhelms traditional drainage systems.

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<sup>101</sup> See Benefit of Green Infrastructure Report to Defra and CLG (October 2010). P79



**Figure 49 Suitably designed and located landscaping and water storage features like ponds can play a significant role in alleviating peak flooding.**

Urban flooding is estimated to cost the UK £270 million per year, with 80,000 homes at serious risk<sup>102</sup>. A related issue is that rivers and ground waters are at risk of diffuse pollution due to run off from contaminated land, poor drainage and accidental spills. The cost of such pollution is estimated at £150 million to £250 million per year<sup>103</sup>. The Pitt Review (2008) and DEFRA's Making Space for Water (2005) have both illuminated the need for sustainable urban drainage systems (SUDS) in areas where the need is greatest. It is estimated that in the UK floods of 2000 failing urban drainage systems caused

40% of damage<sup>104</sup>. It is thus essential that local authorities, developers, and other stakeholders ensure that the growth of Carlisle is done according to best practice. There are various SUDS solutions, including traditional underground draining, but increasingly the solution is seen as incorporating vegetation and water storage (ponds), or controlling water at source through transpiration in vegetation, green roofs, infiltration trenches and filter drains, swales and basins, and ponds and wetlands. It has been estimated that a 10% increase in green cover in Greater Manchester would result in a reduction in run off of 4.9%<sup>105</sup>. In the case of Carlisle the long-term sustainable solution invariably will probably require both effective SUDS that make good use of existing and new green infrastructure and more sustainable management of the catchments upstream to reduce flooding. The good news is that a body of evidence exists to show that SUDS are often the most cost effective drainage systems to construct, and cost less to maintain than traditional drainage systems.

Another solution is to incorporate a requirement for green roofs in planning policy as these can significantly reduce run off (whilst simultaneously providing ecological and aesthetic benefits). Some cities around the world, most notably Toronto, have 'green roof laws' which require developers to build green roofs for certain sizes and types of buildings; German cities also encourage and incentivize for roof greening.

<sup>102</sup> Parliamentary office of Science and Technology Postnote, 2007

<sup>103</sup> See Benefit of Green Infrastructure Report to Defra and CLG (October 2010). P82

<sup>104</sup> Making Space for Water, DEFRA (2005)

<sup>105</sup> Gill, S.E., Handley, J.F., Ennos, A.R. and Pauleit, S. (2007). Adapting cities for climate change: the role of the green infrastructure. *Built Environment* 33, 115–133.

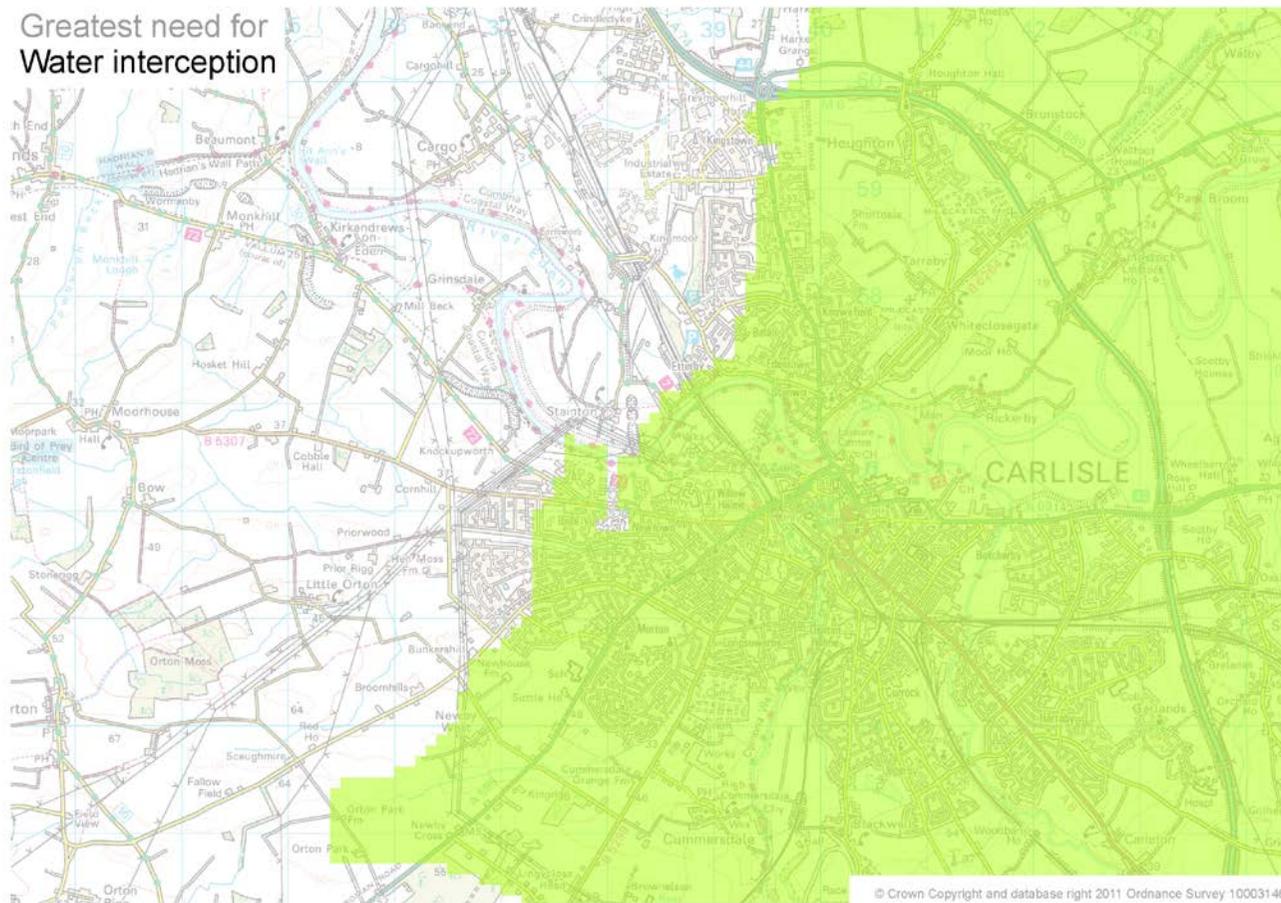
## **Recommended actions to secure benefit**

**Stakeholders should find effective ways to work in partnership to manage flooding and water quality at a catchment-scale to reduce the risk of flooding. This will require engagement and incentives to encourage different land management practices in targeted areas**

**Within the urban settlement area flood risks should be reduced by increasing vegetation, the area of open green spaces, and by using sustainable urban drainage systems (SUDS). Stakeholders should ensure that the Local Development Framework enhances the policies in the Local Plan regarding to flood risk mitigation and management.**

**Stakeholders should prioritise measures that reduce diffuse pollution in urban and rural areas through using SUDS and Sustainable Drainage Systems (SuDS).**

## Map showing the greatest need for water interception – City area



**Figure 50** This map shows where there is the greatest need for the water interception function of green infrastructure. Like all of the greatest need maps, this does not take into account provision or lack of provision of the function (which is covered by the corresponding function map), but instead only considers other factors. The overriding factor in this case is considered to be whether an area is upstream of an urban flood zone. Note that lower levels of need for this function will exist elsewhere. See appendix A for other maps relating to water and flooding management.

# ENHANCE HABITATS AND CREATE WILDLIFE CORRIDORS

## Summary

**Protect core biodiversity areas and create expansion areas and wildlife corridors. There is a need to develop appropriate green corridors across the city and district between wildlife sites and communities to encourage the migration and sustaining populations of key species – river corridors are particularly important. In the long-term stakeholders should work towards the provision of corridors for species movement as climate changes. Temporarily vacant or derelict land often has high biodiversity value. If allowed to grow partially wild, these sites are also often important for wildlife.**

## Introduction and evidence

One of the findings of our consultation and analysis that might surprise the non-environmentalist is the fact that the biodiversity in and around the urban settlements is often of a higher quality than that in the surrounding countryside. The urban settlement of Carlisle city (particularly on the derelict or brownfield land and in the river corridors) provides valuable habitat to a whole range of species - from barn owls, to otters and kingfishers. The interviews with community members suggest that this is a key part of the quality of place for people who live in Carlisle, quite simply making life better. This is reflected in a number of national and international policy documents and strategies, including the Natural Environment White Paper (Natural Choice: Securing the value of nature) that outlines the Government's vision for the natural environment over the next 50 years. The White Paper suggests a number of initiatives that should be taken on board in Carlisle including ideas like 'Biodiversity offsetting' (a new way for developers to ensure we don't lose wildlife sites and make them better by creating and improving other sites)<sup>106</sup>.

The White Paper also suggests there is a need to better connect people and nature for better quality of life; through measures like allowing local communities to

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<sup>106</sup> See <http://www.defra.gov.uk/environment/natural/whitepaper/>

protect areas that are important to them for recreation, their health and wellbeing, or their importance for wildlife; creating better urban green spaces in cities and towns, and supporting parks, gardens and tree planting to benefit both people and nature; providing practical support to schools to experience nature by learning outdoors; and strengthening local public health activities that connect people with nature; and supporting volunteering initiatives to engage people in environmental works. The UK National Ecosystem Assessment has also recently been published presenting the exhaustive results of the work of over 500 scientists and economists. The key findings of relevance to this strategy are:

**The natural world, its biodiversity and its constituent ecosystems are critically important to our well-being and economic prosperity, but are consistently undervalued in conventional economic analyses and decision making.**

**Actions taken and decisions made now will have consequences far into the future for ecosystems, ecosystem services and human wellbeing. It is important that these are understood, so that we can make the best possible choices, not just for society now but also for future generations.**

**A move to sustainable development will require an appropriate mixture of regulations, technology, financial investment and education, as well as changes in individual and societal behaviour and adoption of a more integrated, rather than conventional sectoral, approach to ecosystem management.**

Carlisle District includes four of Natural England's Natural Character Areas; The Solway Basin, Eden Valley, Cumbria Fells and Dales, and the North Pennines. These represent a rich tapestry of habitat types and a wealth of biodiversity. Something captured in more detail in the Cumbria Landscape Character Assessment. These areas form the basis for the local delivery of the Local Biodiversity Action Plan and include precise targets for habitats and specific species<sup>107</sup>. This document does not seek to duplicate these documents which are readily available; here we wish to focus attention on the value of biodiversity to Carlisle, and the importance and value of enhancing it at landscape scale in the future through all of the other actions in this strategy. The evidence shows that to enhance the resilience and coherence of ecological networks they need to be more numerous, bigger, better quality, and more joined up. The excellent Benefits of Green Infrastructure Report by

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<sup>107</sup> See [http://www.naturalareas.naturalengland.org.uk/Science/natural/na\\_results.asp?R=2](http://www.naturalareas.naturalengland.org.uk/Science/natural/na_results.asp?R=2)

Defra and CLG (October 2010) suggests five key approaches, which encompass these, and also take account of the land around the ecological network:

**Improve the quality of current sites by better habitat management.**

**Increase the size of current wildlife sites.**

**Enhance connections between, or join up, sites, either through physical corridors, or through 'stepping stones'**

**Create new sites**

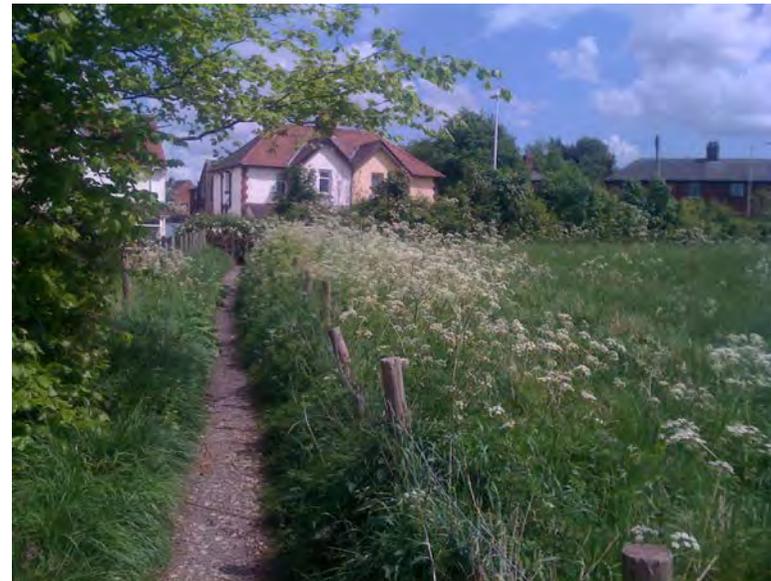
**Reduce the pressures on wildlife by improving the wider environment, including through buffering wildlife sites<sup>108</sup>**

We endorse these findings and would suggest that they guide future policy in Carlisle District. Such an approach is supported by the Draft National Planning Framework (July 2011) which tasks local authorities with ensuring that planning policies and decisions are based on up to date information about the environment and character of their areas, including relevant biodiversity and

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<sup>108</sup> Making Space for Nature: A review of England's Wildlife Sites and Ecological Network, Chaired by Professor Sir John Lawton CBE FRS. Submitted to the Secretary of State, the Department for Environment, Food and Rural Affairs on 16 September 2010

geological resources. Development, it suggests, should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests. The Framework emphasises planning positively for the creation, protection, enhancement and management of networks of green infrastructure<sup>109</sup>.



**Figure 51 Carlisle's urban area has some excellent habitat for a range of species**

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<sup>109</sup> Draft National Planning Framework, Department for Communities and Local Government (July 2011) pp.46

Our initial analysis has shown which areas of the catchment are providing key habitats for biodiversity, but perhaps more importantly where there is a need for the creation of a network of wildlife corridors throughout the District (see maps below). The interviews with specialist stakeholders and our habitat mapping suggests that in Carlisle District, as in many comparable areas, over recent decades there has been a fragmentation of habitats, with wildlife sites often partially or wholly isolated from each other by improved productive farmland. The sustainability and resilience of these habitats and the species that live in them requires a degree of migration and genetic drift, particularly if climate change requires movement and adaptation, and buffer areas. Wildlife corridors also make these sites more resilient to risk events like fire, flooding or pollution. Stakeholders will need to work in partnership to achieve national targets for the quality of SACs and SSSIs.

## Recommended actions to secure benefit

**Stakeholders should consider enhancing biodiversity as a valuable cross cutting benefit that can, and should, result from many of the other green infrastructure interventions suggested in this strategy.**

**This may well require a policy in the Local development Framework like Policy CP2 – Biodiversity, which stated that development proposals should include enhancements to biodiversity<sup>110</sup> to meet UK targets.**

**Stakeholders should work to support partners to improve the quality of current wildlife sites through better habitat management and to protect wildlife sites, designated landscapes and SSSIs. Stakeholders should seek to work in partnership to enhance biodiversity on farmland in key corridors between wildlife sites and in buffers around these sites.**

**Stakeholders should ensure that the Local Development Framework gives adequate protection to the river corridors, both to protect them, and as importantly, to enhance their role in the aesthetics and life of the city region. This should be an enhanced version of Policies LE4 and LE26 in the Local Plan.**

**Stakeholders should work to improve the biodiversity value, and perhaps the quantity if appropriate, of the woodland and forestry in the city region, as this is often single species commercial forestry with low biodiversity value.**

**Stakeholders should work to protect high biodiversity value spaces in urban areas, particularly parcels of derelict land or brownfield land, which provides critical habitat for biodiversity (as in Policy LE30 in the Local Plan).**

**Stakeholders should work through the Green Spaces Strategy to enhance the biodiversity of Carlisle's parks and other open green spaces through improving habitats.**

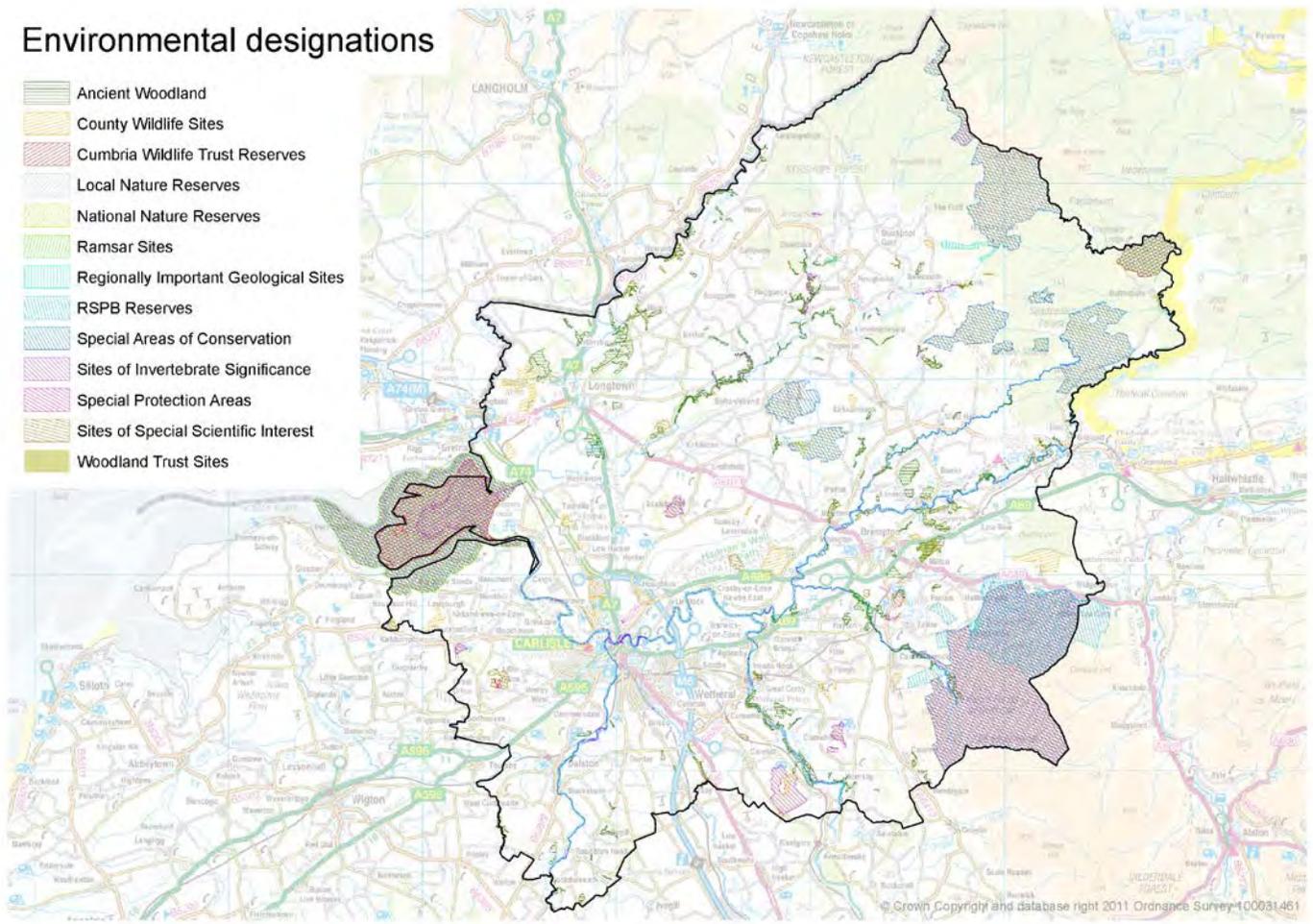
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<sup>110</sup> This policy 'afforded the highest level of protection and management to those resourced which are important and irreplaceable within the lifetime of the plan'. It also recognised the UK Biodiversity Action Plan, and local biodiversity Action Plans and targets for habitat and species, and no net loss of biodiversity in the Plan area.

**Stakeholders should ensure that the Local development Framework raises the strategic importance given to street trees and other urban vegetation (enhancing Policy CP3 in the Local Plan), particularly on key routes to combat climate air pollution, sustain wellbeing, and provide green corridors for wildlife.**

**Stakeholders should work in partnership to better connect communities to the biodiversity of the District, and of the urban areas in particular, to ensure that it is appreciated, utilised and enjoyed by local communities to enhance their quality of life.**

## Map showing some of the key environmental designations - District



**Figure 52 Protecting and enhancing the environmental and biodiversity quality of designated landscapes is critically important. To these shaded areas (which are the various national, international and local environmental designations) should be added the Areas of Outstanding Natural Beauty on the Solway Coast and the North Pennines.**

# SECTION THREE

## KEY RECOMMENDATIONS FOR IMPLEMENTATION

### **SUPPLEMENTARY PLANNING GUIDANCE IN THE LOCAL DEVELOPMENT FRAMEWORK**

Supplementary planning documents, notes and background papers can provide greater detail and useful advice on key features and habitats that are desirable to retain, enhance and create. These will give spatial recognition to the policies for green infrastructure. Documents might be on subjects such as the design of new development, landscape character, developer contributions and the historic environment.

### **MAKE A PUBLIC COMMITMENT TO THE STRATEGY**

Commit to a long-term vision to design and build a better city that optimises the environmental assets at its disposal to make a great place to live, work, invest and play. This strategy should be developed and adopted as part of the Evidence Base of the Local Development Framework and thus be placed in the public arena for examination by a Government Inspector at the LDF Core Strategy Public Examination.

### **COORDINATE A PARTNERSHIP APPROACH TO DELIVERY**

Green infrastructure is so multi-faceted that it is beyond the power or influence of any one partner to deliver this

strategy. Effective delivery will require a coordinated partnership approach to delivering the strategic objectives.

### **FIND AND DEVELOP BIG GREEN CITY CHAMPIONS AND AMBASSADORS**

If this strategy is to have a lasting and sustainable impact it will need to be adopted and championed by a committed group of champions. Identify and support high profile champions of the Big Green City vision as the future narrative for Carlisle, and develop a grass roots ambassador scheme, for example through the 'Friends of Groups.

### **EMPOWER AND SUPPORT COMMUNITIES TO SHAPE AND IMPROVE THEIR OWN ENVIRONMENT WITH NEW INVESTMENT MODELS**

Communities need support to increasingly take responsibility for their green spaces, and to feel empowered to access, enhance and sustain these spaces. The full range of opportunities should be explored including new forms of community governance that might enable greater influence and investment. Stakeholders should establish a new vehicle for fundraising and enhancing Carlisle's public green spaces – potentially titled The Carlisle Trust.

## CONCLUSION: Making this strategy work

For every strategy that has changed a place for the better there are a hundred that result in nothing, and which sit on shelves gathering dust. One of the reasons for this is simply a lack of buy-in to the basic premise of the strategies in question. The more complex the issues the more likely this scenario is. The other fatal mistake for a strategy is to think its existence alone is sufficient, and that simply by the words existing on a page the change will happen. It won't.

This section suggests how stakeholders in Carlisle can most effectively adopt this strategy and its recommendations and begin to implement them over the next few months and years. The aspirations in this strategy will take years to reach fruition, and that will require a remarkable degree of commitment and constancy of purpose, buy-in from the private, third and public sector, committed high-profile champions, countless grass roots supporters and ambassadors, effective partnership working, and coordinated attempts to secure significant investment. There is no off-the-shelf model for how this will be achieved in Carlisle but here are some guidelines:

### **PROCESS**

This strategy is a work-in-progress, a working document that will be shaped to reflect the priorities and aspirations of the stakeholders. In its current form it reflects the aspirations and input of many individuals, organisations and businesses.

Some of the stakeholder groups will find it easier to engage with the strategy and to start to discuss meaningfully the issues when they see this first iteration of the strategy. It may be that some elements of the strategy are casualties of the process of stakeholders finding a consensus on the path to the future. Carlisle City Council commissioned the strategy, but to work it requires other stakeholder support. This document is the beginning of a process not the end.

## **PROCESS RECOMMENDATIONS**

**The printed strategy and recommendations should provide the catalyst for engagement with key stakeholders like property developers and local communities.**

**Stakeholders should consider launching the strategy publically and as a statement of intent on the direction of future travel, with follow-up meetings and discussions with key stakeholders to secure buy-in and to agree delivery roles.**

**Stakeholders must decide how to integrate the recommendations of this strategy into other strategic documents like the Local Development Framework.**

**The strategy should become an evolving document reflecting the stakeholder's views and aspirations.**

## **BUILDING CONSENSUS**

Many stakeholders supported the evolution of this strategy, because they believe in the importance of the issues and see in this strategy the potential for making their communities better places to live, work, rest and play. If these stakeholders support the recommendations in this document then it will be important to develop a consensus behind it, and to broaden that consensus to include other stakeholders. It is not essential that everyone agree with the first iteration of the strategy (if they do it may be a sign that it is not ambitious enough). Champions of this strategy need to be identified and tasked with securing buy-in and delivery actions.



**Figure 53 In Norway tourist routes have been created to animate the landscapes and these have attracted global attention.**

## **BUILDING CONSENSUS RECOMMENDATIONS**

**In the initial stages Carlisle City Council may have to champion the strategy and look to build support. The strategy provides a starting point for discussions and the basis for future engagement – it should be distributed widely as a stimulus to such discussions.**

**But stakeholders need to be given an opportunity to digest the strategy, and then to support, question or challenge it, to secure genuine support people need to this.**



**Figure 54 The 1% for art scheme offers opportunities for 'public art' that can animate green spaces.**

## **CHAMPIONS AND AMBASSADORS**

Great cities and regions need high profile and dynamic champions to drive their ambitions, rally the troops inspire others to action, and tell the rest of the world about why their place is special. Carlisle is no exception to this rule. If Carlisle is to run with this strategy and its aspirations then it will need a high profile champion/s who can rally the communities and stakeholders around the vision within. Initially this role will have to be taken on by the City Council, but it should quickly find external and independent champions who support the agenda. Given the reality that the private sector will build the growing city, this should be a private sector figure. It is also recommend that the buy-in of the Local Strategic Partnership is crucial and should be prioritised.

Within Carlisle City Council effective and coordinated green infrastructure delivery may (in the medium to long-term) require changes to how these issues and spaces are managed and administered. Historically, the Parks Superintendent was part of the Council's senior management team. Today the management capacity of Carlisle's green spaces is slightly diluted across different departments and thematic areas. Consideration should be given to the costs and benefits of streamlining the management of green spaces and GI issues. However, given the limited resources which will be available to the City Council in the foreseeable future it is likely that the planning/development management

functions of the Council will be a key determinant of whether this strategy is delivered and the internal champion needs to be integrated into that department's work and have the authority to defend the tough decisions that may need to be made about green spaces and a growing city.

We would also recommend that Carlisle learns from best practice from elsewhere in terms of building a committed group of champions at grass roots (community) level. Carlisle is blessed with some highly committed community champions who give up their time to ensure that the city's allotments, parks and other green spaces are maintained and managed, and kept safe from threats. These people are already busy, but their passion, knowledge, enthusiasm and influence are invaluable to this process. They, and other people in the communities, need to be encouraged, supported and empowered to be ambassadors for this strategy, and to become its champions for the next decade or more. We hope that they will see in this strategy a strategic support to the things they believe in and work for. People engage most effectively when they believe that their involvement is meaningful and will result in changes for the better – if statutory bodies start to deliver this strategy and make changes for the better which engage communities we believe that the communities will respond positively.



## **CHAMPIONS AND AMBASSADOR RECOMMENDATIONS**

**The City Council and partners should identify a high profile and private sector/independent champion/s who will promote this strategy.**

**The strategy should be presented to the Local Strategic Partnership, and buy-in secured to champion this strategy to a wider audience.**

**The City Council should explore how the green infrastructure strategy can be best implemented and championed internally – including the costs and benefits of potentially organizing the approach to green infrastructure differently.**

**The City Council should work with community groups where possible to identify grass roots ambassadors to champion the delivery of this strategy at community level.**

## **PARTNERSHIP DELIVERY**

For this strategy to result in positive long-term changes to the communities of Carlisle is needs to provide a catalyst for effective partnership working; quite simply organisations and businesses other than Carlisle City Council will need to make much of this strategy a reality through their investments of time, money and influence. The key action that needs to be achieved in the 6 months after the publishing of this strategy is to agree with partner roles and actions to ensure that the strategy is implemented over time.



**Figure 55 Working in partnership with artists in one way to animate and draw attention to Carlisle's stunning landscapes.**

It is theoretically possible to devise a masterplan at this point allocating responsibilities and roles for every one of our recommendations, but we believe that this is unwise and premature. Stakeholders need to understand the core ideas, have time to digest them, and then be engaged in a process of collaboration on turning this strategy into a series of owned actions.

## **PARTNERSHIP RECOMMENDATIONS**

**The City Council needs to engage with key delivery partners to enable them to discuss and agree how and what is implemented from this strategy.**

**This strategy needs to be presented as an indication of the direction of travel and a statement of intent that can unite potential partners in discussion about delivery actions.**

**The working action plan document that accompanies this report (Appendix B) is a work in progress and provides a starting point for building partnerships on green infrastructure issues.**

**The creation of a small working group of committed organisations and businesses might be a sensible first step in the process.**

## **GENERATING NEW INVESTMENT**

The evidence suggests that improving green infrastructure is about more than simply local authority resources being invested; it is also about communities being empowered to have a sense of ownership and control of their green spaces. A sense of community responsibility is essential to driving improvements in environmental quality. This is often the biggest challenge with communities suffering from deprivation who might have the most to gain from high quality green infrastructure but the greatest physical and intellectual barriers between them and having high quality accessible green infrastructure.

To achieve this vision means overcoming a basic problem; how current and potential future green infrastructure can be managed to achieve the various social, economic and environmental outcomes desired. There isn't enough public or third sector funding available to Carlisle to do everything that is desirable with existing, yet alone potential future green infrastructure that may be achieved. We think there are three models for this:

### **'Communities doing it for nothing' – The Big Society**

An idealistic 'big society' solution is simply to empower communities to take responsibility for parks, allotments or other green spaces. Sometimes this is practical and desirable, but often the communities lack the capacity, desire, money or skills to take on this role. This point was made quite clear through the public consultation for this

strategy. Some community organisations in Carlisle want more autonomy and independence, others don't.

### **'Developers will pay for it' – Through section 106 agreements**

It is possible through Section 106 planning agreements to encourage developers to add new green infrastructure to development, or to protect that which already exists. But it is not the preservation of existing green spaces, or the addition of new green spaces that is the primary concern that emerges from our analysis but how these spaces can be managed now and in the future to best effect. New and existing green infrastructure requires management – and management costs money. 106 agreements are relatively effective ways of ensuring green infrastructure is designed into development but often relatively ineffective at ensuring the long-term management of those spaces and environmental assets. We would suggest that equal consideration be given to future management as to initial creation of green spaces. It may be that with some seed capital from developer community management of green spaces through management charges is an option.

### **'The Council will pay for it' – the taxation model**

The City Council budgets are under growing pressure, and, arguably, can provide insufficient investment to manage every park or green space in the most appropriate manner to deliver this strategy. However supportive and well meaning the City Council may be, the basic fact is that there is never sufficient resource available to manage all of the

parks and green spaces to the level of those like Chances Park which have recently been improved with significant investment.

Our research and analysis reveals a rather troubling fact about Carlisle's green infrastructure, namely that it almost certainly exceeds in scale the ability of the City Council and other existing stakeholders to manage it effectively. One potential mechanism for resolving this over time would be to create a parish model for Carlisle's urban communities that would enable local taxation through the precept to fund local environmental improvements. Additional investment will be required and that will require new approaches and new financial models.

### **A new solution – coordinated and independent fundraising**

We believe that serious consideration should be given to a new structure and financial model for investing in the creation of and management of green spaces in Carlisle (District and City areas) that is capable of securing additional investment. Local authorities and tax-funded statutory bodies are not appropriate leads for this; it needs a visibly independent accountable not-for-profit organisation.

We suggest that a Charitable Trust be created which would exist for this purpose. This would require some initial funding but could learn from the best practice of other such organisations in raising investment from visitor

gifting/payback from tourists, sponsorship, public donations, grant funding from a range of sources, payroll giving, legacies/endowments, and a range of other mechanisms including developer contributions.

The Green Carlisle Trust would exist to generate funds for the enhancement of Carlisle's environmental assets and green infrastructure for the benefit of its communities. The Trust would need to be entirely independent of any existing stakeholder or organisation and would have the benefit of being able to fundraise in ways that are not open to the City Council or existing partners. It would exist as an umbrella fundraising organisation, and, if managed effectively would be part of the changing identity of Carlisle, generating positive PR and communicating to the wider world how progressive Carlisle is with regard to its environmental assets and green infrastructure.

Work undertaken by the author of this report for both UNESCO and the island of Arran (in establishing The Arran Trust) have demonstrated the potential for new financial models to generate new funding for conservation and community projects. E.g. The Lake District is currently exploring new ways of generating additional income. Carlisle needs to invest in new models for generating investment.

## **GENERATING NEW INVESTMENT RECOMMENDATIONS**

**Stakeholders should use this strategy to make a stronger case for investment in green spaces, and look to deliver greater social and economic outcomes by targeting interventions and focusing on high quality actions.**

**The New York High Line and other high profile green infrastructure projects have shown that they can attract private investment – this is not money lost, but money invested for a social and economic return.**

**Management of green spaces can sometimes deliver savings that can be reinvested into improving other green spaces.**

**Partners should work with developers, not only create new green spaces, but also to establish community-led vehicles for future management.**

**Establish a charitable Trust for generating funds for the management of Carlisle’s green spaces and landscapes and build its capacity so that it can generate significant new investment.**



**Figure 56 Green infrastructure presents opportunities for attracting investment. It is too often thought of as simply a burden and a cost.**