



GREATER MANCHESTER'S GREEN INFRASTRUCTURE

Next Steps towards a Green Infrastructure Framework

Report to AGMA & Natural England

Prepared by
TEP
in 2010

Genesis Centre
Birchwood Science Park
Warrington
WA3 7BH

T: 01925 844004
F: 01925 844002
E: tep@tep.uk.com
W: www.tep.uk.com



(Report Ref 2057.018C)

Contents

	Page
1 Summary	2
2 Structure of Report	10
3 Evidence Base	11
4 Vision	40
5 Functions and Strategic Objectives	43
6 Investment Priorities	46
7 Partnerships	56
8 Delivery Framework	64
9 Glossary	77
Annexe 1 Map Folder *	
Annexe 2 Presentations from LDF Planners Workshop (November 2009) including GMGI Methodology for developing GI Plans *	
Annexe 3 Case Study Folder *	
Annexe 4 Executive Summary (Powerpoint)	
• Bound separately	

1.0 Summary

1.1 Purpose of this report

TEP's report "Towards a Green Infrastructure Framework for Greater Manchester"¹ recommended a spatial framework for the city-region's green infrastructure (GI). The report was endorsed by the Association of Greater Manchester Authorities (AGMA).

During 2009, further evidence about biodiversity, flood risk, climate change and the economic value of green infrastructure emerged. At the same time, Greater Manchester's governance commissions were developing their forward work programmes, including work towards a Greater Manchester Spatial Framework, and also investment programmes to deliver growth and improve resilience of the economy to environmental stresses such as climate change.

AGMA and Natural England commissioned TEP to produce this "Next Steps" report; with objectives to:

- a) review emerging evidence on Greater Manchester's environment and growth proposals
- b) prepare maps showing GI assets, needs and opportunities;
- c) update the spatial framework for Greater Manchester's GI, bearing in mind Greater Manchester's Strategy for place, growth, regeneration and resilience;
- d) advise on the possible structure of a GI framework.

This report is not itself the GI Framework, rather it sets out how a Framework could be produced, with recommendations in relation to evidence-gathering, objective-setting, governance, delivery, action-planning and advocacy. This report has been prepared at a time of rapid development of policy and investment priorities for city growth. The Framework will also need to take account of emerging evidence and best practice such as the Greater Manchester Surface Water Management Plan, which could not be captured in this report.

The recommendations in the report are for AGMA to consider for their forward work programmes, in conjunction with the city-region's Commissions and partner bodies in national and local government.

1.2 What is Green infrastructure?

The green infrastructure of Greater Manchester is part of its life support system. It is a planned and managed network of natural environmental components and green spaces that intersperse and connect our urban centres, our suburbs and our rural fringe. In simple terms, it is our natural outdoor environment.

In Greater Manchester, green infrastructure consists of:

- o open spaces e.g. parks, woodlands, informal open spaces, nature reserves, lakes, historic sites and natural elements of built conservation areas, civic spaces and plazas, and accessible countryside.

¹ Towards a Green Infrastructure Framework for Greater Manchester: TEP(2008) for AGMA and Natural England

- o linkages e.g. river corridors and canals, pathways, cycle routes and greenways.
- o networks of “urban green” i.e. the collective resource of private gardens, pocket parks, street trees, verges and green roofs

1.3 The Economic Context

Greater Manchester is a city region committed to growth. It aims to be a modern low carbon economic area, noted for quality of life and place, as set out in its Vision (see box).

Greater Manchester’s vision:

By the year 2025, we envisage the Manchester City Region will be:

- o *One of Europe’s premier city-regions, at the forefront of the knowledge economy with outstanding commercial, cultural and creative industries;*
- o *World class, successfully competing internationally for investment, jobs and visitors;*
- o *An area where all people have the opportunity to participate in, and benefit from, the investment and development of their city-region;*
- o *An area known for, and distinguished by, the quality of life enjoyed by its residents; and*
- o *An area with GVA levels to match those of London and the South East.*

Greater Manchester is the UK’s second city in economic terms, key to the economic performance of the North of England, providing the national economy with a strong source of growth, diversity and resilience. In 2008 the city region generated over £50bn of GVA representing 4% of the national economy. It benefits from skilled, knowledge-based jobs within a diversified, private sector driven economy. The city has particular strengths in advanced manufacturing, life sciences, media and business services.

Due to its political and business structures, size, talent pool and connectivity, Greater Manchester is one of a small number of engines of national growth and is well placed to complement London and the South East to help rebalance the national economy. The future growth of Greater Manchester is critical to the north of England and therefore the UK’s long-term economic growth.

For all its strengths, big challenges remain. To quote the Manchester Independent Economic Review (MIER), Greater Manchester “punches below its weight”, with lower economic output than expected for a dynamic modern city of its size. A quarter of Greater Manchester’s output gap (compared to what should be expected) is due to low levels of economic activity, with high rates of worklessness constraining outputs and reinforcing concentrations of deprivation. The remaining three quarters is caused by low economic productivity, the result of a weak skills base, together with relatively low levels of enterprise in comparison with peer cities.

1.4 Greater Manchester’s Strategy

The twin challenges are to boost business productivity and at the same time ensure that all parts of Greater Manchester and its people contribute to and benefit from economic growth. Greater Manchester’s Strategy (GMS) responds to the challenges posed in the MIER and sets out 11 priorities:

1. improving the early years experience
2. securing better life chances for all, including those living in the most deprived areas
3. upskilling our residents
4. attracting and retaining talented people
5. improving transport connectivity into and within Greater Manchester to support economic growth
6. expanding and diversifying the area's economic base through provision of critical infrastructure
7. enhancing the city's residential offer
8. enhancing the international connectivity of our businesses
9. securing a rapid transition to a low carbon economy
10. creating quality places which support economic growth; and
11. securing effective governance arrangements

1.5 Why is Green Infrastructure relevant?

The quality of the natural environment has a direct economic impact. A high-quality environment contributes to at least 6 of the GMS priorities (2,3,4,7,9,10). Conversely, a poor quality environment will be a drag on progress towards these same priorities. For example, in the face of a changing climate, a poorly-managed natural environment lacks resilience to flooding and is prone to overheating. This has a direct impact on property values, public finances and investor confidence.

Research demonstrates GI investment brings eleven economic returns². Of particular relevance to Greater Manchester's economy are the following four:

Enabling high-value housing and economic growth: The city region needs significant new housing which will place pressure on water resources and require investment in flood defences. In order to attract families and retain graduates, good-quality housing is needed, with access to safe and clean green spaces. GI can improve the lifespan and resilience of flood defences by attenuating storm flows. GI can create the setting for decent homes. Similarly, high-quality public realm is vital to attract high-calibre innovators and businesses. Case studies from New East Manchester, the Irwell River Park and the Oxford Road Corridor show that the quality of public realm and the natural environment catalyses economic success and social regeneration. Senior leaders in these areas recognize that investment in GI is an essential feature of sustainable development; and without it, they will not realise all their economic objectives.

Improving health and wellbeing: An ever-increasing body of research shows the positive association between accessibility of green spaces and physical and mental health. Much of Greater Manchester's problem with low productivity relates to poor health. Although life expectancy is improving, the areas of greatest worklessness suffer from above-average rates of obesity, cardio-vascular illness and mental stress. As part of a holistic approach to healthcare, exercise in the outdoor environment is a low-cost means of improving workforce health. Investment in GI, and stimulating community enjoyment of it, will yield health benefits.

Improving Greater Manchester's image as a place to visit and relocate to: The visitor economy is important

² Ecotec (2008) The Economic Benefits of Green Infrastructure. For Natural Economy Northwest

for jobs, and the city-region has a strong brand built around urban culture. Its GI is already important e.g. Heaton Park, Salford Quays and the canal network, the Pennine mills and moors, Dunham Massey/Styal. However there is considerable scope to expand the visibility and range of outdoor destinations. In parallel, the image of the city-region as an exciting place to which to relocate is negatively affected by blight along transport corridors and poor quality of public realm in many economic centres. Greater Manchester has a significant university presence, so has a great opportunity to retain high numbers of graduates looking to settle and work in the area long-term. Quality of GI is a strong driver for retention of families within the city-region e.g. quality of parks and countryside.

Contributing to a low-carbon economy: Greater Manchester will attract businesses working in environmental technologies, low-carbon construction and lean manufacturing – image and public realm are drivers for these businesses. In addition, the city-region has an opportunity to develop as an exemplar of low-carbon urban planning; by maximizing opportunities for walking, cycling and the use of vegetation to cool buildings and provide a setting for green commuting.

Homes and Communities Agency has a Local Investment Plan for Greater Manchester, focused on delivering decent homes in decent places. This ties in with Greater Manchester's continuing status as a New Growth Point. Alongside this, Environment Agency has studied the environmental infrastructure needs to sustain housing growth (waste, water supply, sewerage and green infrastructure). They confirm the need for investment in new and better-managed GI.

GI investment brings other benefits of social and environmental nature e.g. biodiversity, better water quality, landscape distinctiveness and a stronger tourism offer. In this regard, Greater Manchester has several emerging frameworks and management plans to improve environmental quality. These include the Greater Manchester Spatial Framework (expected early 2011), the Strategic Flood Risk Assessments (SFRAs), the Defra-funded Surface Water Management Plan (expected 2011), the Ecological Framework, the Environment Agency's River Basin Management Plans for the Irwell and Mersey and initiatives such as "Manchester's Countryside" and Pennine Prospects promoting the South Pennines.

Investment in GI also helps public bodies meet their statutory obligations in respect of environmental quality, climate change and citizens' wellbeing. National and local governments have robust legislation and planning policy relating to sustainable development and the natural environment. These instruments are good at protecting existing GI assets, but positive mechanisms are needed to create new assets, improve functionality of existing assets, tackle deficiencies in GI and reverse the legacy of past environmental damage. These problems are more difficult to resolve in areas of low economic prosperity where land values are low and inward investment is slow.

A GI Framework is a positive, forward-looking system which promotes the means to foster positive change in areas of need and opportunity. If adopted at city-regional and local levels, it can help deliver the positive objectives of the planning system and can also deliver environmental objectives of the spatial and environmental frameworks and management plans listed above.

A GI Framework is also a vehicle for cross-cutting delivery of economic, health, environmental and other

priorities. It is also a way of linking large strategic GI projects with those of a neighbourhood scale to tease out added value and cumulative benefits.

1.6 The need for a city-regional framework for GI

For all the above reasons, investing in GI is vital to underpin and catalyse growth and regeneration in Greater Manchester. A city-regional framework for GI will help to focus delivery, align the myriad of ongoing local initiatives and act as a flag-bearer for Greater Manchester's objectives of being a World-class city-region, noted for the quality of life enjoyed by its residents. This report advises AGMA about the next steps needed to finalise a GI framework which builds on, not replacing, the many established successful environmental initiatives in Greater Manchester.

1.7 Where does the GI framework apply?

This report identifies that investment in GI is relevant in all urban, suburban and rural parts of Greater Manchester. The spatial priorities are:

The Strategic Green Infrastructure Network – these multifunctional areas of open land and water are the city's green lungs, providing health, access, amenity, biodiversity, tourism. In terms of the economy, these areas sustain jobs in the visitor and natural economies, they improve health of the workforce, they contribute to the positive image of the area, they provide a setting for decent homes and they help absorb stormwater, in turn protecting downstream property from flooding. They include river valleys, mosslands, moorlands and some major areas of open countryside.

Economic Centres and Growth Points – this includes city and town centres, housing growth points, major investment sites and key transport corridors and gateways. Characterised by a highly urbanized environment, the quality of public realm is vital to economic success and image. Since continued investment is dependent on property value, it is also vital to invest in natural systems such as upstream floodplains and surface water flowpaths which protect urban areas from flooding. At a finer grain, vegetation in these areas can help to improve air quality, urban heat and can stimulate walking and cycling and greater public use of open space; in turn creating healthier lifestyles and economic opportunities. These areas are continuously experiencing redevelopment so there are opportunities to fit GI into new-build, often as part of a low-carbon approach.

Regeneration Priority Areas – this includes housing market renewal areas, areas of multiple deprivation, major brownfield regeneration sites, DUN land, blighted transport corridors, often characterised by pollution and low environmental quality. GI can help remediate brownfield and create a better setting for new development, building investor confidence. GI activity is much the same as described above for economic centres, but in regeneration priority areas, there is usually an additional need to engage with the local community in order to use GI to stimulate outdoor activity, healthier lifestyles and provide community groups with a setting to meet, play, engage in sport and even grow food.

Destination Parks, Landmarks and Trails - Major parks, as well as landmarks and vistas in urban and rural areas, are important GI destinations, as well as being valuable in creating a sense of place, civic pride, stimulating healthy lifestyles and sustaining jobs in the tourism, leisure and recreation industries.

A sustainable movement network – footpaths, cycleways, canal towpaths and bridleways which link GI assets to each other and to residential and employment areas provide a means of encouraging sustainable transport, healthier lifestyles, greener commuting and general enjoyment of open spaces.

Greening the Urban Environment – A strategy for the “fine-grained” GI, this includes measures to ensure new build maximizes the use of vegetation; and urban tree-planting or food-growing programmes which enhance local environmental quality and contribute to a more beautiful, walkable and shaded environment. Greening the Urban Environment is particularly relevant in the economic growth centres and regeneration priority areas.

Community Activism (or Civil Society actions) – sustaining the existing groups engaged in neighbourhood management, providing them with resources, access to information, networking and best-practice. Encouraging broader involvement in the outdoor environment through Friends of Parks groups, corporate responsibility programmes and making GI assets available to health and social care programmes (using the “Total Place” model where public services are joined-up in a neighbourhood). This is particularly relevant for communities in and near the main GI assets and also important in regeneration priority areas.

1.8 Next Steps

This report is not itself a framework for GI. It sets out several recommendations for AGMA (and its environmental partners such as Natural England, Environment Agency, Homes and Communities Agency, the Community Forests, Groundwork Trusts, BTCV and many others) as to how a framework can be formulated. It recognizes that substantial GI activity already occurs and advises how this can be further stimulated, gaps filled and the overall level of GI investment enhanced so that Greater Manchester can regenerate and grow as envisaged in its Strategy.

Some of the report’s key recommendations are listed below, and subsequent chapters give further detail

Structure of the Framework

The report identifies the components of a GI Framework and describes what further work is needed in respect of each component (evidence base, vision, strategic objectives, investment priorities, partnerships, governance and delivery framework and action plans). Although the Framework will continuously evolve, it is desirable to formulate Framework documents, headlined by a public-friendly prospectus. The prospectus can be prepared using existing information and would be a useful early action, especially if funds for full Framework production are difficult to source.

Evidence Base

Sufficient evidence is in place to allow a reliable framework to be formulated. However, evidence collation is a living process and mapping and research is needed in various areas, including:

- Asset-mapping – in particular to map all urban surface types, accessibility and quality of open spaces in relation to nearby populations, the sustainable movement network and carbon-sinks
- Need-mapping – to identify areas of the urban fabric where GI investment can make the most significant improvements to climatic resilience (e.g. urban heat zones, surface water flowpaths), or to carbon-sinks (brownfields, peat soils)

- Research and case studies relating to economic benefits of GI investment
- Case studies of best-practice in retro-fitting GI into mature urban areas where every space is subject to competing demands and has multiple constraints
- Open-source data – to enable all Greater Manchester’s citizens to access maps and information about the areas GI and environmental factors.

The NW GI Partnership (co-ordinated by Community Forests NW) is an active “think-tank” in respect of the evidence base, sharing information with other city-regions in England. Manchester and Salford Universities are established “thought-leaders” in the NWGI community, with their promotion of the “EcoCities” initiative for example. AGMA should continue to contribute to the NWGIP, and encourage partnerships and research work by constituent districts and environmental bodies.

Vision and Strategic Objectives

The report makes recommendations how to formulate a vision and strategic objectives for GI in Greater Manchester. These should be clearly linked to the Greater Manchester Strategy’s “World-class 2025 city vision”. The report stops short of formulating a vision statement, since this should be a task shared by AGMA’s Commissions and the GI Community, informed by community aspirations.

Investment Priorities

The report lists, describes and maps the 7 investment priorities for the city-region’s GI (noted earlier in this summary). These should be tested through consultation. Once agreed, work programmes and action plans should be drawn up and incorporated into a Delivery Framework.

Governance

As with any infrastructure, GI investment is relevant to the objectives and work programmes of most of the City’s Commissions, notably Planning & Housing, Environment, New Economy and the Health Commission. Cross-Commission steering, support and oversight is needed. However, to avoid a scenario where it “falls between the cracks”, a Board or Steering Group should be established across all Commissions and a championing role delegated to one of the 4 Commissions named above. The Infrastructure Cross-Commission Group could provide this link between Commissions.

Delivery Framework

A Delivery Framework should be drawn up, building on the work of the existing GI delivery bodies (loosely-termed the GMGI Partnership for the purposes of this report). Delivery of the city-regional GI work programme should be co-ordinated by the GI champion but should have a highly devolved/delegated structure; with as much delivery responsibility as possible at local level. This is appropriate since much GI activity to deliver strategic priorities is actually characterised as “a few major projects and 1001 small changes”.

Delivery will nevertheless require strong and inclusive partnership-working to ensure agreement of priorities and building of capacity to deliver key actions at all scales.

Advocacy

The Framework should be “headlined” by a punchy prospectus which is accessible to the public, politicians, investors, businesses and environmental interest groups. This should celebrate Greater Manchester’s environment and economy, setting out the seven investment priorities with a call for action and involvement from all sectors. Senior City leaders (officers, politicians and media) should be found who will be the public face for Greater Manchester’s environment, engaging with the community, business and planners. Experience from London and New York shows that this role is often carried out well by civic leaders and senior politicians such as mayors.

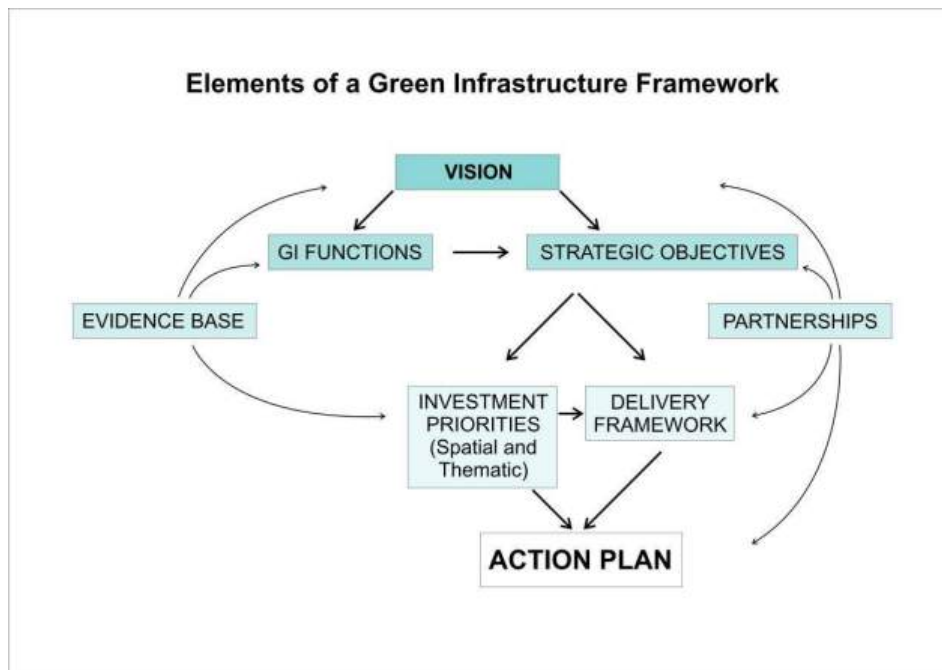
This written report provides detailed analysis and advice. A Powerpoint Executive Summary of the key findings and advice from TEP’s work is enclosed at Annexe 4.

2.0 Structure of the Report

A GI framework for Greater Manchester would consist of several cross-cutting elements (refer to the diagram below). Subsequent chapters of this report contain a series of detailed recommendations about:

- a) Compiling and maintaining an evidence base about Greater Manchester's GI.
- b) Articulating a vision why green infrastructure is at the heart of sustainable growth.
- c) What functions GI delivers to support growth of Greater Manchester.
- d) The strategic objectives for the framework.
- e) Where investment in GI is most needed (considering spatial and thematic priorities).
- f) Who has an interest in planning, managing or using GI (partnerships).
- g) How GI will be delivered, by whom and when.
- h) What programmes are needed to deliver GI.

Several elements of the GI framework are already in place, or require relatively little further development. There has been substantial GI activity for many years, much of which is bearing fruit in the form of improved places and communities. Since 2008, all the Local Authorities have developed policies for GI and the emerging spatial framework for Greater Manchester makes reference to the importance of GI for growth. Given this “head of steam” that has built up, TEP’s over-riding recommendation is that the final steps to formulate and publish a city-regional GI framework are taken as soon as possible, in order to tie in with the process of developing the GM Spatial Framework.



3.0 Evidence Base

This chapter summarises the evidence that has emerged in respect of GI assets, GI needs and areas of opportunity and economic transformation. It includes case studies and samples of maps illustrating these themes at Local Authority and City-region scale. A full folder of maps is found at Annexe 1.

The chapter also makes recommendations about how the evidence base should be enhanced. TEP concludes that there is adequate evidence to draw up a Framework document, but improvements are needed in public accessibility to maps showing GI assets. A consistent typology of green infrastructure across the City region would also reap rewards in terms of easier analysis of where GI is presently deficient. Continued research, case studies and demonstrations are needed prove the range of economic benefits and to improve delivery of multifunctional GI.

Since 2008, the most significant advances in evidence relate to the economic value of GI in making cities liveable and ensuring existing property and proposed growth is resilient in the face of a changing climate³. These studies build on earlier work by Natural Economy Northwest which demonstrated the 11 economic benefits of GI.⁴ Much evidence about the importance of GI in managing surface water and urban heat is emerging from research by the Universities of Manchester and Salford, from AGMA's Strategic Flood Risk Assessments (SFRAs), and the emerging Surface Water Management Plan process. Greater Manchester has set itself on a trajectory towards a low-carbon economy, as confirmed by its declaration in October 2009 as a pilot low-carbon economic area specialising in the built environment. Investment in GI should be recognised as part of the City-region's approach to low-carbon society.

City-regional governance arrangements have now emerged. The City's 7 Commissions, along with national agencies such as Homes & Communities Agency and Environment Agency, have confirmed plans for significant investments in built, social and environmental infrastructure. These investments provide significant opportunities for GI to be integrated into new and re-built development and infrastructure. These areas of transformation also form part of the evidence base, in that they inform priorities for GI activity.

Evidence to support investment in green infrastructure is critical, especially as public sector funds diminish and increasing reliance is placed on private contributions and community activity.

Since GI is delivered by many parties, an accessible store of evidence will help partners develop programmes and avoid duplication of effort when assembling a reasoned justification for GI investment. On the basis that "information is power", if we are to widen participation in GI delivery, we must make our environmental information readily accessible to the public; in line with CABE's recommendations to expand the capacity of the Green Infrastructure "Community".

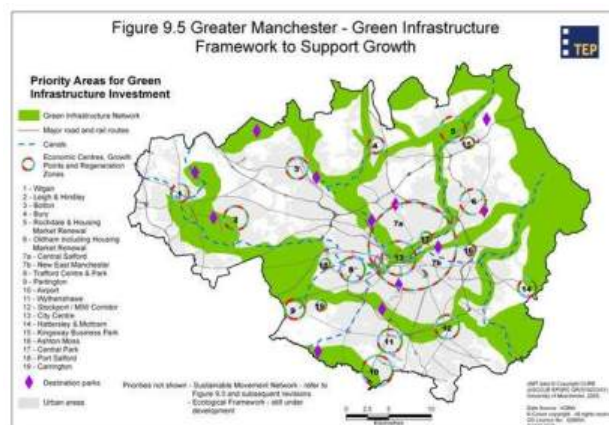
³ e.g. evidence cited in draft Planning Policy Statement (March 2010) on Planning for a low-carbon economy in a changing climate, issued by Communities & Local Government

⁴ Ecotec (2008) The Economic Benefits of Green infrastructure – research report for Natural Economy Northwest.

3.1 Review of Evidence

The 2008 TEP report identified spatial priorities for GI and produced a key diagram, entitled ‘Greater Manchester - Green Infrastructure Framework to Support Growth’ (see inset).

During 2009 and 2010, TEP reviewed and updated the evidence base underpinning the provisional GI Framework. This review included data from:



- a) Strategic Flood Risk Assessments⁵
- b) Greater Manchester’s Ecological Framework⁶
- c) Detailed maps of GI assets using data sourced from Local Authorities and the North West Regional Intelligence Unit’s Place Profiles
- d) Emerging Core Strategies of the ten Local Authorities - these identified priority areas for economic development and social regeneration
- e) National and city-regional legislation and policy for growth, sustainability and resilience (including the priorities of the emerging city-regional Commissions)
- f) Reviews of GI planning in differing Case Study areas of Greater Manchester (Oldham Metrolink corridor, Roch Valley, Radcliffe, Bury Core Strategy, the Salford/Wigan mosslands and the Oxford Road Corridor) and in New York, Vancouver and the Ruhr Valley in Germany. Case Study reports are found at Annexe 3

TEP considered the evidence in three broad classes (refer to glossary):

- a) GI Assets
- b) GI Needs
- c) GI Opportunities (Areas which have policy or market priority for Economic Growth and Transformation – and thus require parallel investment in GI to sustain or catalyse growth)

A full suite of maps is found at Annexe 1 (Map Folder). Detailed maps were produced in four geographic clusters to help identify cross-boundary assets, needs and opportunities:

- a) Wigan
- b) Rochdale/Bury/Bolton
- c) Oldham/Tameside/Stockport
- d) Manchester/Salford/Trafford

⁵ JBA Consulting, for AGMA: Strategic Flood Risk Assessments (Stage 2 reports for each district of Greater Manchester), prepared in 2008/9/10

⁶ Greater Manchester Ecology Unit and University of Salford (2009): An Ecological Framework for Greater Manchester

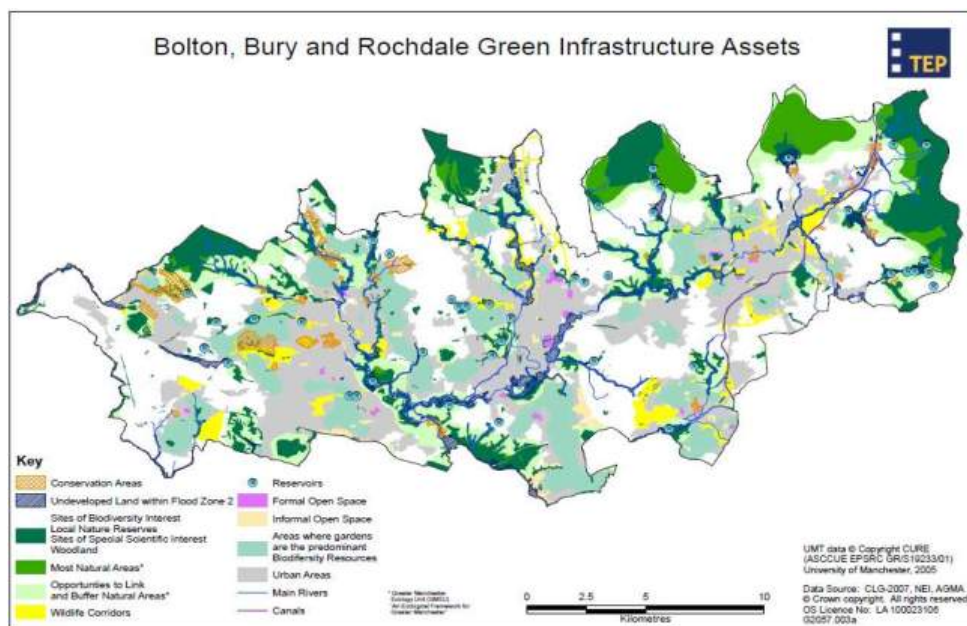
As the information is available in GIS, the maps could be reformulated for any desired geographic focus. For example, there is merit in analysing GI at a catchment scale to assist with river basin and flood planning.

3.2 GI Assets

The following classes of asset were mapped:

- a) Rivers and Canals
- b) Reservoirs
- c) Ancient woodlands and other woodlands
- d) Most Natural Areas and buffer zones (from the GM Ecological Framework)
- e) Areas where gardens are the predominant biodiversity resource⁷
- f) Sites of Biological Importance, Sites of Special Scientific Interest, Special Protection Areas and Special Areas for Conservation
- g) Local Nature Reserves
- h) Conservation Areas
- i) UK BAP priority habitats (information not consistently available)
- j) Wildlife corridors (from former Unitary Development Plans)
- k) Public open spaces (from District PPG17 maps, although the information is not consistently mapped across districts)
- l) Open Access Areas
- m) Undeveloped land in floodzones 2 and 3 (allowing for climate change adjustment)

A typical GI asset map (for Rochdale/Bury/Bolton) is shown.

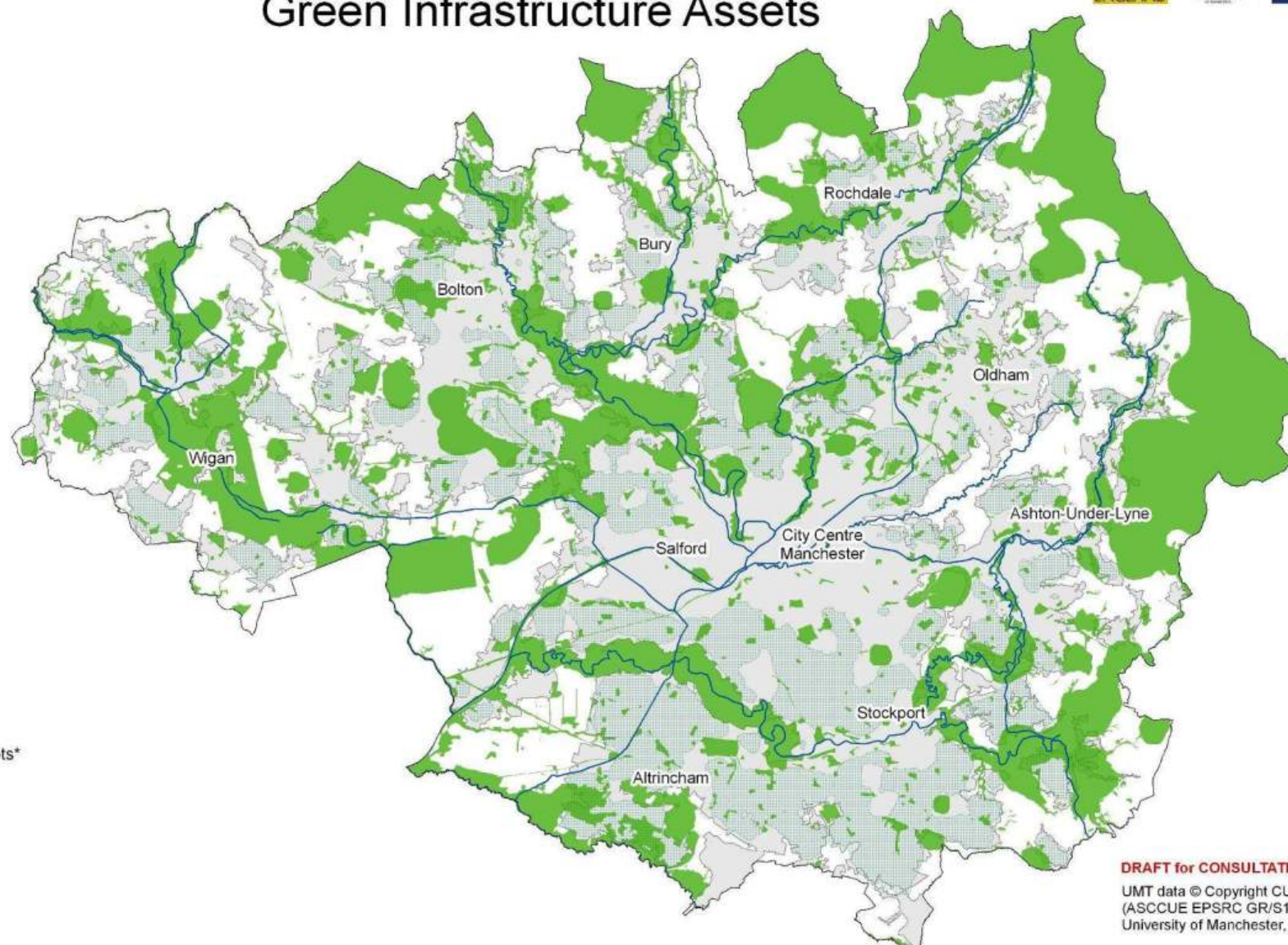


This information would be too detailed to present at city-regional scale. However, it is possible to “zoom out” by aggregating various classes of asset to create a city-regional scale asset map (see below).

⁷ Gardens cover some 800,000 ha of land and make up between 21.8 and 26.8 per cent of the land within the urban boundary of five major UK cities (Gross & Lane, 2007). The GM Ecological Framework identifies areas where gardens are a significant biodiversity resource

Greater Manchester Green Infrastructure Framework

Green Infrastructure Assets



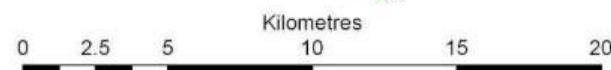
- Green Infrastructure Assets*
- Areas where gardens are important biodiversity resources
- Principal Waterways
- Urban Areas

* Includes:
Canals, Rivers, Conservation Areas,
SSSIs, SBIs, LNRs, Most Natural Areas,
Wildlife Corridors, Opportunities to Link and Buffer,
Habitat Mosaics, Non-Urban Land in Flood Zone 2,
Formal Open Space, Informal Open Space

DRAFT for CONSULTATION (2010)

UMT data © Copyright CURE
(ASCCUE EPSRC GR/S19233/01)
University of Manchester, 2005

Data Source: AGMA
© Crown copyright. All rights reserved
OS Licence No: LA 100023108
G2057.096 (7.03.10)



It is also possible to zoom in to show greater levels of detail. The Bury Core Strategy Case Study shows how evidence about GI assets can be mapped at Borough level – by providing a sequence of maps illustrating different assets and their relationship to neighbouring communities.

Green Infrastructure is apparent at various scales. River valleys and major countryside areas are easily recognised as multi-functional assets. However, in the context of a mature and continuously evolving urban area, a finer grain of analysis is also needed. For the purposes of this report the term “Urban Green” is used to describe the fine-grained network of green spaces, urban trees, civic spaces, gardens that can be critical to sustaining a functioning city environment.

Green Infrastructure: from Neighbourhood to Town & City through to City-Regional and Strategic Scales					
Neighbourhood Scale		Town / City Scale		City Regional Scale	Strategic Scale
A network of local green spaces addresses many user needs especially in light of urban densification, demographic changes, social inclusion; and helps to move towards a low carbon economy.		District scale green infrastructure contributes to an area's distinctiveness and biodiversity, allowing a wide range of user groups to share the same space.		Including major sites and landscape tracts, as well as smaller interconnected neighbourhood and district assets, this scale of green infrastructure provision can deliver multiple ecosystem services and public benefits, such as biodiversity, landscape enhancement, recreation, health and climate change adaptation	
					
Street Trees / Home Zones	Local Rights of Way	City Parks	Country Parks / Estates	Regional Parks	Regional Environmental Frameworks for Biodiversity, Landscape, Heritage
Roof Gardens & Green Roofs	Dedicated Gardens / Cemeteries	Urban Canals & Waterways	Continuous waterfront	Rivers & Floodplains	Strategic River Catchment Plans
Pocket Parks	Institutional Open Spaces	Green Networks	Municipal / Cathedral Plazas	Shoreline & Waterfront	Strategic & Long-distance Trails
Gardens	Ponds & Small Woodlands	Multi-user routes	Lakes	Strategic & Long-distance Trails	Major (>100ha?) woodlands
Urban Plazas	Play Areas	Urban Commons	Major recreational spaces	Community Forests	Open Access Sites
Village Greens	Local Nature Reserves	Forest Parks	Landmarks & Vistas & Gateways	Landmarks & Vistas	Reservoirs
				Environmental Management Initiatives	Strategic Infrastructure corridors
				Strategic Corridors & Gateways	Behavioural & Societal Change

Sections 3.2.1 to 3.2.10 contain recommendations for future mapping and research in respect of:

- Typology mapping – mapping and valuing fine-grained GI
- Urban tree canopy
- Surface Water flowpaths
- Soils
- Geodiversity
- Sustainable Movement Network
- Destination Parks, Landmarks and Vistas
- Landscape Character Assessment
- Cross-boundary GI mapping
- Making the evidence base available to the public

3.2.1 Mapping and Valuing Fine-Grained Green Infrastructure

A full typology of open spaces that may be of public value use is a very helpful baseline to measure and plan for GI. The recently published draft PPS on Planning for a Natural and Healthy Environment suggests a typology (see Box 3.1). Some of this information is already held by Local Authorities and it is expected that, over time these datasets will improve in quality. Work by Manchester University's Centre for Urban Ecology

(CURE) has already classified the city-region into Urban Morphology Types – for each UMT, general statistics are available about landcover. While it would presently be uneconomic to map landcover and land use across the whole City Region, progress is being made by the NW GI Unit on automating the process of landcover mapping using OS MasterMap and digital aerial photography.

An open space typology is particularly useful when planning GI at neighbourhood, masterplan or development-specific scales. It is similar to the way that BREEAM assessment measures landcover change to assess how a development affects local ecological value. In Chapter 9, the “Malmo Green Space Factor” is discussed as a possible approach for quantifying GI value in existing and proposed development.

Box 3.1

OPEN SPACE AND GREEN INFRASTRUCTURE TYPOLOGIES (from draft PPS on “Planning for a Natural and Healthy Environment”)

The following typology illustrates the broad range of open spaces that may be of public value. Most have the potential to make a contribution to green infrastructure and should be included in both the open space and green infrastructure assessments of needs and audits of provision. Green infrastructure can also include features such as green roofs and green walls.

- (1) **parks and gardens** – including urban parks, country parks and formal gardens
- (2) **natural and semi-natural urban green spaces** – including woodlands, urban forestry, scrub, grasslands (e.g. downlands, and meadows), common land, wetlands, open and running water, wastelands and derelict open land and rock areas (e.g. cliffs, quarries and pits)
- (3) **green corridors** – including river and canal banks, cycleways, and rights of way
- (4) **outdoor sports facilities** (with natural or artificial surfaces and either publicly or privately owned) – including tennis courts, bowling greens, sports pitches, golf courses, athletics tracks, school and other institutional playing fields, and other outdoor sports areas
- (5) **amenity greenspace** (most commonly, but not exclusively, in housing areas) – including informal recreation spaces, green spaces in and around housing, domestic gardens and town or village greens
- (6) **provision for children and teenagers** – including play areas, adventure playgrounds, skateboard parks, outdoor basketball hoops, and other more informal areas (e.g. ‘hanging out’ areas, teenage shelters)
- (7) **allotments, community gardens, city (urban) farms and land used for permaculture**
- (8) **cemeteries and churchyards**
- (9) **accessible countryside** in urban fringe areas; and
- (10) **civic spaces**, including civic and market squares, and other hard-surfaced areas designed for pedestrians

One example of the potential application of an open space typology map relates to climatic adaptation. A typology map could identify opportunities for climate and flood-proofing development through enhancing vegetation (see Box 3.2). In this scenario urban land would also be mapped in terms of its ability to help the city adapt to climate change. This could include categories of sealed/unsealed surfaces, tree/shrub canopy, grassland and surface reflectivity (albedo). This information can be used to prepare climate change projections and model how urban areas could be cooled by increasing tree canopy cover particularly in areas vulnerable to heat stress.

TEP recommends that a Greater Manchester wide map of open space typologies is prepared to overcome problems which occur at boundaries between administrative areas, and to demonstrate continuous networks of open space.

In future, it would be useful to define appropriate standards for the climatic benefits of urban greenspace and identify areas of the city which are assets in terms of creating a cool, shaded and sustainably-drained city (and areas which are deficient).

Box 3.2

Research by the University of Manchester has shown that:

- increasing the green space cover in urban areas by 10 per cent reduces surface run-off by almost 5 per cent
- increasing tree cover in urban areas by 10 per cent reduces surface water run-off by almost 6 per cent
- grassed areas can be up to 19 C cooler than adjacent bitmac surfaces

from **"Adapting cities for climate change: the role of the green infrastructure"** and the i-trees research

(S. Gill, J. Handley, R. Ennos, S. Pauleit)

3.2.2 Urban Tree Canopy

Mature urban trees, where the species is appropriate to the local environment, give public benefit, especially in terms of shading, biodiversity, sense of place and property value.

Red Rose Forest has data for some districts on urban tree canopy cover, available in detailed GIS formats which include tree location and 3D data on tree canopy dimension. This data is derived from aerial photographic interpretation (using the "Proximitree" programme).

A tree canopy map for the whole of the city-region will provide extremely useful for detailed planning and target-setting for GI, especially in the existing and proposed family housing areas in New East Manchester, Oldham and central Salford which have few mature trees and are vulnerable to future climatic stresses unless tree-planting takes place.

"The Red Rose Forest's Green Streets programme has transformed neighbourhoods through street and garden tree-planting. Not only has the area been improved visually, but the activity has brought people together in a way that will really benefit the community. Although, this is not the sort of thing that NWDA are known for funding, it hits all our targets for cohesive communities, transformed neighbourhoods and new skills" Joe Dwek, NWDA Environment Board member

This would also benefit several AGMA workstreams as tree canopy data is useful evidence for Strategic Flood Risk Assessments, Surface Water Management Plans and climate adaptation protocols, as well as image and biodiversity-related workstreams.

TEP recommends that, when the proposed GM-wide tree canopy audit is completed, the data is made available to local authorities, researchers, architects, planners and the interested public in order to improve awareness, design and management of the urban tree stock.

3.2.3 Surface Water Flowpaths

Strategic Flood Risk Assessments for the Greater Manchester authorities stress the importance of managing surface water flow paths (which carry overland flows of stormwater). Many of Greater Manchester's flowpaths have been provisionally identified through aerial photography and LIDAR analysis. They are too fine grained

to map at a city-regional scale but good management of them is vital in managing flood risk. GI has a role to play in good management e.g. through the use of swales, attenuation pools and soakaways.

Surface water flowpaths form one of the categories of 'Urban Green', recognised as fine-grained GI of City-Regional Importance in the investment priority listed later in this report.

AGMA will prepare a city-regional surface water management plan during 2011. This will include an interim and final strategic floodrisk assessment. The SWMP will build an evidence base about areas where GI can assist with mitigation or attenuation of stormwater flows.

In New York, there is a stormwater management plan which proposes a balanced approach to surface water management, including use of conventional engineering solutions, better building controls, SuDS, source controls and use of green infrastructure (see inset)



TEP recommends:

- a) AGMA (through the medium of the SWMP and future floodrisk management strategies) promotes the use of GI for surface water management, including standards for development management.
- b) Surface water flowpaths should be included on maps of urban typology (see section 3.2.1 above)

3.2.4 Soils

Soils have proven value to cities:

- a) as carbon sinks to mitigate for climate change
- b) to help buffer stormwater surges and to recharge aquifers
- c) to help manage air and water pollution
- d) for biodiversity
- e) for food production

Soils provide ecosystem services, particularly relevant for Greater Manchester which has important upland soils helping to manage flood risk. The Mosslands (between Salford, Wigan and Warrington) are also vital for carbon storage, biodiversity and food production.

However, many urban soils are in poor condition, having been removed, compacted, capped-over or polluted as a result of inappropriate development.

It is recommended that the soils of Greater Manchester are studied and maps prepared which identify:

- a) areas of soil with highest GI value – this would enable new thinking about how agricultural support

and carbon-offset funds are targeted to sustain soils

- b) areas of particular soil deficiency, such as brownfields, which could be targeted for soil-restoration projects, ideally utilising appropriate waste products from the city, thus building carbon stores.

For example, the ASCCUE study highlighted the importance of planners and developers being aware of soil permeability, in order to protect areas important for surface water infiltration.

Brownfield soil restoration might be a topic for the involvement of Greater Manchester Geological Unit and Environment Agency, since tackling brownfield sites with soil-restoration projects could improve land and downstream water quality

3.2.5 Geodiversity

The draft PPS on Planning for a Healthy and Natural Environment reminds local authorities that geodiversity conservation is a national policy. Geodiversity assets should be mapped, and where appropriate included in the GI Network. This task runs parallel to the soils mapping described above.

3.2.6 Sustainable Movement Network

Multi-user (non-car) routes are key GI assets to enable growth and healthy lifestyles. The 2008 TEP report included a plan showing a “Strategic Access Network”, based on work by Red Rose / Pennine Edge Forest in the early 2000’s. This has been partly implemented by Local Authorities and programmes such as Sustrans Connect2, Rights of Way Improvement Plans and locally-brokered s106 agreements.

However, there is no contemporary city-wide map showing existing and proposed sustainable movement network tied into the city’s green infrastructure assets and the city’s principal areas of population and planned growth.

TEP recommends that a sustainable movement network is mapped, including current and programmed routes. This mapping should also consider proximity to existing and planned population centres, community facilities and destinations, in order to meet accessibility targets (which would have to be defined).

“In a well-designed plan, every dwelling is located within an easy bicycle ride of a continuous park system so that a day’s walking or trailbiking does not have to begin with a drive”
From “The Smart Growth Manual” Duany, A. & Speck, J. McGraw Hill (2010)

3.2.7 Destination Parks, Landmarks and Vistas

Major parks, as well as landmarks and vistas in urban and rural areas, are important GI destinations, as well as being valuable in creating a sense of place, civic pride, stimulating healthy lifestyles and sustaining jobs in the tourism, leisure and recreation industries.

Figures suggest that in 2007⁸, 95% of people visited parks and urban greenspaces at least occasionally, and

⁸ From “Attitudes and Behaviour in relation to the environment” British Market Research Bureau, for Defra, 2007

77% at least monthly. This shows an 8-10% rise since 2002. This suggests the value of parks is appreciated and also suggests that there is an increasing opportunity for job-creation in parks, open spaces and accessible countryside.

New York's "Greener Greater" plan identifies that destination parks (existing and proposed) are vital for its residents, its economy and its tourism. In fact several of its destination parks, such as the Hudson River Park, are on former brownfield land. Its approach mirrored that of the NEWLANDS programme where sites were reclaimed for public benefit, as economic and community destinations.

East London's Green Grid has established a hierarchy of parks (from local to metropolitan). For Greater Manchester, it may be useful to identify destinations of more-than-local importance, so they can be highlighted in city-regional GI plans for enhancements in quality, accessibility and functionality.

TEP has drafted a provisional list of city-regional destinations. It would be useful for the final framework document to identify objective criteria for destinations of actual or potential city-regional value; and then to map these as investment priorities. This would need consultation with greenspace managers in Local Authorities, National Trust, Forestry Commission etc.

3.2.8 Landscape Character Assessment

Landscape Character Assessment (LCA) provides a structured approach to identifying character and distinctiveness as well as value. It helps to ensure development and land management contributes to and respects landscape character.

The European Landscape Convention requires all landscapes (urban, rural, developed and open) to be characterized and landscape quality objectives (LQOs) to be set. Landscape quality objectives should be incorporated into the GI delivery plan, to ensure that development uplifts landscape quality. In return, landscape character assessments should incorporate considerations of biodiversity, heritage, climatic resilience, social/demographic needs and the economic and educational value of the landscape.

In Greater Manchester, some districts have prepared LCAs, generally for areas of countryside. Some districts (with help from GMAU) have prepared historic landscape character assessments and townscape assessments, often associated with regeneration in areas of high conservation value. There is no consistent landscape typology for the city region, and some areas have not been assessed. Assessment style and dates vary greatly.

Natural England is considering how to implement the ELC and how to ensure that Landscape Character Assessments are consistent with GI plans. NE is also starting to examine urban landscape characterisation, and this work should be monitored by AGMA. LCA is a task that is carried out by Local Authorities, so bespoke guidance is needed for a complex urban environment such as Greater Manchester. As and when guidance emerges, it will be important to ensure that the GI Framework and the LCAs are aligned.

Natural England who are championing the NorthWest Landscape Character Framework (NWLCF) which is a consistent framework for mapping and describing landscapes. As each individual Local Authority carries out

landscape character assessment, it should refer to, and align with the NWLCF.

In the meantime, TEP recommends that the GI Framework should at least include a map showing the current status of LCAs/HLCAs/TCAs in the city-region, and a gap analysis identifying which areas of GI priority require the setting of LQOs in line with ELC objectives.

3.2.9 Cross-boundary asset mapping

Greater Manchester is bounded by other sub regions which are at various stages in preparation of GI strategies;

- a) **Lancashire** - Evidence base is well-documented, and the Strategy and an outline implementation plan have been drafted
- b) **Merseyside** (includes Warrington) - Scoping work complete, with the evidence base in preparation. Strategy expected in early 2011.
- c) **Cheshire and North-East Wales** - A GI Framework is expected in early 2011.
- d) **Leeds & West Yorkshire** – The GI strategy was published in autumn 2010.

Due to difficulties in sourcing consistent and replicable maps, the present iteration of Greater Manchester's spatial framework stops at the boundaries. It would be useful to review the 5 joining strategies during 2011 to examine if important cross-boundary issues such as flood management and the visitor economy are being addressed and ensure that the GI delivery plan includes actions for cross-boundary priorities (e.g. the River Irwell Catchment Management Plan). This task is most appropriately co-ordinated by AGMA with assistance from Natural England.

This process will also solidify the community of interest which currently meets as the NW GI Partnership to share best practice.

3.2.10 Availability of open-source data regarding environmental assets and needs

Much evidence has been built up over the past decade due to the efforts of the Northwest Green Infrastructure community, which includes Red Rose Forest, Pennine Edge Forest, several GM Local Authorities, Groundwork, Environment Agency and other bodies active in Greater Manchester.

Over the past 2 years there has been much convergence towards common standards in respect of availability and compatibility of digital environmental information. However, the situation is a long way short of "open source standard" where datasets relating to land and environmental quality are freely accessible and consistently presented.

One principle of a sustainable city is that the public should be engaged in planning, designing and managing the environment. Democratic involvement in, and equality of access to, the environment is particularly appropriate for Greater Manchester given its history of social responsibility and workers involvement in co-operative institutions. The principles of the Århus Convention are converted into

legislation by the European Commission. The convention joins environmental rights to human rights, stating:

“In order to contribute to the protection of the right of every person of present and future generations to live in an environment adequate to his or her health and wellbeing, each party shall guarantee the rights of access to information, public participation in decision-making, and access to justice in environmental matters in accordance with the provisions of this Convention”.

“Citizens by and large do not want to damage the environment and if they know what does and does not do damage, then they will act accordingly. The green city is founded on the assumption that humans desire a place in a flourishing natural order. What is good needs to be signalled clearly in legislation and institutional practice. Good governance is the means by which citizens act together on common problems for the common good” (from “The Green City”; Low.N et al 2005)

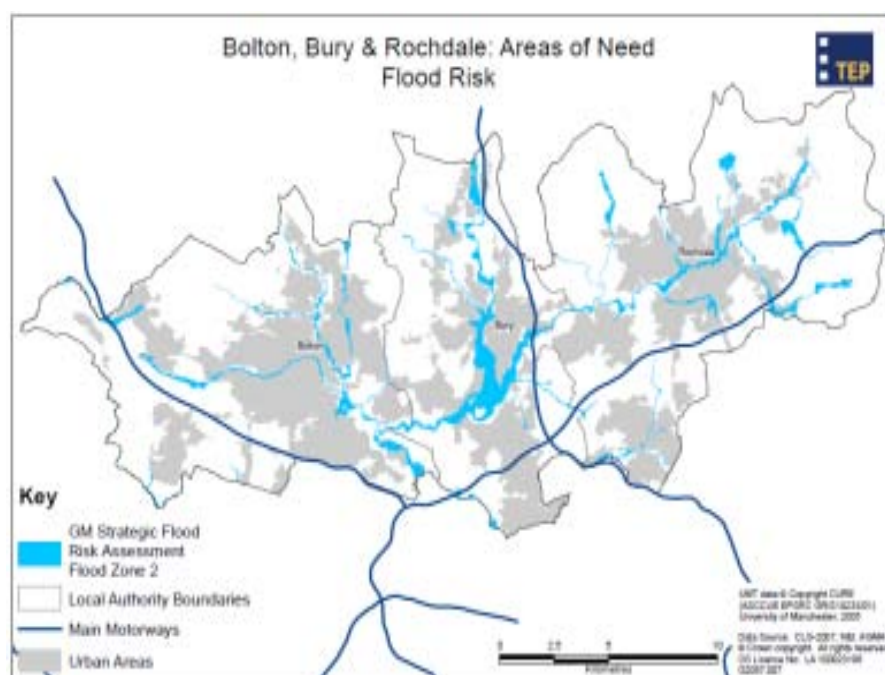
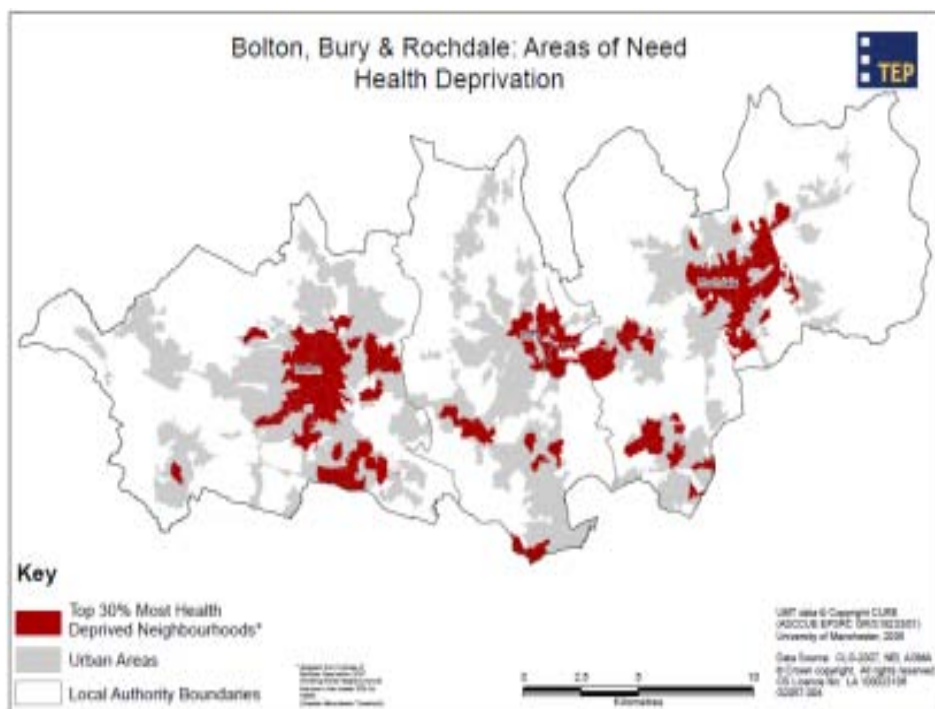
TEP recommends that the evidence base for the GI framework, including details of all GI assets is made available to the public in the form of an open-source datastore. This is a matter for AGMA to consider, since it has wider implications in relation to freedom of information and copyright.

3.3 GI Needs

TEP mapped five classes of social need and environmental stress, considering factors where GI could make a difference. The “Needs” maps were prepared for clusters of local authorities and covered the following elements, which partly overlap:

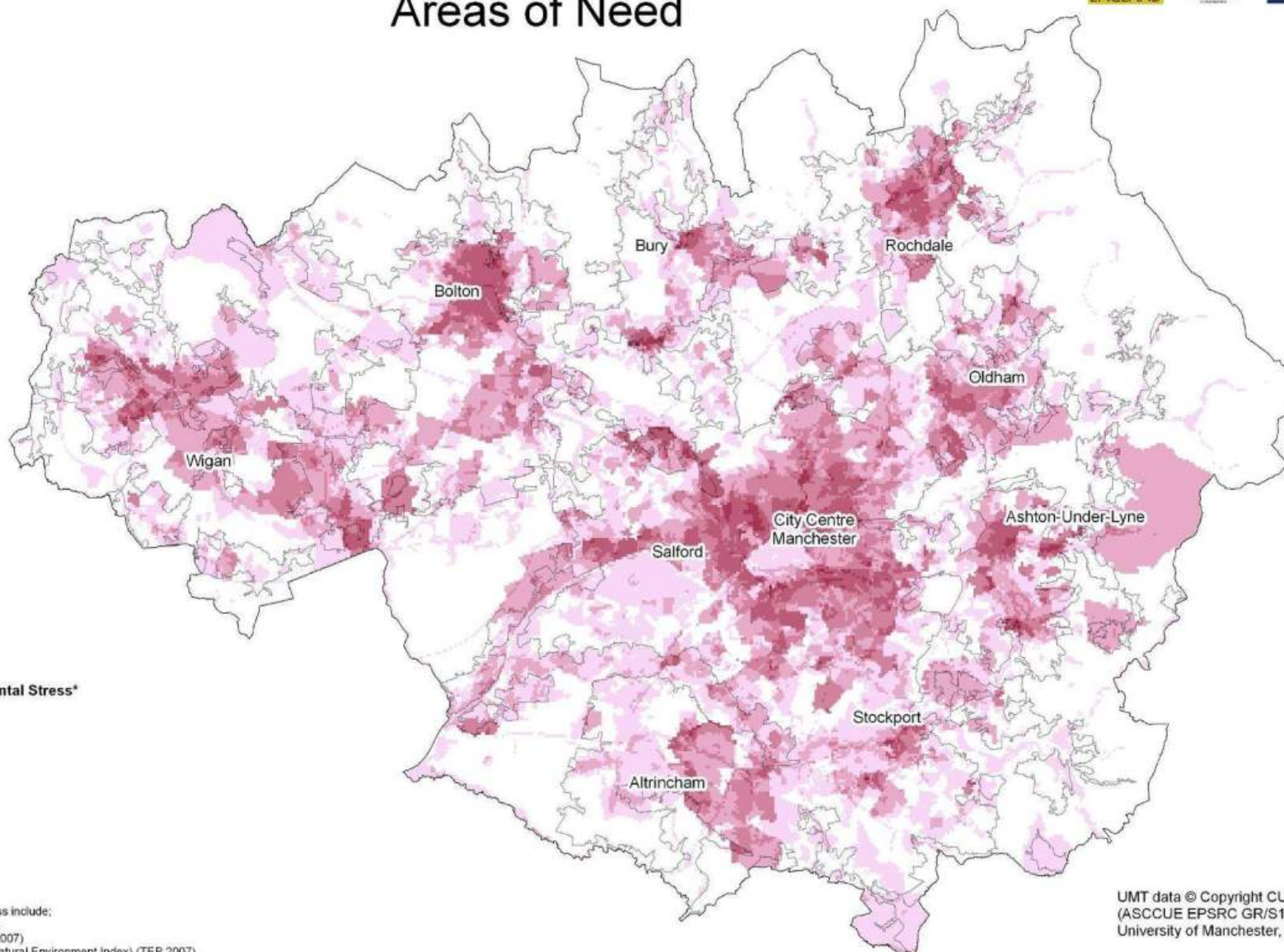
- a) Most deprived neighbourhoods (using the worst 30% Super Output areas; based on Index of Multiple Deprivation 2007)
- b) Neighbourhoods suffering health deprivation (using IMD 2007 and other health indicators)
- c) Areas in the 30% worst quality band for Natural Environment (using the Natural Environment Index, 2007)
- d) Areas in Floodzone 2 and 3 (allowing for climate change adjustment)
- e) Areas most likely to suffer from urban heat stress (using the 30% most affected neighbourhoods identified by Gill et. al)
- f) Areas of Derelict, Underused and Neglected Land (using the DUN Land survey, 2001)

These datasets are the best available because they can be mapped at a reasonably fine-grained scale and are replicable regionally. They do contain some inconsistencies when viewed at a local scale, due to boundary issues, and age of data. However, when overlaid at a city-regional scale, they give a good spatial indication of the extent to which particular neighbourhoods are experiencing present deprivation and future vulnerability to environmental stresses. Two inset maps show specific needs for the Rochdale/Bury/Bolton cluster. The large map shows intensity of need at a city-regional scale, where the darker the colour, the greater the number of stress-points. Interestingly, Manchester City Centre appears relatively “stress-free” but this may be because it has not yet been able to map deficiency of access to greenspace.



Greater Manchester Green Infrastructure Framework

Areas of Need



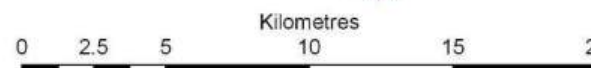
Elements of Need and Environmental Stress*

- 1 Element
- 2 Elements
- 3 Elements
- 4 Elements
- 5 Elements
- 6 Elements
- Urban Areas

*Elements of Environmental Needs and Stress include:
 30 % most Health Deprived Neighbourhoods
 30 % most Deprived Neighbourhoods (IMD 2007)
 30 % Worst Quality Natural Environments (Natural Environment Index) (TEP 2007)
 Floodzone 2
 Areas most likely to suffer from Urban 'Heat Island' (top 30%)
 Derelict, Unused and Neglected Land (DUN)
 Access to Greenspace Deficiency not yet mapped at
 City-Region Scale

UMT data © Copyright CURE
 (ASCCUE EPSRC GR/S19233/01)
 University of Manchester, 2005

Data Source: AGMA
 © Crown copyright. All rights reserved
 OS Licence No: LA 100023108
 G2057.094 (11.11.09)



This correlates well with the pinch-point mapping by the NW Green Infrastructure Unit⁹, which identified areas of proposed economic growth vulnerable to environmental stresses.

TEP recommends the following aspects of GI Need be mapped in a finalized framework:

- a) Deficiencies in access to various classes and qualities of greenspace - information from District PPG17 assessments needs to be assembled and city-regional consideration needs to be made about appropriate standards for accessibility to different classes of greenspace. Deficiency in quality of access also should be identified. This will require a scoping assessment, in consultation with the individual local authorities, to avoid duplication of effort. Much work has been done at Local authority level and Natural England have made a start on deficiency mapping using standards in Nature Nearby¹⁰, but there are problems with consistency of definition and cross-boundary mapping. Budgetary restrictions in 2010 have slowed this work down.
- b) Deficiencies in access to rights of way and cycle/bridleways should be mapped, with a view to an action plan for creating safe/green routes.
- c) Deficiencies in “urban green”, are also important to map, so that new developments, refurbishments and urban landscaping projects can be prompted to uplift local standards in relation to climatic performance, biodiversity, landscape and surface water management.

Identification of deficiencies is closely linked to the setting of standards for GI, to help deliver GI through the development process.

Box 3.3: Green Infrastructure supporting growth of New York

Growth of New York depends on improving environmental quality, and its usefulness for family and sporting life. In New York, there is limited scope for creation of new greenspaces. The City identified 7 regional park sites on existing open land and is midway through a programme of creating or completing these “flagship” projects.

However, these were at some distance from many neighbourhoods. The City set a standard that all New Yorkers, including the elderly and infirm, should be no more than 10 minutes walk from a safe and clean greenspace ideally with play facilities. Using GIS mapping, the City identified about 350 opportunities to create new or enhanced spaces in areas of need and/or economic activity:

- New public realm created by adjusting street patterns and creating shaded pedestrian areas on former highways
- Extending opening hours, wardening and lighting at existing parks and sports grounds
- A schoolyards to playgrounds programme

The City has commenced an implementation plan which is tackling these projects at a rate of about 50 per year (2008-2010 average).

⁹ Green infrastructure solutions to pinch-point issues in England’s Northwest” North West Green Infrastructure Unit, 2009; available at www.greeninfrastructurenw.co.uk

3.4 GI Opportunities: Areas of Growth and Transformation

During 2009/10, several strategies have been published by city, regional and national bodies which help define the extent and ambition of Greater Manchester's aspirations for sustainable growth. Most of this investment is being made in areas which:

- a) have important green infrastructure assets (rivers, parks, city-centre public realm) or
- b) are vulnerable to future environmental stresses (flooding, urban heat) or
- c) will support a growing and/or ageing population which requires access to high-quality open space "on the doorstep" or
- d) already suffer health deprivation or
- e) are essential drivers for the economy by virtue of their location and accessibility

For example:

- In the Oxford Road corridor, the major landowners (Universities, City Teaching Hospital, City Council and private developers) expect to make £2.5bn investment in new facilities over the next 15 years.
- In the Roch Valley, investment by the public and private sector in town centre regeneration, housing market renewal, transport improvements in Rochdale and Heywood is expected to involve over £1bn investment.
- The Irwell River Park, including MediaCityUK, is expected to involve over £2bn private-sector investment in new commerce, retail, cultural and residential development when complete.

This sort of targeted investment is vital to the regeneration and economic development of the city-region, beyond the immediate boundaries of the investment area. Creation and management of GI, as part of the overall investment package is essential:

- a) to improve the resilience of the "hard" development against climatic and other environmental stresses,
- b) to increase its long-term value (land, rental, and marketability)
- c) to reduce running costs
- d) to maximize "off-site" benefits to neighbouring communities, particularly those suffering from poor health or worklessness
- e) to offset negative environmental impacts (biodiversity, carbon-emission, visual)
- f) to create an attractive, liveable and "low-carbon" economy as a context for the development.

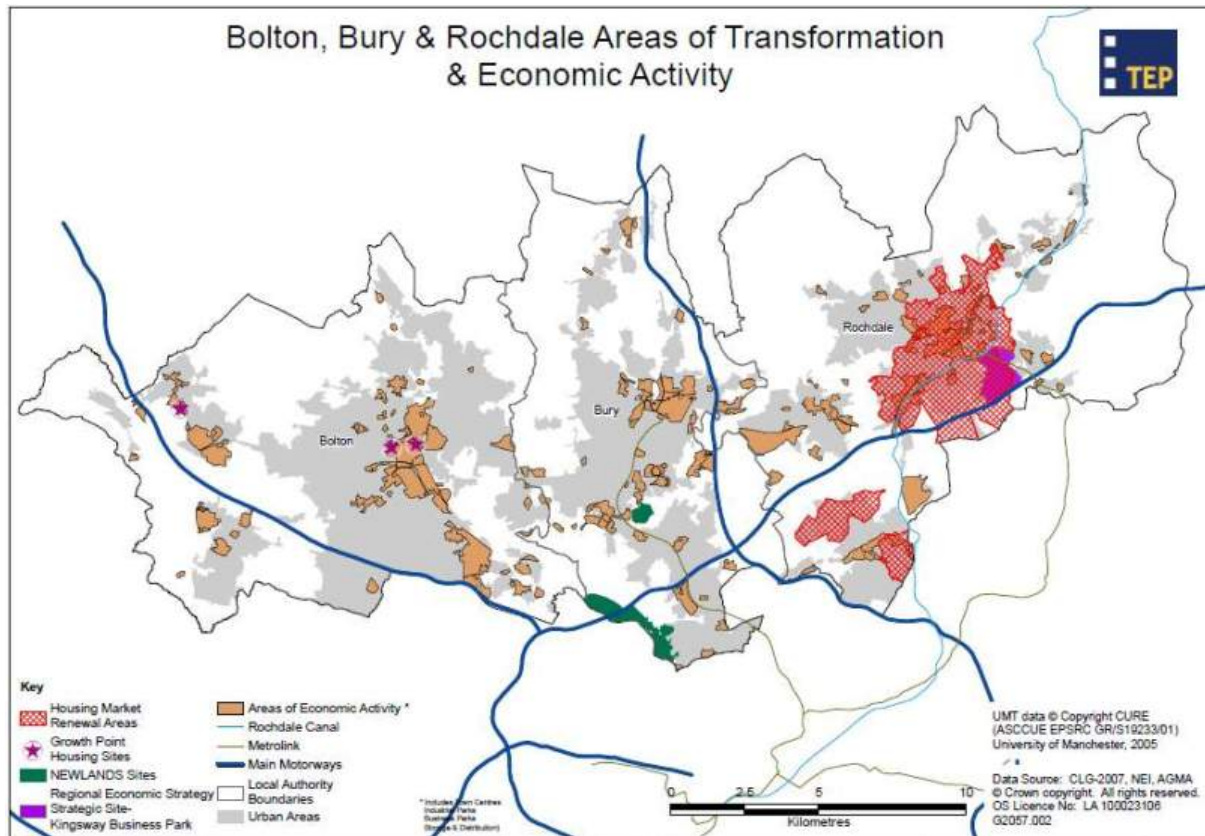
Emerging evidence on valuation of GI¹¹ will give practitioners more information about the monetised value of GI. This will provide decision-makers with toolkits to negotiate with developers and Government about

¹⁰ Natural England (2010) Nature Nearby – Accessible Natural Greenspace Guidance

¹¹ Genecon (2010 in draft): Green Infrastructure – building Natural Value for Sustainable Economic Development – Valuation Toolbox; unpublished research for Tees Valley Joint Strategy Unit and partners

the appropriate level of GI investment to sustain ecosystem services and public benefits in (and upstream of) major developments.

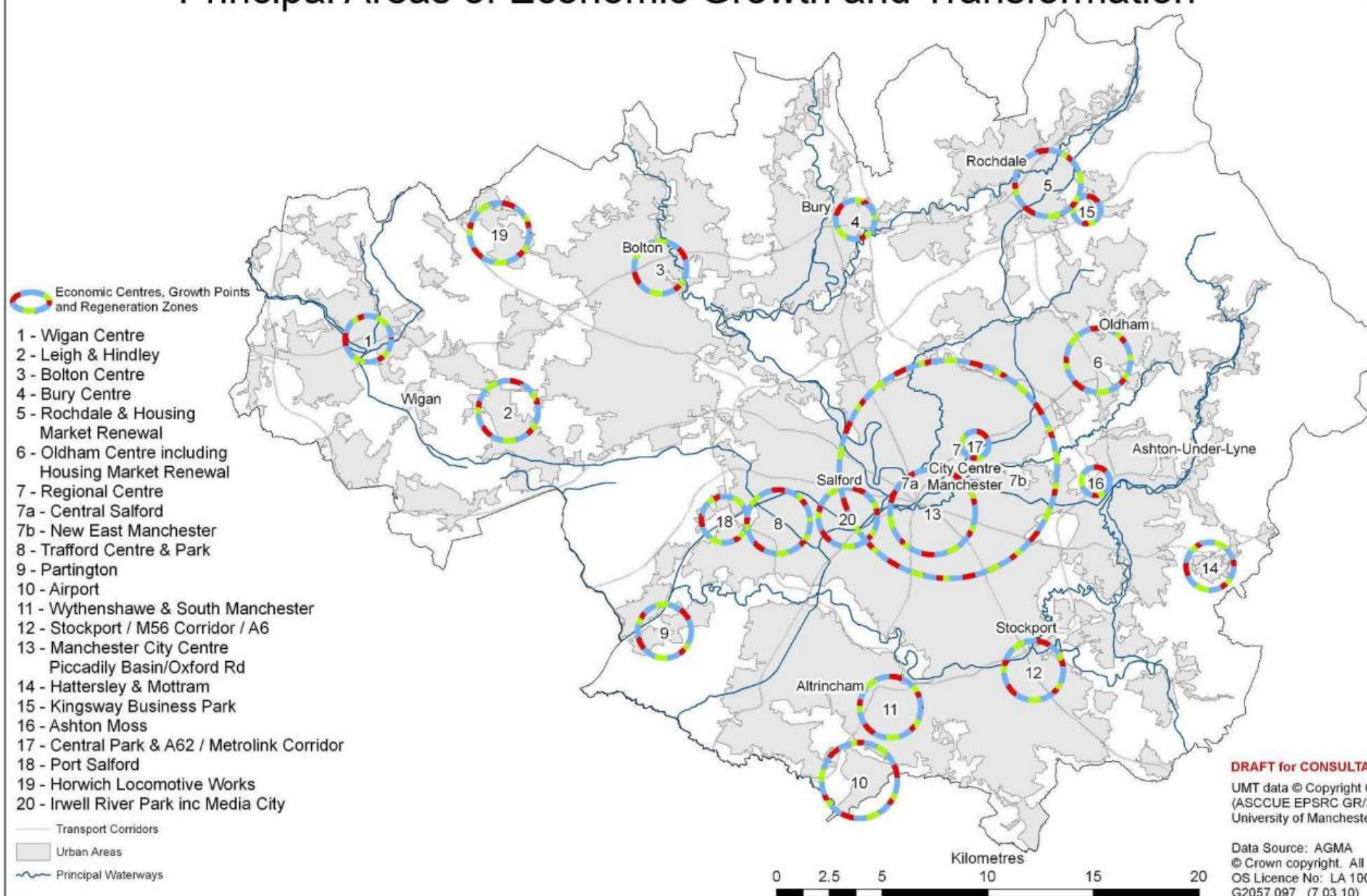
The areas of economic activity and proposed major investment are mapped by local authority cluster. An example for Rochdale, Bury and Bolton is shown (see inset).



In consultation with the Commission for the New Economy, TEP has mapped a “top 20” list of major transformation areas on the basis of a brief overview of scale, geographic spread, publicity afforded to the proposed investments, and their priority in existing and emerging city-regional Strategies. No attempt was made to measure the cash value or output quantities of the proposed investments. However, the plan is believed to give a reasonable indication of the principal areas of transformation, and further evidence will emerge as the GM Spatial Framework is finalised in 2011. Findings from the GMSF should inform the GMGI Framework.

Greater Manchester's Green Infrastructure Framework

Principal Areas of Economic Growth and Transformation



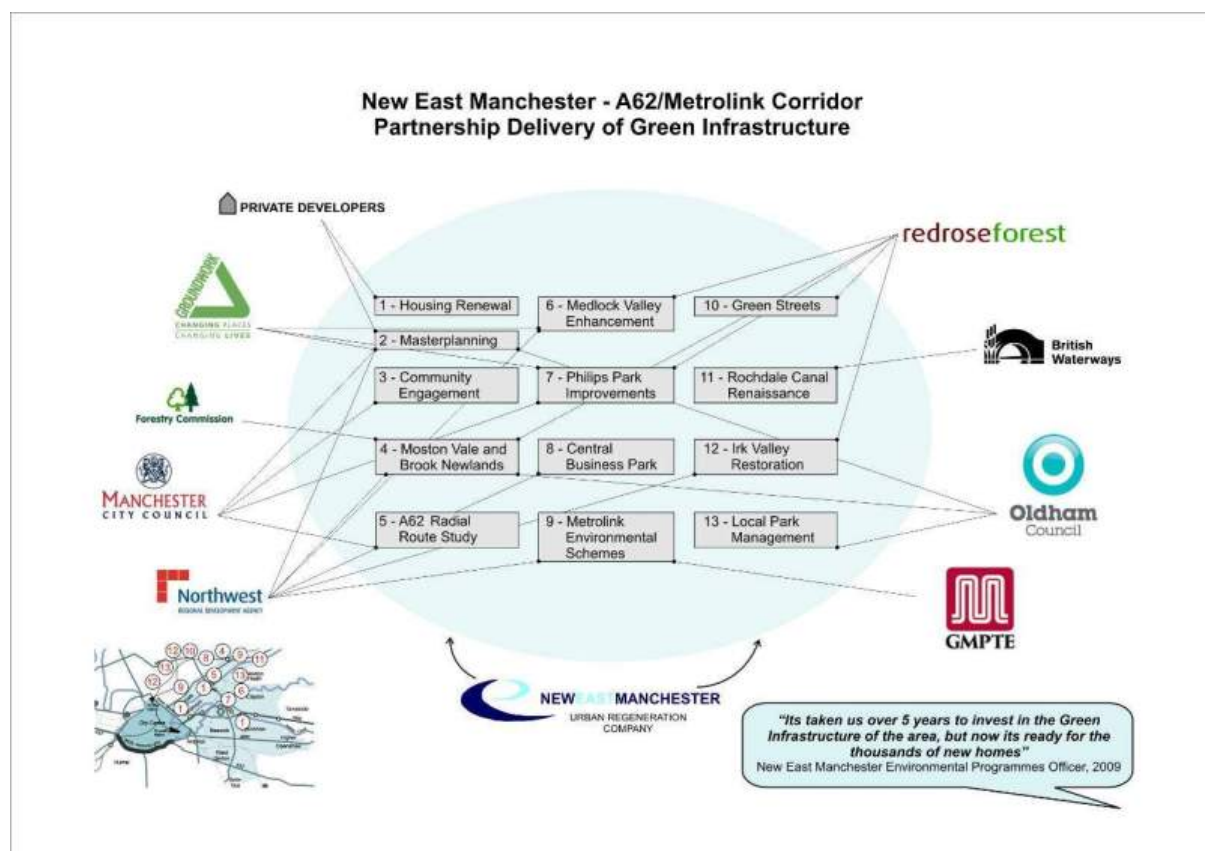
DRAFT for CONSULTATION (2010)

UMT data © Copyright CURE
 (ASCCUE EPSRC GR/S19233/01)
 University of Manchester, 2005

Data Source: AGMA
 © Crown copyright. All rights reserved
 OS Licence No: LA 100023108
 G2057.097 (7.03.10)

The transformation areas include multiple investments, some of which are centrally co-ordinated. For example, Area 7b is New East Manchester (NEM). TEP's case study of the Oldham Metrolink/A62 corridor showed that, there were numerous projects operating with different timescales and partnerships. The role of the NEM urban regeneration company in co-ordinating investment and raising standards was vital.

Equally important was the role of the NEM's environmental programmes manager who co-ordinated the GI elements of the built infrastructure, and matched these to public sector funding streams and community actions and thus squeezed environmental and community benefits from the hard infrastructure investment.



As noted in the box above, investment in GI alongside investment in buildings and social infrastructure as part of a co-ordinated regeneration programme has made a real difference to the investment prospects in New East Manchester.

Some of the key strategies for economic growth are summarized below. The GI framework and the partnership-building work of the GI consortium will need to reflect these priorities.

3.4.1 Commission for the New Economy and AGMA's growth plans

Manchester City Region has set out proposals for a world-class city region that will accelerate the economic growth of the north and begin to close the gap between the Northwest and the higher GVA of London, the South East and other aspirational benchmark city regions. Central to these plans is the prioritisation of key

economic sectors and a major role for the knowledge economy and commercial, cultural and creative activities.

The most recent economic forecasts for the Manchester City Region show a strong long-term growth forecast from 2011, with an additional 155,000 jobs by 2030. Some of the main drivers of this growth are located at the core of the regional centre, including Spinningfields, MediaCityUK, the Oxford Road Corridor, Sportcity, a civil service campus at Mayfield and Manchester Airport. These will be supported by development at other important locations such as Central Park, Barton, Kingsway, Central Bolton and Wigan.

In the 2009 Budget, Greater Manchester was given pilot Statutory city region status, with a particular remit to grow as a Low Carbon Economic Area. GI is critical to creating a resilient setting for the major investments described above. It is also vital to increasing city liveability (which is itself a mitigation strategy). Good management of GI in the form of trees and soils will also act as a carbon sink.

In September 2010, AGMA announced that the Greater Manchester area was putting itself forward as a Local Enterprise Partnership with an economically-driven plan. It was seeking Governmental approval as a means of managing city-regional economic development.

The LEP prospectus touches on GI in relation to its value in creating a setting for investment and tourism. It also implies that attention to the natural environment will help the city's bid to improve workforce health and increase climatic resilience, and improve and diversify the city's housing offer.

3.4.2 Homes & Communities Agency

HCA has entered an annual Local Investment Agreement (LIA) with the GM authorities. This will focus on packages to stimulate and catalyse the housing market, particularly aiming for decent family homes with a variety of tenures in the Housing Market Renewal areas and other growth point priorities identified by the city region. HCA is committed to high design standards in respect of place-shaping and environmental infrastructure. GI has a role in creating places where people wish to live. Since the announcement of the LIA in February 2010, several initiatives in Rochdale, Ancoats and the Irwell River Park have announced their intentions to deliver GI projects (such as new cycleways, bridges and parks) alongside housing renewal.

3.4.3 New Growth Point

Greater Manchester is recognized as a New Growth Point in an agreement between AGMA and the Government, brokered by CLG. This growth will be underpinned by a GI strategy.

3.4.4 Atlantic Gateway

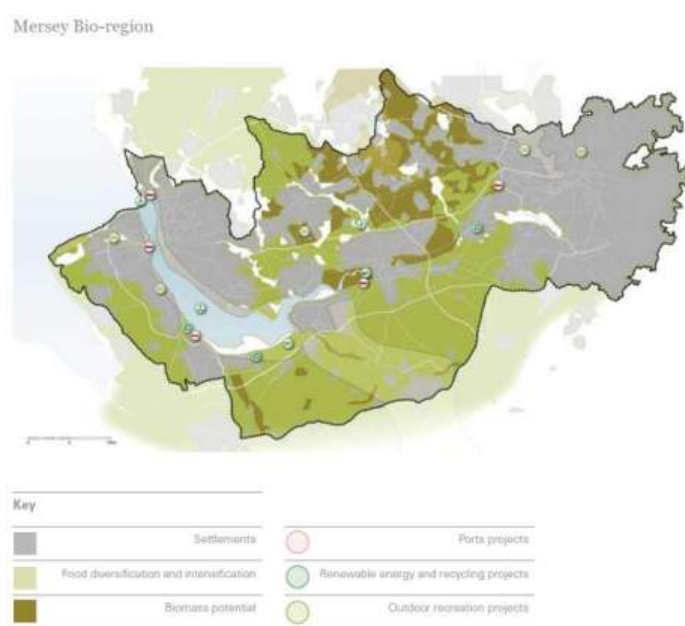
The NWDA published their draft Atlantic Gateway strategy in March 2010. Since the announcement of the demise of the NWDA its replacement by a Greater Manchester Local Enterprise Partnership, the Atlantic Gateway has been promoted by the Peel Group as a private-sector led delivery vehicle, working alongside the LEP. The Atlantic Gateway is a framework for collaboration between the Manchester and Liverpool city

regions which will help to unlock their full sustainable economic growth potential. The connected economic geography provides opportunity for the Atlantic Gateway to become one of Europe's leading low carbon economic growth areas – second only to London in a UK context.

The Atlantic Gateway seeks to draw on the area's key assets – a range of high-growth economic sectors, well-located development sites, key sustainable infrastructure and a skilled workforce. It seeks to do so in a way which supports sustainability and low carbon objectives. The Atlantic Gateway framework provides the opportunity to address these issues collaboratively. This includes the need for environmental infrastructure such as flood management, energy and food production and green infrastructure.

Environmental infrastructure issues are considered in a parallel report entitled "Adapting the Landscape"¹². Two aspects are of particular importance. The first relates to the creation of a Mersey Bio-Region (see inset), characterised by broad, landscape-scale natural features and environmental processes that influence the functions of entire ecosystems.

The second relates to the creation of a 'Mersey Playground' which will act as an urban and rural recreational resource and amenity for the expanding resident population.



The two major cities of Manchester and Liverpool have substantial environmental blight in parts, as have a number of other major centres, affecting perceptions of the area as an attractive place to live and work. There are major opportunities in terms of urban greening to support new investment and housing growth, with examples such as Irwell River Park where new approaches to urban greening and commercial development are being developed. At the same time, there is the opportunity for partnerships between developers, national and local government and environmental agencies to bring forward new and imaginative ways of using the landscape, both as a productive asset and for tourism and leisure.

In terms of GI Planning, there is much to commend in the Adapting the Landscape proposals. While the terminology is somewhat distant from everyday reality, the principles are sound, and elevate the status of GI from being a "desirable" to an "essential" aspect of growth. The concept (that growth relies on GI) needs to be translated into a GM context – in other words the Adapting the Landscape proposition must include a GI strategy for the entirety of Greater Manchester and (for water management) the Irwell catchment extending into Lancashire. It is also important that fine-grained urban green infrastructure is subject to the same prioritisation given to the Bio-Region and the Playgrounds as it sustains city 'liveability'.

¹² URS et al. (2010) Adapting the Landscape – Final Report, research report, prepared for NWDA

3.4.5 River Basin Management Planning

Manchester and Salford in particular, will see significantly above average housing growth. It is therefore economically critical to this growth to ensure continued water quality and supply and to reduce the risk of flooding to households and businesses. The Flooding and Water Regulations require Local Authorities to take a pro-active role to flood defence planning and encourage the use of GI approaches and enable them to require developers to use Sustainable Drainage Systems.

The impacts of climate change will increase the challenge. Highly protective European and UK legislation also sets requirements for water quality and management improvements. The Environment Agency is drawing up River Basin Management Plans (RBMPs); and within the City region, AGMA is working with the Agency on Surface Water Management Plans (SWaMPs) and Strategic Flood Risk Assessments (SFRAs).

Flooding: There are nearly 25,000 properties at risk from a one in 100 year flood event in the Lower Mersey, Upper Mersey and Weaver/Gowy river catchments. Over the next 100 years, due to the effects of climate change, this could increase to over 45,000 properties.¹³ The high levels of urban development continue to increase flood risk from fluvial and drainage sources. Rivers have also been significantly modified physically, to facilitate development, flood risk management or navigation. Physical modification needs to be addressed in more than 45% of rivers and lakes in the Northwest River Basin management area, in order to achieve more natural functioning of wetland ecosystems.

Water Quality: Key issues include diffuse pollution from rural areas, point source pollution caused by discharges from sewerage systems and industry and diffuse pollution from roads and urban areas. It is anticipated that it will cost approximately £29 billion to continue to operate and maintain existing environmental infrastructure in the Northwest up to 2029. Of this, the maintenance and operation of water resources and supply, water quality and flood risk infrastructure will cost approximately £21.65 billion. Whilst it is not possible to be precise as to the costs within the Mersey Basin it is likely to be greater than 50% of this figure, given the levels of economic activity and population

GI can contribute to better and more cost-effective flood management and improved water quality, through catchment-planning, source-control measures and through environmental engineering. GI is needed at various scales. Within developments, SUDS schemes and protection of surface-water flowpaths is a “fine-grained” approach to improve flood resilience. Within neighbourhoods, parks and greenspaces can be used to harvest and attenuate storm waters. At a catchment-scale, re-naturalisation of floodplains and mass tree-planting can improve water storage in soils, washlands and in canopies.

Other Regeneration and Development in the City Region

As well as the above strategies, the Case Studies revealed the vast investment proposed by the public and private sectors in renewal and redevelopment of urban fabric throughout the City Region.

¹³ Atlantic Gateway Draft Strategy, NWDA, March 2010

Environmental Infrastructure Study

Over the last year the Environment Agency has led a project¹⁴ to assess future environmental infrastructure needs arising through housing growth across Greater Manchester. This work contributes to the EA's goal of ensuring that new and existing developments have a reduced environmental impact and well planned environmental infrastructure.

The study uses a series of growth scenarios to assess the additional investment necessary to support forecast housing growth. It draws out the strategic implications for the way that new housing is planned and delivered. It covers five areas, all of which provide essential services and help to protect quality of life:

- flood-risk management;
- green infrastructure;
- household waste;
- water resources;
- water quality and sewage treatment infrastructure.

EA estimate that around £600 million a year is currently spent on environmental infrastructure to support existing communities across Greater Manchester. Without interventions to manage the demand for key services, Greater Manchester could need to spend an additional £19 million a year providing the additional environmental infrastructure needed for new housing. However with changes to the way household waste is managed and the amount of water used, Greater Manchester could reduce the additional costs by around 40 per cent.

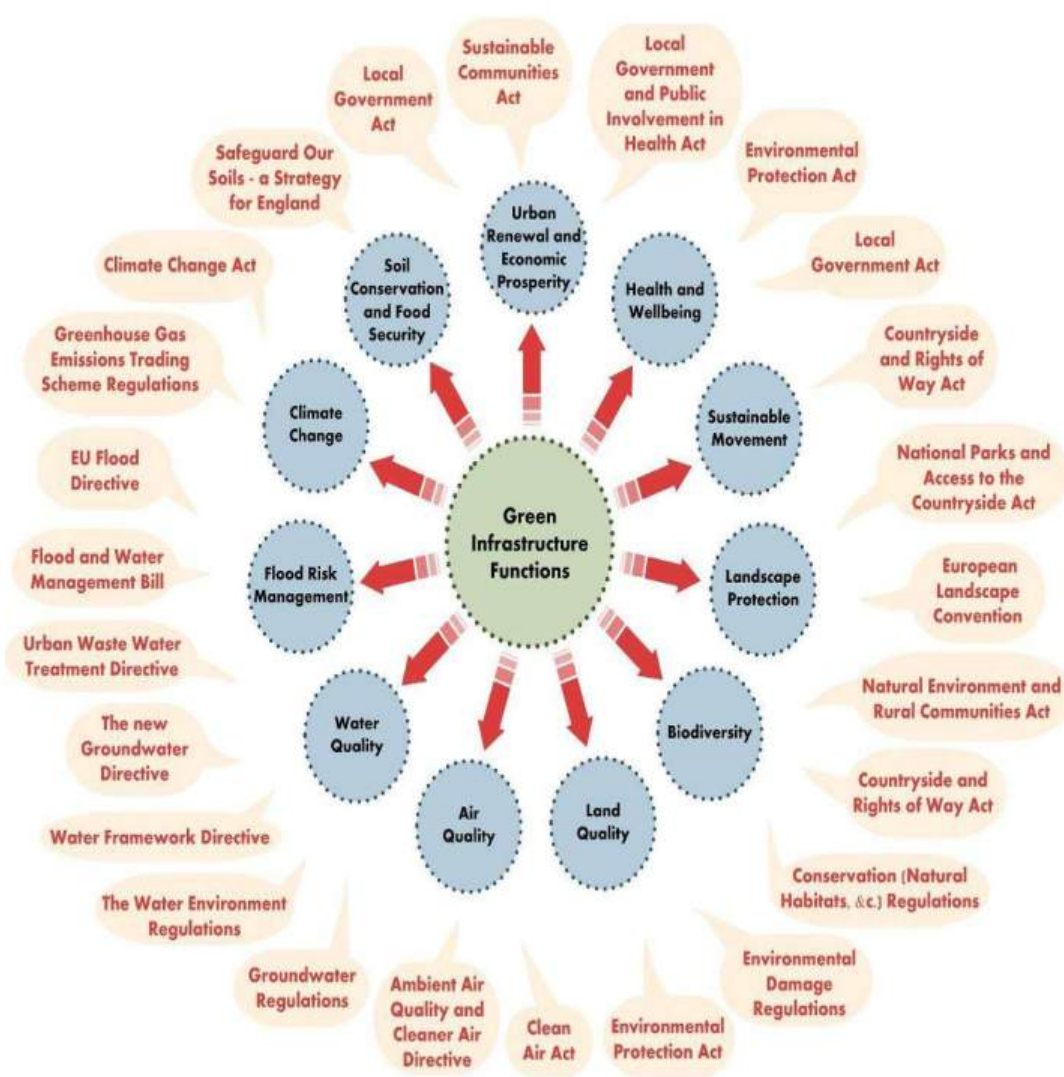
EA's study included an assessment of the additional cost for new GI associated only with housing growth (i.e. not addressing existing deficiencies). This concluded that an additional investment of £1.3m to £1.6m per annum would be needed. The report also identified that this GI could bring significant economic benefits over and beyond the enabling of housing growth.

¹⁴ Environment Agency (2010): *Greater Manchester's Environmental Infrastructure Needs: A Strategic Study* is online at: <http://publications.environment-agency.gov.uk/pdf/GEHO0610BSMK-e-e.pdf>

3.5 Statutory Obligations relating to GI

Although there is no statutory duty explicitly referring to green infrastructure, it is evident that planning for GI helps Government, its agencies, Local Government and other statutorily-constituted public authorities meet their obligations in respect of sustainability.

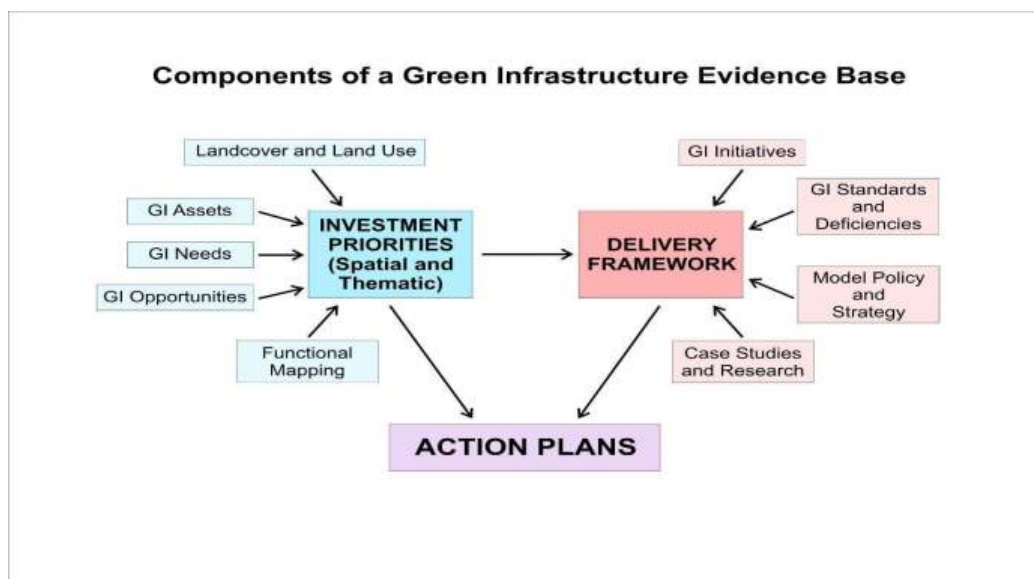
TEP has prepared a diagram indicating how GI relates to statutory duties regarding climate change, health, wellbeing, biodiversity, landscape, catchment management, flooding and economic prosperity.



3.6 Gap Analysis and Recommendations for continued research

There are gaps in the evidence base, as described earlier in this chapter. Although these should not hold up the formulation of a GI framework, nevertheless, they must be addressed through ongoing research and innovation.

Evidence takes many forms, as set out in the diagram below.



An evidence base is a lifetime project; with information continually being added. TEP's opinion is that most of the evidence needed to finalise the GI Framework document is already available but there are critical gaps in some sectors. There are also difficulties in assembling and presenting cross-city environmental evidence. For example case studies showed that most local authorities have few publicly-accessible datasets which span boundaries into neighbouring authorities.

Beyond the preparation of a framework document, continuing compilation of evidence is needed to aid delivery, action planning, fund raising, advocacy and partnership development. Table 3.1 below sets out TEP's recommendations about what evidence is needed;

- a) to finalise a GMGI framework document, and
- b) to continuously improve delivery, advocacy and partnership building beyond document finalisation.

The table uses the categories of evidence shown in the diagram.

Table 3.1: Evidence Base to Underpin Greater Manchester's GI Framework

Evidence Category	What should be included in the background to a framework document?	What should be included in ongoing research?	Notes
Land Cover and Land Use	<ol style="list-style-type: none"> 1. Information from Landscape Character Assessments and Historic LCA, where available. 2. Surface water flow paths from Strategic Flood Risk Assessments, where available. 3. Tree canopy audits, where available. 4. Guidance to GI practitioners on how to interrogate OS Mastermap and aerial photographs to prepare land cover and landuse typologies. 	<ol style="list-style-type: none"> 1. Integration of the GI Framework with Landscape Character Assessment. 2. Information on soil porosity and aquifer recharge - to inform decisions about how GI can assist the water cycle. 3. Soil type, and carbon storage potential – to inform decisions about how GI can contribute to soil conservation and carbon sequestration. 4. Tree Canopy audit for the city region. 5. Land cover/land use typology for the city region. 	See also discussion in section 3.2 of this report.
GI Assets	<ol style="list-style-type: none"> 1. Consolidation of information (from district PPG17 assessments) about quantity/ quality/accessibility of publicly-accessible green spaces/various types. 2. Mapping of landmarks and vistas identifying those of city regional value. 3. River location data available in open source GIS. 4. Agreed list of city regional destination parks, with criteria to identify what makes a park of city-regional importance. 5. Sustainable Movement Network map (this may require a separate commission). 6. A protocol to identify neighbourhoods where urban green is a priority for enhancement and conservation for reasons of climatic resilience, biodiversity and sense of place. 	<ol style="list-style-type: none"> 1. A sustainable movement map (aka active travel network) (if this cannot be achieved in the timescale to finalise the framework document). 	See also discussion in section 3.2

Evidence Category	What should be included in the background to a framework document?	What should be included in ongoing research?	Notes
GI Needs and Environmental Stresses	<ol style="list-style-type: none"> 1. Sustainable Movement network map showing gaps and areas with poor access to routes. 2. Consolidation of PPG17 data to identify areas of deficiency in access to quality open spaces (standards and mapping protocols will have to be defined in order to map deficiency). 3. River and canal water quality (existing and target grades) available as open source GIS. 4. A consolidated plan showing different levels of environmental stress and GI needs in the city region. 	<ol style="list-style-type: none"> 1. Information arising from research into environmental equity and the potential for additional environmental domains for the Index of Multiple Deprivation. 2. Information arising from regional reviews of environmental quality and land regeneration priorities. 3. Updated demographic mapping following 2011 census. 4. Updated DUNLand/NLUD/Part 2a Database of sites. 	See maps in section 3.3 of this report.
GI Opportunities	<ol style="list-style-type: none"> 1. Review of TEP maps of areas of transformation and economic investment – each district and commission to confirm its major growth, regeneration and refurbishment sites. 2. Information arising from GM Spatial Strategy (expected 2010). 3. Information arising from GI strategy development in neighbouring sub-regions. 	<ol style="list-style-type: none"> 1. Ongoing liaison with the Commission for the New Economy AGMA and the Atlantic Gateway sustainability team to ensure GI Action Plans align with City Regional Growth Priorities. 2. Population density mapping (present and 20 year forward projection) 	Recommend that Natural England lead on co-ordination with GI Strategies emerging in adjoining sub-regions.
Functional Mapping	<ol style="list-style-type: none"> 1. Updated functional assessment maps taking account of any proposed amendments to the GI functions and new evidence which has emerged from SFRA, Landscape Character Assessments, Climate Change Plan, GM Ecological Framework, water quality data etc. 2. Guidance on how to assess and promote multi-functionality in area action plans and development masterplans. 	<ol style="list-style-type: none"> 1. A system for mapping multi-functionality of land in Greater Manchester – learning from approaches in the East Midlands and the Mersey Forest. 	The existing functional maps (in the September 2008 report) are a good starting point. The draft PPS on Planning for a Natural and Healthy Environment contains some policy formulations but practice guidance is needed on how to embed functionality in GI masterplanning.
GI Initiatives and Partnerships	<ol style="list-style-type: none"> 1. Map and database of initiatives covering the city-regional GI investment priorities. 2. SWOT and political analysis to identify shortfalls and vulnerabilities in the existing delivery arrangements. 	<ol style="list-style-type: none"> 1. A social network for the GI community to enable members to communicate, learn of new developments, best practice and receive targeted communications. 	Refer to discussion in Chapters 7 and 8.

Evidence Category	What should be included in the background to a framework document?	What should be included in ongoing research?	Notes
GI Standards and Deficiencies	<ol style="list-style-type: none"> 1. Identification of “deficient” areas in the GI network which require enhancement/restoration/linkage. 2. Guidance on setting of standards for new developments and masterplans. 	<ol style="list-style-type: none"> 1. Continued development of GI standards applicable at various scales of planning and in different situations. 	Deficient areas could be identified by overlapping assets and need maps. Refer to discussion in Chapter 8 about standard-setting.
Model Policy and Strategy	<ol style="list-style-type: none"> 1. Practical guidance on model policy for core strategy and development management. 2. Advice on model policy for other spatial, community and infrastructures strategies to ensure the strategy owners consider how to build GI into planning and delivery of their initiatives. 3. Guidance on preparation of GI strategies at District level. 4. Guidance on costing GI for Community Infrastructure Levy/Tariff 	<ol style="list-style-type: none"> 1. Ongoing monitoring of GI policy effectiveness 2. Adjustments to GI policy and CII if Government changes in 2010 	Draft PPS on Planning for a Natural and Healthy Environment has model policies and practice guidance is expected to follow from Govt.
Case Studies and Research	<ol style="list-style-type: none"> 1. Handbook of case studies showing best practice projects in the following categories: <ul style="list-style-type: none"> * GI function * GI scale (neighbourhood to city-regional) * Investment priority type (e.g. GI network, river valleys, major countryside area, city centres, new housing situations, destination parks etc. * Delivery partnerships * Strategy formulation * Co-provision with other infrastructures 	<ol style="list-style-type: none"> 1. Research into financial valuation of GI and ecosystem services particularly carbon-sink valuation. 2. Research into costs/benefits of natural solutions to flood defence in Greater Manchester’s catchment. 	Genecon are drafting a Valuation toolbox on behalf of a large partnership of economic development agencies The Smart Growth Manual ¹⁵ is an easy to read handbook covering urbanism, green design and sustainability. It covers GI scales from regional planning to individual buildings. Although too US-focussed to transfer to Greater Manchester, it’s format could be used for advocacy and good-practice guidance

¹⁵ The Smart Growth Manual by Duany A., and Speck J. (2010) McGraw Hill

To finalise evidence for a GMGI framework document, TEP recommends:

- a) The existing evidence base is reviewed as set out in Table 3.1 (column 2).
- b) Additional evidence is collected as set out in the table, where practical. The lack of the additional evidence need not hold up preparation of the framework.
- c) Revised assets, needs, opportunities and functional maps are produced to update those presently available (see map folder).
- d) A Case Study handbook is produced to accompany the Framework, focussing on the particular challenges of Greater Manchester's urban fabric.
- e) Evidence owners such as Environment Agency, Ordnance Survey and Natural England should be approached with a view to allowing their information to be published on an open-source basis.
- f) Gaps in the evidence base should be highlighted. This may include city-regional or district studies.

In relation to ongoing and continuous updating of the evidence base, TEP recommends;

- a) The evidence base is supplemented as set out in Table 3.1 (column 3)
- b) The GI Team (see glossary) takes a lead role in acting as an environmental data store (or observatory) for the city-region.
- c) The GI Team aims to make the data store available in open source format to enable community groups and environmental bodies to fund-raise, develop programmes and build partnerships.
- d) A virtual or social network is established to connect the GI community and enable them to access evidence.
- e) The Northwest Green Infrastructure Community (including the Community Forests, various universities, Lancashire, Cheshire and Cumbria Councils and others) continues to commission and publish research on the costs and benefits of GI. This research should be added to the data store.
- f) The GI Team maintains a horizon-scanning role to add evidence emerging from regional and national studies; working with the Northwest Green Infrastructure Partnership, the University of Manchester and MMU.

4.0 Vision

A vision for Greater Manchester's Green Infrastructure needs to be articulated in the GI Framework. The vision must relate to the world class city region 2025 vision (see Chapter 1). The vision should be for a "third generation" GI framework¹⁶. This is a vision of a sustainably growing city region, with an increasing and prospering population noted for quality of life and quality of place. More than this, it is a vision for a city region which manages the ecosystems on which it depends. Some term this as an eco city¹⁷. It is particularly appropriate that a city-region which was in the vanguard of the Industrial Revolution and establishment of workers' rights to share in prosperity should now become a city which is at the forefront of a low-carbon economy, living within environmental limits.

4.1 Content of a GI Vision

A GI vision is multi-layered. The primary message is that sustainable growth is underpinned by sustained investment in GI. The vision should also convey how GI underpins quality of life and place e.g.

- a) improving environmental resilience in response to climatic and demographic change.
- b) Addressing the negative legacy of industrial and post industrial developments.
- c) Enhancing the natural and the cultural environment.
- d) Facilitating active healthy lifestyles and social cohesion.
- e) Creating jobs and skills in the green economy.
- f) Creating a liveable human environment (decent homes in a quality place).

"You cannot have sustainability without liveability"

Wayne Hemingway, Designer.

The vision should also build on the considerable achievements of the numerous environmental initiatives and organisations already active in Greater Manchester.

The vision needs to be forward looking. Recent think tank studies¹⁸ identify the need for sustainable urban land use to be guided by a proper valuation of non-market benefits of open space, nature conservation and recreation. The concept of "ecosystem services" is becoming more widely expressed. Future decisions on

¹⁶ First-generation GI strategies were primarily concerned with biodiversity, green spaces and access. Second-generation GI strategies included a greater emphasis on socio-economic goals and sustainable communities. Third-generation strategies will integrate the concept of ecosystem services and will consider the role of GI in sustaining a low-carbon society which lives within environmental limits.

¹⁷ Eco Cities are "cities designed with consideration of environmental impact, whose citizens minimise inputs of energy, food and water; and outputs of waste, heat and pollution" from Register, R. (1987) "Berkeley EcoCity Berkeley: building cities for a healthier future; North Atlantic Books

¹⁸ "Land Use Futures – Making the most of land in the 21st Century" Foresight Land Use Futures Project 2010; Govt. Office for Science, London.

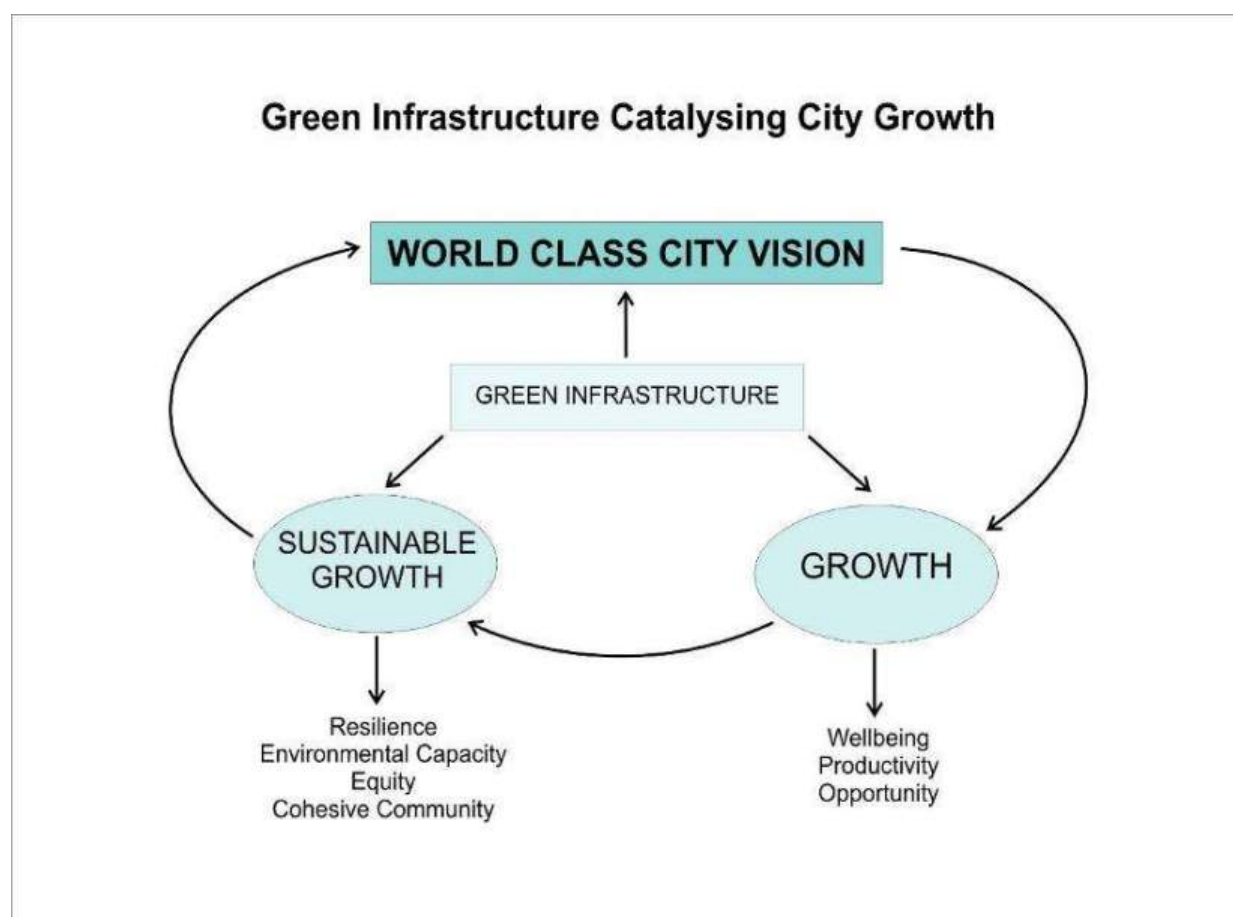
land use will probably be informed by a greater understanding of impacts on ecosystem services. Well planned GI sustains, restores and creates well functioning urban ecosystems.

The vision will also form part of the city region's message to residents and businesses about its aspirations and expectations for quality of life and place. It must be developed and articulated in an attractive and inclusive way, respecting the diversity and pride of towns and cities in Greater Manchester.

The vision will also form part of Greater Manchester's communication beyond its boundaries that it is a growing, thriving and innovative place, offering a sustainable and attractive alternative to growth in south east England which is recognised as being extremely challenging to ecosystems and quality of life.¹⁹

The vision should be informed by the rapidly evolving policy on place-making. The recent draft Planning Policy Statement on Planning for a Natural and Healthy Environment²⁰ has a summary of the wide-ranging policy background relating to GI.

The graphic below conveys the principle that growth is a desirable outcome of the City's Vision; and that sustainable growth is underpinned and catalysed by GI.



¹⁹ Foresight Land use Futures 2010 op. cit.

²⁰ Consultation Paper on a new Planning Policy Statement: Planning for a Natural and Healthy Environment (Communities and Local Government, March 2010)

4.2 Recommendations

- a) A vision should be drawn up and articulated for the GMGI Framework. This should be an early priority to enable publication of an advocacy prospectus.
- b) The vision should:
 - 1. be shared by the city region's executive, the districts and key stakeholders concerned with environmental management.
 - 2. articulate how GI will deliver the 2025 World Class City Vision
 - 3. relate to the statutory obligations of Government and local authorities
 - 4. bear in mind good practice elsewhere, particularly other world cities such as New York and London
 - 5. be based on an up-to-date review of Governmental policy and strategy relating to Green Infrastructure and its functions
 - 6. reflect city-regional and distinctive local priorities
 - 7. bear in mind horizon-scanning reports about land use policy
- c) Above all the vision should be a statement of intent for sustainable city growth.
- d) To promote the vision, the city region's executive should identify a champion for GI. This could be a body, or possibly a Commission, which already champions related topics such as climate resilience, cultural life, economic growth or sustainable construction. However it is also highly beneficial to have a patron who can advocate and negotiate with other city-regional leaders.

5.0 Functions and Strategic Objectives

Green Infrastructure is an approach to managing land (urban, rural, developed and open) to deliver functions of public benefit and, in doing so, to enhance ecosystem services.

The 2008 TEP report identified 8 important functions of GI to support growth and quality of life in Greater Manchester (See Box 5.1). Following review in 2009/10, some minor refinements are recommended.

The framework will be guided by strategic objectives. These will prioritise where investment in GI should be made and will guide delivery. The primary objective is to promote multi-functional land use and maintain ecosystem services. Further “process objectives” should be formulated to help the GI partnership advocate, co-ordinate, fund-raise, research and develop partnerships for GI.

5.1 Review of Functions

Box 5.1 sets out the 8 growth-support functions proposed in 2008. These functions were reviewed:

- a) Though an LDF Planners workshop held in November 2009 and through consultation with the GMGI Steering Group. (See Annexe 2)
- b) By case study review to see if the functions are valid for a range of sites and localities (see Annexe 3).
- c) By study of emerging Core Strategies to assess which GI functions are being promoted by local authorities.
- d) By study of the consultation draft PPS on Planning for a Natural and Healthy Environment.

Box 5.1: The “Growth-support” functions identified for GI in Greater Manchester in 2008

- 1 Flood risk management and climate change adaptation** - Greenspaces being used to manage storm flows and free up water storage capacity in existing infrastructure to reduce risk of damage to urban property, particularly in the City centre and vulnerable urban regeneration areas. Vegetation which cools and shades urban environments. Carbon being stored in soils and woodland. Integrity of wildlife corridors and distinctive landscapes adjusting to a warmer climate.
- 2 An ecological framework** - Greenspaces sustaining Greater Manchester’s biodiversity; forming habitat networks and ‘stepping stones’ valued by people.
- 3 A sustainable movement network** - Multi-user routes for recreation and commuting. People-centred routes in and around regenerating inner urban areas to enable doorstep access to the natural outdoor environment. Routes from urban areas to our Pennine, Peak, Cheshire and Lancashire countryside.
- 4 A sense of place** - Distinctive and vibrant civic spaces, landscapes and townscapes. Encouraging use and appreciation of the City’s natural and built heritage of rivers, canals, woodlands, moorland fringes, mills, parks and modern architecture.
- 5 River and canal corridor management** - Accessible waterways with improving water quality, supporting regeneration and providing opportunity for leisure, economic activity and biodiversity.
- 6 Positive image and a setting for growth** - well-designed and managed public realm, speaking of the City Region’s brand as a green and world-class city region.
- 7 Supporting urban regeneration** - Accessible, clean, safe and high-quality green spaces that provide economic and community benefits to all sectors of our growing, diversifying and ageing population; particularly important in areas of deprivation and transformation.
- 8 Community, health and enjoyment** - Greenspaces which are specifically managed to sustain communities through healthy, active lifestyles, social networking, cultural and community events.

5.2 Recommendations regarding Functions

TEP's review suggests that all the functions remain valid, but some refinements and additions should be made:

- a) Flood and water management functions should be joined - parts of function 1 should be moved to function 5.
- b) Management of surface water flow paths and maintenance of fine grained urban GI to attenuate flows should be emphasised. At the "macro scale", catchment management practices to improve flood resilience should be promoted (e.g. soil conservation, tree planting, washland creation).
- c) Function 1 could be re-titled as "Facilitating a Low-Carbon Society in a Changing Climate".
- d) More emphasis is needed on dealing with pollution and low environmental quality of land, water and air. This will require references in Function 1 (climate), Function 5 (Flood and Water Management) and Function 7 (Urban Regeneration).
- e) Greater reference to the importance of landscape, integrating all the intrinsic qualities of place is needed, in line with the wording of the European Landscape Convention. Functions 4 and 6 could therefore be combined to highlight how GI can contribute to quality of place.
- f) Function 3 might be re-named "The Active Travel Network" to reduce jargon.
- g) Function 8 could be strengthened in respect of health to include physical and mental health. Function 8 could also introduce the concept of "localism" and community stewardship of open spaces.
- h) Local food production on Greater Manchester's agricultural land, city farms and allotments should be recognised as a function of GI in a sustainable low-carbon city. This could be achieved in Function 1 (Climate) and Function 8 (Community).
- i) The function of GI in supporting employment and skills development should be recognised, including green technology, outdoor visitor and sport sectors. This may require a new function being recognised.
- j) The vocabulary describing the functions could be refined and made more consistent. A graphic presentation (e.g. functional maps) would also help.

5.3 Functional Map

The 2008 TEP report mapped the eight GI functions showing areas where they are most needed and where they are deficient. One of the case studies (Bury Core Strategy) mapped GI assets and functions important to Bury's green infrastructure; leading to preparation of a key diagram for GI in the Borough. This process gave useful insights into how GI functions could be integrated and on how gaps or deficiencies in the network could be highlighted. The Radcliffe Case Study gave insights into how multi-functionality could be mapped and used to inform decisions on land-use.

5.4 Strategic Objectives

The strategic objectives inform investment priorities and the delivery framework (as shown in the systems diagram in Chapter 2). TEP recommends the following strategic objectives for the GI framework in Greater Manchester;

- a) To shape the outdoor environment of Greater Manchester to fulfil the growth support functions and, in doing so, to enhance its ecosystems and establish it as a sustainable world city.
- b) To promote multi-functional use of land, except where restricted use is necessary to protect ecosystem services or irreplaceable qualities of the land.
- c) To promote partnerships across social, economic and environmental sectors in the use of land. These partnerships should be established at governance and delivery levels.
- d) To promote integration of GI into the strategies and work programmes of all organisations working in the growth, sustainability and well being sectors.
- e) To promote individual and community involvement in multi-functional land management.
- f) To promote and disseminate research into GI costs, levies, standards and benefits.

These objectives are “high-level” and strategic in nature. They apply to the Framework as a whole. In addition, focussed objectives are needed for each of the city-regional investment priority areas. This is discussed in more detail at section 8 of this report.

6.0 Investment Priorities

The 2008 TEP report identified the spatial priorities for GI to support city-regional growth. During 2009/10 TEP reviewed these investment priorities in the light of emerging evidence about GI functions, assets, needs, and areas of opportunity. The review identified the importance of community activism and civic pride in the management of green infrastructure, particularly in the context of declining public sector finances.

6.1 Investment Framework

Investment in GI takes many forms, including strategic funds, private-sector developments, local sustainable community strategies, voluntary-sector and civil society activity, park regeneration, land and water management. TEP advises the city-regional priorities for GI investment are in the following areas:

- The Strategic Green Infrastructure Network: the network of rivers, floodplains, valleys and canal corridors (with their associated habitats, built heritage and pathways), woodlands, parks and major countryside areas (Pennine moorlands, Manchester's mosslands and the coalfield countryside in Wigan's Greenheart Park).
- Economic centres and Growth points: city and town centres, major strategic sites for new housing and employment, transport corridors and other areas where significant transformation and infrastructure investment is likely.
- Regeneration Priority Areas: housing renewal areas, areas of multiple deprivation, brownfield land, transport corridors and gateways. These sometimes overlap with economic centres and growth points.
- Sustainable Movement Network: footpaths, cycleways, towpaths, bridleways and other multi-user trails that connect people, workplaces and greenspaces without needing the car.
- Destination Parks, Landmarks and Trails: Urban and country parks, civic squares and Conservation Areas where the public realm creates a distinctive and sociable space.
- Greening the Urban Environment: the urban tree canopy, gardens, porous surfaces, pocket parks, surface water flowpaths – sometimes described as fine-grained GI - collectively are vital for flood and water management, biodiversity, community cohesion etc.
- Community Activism: empowering practitioners and lay-people who care for and care about the outdoor environment.

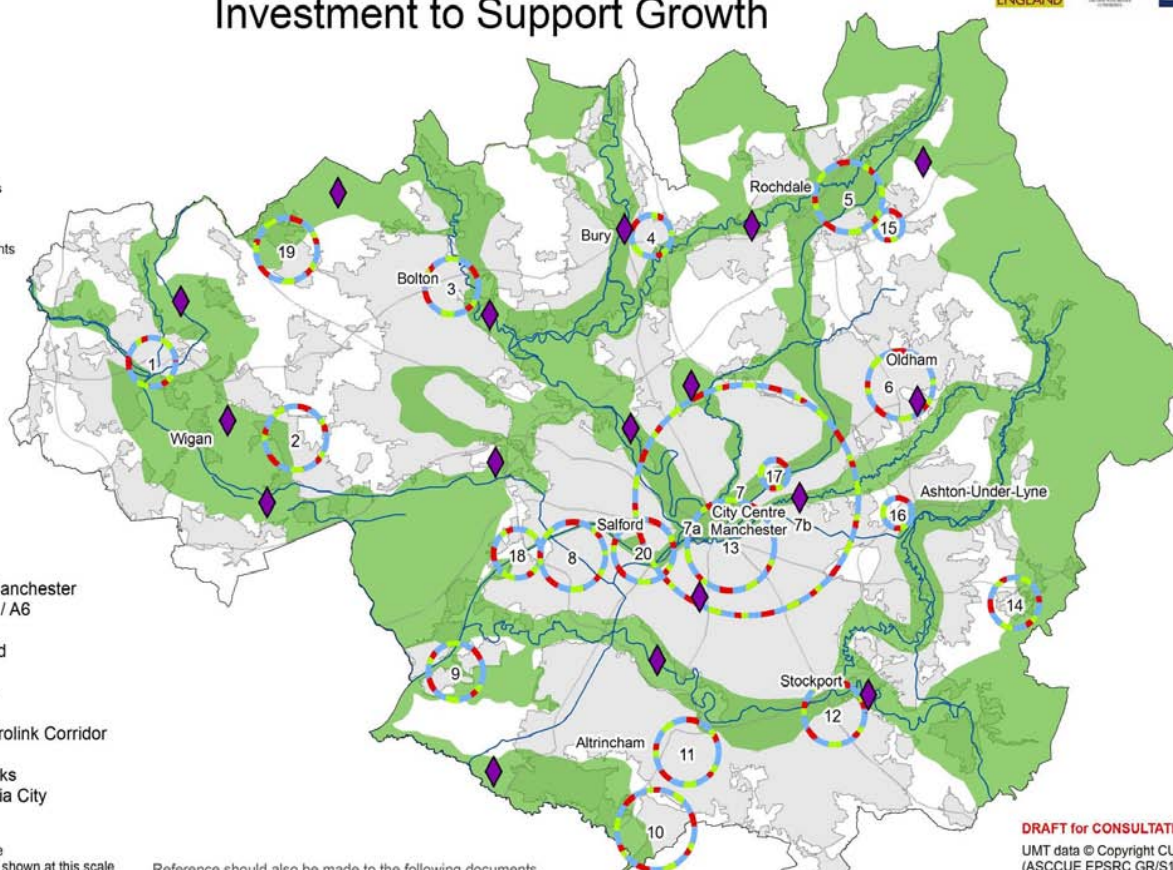
The 7 investment priorities are set out in the graphic overleaf

Greater Manchester Green Infrastructure Framework

Investment to Support Growth



- Green Infrastructure Network
 - ~ Principal Waterways
 - ◆ Destination Parks & Landmarks
 - Transport Corridors
 - Economic Centres, Growth Points and Regeneration Zones
- 1 - Wigan Centre
 - 2 - Leigh & Hindley
 - 3 - Bolton Centre
 - 4 - Bury Centre
 - 5 - Rochdale & Housing Market Renewal
 - 6 - Oldham Centre including Housing Market Renewal
 - 7 - Regional Centre
 - 7a - Central Salford
 - 7b - New East Manchester
 - 8 - Trafford Centre & Park
 - 9 - Partington
 - 10 - Airport
 - 11 - Wythenshawe & South Manchester
 - 12 - Stockport / M56 Corridor / A6
 - 13 - Manchester City Centre Piccadilly Basin/Oxford Rd
 - 14 - Hattersley & Mottram
 - 15 - Kingsway Business Park
 - 16 - Ashton Moss
 - 17 - Central Park & A62 / Metrolink Corridor
 - 18 - Port Salford
 - 19 - Horwich Locomotive Works
 - 20 - Inwell River Park inc Media City
- Urban Areas
- Urban Green is not shown at this scale
Sustainable Movement Network is not shown at this scale



Reference should also be made to the following documents which inform the Green Infrastructure Framework;

- Greater Manchester Ecological Framework
- Strategic Flood Risk Assessment
- Climate Change Action Plan
- Red Rose & Pennine Edge Forest Plans

DRAFT for CONSULTATION (2010)

UMT data © Copyright CURE
(ASCUE EPSRC GR/S19233/01)
University of Manchester, 2005

Data Source: AGMA
© Crown copyright. All rights reserved
OS Licence No: LA 100023108
G2057.098a (7.03.10)

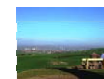
Green Infrastructure Network



Rivers, valleys, floodplains, parks, woods, multi-user trails, heritage features, major countryside areas, uplands and biodiversity sites and corridors



The GI network is multifunctional and is critical to sustain growth and climate resilience. It buffers against floods and is a carbon sink. It provides recreation, tourism, landscape and biodiversity functions. It is found in urban and countryside areas. A healthy GI network is essential to maintain water, air and land quality throughout the city.



Parts of the network, such as some urban areas, have few assets and action is needed to repair linkages and restore environmental quality. Other areas are of high value and functionality, and merit conservation management.

Economic Centres and Growth Points



City and town centres, housing sites, strategic employment sites and transport corridors. In the forthcoming decades, multi-billion pound investments will be made in new and refurbished property.



GI is essential for resilience, higher property values, sustainable travel and image as a world-class city. Good GI broadens the economic offer and sustains creative and knowledge industries. GI upstream has been proved in Greater Manchester to reduce risk of flood damage to residential and business property.



Priority areas are centres and growth points which are deficient in green and civic space and perform poorly in terms of water and air quality management.

Regeneration Priority Areas



Brownfield sites, housing renewal areas and deprived areas. Often vulnerable to flooding, suffering visual blight or air pollution. Poor quality public space depresses inward investment. Programmes such as Green Streets, New Deal and Home Zones have increased community spirit, raised property values and increased positive perceptions.



More family housing and home care for elderly will require neighbourhood open space design and management to maximise community safety and social interaction.



Priorities for investment include uplifting major parks and civic spaces, improving transport corridors, dealing with brownfield land, and implementation of neighbourhood-scale street-greening, allotment and schoolground projects

Community Activism



Community pride & stewardship of green infrastructure is a high priority in a GI strategy for an urban area.

This includes individual environmental actions at home and work, which can be stimulated through raising awareness using education and informal means. Community volunteers are responsible for managing, growing food in, and campaigning for local spaces.



At a more formal level, environmentalists can work alongside health, education and social services to join up services using GI as an arena to sustain stronger communities. This is termed "co-provision".



Localism can stimulate democratic involvement and contribute to "liveability" in large urban areas.

Sustainable Movement Network



An important aspect of GI is a strategy to increase walking and cycling, for leisure and commuting. Provision of safe and attractive routes, in green spaces where possible, will encourage a shift away from the private car. This will also increase the opportunities for sport and healthy activity.



Priorities include: high quality public realm in walking and cycling corridors; safe bus stops and walking routes from them; safe routes to community facilities, legible urban centres and longer routes to the river valleys, uplands and the Greenheart Regional Park.



Greater Manchester does not presently have a strategic plan for sustainable movement which means opportunities to improve the network could be missed as the city grows.

Destination Parks, Landmarks & Trails



Major green spaces and visitor facilities such as Green Flag Parks, large country parks, sites of heritage interest, Sculpture Trails, sporting areas, canals and panoramic viewpoints. These vary in character across the city ranging from inner urban destinations such as the Inwell River Park through to upland sites such as Hollingworth Lake and Peel Tower. Most are within the GI Network.



The GI priority is to further enhance community stewardship, encourage uptake of healthy activity, promote jobs relying on the quality of these sites, and maintain them areas as "jewels in the crown".



Trails which connect the destinations to the urban areas will form part of the sustainable movement network.

Urban Green



Fine-grained Green Infrastructure: street trees, gardens, corporate grounds, pocket parks, allotments, green roofs and walls, along with porous surfaces and sustainable drainage systems (SUDS).



The priority is to retain or create high levels of canopy cover and urban vegetation to promote a positive image, sustain biodiversity, promote mental health and adapt to climate change. SUDS and vegetation are important in surface water management.



The need for urban green is greatest in areas of family housing, health deprivation, town and city centres, and where it can contribute to improving the management of surface water by reducing the pressure on existing sewerage infrastructure

During consultation on the framework, several people questioned whether the GI framework applies to all urban and rural areas of the city region. One problem of a key diagram is that some areas do not appear as priorities (e.g. the white/grey areas, in the map here).

The GI framework is indeed relevant to all areas, but some investment priorities do not lend themselves to mapping. It is not practical to map urban green priority areas at a city-regional scale although study of detailed assets and needs maps can easily identify areas of priority for improvements in urban green. This has close parallels with New York's growth plan which emphasises the city-wide value of many hundreds of neighbourhood scale enhancements targeted towards areas of economic activity and areas of deficiency, environmental or social deprivation (see box).



The sustainable movement network (perhaps also called the Active Travel Network) cannot yet be mapped at a city-regional scale since further strategy development is needed.

TEP recommends that a poster-style flyer or prospectus be produced to describe and illustrate these investment priorities. This can act as an advocacy document until such time as a final framework is prepared. It will also advocate for continued local GI activity, including the fine-grained GI investment needed to deliver liveability.

6.2 Issues for Framework Development

This section sets out recommendations for further work in respect of the six land-based investment priorities. The seventh priority (community activism) is discussed in chapter 7 (Partnerships)

6.2.1 Strategic Green Infrastructure Network

River Valleys and canal corridors are the “crown-jewels” of the City-region’s GI because of their multi-functional nature. The costs of mismanagement of rivers and floodplains from historic unsustainable development are still being felt in terms of flood risk to property, depressed land values slowing regeneration, and the amenity/biodiversity cost of poor water quality.

The historic River Valley Plans and the Mersey Basin Campaign have resulted in a reasonable degree of

policy protection and an ongoing programme of environmental action. River Basin and Catchment planning is a national priority and Environment Agency are currently developing their long-term plans. Evidence is continually emerging about the costs and benefits of natural approaches to flood management. Greater Manchester's Strategic Flood Risk Assessment has now given a clear understanding of where there is greatest need for floodplain management - and these priorities are reflected in the GI network map.

However, the existing policy protection available from the application of PPS25 is inadequate to fully protect all the assets and the functions of river valleys – particularly where the floodplain is outside of Greenbelt / SBI designation. Policy protection is good at conservation of specific assets, but less effective at positive promotion of multi-functionality, enhancement and catchment-wide management.

In urban centres and regeneration priority areas there is a potential tension between redevelopment policy (concentrate development within the existing urban area and achieve high development densities) with good catchment management (functional floodplains and adequate space for porous and vegetated surfaces to attenuate surface water flooding). This highlights the need for LDF's to have strong GI policies supporting growth and regeneration functions.

The Radcliffe case study suggests that if the planned growth and regeneration is to occur, planners face a choice:

- a) Develop river valley land in accordance with PPS25 sequential and exception tests but incorporate technological fixes to manage floodwater on and off-site. Fixes could include green roofs, underground holding tanks, floodproof buildings and access points, upstream flood-storage; OR
- b) Reduce the amount of development on river valley land (by re-allocation of sites as GI land and/or by reducing development densities) but increase development elsewhere in the urban area.

In future, it is conceivable that a Green Belt review could de-allocate Greenbelt with low flood risk, with compensatory allocation of river valley GI land as Greenbelt.

In the meantime, AGMA or the Planning and Housing Commission could consider supporting Local Authorities in the way they apply GI policy to rivers and canal corridors in the City-region. A similar issue is considered in the London Plan (a Mayoral plan which guides the LDF process at Borough level). This has 2 relevant policy approaches which may be transferable:

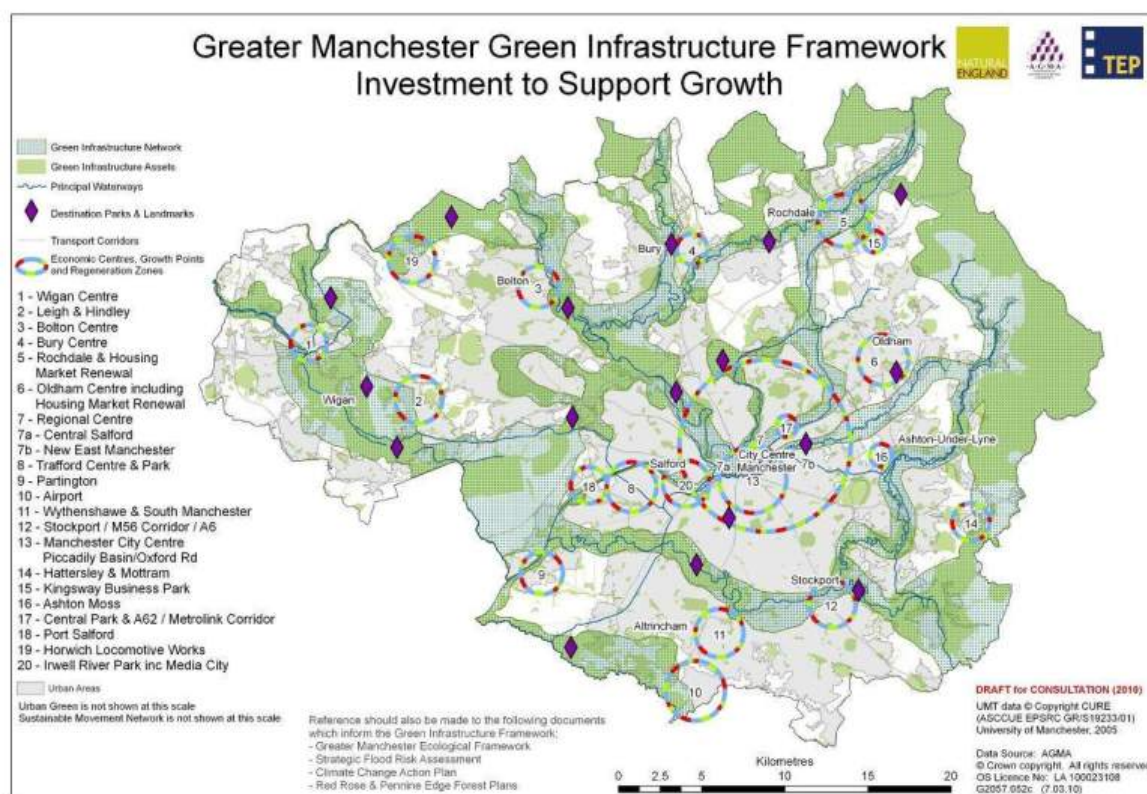
- a) a Thames River Policy Area which encourages Boroughs to collaborate in policy formulation for the river and all property and open spaces which front onto and connect with the Thames. The London Plan gives guidance on how to identify river policy areas and how to formulate LDF policy.
- b) a Blue Ribbon policy identifying priority tributaries for environmental protection and restoration.

At a city-regional level, one of the key GI programmes will be the incorporation of GI projects into the EA's forward-planning and investment in flood defence and catchment management. GI should also be incorporated into the city-region's approach to surface water management. In this regard AGMA will be drafting a surface water management plan, funded by Defra, in 2011.

The major countryside areas in the GI network enjoy strong policy protection from adverse effects of development. Wigan's approach to the Greenheart Park is an exemplar of positive policy formulation and targeting of investment because it explicitly makes a link between development in the Borough and the need for investment in the Greenheart Park as multi-functional economic green infrastructure. A similar approach could be adopted for other significant major countryside areas in the GI Network, such as the Roch and Irwell valley and the South Pennine moors.

The Case Studies revealed that increased funding and better targeting is essential for sustaining the ecosystem services provided by the mosslands and uplands. New funding streams such as carbon credits, coupled with pooling of the numerous agricultural support schemes could improve delivery of critical conservation projects which are essential to maintain the carbon-sink and biodiversity value of peatlands.

The GI network is built on a framework of existing GI assets. However, not all assets are well-managed, and there are gaps between assets. A policy priority must be to improve connectivity and functionality of the network as a whole in order to deliver the full range of GI functions. The map below shows where there are gaps between assets within the network. Maps such as this are useful evidence when seeking funding and developer contributions for creation and management of assets.



6.2.2 Economic centres and regeneration priority areas

Case studies (from the Roch Valley, Radcliffe, Oldham Metrolink and Corridor Manchester) show there is usually a strong vision and masterplanning process for regeneration areas.

However, GI is often not embedded into these masterplans. Where GI is considered, it is often restricted to landscape design of new development and upgrades to existing green spaces. Issues of climatic adaptation, flood management and restructuring of the public realm to increase greenery and surface porosity are sometimes considered, but primarily in relation to new development rather than as a holistic approach to the entire neighbourhood.

Masterplans sometimes consider upstream or off-site areas but only insofar as they affect developability of the parcel being considered. However, the Roch Valley is an example of how a Borough-wide masterplanning approach can positively influence a series of individual parcel masterplans. It also hints at how GI can unlock development potential through increasing resilience and attractiveness of the investment.

In the areas of transformation, there are success stories and examples of good practice. However there is often a gap between vision and actual delivery of environmental initiatives. This is due to various factors:

- a) GI not being considered and embedded into masterplans at an early stage, which then become binding on project sponsors
- b) Limited bespoke guidance in respect of GI, public realm design standards, SuDS
- c) Few mandatory requirements to include GI
- d) Limited ability to influence or stimulate GI activity outside immediate development red-line boundaries
- e) Limited capacity and skills in project teams in public realm and GI design
- f) Inadequate partnership-working (GI successes have been achieved in East Manchester where Red Rose Forest has brought in NEWLANDS, Green Streets or HLF funding)

To overcome these constraints, AGMA and the Planning & Housing Commission could consider:

- a) A strong policy direction to ensure GI is embedded in all masterplans for areas of transformation
- b) A GI Worksheet for GM, setting standards and expectations (examples are the TCPA GI Worksheet for EcoTowns or the BREEAM Communities Manual)
- c) Training for urban renewal practitioners in GI, SuDS, climatic adaptation and public realm design standards

6.2.3 Greening the Urban Environment

Urban green has been described as the “fine-grained” GI, whose individual components collectively are of

strategic value. It includes the urban tree canopy, gardens, pocket parks and porous surfaces important for biodiversity, climatic cooling and surface water management.

The cost of neglect of urban green is felt through loss of climatic adaptation, increased flooding, declines in amenity and biodiversity.

Urban Green has a collective value for the City Region. There is a developing, but still incomplete, evidence base about the resource of urban green and which areas are of greatest priority for conservation or enhancement.

There are various tools which can be used in development management (locally-adopted strategies regarding development in gardens and creating paved areas, TPOs, BREEAM assessment etc). However, these are limited in scope. They would be strengthened by an improved evidence base on priorities for protection and stronger policy direction.

Development management is only a small aspect of the overall management of urban green. Other important strategies to consider include:

- a) Awareness-raising for residents, streetscene and facilities managers of the value of urban green
- b) Targeted campaigns to increase urban tree canopy in areas of deficiency – for example the TCPA EcoTowns worksheet sets out canopy cover standards and design expectations for private gardens and public realm. RRF has gained Green Streets funding for particular areas. Trees for London has a grant scheme which enables tree planting in selected areas of deficiency.
- c) Action with United Utilities & Environment Agency to promote SUDS and to encourage use of domestic soakaways in appropriate areas
- d) Good practice training for streetscene and facilities managers in use of pavements and landscaped areas to manage surface water.
- e) Clear and strident policy statements at City-Regional level of the value of urban trees, together with targets for new planting
- f) Drawing-up a City-Regional GI standard for new development (perhaps borrowing from the Malmo Green Space Factor approach – see Chapter 9)
- g) Preparation of local GI strategies for districts and smaller neighbourhoods.

6.2.4 Sustainable Movement Network

This aspect of GI work provides for cycling and walking in terms of the green space and public realm improvements that facilitate these activities. It covers countryside recreation and green routes for urban commuting.

GI activity includes:

- a) development of new routes
- b) upgrading of existing routes to make them suitable for multiple use

- c) increased legibility of the public realm
- d) removal of pinch-points on existing routes
- e) promotion and interpretation

RRF and PEF have plans for a Strategic Access Network, focused on river valleys and countryside routes. Although these plans have not been reviewed for several years. Sustrans, GMPTE and Local Authorities have their own work programmes; for example Connect2. Manchester's Countryside website promotes a number of trails and destinations.

TEP recommends a refreshed strategic approach to the sustainable movement network, taking account of:

- a) Deficiency in accessibility to open spaces
- b) Health deprivation
- c) Networking of routes and destinations
- d) Promotion and branding of routes of touristic value

Promotion of sustainable movement could become a task of a GM-wide GI Co-ordinator incorporating relevant Sustrans and GMPTE staff to avoid duplication. A clearly articulated and visualised city-regional network would also have the benefit of becoming eligible for support through developer contributions.

6.2.5 Destination Parks, landmarks and Trails

These assets are already well-known and subject to policy protection and investment. However, with the pressures on public finances likely in the period 2010 to 2015, innovation will be needed to formulate new models involving greater private and voluntary sector involvement. This is discussed in chapter 7 (Partnerships).

It is thus very important that assets of significance to Greater Manchester's society and visitor economy are identified on the framework map. Chapter 3 of this report discusses the need for a further round of consultation as to which assets should be depicted on a city-regional framework plan.

6.3 From Priorities to Work Programmes

The city-regional GI priorities need to be translated into work programmes with deliverable action plans and partnering arrangements. Perhaps the guiding philosophy is that a healthy green infrastructure is achieved "through a few major projects and a thousand small changes"

TEP's preliminary view is that there are **6 headline work programmes** to deliver the city-regional priorities:

1. A **Water Action plan**, covering rivers, floodplains, tributaries and water-gathering-grounds, as well as canals, reedbeds and ponds. This would include numerous projects to:

- a. restore rivers and floodplains (such as the Environment Agency's Irwell Restoration project)
 - b. improve flood-storage and surface-water management in green spaces linked to rivers and floodplains
 - c. improve connectivity for biodiversity and recreation
 - d. deal with the legacy of contamination and poor soil quality on land which is hydrologically connected to rivers and floodplains
 - e. create new wetlands
 - f. plant significant areas of trees and scrub in upper catchments
2. A plan to **green the urban landscape in priority areas** – to ensure high standards in respect of climatic adaptation, canopy cover, surface porosity, walkable neighbourhoods, building and public realm design standards
3. A plan to ensure **all residents live within 300m (5 minutes walk) of a multifunctional, safe and clean green/civic space**. This would involve mapping deficiencies and using a variety of techniques to create new public realm and/or diversify existing spaces. Priority would be given to areas of need, economic centres, growth points and regeneration areas:
- a. Diversifying existing spaces to widen their appeal, accessibility and functionality
 - b. Creating new public realm e.g. by street-greening or restructuring of existing spaces
 - c. Temporary greening in areas undergoing transformation and redevelopment
 - d. Outreach programmes to increase community awareness and involvement
4. Implementation of a **sustainable movement network**
5. Ensure **Destination Parks, Landmarks and associated trails** are exemplars of multifunctional green infrastructure, of benefit to Greater Manchester's residents and environment, and also important regional visitor attractions
6. **Management and improvement of Greater Manchester's most important carbon-sinks**, for climatic mitigation and also for biodiversity, food production and landscape quality:
- a. Woodlands – doubling of woodland cover
 - b. Mosslands and Moorlands – all peat soils to be under positive management
 - c. Wetlands – doubling of wetland cover
 - d. Brownfield Land – action to aggressively build soils and plant woodlands, using composted waste where appropriate

To help develop these programmes during the Framework finalisation, TEP recommends:

- a) Build on existing and proposed initiatives – there is much good work being carried out through programmes such as NEWLANDS, Green Streets, Local-Authority initiatives, River Basin

Management Plans, and the emerging Adapting the Landscape proposal has ideas with strong merit.

- b) Review public lands to assess their existing and potential multifunctionality, and their potential for new GI activity
- c) Align with the key growth agendas; perhaps the HCA's investment programme and the EA's River Basin Management Plans and the work-programmes of the Commissions are the most critical.
- d) Consult widely within the GI Consortium and the "Growth, sustainability and wellbeing sector (see Glossary) to identify existing programmes which could be strengthened in respect of GI.
- e) Align with masterplanning leaders (such as Corridor Manchester) to ensure GI is positioned well in area-based regeneration schemes (see maps in Chapter 3)
- f) Retain a focus on City-regional priorities, accepting that targeted action at neighbourhood level is valid to achieve city-wide goals of liveability and sustainability.

7.0 Partnerships

Regeneration and growth requires partnership working. GI is more reliant on partnerships than other infrastructure because it is delivered in many ways by many parties. Thus the GMGI Framework must:

- a) *Be developed in consultation with many partners*
- b) *Advise how to maintain, enhance and create partnerships*
- c) *Map existing and potential partnerships for delivery of GI in priority areas*

This chapter provides recommendations about how the existing GI Partnership can build support for the GI framework, by engaging with its own membership and with its circle of contacts.. This circle of contacts includes the City-Region's Commissions, stakeholders in the health, wellbeing and regeneration sectors; and of course the interested public.

The consultation process needed to develop the GI framework should also encourage GI project development and encourage increased levels of community activism. During the process of framework-development, governance and advocacy arrangements for GI in the city-region should be formulated.

7.1 Lessons from Case Studies

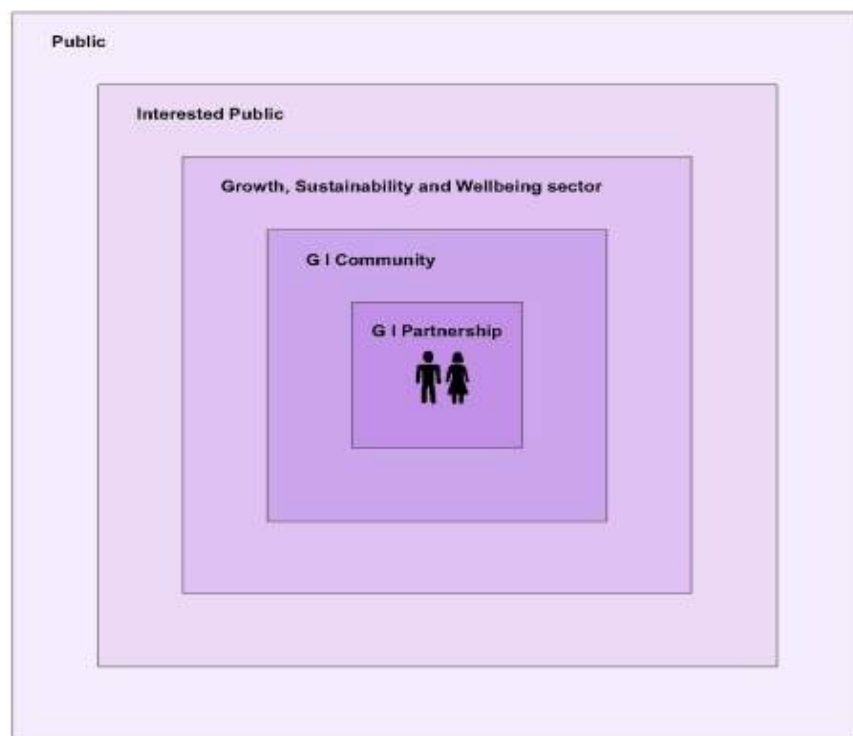
The case studies (see Annex 3) identified:

- a) GI skills in urban renewal partnerships brought improved project delivery, attracted match funding and made better connections to target communities.
- b) Even when there is good partnership working at strategy and programme development stages, it is also vital to ensure GI skills are applied at project design and implementation stages.
- c) There is still widespread lack of awareness amongst funders and grey infrastructure providers about the scope and benefits of GI, so advocacy, communication and case studies are essential to fit GI into existing partnerships.
- d) There is a risk of duplication of activity and client confusion when several environmental agencies all have an input to a partnership initiative. Pooling resources so the client has a single point of contact can help delivery.

7.2 Mapping Existing Partnerships

Numerous groups already implement and manage GI. Some have been established for many years while others wax and wane in response to funding priorities. The groups operate at all scales from local to city-regional. This "GI Community" (see diagram overleaf) is often linked to common interest networks such as the Community Forests, Mersey Basin Campaign, Groundwork.

The GI framework needs to respond to the aspirations of these groups. While it cannot deliver every local aspiration, it must be informed by them and must set out a mechanism for local groups to increase their influence. The framework also needs to set out a mechanism to encourage these groups to thrive, develop new programmes, learn new skills and disseminate good practice. This chimes with the “Big Society” approach to neighbourhood management.



- Green Infrastructure Co-ordinator and G I Board

G I Partnership - Organisations from public, private, voluntary and academic sector, which are the principal delivery bodies for G I. Includes Local Authorities, Forestry Commission, Environment Agency, Community Forests, Groundwork Trusts, Wildlife Trust, Climate Change team, Sustrans, National Trust, CABE Space, Greater Manchester Ecology Unit, Mersey Basin Campaign and Regional Parks.

G I Community - Includes partnership and numerous other individuals and local groups engaged in funding planning, design and management of the G I. Includes Civic groups, Friends groups, landscape architects, ecologists, heritage specialists, climate change specialists, land managers, farmers and businesses in the 'natural economy.' Homes and Community Agency and NWDA form part of the G I Community.

Growth, Sustainability and Wellbeing sector - Includes a great range of urban practitioners (developers, social housing providers, architects, planners, transport specialists, surveyors), health and sport professionals, educationalists and infrastructure providers.

Interested Public - 77% of the public use and enjoy parks and outdoor recreation regularly for leisure, sport and allotments, 7 out of 10 consider themselves to lead a lifestyle with a concern for ethical and green choices. This category includes individuals and businesses involved in neighbourhood and community voluntary work.

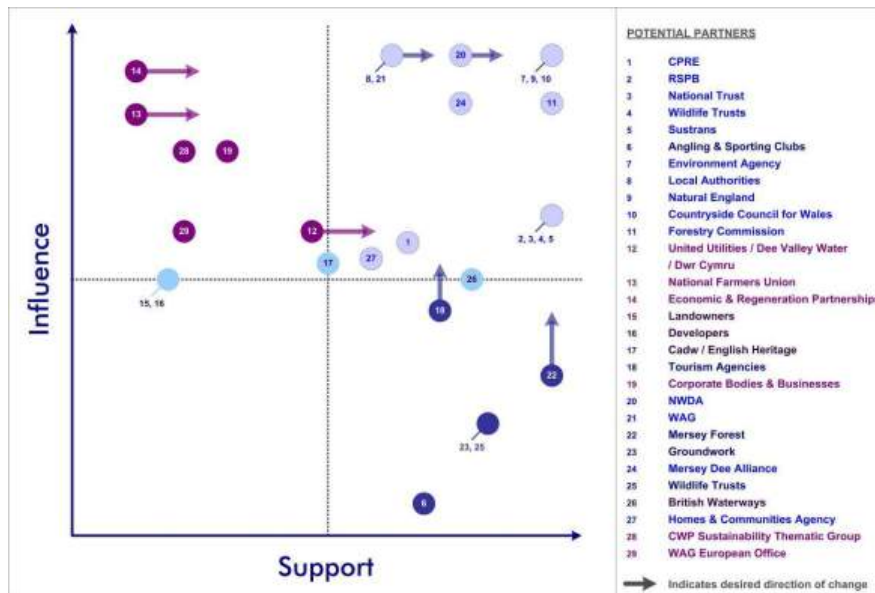
Other public - Only 9% of the population are uninterested in environmental issues or are unconcerned about parks and outdoor spaces.

The framework must also identify gaps in GI delivery, particularly in areas of city-regional priority. Such gaps might relate to human resources, funding, design capability or implementation capacity. A useful approach to mapping partnership working is through an influence/support matrix (see example from Mersey Dee Alliance GI Feasibility Study). The matrix helps the GI co-ordinator develop a communications strategy, build new partnerships and strengthen existing partnerships.

The matrix approach can be used at various levels. For the city-regional GI framework it should be used to

scope the optimum governance partnership. It should also be used to assess what partnerships need to be built to implement city-regional programmes. The approach should include all organisations shown in the systems diagram as being in the GI community and the “growth, sustainability and wellbeing sector”. The matrix should focus on organisations that:

- a) have a city-regional or broad remit
- b) lead cross boundary and city-regionally significant regeneration programmes



An Influence/Support Matrix to assess current and potential support for GI (TEP, 2009)

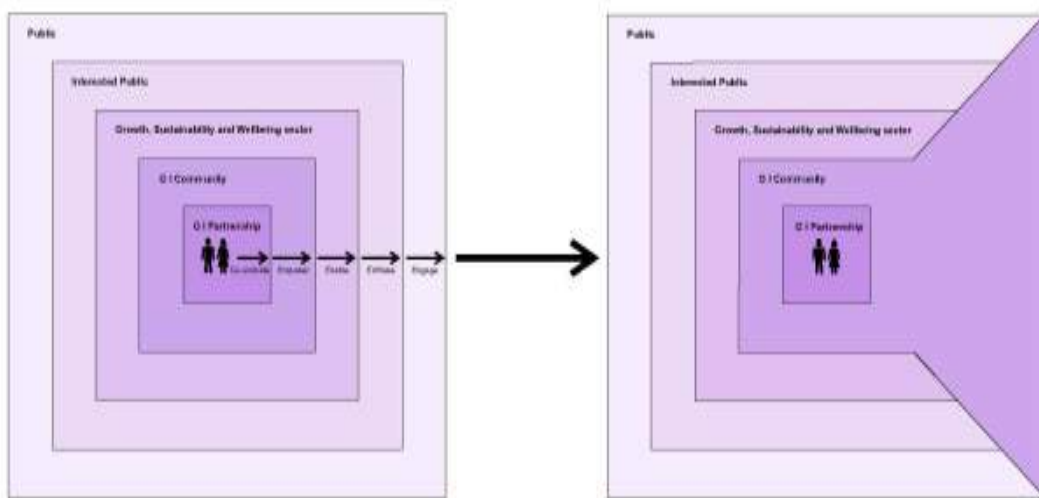
7.3 Expanding Partnerships in the City Region

The diagram below shows how a GI partnership might expand awareness by adopting strategies to engage different supporters. The process of preparing the framework should enable involvement with GI. This requires a collaborative and listening approach, whereby the framework should be influenced by the priorities of the communities it seeks to influence. Particularly important is the growth, sustainability and wellbeing sector, who may be well-disposed towards green infrastructure, but unsure of its relevance to them. Partnership development is a lifetime process which can be stimulated during the process of framework development. A target could be set for the process to produce at least 5 new leads and 10 new ideas for partnership working during the production of the Framework document.

7.4 Building Community Partnerships

Building community partnerships is essential for a GI strategy in a mature urban area. At this stage it is not critical to achieve full community engagement in framework development since this could result in frustrated community expectations. Nevertheless long term GI delivery depends on grassroots activism. The GI partnership should empower and enthuse this activism, as shown in the diagram. During the process of framework development the views of individuals and neighbourhood groups should be sought. This could be done in various ways, depending on budget;

Building Influence and Partnerships for Green Infrastructure



Green Infrastructure Co-ordinator and GI Board

GI Partnership - Organisations from public, private, voluntary and academic sector, which are the principal delivery bodies for GI. Includes Local Authorities, Forestry Commission, Environment Agency, Community Forests, Groundwork Trusts, Wildlife Trust, Climate Change team, Sustrans, National Trust, CABE Space, Greater Manchester Ecology Unit, Mersey Basin Campaign and Regional Parks.

GI Community - Includes partnership and numerous other individuals and local groups engaged in funding planning, design and management of the GI. Includes Civic groups, Friends groups, landscape architects, ecologists, heritage specialists, climate change specialists, land managers, farmers and businesses in the 'natural economy'. Homes and Community Agency and NWDA form part of the GI Community.

Growth, Sustainability and Wellbeing sector - Includes a great range of urban practitioners (developers, social housing providers, architects, planners, transport specialists, surveyors), health and sport professionals, educationalists and infrastructure providers.

Interested Public - 77% of the public use and enjoy parks and outdoor recreation regularly for leisure, sport and ailments. 7 out of 10 consider themselves to lead a lifestyle with a concern for ethical and green choices. This category includes individuals and businesses involved in neighbourhood and community voluntary work.

Other public - Only 8% of the population are uninterested in environmental issues or are unconcerned about parks and outdoor spaces.

Through a process of communication, networking and partnership building, the number of people and groups who would consider themselves as part of the GI Community expands.

For those already engaged in growth, sustainability and well-being, this may be a recognition of how their activity can include hitherto unconsidered environmental projects. It may involve partnerships with the GI Partnership.

It may include an increased awareness of environmental technologies and approaches, contributing to an increased willingness to fund or co-provide GI within the course of their normal activity. In return these practitioners should see better outcomes in terms of environmental impact and/or community engagement.

For individuals and businesses there will be an increased uptake of opportunities to actively plan and manage neighbourhood spaces and be involved in local decision-making. There will be increased levels of personal environmentalism eg walking, cycling, home energy conservation, food growing, recycling etc.

- By analysis of published citizens panel results and study of Sustainable Communities Strategies. This would examine levels of engagement with the natural environment. It would identify widely shared community priorities for management and enhancement of the outdoor environment.
- Through consultation with bodies such as Manchester CSV, Groundwork Trusts.
- Through a sample survey of representative individuals e.g. civil society bodies concerned with the environment such as the National Trust.
- Through a wider consultation exercise advertised through representative organisations and social networking media.

The aims of community engagement at this stage should be:

- a) To test support for the proposed GI priorities and delivery arrangements.
- b) To identify if there are any missed priorities or delivery bodies.
- c) To test the idea of networking the GMGI community (see Chapter 8).

7.5 Building cross-commission Sponsorship

Greater Manchester's commissions are drawing up their strategic objectives and forward work programmes. This is an ideal time to establish GI as a strategy which helps all the Commissions deliver their objective. Table 7.1 below summarises how GI can assist them.

Chapter 8 of this report advises that cross-commission governance of GI is important. During the process of framework development, the commissions should be fully engaged to garner support for governance of GI and establish a clear planning and delivery framework for GI.

Support to the Commissions is primarily a task for AGMA's GMGI Steering Group, with additional resources from agencies such as Natural England and Environment Agency.

Commission	Strategic Objective Relevant to GI	Example City-Regional GI Programme
Planning & Housing	<ul style="list-style-type: none"> * Creating a setting for housing growth * Management of flood risk – from rivers and from surface water flows * Create and sustain a resilient infrastructure for growth * Prepare a Spatial Framework 	<ul style="list-style-type: none"> * Portfolio of projects to meet GI targets for canopy cover, ANGST, remediation of brownfields, carbon-sequestration * GI projects as part of River Basin Plans – washlands, catchment management * Work with United Utilities to identify which surface water flowpaths that should be managed as GI * Best practice guidance on incorporating GI into masterplans * Promote positive policy for management of the GI network (cf Wigan’s Greenheart Park policy direction)
Environment	<ul style="list-style-type: none"> * Climate Change Action * Low carbon transport * Low carbon Economic Area 	<ul style="list-style-type: none"> * Development of a GI standard to apply to new developments and neighbourhoods to assist neighbourhoods to achieve high energy, waste and climate performance * Identification of a strategic portfolio of neighbourhood/street greening projects * A Sustainable Movement Strategy * Networking the GI community to facilitate local activism * Action to improve carbon-sink value of wetlands, mosslands, uplands and woodlands
New Economy	<ul style="list-style-type: none"> * Resilience of economic centres to environmental stress * Low Carbon Economic Pilot Area * Creating a setting for inward investment * Employment in the Natural Economy 	<ul style="list-style-type: none"> * GI Projects as part of River Basin Plans to reduce flood risk * Best practice guidance on incorporating GI into masterplans * Strategic portfolio of public realm projects in key centres * Reinforcing Manchester’s reputation as a centre of environmental excellence and visitor destination
Transport	No priorities yet identified but it is likely that promotion of walking/cycling will be a workstream	<ul style="list-style-type: none"> * A Sustainable Movement Strategy
Health	<ul style="list-style-type: none"> * Tackling obesity * Improving mental health and wellbeing and community cohesion * Preparing for future climate change impacts on vulnerable communities 	<ul style="list-style-type: none"> * Sustainable Movement Strategy * Promote positive policy and management of the GI network, specifically for sport and recreation * Strategic portfolio of neighbourhood street-greening projects in areas of poor health.
Public Protection	Protection of communities from disasters e.g. catastrophic flooding	<ul style="list-style-type: none"> * GI projects as part of River Basin Plans to reduce flood risk
Improvement and Efficiency	<ul style="list-style-type: none"> * Collaborative Efficiency Programme by improving joint delivery of public services * Contribute to place-shaping * Promoting the vision and values of Greater Manchester 	<ul style="list-style-type: none"> * Networking the GI Community to facilitate local involvement in place-shaping * Use of city-regional GI assets as arenas for service delivery in health/social care * Reinforcing Manchester’s reputation as a centre of environmental excellence and visitor destination

7.6 Consulting the GI Partnership

The existing GI Partnership has a strong and continuously evolving working relationship. Partnerships are formed to deliver specific projects and members regularly meet to discuss collective interests. There is a long tradition of collaborative working to deliver environmental and social outcomes, so the Framework must build on existing partnership initiatives. However the challenges of the future mean that new alliances are needed – which may mean that there will be shifts in staffing between existing employers to achieve the optimum delivery skills base.

During the period 2008 – 2010, changes in Local Authorities, Groundwork Trusts and the Mersey Basin Campaign have resulted in a net loss of staff with experience in planning and delivering GI. Continuing public sector austerity means this trend is unlikely to be reversed in the short term. On the positive side, there has been an increase in skills and staffing in the closely related fields of climate change, planning and sustainable construction.

During the production of this report, the GMGI Steering Group has guided and commented on the proposed GI priorities and delivery arrangements. However a formal consultation process on a GMGI framework is vital to ensure the aspirations, plans and contributions of the wider GI partnership are fully reflected.

A full consultation will “harvest” the extensive experience of the partnership. It can go some way towards resolving some of the thorny problems of GI implementation (e.g. application and costing of s106/community infrastructure funds, long term management arrangements, engagement of urban fringe landowners, fund-pooling and targeting, use of public land, skills gaps, building an evidence base on economic performance of GI, storing and managing land cover information, setting GI standards for new development, integrating promising GI technologies into new developments).

It is recommended that a consultation process with the GI Partnership should include the following steps;

- a) Initial briefing and workshop to kick-start the process of agreeing a city-regional GI vision and investment priorities. This would be targeted at a broad representation of the partnership.
- b) Research topic groups on the thorny issues. The groups would run for the life of the framework development process and input to the final document. The groups may well have a life beyond the framework publication.
- c) Delivery orientated workshop with leaders of the GI Partnership, senior representatives from the proposed GI Board and major funders. This will help construct an action plan and a partnership development plan.
- d) Consultation on a draft final framework document.
- e) Launch of the GMGI framework, hosted by the GI Board with commitments being made by the Partnership to joint working.

7.7 Global partnerships

Greater Manchester's emerging GI framework is a third generation approach. It is part of a blueprint for a sustainable city region noted for quality of life, quality of place and living within environmental limits. It is a philosophy which welcomes urban growth and is an offer to the UK to adopt a more sustainable pattern than the market-led intensification of urban land in south east England. GM's challenge is to retrofit GI into a mature urban fabric and at the same time manage the ecosystems which sustain the city. Collaboration with other cities facing similar challenges is clearly beneficial:

- a) Liverpool – collaboration essential because of human, trade and ecosystem flows between the cities.
- b) Leeds/Bradford - collaboration essential because of human, trade and ecosystem flows.
- c) London – the East London Green Grid and other London-wide GI initiatives have built up much useful advocacy and policy guidance. There are many similar challenges.
- d) New York – the city is pioneering a 25 year drive to increase population, renew its infrastructure (including GI) and reduce its greenhouse gas emissions. Urban liveability and the co-ordination of hundreds of neighbourhood GI projects to meet city-regional goals are central to its plan.

It is recommended that 'twinning' arrangements are established, including a workshop during the production of the Framework. This task is appropriate for Natural England and CABE.

7.8 Skills and Leadership

CABE highlights²¹ the gap in leadership and skills in relation to GI planning, design and delivery. CABE has highlighted what it will do in this area at a national level (see Box 7.1). Greater Manchester, as a city-region regarded as an exemplar in GI, has a role to play in leading the skills uplift. This is a task that is directly in line with the aspirations of two of Manchester's Commissions (New Economy and Improvement of Efficiency). TEP recommends that one of the "thorny issues" examined during Framework development is the potential costs and benefit of uplifting the skills base in GI, in leadership, practitioner and community sectors.

Box 8.1 "Grey to Green – CABE's Recommendations for a Skills To Grow Strategy"

About 65% of England has some kind of strategic approach to GI. But this masks a major gap in delivery, largely at the level of local authorities. Councils need to:

- 1) Establish strong high-level leadership e.g. a cabinet member with a portfolio commitment to championing an urban greening programme.
- 2) Provide sufficient professional co-ordination and skills e.g. technical specialists with access to a meaningful budget who ensures that GI awareness and skills to deliver are embedded across the LA.
- 3) Engage local people in the design and delivery of GI e.g. by giving community groups access to information and advice from trained/aware councillors and officers.

At a national level, CABE is calling for:

- 1) A jobs and skills strategy for the right people and skills to deliver GI.
- 2) A national GI taskforce to shape environmental policy and delivery.
- 3) An open-source national environmental resource – a kind of atlas – to record the location, quantity, function, type and quality of green spaces.

²¹ CABE (2010) Grey to Green: How we shift funding and skills to green our cities

8.0 Delivery Framework

GI merits a co-ordinated approach to delivery of the big agendas of environmental resilience, reshaping the urban fabric, improving health, accelerating growth and sustaining biodiversity. GI activity will help all Greater Manchester's Commissions towards their objectives. Delivery of GI projects can also stimulate joined-up working and potential savings in service delivery at Local authority level.

GI is implemented by many different actors, unlike most other infrastructures which are built and maintained by specialist providers, often with statutory powers to raise funds and construct the infrastructure .

Britain has models of city-scale GI delivery. In London, the mayor champions the East London Green Grid as a delivery framework across 11 local authorities. The ELGG is a statutory plan and has six Delivery Frameworks and Area Boards. This enables significant fundraising and programme development. Central top-down funds have added to local and grass-roots activity to create significant new assets such as the RSPB's Riverside Conservation Park.

In New York, PlaNYC was derived from extensive public consultation. It has several GI delivery programmes, with a strong emphasis on reporting progress back to the public who influenced the plan in the first place.

In the Northwest (without a mayoral imperative) GI delivery bodies such as the community forests, Mersey Basin Campaign and Groundwork/BTCV have a track record of working with Local Authorities, communities and regional funders to deliver "a few large schemes" e.g. major brownfield regeneration, water quality enhancement, NEWLANDS, the Regional Parks; and "a thousand small changes" e.g. Green Streets, Green Flag Parks, Health Walks.

Greater Manchester's Local Authorities have a good track record of partnership-working with Urban Regeneration Companies, corporates and the community to delivery enhanced parks and open spaces.

The community forests were most effective in delivering quantitative outputs when their teams benefited from 50% core funding from Countryside Agency. When that funding ended, the teams remained innovative but quantity of outputs declined, perhaps because an increased proportion of management time was needed to chase funds and manage short-term programmes.

Case Studies show that there is still a significant gap between strong policy aspiration and weak delivery capacity for GI in all the city-regional GI investment priorities. This is particularly true in inner-urban environments, flood and surface-water management, active travel networks and urban-fringe farmland management.

GI activity in New York shows the merit of having a centrally-driven delivery plan strongly focussed on media-friendly targets e.g. planting of X million trees, conversion of X school yards to playgrounds, completion of

regional parks.

Experience from the Green Grid in East London and the Thames Gateway suggests that territorial overlaps between GI funding and championing bodies can slow the project appraisal process, frustrating delivery. This can be improved by streamlining the project design and approval process but the danger of “too many cooks” must always be guarded against. Generally Greater Manchester’s GI Partnership has an excellent track record of brokering activity and partnership-working. This is a strength which can be built on over the forthcoming five years, which are likely to be marked by public sector austerity.

This chapter sets out a proposed structure for GI delivery in Greater Manchester, to ensure it is aligned with the work-programmes of the City Regional Commissions, national agencies, and grassroots community activists. It recommends a GI Co-ordinator team is formed to assist with delivery of City Regional priorities; and to help fill the skills gap in relation to GI.

The chapter also identifies the scope for delivery through the planning system, and sets out some preliminary thinking on fundraising and fund-pooling. It concludes with preliminary thoughts regarding action-planning.

8.1 Governance – a GI Board?

A concerted effort over a long period is needed to deliver fully-functioning GI for Greater Manchester. Problems of poorly-functioning floodplains, lack of climate resilience in the urban fabric, slow regeneration of brownfield land, community perceptions and use of open spaces and low uptake of active lifestyles are of a generational nature.

Since GI is critical to delivery of the 2025 World-Class Vision, overall Governance must be in the hands of all the City’s Commissions, acting on behalf of the ten Local Authorities. Various other national, city-regional and environmental bodies should be involved in governance e.g.

- a) AGMA
- b) Natural England
- c) Environment Agency
- d) Forestry Commission
- e) Homes and Communities Agency (HCA)
- f) National Health Service
- g) Manchester University/MMU
- h) Private Landowner representation
- i) Local Enterprise Partnership (following dissolution of the Regional Development Agency)
- j) Community Representation

Other organisations should input to governance as a wider reference group, when appropriate e.g. the community forests, Groundwork NW, Sport England, Sustrans, GM Biodiversity Partnership, CABI.

This report uses the term “GI Board” to mean a body which provides strategic guidance, direction and oversight for GI activity. It may or may not be a legally constituted “Board” – that is a matter for future discussion. In any event the role of the Board must be carefully defined. Its aim would be to advocate GI at national and regional levels, raise funds and oversee delivery of the City-Regional priority programmes (see chapter 6)

Such a GI Board should be a body with a light touch, in order to avoid suffocating innovative programme development and project delivery. Its role would include:

- a) Endorsing and refreshing the City-Regional GI Framework
- b) Championing GI and ensuring its integration into the work programmes of the City-Regional Commissions, and national agencies such as HCA
- c) Securing funds for critical city-regional GI and approving budgets for expenditure on delivery of such projects. This would include establishing a transparent project appraisal process.
- d) Providing strategic direction to the GI Teams charged with delivery.
- e) Monitoring progress and reporting to the people of Greater Manchester
- f) Evaluation and research to improve GI delivery in all City-Regional priority areas.

The systems diagram found at Chapter 7 illustrates how the GI Board would interact with the GI Team, the GI Partnership, and wider groupings of public and practitioners.

8.2 Strategic Co-ordination

In Greater Manchester, there is an active “GI Partnership”, centred on the two community forests, partner agencies, local authorities, Groundwork, BTCV and others. Numerous other partners are involved on a task-specific basis. Delivery of GI is seen as a shared objective for all these organisations and there does not appear to be any significant problem with particular groups assuming a primacy which is unwelcome to the majority.

The combined effects of the economic downturn, pressures on public-sector finances and uncertainty during the emerging of the City-Regional commissions mean that many of these bodies are currently examining how they might co-operate.

TEP and the GMGI Steering Group considered how and if strategic co-ordination of GI delivery in Greater Manchester could be organised, considering particularly the role of the community forests.

This concluded that:-

- a) strategic co-ordination does maximise GI benefits;
- b) co-ordination should be firmly oriented to partnership-working and should stimulate, not suffocate, local initiatives;
- c) the community forests should continue with the role they already carry out and also develop new and deeper partnerships and workstreams in the areas of climate change, flood resilience, health,

- active travel and carbon offsetting/sequestration;
- d) there is merit in the community forests joining forces with practitioners in some of the following areas: climate change, active travel, water management, urban design and the use of GI for health benefits. This could bring net cost savings to the public sector;
- e) Strategic co-ordination may require an element of “core” funding for a significant period of time (5 + years) in order to focus on delivery of GI outputs and advocacy for GI during what will be a critical stage in the restructuring of the city’s fabric.

There is considerable uncertainty over the future shape of public service delivery. TEP recommends that, early in 2011, a review of the options for GI co-ordination in Greater Manchester takes place as part of the finalisation of the GI Strategy.

In the meantime, TEP recommends that AGMA and other central/local funding bodies consider how to maintain support for their existing GI partners to avoid a loss of expertise and momentum at an important time for GI in the City Region.

The following sections of this report provide further recommendations about the delivery role of the GI team and its partners.

A highly centralised co-ordinating structure would dampen local innovation and delay local delivery. Given probable squeezes on public-sector funding, GI delivery will need to use the voluntary, private and grey infrastructure sectors to a greater extent, which will require skilful, nimble and responsive networking by the GI co-ordinator.

The critical role of the GI co-ordinator will be to provide ‘thought-leadership’, advocacy, innovation, grasp new fund-streams and network with new partners.

If LA and Government public sector shrinks in leadership and delivery capacity, the GI co-ordinator could take on these roles if it is able to offer shared resources at a lower cost. Various models exist for such a co-ordinator (LA shared unit, Co-operative, Trust) but the LA shared unit model has probably stood the test of time best. In any event, the GI co-ordinator should provide the following roles:-

- a) Fund-raising and fund-pooling
- b) Partnership Development
- c) Programme development and implementation
- d) Increasing uptake of GI funds by the private and voluntary sectors
- e) Advocacy and thought-leadership
- f) Networking Service for the GI Community
- g) Expert advice (in-house or portal-style) on planning, funding, GI Standards and technical issues
- h) Research and training to uplift the GI skill base (in-house or portal-style)
- i) Data store for land/GI related environmental information
- j) Action Planning for City-Regional GI delivery

8.3 Delivery through Co-Production, Fund-pooling and Stimulating Community Activism

Three delivery options merit further discussion in this section:

- a) Co-Production (through alignment with other infrastructure providers)
- b) Fund-pooling
- c) Stimulating greater community and individual action for GI

8.3.1 Co-production

The concept of “co-production” or “joined-up delivery” is at the heart of the Government’s Total Place initiative. GI has much to offer to other public services and infrastructure providers since it can:

- a) extend the public benefits arising from the services
- b) save costs
- c) extend infrastructure life
- d) offset negative environmental impacts and thus speed the process of gaining planning permission and environmental consents.

The Genecon GI valuation report²² (currently in draft) will provide a means of monetising the benefits of GI, and thus may assist with generating funds associated with physical infrastructure. Initial review suggests the GI delivery is most appropriately joined to the following public services:

Built Infrastructure

- Transport networks
- Schools, hospitals, housing

Environmental Infrastructure

- Surface water management
- Flood Defence

Social Infrastructure

- Education
- Health care
- Community Cohesion and Local Democracy

Climate Change Adaptation and Carbon Credits

Agricultural and Rural diversification funding streams

²² Genecon op.cit.

The Framework should be developed in consultation with representatives from these sectors to identify how GI can benefit their investments and what joint programmes could be devised. AGMA and Environment Agency have an important role in brokering introductions to senior players in these sectors.

Chapter 3 has identified some of the forthcoming major infrastructure investment programmes which should be investigated. The work-plans of the Commissions should also be investigated, as set out in Chapter 6.

Greater Manchester's GI Framework needs to be aligned with the concept of Adapting the Landscape (refer to discussion about the Atlantic Gateway in chapter 3). Conversely, Adapting the Landscape needs to consider the Upper Mersey catchment as critical GI for the resilience of Liverpool and Manchester city regions. Assuming these issues can be resolved to the satisfaction of the City Region, there is great benefit to GM's GI in establishing its value as a national priority to support growth - similar to how the Green Grid is understood to be critical to the success of the Thames Gateway.

8.3.2 Fund-pooling

Another aspect for investigation is whether better targeting and uptake of GI funds can be achieved. Over the past few years, there has been targeting of Woodland Grant Scheme and Environmental Stewardship funds towards certain projects and areas. Experience suggests that this has been, in parts successful. However the Mosslands case study indicated that for a number of reasons connected with land value, landowner inertia and awareness; uptake of funds critical to enhancing the Mosslands has not occurred.

The National Forest provides a precedent for corraling all available Land Management funds into a Challenge Pot for which landowners can bid. Projects delivering the greatest public benefit received funding at rates which were attractive to urban-fringe landowners.

TEP recommends that the Delivery Framework takes a fresh look at co-provision and fund-pooling in various sectors to help deliver City-Regional GI priorities. This may require specialist consultancy services from companies with a track record in fundraising for joined-up service delivery – e.g. from social marketing consultancies which have experience in joining-up service delivery for health outcomes.

A creative approach is needed, including a review of the following funding-sources which could perhaps be pooled:

- a) Aggregates Levy Sustainability Fund
- b) Carbon Trading credits
- c) Landfill Tax Communities Fund
- d) Defra's various agricultural and woodland support funds that are currently channelled through Natural England and/or NWDA and Forestry Commission
- e) Homes & Communities Agency Local Investment Agreement (which has several budget lines applicable to GI)
- f) Corporate Social Responsibility contributions (especially from N. American companies with bases here in GM, as they can obtain tax-credits in some cases)

- g) United Utilities – various funding streams associated with their infrastructure upgrading programme and their surface water management charges which can be offset by use of SUDS
- h) S106/Community Infrastructure levy (or tariff)
- i) Match-funding arising from donation of land by public bodies
- j) Leases of public land for renewable energy (e.g. onshore windfarms will pay an annual rental fee equivalent to ca 10% of turnover)
- k) Landswaps and land-purchases by Government bodies and/or charitable trusts
- l) Lottery funds e.g. Heritage Lottery funding
- m) European Funding initiatives (e.g. ERDF/RDPE/Intereg)
- n) Primary Care Trusts (if there is potential for using greenspace as an arena to deliver improved health outcomes)
- o) Environment Agency's River Basin Management Plans, particularly if monies allocated for flood defence can be proven to be spent just as effectively on natural approaches
- p) Business Improvement District designation

TEP recommends that, during Framework finalisation, a target is set for the development of 3 new strong leads in relation to fund-raising or pooling; and 10 new ideas for future development in relation to this.

8.3.3 Networking the GI Community

Many individuals are engaged in environmental and neighbourhood management work on a paid or voluntary basis. Many are keen to live 'greener' and more active lifestyles. At the same time, public authorities have an interest in increasing the engagement of individuals and communities with neighbourhood management, local democracy and uptake of healthy lifestyles. The objectives of individuals and authorities can be brought together through a GI networking service.

In the East Midlands, a Green Infrastructure Network (EMGIN) links professionals, community groups and individuals, providing them with information about new projects, training courses, funding opportunities and best practice.

A Greater Manchester GI Community (GMCIC) could have various purposes:

- a) sharing good practice
- b) stimulating new partnerships
- c) advocacy
- d) encouraging behavioural change
- e) portal for environmental information
- f) repository for publications
- g) publicity for events, funding streams, training courses and conferences
- h) awarding outstanding achievement
- i) publicity for member organisations

A GMCIC would largely be virtual, but would provide forums for meetings, conferences, training courses

and award ceremonies. For example, EMGIN organises annual conferences for community groups which provide information on latest funding sources and good practice and present awards.

The target audiences of GMGIC would include the following groups:

- a) **Practitioners:** Environmentalists, architects, landscape architects, rights of way officers, heritage professionals, planners, environmental engineers, BREEAM assessors, sustainable construction professionals, climate-change professionals, environmental retailers, park managers, rangers, water and sewerage managers.
- b) **Groups:** Park Friends, Residents Associations, Neighbourhood Watch, Civic Trusts, Sports Clubs and Associations, Wildlife Groups, FoE Groups
- c) **Individuals:** Environmental activists, gardeners, wildlife-watchers, tree-wardens, National Trust members etc.
- d) **Institutions:** Schools, Colleges, Local Authorities, quangos

The GMGIC would need to target the delivery of information carefully to maximise impact and interest.

A GMGIC would require funding. A feasibility study is needed but for example, revenue could be raised from advertising (recruitment and products), conference fees, sponsorship, search fees (if an environmental information portal was provided) and service-level agreements with local authorities and other cultural/outdoor attractions which wished to advertise their events. In London, a community-oriented web-group, Project Dirt, has about 2,800 members of the public who have joined various sub-groups concerned with local environmental initiatives. It is a grass-roots approach, deliberately not aligned to any political or administrative body. Liverpool City Council is trialling a spin-off website to see if it could contribute to Greening the City, its own programme of neighbourhood enhancement.

TEP recommends that a GMGIC be established. During framework preparation, feasibility testing is needed to ascertain the realistic reach, cost, scope and governance of a GMGIC. In this regard it may be worthwhile seeking proposals from commercial providers of social networking services.

8.4 Delivery through the Planning System

Planning policy sets standards for GI associated with new development and raises funds for infrastructure provision and management. Considerable advances are taking place in the way GI is delivered through planning, both in GM and nationally:

- a) GM Local Authorities are all proposing Core Strategy policy to protect and enhance GI assets, networks and functions.

- b) Most GM Authorities are proposing to adopt GI Strategies as Supplementary Planning Documents.
- c) Elsewhere in the UK, Core Strategies are being examined by PINS and GI policies are generally passing tests of being “justified” and “effective” – although PINS are advising that delivery plans need to be more robust and realistic.
- d) In 2010, a new Planning Policy Statement (PPS) is expected to include green infrastructure, as a major component of policy for ‘a healthy natural environment’. The draft (March 2010) includes model Core Strategy and Development Management policies for GI.
- e) A methodology for preparing GI Plans has been drafted by the GMGI Steering Group. In bullet-point style it sets out stages and actions which a LPA should take to prepare a GI Plan for different scales of activity (masterplan area, township, Borough-wide). This is found at Annexe 2.
- f) From April 2010 the Community Infrastructure Levy (CIL) has been (theoretically) available to LPA’s to use for GI. The ability of LPAs to use s106 contributions for City or District-wide GI projects will be significantly curtailed. This will trigger a need to include GI funds in CIL calculations. The coalition government is likely to change this, although some tariff-based system may emerge.
- g) GI standards are needed to ensure adequate provision of GI in new development and also to secure funding (through CIL/s106) for Borough-wide GI. At a national level, GI standards and Funding levies are absent or inconsistent and have not been tested through examination by PINS.

In summary, there are more and better policy and statutory tools to deliver GI through planning activity than ever before. However, at an operational level, the GM Authorities will find it difficult to use these tools in the absence of detailed strategies and standards; and manpower to develop and apply them.

A GI co-ordinating body has a vital role to assist Local Authorities during a time of restricted capacity. GI standards can largely be prepared at a City-regional focus, allowing for local nuance. This is achieved in East London’s Green Grid. GI Strategies and Delivery Plans can also be prepared by clusters of Local Authorities. In East London, there are 11 Local Authorities, one regional park authority and the Greater London Authority, but to improve efficiency, common standards for mapping GI assets and deficiencies have been adopted.

The ELGG has been divided into 6 Area Frameworks. Within each Framework, there is a Board with responsibility to fund-raise and deliver major GI schemes, while local Planning Authorities are tasked with delivery of GI through everyday planning decisions – including raising s106/CIL funds towards the major schemes.

GM Local Authority Core Strategy policy on GI is still developing. A brief audit of the publicly-available policy statements (as at February 2010) suggests that most policies do not include specific references or

maps to illustrate GI investment priorities of the City-Region. Many do not refer to the City Region GI Framework. Some do not refer to delivery bodies such as the community forests.

This suggests that there is a need for AGMA to push ahead with finalisation of the City-regional framework so that LPA's can confidently refer to it in LDDs.

In relation to delivery of GI through planning activity, TEP recommends:

- a) AGMA finalises the City-Regional GI Framework as soon as possible, in consultation with LPAs.
- b) During the process of finalising the GMGI Framework, an LPA forum is convened to achieve the following outputs:
 - Core Strategy policy takes account of City-Regional priorities
 - interpretation of the emerging PPS on GI
 - guidance to LPAs on formulation of GI standards
 - guidance on how to formulate GI Strategies for adoption as SPD, taking advice from PINS
 - decisions on whether LPA's collaborate on producing cross-boundary GI Strategies
 - provision of an accessible evidence base about GI assets, needs and opportunities across the City Region
 - survey of planning officers to find out what type of support they need from a GI co-ordinator
- c) Beyond the completion of the City Regional Framework, continuing support to LPAs will be needed in respect of GI Standards, sharing of best practice and networking of practitioners. This could be managed by the GI Co-ordinating body.

8.4.1 Green Infrastructure Standards

It is vital to set out standards for green infrastructure in order to tackle deficiencies, maintain quality and raise aspirations. Across the UK, considerable effort is being invested in the formulation of standards. Natural England's 2009 guide gives some suggestions, but it is recognised that there can never be a "one-size-fits-all" standard.

Standards can be set in the following categories.

Quality

- e.g X% of a development plot, Y% of a neighbourhood should be GI
- e.g. Xha of GI per head of population
- e.g. new development should achieve a Green Space Factor of 0.6 (the Malmo/Berlin Green Space Factor)

<u>Accessibility</u>	e.g. everyone should live within 5 minutes (300m) of a safe, clean, green and multifunctional green space e.g. ANGST standards e.g. Safe routes to schools
<u>Quality</u>	e.g. Green Flag Standards for Parks, Design Quality Indicators, compliance with adopted Design Guides, Natural Environment Index, Air Quality and Water Quality targets.
<u>Sustainability</u>	e.g. BREEAM standards for new development, both for specific plots and for neighbourhoods (BREEAM Communities) e.g. CABI Building for Life standards
<u>Case Studies</u>	i.e. good practice which raises expectations and provides a benchmark
<u>Functionality</u>	No national standards are known but experimental work by TEP in the East Midlands and Mersey Forest in Liverpool and Cheshire shows how functionality can be assessed with a view to diversifying how spaces are used.

A closely-related topic is mapping of GI deficiency. Deficiency may be mapped:

- a) where provision or quality falls below a defined standard
- b) where no standard is defined, areas falling short of a target can be highlighted
- c) where no target is defined, areas of lower than average provision or quality can be mapped.

A portal for GM-wide geographic data is needed to help map deficiencies and set standards. In London, the Mayor is implementing an open-source approach to data (the London DataStore).

In relation to GI Standards, TEP recommends the following actions in the next stages of development of the GMGI framework:

- a) AGMA (probably via the GI Co-ordinator) takes a lead role in sharing geographical information about Greater Manchester's environment, whether by acting as a data store or as a portal.
- b) AGMA moves towards a system whereby geographical information is available on an open-source basis (unless inappropriate for commercial or security reasons).
- c) AGMA draws up a set of model GI Standards, in conjunction with Natural England and other Northwest city regions. These should apply to neighbourhoods, masterplan areas and specific development plots. It will need to be pragmatic, taking account of delivery capacity.
- d) AGMA publishes Case Studies of good practice in GI provision in mature urban areas; to assist Local Planning Authorities negotiate with developers.

8.4.2 Community Infrastructure Levy/Tariff

The Community Infrastructure Levy (CIL) was introduced in April 2010 although it is unlikely that the GM Authorities will be able to use it to secure funding until at least 2011 as it requires adoption of an up-to-date development plan. Under the coalition government, CIL may be replaced with some form of infrastructure tariff or bonus.

So it is premature to plan how City-regional GI funds would be calculated, managed and spent. Nevertheless, it is necessary for the GMGI Framework to identify schemes of city-regional importance and also to identify appraisal criteria to assess the importance of future schemes.

TEP recommends that the GMGI Framework includes an Action Plan listing GI programmes of city-regional importance which can be regarded as community infrastructure (such as the preliminary list set out at Chapter 6); including details on approximate project cost, funding and delivery partners, reasoned justification, timeframes, outputs/outcomes and a risk register.

GI Schemes of City-regional importance will include flagship/physical projects e.g. flood washlands in the Irwell basin, new access networks. However GI schemes which deliver “a thousand and one small changes” may also be of City-regional importance. Examples of such schemes could be a campaign to boost healthy activity in the city’s parks (allotments, volunteering, exercise, sport) or a programme of tree planting in inner urban areas most vulnerable to climate change.

8.5 Action Planning

An important outcome from the Framework finalisation process, will be the drafting of an Action Plan for City-Regional GI Investment. The Action Plan will have two broad sections, dealign with different categories of action:

- a) Actions to deliver the Strategic Objectives (see Chapter 5), including actions in relation to partnership-development, evidence-building, advocacy, research and stimulating local delivery
- b) Actions to deliver the City-Regional GI programmes (see preliminary list at Chapter 6)

The Action Plan should cover the following topics, as set out in the sample table below. This table shows actions in the two categories listed above:

Table 8.1: Example structure for an Action Plan, showing actions in the Strategic and the Programme categories

Objective (Strategic Objectives are listed at chapter 5.4 Investment Priority Programmes are listed at section 6.3)	S.O 4: To promote partnerships across social, economic and environmental sectors in the use of land. These partnerships should be established at governance and delivery levels	I.P.1 Wetland Action Plan for Rivers in the GI Network, to ensure they contribute to climatic resilience and biodiversity
Action(s)/specific projects	Work with LSPs to embed GI into Sustainable Community Strategies and LAA targets, especially looking for overlaps with the education, health and social care sectors	Irwell Catchment – River Restoration Scheme
Suggested Lead Agency	GI Co-Ordinator	Environment Agency
Supporting Bodies	City Commissions (Health, Improvement & Efficiency) Relevant LSPs, Primary Care Trusts, Childrens & Young People's leads in the LSPs Groundwork Trust	Bolton, Bury, Rochdale, Salford Councils, Natural England, River Restoration Trust, Lancs. Wildlife Trust, Vincent Wildlife Trust, Forestry Commission, City Commissions (P&H, Env., Economy & Public Protection), CFNW, Mersey Basin Campaign, major private landowner(s)
Funding sources	City Commission funding LSPs corporate funds PCTs, Charitable Trusts,	Agg. Levy, RBMP-related funds, Climate Funds, Council corporate funds, FC, NE, CIL and s106, NWDA, Atlantic Gateway/Growth Point
Approximate cost	£XX,000 p.a for 2 years	£XXm over 10 years
Relationship to city/regional/national priorities	Total Place – joining up service delivery Existing SCS priorities re quality of place and community involvement	River Basin Management Plans, Atlantic Gateway, Rochdale & Bolton HMR/Growth Point
Timeframe	2012-14	2012-2022
Measurable outcomes/outputs	Feasibility Study, then.. 2x pilot projects for GI being used as arena for innovative health or social care schemes GI having an improved profile in future SCS reviews and the MAA Conference and/or Case Study dissemination	Xxxm3 new flood storage, xxx new woodlands, xxx km river naturalised, xx brownfield sites removed from pollution pathways, xxm3 soilcreated, xx tonnes carbon sequestered
Risk register	Lack of interest from PCTs/LSPs Difficulty proving value of outcomes in short timeframes	Private landownership esp sites with hope value in or near floodplain. Difficulty tracing owners of brownfield sites Skills shortage in Local Authorities Lack of LPA priority

NB these projects are described purely to illustrate how an Action Plan would be constructed, and do not imply any approval or validation in respect of any of the information presented!

9.0 Glossary

Action Plan

This often forms part of a Green Infrastructure Framework, and identifies funding streams and partners to deliver green infrastructure projects. In some cases capital and revenue cost estimates are provided, together with outline phasing. Implementation plans can also form stand alone documents and are sometimes called Implementation Plans, Business Plans or Intervention Plans.

Active Travel Network (aka Sustainable Movement Network)

For the purposes of this report, the network consists of routes that are managed for pedestrians and cyclists. Most are off-road but some are associated with highways. The network will include footpaths, bridleways, cycleways and byways. The intention is to ensure that all neighbourhoods are connected to others, to work places and community facilities and to the GI network by a system of safe and attractive routes. Often the ATN will run within the GI Network.

ANGSt

Accessible Natural Greenspace Standards – a four level spatial typology used by Natural England.

AAP or Area Action Plan

A Form of Development Plan Document of DPD, which sets out proposals and policies for the development of a specific area.

Area of Transformation

Areas which are likely to experience considerable change in the forthcoming 10-20 years. This includes town and city centres, housing market renewal areas, strategic employment or housing sites, areas of particular economic strength, housing growth points or other areas identified for significant refurbishment.

Carbon Sink

Atmospheric carbon in the form of carbon dioxide is captured and stored in living (trees and other green vegetation) or non-living reservoirs (soil, geological formations, oceans, wood products). Land uses which absorb and store carbon over long periods of time ('carbon sinks') may help to offset carbon dioxide emissions, at least in the short to medium term.

Carbon Sequestration

The removal from the atmosphere of carbon or carbon dioxide through biological or physical processes and their retention in living biomass, soil or wood products.

Climate Change Adaptation

Initiatives and measures to decrease vulnerability of natural and human systems to climate change effects.

Climate Change Mitigation

Actions to decrease GHG emissions and/or to enhance carbon/GHG sinks, in order to reduce the extent of global warming.

Community Forests Northwest (CFNW)

This includes Red Rose Forest and Pennine Edge Forest within Greater Manchester. Elsewhere in the Northwest, the Mersey Forest is part of CFNW, as are Woodland initiatives in Lancashire and Cumbria.

Delivery Framework

Part of GI Framework which sets out the required programmes of activity to achieve the objectives set out in the GI Framework. It will identify programmes, projects, partners, costs, funding streams, long-term management. It will include a risk register and set out arrangements for championing and co-ordination of GI activity.

Destination Parks, Landmarks and Trails

For the purposes of this report, these are major multi-functional sites which are focal points of more local value. They will often be of tourism value and will be the focus of “days out”. They will often host events and festivals, aimed at attracting more than immediate neighbours.

Ecosystem Services

The essential services and benefits that are derived from a fully functioning natural environment, including the management of basic resources such as water, and the sequestration of carbon.

European Landscape Convention (ELC)

This seeks to protect landscapes in law, with consideration given to landscape from the earliest stages in the planning process. The UK became a signatory to the Convention in February 2006 (ratified in November 2006).

GI Asset

Assets are areas which, by virtue of their location, their use or their management, serve one or more functions or social, economic or environmental public benefit. Assets can be defined sites, or equally can be landscapes or other broader environmental features.

GI Board

This report proposes that the implementation of city regional green infrastructure is overseen by an executive board, drawn from most of the City Regional Commissions and the Local Authorities. The Board’s responsibility would be to ensure delivery and good governance over funding and broker cross-boundary implementation. The Board’s remit would be to ensure that projects contributed to city-regional growth priorities and other commitments included in agreements between the City Region and UK Government/government agencies.

GI Community

All individuals and groups engaged in funding, planning, design and management of GI. Includes the GI

Partnership (see below) as well as Civic groups, Friends groups, landscape architects, ecologists, heritage specialists, climate change specialists, land managers, farmers and businesses in the 'natural economy'.

GI Partnership

Organisations from public, private, voluntary and academic sector, which are the principal delivery bodies for GI. Includes Local Authorities, Community Forests, Forestry Commission, Groundwork Trusts, Wildlife Trusts, Climate Change team, Sustrans, National Trust, CABI Space, Greater Manchester Ecology Unit and Regional Parks.

GI Co-ordinator

A team charged with co-ordinating the delivery of city-regional GI programmes and facilitating the GI projects carried out by many other partners in the City Region. The team would report to the GI Board. The community forests have traditionally undertaken this role.

GI Function

See definition of green infrastructure

GI Need

A social, economic or environmental problem which can be reduced through green infrastructure. This may include issues of poor public health, where GI can facilitate healthy lifestyles and sporting activity. In economic terms, GI needs include areas blighted by flood risk, potential heat stresses, low air or water quality, derelict land. Environmental problems could include fragmented or degraded habitat, and landscapes.

GI Network

For the purposes of this report, the network of rivers, floodplains, valleys and canal corridors (with their associated habitats, built heritage and pathways), woodlands, parks and major countryside areas (Pennine moorlands, Manchester's mosslands and the coalfield countryside in Wigan's Greenheart Park.) Collectively these areas perform multiple GI functions. Not all the network consists of assets, nor are all the assets in good condition. Where the network is fragmented or suffering environmental stress, the investment priority is to restore and create and re-connect assets; and at the same time, improve human enjoyment of the network.

GI Resource

The Resource is the collective area of all landscapes, green and open spaces, natural elements, waterways and civic places; and the corridors between such places.

GI Scales

Green infrastructure is realised at different geographies, or scales:

- a) neighbourhood
- b) town/city
- c) city-region
- d) strategic

The graphic in chapter 3 illustrates how green infrastructure operates at different levels; and what kind of assets are valuable in different situations.

GMGI Steering Group

The scoping work carried out in 2008 -10 has been managed by a group comprised of AGMA on behalf of the 10 Local Authorities, Natural England, Red Rose Forest and Pennine Edge Forest.

Green Infrastructure (*definition from draft PPS “Planning for a Natural and Healthy Environment”*)

Green infrastructure’ is a strategic network of multi-functional green space, both new and existing, both rural and urban, which supports natural and ecological processes and is integral to the health and quality of life in sustainable communities. It delivers a broad range of functions and provides vital socio-economic and cultural benefits which underpin individual and community health and wellbeing. These functions include:

- a) conserving and enhancing the natural environment;
- b) providing wildlife corridors;
- c) reducing noise and air pollution;
- d) helping communities to adapt to a changing climate through water and carbon management.
- e) providing routes (e.g. footpaths and cycleways) which link areas of open space within settlements;
- f) providing sustainable drainage, flood storage and urban cooling;
- g) providing a wide range of opportunities for engagement and active citizenship, relaxation and quiet contemplation, sport, recreation and children’s play.

Green Infrastructure Framework

See definition and systems diagram in chapter 2.

Green Infrastructure Study

A report which assimilates baseline information for green infrastructure for a given location, e.g. location standards, initiatives and establishment of environmental character. Such a study may go as far as investigating deficiency and need based on projected growth, and identifying opportunities.

Green Infrastructure Strategy

Building on the green infrastructure study approach, developing a GI hierarchy and identification/prioritisation/phasing of projects through an Action Plan or Implementation Strategy (usually developed after the completion of the Strategy and which often provides information on capital and revenue costs, management needs, funding streams and delivery partners, although this varies with the scale of the strategy). Also sometimes referred to as a Green Infrastructure Plan, and often forming evidence base for SPD/AAP.

Greenspace Strategies

These evaluate publicly accessible open space provision within these typologies at the local authority scale, noting issues in relation to condition, quality and access, often to inform a strategy and action plan that sets out future management and regeneration policies.

Growth Points

Growth Points are a means by which local authorities can pursue large scale, sustainable growth, in partnership with central government and other local partners. They are based on four key principles, and these are:

- a) early delivery of housing as part of the growth plans
- b) supporting local partners to achieve sustainable growth
- c) working with local partners to ensure that infrastructure and service provision keep pace with growth, and
- d) ensuring effective delivery

Growth, Sustainability and Wellbeing Sector

Includes a great a great range of urban practitioners (developers, social housing providers, architects, planners, transport specialists, surveyors) health and sport professionals, educationalists and infrastructure providers.

Index of Multiple Deprivation

These aggregate a number of indicators of social, economic and housing deprivation, into a single deprivation 'score' for a discrete area (local authority wards are often used).

Interested Public

77% of the public use and enjoy parks and outdoor recreation regularly for leisure, sport and allotments. 7 out of 10 consider themselves to lead a lifestyle with a concern for ethical and green choices. This category includes individuals and businesses involved in neighbourhood and community voluntary work.

Investment Priorities

For the purposes of this report, these are the areas and themes where sustained investment in GI (safeguarding, managing, creating and/or restoring) is needed to support the sustainable growth of the City Region. The provisional investment priorities are listed and illustrated at Chapter 6

Key Centres

For the purposes of this report, these are Economic centres, Growth points, Town and City Centres, Strategic Employment Sites, key transport corridors and gateways. Many are described as Key centres in Core strategy.

Landscape Quality Objectives (LQOs)

For specific landscapes, a statement of important characteristics which people want recognised in that landscape (ELC).

Local Area Agreement (LAA)

These set out the priorities for a Local area agreed between central government and a local area (the local authority and Local Strategic Partnership).

Multi-Area Agreement

A multi-Area Agreement is an English political framework that aims to encourage cross boundary partnership working at the regional and sub-regional levels. They are defined by the Department for Communities and Local Government as a voluntary agreement between two or more top tier or unitary local authorities, their partners and the government to work collectively to improve local economic prosperity.

Multifunctionality

The ability to provide multiple or 'cross cutting' functions, by integrating different activities and land usage, on individual sites and across a whole green infrastructure network.

Natural Environment

'Natural environment' refers to biodiversity, geodiversity and soil, and landscape, where:

- Biodiversity is the variety of life in all its forms.
- Geodiversity is the variety of geological (rocks, minerals, fossils), geomorphological (land form, processes) and soil features. It includes their assemblages, relationships, properties, interpretations and systems; and
- Landscape is defined as in the European Landscape Convention as an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.

Other Public

Only 9% of the population are uninterested in environmental issues or are unconcerned about parks and outdoor spaces.

Public Benefit

Green infrastructure is set firmly in a context of public benefit. Public benefit is defined in relation to social, economic and environmental goals appropriately acting in combination (i.e. sustainability goals), and it has a spatial dimension, responding to the needs and aspirations specific to an area.

Green infrastructure benefits are not always related to site size: small sites or green routes which serve a large population or a regenerating economic centre can be as valuable for City-Regional growth as the major protected landscapes on the city's fringe.

Public Benefit is often visible (e.g. the recreational benefits of a park). Sometimes the benefit is just as real but not evident e.g. water storage functions of Greenspace which prevents downstream flood damage to property.

Regeneration Priority Area

For the purposes of this report, these are areas experiencing low IMD scores, poor health, housing market difficulty, or are otherwise prioritised for economic or social regeneration. Many are identified as Regeneration Zones in Core Strategy.

Sustainable Drainage Systems (SUDS)

Sustainable Drainage Systems is an approach to drainage which seeks to decrease the amount of surface runoff, or divert it for other useful purposes, thereby reducing the contribution it makes to sewer discharge

and flooding. It takes account of the quantity and quality of runoff, and the amenity value of surface water in the urban environment. (CIWEM, 2009).

Sustainable Movement Network

See Active Travel Network

Sustrans

A British charity which promotes sustainable transport, to give people the choice of 'travelling in ways that benefit their health and the environment' (Sustrans, 2005). They have created thousands of miles of signed cycle routes across the country.

Urban Cooling/Urban Heat Island

Moderating high summer temperatures, through for example the design of buildings and their energy supply, layout of urban open space, green infrastructure and shading and cooling from trees. Climate change will exacerbate the temperature gradient that rises from the rural fringe and peaks in city centres. This is described as 'the urban heat island' because the warmer urban air lies in a 'sea' of cooler rural air.

Urban Green

For the purposes of this report, this includes the urban tree canopy, gardens, porous surfaces, pocket parks, surface water flowpaths – sometimes described as fine-grained GI - which collectively are vital for flood and water management, biodiversity, community cohesion etc

Annexe 4: Executive Summary (Powerpoint)



Greater Manchester's Green Infrastructure

Catalysing sustainable growth

*An interim report to AGMA and Natural England
May 2010*



Purpose of Report

This presentation is an executive summary of a consultancy report by TEP presented to AGMA and Natural England in May 2010.

In September 2008, TEP advised on the benefits and scope of a green infrastructure (GI) framework for the Greater Manchester City Region. TEP's report was welcomed by the City's Planning & Housing Commission. In 2009, they asked TEP to:

1. provide further advice on the spatial and thematic priorities for green infrastructure investment, given the emerging priorities in the Greater Manchester Strategy (particularly considering the city region as a low-carbon economic area).
2. examine case studies to test the concept that GI is necessary to underpin sustainable growth.
3. prepare a draft framework plan to map the GI investment priorities.
4. consider how delivery of GI could be maintained and enhanced, given the changing and tightening economic circumstances.
5. propose how the City Region's Commissions might organise themselves to promote GI.



Key Messages

1. **Sustained growth and prosperity is underpinned by green infrastructure.**
2. **Greater Manchester can lead the UK by developing the first urban green infrastructure strategy to fully address low-carbon living, economic and social regeneration in the context of rapid and sustainable growth.**
3. **Green infrastructure needs city-regional leadership. The Planning & Housing Commission is best-placed to lead, but should specifically work with the Environment Commission and New Economy - GI is relevant to all the Commissions.**
4. **A “green infrastructure partnership” of established and emerging city groups is being formed to implement the city region’s GI priorities**



Definitions

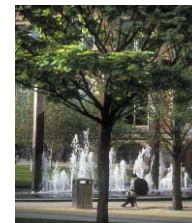
Green Infrastructure is our life support system – the network of natural environmental components and green and blue spaces that lies within and between our cities, towns and villages. It regulates the quality of our air, water and soil, provides raw materials for our economy, sets the scene for investment and underpins the wellbeing of all who live and work here. (The Northwest's Green Infrastructure Prospectus, Natural Economy Northwest, 2010)

In Greater Manchester, our GI consists of:

Open Spaces – parks, woodlands, informal open spaces, nature reserves, water bodies, accessible countryside, and the natural element of historic sites, built conservation areas and civic spaces.

Linkages – river corridors and canals, pathways, cycle routes and greenways.

Networks of “urban green” – the collective resource of private gardens, pocket parks, street trees, verges, green roofs and green walls.



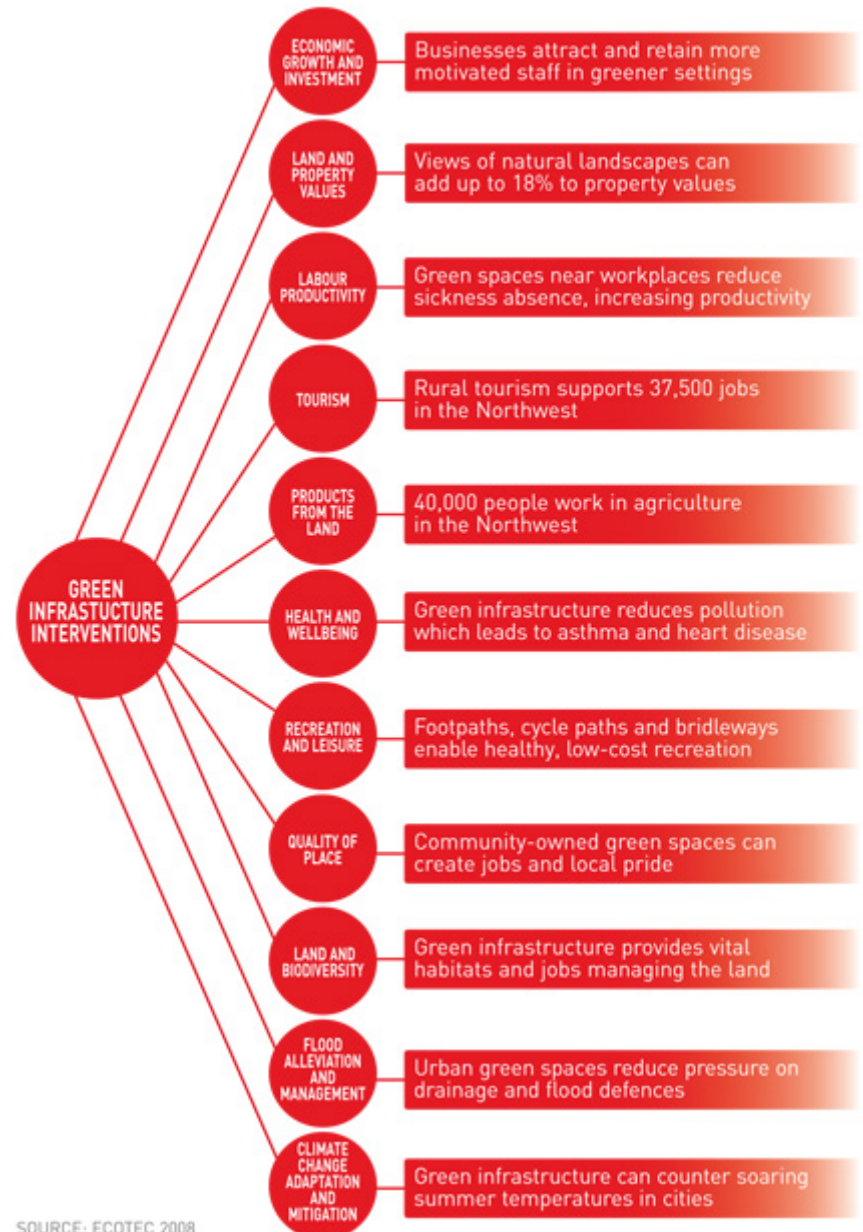
The GI **resource** is the collective of open spaces, parks and civic spaces, rivers, farmland, woodlands, coastline, paths, natural elements & gardens. In short, all we call our “outdoor environment”

GI **assets** are particular areas of land and water, which by virtue of use, location or intrinsic value, serve **functions** of public benefit.

Research has identified eleven economic benefits of GI, including a thriving tourist industry, a more healthy and productive workforce, and a quality of place that drives inward investment.

GI has a particular role in a **low-carbon economy**, because it will make the city region more resilient to negative effects of climatic change, and will increase liveability and sustainability of urban lifestyles

Figure 1: The economic benefits of green infrastructure

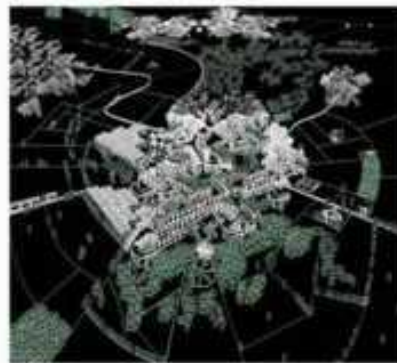


SOURCE: ECOTEC 2008

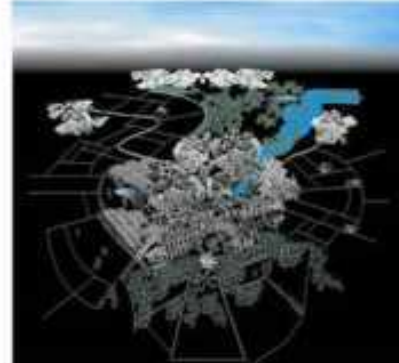
Green Infrastructure is planned and delivered at all **scales** – from local to strategic. Neighbourhood-scale and catchment-wide projects are collectively important for the city region



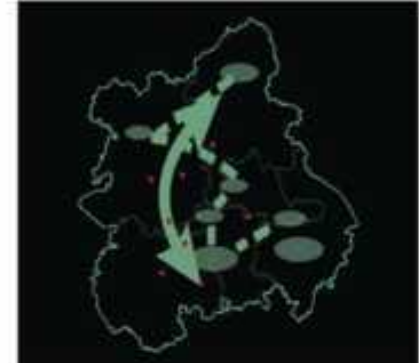
Urban Greening
Pocket Parks & Local Nature Reserves
Wildlife Corridors
Community Gardens
Civic Spaces
Natural elements of Conservation Areas



Town Parks
Country Parks
Urban Greenspace Strategy
Local Development Framework policy
Strategic Flood Risk Plans




City-region GI Action Plans
Community Forests
Catchment Management Plans
Biodiversity Action Plans
Regional Parks



River Basin Management Plans
National Trails
Environmental Stewardship Schemes
"Big Society"

Local Scale

Strategic Scale



We will make our cities
sustainable by a few major
projects and a thousand
and one small changes

From Low N. Sustainable Cities

Why is Green Infrastructure Important for Growth?

Greater Manchester has a Vision for Prosperity & Growth

By 2025, Greater Manchester will be:

- One of Europe's premier city-regions, with outstanding commercial, cultural and creative industries
- World-class, successfully competing internationally for investment
- An area where all people have opportunity
- An area distinguished by the quality of life enjoyed by its residents
- An area with GVA levels to match London and the South-East
- From GM Strategy (AGMA, 2009)



Sustainable Growth of the City-Region has national benefits



Emerging policy for sustainable development. New localism.



Continued commitment to Investment



NW River Basin Plan and Flood Defence Investments

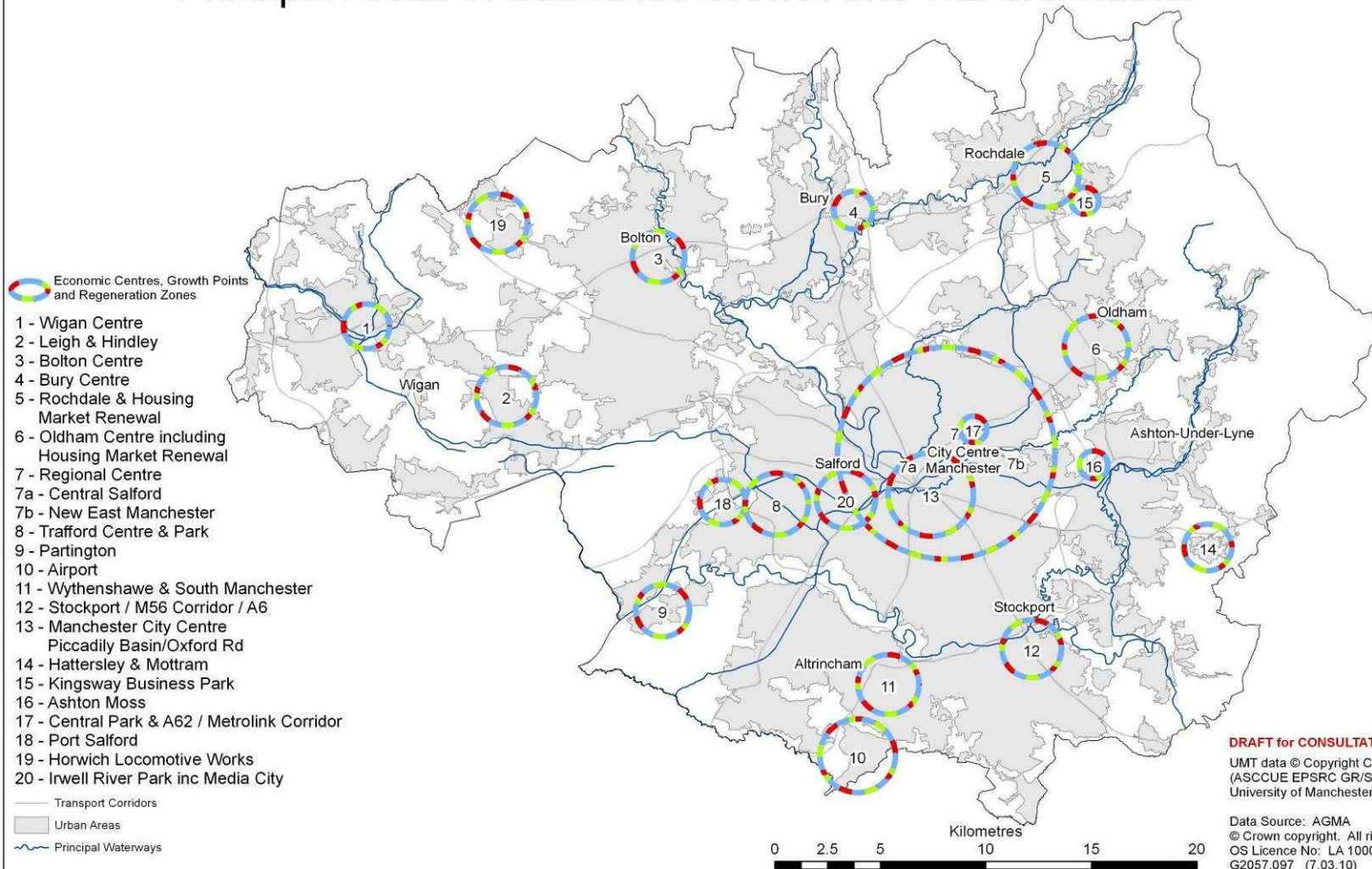


Low Carbon Economic Area- national pilot

Coalition Government commitment to national tree-planting campaign

Sustainable Growth is a City-Region Priority – the plan shows the top 20 locations of growth and economic activity

Greater Manchester's Green Infrastructure Framework Principal Areas of Economic Growth and Transformation

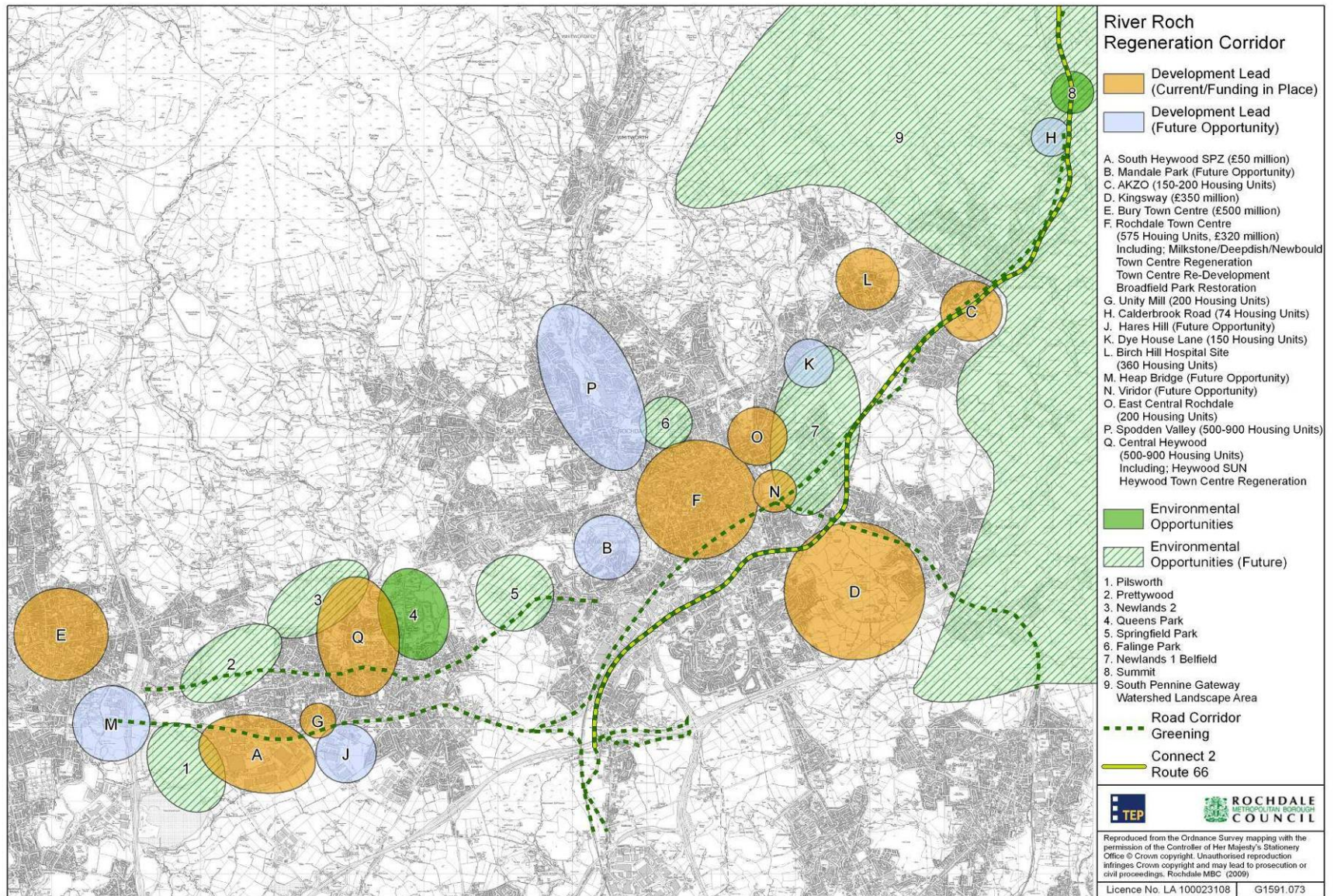


DRAFT for CONSULTATION (2010)

UMT data © Copyright CURE
 (ASCCUE EPSRC GR/S19233/01)
 University of Manchester, 2005

Data Source: AGMA
 © Crown copyright. All rights reserved
 OS Licence No: LA 100023108
 G2057.097 (7.03.10)

Sustainable Growth is a Local Priority – the map shows proposed public and private investment in the Rochdale and Bury area



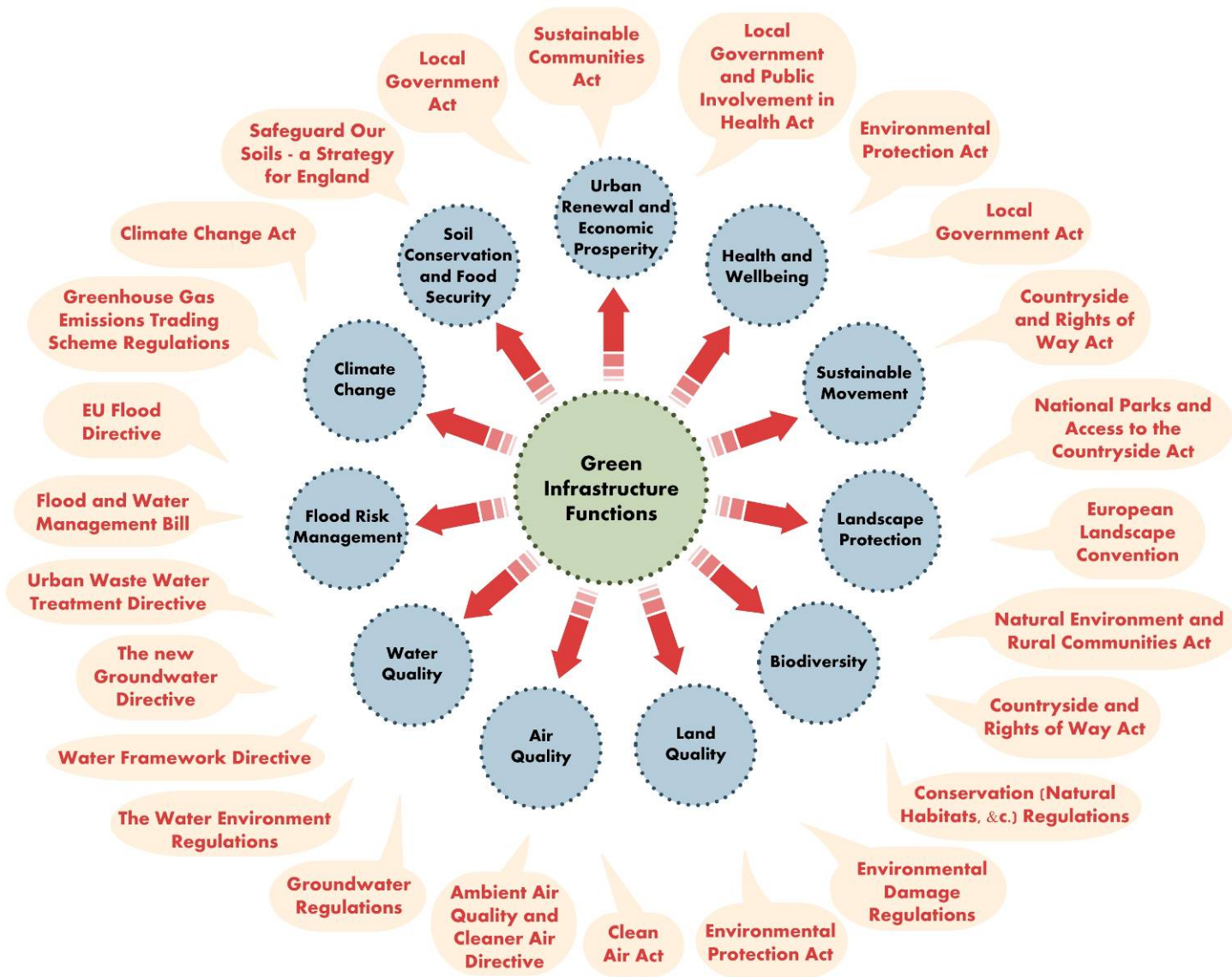
In summary - Green Infrastructure has a role in delivering Greater Manchester's Strategy

The GM Strategy is “to pioneer a new model for sustainable economic growth based around a more connected, talented and greener city region where the prosperity secured is enjoyed by the many and not the few”. Relevant GI themes from the emerging Strategic Spatial Framework (being developed by AGMA in 2010) are:

- *Responding to climate change through adaptation and mitigation*
- *Optimising economic performance through agglomeration and connecting residents to opportunities*
- *Creating attractive places to live*
- *Making a positive contribution to health and wellbeing*
- *Improving the quality of the natural and built environment*
- *Ensuring most efficient use of natural resources*



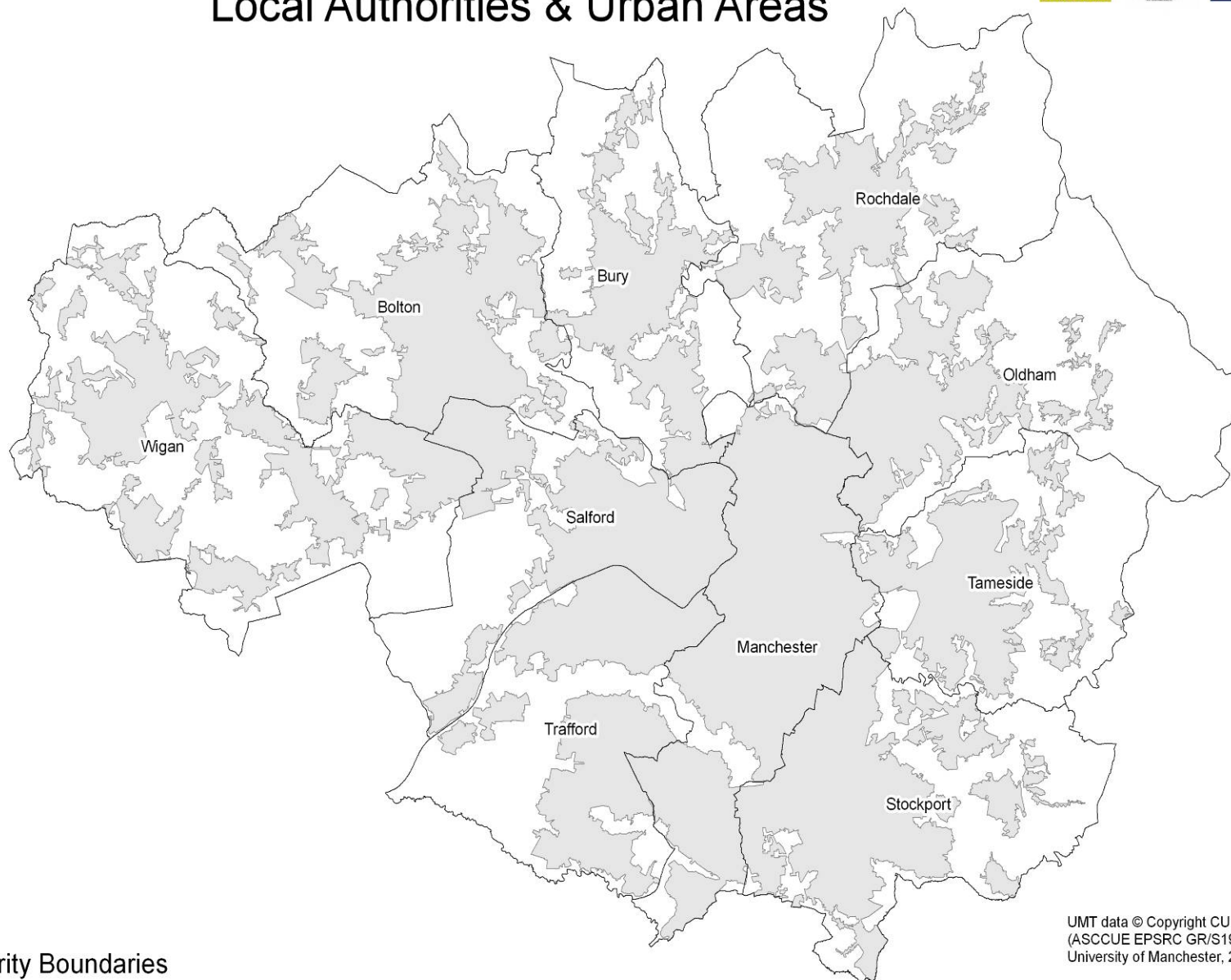
Delivering Green Infrastructure can help deliver the statutory obligations of many public bodies



GI Assets, Needs and Opportunities in Greater Manchester

Greater Manchester Green Infrastructure Framework

Local Authorities & Urban Areas



 Local Authority Boundaries

 Urban Areas

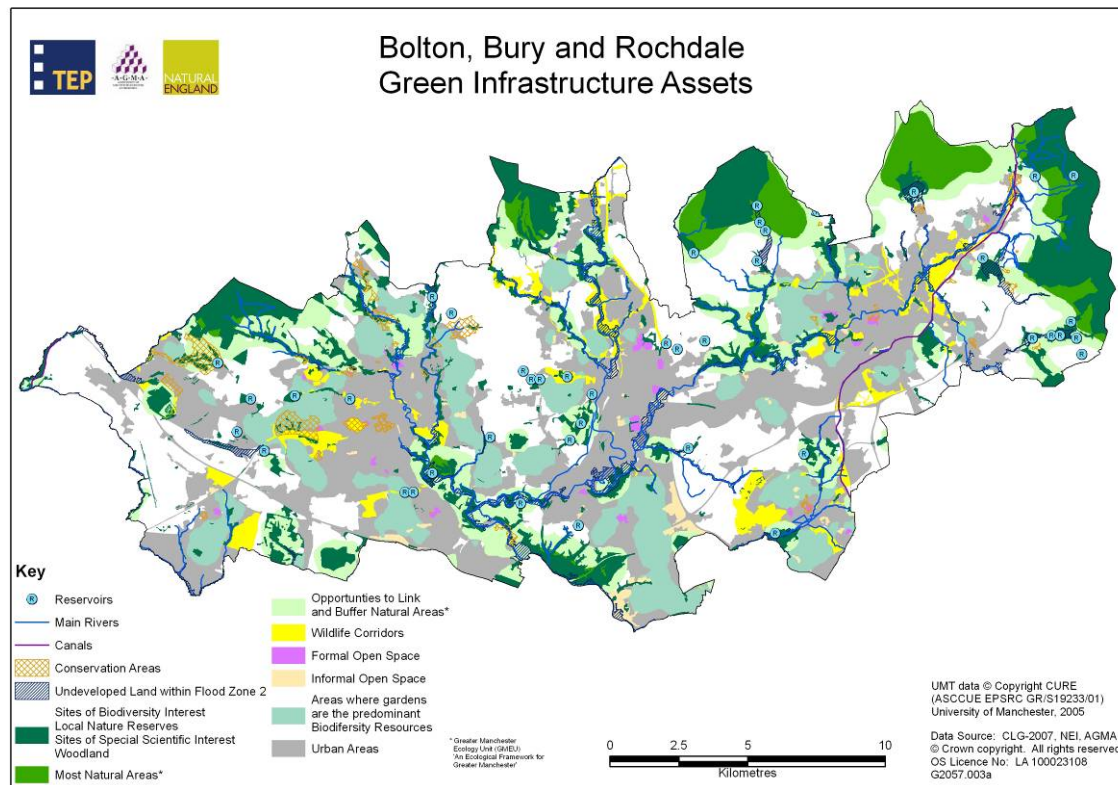
0 2.5 5 10 15 20
Kilometres

UMT data © Copyright CURE
(ASCCUE EPSRC GR/S19233/01)
University of Manchester, 2005

Data Source: AGMA
© Crown copyright. All rights reserved
OS Licence No: LA 100023108
G2057.095 (11.11.09)

Green Infrastructure Assets, Needs and Opportunities

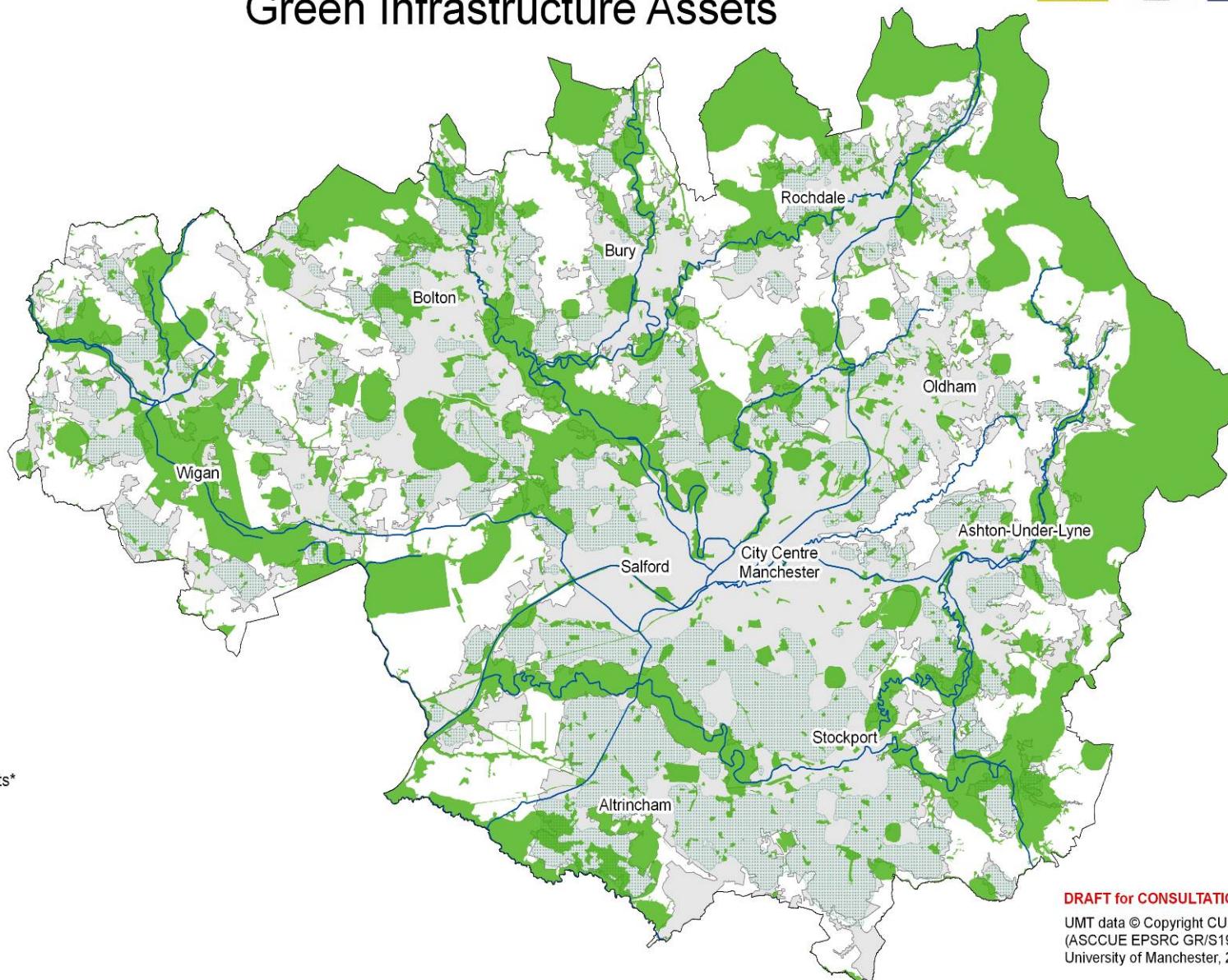
We mapped green infrastructure assets, needs and areas of economic growth and opportunity at a local level, and then consolidated these into a city-region wide maps.



An example of an asset map, showing a diversity of types of open space of value. In a Greater Manchester context, collective areas of private gardens, in some places, are important for biodiversity and sense of place.

Greater Manchester Green Infrastructure Framework

Green Infrastructure Assets



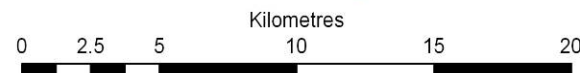
- Green Infrastructure Assets*
- Areas where gardens are important biodiversity resources
- Principal Waterways
- Urban Areas

DRAFT for CONSULTATION (2010)

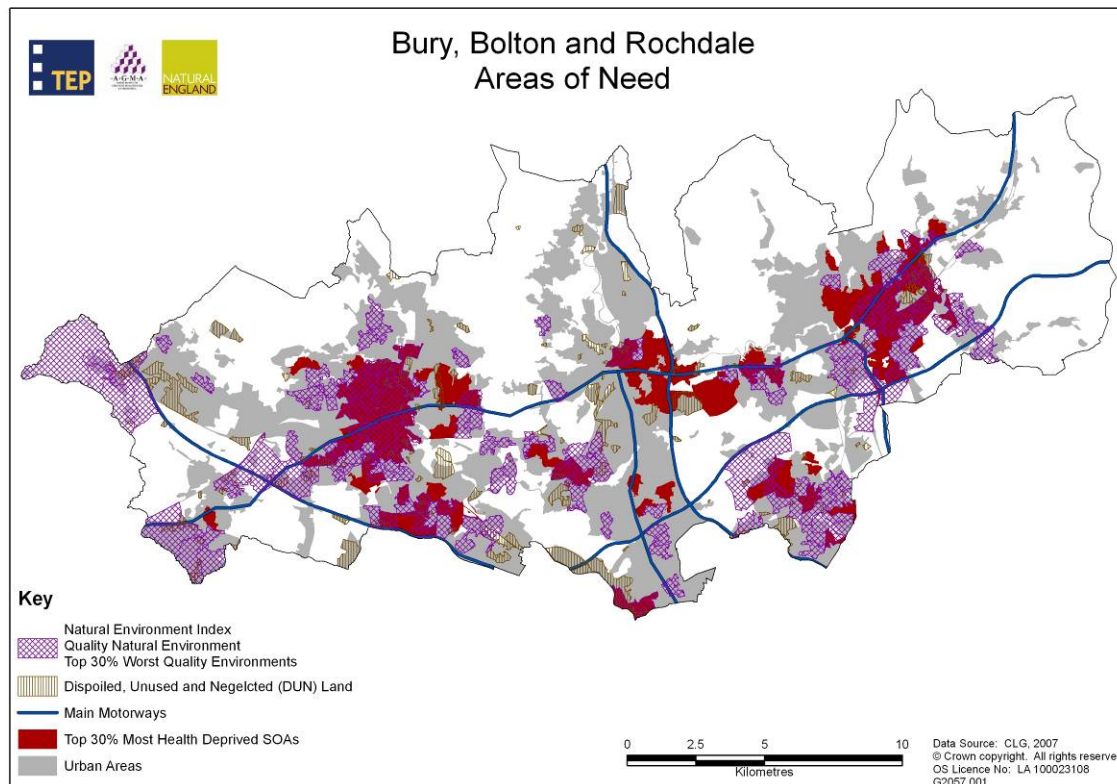
UMT data © Copyright CURE
(ASCCUE EPSRC GR/S19233/01)
University of Manchester, 2005

Data Source: AGMA
© Crown copyright. All rights reserved
OS Licence No: LA 100023108
G2057.096 (7.03.10)

* Includes:
Canals, Rivers, Conservation Areas,
SSSIs, SBIs, LNRs, Most Natural Areas,
Wildlife Corridors, Opportunities to Link and Buffer,
Habitat Mosaics, Non-Urban Land in Flood Zone 2,
Formal Open Space, Informal Open Space



We mapped needs in terms of neighbourhoods at risk from flooding, overheating, areas of low health, areas of poor air and water quality, areas with a prevalence of derelict, underused and neglected land. Often these areas have few GI assets, yet they are home to many businesses and thousands of residents. Investment in GI will help address social inequalities and make these areas more attractive and climatically resilient. Other studies have referred to such areas as being “stressed” or being investment “pinch-points”

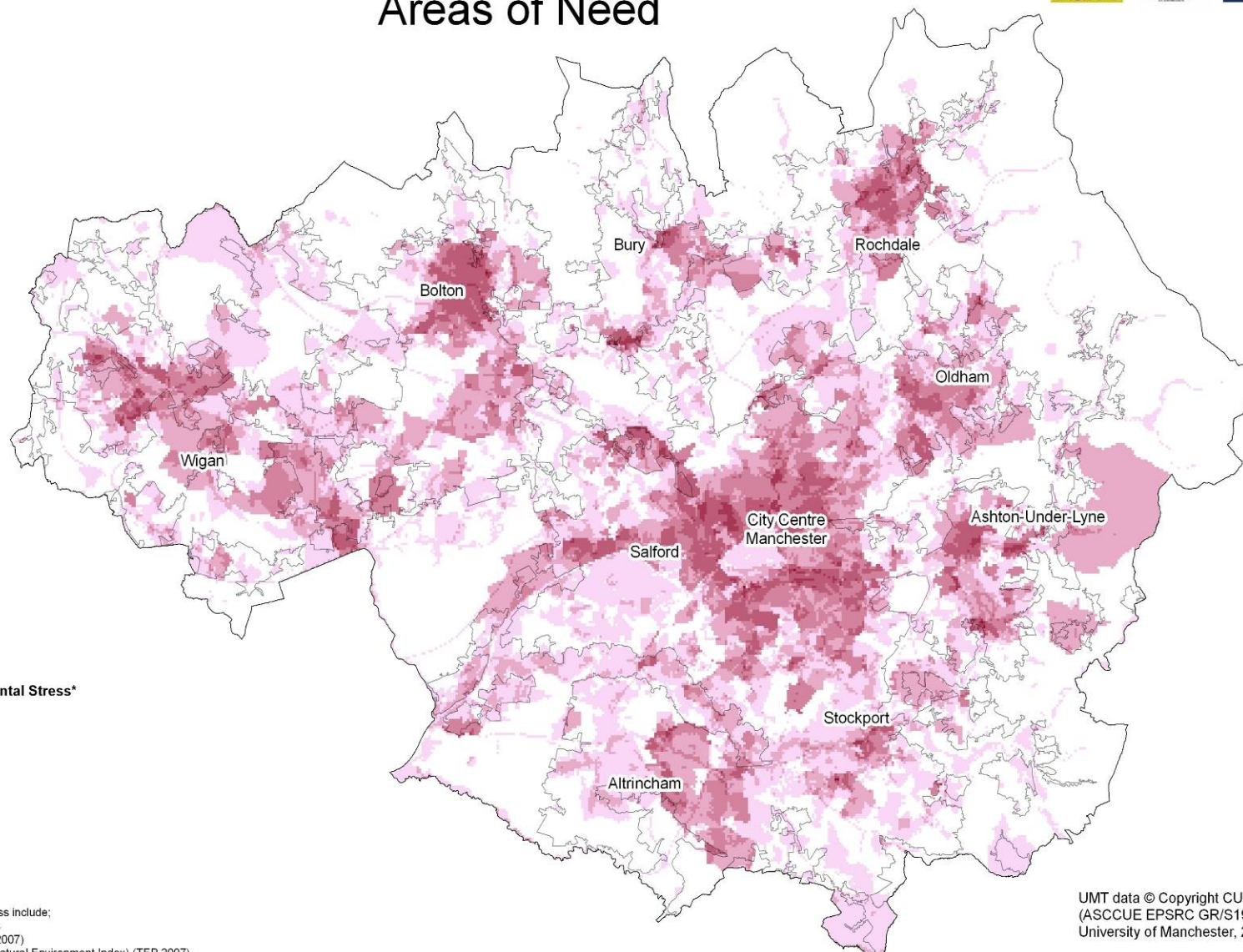


An example of a needs map, this showing areas of low environmental quality. Other needs maps illustrated floodzones, areas of poor health etc.

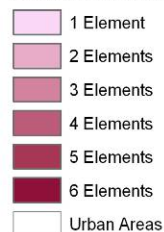
The 5 aspects of “need” listed above were mapped – the results were combined into a city-regional map overleaf

Greater Manchester Green Infrastructure Framework

Areas of Need



Elements of Need and Environmental Stress*



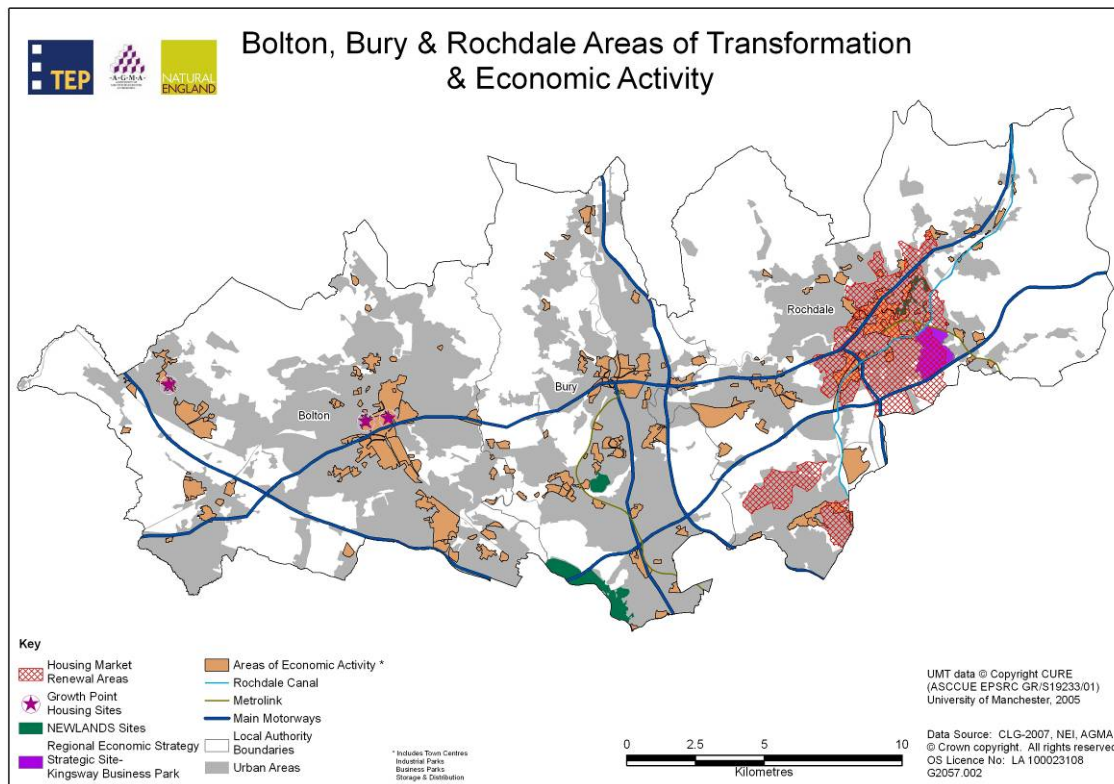
*Elements of Environmental Needs and Stress include;
 30 % most Health Deprived Neighbourhoods
 30 % most Deprived Neighbourhoods (IMD 2007)
 30 % Worst Quality Natural Environments (Natural Environment Index) (TEP 2007)
 Floodzone 2
 Areas most likely to suffer from Urban 'Heat Island' (top 30%)
 Derelict, Unused and Neglected Land (DUN)
 Access to Greenspace Deficiency not yet mapped at
 City-Region Scale

UMT data © Copyright CURE
 (ASCCUE EPSRC GR/S19233/01)
 University of Manchester, 2005

Data Source: AGMA
 © Crown copyright. All rights reserved
 OS Licence No: LA 100023108
 G2057.094 (11.11.09)



We mapped areas of economic activity, growth and transformation. Data sources included allocations from UDPs and emerging Local Development Frameworks, evidence from Regional Economic Strategies, consultation with Local Authorities about their proposed strategic and safeguarded investment sites. These are the areas of opportunity, where it is vital for GI to contribute to resilience, property value and attract inward investment.

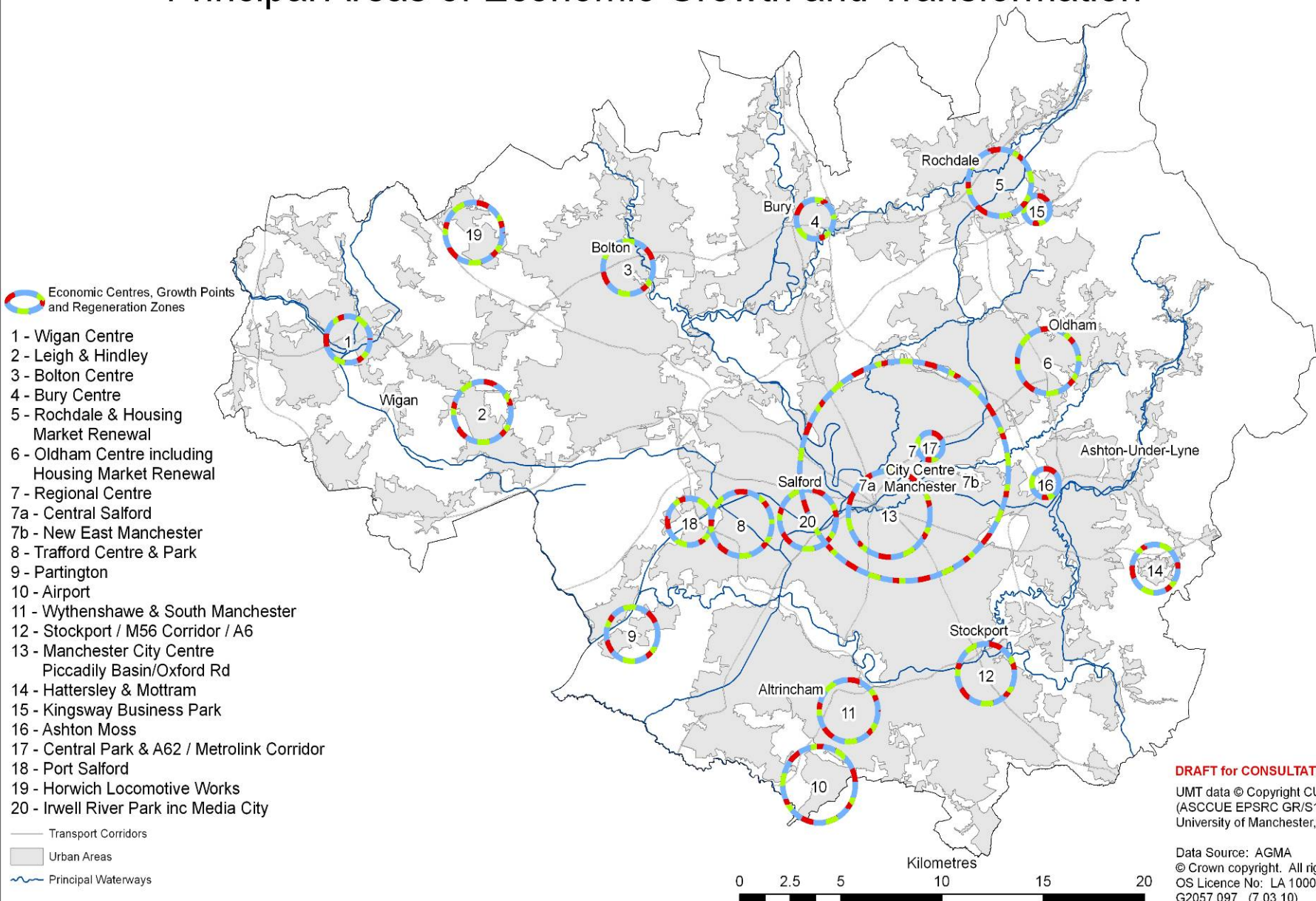


An example of an opportunity map, this showing transport corridors, town centres, local centres, growth points, major allocations.

A notional “Top 20” areas of growth and transformation were mapped, shown overleaf. As the GM Spatial Framework evolves this map will need to be updated.

Greater Manchester's Green Infrastructure Framework

Principal Areas of Economic Growth and Transformation



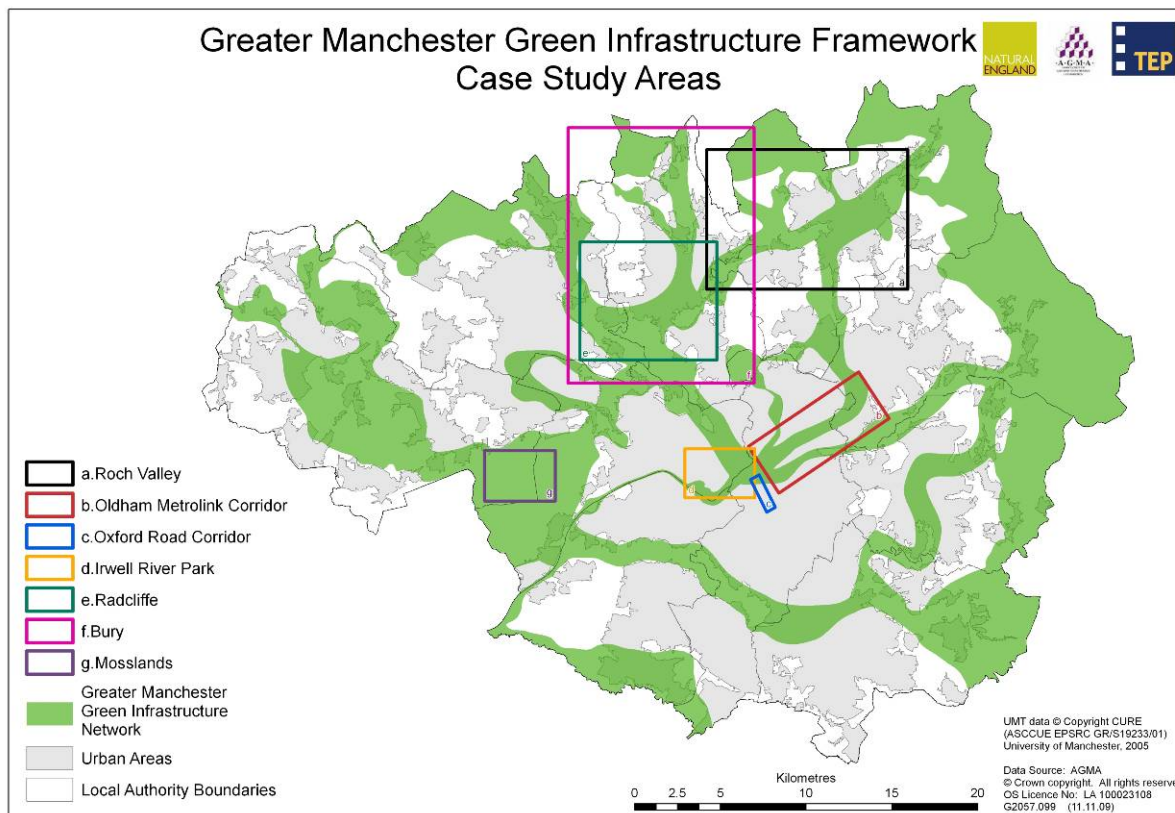
DRAFT for CONSULTATION (2010)

UMT data © Copyright CURE
 (ASCCUE EPSRC GR/S19233/01)
 University of Manchester, 2005

Data Source: AGMA
 © Crown copyright. All rights reserved
 OS Licence No: LA 100023108
 G2057.097 (7.03.10)

Case Studies: GI assisting transformation & renewal

We examined several case study areas to assess whether green infrastructure was an important component of sustainable growth, and to recommend how delivery of GI could be improved, learning from the experiences of those engaged in regeneration and environmental management



Our case study areas are “priority places” – areas of major change, areas with opportunity for multiple benefit, areas of regenerative development and areas of environmental deficit.

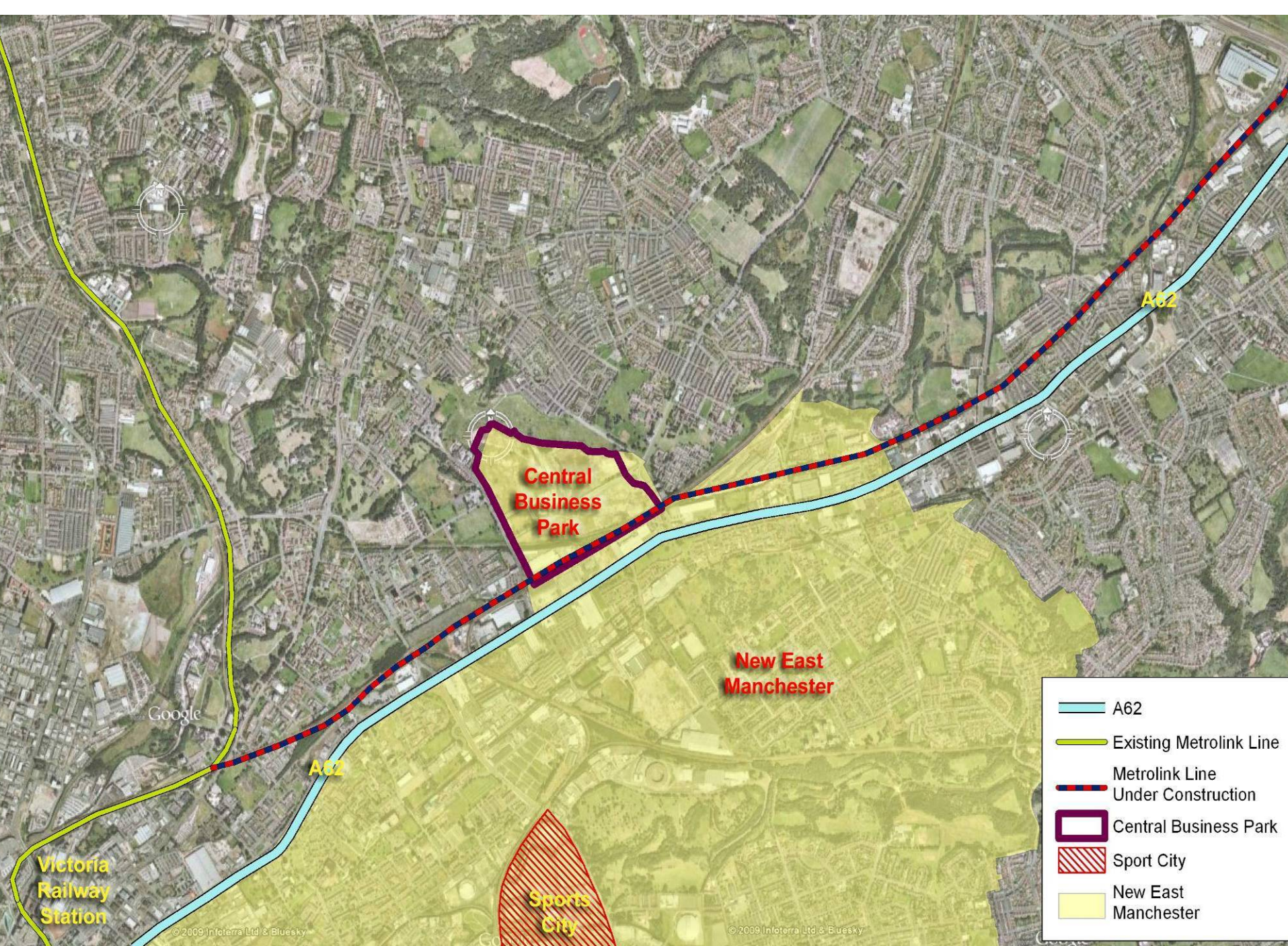
Case Study: Oldham Metrolink & A62 Corridor

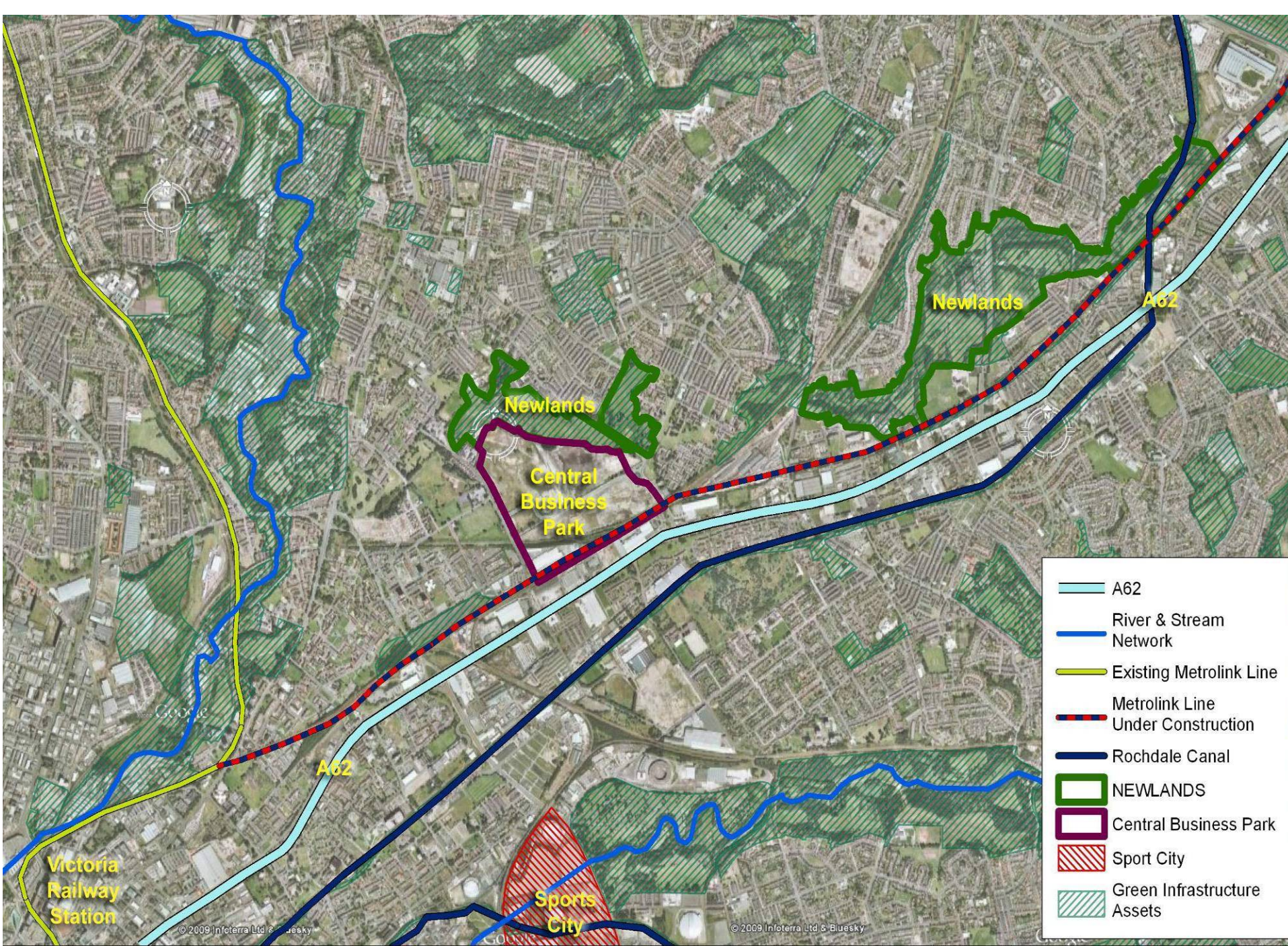
Location: Victoria Station to M60

Long-term physical regeneration: new Metrolink, New East Manchester housing renewal, Central Business Park, Eastlands, Sportcity, Velodrome, Housing and Schools PFIs

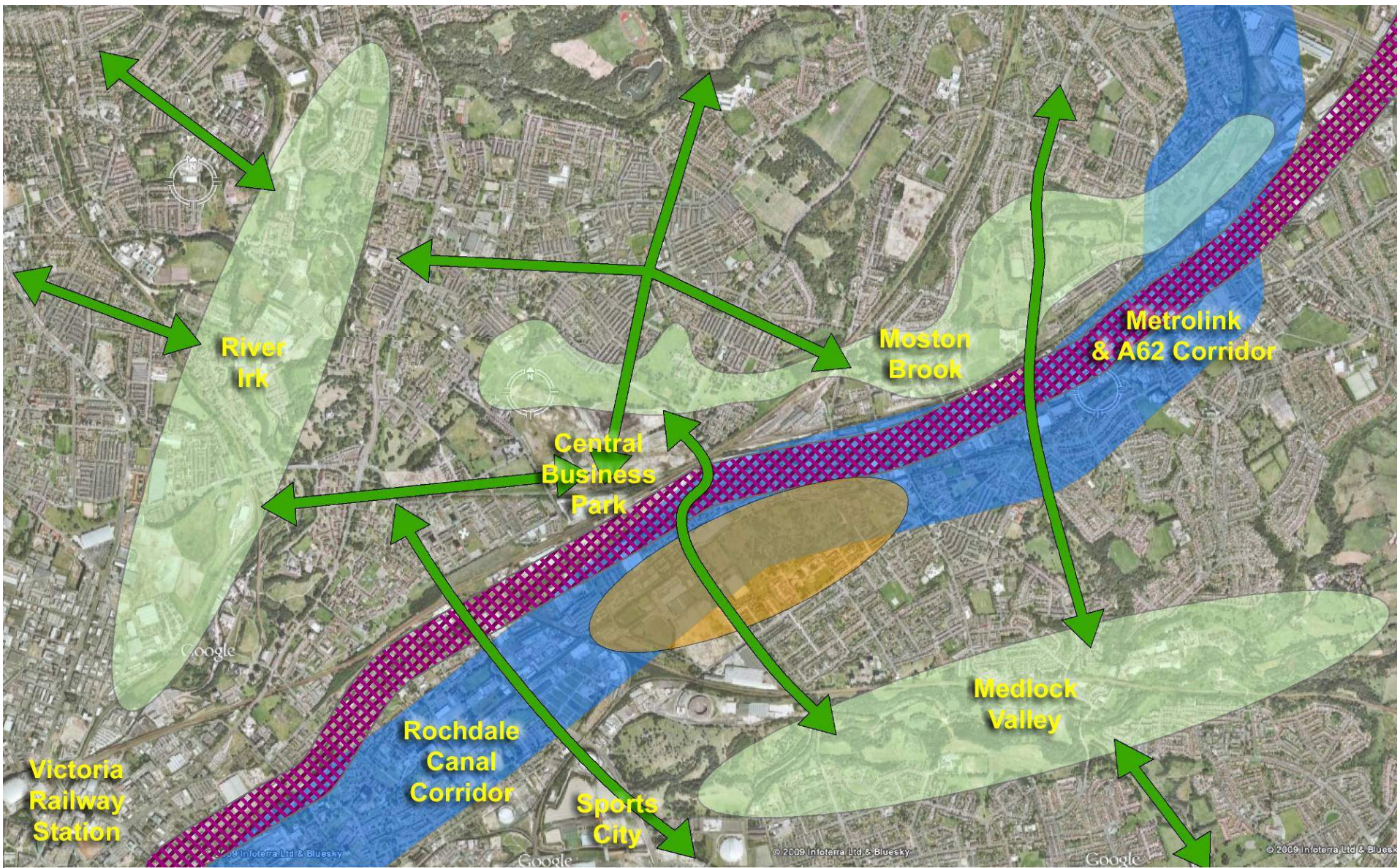
Social Needs and Environmental stress-points: Poor health, image, deprivation, potential heat island effects, local flooding and brownfield contamination are significant drags on the area's self-esteem and investment potential






Long-term investment in GI: NEWLANDS (Moston Vale & Moston Brook), Medlock Valley, Phillips Park, Rochdale Canal, Green Streets, community projects



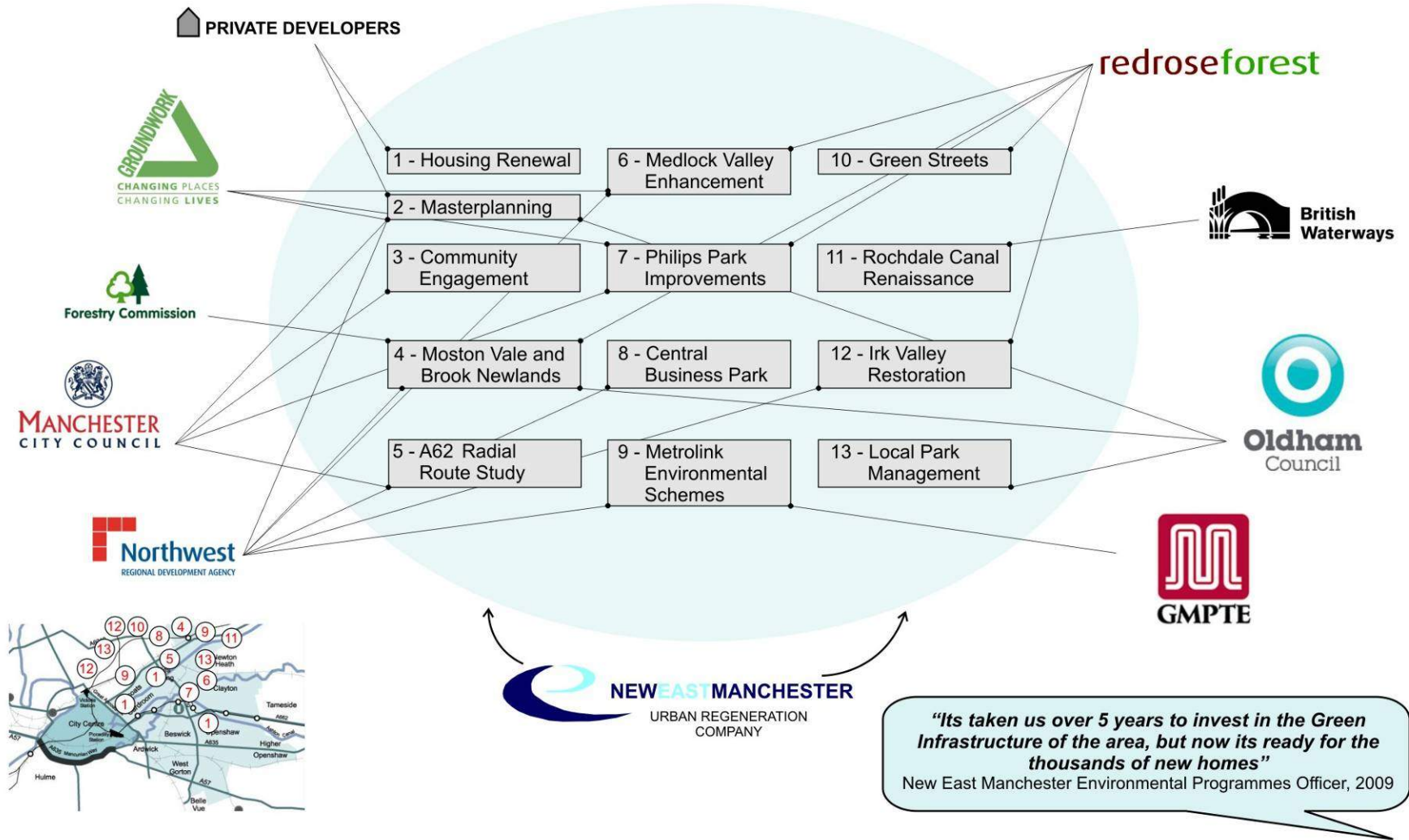


- A62
- River & Stream Network
- Existing Metrolink Line
- Metrolink Line Under Construction
- Rochdale Canal
- NEWLANDS
- Central Business Park
- Sport City
- Green Infrastructure Assets



- | | | | |
|--|---------------------------------|--|---|
|  | 1. Canalside Regeneration |  | 4. Canal Regeneration & Tourism |
|  | 2. Green Corridors and Key Hubs |  | 5. River Corridor Access and Recreation |
|  | 3. Greening of Radial Routes | | |

New East Manchester - A62/Metrolink Corridor Partnership Delivery of Green Infrastructure



Case study: Corridor Manchester

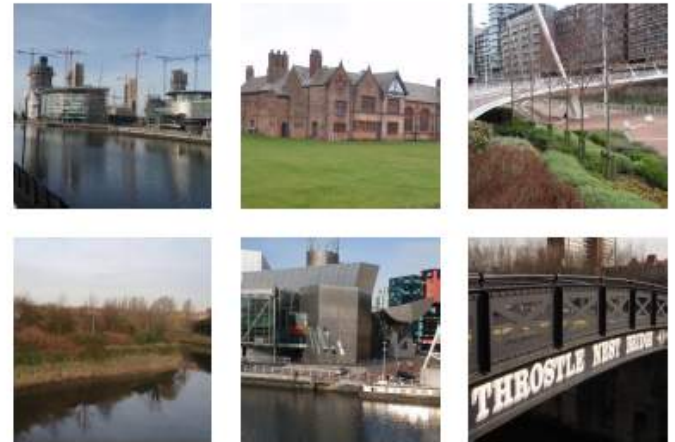
- By 2020, the Corridor will generate £4.7bn GVA (from £2.8bn now).
- 22,000 jobs created.
- *“Such ambitious targets rely on the Corridor Partnership enabling development opportunities – our businesses demand exceptional facilities and will want to locate in an area that demonstrates investment and a commitment to excellence”* from “Strategic Vision to 2020”
- Environment & public realm recognised as critical economic drivers to attract businesses, grow GVA and create a liveable centre, adapted to climate change
- Strong leadership is advocating for £m for green infrastructure in the public realm
- Need for leadership and skills during GI delivery phase



Case study: Irwell River Park

- Hugely ambitious plans for growth and investment by private and public sector.
- Green infrastructure is recognised as a way to raise environmental quality and increase resilience to climate change.
- The GI Plan includes many practical measures to improve public spaces and the waterfront. The IRP is a destination.
- GI plan includes fine-grained urban greening and green building codes.
- The IRP sits within a wider green infrastructure network – upstream along the Irwell, through the City centres and along the Ship Canal to the Mersey Valley
- A GI plan for the wider network can improve water management in the catchment, further improving resilience of investment in the IRP.

Irwell River Park Green Infrastructure Plan Consultation Draft March 2010

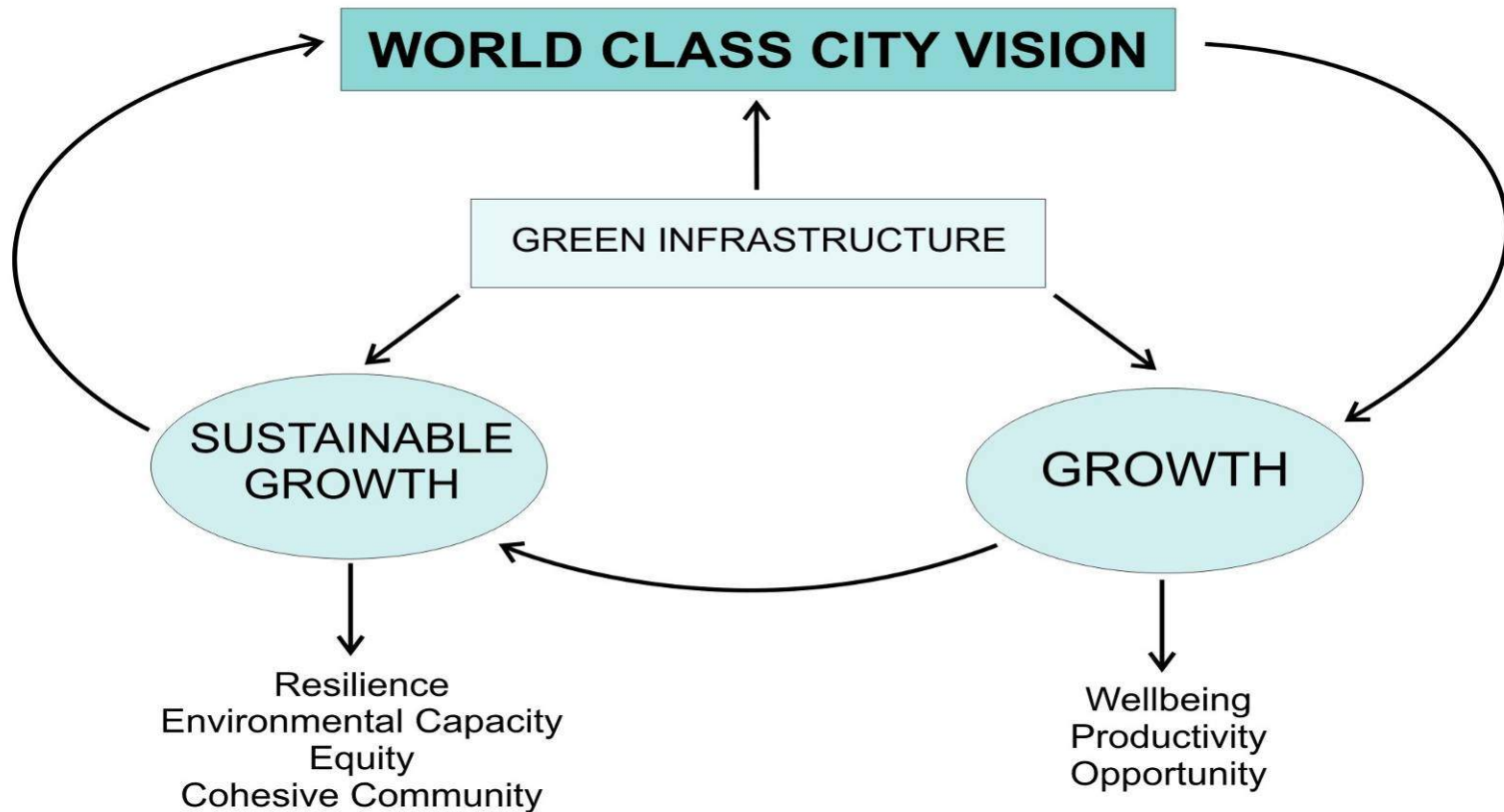


The case studies from the Oldham Metrolink corridor, the Oxford Road Corridor and the Irwell River Park show that leaders in these areas recognise GI as essential to underpin and add value to their growth and renewal plans by:

- Improving environmental **resilience** and thus sustaining property values.
- Adding environmental **quality** and thus creating attractive places for residents and businesses to “put down roots”.
- Adding to the “offer” of the place, when in **competition** with other areas.
- Enabling a visible contribution to a **low-carbon** economy

The catalytic effect of green infrastructure is shown in the graphic overleaf

Green Infrastructure Catalysing City Growth

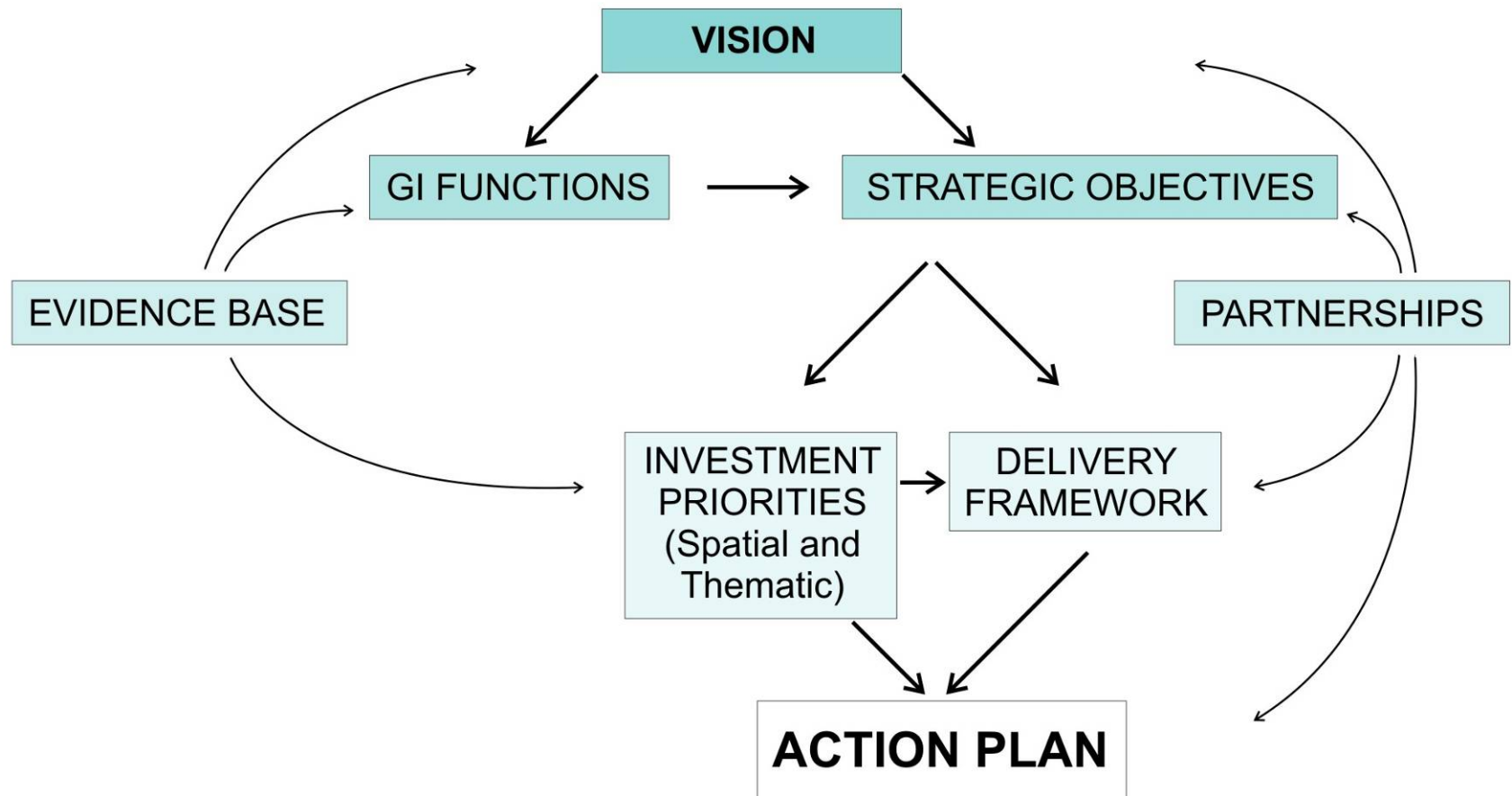


This “virtuous circle” diagram expresses that the City Region’s growth will bring benefits. GI will enable and sustain growth. Moving beyond growth, GI will assist in sustainability, bringing wider benefits and helping achieve the Vision more rapidly and effectively – i.e. GI has a catalytic role

A Green Infrastructure Framework for Greater Manchester Recommendations for AGMA, GI Partners and the City-Region's Executive

TEP's report considered all the elements of a framework needed to deliver GI at a city-regional scale. TEP recommended actions for AGMA and partners to develop, and document, a GI Framework.

Elements of a Green Infrastructure Framework



Evidence Base – TEP reviewed evidence on GI assets, needs and opportunities, as presented earlier.

Gaps in the evidence base were identified and recommendations made for ongoing research. Nevertheless, TEP considered the evidence base is certainly adequate to enable a GI Framework to be drawn up.

However, to increase delivery of GI through the planning system, further evidence is needed in the form of GI standards, model policies and case studies.

To advocate GI to City-Regional Chief Executives (public and private-sector), more evidence is needed about the critical need for investment in GI (and the cost of not investing).

To enable community groups to develop their own GI projects, the evidence base should be made publicly accessible

Vision - a vision for green infrastructure should be drawn up by AGMA, in consultation with national, city-wide and local stakeholders who are already engaged in sustainable growth and environmental management.

The GI Vision should link clearly to the “2025 world-class city vision” which underpins all the city-regions objectives.

The GI vision should build on existing GI activity and bear in mind good practice elsewhere (e.g. New York, London)

The GI Vision, once drawn up, should be championed by the City’s executive(s).

Functions – TEP identified 8 functions for GI to support growth of the City-Region. In summary, GI should sustain and enhance:

- A low-carbon society, resilient to a changing climate
- Biodiversity
- An active travel network
- Quality of place
- Flood and Water Management
- Jobs and skills in the natural and visitor economy
- Urban renaissance
- Health, wellbeing and cohesive communities

Strategic Objectives – TEP suggested the following objectives for AGMA and the City-Region's Commissions:

1. To shape the outdoor environment so it fulfils the 8 growth support functions
2. To promote multifunctional use of land, except where restricted use is necessary to protect ecosystem services or intrinsic qualities
3. To promote partnerships across social, economic and environmental sectors in the use of land and the delivery of all forms of physical infrastructure
4. To promote the integration of GI into the strategies and work programmes of all the City's Commissions and their partners
5. To promote community involvement in land management
6. To promote and disseminate research into GI costs, levies, standards and benefits

Investment Priorities – TEP identified the following priorities for GI funding and policy at a city-regional scale. A city-regional approach to GI will help achieve cross-border co-operation and resilience. It will guide activities of major infrastructure providers and be reflected in Local Development Frameworks.



The multifunctional green infrastructure network



Economic centres and growth points

Regeneration priority areas



Destination parks, landmarks and trails

Urban Green



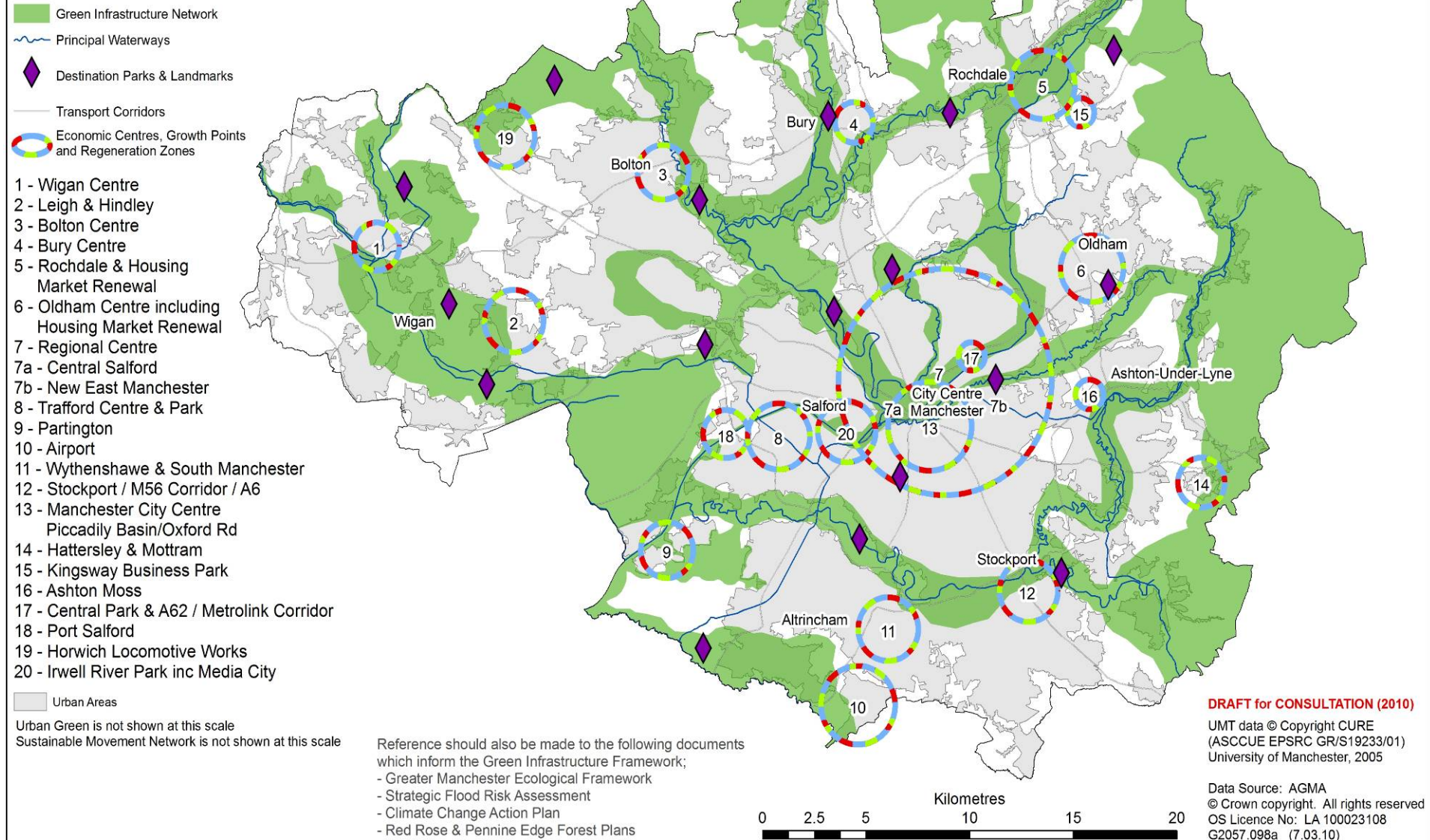
An active travel network

Community activism

The map overleaf shows a spatial presentation of some of these priorities. As urban green, the active travel network and community activism cannot be represented spatially at a city scale, a handout was also prepared.

Greater Manchester Green Infrastructure Framework

Investment to Support Growth



Greater Manchester Green Infrastructure Framework

Investment to Support Growth



- Green Infrastructure Network
- Principal Waterways
- ◆ Destination Parks & Landmarks
- Transport Corridors
- Economic Centres, Growth Points and Regeneration Zones

- 1 - Wigan Centre
- 2 - Leigh & Hindley
- 3 - Bolton Centre
- 4 - Bury Centre
- 5 - Rochdale & Housing Market Renewal
- 6 - Oldham Centre including Housing Market Renewal
- 7 - Regional Centre
- 7a - Central Salford
- 7b - New East Manchester
- 8 - Trafford Centre & Park
- 9 - Partington
- 10 - Airport
- 11 - Wythenshawe & South Manchester
- 12 - Stockport / M56 Corridor / A6
- 13 - Manchester City Centre Piccadilly Basin/Oxford Rd
- 14 - Hattersley & Mottram
- 15 - Kingsway Business Park
- 16 - Ashton Moss
- 17 - Central Park & A62 / Metrolink Corridor
- 18 - Port Salford
- 19 - Horwich Locomotive Works
- 20 - Inwell River Park inc Media City

Urban Areas
Urban Green is not shown at this scale
Sustainable Movement Network is not shown at this scale

Reference should also be made to the following documents which inform the Green Infrastructure Framework;
- Greater Manchester Ecological Framework
- Strategic Flood Risk Assessment
- Climate Change Action Plan
- Red Rose & Pennine Edge Forest Plans

Kilometres
0 2.5 5 10 15 20

DRAFT for CONSULTATION (2010)

UMT data © Copyright CURE
(ASCCUE EPSRC GR/S19233/01)
University of Manchester, 2005

Data Source: AGMA
© Crown copyright. All rights reserved
OS Licence No: LA 100023108
G2057.098a (7.03.10)

Green Infrastructure Network



Rivers, valleys, floodplains, parks, woods, multi-user trails, heritage features, major countryside areas, uplands and biodiversity sites and corridors



The GI network is multifunctional and is critical to sustain growth and climatic resilience. It buffers against floods and is a carbon sink. It provides recreation, tourism, landscape and biodiversity functions. It is found in urban and countryside areas. A healthy GI network is essential to maintain water, air and land quality throughout the city.



Parts of the network, such as some urban rivers, have few assets and action is needed to repair linkages and restore environmental quality. Other areas are of high value and functionality, and merit conservation management.

Economic Centres and Growth Points



City and town centres, housing sites, strategic employment sites and transport corridors. In the forthcoming decades, multi-billion pound investments will be made in new and refurbished property.



GI is essential for resilience, higher property values, sustainable travel and image as a world-class city. Good GI broadens the economic offer and sustains creative and knowledge industries. GI upstream has been proved in Greater Manchester to reduce risk of flood damage to residential and business property.



Priority areas are centres and growth points which are areas in green and civic space and perform poorly in terms of water and air quality management.

Regeneration Priority Areas



Brownfield sites, housing renewal areas and deprived areas. Often vulnerable to flooding, suffering visual blight or air pollution. Poor quality public space depresses inward investment. Programmes such as Green Streets, New Deal and Home Zones have increased community spirit, raised property values and increased positive perceptions.



More family housing and home care for elderly will require neighbourhood open space design and management to maximise community safety and social interaction.



Priorities for investment include uplifting major parks and civic spaces, improving transport corridors, dealing with brownfield land, and implementation of neighbourhood-scale street-greening, allotment and schoolground projects

Community Activism



Community pride & stewardship of green infrastructure is a high priority in a GI strategy for an urban area.

This includes individual environmental actions at home and work, which can be stimulated through raising awareness using education and informal means. Community volunteers are responsible for managing, growing food in, and campaigning for local spaces.



At a more formal level, environmentalists can work alongside health, education and social services to join up services using GI as an arena to sustain stronger communities. This is termed "co-provision".



Localism can stimulate democratic involvement and contribute to "livability" in large urban areas.

Sustainable Movement Network



An important aspect of GI is a strategy to increase walking and cycling, for leisure and commuting. Provision of safe and attractive routes, in green space where possible, will encourage a shift away from the private car. This will also increase the opportunities for sport and healthy activity.



Priorities include: high quality public realm in walking and cycling corridors; safe bus stops and walking routes from them; safe routes to community facilities, legible urban centres and longer routes to the river valleys, uplands and the Greenheart Regional Park.



Greater Manchester does not presently have a strategic plan for sustainable movement, which means opportunities to improve the network could be missed as the city grows.

Destination Parks, Landmarks & Trails



Major green spaces and visitor facilities such as Green Flag Parks, large country parks, sites of heritage interest, Sculpture Trails, sporting areas, canals and panoramic viewpoints. These vary in character across the city ranging from inner urban destinations such as Hollingworth Lake and Peel Tower. Most are within the GI Network.



The GI priority is to further enhance community stewardship, encourage uptake of healthy activity, promote jobs relying on the quality of these sites, and maintain them as "jewels in the crown".



Trails which connect the destinations to the urban area will form part of the sustainable movement network.

Urban Green



Fine-grained Green infrastructure: street trees, gardens, corporate grounds, pocket parks, allotments, green roofs and walls, along with permeable surfaces and sustainable drainage systems (SUDS).



The priority is to retain or create high levels of canopy cover and urban vegetation to promote a positive image, sustain biodiversity, promote mental health and adapt to climate change. SUDS and vegetation are important in surface water management.



The need for urban green is greatest in areas of family housing, health deprivation, town and city centres, and where it can contribute to improving the management of surface water by reducing the pressure on existing sewerage infrastructure

Partnerships – The case studies showed:

GI practitioners improved the quality and sustainability of urban renewal partnerships.

However, continued partnership working is vital at all stages of a project, because implementation stages are often where environmental commitments, made as part of planning and funding conditions, fall down.

If GI practitioners are to take a more prominent role in urban renewal and physical infrastructure works, then more evidence is needed about the benefits of GI; and firm enforceable GI standards are needed.

In some cases, there is duplication and/or competition in GI practitioner activity and funding streams, leading to confusion amongst landowners wishing to implement GI.

Partnerships (contd) — During 2009/2010 many of Greater Manchester's groups already advocating, planning, funding and delivering GI have come together to form a loose "GMGI Partnership". This partnership will work together to advocate for GI and develop GI programmes in a time of austerity and new opportunity engendered by the change in UK Government. TEP also recommended:

- 1 Building **cross-Commission** sponsorship of GI – we identified city-regional GI projects which would benefit the strategic objectives of several Commissions – for example a river basin management plan would benefit the Planning & Housing Commission by increasing opportunities for safe development, Environment Commission by improving carbon storage and water resources, Commission for the New Economy by safeguarding land values and the Public Protection Commission through enhancing resilience from floodrisk.
- 2 Expanding partnership working with organisations in the "**growth, sustainability and wellbeing sector**"
- 3 Expanding partnerships with **community environmental activists**
- 4 **Twinning** Greater Manchester's GI practitioners with London, New York and Liverpool to share experience and best-practice

Delivery – TEP examined how GI delivery can be maintained and enhanced as the city-region develops new governance structures in an age of public sector spending restraint.

GM has a good track record in cross-boundary programme development and implementation.

GI is implemented by many different actors, unlike most other infrastructures which are built and maintained by specialists, often with statutory powers to raise funds and construct the infrastructure.

Case studies from GM show that there is a gap between strong policy aspiration and actual on-the-ground delivery of GI. Where there is good partnership-working and leadership is shown by GI practitioners, this gap can be closed, but there are many opportunities not fully taken.

Delivery (contd)

Case Studies from other cities showed that localism and centralism need to be balanced to achieve GI goals at a city-regional level – many projects are best when locally-developed, but a central resource for advocacy and funding brings benefits to local practitioners.

TEP recommends:

- A GI Board, composed of the 7 City Commissions, along with representatives from the environment, health, wellbeing, development and community sectors.
- A GI Champion to provide strategic co-ordination, leadership and advocacy amongst senior city-region executives. TEP felt this was probably best as a function of the Planning and Housing Commission.
- A champion for GI in the political +/- media eye
- A GI Partnership, a loose grouping of GI delivery bodies, consisting of bodies such as Community Forests, Groundwork Trusts, Local Authorities and other voluntary sector bodies

Delivery (contd)

The report also examined GI delivery through:

Co-production – aligning with other infrastructure providers in the fields of surface water management, flood defence, municipal building, transport and healthcare.

Fund-pooling – streamlining of FC and Natural England land management funds, and matching the numerous grants and funds available from private, fiscal, European and charitable sectors

Stimulating Community Activism – through enabling better networking and access to environmental information, thus stimulating “localist” activity and increased neighbourhood management

Delivery through the Planning system – an established tool for funding and delivery of GI, this will need considerable attention in 2010/11/12, if:

- Availability of s106 funding declines if stricter rules are applied
- Community Infrastructure Levy/Tariff does not come onstream for GI
- National GI policy (in the form of PPS) is not formulated strongly

Delivery (contd)

The report suggests that GI standards for new development need to be firmed up, alongside BREEAM and design quality standards

The report recommended that Planning and Housing Commission take a lead with drawing up a GI Framework, leading to the production of Action Plans for city-region wide GI.

The Environment Commission and the Commission for the New economy also have a vital role in shaping GI policy and investment and should work with Planning and Housing.

The GM GI Steering Group, which has guided the work to date, should continue to steer the formulation and adoption of a City-regional framework.

Cross-Commission delivery – New York case study

The challenge to grow and renew itself in a sustainable way led to the formulation of New York's Plan "A Greener Greater New York"

<http://www.nyc.gov/html/planyc2030>

The plan was developed from extensive city-wide public consultation. It is adopted by all the City's public bodies and governing Commissions.

The plan includes several green infrastructure actions. Some are specifically concerned with **parks and public spaces**, such as the challenge to plant a million trees and create several hundred new multifunctional open spaces.

Other programmes are concerned with **greening physical infrastructure** and new building works. One example is the way in which green infrastructure is promoted as part of the city's surface water management system.

The Challenge



By 2030, our City will be getting bigger, our infrastructure older, and our environment more unpredictable. Now is the time for New Yorkers to rise once again to the challenge of tomorrow.

New York's plan for parks and public realm has the objective of ensuring that all residents live within 10 minutes walk of a safe and attractive green space. It includes the following actions to achieve this:

1 Make existing sites available to more New Yorkers:

- Open schoolyards as playgrounds;
- Increase options for competitive athletics;
- Complete undeveloped regional parks;

2 Expand useable hours at existing spaces;

- Provide more multi-purpose fields;
- Install more lighting;

3 Re-invigorate public realm;

- Create/enhance a public plaza in every community;
- Green the cityscape through planting of a million trees.

4 Complete seven destination parks (some on large brownfield sites by waterfront to increase their impact)

5 Carry out these works by involving the community, where possible providing training and rehabilitation opportunities.

Case Study: 256 Schoolyards to Playgrounds



Schoolyards to Playgrounds

By mapping areas that lack open space and have a high ratio of children per playground, the Bloomberg administration has identified school playgrounds as opportunities to increase access to open space for all New Yorkers. Mayor Bloomberg has pledged to open 256 schoolyards in underserved neighborhoods and has committed \$56.7 million in capital funding for playground improvements. By opening schoolyards after school, on weekends, and during school breaks, these playgrounds will be available to approximately 360,000 New York children by 2012 and help ensure that all New Yorkers live within a 10-minute walk of a playground or park.



The Parks Department has teamed up with the Department of Education (DOE) and the Trust for Public Land (TPL), which works in cities across America to conserve land so that people may enjoy local parks, playgrounds, and natural areas. Working together, the Parks Department, DOE, and TPL will renovate 187 schoolyards in addition to 69 sites that opened July 2007 without capital improvements. The program employs a participatory design process with the school community that involves children, parents, and teachers. This design process facilitates exciting inter-agency and community coordination and opens up dialogue to ensure continued success with the Schoolyards to Playgrounds initiative.

Targeted at areas of need

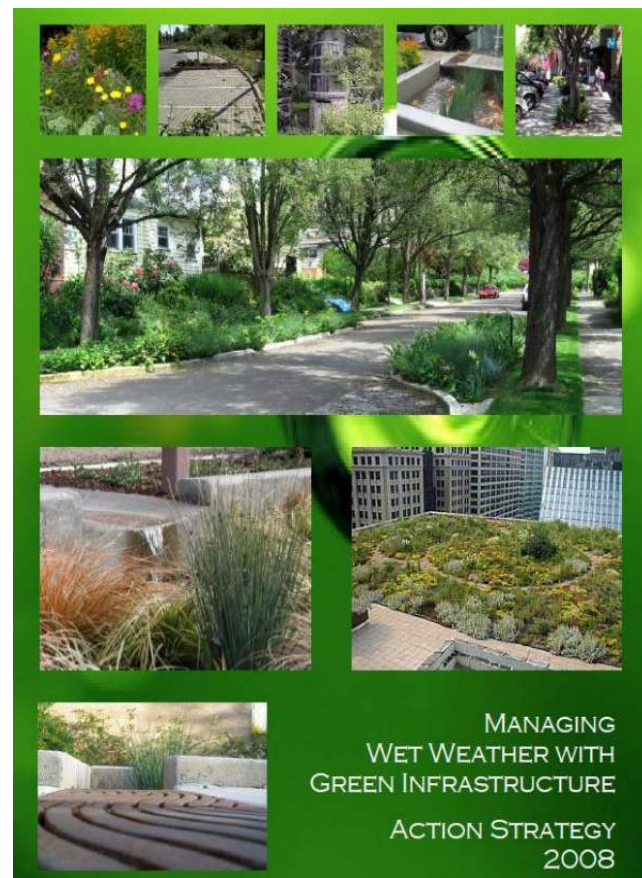
Part of a multi-stranded programme to improve access and enjoyment of green spaces, and sporting achievement

Partnership-working between mayor, Parks Dept. Education Dept and Trust for Public Lands.

Case Study: Using Green Infrastructure to assist with storm water management and increase resilience

The City has several pilot studies to establish cost & feasibility of mixing different techniques for flood and surface water management. Using GI as part of a package of measures decreases costs, delivers amenity and biodiversity and extends the usable life of engineered infrastructure.

INITIATIVE	BRONX RIVER	
	STORMWATER CAPTURED	COST
PlaNYC Street Trees	4,180,000	\$11,000,000
PlaNYC Greenstreets	220,000	\$2,300,000
Performance Standards for New Construction	23,800,000	\$4,600,000
Road Reconstructions	33,900,000	\$7,300,000
Low- and Medium-Density Residential Controls	21,200,000	\$4,900,000
Green Infrastructure: Greenstreets and Swales	16,500,000	\$4,300,000
Sidewalk Standards	116,100,000	\$29,800,000
Performance Standards for Existing Buildings	40,000,000	\$13,200,000
TOTAL	255,890,000	\$77,400,000



New York – transferable ideas

1. World city
2. Similar issues of growth, ambition, brand
3. Strong leadership and buy-in across Commissions
4. Regional Destination Parks
5. Public Realm transformation
6. Tackling pollution & neglect of brownfields & waterways
7. Making '00s existing spaces multi-purpose and safe
8. Co-ordination across civic boundaries
9. Strong Delivery Plan
10. Part of a strategy for low-carbon society

Experience from New York suggests a Green Infrastructure approach will help all Greater Manchester's Commissions

- meet their objectives
- work in partnership
- join-up services for greater efficiency
- engage with the communities



Summary

Summary

- In contrast to south-east England, Greater Manchester has the green infrastructure resources to support sustainable city growth – with management and repair of our GI, we can welcome new residents and businesses, we can respond positively to demographic and health trends and make the city-region more resilient to inevitable climate change – GM can make a credible growth hub for the UK.
- Case studies show that early investment in GI creates a setting for the kind of growth people want – decent homes and workplaces in a quality environment. Early investment in GI builds insurance against future change and is considerably cheaper than retrofitting GI into a mature urban fabric.
- Greater Manchester cannot grow without investing in its green infrastructure assets – making them multifunctional, better-used and managed. But with attention, these assets can deliver quality of life, quality of place and quality of environment, for existing and incoming residents and businesses.
- Our GMGI Framework must plan for “major projects and 1001 small changes”.
- We have an active and passionate GI community.
- Local delivery is key, but there are city-regional priorities which require a significant uplift in delivery capacity (finances, skills, leadership and land).

Proposition

1. GI needs cross-Commission governance with strong and collaborative leadership.
2. Planning & Housing Commission (working with Commission for the New Economy and the Environment & Health Commission) lead and.....
 - formalise a City-region GI framework in conjunction with other commissions, the Local Authorities and the community.
 - promote and enable GI programmes of City-Regional importance. *(e.g. improved flood resilience, improved catchments, sustainable key centres, active travel networks, cleaner/safer/greener/better-used spaces for decent homes, greenspaces for health improvement)*
 - prepare a prospectus to advocate GI and to explain how to place green infrastructure at the heart of plans for growth.
 - secure the resources (human, leadership, finances) to achieve the necessary GI delivery in the short and mid-term.

