

Stockport Town Centre Urban Green Infrastructure Enhancement Strategy



INVESTING IN STOCKPORT

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Free stranding appendicies - DVD/CD
I. Mapping - key maps in zoomable pdf
II. All maps in GIS
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IV. Workshop report
V. Economic Valuation Toolkit full results
VI. Urban Landscape Character Assessment
VII. Photographic Archive

EXECUTIVE SUMMARY AND PRINCIPLE RECOMMENDATIONS

Urban Green Infrastructure (UGI) is the infrastructure for 'life-support' in Stockport Town Centre. Research undertaken in 2013/14 for this study has shown that throughout the study area there is a lack of green infrastructure provision and that there are notable gaps in the Central Business and Retail area more commonly known as Stockport Town Centre. Through the delivery of a bespoke theoretical framework and the implementation of a series of thematic and project interventions it is proposed that the existing network of urban green spaces can evolve to deliver a full spectrum of ecosystem services to residents, visitors and nature.

“Green Infrastructure contributes over £100 million of benefits in the Town Centre notably in the area of health and wellbeing. Through implementing the interventions proposed in this Strategy this will increase by at least a further £60 million”.

In order to enhance Stockport Town Centre’s Urban Green Infrastructure (UGI) three thematic and twelve project interventions have been identified. The thematic interventions accumulate through time and their impact will be large. The first theme is an up-scaling of tree cover leading to the creation and management of an urban forest canopy. The second theme is the creative management of surface and groundwater (including urban soils and nutrient flows) which can make a substantial difference to urban green infrastructure in the face of a changing climate. The third theme is the incorporation of high performing vegetation in new building design and through retrofitting.

The Urban Green Infrastructure project interventions are site specific and symbiotically linked to the regeneration of the Town Centre through existing proposed and future ‘Investing in Stockport’ regeneration initiatives.

Principle recommendations:

- 1 Stockport Metropolitan Borough Council assumes the lead role for overseeing the delivery of this strategy, particularly with regards to coordination.
- 2 The importance of the three thematic interventions outlined in this strategy is acknowledged and that measures are taken to implement such interventions:
 - urban forestry,
 - creative management of water, and
 - vegetation in building design.
- 3 Implement a range of the key project interventions outlined in this strategy which are focused on the Central Business District and retail quarters and linked with regeneration initiatives.
- 4 Adopt a robust delivery framework including an action planning process, monitoring and evaluation.

- 5 Produce planning guidelines to enable Development Management to ensure that future approvals of planning applications enhance and increase urban green infrastructure; potential guidelines can be incorporated into revised existing SPD’s but should include:
 - Town Centre Urban Green Infrastructure Design Guide,
 - Urban Forestry Strategy,
 - Tree Standard for the Stockport Development Plan,
 - Landscape Character Assessment, and a
 - Green Infrastructure and Water Cycle SPD.
- 6 Achieve early project delivery ‘wins’ as ‘proof of concept’, included in this should be the establishment of delivery partnerships with external organisations and internal departments.
- 7 Embed the Town Centre Green Infrastructure Enhancement Strategy within a Borough wide Green Infrastructure context to ensure ecological links are made and the benefits of ecosystem services maximised.
- 8 Explore the opportunity to deliver a GreenStreets Stockport project in order to involve the community and local businesses, and explore and ultimately pilot new project funding mechanisms and alternative management options.

SUDS encourage green space in urban areas by controlling the water at the source through trees and vegetation, green roofs, infiltration trenches and filter drains, swales and basins and ponds and wetlands. Gill et al. (2007) suggest that increasing green space would reduce runoff by 4.9%, increasing tree cover reduces runoff by 5.7% and that green roofs would have a significant effect in reducing runoff by 11.8–14.1%. Duffy et al. (2008) produced a cost benefit analysis which supports SUDS and indicates that well designed and maintained SUDS are more cost effective than traditional drainage solutions, as they cost less to construct and maintain.



Location map of Stockport

AIMS AND OBJECTIVES

1



AIMS AND OBJECTIVES

1

1.1 The aim of this Strategy is to enable urban green infrastructure to function as the 'life-support' system for Stockport Town Centre and the surrounding environs. Through a planned approach, the existing network of urban green spaces will evolve to deliver a full spectrum of ecosystem services to residents, visitors and nature and in turn positively contribute to the health and wealth of the borough.

1.2 To fulfill this aim the chosen starting point for the preparation of the Strategy was to determine the form and function of the Town Centre's existing urban green infrastructure and understand how it is currently performing. This process was followed by further stages of analysis, consultation and finally devising strategic interventions.

1.3 Seven objectives were devised for the Strategy; these were determined following discussions with key local authority officers, analysis of the original brief, the consultant's wider knowledge and instances of good practice from elsewhere.

A further consideration was to ensure, as far as possible, that the Strategy would be seen as a forward looking and most importantly, deliverable.



Objectives:

- 1 To inform and educate opinion formers, policy makers and planners that urban green infrastructure is critical to the future vitality and sustainability of Stockport Town Centre.
- 2 To map the location of existing urban green infrastructure networks and describe their distribution.
- 3 To make the case for conservation and enhancement of the Town Centre's existing urban green infrastructure.
- 4 To describe the economic contribution of urban green infrastructure in Stockport Town Centre.
- 5 To present the 'tools' needed for future enhancement of the Town Centre's urban green infrastructure.
- 6 To identify the strategic thematic and project interventions that will lead to a stronger urban green infrastructure network in the future.
- 7 To make the case that the Town Centre's Urban Green Infrastructure should be managed primarily to deliver ecosystem service benefits.

Living vegetation helps enormously in countering the urban heat island effect. In summer, the cooler air of a shady street or park is noticeably more comfortable. Average UK temperatures are predicted to rise by as much as 4°C this century but research by the University of Manchester shows that 10 per cent increase in the urban tree canopy cover would cancel out this increase.



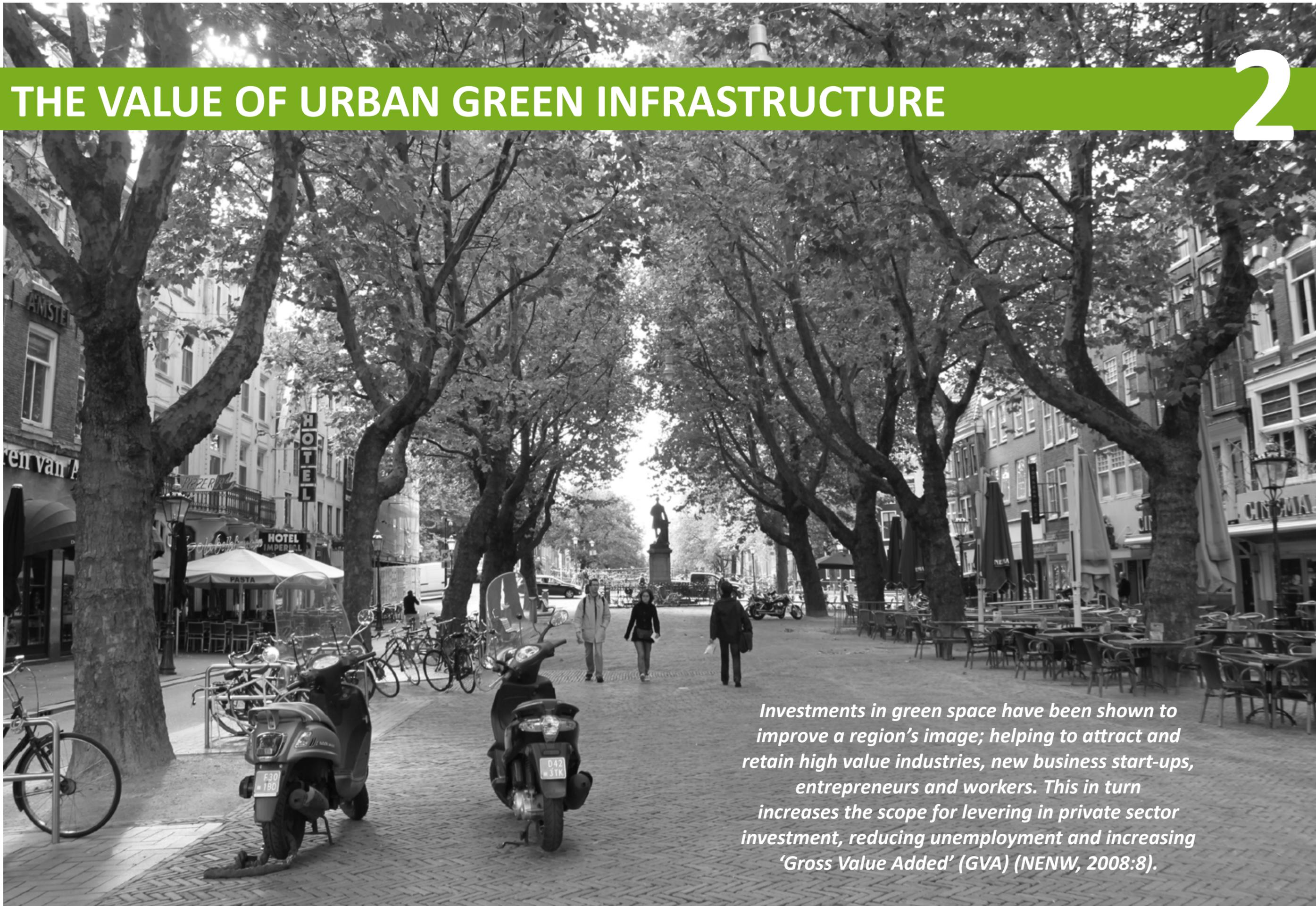
Figure 1 (above left and right): Green space containing formal design elements contribute to place making, increasing biodiversity and attracting inward investment. With green infrastructure, spaces must be linked functionally to adjacent green spaces so that a network emerges and the benefits of ecosystem services can be maximised and captured. Consideration is also required for the sub-surface environment notably the distribution of urban soils, nutrient flows and ground water levels. Ideally the sub-surface layer should also be interconnected but this often not something that is considered in traditional urban design proposals.



Figure 2 (above): This study has identified that Stockport Town Centre's watercourses are the main 'green arteries' running through the study area. Linking to this network of watercourses is vital for ecological connectivity between sites. Whilst recreational access is currently limited there is potential for future uses and the watercourses perform an aesthetic role.

THE VALUE OF URBAN GREEN INFRASTRUCTURE

2



Investments in green space have been shown to improve a region's image; helping to attract and retain high value industries, new business start-ups, entrepreneurs and workers. This in turn increases the scope for leveraging in private sector investment, reducing unemployment and increasing 'Gross Value Added' (GVA) (NENW, 2008:8).

THE VALUE OF URBAN GREEN INFRASTRUCTURE

2

2.1 Urban Green Infrastructure can be considered as a planned approach to how green spaces when they are interconnected together in the urban fabric become as critical for human life as other infrastructures. When connected together green spaces behave as infrastructure and provide multiple benefits that individual spaces cannot provide. These multiple benefits can be directly related to ecosystem services. Ecosystem services include the supporting; provisioning and cultural services provided by nature and are illustrated in Figure 3. These services include, as examples; access to clean water and air, living close to nature, health and well-being benefits.

2.2 In the document “Building a Green Infrastructure for Europe” the European Commission defined Green Infrastructure as “a spatial structure providing benefits from nature to people which aims to enhance nature’s ability to deliver multiple valuable ecosystem goods and services, such as clean air or water.” Urban Green Infrastructure is part of the ‘green infrastructure approach’ but focused on urban core areas.

2.3 It has been realised that some of the principles of the green infrastructure approach need to be adapted to fit the needs of urban centres. Recognising this in 2013 the European Commission commenced funding the GREEN SURGE project to determine the contribution urban green infrastructure can make and how it fits with the green infrastructure approach .

2.4 In England, Stockport, is one of the first town centre’s to have an Urban Green Infrastructure Enhancement Strategy. A majority of Green infrastructure strategies in England cover the whole of a local authority area or city-regions and are generally driven by planning as opposed to sustainability drivers. Subsequently, as an early adopter of urban green infrastructure in a town centre it has proven necessary to devise a bespoke conceptual framework.

2.5 Green Infrastructure planning normally focuses on creating networks derived from ‘hubs and links’ of green spaces joined together to provide strong connectivity with multifunctional benefits then accruing. However by undertaking a spatial analysis of Stockport Town Centre using different methods including the Space Syntax approach it became apparent that a framework of ‘hubs and links’ fits less well in the urban core area due to the density of buildings and population. Hence new network principles were devised for Stockport Town Centre.

2.6 The theoretical framework developed for the Strategy is a ‘closed packed polyhedron’ where the spaces represent built elements (such as buildings) and the wall structures provide structural strength and connectivity through green connections. This structure does not depend on the green ‘hubs and links’ which normally feature in green infrastructure planning yet maintain connectivity and the potential for added benefits. A close packed polyhedron is familiar in nature as it is the structure of the ‘honeycomb’.

In a study by CABI (2005) it was found that for properties ‘on’ a local park the average premium was 11.3% and for properties within close proximity to the park the average premium was 7.3% (standard deviation of 9.4%). An earlier study (CABI, 2004) reported that in The Netherlands a view of a park was shown to raise house prices by 8%, and having a park nearby by 6%.

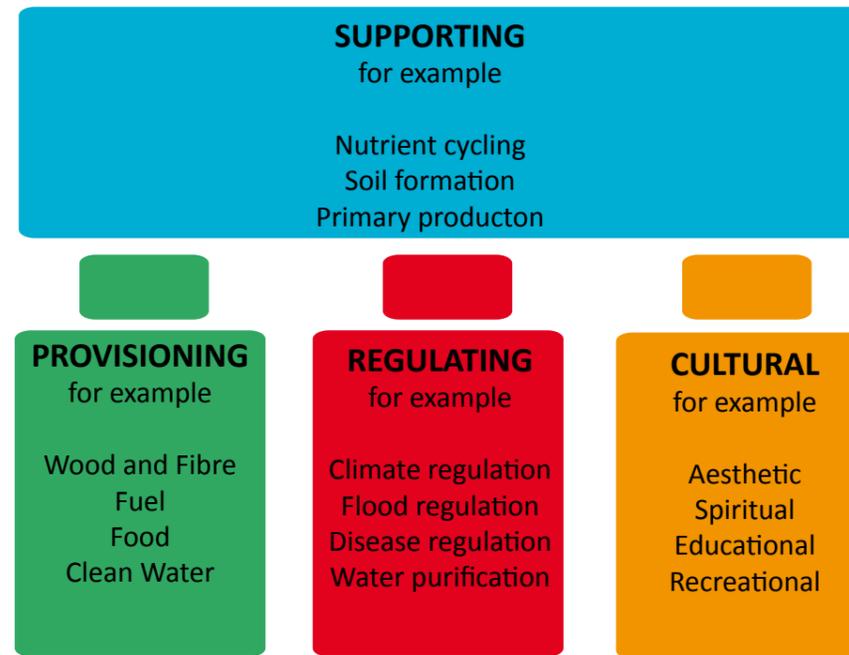
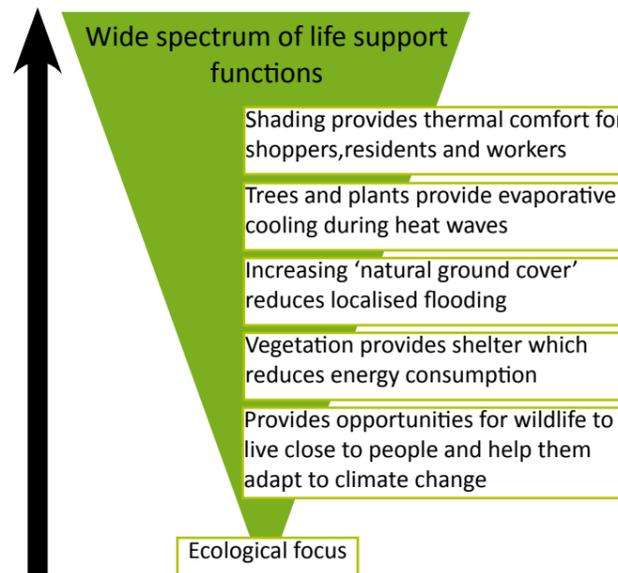
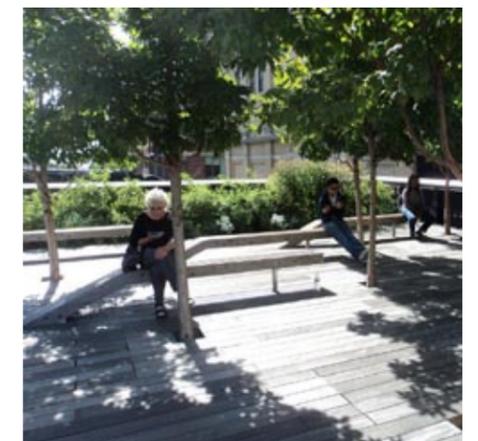


Figure 3 (above): infographic showing the services provided by eco-systems.

Figure 4 (right): Green infrastructure can help make areas more resilient to climate change. This is becoming a policy priority following years of storms, flood and heatwaves.

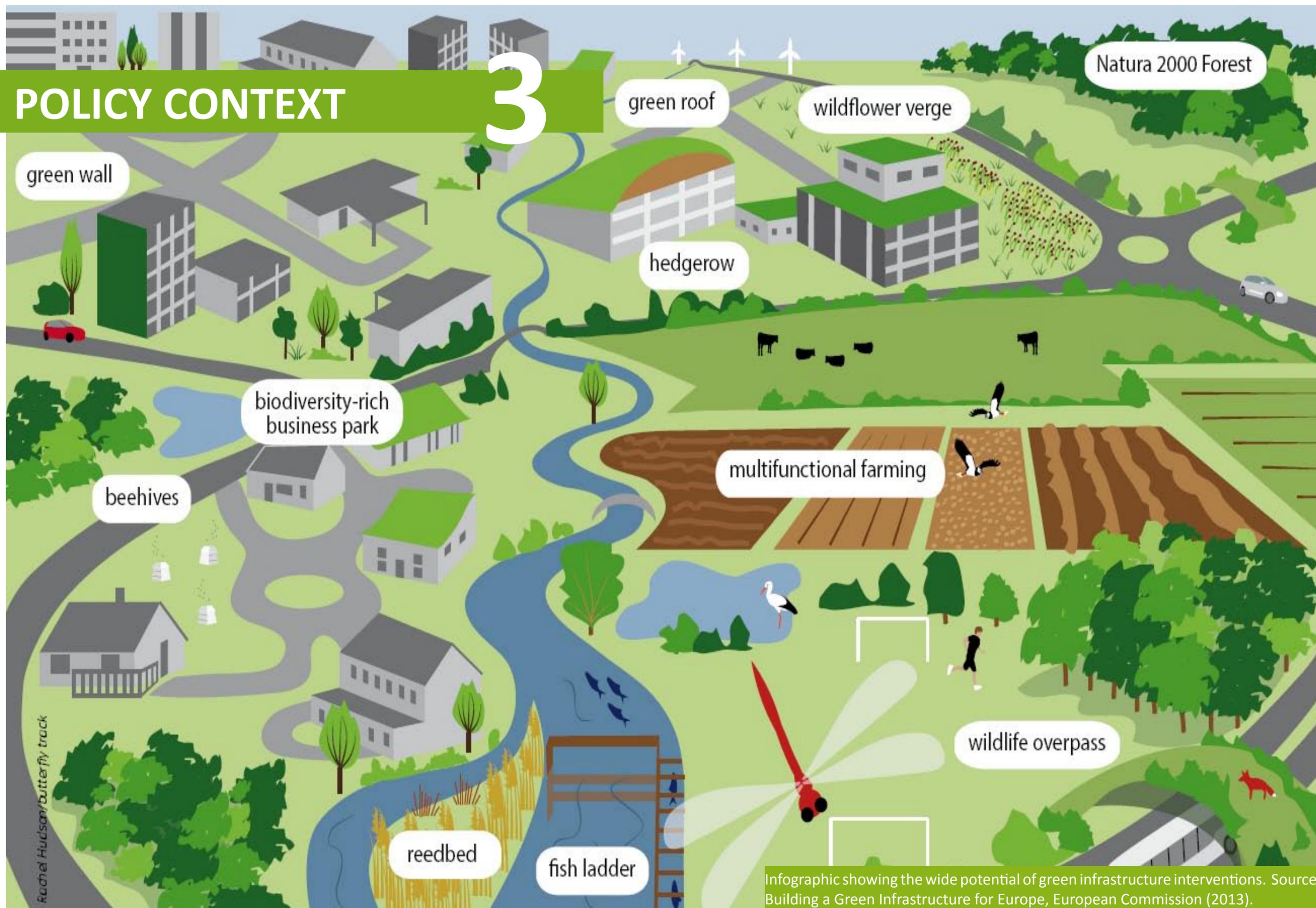


New research using the health records of 350,000 people in the Netherlands found that city dwellers living near parks are healthier and suffer fewer bouts of depression. The effect of green surroundings was greatest for people with low levels of education and income. In urban zones where 90 per cent of the area was green space, the incidence of anxiety was 18 people per 1,000. In areas with only 10 per cent greenery, it was 25 per 1,000 (CABI, 2009).



POLICY CONTEXT

3



Infographic showing the wide potential of green infrastructure interventions. Source: Building a Green Infrastructure for Europe, European Commission (2013).

POLICY CONTEXT

3

3.1 Green Infrastructure is well represented in national policy and programmes. A Green Infrastructure Partnership was set up by the Government initially under Defra's direct support and facilitation. This has been taken over by the Town and Country Planning Association (TCPA). The Green Infrastructure Partnership issues regular newsletters and organises networking events and webinars. At a national level three Government Agencies have a notable role in Green Infrastructure and the production of research, policies and guidance: Natural England, Forestry Commission and the Environment Agency.

3.2 The National Planning Policy Framework (NPPF) is the key document for how Green Infrastructure is embedded in policy. This requires local authorities to set out a "strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure". The NPPF also includes a duty on local authorities to cooperate. This is especially significant for Green Infrastructure where green networks often cross administrative boundaries.

3.3 Natural England has outlined a typology for Green Infrastructure which includes parks, open spaces, playing fields, woodlands, wetlands, grasslands, river and canal corridors allotments and private gardens. They have also facilitated research on the importance to the urban fabric of Green Infrastructure and how it provides a wide of benefits close to the places where people live and work. Investment in Green Infrastructure (GI) is seen as a catalyst to economic growth as shown in Figure 5.

3.4 Preparation of this Strategy has been informed by the Stockport Development Plan. This Strategy adds a layer of detail to the Development Plan to facilitate the enhancement, improvement and revitalisation of Stockport Town Centre using the green infrastructure approach. There are two main component elements to the Stockport Development Plan. The spatial vision is articulated in the Core Strategy DPD, approved in March 2011 for the Local Development Framework under the direction of the Planning and Compulsory Purchase Act, 2004. The Allocations Development Plan Document (DPD) is currently approaching Preferred Option stage and is being produced under the direction of the Localism Act (2011) and the National Planning Policy Framework (2012). The key relationship between this Strategy and the Stockport Development Plan is that where new development is permitted it should include an element of Green Infrastructure in every proposal permitted.

3.5 The new Development Plan will set out a policy framework which will enable Stockport to develop in a manner consistent with the National Planning Policy Framework and local priorities. This will form the template for the judgement of planning applications for all new development

and changes of use. The Stockport Development Plan in concert with the Stockport Town Centre Development Prospectus can enable the Stockport Town Centre Green Infrastructure Enhancement Strategy to act as a guide to facilitate and direct decision making at the local level and to address the allocation of scarce resources. There is potential for new development permitted under the development management process to be supplemented by an Infrastructure Delivery Plan. If realised this could provide funding towards new Urban Green Infrastructure in the town centre.

3.6 The National Planning Policy Framework (NPPF) requires that sustainable development is a "thread" running through and holding together a Development Plan. Green Infrastructure (GI) is a key element of sustainable development and is considered in the NPPF in several places, notably paragraph 114. This Green Infrastructure Strategy can help the Development Plan process to be compliant with the NPPF.

3.7 The Stockport Town Centre Green Infrastructure Enhancement Strategy could erroneously be viewed purely as an environmental strategy, reflecting the aims of policy CS8 of the Stockport Core Strategy. However it is a cross-cutting strategy, with potential to influence every area of delivery.

Whilst the Strategy will serve to reinforce provision of multifunctional greenspace in appropriate locations in Stockport Town centre, it should not be overlooked that it also impacts on a diverse range of policy issues and land uses including:

- Regeneration
- Retail
- Employment
- Sustainable transport
- Housing
- Urban design
- Health and well-being
- Water management
- Moving to a low carbon economy
- Resilience and climate change

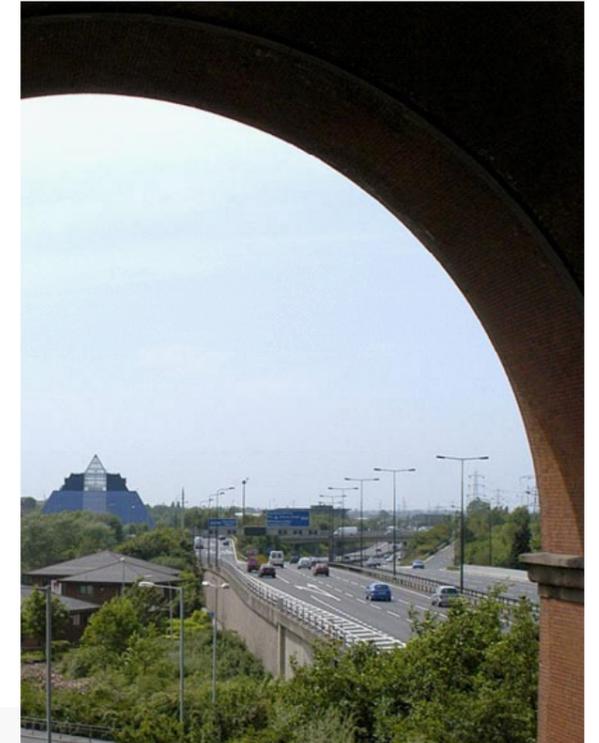
3.8 There is the scope to extend the study to encompass the whole of the Borough and thus contribute towards the evidence base for the new Stockport Development Plan by adding a layer of detail which helps not only to facilitate delivery, but to ensure that the evidence base is as credible and robust as possible.

Future studies should acknowledge, complement and interlink with the Town Centre Green Infrastructure Enhancement Strategy including its proposals, findings and theoretical framework.

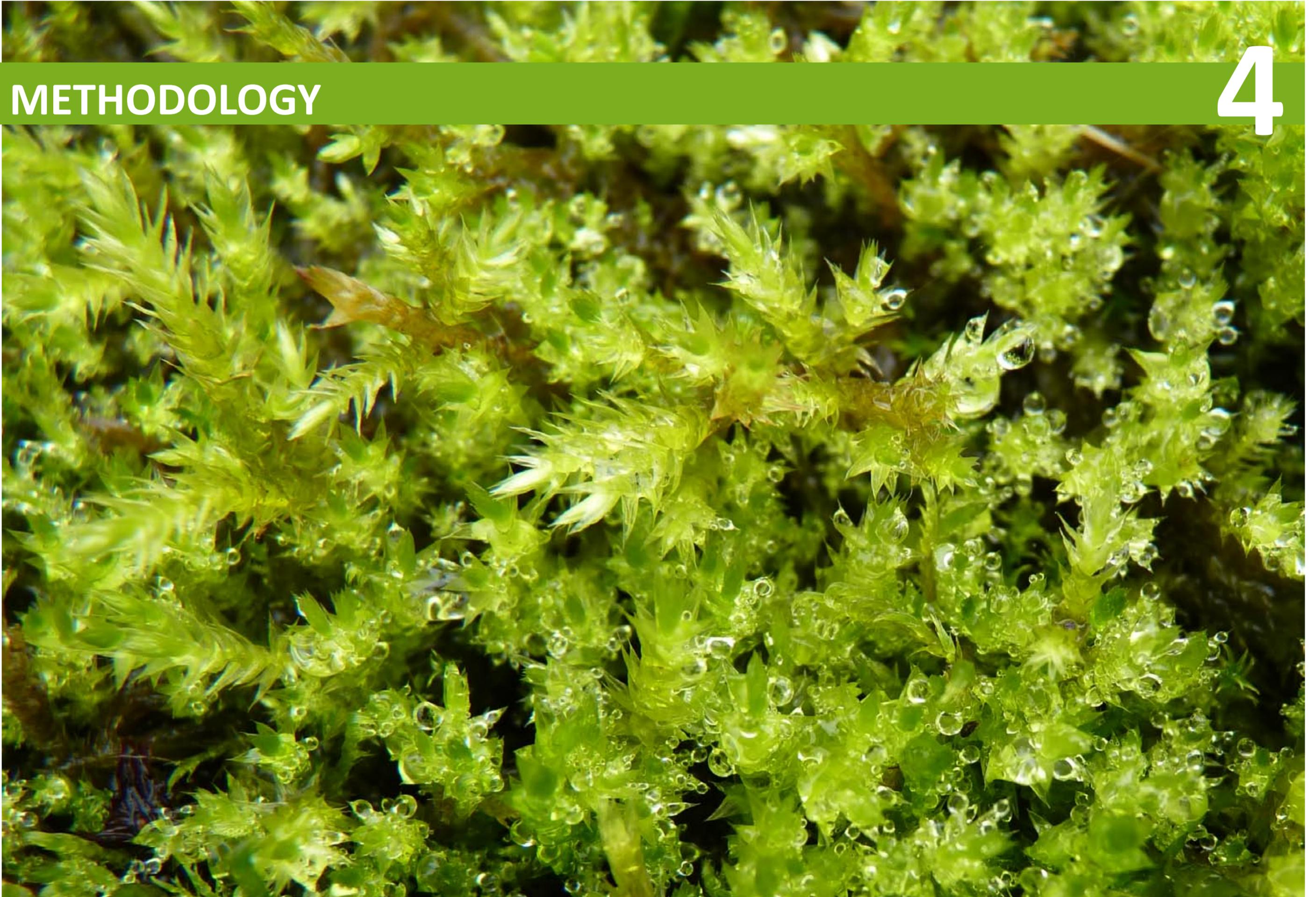
Figure 5 (right): Research led by Natural England has shown the key ways by which green infrastructure promotes economic growth. Green Infrastructure's contribution to economic growth: a review, Natural England & Defra (2013)

3.9 Extension of the study could lead to the production and adoption of a Green Infrastructure Supplementary Planning Document (SPD). An SPD amplifies and adds detail to planning policies in the Development Plan and can also be a material consideration in guiding decisions about new development.

Figure 6 (right): The M60 motorway cuts through the study area and has a major impact on its urban green infrastructure. In particular it acts as a barrier to the movement of species and people however it does include some greenspace elements notably on the roundabouts.



- Attracting inward investment which makes a local area more attractive to business investors.
- Attracting increased visitor spend which makes a local area more attractive to tourists and visitors.
- Saving environmental costs which improve air quality, reduces the urban heat island effect, filters diffuse pollution and helps to manage flood risk.
- Providing health benefits which impacts on health through improved air quality and surroundings which encourages activity and improves mental health and well-being.
- Generating employment by attracting new businesses and residents to the area, increasing office occupancy rates and increasing the number of jobs in the area.
- Promoting food production by enabling increased productivity in the city.



METHODOLOGY

4

4.1 Multiple methods have been used and merged together to produce the Strategy. These include a contextual review, urban character analysis, data audit, resource mapping using a Geographical Information System, needs and opportunities assessment, economic valuation, internal exemplars and a stakeholder workshop.

4.2 An urban character landscape analysis was conducted across the entire study area. To facilitate this, the study area was subdivided into character zones and then into 38 compartments for more detailed analysis. The compartments are areas which have a homogeneous character typically of land-use type and are often bounded by significant linear features such as main roads an example of a compartment is the area of Gorsey Bank. The character zones also typically reflect social-economic factors such as business usage or residential areas. Key factors recorded include visual character, landform, individual landscape components (such as the presence of trees, hedges or paths), built form and sensitivity to change. The detailed analysis was undertaken on a control document designed to allow for direct comparison between sites and minimize input bias. Possible Green Infrastructure interventions were defined for the strategy.

4.3 Typology is the study and classification of types. In the case of Green Infrastructure we are interested in the types of land and water bodies that contribute towards green infrastructure. Only sealed surfaces (buildings, car parks etc) are excluded. To ensure that the myriad of functions urban green infrastructure performs and that the associated needs in Stockport Town Centre can be geographically mapped and understood, the strategy uses a broad typology of 'green spaces'. This encompasses all vegetated or surface water areas, both public and private. The list was developed from (the now superseded) Planning Policy Guidance Note 17 typology to cover all green infrastructures in broad, functionally distinct categories:

- Agricultural Land
- Allotment, community garden or urban farm
- Cemetery, churchyard or burial ground
- Coastal habitat
- Derelict land
- General amenity space
- Grassland, heathland, moorland or scrubland
- Green roofs
- Institutional grounds
- Orchards
- Outdoor sports facilities
- Parks or public gardens
- Private domestic gardens

- Street trees
- Water body
- Water course
- Wetland
- Woodland

4.4 The green infrastructure mapping process was conducted using a set of tools operating in Arc GIS. The process consists of four main stages;

- Typology
- Functionality
- Needs and
- Needs met and not met.

These stages follow a methodology that has been developed in the North West of England by The Mersey Forest. The general methodology (an overview of which has been published in collaboration with Ordnance Survey and RICS) has garnered significant acclaim and has been used for several previous studies, although it is always evolving.

4.5 The methodology includes techniques that were applied to show the different functions performed by green infrastructure. All of the methods used to measure performance have either been peer-to-peer or externally reviewed. 35 functions were mapped individually, then merged together to form a multifunctionality map, which can be used to shape strategic interventions and devise policies to support these. Not all the functions are present in the study area; these return a null value in the analysis.

4.6 Mapping has been used as a 'key stone' to define the strategy for Stockport Town Centre (see 4.4). Mapping does not set the Strategy itself but an analytical tool it is invaluable. A 'need' for each of the functions was mapped for the study area as a strategic tool:

A 'needs met' map indicates for how many functions the greatest need is met in each location across the study area.

- A 'needs not met' map indicates for how many functions the greatest need is not met in each location.
- A 'percentage of needs met' map indicates the percentage of the needs present that are met in each location across the study area.

4.7 A consultation workshop was held in January 2014 and generated inputs to the Strategy (see Figure 7). Visual Amenity, Connectivity/Transport Routes, Recreation, Economic investment and Wildlife Biodiversity being seen by consultees as the most important issues. A report of the consultation event is a standalone support document for this Strategy (Appendix IV). Consultees were concerned that the Strategy should seek to address new ways of funding managed through partnerships involving different sectors. Consultation revealed a 'duality' with people suggesting small incremental actions and others favouring bold statements and larger scale 'iconic' projects.

4.8 A key point to emerge from consultation was that the boundary of the study area can be considered as arbitrary. In respect of this there were links to be made to areas immediately 'adjacent' to the boundary as consultees felt there were important green corridors nearby and that to maximise the benefits to wildlife/biodiversity that connections should be made to these areas.

LOCAL ISSUE	RATING
Visual Amenity	1
Connectivity/Transport Route	2
Recreation	3
Economic Investment	4
Wildlife Biodiversity	5
Public health/wellbeing (including mental health)	
Providing a setting	
Heritage	
Storyline	
Accessibility for pedestrians	
Evening economy	
Civic Spaces	
Air quality	
Noise quality	
Flooding and climate change	
Sustainability	

KEY MANAGEMENT ISSUES RAISED BY CONSULTEES:

- Topography
- Lack of (local) self confidence
- Underground services
- Funding
- Unimaginative development
- Land ownership
- Short termism
- Long-term management and maintenance



Figure 7 (left): Infographic showing the main methods used to produce the strategy. The use of a 'honeycomb' grid is a reminder of the theoretical framework devised to understand how urban green infrastructure can benefit the study area in the future. The activities were undertaken between November 2013 and April 2014.

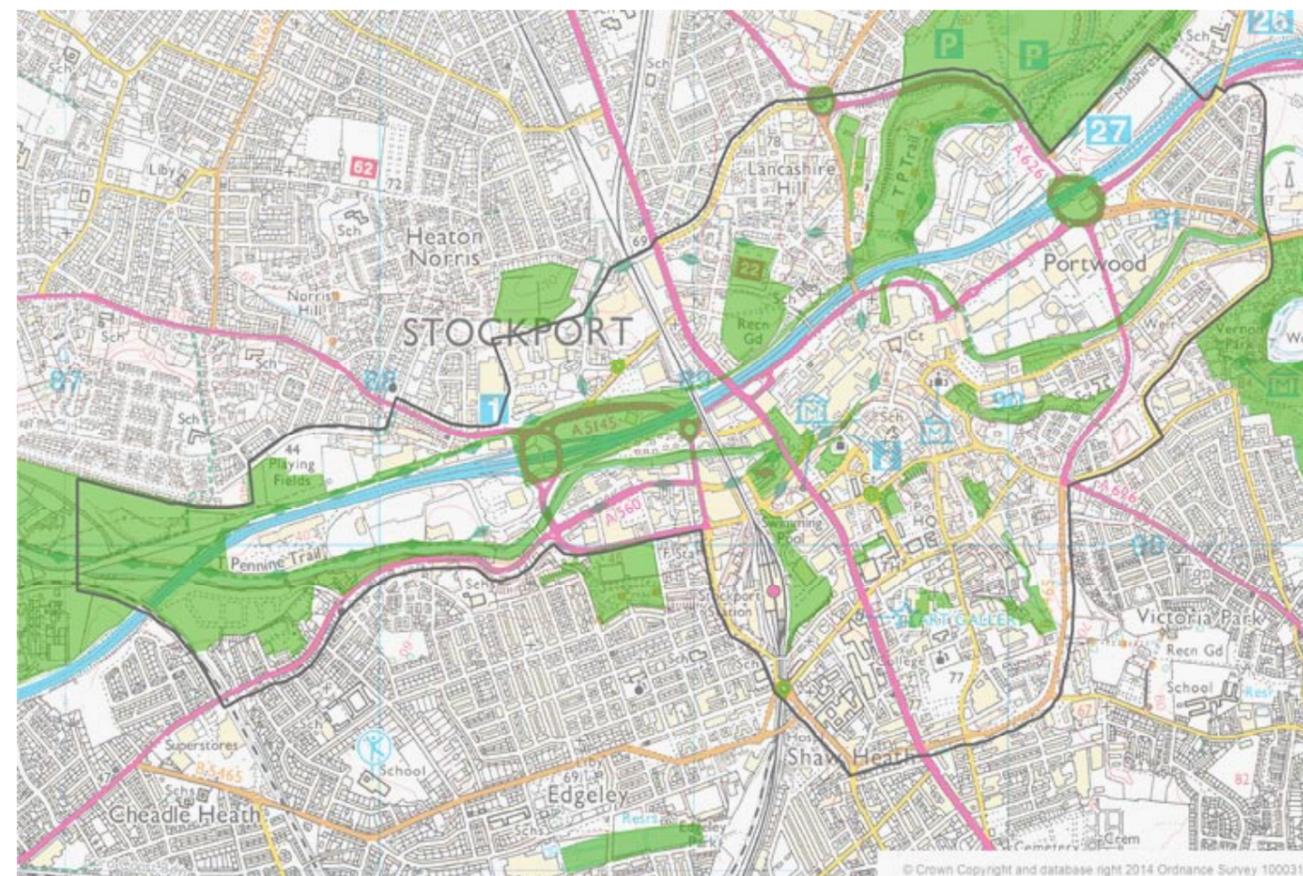


Figure 8 (left): Workshop consultees were invited to identify the areas they considered to be the most important for Green Infrastructure. There is a remarkably good fit with the percentage of needs met map (Figure 11) which would indicate that local stakeholders already have a good understanding of the geographical areas where needs are being met and not met.

Typology

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

Hidden Mersey

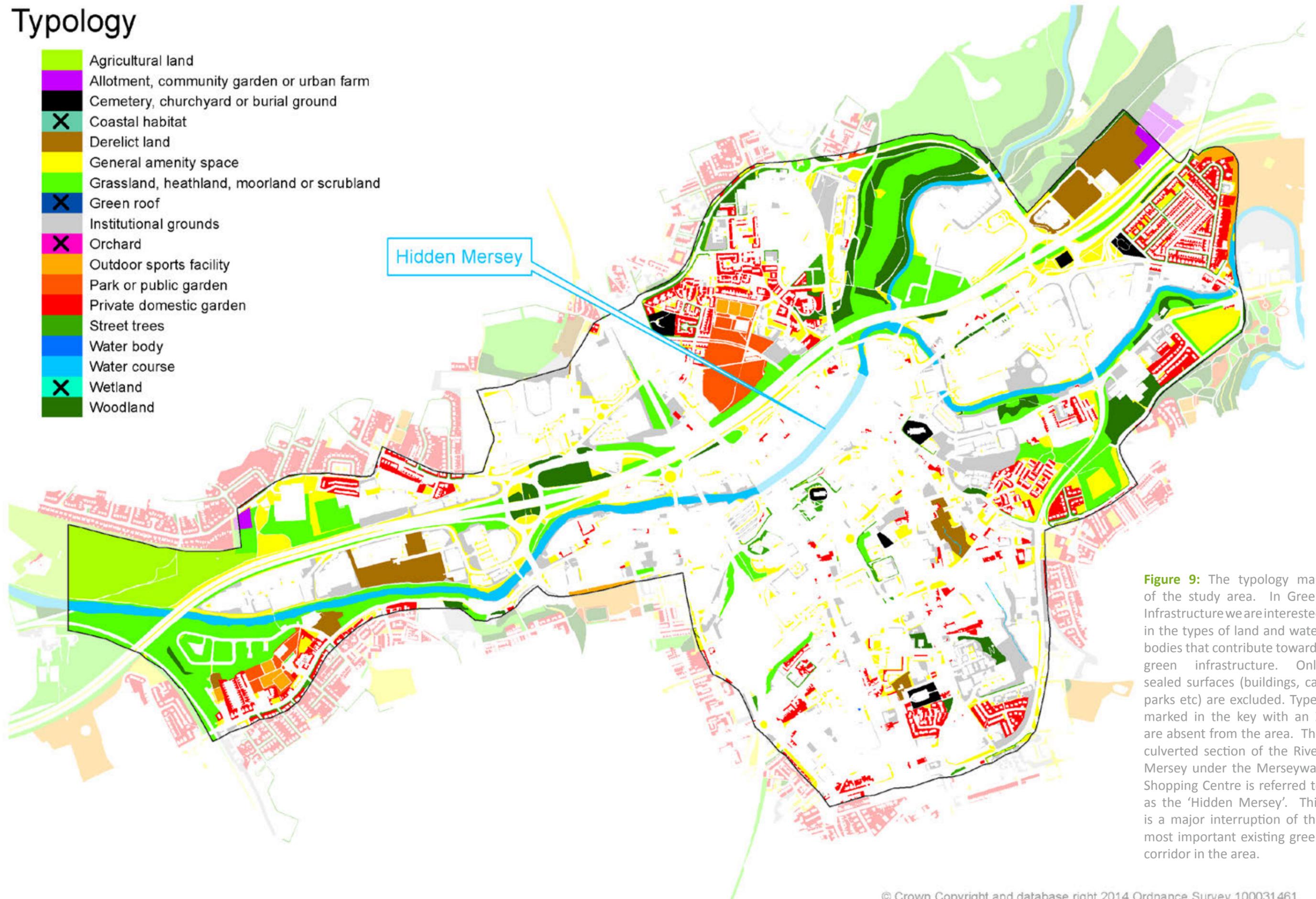


Figure 9: The typology map of the study area. In Green Infrastructure we are interested in the types of land and water bodies that contribute towards green infrastructure. Only sealed surfaces (buildings, car parks etc) are excluded. Types marked in the key with an X are absent from the area. The culverted section of the River Mersey under the Merseyway Shopping Centre is referred to as the 'Hidden Mersey'. This is a major interruption of the most important existing green corridor in the area.

Multifunctionality



Figure 10: The methodology includes techniques that were applied to show the different functions performed by green infrastructure. All of the methods used to measure performance have either been peer-to-peer or externally reviewed. 35 functions were mapped individually then merged together to form a multifunctionality map.

Needs met

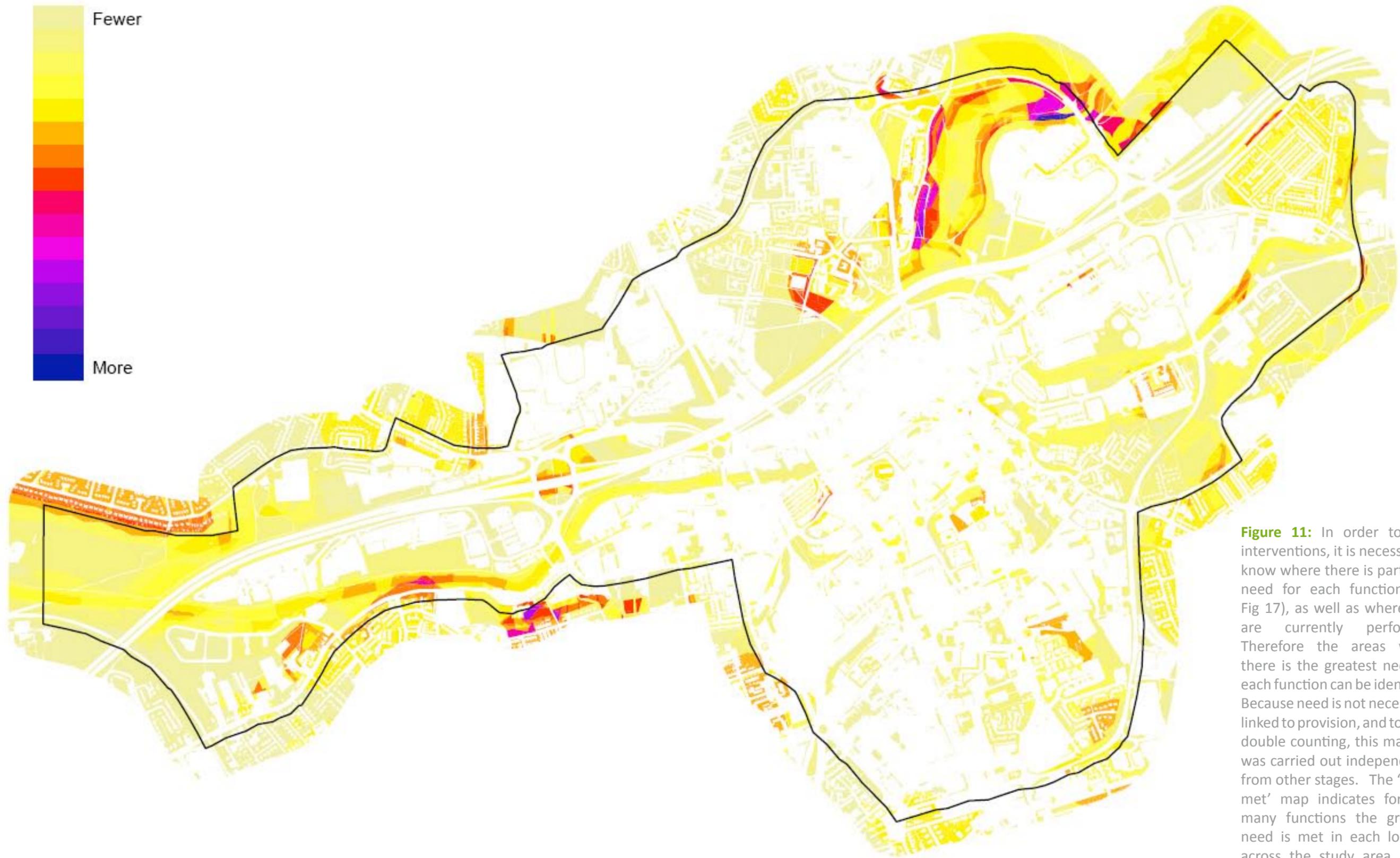


Figure 11: In order to plan interventions, it is necessary to know where there is particular need for each function (see Fig 17), as well as where they are currently performed. Therefore the areas where there is the greatest need for each function can be identified. Because need is not necessarily linked to provision, and to avoid double counting, this mapping was carried out independently from other stages. The 'needs met' map indicates for how many functions the greatest need is met in each location across the study area. (See Appendix III) for examples.

Needs not met

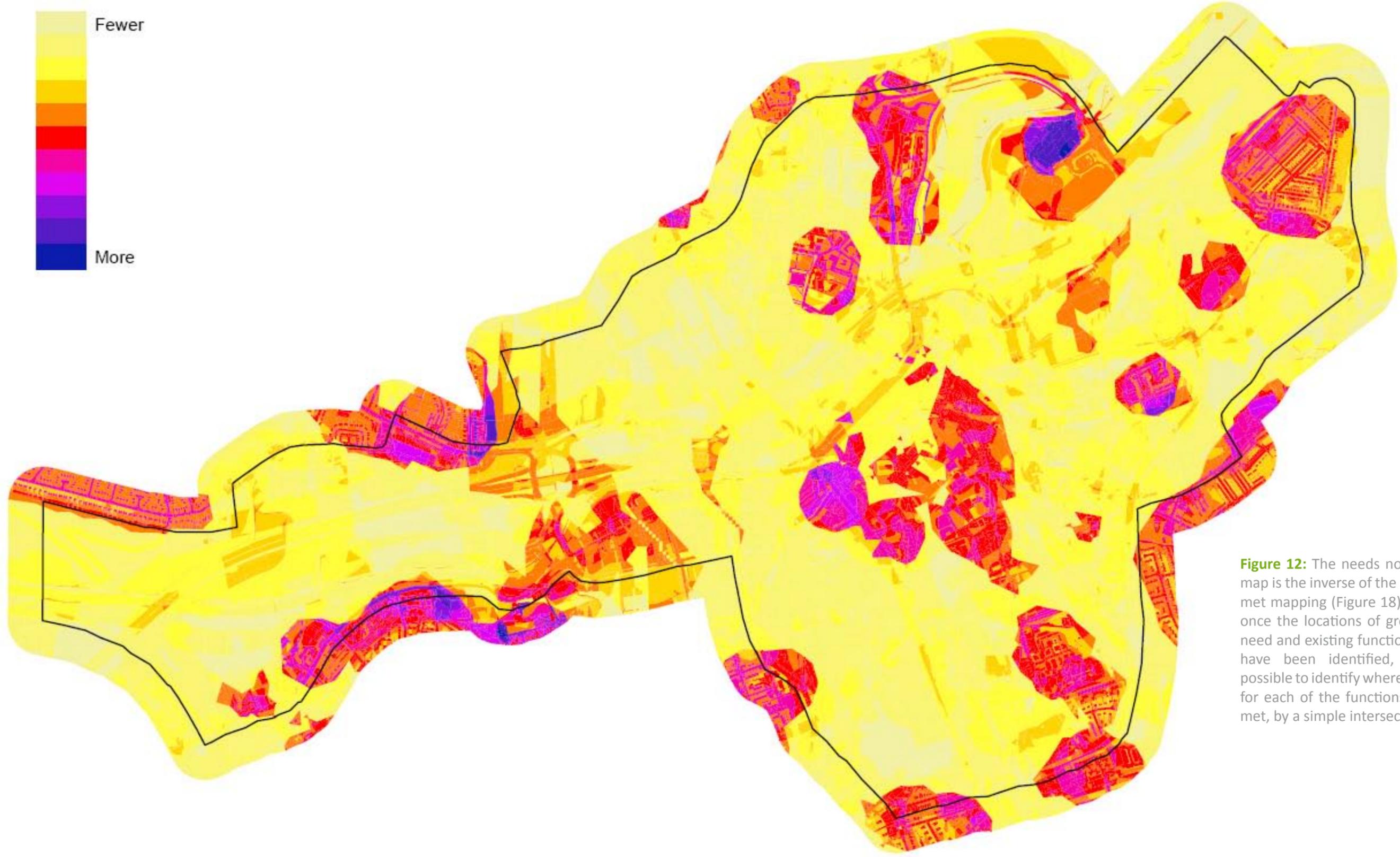


Figure 12: The needs not met map is the inverse of the needs met mapping (Figure 18) since once the locations of greatest need and existing functionality have been identified, it is possible to identify where need for each of the functions isn't met, by a simple intersection.

Percentage of needs met

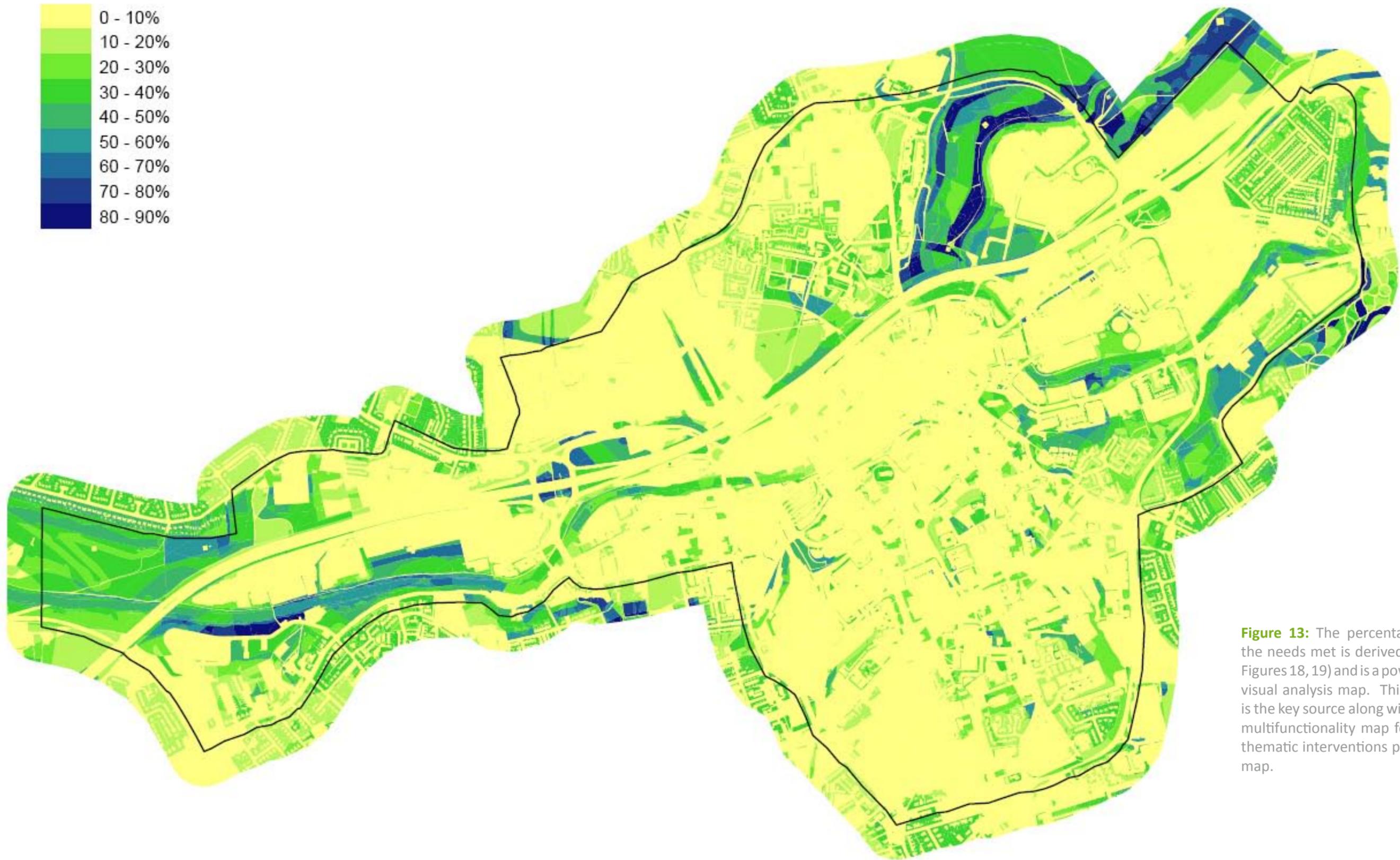


Figure 13: The percentage of the needs met is derived from Figures 18, 19) and is a powerful visual analysis map. This map is the key source along with the multifunctionality map for the thematic interventions priority map.

CURRENT STATUS OF STUDY AREA

5



CURRENT STATUS OF STUDY AREA

5

5.1 The study area encompassing Stockport Town Centre has a notable industrial legacy especially related to the town's 'textile' roots but is now dominated by service industries. It is economically part of the Greater Manchester conurbation. Reflecting this, there are significant daily commuter flows, hence transport is a key local issue. Stockport's location within the conurbation has socio-economic consequences reflected in its cultural and job market profile. Within the study area the most prominent architectural feature is the Stockport Railway Viaduct of 1840. Historically the site of the medieval market is of special note and geologically the outcrop of Triassic Red Sandstone is of strong geo-diversity interest.

5.2 Historically there has been a lack of coherence within the design palette, public spaces and built form in Stockport Town Centre although significant attempts have been made to address such attributes through development management and the publication of the Stockport Town Centre Public Realm and Lighting Guide.

Stockport appears to have a built environment that has its back turned to its water courses which is similar to other industrial towns and consultation indicates that there is local regret that the River Mersey has been culverted under the Shopping Centre. The rivers are critical elements of Stockport's Urban Green Infrastructure this is an important observation with implication for the Strategy.

Overall Stockport Town Centre is typical of a northern town with an industrial heritage with some fine heritage buildings and a strong cultural identity.

5.3 The Typology Map for the study area (Figure 9) shows that the distribution of existing urban green infrastructure is uneven across the study area with a notable but not unexpected reduction of green spaces in the Central Business and Retail areas. The types marked with an X are entirely absent from the study area. In total 38% of the study area (2014) contributes to urban green infrastructure and is highly fragmented.

5.4 The River Mersey Corridor along with the River Goyt and River Tame are the most significant green corridors through the study area. The culverting of the River Mersey under the Merseyway Shopping Centre is a serious interruption to the surface network connectivity. The River Tame flows through Penny Lane meadows which is a significant natural area acting as an ecological corridor enabling the movement of species in and out of the study area. Penny Lane meadows however requires improvements to the site infrastructure in order to maximise the potential and increase use.

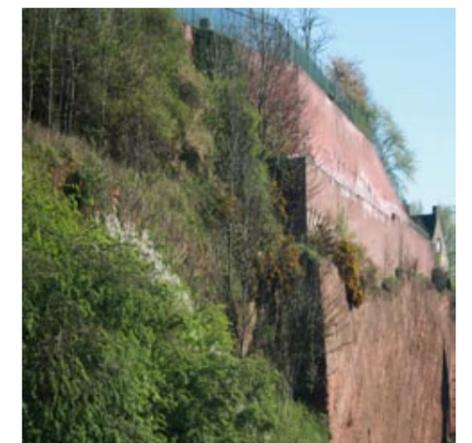
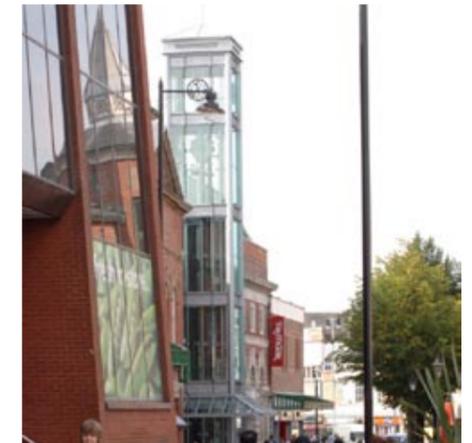
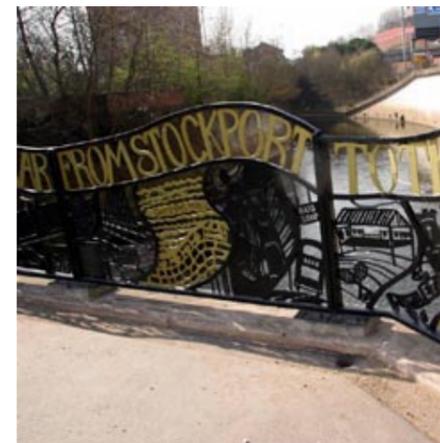
5.5 The M60 is the other notable corridor and this bisects the area into two distinct segments with the Central Business and retail areas contained within the southern area. Whilst the M60 is a significant boundary to the movement of species and people across the site and has a negative impact upon the landscape, there is a thin green line running alongside the motorway allowing some Green Infrastructure structure east-west and the motorway roundabouts contain semi-mature vegetation which is of value.

5.6 Close analysis of the typology map shows that there are challenges to developing the 'honeycomb pattern' of urban green infrastructure devised for the town centre notably due to the likely pace of land availability and the need to lever funding and influence decisions in future regeneration and development programmes upon which delivery will depend. However it must be noted that there is no other structural model that is less challenging. In view of this it is necessary to build the green infrastructure network incrementally through a succession of smaller actions funded and implemented by a rolling programme of activities. Thematic interventions delivered over a realistic long-term timescale are key to addressing fragmentation alongside positioning urban green infrastructure as a key consideration in urban design and regeneration programmes. The task is greatest in the Central Business and Retail areas but this also presents a significant opportunity which is the involvement of the business community in delivery of the strategy - a theme returned to later in this document.

5.7 Needs mapping (Figures 11, 12 and 13) is an analytical technique used to determine where need for each of the functions is met (Figure 11) by existing provision of that function and where it isn't met (Figure 12). The analysis supports the findings of consultation and the urban character landscape analysis which shows that Stockport Town Centre is poorly served by green infrastructure in terms of the needs that exist. This has shaped the following strategic considerations:

- There is a considerable need for urban green infrastructure interventions.
- These interventions are needed across the entire study area.
- There is a particular need for interventions that focus on the Central Business and retail areas; this means a close tie-in with urban design and regeneration programmes.
- That Penny Lane Meadows and the River Corridors are important elements of any network and should be improved and the benefits harnessed accordingly.
- That the M60 is disruptive to ecological connectivity and there is a need to explore measures to address this problem.

5.8 An economic valuation of Stockport Town centre's current Green Infrastructure was undertaken to determine a current economic value and are reproduced in Appendix V of the Strategy. The valuations were done using the Green Infrastructure Valuation Toolkit. The toolkit provides a set of calculator tools to help assess an existing green asset or proposed green investment and translate findings into a business case. It looks at how the range of green infrastructure benefits deriving from an asset or investment can be valued in monetary terms by:



- i. applying economic valuation techniques where possible;
- ii. quantitatively - for example with reference to jobs, hectares of land and visitors;
- iii. qualitatively – referencing case studies or important research where there appears to be a link between green infrastructure and economic, societal or environmental benefit, but where the scientific basis for quantification and/or monetisation is not yet sufficiently robust.

The toolkit does not assess the quality of the design or detailed management requirements of green infrastructure.

5.9 Three types of valuation were determined. The first is ‘Gross Value Added’ (GVA) which is a measure in economics of the value of marketed goods and services produced in an area. It is roughly equal to the grand total of all revenues, from final sales and (net) subsidies, which are incomes into businesses. It is often used as an equivalent to gross domestic product for areas smaller than a whole country. The figures represent the contribution of green infrastructure towards the total for Stockport Town Centre.

As examples:

- Large trees near buildings can help to insulate those buildings, allowing businesses to save money on heating.
- Workers encouraged to walk or cycle to work become healthier, reducing absenteeism and making businesses more productive.

The second is ‘Land and Property Value’ (LVA) which represents the contribution of green infrastructure towards the total value of land and property within Stockport Town Centre. Studies have shown the nearby green space can increase house prices. For example, a case study found that transformation of the former Bold Colliery site in St Helens into a community woodland directly enhanced existing property values in the surrounding area by approximately £15 million (Forestry Commission n.d.)

The third is ‘other economic value’ this represents the economic value of green infrastructure benefits that cannot be included in either of the above categories. As an example reduced mortality from increased walking and cycling cannot be counted towards either of the above categories, but an economic value can be put on it using the Department for Transport’s ‘cost of life’ figure.

5.10 The benefit monetisation is shown at Figures 14, 15. It should be noted that the three sets of figures should not be added together, as they represent different kinds of value. The value of recreation & leisure benefits has not been included in the other economic value total because of the risk of double counting. The most significant benefits in order of magnitude are (i) Health and Wellbeing, (ii) Land and Property Values and (iii) Biodiversity.

In 2011 Natural Economy North West published research on the economic value of green infrastructure. It discovered that the North West’s environment generates £2.6 billion in gross value added (GVA). It also supports 109,000 jobs in environmental and related fields. As well as this direct income, the research discovered a wide range of indirect economic benefits. These include cost savings for the public and private sectors - such as a reduced need for healthcare - and reduction in risks like flooding and climate change.

Existing Green Infrastructure Valuation

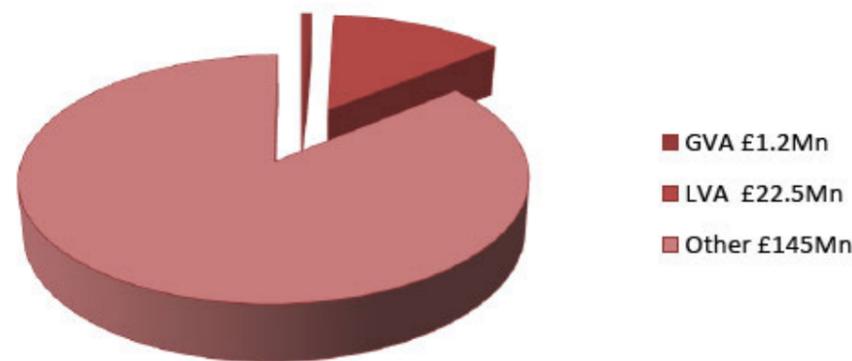


Figure 14, 15 (above and right): The benefit monetisation of Stockport Town Centre existing green infrastructure derived from the Green Infrastructure Valuation Toolkit.

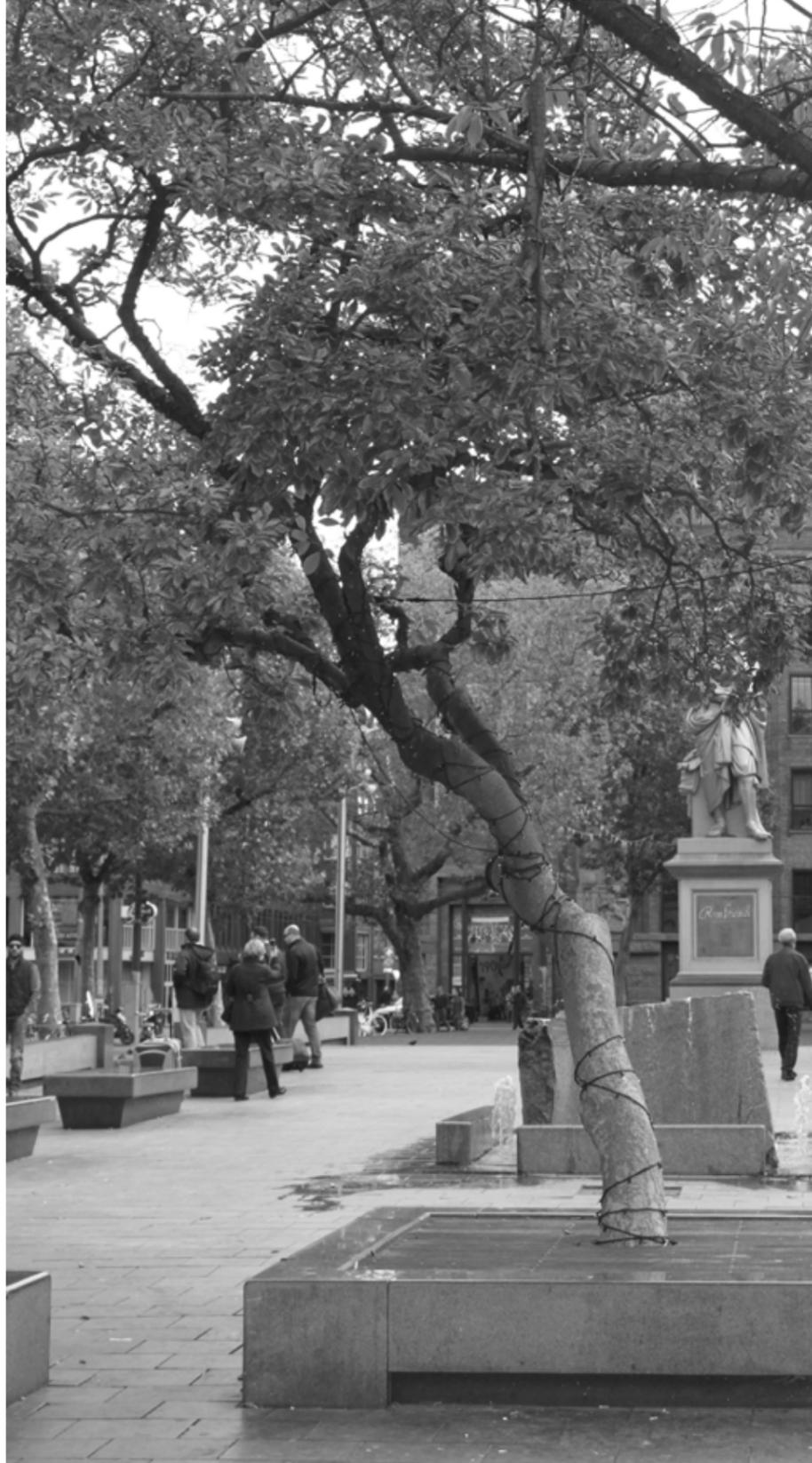
BENEFITS	BENEFIT MONETISATION		
	GVA value	Land and Property Value (LVA)	Other economic value
1 Climate Change Adaptation & Mitigation	£1,165	n.a.	£131,567
2 Water management & Flood Alleviation	£230,434	n.a.	n.a.
3 Place & communities	n.a.	n.a.	n.a.
4 Health & Well-being	n.a.	n.a.	£138,381,557
5 Land & Property Values	n.a.	£22,519,485	n.a.
6 Investment	n.a.	n.a.	n.a.
7 Labour Productivity	£347,021	n.a.	n.a.
8 Tourism	£0	n.a.	n.a.
9 Recreation & leisure	n.a.	n.a.	£589,941
10 Biodiversity	n.a.	n.a.	£6,614,528
11 Land management	£618,965	n.a.	n.a.
TOTAL ECONOMIC VALUE OF BENEFITS	£1,197,585	£22,519,485	£145,127,652



Figure 16 (above): The study area contains some surprisingly naturalistic areas. Nature is reclaiming land at Gorse Bank. During the field study the number of people using the site as a thoroughfare and for dog-walking was high; this green infrastructure asset should be enhanced as per guidance in the National Planning Policy Framework in order to increase the use of sustainable modes of transport and improve the health and wellbeing of Stockport residents - in turn reducing the strain on the budget of health care services.

STRATEGIC CONSIDERATIONS

6



STRATEGIC CONSIDERATIONS

6

6.1 It is clear from the preparatory work undertaken for the Strategy that local stakeholders are well-aware of where key Urban Green Infrastructure exists and also the areas of Urban Green Infrastructure deficiency. This suggests that there is not a lack of knowledge but a requirement for additional data/information to focus Green Infrastructure project interventions effectively and a lack of 'tool's to enable the changes needed.

6.2 The consultants believe that only the local authority is in a position to provide the leadership needed to deliver the Strategy. However the Council cannot address and undertake delivery on its own. The key roles for the Council are (i) coordination, (ii) motivation, (iii) promotion, (iv) partnership development and (v) Strategy management.

6.3 Many professional skills are required to deliver the strategy, including civil engineers, landscape architects, urban designers, architects and planners. Planning and delivery is not however restricted to professionals as communities and volunteers must play a key role. Having a delivery framework that is inclusive of professional skills but also provides an opportunity for volunteer participation is necessary.

6.4 The strategy has to be tied into wider regeneration and renewal processes taking place in the Town Centre both now and in the future in order to achieve the proposed thematic and project interventions. In view of this a strong link between this Strategy and regeneration, landscaping and urban design activities is fundamental to moving forward.

6.5 The mapping analysis demonstrates that the Town Centre area is significantly underperforming in terms of Green Infrastructure. The starting base is low. It is reasonable to conclude that delivery will take an extended period. In view of this early project successes are needed as a confidence building measure and proof of intent.

6.6 Stakeholders believe that visual amenity is a key consideration. Essentially Urban Green Infrastructure must 'look good' as well as be high performing socially, economically and environmentally. Urban Green Infrastructure should be used to 'frame' key views and screen less pleasant views however care needs to be taken as perceptions vary according to the observer. There is a key link to be made between Urban Green Infrastructure and eco-system services. However these are technical terms and need to be explained in layman's terms in publicity.

6.7 Money supply is a current difficulty hence securing funds will be a major aspect of moving forward. Interventions need to be affordable in the longer term and the local authority cannot be expected to take on unlimited management responsibilities. There is also a challenge to persuade those who consume the benefits of Urban Green Infrastructure to contribute to its management and creation beyond their taxes.

6.8 The conceptual framework of the 'honeycomb' (see 2.6) appears to fit well with the geographical and topographical structure of the town centre area. However the Strategy has to provide links outside of the study area these are important as ecological corridors.

6.9 There is a link between the Strategy, Development Management and the Local Plan to be factored in. The planning principles can be described in key words: Integration, Connectivity, Multi-functionality and Multi-scale.

6.10 Economic valuations need to be cautious so as not to lead to criticism that they are unrealistic in terms of the Strategic Interventions. The consultants believe that a conservative approach is appropriate for this study in the supporting appendices and that the figures quoted can be exceeded by other methods of valuation.

6.11 A Delivery Framework is needed if the interventions and proposals contained in the Strategy are to be brought about.



Figure 17 (above): The street scene can be improved by the position of vegetation and the choice of species. Whilst indigenous species have a key role to play ornamental species can be especially attractive in the right setting. Visual enhancement was a key consideration for consultees when preparing the Strategy. Landscape architects have access to an ever widening list of ornamental species. Care should be taken to 'climate proof' planting schemes to address models which suggest that Stockport will experience higher winds, higher annual precipitation and more regular summer droughts this century.



THE STRATEGY

7



THE STRATEGY

7

7.1 There is a strong sustainability and regeneration focus to the Stockport Town Centre Green Infrastructure Enhancement Strategy. The prime consideration is to enable Stockport's Urban Green Infrastructure to deliver essential ecosystem services now and more-so in the future by delivery of the aim (see 1.2) and objectives (Figure 3).

7.2 The recommended timescale for the Strategy is short-term (0-5 years), Medium Term (5–10 years) and long term (>10 years). In some cases reference can be made to actual timescales such as mid-century (circa 2050) and end of century (circa 2100).

7.3 Whilst the Strategy is not a statutory planning document it is very relevant to Stockport Metropolitan Borough Council's Local Plan. Hence this strategy should contribute to revisions, processes and development frameworks that the Council prepares under its statutory obligations in respect of the study area and beyond. Notably it should inter-leaf with borough-wide and adjacent green infrastructure strategies, the latter driven by the National Planning Policy Framework's duty on local authorities to cooperate.

7.4 The Strategy is based on delivering change based on two types of interventions - THEMATIC and PROJECT-BASED.

7.5 Thematic interventions are non-geographical with the potential for implementation across the entire study area. They are (i) driven by opportunity (such as a planning submissions or civil engineering works) and (ii) targeted to the areas of greatest need.

7.6 For the purposes of targeting thematic interventions a priority map is shown at Figure 26. The colour coded areas are shown as 1 = lowest requirement for intervention to 5 = greatest need for intervention and is based on the number of needs not met mapping undertaken in the study. Whilst category 1 may have the lowest requirement, opportunities should invariably be taken since most areas of Stockport Town Centre will benefit from the interventions because of the low base referred to at 6.5. Three groups of thematic intervention are proposed:

- i. Creation and management of a tree canopy – referred to as the Urban Forestry Intervention.
- ii. Integrated management of urban surface and ground water linked to soils, nutrient flows and surface vegetation.
- iii. The intimate incorporation of vegetation into new building design and through retrofitting.

7.7 Thematic interventions are key to delivery of the honeycomb conceptual framework, as through time, the desired 'structure' will evolve. All three of the interventions contribute towards this. The urban forestry and water measures have a close spatial relationship to each other and will likely be focused on the existing vehicular and pedestrian route pattern throughout the study area. The vegetation and building design intervention is not 'route' dependant and has the potential to provide green structure to buildings especially if retro-fitting is strongly embraced.

7.8 Cumulatively the thematic interventions will make the greatest impact on creating a robust urban green infrastructure for Stockport Town Centre.

However there is also a discernible requirement to target interventions to the areas of greatest need. This can be achieved through targeted project based interventions. A further reasoning for project interventions is that these are:

- an opportunity to 'show case' the Urban Green Infrastructure Strategy and hence build support for it;
- the basis to attract external funding (as identified in Section 8) because of the scale and ambition of the proposals;
- directly link urban green infrastructure interventions to the 'visitor economy' by adding to the Town Centre attractions hence increasing footfall and visitor spend in local businesses;
- key elements within the final urban green infrastructure network;
- highly targeted and geographically specific rather than spread across the entire area, they are hence easier to understand by members of the public;
- successional, meaning that positive change can be observed through time;
- promotional and photogenic with ample opportunities to engage with the media.

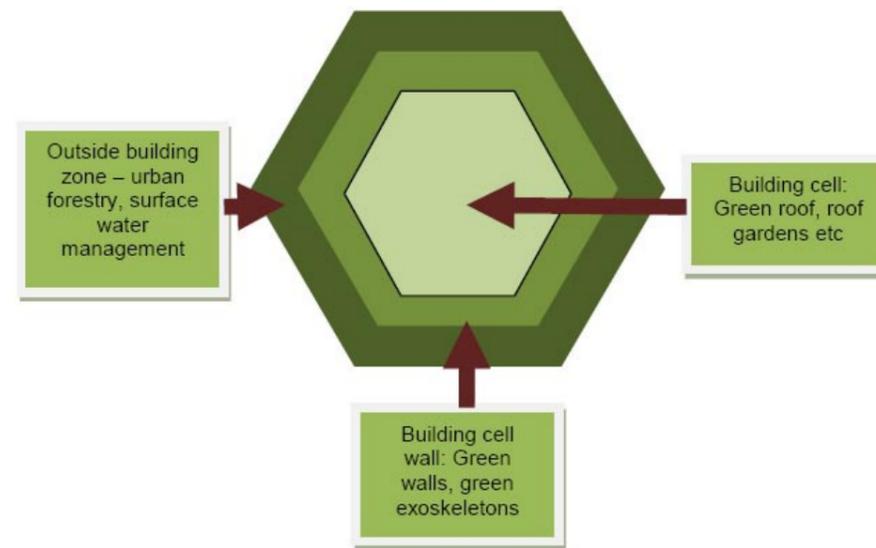
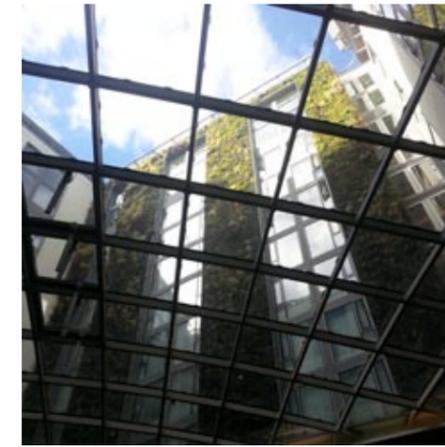


Figure 18 (above): Relationship diagram between conceptual framework (honeycomb cell) and thematic interventions. The cell structure and the infrastructure benefits that will flow from it will not be created without adopting the thematic interventions. Project interventions are insufficient to achieve the scale of change across the whole study area.



Thematic intervention priority map

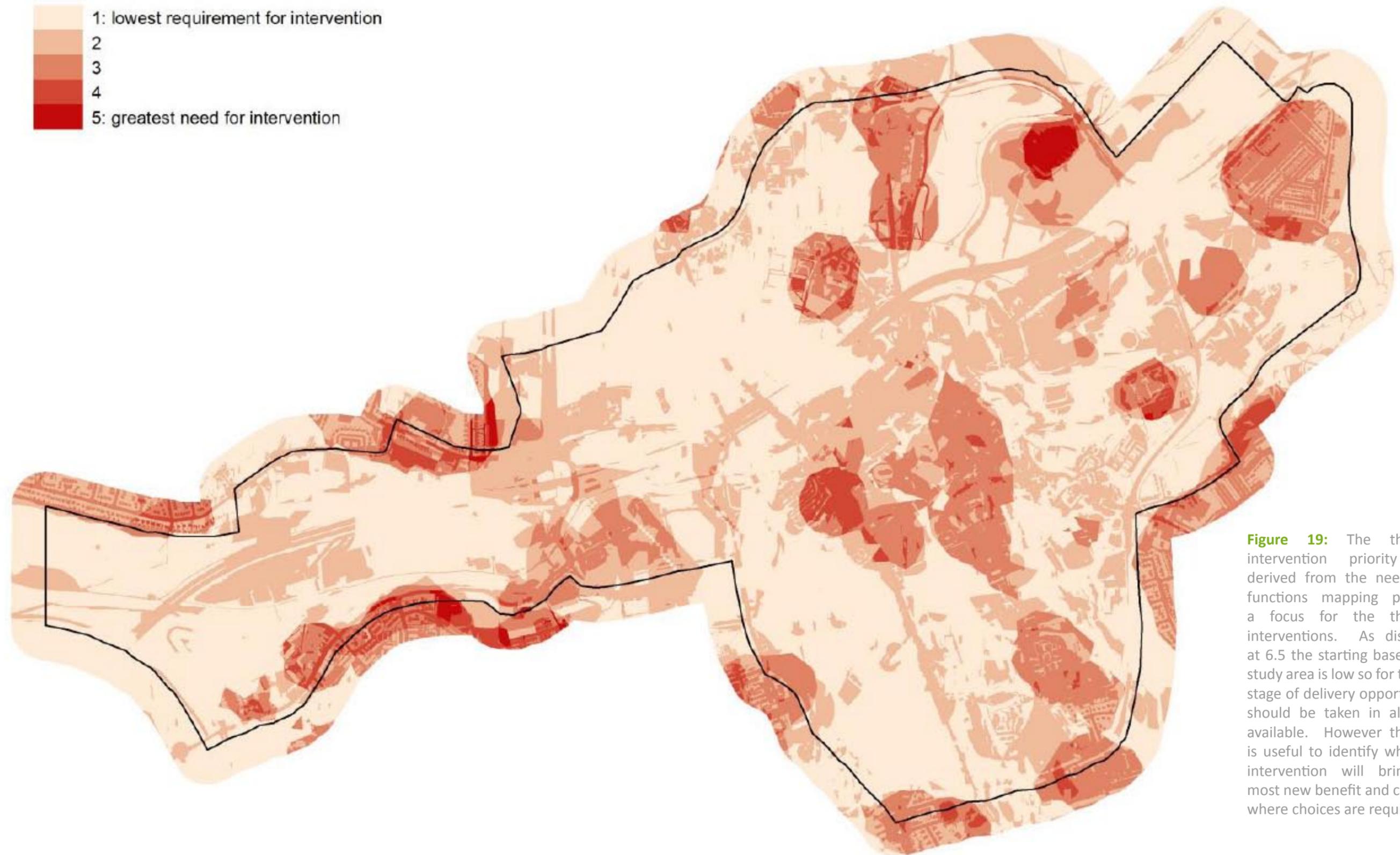


Figure 19: The thematic intervention priority map derived from the needs and functions mapping provides a focus for the thematic interventions. As discussed at 6.5 the starting base in the study area is low so for the first stage of delivery opportunities should be taken in all areas available. However the map is useful to identify where an intervention will bring the most new benefit and can help where choices are required.

THEMATIC INTERVENTIONS

7.9 Urban Forestry - Introduction

Tree cover in the study area is only 8% and is not evenly distributed. Some localities are almost devoid of trees and there is almost no joined-up canopy in the study area except small areas of 'copse' woodland and on the approach roads to the M60. Trees can greatly ameliorate the urban climate by providing wind breaks in winter, shading and evaporative cooling in summer. Conversely it should be noted that trees can locally add to VoCs, add pollen to the air and leaf fall requires removal in pedestrian zones. Nevertheless the balance and evidence is strongly in favour of tree benefits.

Tree canopy expansion can also address the top priority of consultation – visual amenity and tree cover contributes strongly to biodiversity. There are substantial amenity values to street trees too and several tools are available to value these. A useful review of these has been conducted in 2011 by the Forestry Commission entitled 'Street Tree Valuation Systems'.

Trees have to be appropriate to the setting and this requires arboricultural advice to be taken on a site-by-site basis. There is no requirement in highly altered urban settings to favour 'indigenous trees' but where the opportunity exists to plant groups of trees, indigenous trees should be favoured. There is also a need to specify large trees for some locations to secure the structural benefit in the longer term.

Urban areas are 'hard-on-trees' and design consideration needs to be given to adequate planting space, water retention and nutrient supply under surfaces.

Tree diseases are increasing due to climate change and the global trade in plant material; hence a wide-selection of species is to be preferred to avoid disease removing large swaths of canopy in the future.

It is proposed that trees can be 'shoe horned' into small pocket areas and feature in urban regeneration and street scene improvements. For example road calming schemes (such as the introduction of 20 MPH zones) can use trees as traffic calming structures whilst improving the character of the street scene.

7.10 Urban Forestry - Intervention

- i. The recommended strategic aim is to increase canopy cover to at least 16% (2x the current level) by 2050 and 24% (3x the current level) by 2100.
- ii. Prepare a Town Centre Urban Forestry Strategy which details where and how trees should be located. The core aim of the Strategy should be to manage the tree cover of Stockport Town centre as a canopy.
- iii. Prepare tree planting and management guidelines and include these in a Stockport Town Centre Green Infrastructure Design Guide.
- iv. Introduce a 'tree standard' for development management notably to ensure that more trees are planted than are lost and that mature trees and highly valued.



Figure 20 (above): Mature trees in and around Stockport Bus Interchange should be retained during and beyond site redevelopment, contributing to the increase in canopy cover throughout Stockport Town Centre and reinforcing the importance and value of green infrastructure.

7.11 Surface and Ground Water – Introduction

The management of surface and groundwater (including urban soils and nutrient flows) will make a substantial difference to urban green infrastructure over the longer term especially in face of a changing climate. Water management is for the most part a hidden urban system and for the greater part of the last two centuries has been managed as an engineering concept rather than as 'engineering managing an ecosystem'. The implication for the future is for a more inter-related form of water management.

There is also a relationship between this approach and the urban forestry concept as ground water and nutrient flows are fundamental to the health of trees and their ability to perform evaporative cooling which is one of the benefits being sought from that intervention. The management of surface and groundwater should also bring it into the public domain to avoid the 'out of sight out of mind' implication that result from this.

There is a long list of projects that can bring ecosystem benefits from urban water management and delivery and choice of these rests with those who conceive and specify water management at all levels. Notable in Stockport this is the role of United Utilities, Stockport Metropolitan Borough Council and the Environment Agency. The list of potential interventions includes:

- Sustainable urban drainage from buildings
- Nature based water filtration such as reed beds
- Porous paving surfaces
- Rain gardens and swales
- Natural irrigation of green walls and roofs
- Redesigning parks and gardens as flood holding areas
- Water features in urban design (e.g. water clocks, functional art, play fountains)

An ancillary aspect of this strategy is that Stockport should gradually 'turn to face' its rivers and water courses. This is a planning and design issue and should be specified in future planning design guides and made a condition for developers seeking to build. Inspiration can be taken from cities such as Birmingham and Leeds which have pursued this policy for many years. In the medium to longer term revealing the River Mersey which is currently culverted under the Merseyway Shopping Centre is an important Urban Green Infrastructure intervention.

7.12 Surface and Groundwater - Intervention

- i. Prepare surface and groundwater management guidelines and include these in a Stockport Town Centre Green Infrastructure Design Guide.
- ii. Develop a partnership with United Utilities with the aim of implementing several 'pilot scheme' as a 'proof of concept'.
- iii. Seek to 'turn building frontages' and 'reveal the hidden River Mersey' which currently culverted under the Merseyway Shopping Centre as part of future Masterplanning activities.



Figure 21 (above): Surface water management with public access providing surface water drainage for a garage franchise.

7.13 Vegetation in Building Design - Introduction

Incorporating vegetation into new building design and retrofitting existing buildings has grown significantly over the last 20 years because of the benefits of energy saving (shade and shelter), visual amenity and water management and their ability to contribute to increasing biodiversity. In an urban green infrastructure strategy there is the additional need to ensure that these vegetation systems are, as far as is technically possible, inter-connected. The use of rambling vegetation growing on wires, trellises, and green bridges can be especially significant in this regard.

In Stockport Town Centre this intervention has the potential to create building harmony which is notably absent in post 1945 structures and also to provide further connectivity with urban forestry, water and drainage interventions hence strengthening the honeycomb concept. The intervention contains several aspects of which the major contributors are:

- Green Roofs
- Green Walls
- Rambling vegetation affixed to wires, building exo-skeletons and trellises

All of these have been keenly researched and turn-key solutions are available as well as bespoke solutions led by landscape design companies.

In planning terms vegetation in building design should be the default position with planning applicants required to 'opt-out' rather than 'opt-in' to this provision. This recommendation needs to be embedded in future design guides and local plan policies in order to guide development management.

Retrofitting is equally important as new build and should be incentivised possibly through temporary rate relief where/if this tool is available.

7.14 Vegetation in Building Design - Intervention

- Prepare vegetation in building design guidelines and include these in a Stockport Town Centre Green Infrastructure Design Guide.
- Through the Development Management Process require all developers to 'opt-out' of rather than 'opt-in' to the inclusion of vegetation in their building design.
- Establish a sector leadership role by retro-fitting municipal buildings and Council managed infrastructure in the town centre with vegetation interventions over a 10-year period where fiscally and physically feasible/viable.

Figure 22 (right): Vegetation in building design photo montage: A successful green wall such as the M&S Food Store in Ecclesall Road, Sheffield can become a significant local attraction. The Promenade Plantee in Paris is an example of the exceptional use of plants and urban design featuring climbing vegetation. Ijburg in Amsterdam has embeded green infrastructure and sustainability principles in to the development of the island giving rise to numerous green walls, green roofs and vegetation in building design both in the public and private domain. Structurally the Merseyway Shopping Centre is highly suited to training rambling vegetation both on existing structures (balconies and terraces) and also by the use of training wires. The overall visual impact would be much greater than the planters currently used in the shopping centre and contribute to the ecosystem services provided by green infrastructure.



PROJECT BASED INTERVENTIONS

7.15 The project based interventions are for the most part focused on the Central Business and retail areas of the Town Centre and are site specific.

There is a notable exception which is the proposed 'GreenStreets Stockport' project which is a community and business scale initiative to target small-scale thematic and project interventions across the study area and will contribute to achieving the targets as set out in the Urban Foresty thematic intervention.

7.16 The project based interventions can be considered as part of larger 'place making' regeneration initiatives.

7.17 In contrast to the thematic interventions the project based interventions should be read as a menu as there is no expectation that all of these projects will be delivered; some are expected to merge or morph into other projects and it is anticipated that new projects will be identified as funding and development opportunities arise. These new opportunities should be identified and harnessed and consideration should be given to their contribution to Green Infrastructure.

7.18 A range of small-scale localised interventions are included in the Urban Character Landscape Analysis report which is a standalone Appendix (VI) to the strategy.

The major project based interventions outlined in Section 7.19 through to 7.30 are strongly linked to urban design and town centre regeneration.

7.19 Mersey Square

Mersey Square is the part of the Town Centre that most visitors and shoppers see when they arrive at Stockport as it sits in front of the Town's most popular destination, Merseyway Shopping Centre. For many people it provides a significant first impression of the character of Stockport Town Centre.

The Square is not a pedestrianised area on account of the road link from Princes Street to the Bus Station and Chestergate which bisects it - as a result of this road the quality of the Square and the experience for the pedestrian is diminished. Closing the road off to traffic there would be an excellent opportunity to transform the Square in to a quality hard and soft landscaped area where shoppers and visitors could spend time as opposed to using it as a transitory space.

The main constraint in terms of the landscaping is the culverted river Mersey however, there is sufficient space to the north of the river to carry out more substantial landscaping works including large specimen tree planting similar to a continental city square.

If funding were not a constraint then exposing the course of the river would provide an even greater source of interest and attraction to the visitor and would transform this location in to a landmark feature for the Town.



Figure 23: Mersey Square: The opportunity for a significant piece of public art could be incorporated into the re-design of Mersey Square to act as a visitor draw.

7.20 Penny Lane Meadows

This semi natural open space which sits at the foot of Lancashire Hill flats is already a valuable open space asset. However there is scope for further improvements in terms of habitat diversification, access and interpretation.

The area is poorly drained and could be the focus for creating wet woodland and wildflower meadows with shallow scrapes to increase biodiversity. It is recommended that surrounding surface water runoff from Penny Lane is diverted on to site to reduce pressure on engineered drainage systems whilst supporting the new habitats outlined. The collective habitat creation and improvement works could form a nature trail which could be further enhanced from an educational perspective with interpretation.

The site could also host some form of environmental art or sculpture to further raise its profile and encourage public usage.

There is also the opportunity for natural play and robust fitness trim trail apparatus. In the Lower Irwell Valley Improvement Area in Salford a semi natural climbing wall was constructed as part of the Newlands Project and is now heavily used by climbing enthusiasts.

Access improvements are needed on the footpaths that link the Town Centre via the River Mersey / River Tame crossing and more visual signage is needed to highlight the route to the Town Centre, the Trans Pennine Trail / Reddish Vale and the confluence of the River Tame and the River Goyt giving rise to the start of the River Mersey.

There is the potential for this site to form a component in a longer Trans-Stockport walking route from Vernon Park to Reddish Vale.



Figure 24: LIVIA Outdoor Climbing Facility – a similar installation could be installed at Penny Lane Meadows

7.21 Wellington Road – a new Boulevard

The approaches to the Town Centre via Wellington Road are largely devoid of tree cover other than some small scale planting outside locations such as the Town Hall / Art Gallery on the southern end and offices including Kingsgate on the northern end.

The existing pavements are wide enough to plant street trees which would create a sense of arrival to the Town Centre and mask some of the currently vacant units and blank facades.

More ambitiously, road narrowing and widening of pavements is a real opportunity to create a Wellington Boulevard with street seating areas for cafes and bistro's which would animate the street scene and improve the ambience. The use of 'Plane Trees' would create a continental street-scene atmosphere, providing shelter and shade during the warmer Summer months, improving the built environment on a human scale.

These locations are high profile and so the opportunity for private sponsorship can be explored. Interpretive information around the base of the trees could also help to form a walking trail. The design of the tree pits should incorporate SUDS and permeable surfaces which may also improve opportunities for procuring funding.

The bridge over the Mersey presents more of a problem as it would not be feasible to plant street trees here unless they were containerised which would require regular watering during dry periods and ongoing maintenance indefinitely which would be costly.



Figure 25: Computer Generated Image of tree planting in the existing pavement on Wellington Road. A more ambitious approach would reprioritise the road, making more space for pedestrians allowing for the development of street-life at the expenses of carriageway. The result would be transformative.

7.22 Merseyway Shopping Centre

The Merseyway Shopping Centre is almost devoid of vegetation. Whilst opportunities for vegetation at the pedestrian level are limited to planters there is ample opportunity to install less traditional forms of planting in the form of rambling vegetation on trellises, wires and balconies which will have a significantly greater visual impact.

In the past it has been suggested that the course of the culverted river be exposed with a reinforced transparent viewing window which would be an exciting and interesting focal point for the shopping area but cost will be a major constraint. In the long term when the Shopping Centre is next redeveloped it is essential to reveal the River Mersey and include it in the redevelopment.

On the north side of Merseyway there are significant numbers of buildings with canopies which could potentially host simple sedum green roofs which require relatively little maintenance if an established sedum roll is used. The green canopies could be irrigated if required from rain collected on the building roofs.

On the south side of Merseyway the buildings have balconies at the first floor level which could accommodate planters to create a hanging garden effect which has been done with considerable success elsewhere such as the Barbican in London. These planters would require maintenance in particular watering.

This site is a key opportunity to engage with the business community in the creation and maintenance of green space.



Figure 26: The Merseyway Shopping Centre is a notable challenge however the buildings are highly suited for adaption to hold climbing and rambling vegetation which would have a strong visual impact.

7.23 Turncroft Lane – creation of viewing mound

The sports pitch off Turncroft Lane is currently underutilised and requires maintenance and subsequent alternative uses could be explored whilst taking in to consideration planning guidance.

The elevated position of this location provides excellent views of the surrounding area. The vantage point could be further enhanced by creating a viewing mound which would feature views to the Town Centre and the Peak District. A view finder sign could be used to highlight points of interest.

The viewing mound could be sculptured into an interesting land form which would present opportunities to celebrate a local feature, person or historical event in the design.

A footpath would provide good recreational access to the Town Centre via the banks of the River Goyt.

Creating an elevated mound would provide a destination for walkers and become a focus for activities such as kite flying, sledging and community events.

A similar viewing mound has been constructed on the Manor Fields Park in Sheffield with success.



Figure 27: The viewing mound at Manor Fields Park in Sheffield is inspiration of a potential intervention at Turncroft Lane.

7.24 Great Portwood Street

This key gateway in to the Town Centre is dominated by retail warehouses and is a hard urban landscape that is visually unappealing.

The visual appearance of this road could be significantly enhanced and surface water run-off reduced by increasing the levels of street tree planting on the pavement on the north side of the street and the existing soft landscaped area on the south side.

The latter has some tree provision but not enough to create a tree lined avenue.

The prime focus should be on the north side of the road where there is currently no tree cover. Additional tree planting on the soft landscaped areas is also recommended.

The pavement is wide so this is a site suitable for larger trees although careful ground preparation will be necessary to accommodate these. The potential for business sponsorship could be explored.



Figure 28: Computer Generated Image showing the impact of tree planting on Great Portwood Street – above before, below after.

7.25 Vacant Site Next to Tesco

The substantial area of derelict land bordered by Marsland Street and Water Street adjacent to the Tesco Extra Supermarket off the M60 could be used as a 'meanwhile site' until the land is developed.

The site could be trialled as a temporary food growing area at a commercial (social enterprise) or community level in containers or as short rotation coppice for biomass. Opportunities for working with Tesco as a destination for the produce could be explored and this would make for a very interesting national pilot.

To ensure the temporary nature of the food growing area Intermediate Bulk Containers (IBCs) could be used for growing the fruit and vegetables in. IBCs can be easily moved by fork lift trucks and to ensure the continuity of the food growing operation other 'meanwhile sites' in the vicinity should be identified in advance.

The addition of polytunnels would enable the growth of more niche market varieties to be grown, and like the IBCs polytunnels can be easily dismantled and moved on. Green waste from Tesco could be a useful source for composting on site.

It should be noted that permission would need to be granted by the landowner before any works could be undertaken on site, which may in turn render the project unfeasible if consent cannot be obtained this would need to be explored from the outset before any further steps are taken to progress the project.



Figure 29: Intermediate bulk containers are used for fruit and vegetable growing. The site picture is on McDonald's Land in Wythenshawe.

7.26 Hempshaw Brook

A section of Hempshaw Brook runs parallel with Hopes Carr and has the potential to provide a short circular recreational walking route, however there is no public access at present. There is a requirement for maintenance and litter picking throughout the site and this might be a task for local volunteers as the site is conducive to setting up a 'friends of' group drawn from local residents in the vicinity.

Hempshaw Brook is a much underutilised local resource notably at the Waterloo Road crossing point. Signage is needed to highlight its existence and some tree thinning would help to raise its profile by opening up views of the Brook. Under-storey planting with wildflowers (such as bluebells, wild garlic, snow drops) would inject seasonal colour in to the Clough woodland.

Access could be provided from the Hopes Carr entrance subject to agreement with the developer of the new housing scheme or via steps from the Waterloo Road Bridge. The latter would not be conducive though to wheelchair users or people with mobility issues due to the gradients included.

A circular route could be created with board walk crossing points at either end of the brook. Footpath works would be needed and some steps installed where the gradients require. Initially paths could be made from compacted earth and upgraded at a later stage when the footpath is well-established. The site is likely to be popular with dog-walkers so dog bins will need installing and servicing at access points.



Figure 30: Hempshaw Brook is an almost forgotten stretch of green infrastructure but is badly littered. It would make an attractive local walking route with opportunities for wildflower enhancement.

7.27 River Goyt Walkway

The River Goyt is a major asset to Stockport Town Centre both visually and as a recreational and practical walking route in to the Town Centre. There is the potential to establish a walking route from Vernon Park to the confluence with the River Tame and in to Penny Lane meadows and then on to the Trans Pennine Trail. Elements of the route already exist on Bridge lane and Millgate but where it is not possible to create footpaths close to the River then the link can be achieved by using interpretive signage or imprinted materials on the pavements.

At present there is no signage to direct the walker between Bridge Lane West and Millgate which is likely a deterrent to people using this footpath.

An exciting alternative to directional signage would be to construct a walkway over the river to bridge the gap between the footpaths. This has been done with the Torrs Millenium walkway over the River Goyt in New Mills (Figure 39). This would have the potential to be a major visitor attraction.

The ASDA superstore straddles the River Goyt on Great Portwood Street, removing the brick parapet of the bridge and replacing with railings would open views of the river while up lighting and down lighting would make the river more visible both night and day.



Figure 31: Torrs Millennium Walkway at New Mills.

7.28 River Mersey Revealed

The River Mersey is an overlooked asset in the Town Centre. At its birth place at the confluence of the Goyt and Tame the environment is intimidating and this undervalues the significance of this place. This key location could be more welcoming with up lighting on the M60 underpass and up lighting on the wall of the motorway bridge. The sculpture that exists is low level considering the importance of the subject matter so perhaps something of a larger free standing nature could be considered, through a design competition.

An interpretation lectern about the history of the Goyt, Tame and Mersey would be of interest to visitors. There is no signage to direct walkers from Knightsbridge down Howard Street to the River Mersey so many people walking do not know that the start of the River is only 25 meters away. There is currently a lot of tree cover along the fringes of Knightsbridge which obscure views of the Mersey so this could be thinned out to open up visual access to the river.

At the bus interchange the Mersey is hidden by dense tree cover on the River's embankments which if thinned would open up views to pedestrians.

As part of bus station redevelopment the river view can be revealed along with creation of small scale eco-buildings accommodating gift based craft micro-businesses with seating and a short promenade. This would be an attractive location for a cafe.



Figure 32: Currently the bus interchange abuts the river but there are no welcoming views or a promenade. Bus interchange redevelopment is an opportunity to open up views of the river and create a short promenade featuring small craft/gift outlets and a cafe.

7.29 Snake Path

The route between Stockport Railway Station and the Bus Interchange has been the subject of discussion over many years namely how to provide a high quality link between the two sites taking into account the considerable differences in elevation.

A link between the two is an opportunity to create some innovative urban green infrastructure. Constraints to be overcome would include landform, engineering limits such as the choice of structural materials, foundations and construction method and the requirement to provide ingress and egress points close to the transport hubs. The constraints can be overcome through planning, design and the involvement of key professional skills.

The proposal is to design a 'snake path' in the form of a suspended bridge (winding to take account of gradients – allowing mobility scooters to use it) which features inbuilt vegetation notably through the use of an archway framework which would provide a trellis. The effect would be that of a green arbour and plants such as roses and vines would be trained across the structure.

The snake path would be 'functional' and 'green' with the potential to be a major visitor attraction itself.



Figure 33: The snake path is a design concept where transport infrastructure and urban green infrastructure can combine. A winding elevated walkway would be designed to accommodate pedestrian access AND rambling vegetation through the incorporation of pergolas and arches. This project could be run as a design competition.

7.30 GreenStreets Stockport

For the smaller scale community focused urban green infrastructure projects such as residential street tree planting, smaller green roofs, involvement of local businesses on neighbourhood improvements and meanwhile food growing areas, a GreenStreets project for Stockport Town Centre is proposed.

GreenStreets is an established urban greening initiative which uses street greening projects to enhance the quality of life for urban communities both residential and visitor. It improves the 'local places', encourages greater social interaction and brings new transferable skills and confidence to volunteers. Success is measured by the greening delivered and the process behind that delivery.

GreenStreets was launched by Red Rose Forest in 2001 and since then many hundreds of community greening projects have been delivered including over 5,000 street trees. The success of this project has led to its extension to the area covered by the Mersey Forest and also in West Yorkshire. The emphasis of GreenStreets is placed on residents, users and businesses taking 'ownership' of their project.

From a consultation and resource perspective it opens up new channels of dialogue and enhances peoples understanding of the processes involved in project development, fund raising and the different stakeholders that need to be engaged. It also provides an insight as to the costs, maintenance and sustainability of a project.

Communities and workers are involved in the project design which might be tree species selection or layout of a food growing area or the plants that will be used on a green roof. The focus for community ownership is further reinforced through participation during the delivery phase which may involve installing window boxes, planting trees on verges or planting bulbs on verges and around trees. This also provides a number of physical and mental health benefits and opportunities for residents to develop new horticultural skills and engage with one another.

In the long-term, the Green Streets approach helps communities look after Urban Green Infrastructure by reducing the burden on Local Authority resources, reinforcing ownership and providing residents with transferable skills. Aftercare is designed to be low maintenance to ensure project sustainability and inclusion of older residents or people with limited mobility.

Successful Green Street projects achieve and enhance external perceptions of the urban environment. They also provide a platform for raising awareness on issues such as health, climate change and water and air quality.

GreenStreets Stockport would identify an officer who would work with communities, businesses, a strategy coordinator and landscape contractors as well as key external advisors and project support workers.



Figure 34 (left): Green Streets projects will contribute to the urban forestry thematic intervention. The theme is the involvement of local people and developing 'ownership' and 'management responsibility' in the community. Experience in Manchester, Salford, Chester and elsewhere has shown that these projects are successful in leveraging in funds from local businesses. In Stockport the proposal is to draw in the town centre business community with the involvement of employees and customers. Green Streets can also help defray concerns over long term management.



Figure 35 (left): Some parts of the town centre have good urban character such as the 'Markets area'. However vegetation is sparse and the urban forestry intervention could enhance the 'visual amenity' yet further, providing shade and shelter and enhancing the sense of place - in turn increasing footfall, dwell time and visitor spend.



FUNDING OPPORTUNITIES

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8.1 Developer Agreements (planning obligations) have the potential to provide funding for urban green infrastructure projects. However to facilitate this Stockport Council will need to put in place the 'planning tools' to enable this. An Urban Green Infrastructure Design Guide and Green Infrastructure SPD are amongst these planning tools. Whilst the policy decisions on these matters are beyond the scope of this Strategy the primary mechanisms available to the Council are through S106 agreements and CIL.

8.2 Business Funding can operate at many levels. Local funding approaches are typically of low value in financial terms and may include 'customer' and 'promotion' related fundraising. A further area of funding can be through Corporate Social Responsibility (CSR) programmes which may be of interest to larger companies. Some legal practices and accountancy practices also participate in CSR schemes. Very worthy of exploration is a BID (Business Improvement District) which could attract funds (subject to business partners agreement) for wardens and local green space interventions.

8.3 Community and Voluntary Sector funding is important in respect of delivering the thematic interventions proposed in this Strategy. For example, 'Friends of' groups can apply to 'Awards for All' England for project funding of up to £10,000 that is related to community involvement and benefit. This fund is operated by the BIG Lottery and applicant's must be community or voluntary organisations. It funds a wide range of community projects aimed at developing skills, improving health, revitalising the local environment and enabling people to become more active citizens.

8.4 The National Lottery is without doubt the largest potential source of discretionary funding for projects. However demand for lottery funding has increased substantially since 2011 and smaller applicants find the application process onerous. In practical terms Lottery Funding for larger projects has become an area for professionally-led fundraising. There are several Lottery grant programmes highly appropriate to delivery of this Strategy and new ones are being introduced on a regular basis. It is recommended that this Strategy is reviewed for Lottery Funding opportunities by the Councils Fundraising Manager.

8.5 The BIG Lottery Power to Change is a new initiative which will invest up to £150 million to support the development of sustainable community-led enterprises across England. It will be delivered by an independent Trust to be established later this year. The fund is about restoring vitality and could be especially applicable in the context of the GreenStreets Stockport project intervention proposal and 'Meanwhile Sites' such as the intervention at 7.25.

8.6 Charitable Trusts have come under increasing pressure as discretionary public funding has declined. Many Trusts now only receive applications from established clients and generally want to 'move on' after a short period of funding so that they can share their resources more widely. One of the most established charitable givers for conservation and biodiversity projects is the Esmée Fairbairn Foundation. They are especially interested in activities that connect individuals and communities, particularly those in more urban areas, with the environment or environmental issues, and that encourage people to become involved and to take practical action. They are also interested in working at the landscape scale, benefiting multiple species and habitats and encouraging closer partnership collaboration.

8.7 The Landfill Communities Fund (LCF) is a tax credit scheme enabling operators of landfill sites to contribute money to organisations enrolled with a scheme regulator, ENTRUST as Environmental Bodies (EBs). EBs carry out projects that comply with the objectives (Objects) set out in The Landfill Tax Regulations 1996 (Regulations). The LCF is a way for Landfill Operators (LOs) and EBs to work in partnership on projects that create significant environmental benefits, jobs and which improve the lives of communities living near landfill sites. The most common way to receive funding is to approach an Environmental Body (EB). There are six objectives of which objects A, B, D and DA are all relevant to this Strategy.

8.8 Forever Manchester is a Community Foundation and has monies available for community groups and projects in Stockport via their CDL and Stockport Funds. Awards of up to £1,000 and £3,000 respectively are available to support groups that contribute positively to the quality of life of people in Stockport. Environment projects are eligible through both the CDL and Stockport Funds.

8.9 Crowdfunding is the collection of finance from backers to fund an initiative and usually occurs on Internet platforms. Crowdfunding involves a variety of participants and generally include the people or organisations that propose the ideas and/or projects to be funded, and the crowd of people who support the proposals. Crowdfunding is then supported by an organisation (the "platform") which brings together the project initiator and the crowd. Green Streets Stockport could be a crowd funding platform. The Case Study at Figure 44 is partly funded this way.

8.10 INTERREG is a European programme which can be used to fund programmes that achieve sustainable management of natural resources and of natural and technological risks. The Programme is unique in that it offers a cross-sectoral approach to territorial development, promotes close cooperation with universities, NGOs, public authorities, and the private sector to secure contribution towards economic and social cohesion and EU competitiveness. Organisations such as the Red Rose Forest have experience in this area of funding and are partners to join with. Other European Sources are LIFE+, URBACT, Horizon 2020, Smart Cities and Communities European Innovation Partnership, EU Cities Adapt.

CASE STUDY 1: Stevenson Square: Northern Quarter, Manchester City Centre

What was delivered: 11 street trees and a mini green-roof.

Partners: Red Rose Forest, Manchester City Council, CityCo, over 10 local businesses and local residents group – A New Leaf.

Funding: Manchester City Council, Local businesses and Crowd funding

Innovation / Best Practice:

- Trees - use of flexi pave permeable surface on top of tree pits, strata cells, 4.5m3 tree pits
- Green Roof – box compartments to retain and hold large soil volume to provide good source of nutrients and increase water holding capacity
- Use of Crowdfunding to raise the remaining funds to complete the project.



CASE STUDY 2: Kirkby Green Streets, Knowsley, Merseyside

What was delivered: Street trees planted along 4.2km of potential walking and cycling routes

Partners: The Mersey Forest, Knowsley Council, Knowsley Housing Trust, Defra, Forestry Commission, Department for Business, Innovation & Skills, Department of Transport, Merseytravel

Funding: The project was part-funded by the Forestry Commission's Setting the Scene for Growth programme funded by the Department for Business, Innovation and Skills, with additional funding provided by Knowsley Housing Trust, Knowsley Council, and the government's Big Tree Plant project.

Innovation / Best Practice:

- complementarity with other landscaping improvements carried out by The Mersey Forest locally.
- in-depth door-to-door consultation with local community; improvement of walking and cycling routes to work and school.



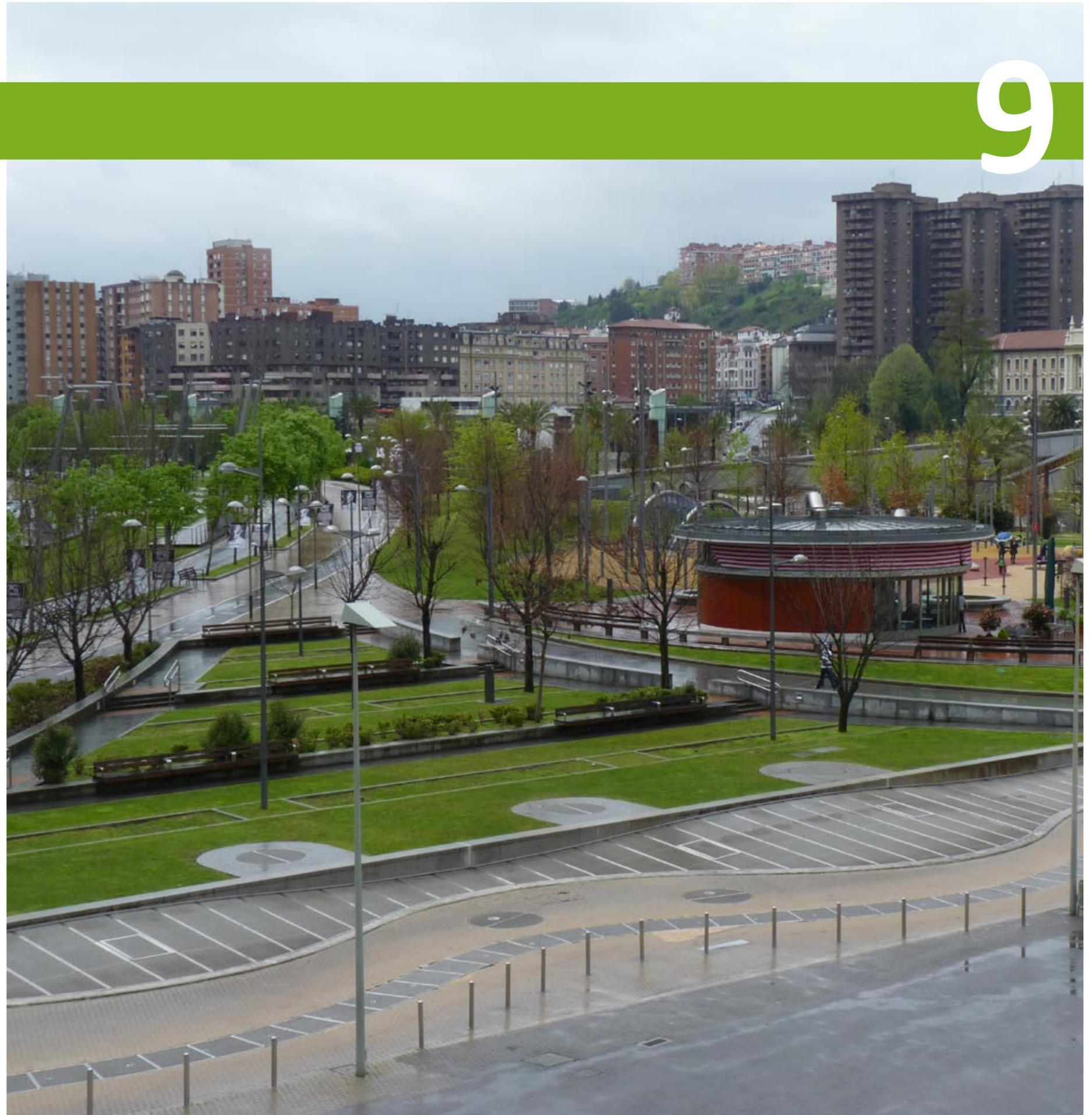
CONCLUSION

9.1 This strategy can be considered a guide for Stockport Metropolitan Borough Council and local stakeholders giving additional research, data, information and recommendations to provide directions on how to enhance the green infrastructure within the urban core of the Stockport Town Centre area.

9.2 The Strategy sets out a framework for achieving this. The framework is based on two types of strategic interventions – thematic and project based. It will take a significant period of time to deliver the strategy as the ambitions are transformative.

9.3 It has also been determined that in the long term it will be the thematic interventions which cumulatively will have the greatest impact. This does not devalue the project based interventions which are an essential part of maintaining momentum and securing public support.

9.4 Finally Stockport Town Centre can be likened to an urban ecosystem in which Urban Green Infrastructure provides the ‘life-support’ not only for nature but also for its human residents and workers.



CREDITS, ACKNOWLEDGMENTS, DISCLAIMER

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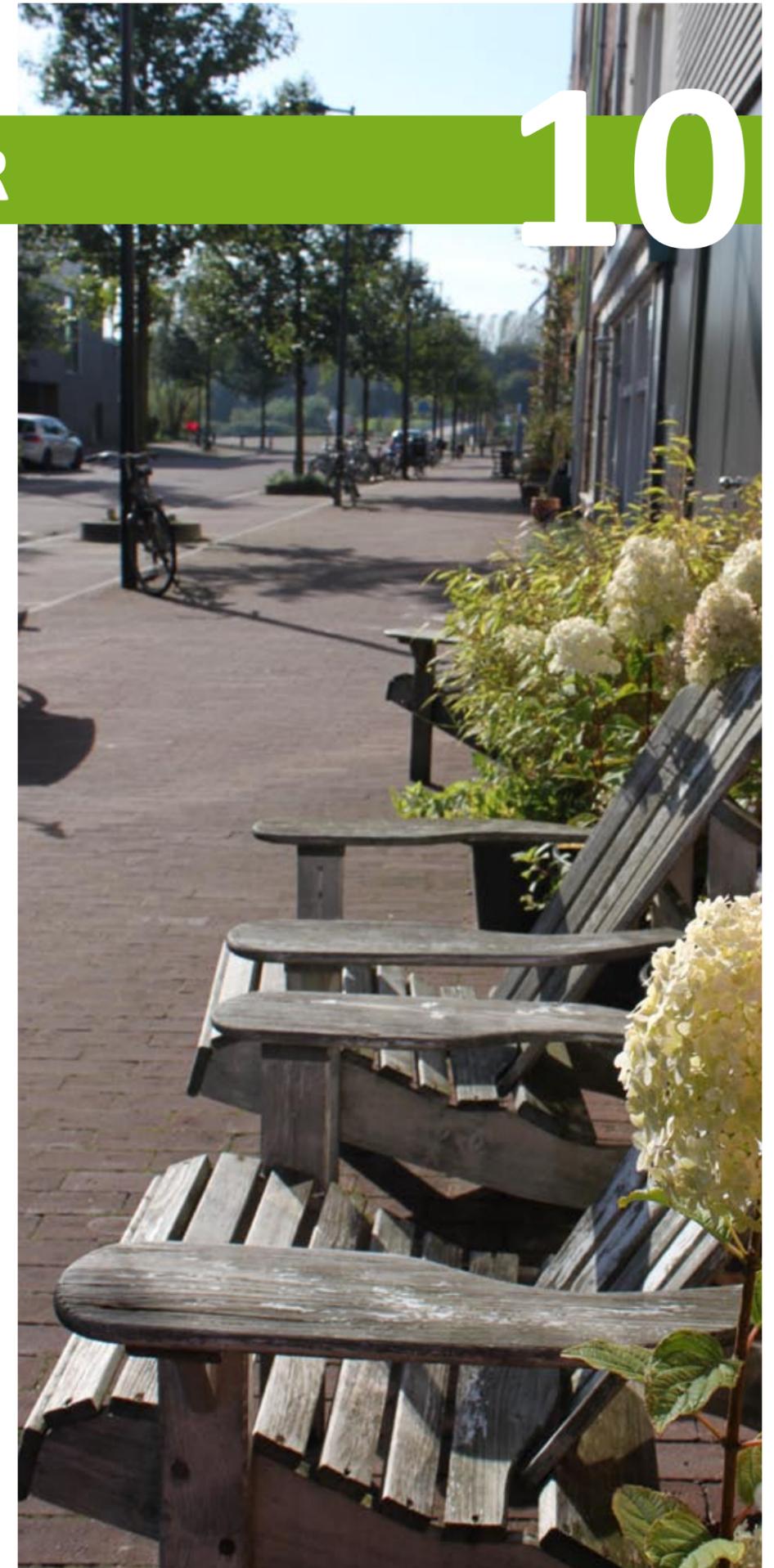
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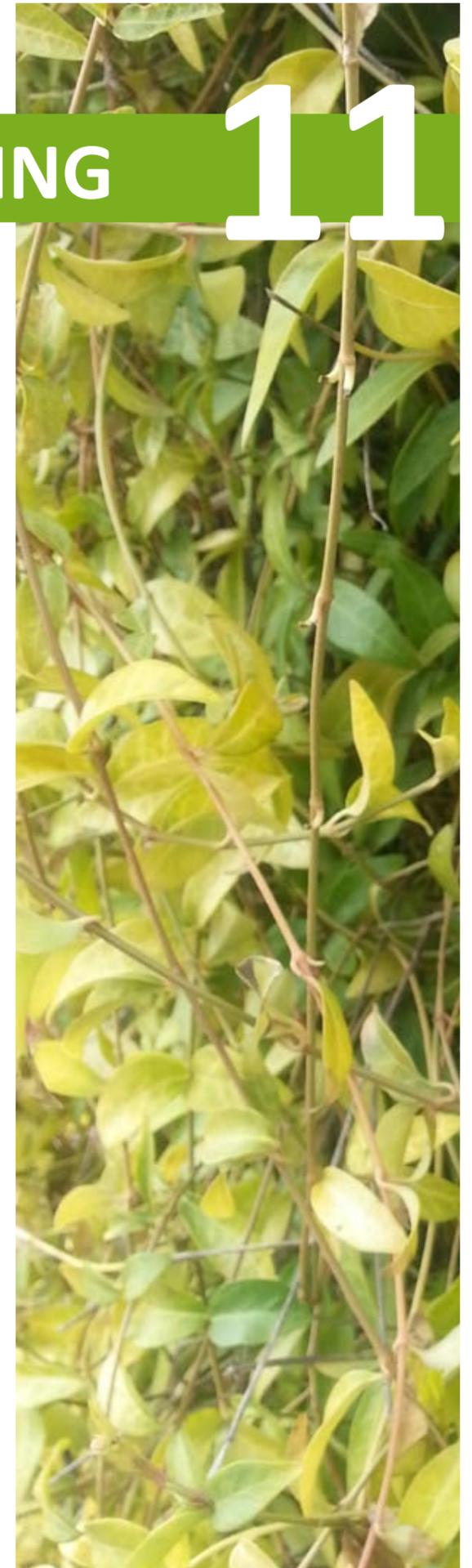
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