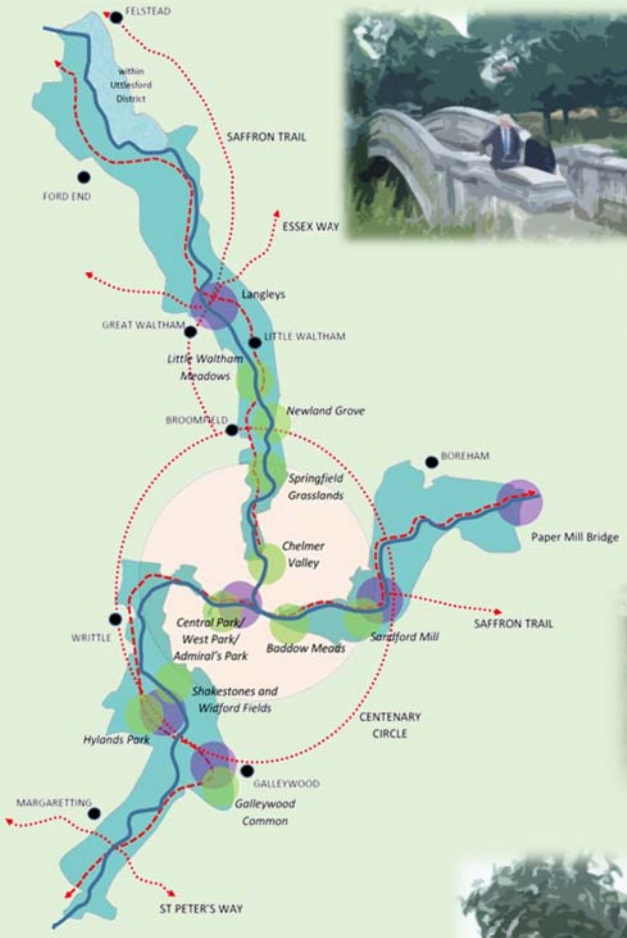

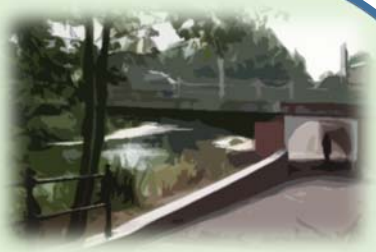

Chelmsford Green Infrastructure Strategic Plan 2018 - 2036

Report for

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Doc Ref. L39774-01

January 2018

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Non-Technical Summary

1. Purpose and Foundation of the Strategic Plan

Chelmsford has grown significantly in past decades and will continue to do so. It is important that change is secured in a sustainable fashion, protecting natural, historic and community assets and making the most of opportunities for enhancing their quality.

The City's character is distinguished by a wide range of biodiversity, heritage and landscape assets which collectively form the basis of a Green Infrastructure network which reflect environmental, social and economic aspirations and needs. The Green Infrastructure resource as a whole comprises open spaces, parks and gardens, allotments, woodlands, street trees, green roofs, fields, hedges, water bodies, footpaths and cycleways.

Planning for the City's Green Infrastructure is part of a wider planning process led by the Chelmsford Local Plan which establishes the framework for the City's growth. They are complementary exercises, with the Green Infrastructure Strategic Plan providing detail on the way in which aspirations for the protection, enhancement and positive use of Green Infrastructure assets can be realised spatially and thematically.

Green Infrastructure is a term used to describe greenspaces and other environmental features and ways in which they are linked together as a network. Green Infrastructure is a multifunctional resource which assists environmental functions (biodiversity, climate change adaptation and water management) and provides quality of life benefits for local communities (recreation, sustainable travel, well-being and quality of place).

Green Infrastructure should be considered as an essential part of local environmental character and quality, critical to the health and well-being of communities and the reference point for planning for growth.

The Green Infrastructure Strategic Plan draws from a wide range of plans, programmes and strategies developed within the City and by partners. These documents have helped to inform the identification of the character and opportunities associated with Green Infrastructure across the City Council area and beyond. The Green Infrastructure Strategic Plan is a starting point for identifying and targeting gaps in provision, providing a framework for new development and determining how existing assets can be used to better effect.

The Green Infrastructure Strategic Plan provides a framework for the planning and management of Chelmsford's Green Infrastructure resources both in terms of the protection of its integrity and enhancement to the benefit of residents, workers and visitors in light of the significant scale of growth to be accommodated over the next 25 years and beyond.

2. Chelmsford's Green Infrastructure: Assets & Priorities

Chelmsford has a rich and diverse array of Green Infrastructure resources which collectively form the basis for establishing a high quality and well-connected network across the City, its hinterland and into neighbouring authorities. The geography of the area can be broadly split into four character areas:

- The urban area of Chelmsford and surrounding settlements, including numerous villages, hamlets and isolated dwellings of various eras and diverse character.
- River valley landscapes (the rivers Chelmer, Wid and Can and their tributaries) dissecting overlying boulder clay/chalky till, with flat or gently undulating floors, of wooded and intimate character in places.
- Farmland plateau landscapes characterised by elevated and gently rolling farmland, offering periodic long-distance views across river valleys, of medium to large-scale predominantly arable fields divided by a network of lanes and minor roads, remnants of semi-natural and ancient woodland.
- Wooded farmland on elevated, undulating hills or ridges and slopes, comprising a mixture arable and pasture, pockets of common land, wooded blocks, mature field boundaries and a mixture of extensive and framed views.

The corridors of the Rivers Chelmer, Can and Wid converge on the City Centre and influence its form and function. They are the focus of much recreational (formal and informal) and biodiversity interest, notably within the urban area along the Chelmer Valley from the City Centre to Springfield, and from Moulsham to Sandford.

Wider biodiversity resources are spread across Chelmsford, with notable concentrations to the south west from Hylands Park to Blackmore, to the south from Galleywood to Hanningfield Reservoir, to the east around Danbury and Little Baddow, and to the north from Little Waltham to Great Notley. Notable focal points for recreational activity are Hylands Park, Galleywood Common, Hanningfield Reservoir, the River Crouch Estuary and the extensive woodland around Danbury (including Danbury Country Park).

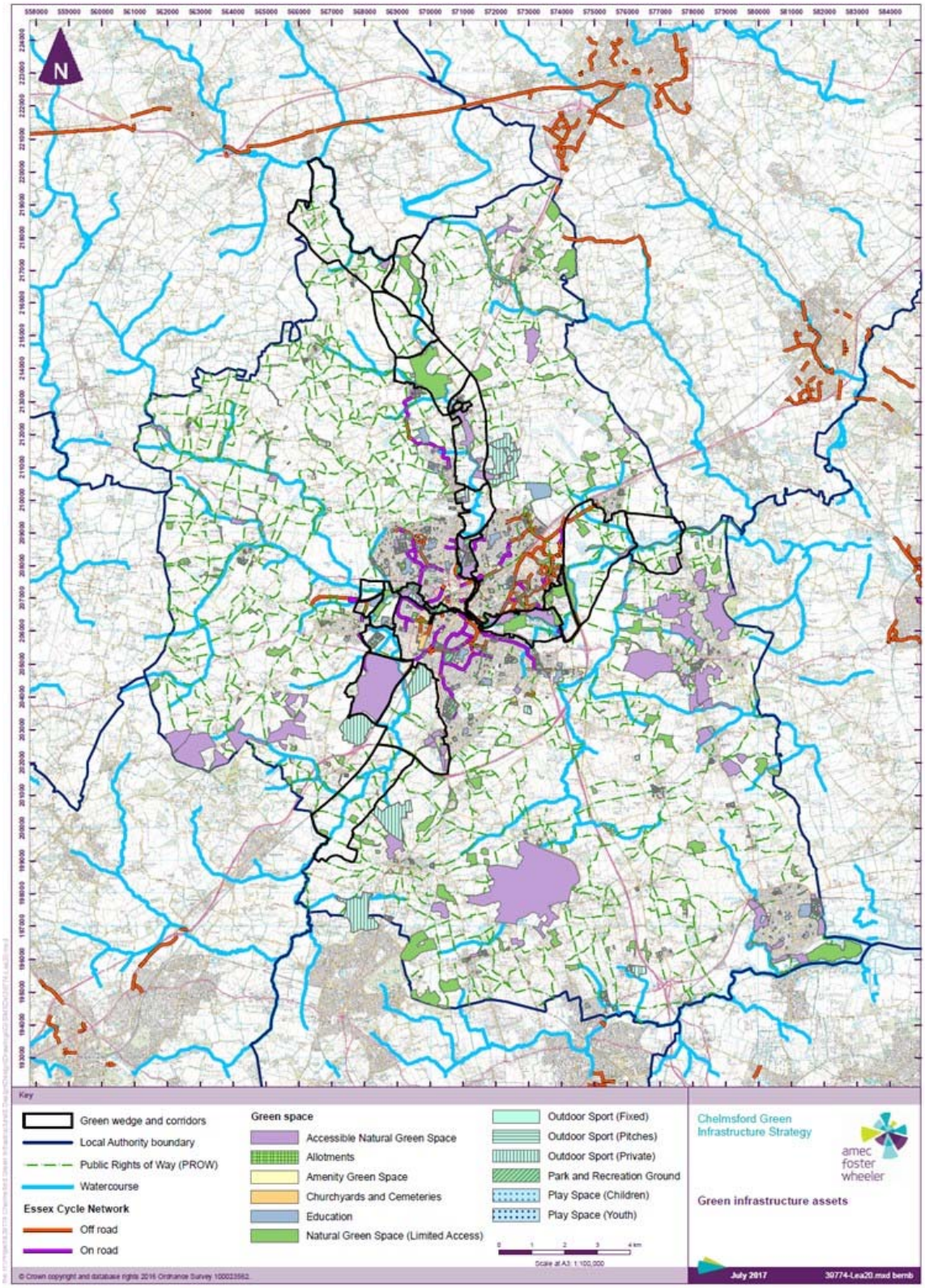
Heritage resources often coincide with biodiversity and recreational interests, including Hylands Park and Danbury Palace and Langleys (all Registered Parks and Gardens), Conservation Areas along the Chelmer & Blackwater Navigation, Danbury and the Walthams.

Agricultural activity dominates much of the City's hinterland, where much of the land is in highly productive arable cultivation (with pasture along the river valleys) and where modern farming practices (notably hedgerow and woodland loss) exert a significant influence over landscape character.

The proportion of tree cover across Chelmsford is around 6% (compared to 8.5% for England), but the river valleys through the City Centre are generally well-treed, with the suburbs less so. There are extensive, often ancient and biologically important tracts of woodland to the east around Danbury and to the south west of Writtle, with pockets of smaller woods across farmland surrounding the City.

Open space provision across the City is generally excellent in terms of quantity, quality and accessibility, although inevitably there is variation both within the City and between the City and surrounding settlements. The City's Parks and Gardens and the cycle and footpath network are important Green Infrastructure assets.

Green Infrastructure Assets Across Chelmsford



Priorities Arising from the Analysis of Chelmsford's Green Infrastructure

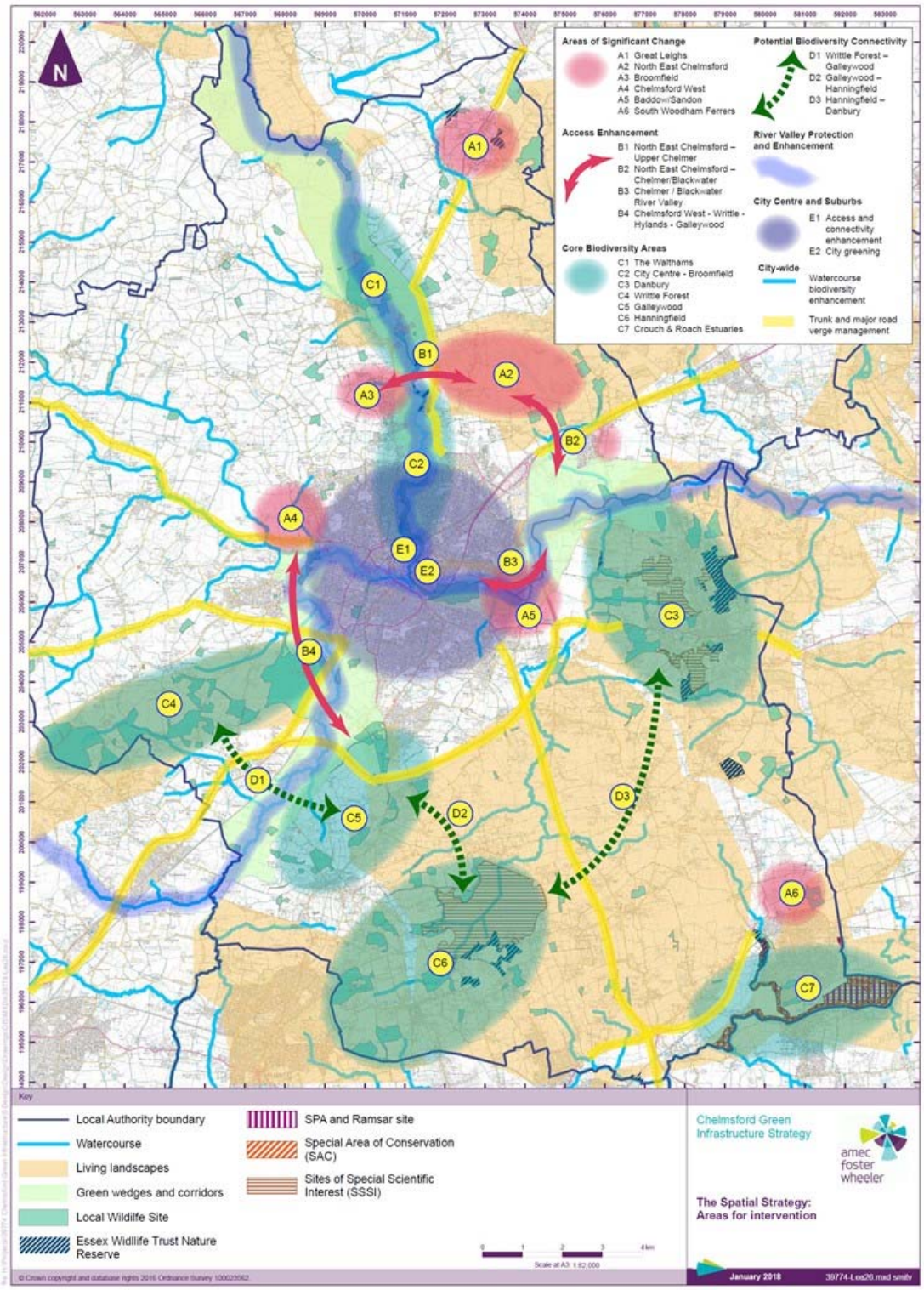
The following priorities have been identified based on the analysis of the City's Green Infrastructure resource:

- **Reinforcing and extending the connectivity of, and accessibility to, Green Infrastructure resources** to create a robust network for the benefit of people and wildlife, which is integrated with the networks in adjacent authorities and contributes to realising the aims and objectives of the Chelmsford Local Plan.
- **Protecting and enhancing Green Infrastructure assets** focusing on maximising the functioning and quality of existing assets before embarking on any ambitious extension of the network.
- **Protecting and enhancing key cultural heritage assets** (including buildings, places, settings and landscapes) which are part of the character of Green Infrastructure in particular localities and City-wide.
- **Recognising the critical role that the river valleys play as a focus for the Green Infrastructure assets across the City and its hinterland**, forming the basis of a connected and robust network which reflects the interests of biodiversity, landscape management, recreational opportunity and water management.
- **Paying particular attention to the integrity of protected areas** such that they are fundamental to enhancing biodiversity throughout Chelmsford.
- **Ensuring that existing Green Infrastructure resources are used to their best advantage**, increasing their multifunctional role where appropriate and in doing so meeting the needs and aspirations of residents.
- **Enhancing the quality and accessibility of Green Infrastructure resources** such that they are attractive to use for recreation and sustainable travel.
- **Promoting Green Infrastructure as central to the character and well-being of local communities**, encouraging greater engagement in management and local 'ownership' where appropriate.
- **Ensuring that new development at all scales and in all locations addresses the needs and opportunities associated with the planning and management of Green Infrastructure**, in particular creating sustainable places which add to the Green Infrastructure resource, fulfil community aspirations for high quality environments and contribute to the coherence of the wider network.
- **Using the Green Infrastructure resource to help promote the City economically**, as part of its overall image as an attractive and thriving place to live, work and visit and as a source of new employment opportunities.
- **Addressing and preparing for the effects of climate change** through using Green Infrastructure resources such as flood management, urban cooling, air quality enhancement and opportunities for sustainable travel.
- **Using Green Infrastructure to advance health and well-being for residents** through access to high quality open spaces which are connected and provide a diverse range of recreational and amenity benefits.

These priorities are translated into specific objectives for their delivery, spatially and sectorally.

3. The City-Wide Strategy: Areas for Intervention

A strategy for Green Infrastructure planning and management is summarised in the figure below, Areas for intervention relating to the protection, enhancement and creation of Green Infrastructure assets are identified as the reference point for a detailed Action Plan which sets out area and topic-based work.



4. Green Infrastructure Objectives and Delivery

Based on the analysis of Chelmsford's Green Infrastructure assets and identification of areas for intervention, a series of objectives and prioritised actions have been developed. These are organised around the following themes:

- access and recreation
- biodiversity
- communities and health
- economy
- heritage, landscape and townscape
- water management

These themes are set out below with example projects from the Action Plan.

Access and recreation – to promote opportunities for recreation, play and everyday transport through an accessible and attractive network of open spaces, footpaths, cycleway, bridleways and waterways.

- Provide high quality recreational opportunities for existing and new communities, using City-wide standards of provision.
- Enhance opportunities for the greater use of cycling and walking as a mode of travel, developing links between residential areas, parks, green spaces and the wider countryside.
- Promote waterways and adjacent paths for leisure use.

Example projects and lead partners

Address missing links in the cycle network identified in the Cycle Action Plan, notably: Chelmsford Road between Writtle and Chelmsford, Broomfield Road, between Galleywood and Great Baddow and Mill Lane needing a connection across Essex Regiment Way, Chelmer Valley Road and connecting Beaulieu with the rest of Chelmsford.	Essex County Council, Chelmsford City Council, Developers
PRoW & cycleway extension and enhancement under the Chelmsford City Growth Package.	Essex County Council, Chelmsford City Council
Identify where there is likely to be additional recreational pressure on existing sites arising from new developments and mitigate through the provision of intervention sites and/or management to increase capacity.	Chelmsford City Council, Developers
Address River Valley access enhancement, including along towpaths and to the Blackwater Navigation.	Essex County Council, Interest Groups
Address barriers to access for disabled people; children and young people; households in more isolated rural areas and those in the more deprived urban wards.	Essex County Council, Chelmsford City Council

Biodiversity – to create a well-connected network of healthy ecosystems through protection, enhancement and where possible restoration.

- Protect and enhance biodiversity resources.
- Secure a net increase in biodiversity through enhancement, restoration and new provision.
- Use the river valleys and other clusters of biodiversity as the basis for improving the connectivity of the biodiversity resource.

Example projects and lead partners

Countryside stewardship (soil, water, habitats, species, landscape).	Landowners, Essex Wildlife Trust, Environment Agency (Catchment Partnerships), Natural England (Catchment Sensitive Farming)
Chelmsford BAP update and implementation.	Chelmsford City Council, Essex Wildlife Trust, Essex County Council
Review parks and open space planning and management practices to test their compatibility with other Green Infrastructure initiatives to produce multifunctional spaces, in turn promoting resilience to climate change and other pressures.	Chelmsford City Council Parks (Green Flag standard)
Develop a full suite of Living Landscapes Vision Documents.	Chelmsford City Council, Essex Wildlife Trust, community groups
Develop City-wide and local targets for increasing tree and woodland cover and woodland management.	Chelmsford City Council

Communities and health – to support the development of thriving communities, local engagement and the promotion of healthy lifestyles.

- Use local and City-wide Green Infrastructure resources as the focus for community activity.
- Use city greening and the promotion of sustainable transport to help enhance air quality and address climate change impacts.
- Set new development within a planned Green Infrastructure setting which links to its wider context.

Example projects and lead partners

Improve cyclepath and PRoW quality, connections and circular routes.	Chelmsford City Council, Essex County Council Highways, Developers
Ensure greenspaces are appropriate for the differing needs of various age groups and levels of mobility.	Chelmsford City Council
Promote/make wider use of Parks and other open spaces e.g. for community events, markets, walking and cycling loops, outdoor gyms and natural play areas.	Chelmsford City Council
Target areas where access to greenspace could be improved to benefit health and well-being.	Chelmsford City Council
Promote city greening (trees, green roofs and screens) to enhance air quality and help mitigate climate change.	Chelmsford City Council

Economy – to support the development of a more robust and diverse economy and contribute to sectors such as tourism.

- Promote city greening to enhance the City's image, attract investment and enhance recreational and tourism activity.
- Promote opportunities for green infrastructure-related employment and training.
- Develop partnerships to secure investment in, and delivery of, Green Infrastructure.

Example projects and lead partners

Promote tree planting as part of applications for new development in established urban/suburban areas.	Chelmsford City Council
Reinforce and transform the image of the City as an attractive place to live, work and visit through City greening initiatives.	Chelmsford City Council
Improve cycle/pedestrian routes to promote a sustainable City image.	Essex County Council Chelmsford City Council
Use exemplar schemes locally (e.g. Highwood Village Hall) and nationally (such as Green Roofs) to demonstrate commitment to addressing climate change and enhancing biodiversity.	Chelmsford City Council Developers
Develop Green Infrastructure-related local enterprise initiatives, employment and training schemes.	Chelmsford City Council

Heritage, landscape and townscape – to protect and enhance the City's heritage, landscape and sense of place.

- Retain and enhance local heritage and landscape character through attention to the setting of heritage assets and wider landscape interventions such as tree and hedge planting.
- Develop exemplar initiatives to encourage greater recognition of the role and potential of Green Infrastructure.
- Use Green Infrastructure, notably the River Valleys, as a focal point for the City's identity.

Example projects and lead partners

Use City Greening for image enhancement.	Chelmsford City Council
Promote public access and enjoyment of the historic environment (i.e. permissive access/footpaths, interpretation, events [such as Heritage Open Days]).	Chelmsford City Council Historic England
Enhance key gateways along transport corridors and highway verge management.	Essex County Council
Promote high quality structural landscaping, tree planting and green roofs as part of new development.	Chelmsford City Council Developers
Target specific areas/ landowners for landscape management enhancement initiatives using existing models (e.g. RHS Hyde Hall, Hanningfield).	Landowners, Essex Wildlife Trust, Natural England

Water management – to ensure that the City's watercourses are healthy and can help to provide a response to the challenges of climate change.

- Use the City's River Valleys (Green Wedges and Green Corridors) as a focus for securing multifunctional benefits.
- Incorporate Sustainable Drainage Systems into new development, and retrofit existing development where appropriate.
- Use green spaces to provide a flood storage/management role where appropriate.

Example projects and lead partners

River restoration at Chelmer Valley Local Nature Reserve and Admirals Park to increase wildlife value.	Chelmsford City Council Essex Wildlife Trust Environment Agency
River corridor/floodplain management to meet Water Framework Directive (WFD) objectives (e.g. tree/woodland management, pollution and flooding management, access) through actions in Catchment Flood Management Plans and River Basin Management Plans.	Essex Wildlife Trust Environment Agency (Catchment Partnerships), Natural England (Catchment Sensitive Farming)
Address river access which is hampered by old weirs and structures that disrupt river flow rates.	Environment Agency
Link SuDS and biodiversity, particularly at new developments.	Developers
Extend the reach and scope of activities of the Catchment Partnership.	Environment Agency

5. Delivering Green Infrastructure in New Development

New development across the City Council area will require particular attention to ensure that Green Infrastructure is an integral part of its character which is used to form strong connections with surrounding areas. The scale of some developments is such that they will incorporate Green Infrastructure resources of City-wide significance. The following guidance sets out the expectations for how Green Infrastructure should be delivered to help meet the wider aspirations across Chelmsford and its hinterland.

Green Infrastructure Theme	Guidance
LANDSCAPE SETTING AND QUALITY OF PLACE **Green Infrastructure Strategic Plan objective: Heritage, landscape and townscape** – to protect and enhance the City's heritage, landscape and sense of place.	► Fit into the surrounding landscape setting, referencing the local vernacular where appropriate. e.g. attention to topography, the relationship between plateaus and river valleys, the context for heritage assets, views from PRoW, and gateway sites. e.g. use of local design cues and local materials.
HABITAT PROVISION AND CONNECTIVITY **Green Infrastructure Strategic Plan objective: Biodiversity** – to create a well-connected network of healthy ecosystems through protection,	► Protect, enhance and create habitats, particularly where greater connectivity can be achieved. e.g. protection of existing key structural features (trees and hedgerows), and provision of new habitats using principles of multifunctionality.

Green Infrastructure Theme	Guidance
enhancement and where possible restoration.	e.g. demonstrate habitat connectivity within the development and with surrounding biodiversity resources.
GREENSPACE PROVISION AND CONNECTIVITY **Green Infrastructure Strategic Plan objective: Communities and health** – to support the development of thriving communities, local engagement and the promotion of healthy lifestyles. **Green Infrastructure Strategic Plan objective: Access and recreation** – to promote opportunities for recreation, play and everyday transport through an accessible and attractive network of open spaces, footpaths and cycleways.	► Provide amenity greenspace of at least 0.1ha within a 5 minute walk (300m) of all dwellings. ► Provide accessible natural greenspace of at least 0.1ha within a 15 minute (900m) walk of all dwellings. ► Achieve provision of at least 40% open spaces of various kinds. ► Create and integrate open space provision with a planned network of walking and cycling routes. ► Incorporation of a diverse range of recreational opportunities which meet the needs of all residents. e.g. develop a hierarchy, by type and size, of appropriate facilities ► Develop and connect to sustainable transport routes which help to form part of the City's strategic network. ► Demonstrate how recreational pressure on external resources will be managed. e.g. provision of sites within the development that can intercept recreational requirements, otherwise/in addition to enhancement of the capacity of destination sites.
SUSTAINABLE ENERGY USE **Green Infrastructure Strategic Plan objective: Economy** – to support the development of a more robust and diverse economy and contribute to sectors such as tourism.	► Exemplar development, or wider scale schemes, which clearly show how green infrastructure is part of the intrinsic design approach. e.g. green roofs/walls; open spaces as focal points not incidental land use; generous structural tree planting as part of the public realm.
FLOOD ATTENUATION AND WATER RESOURCE MANAGEMENT **Green Infrastructure Strategic Plan objective: Water management** – to ensure that the City's watercourses are healthy and can help to provide a response to the challenges of climate change.	► Provision of SuDS and other water management measures. e.g. stormwater ponds, swales, street trees, permeable paving. ► Demonstrate the use of multifunctional approaches to the planning and management of open spaces within the development.

Contents

1. Preface

1. Chelmsford has grown significantly in past decades and will continue to do so. It is important that change is secured in a sustainable fashion, protecting natural, historic and community assets and making the most of opportunities for enhancing their quality as they arise. The City's character is distinguished by a wide range of biodiversity, heritage and landscape assets which collectively form the basis of a Green Infrastructure network which can be used to address environmental, social and economic aspirations and needs.

2. Planning for the City's Green Infrastructure is part of a wider planning process led by the Chelmsford Local Plan which establishes the framework for the City's growth. They are complementary exercises, with the Green Infrastructure Strategic Plan providing detail on the way in which aspirations for the protection, enhancement and positive use of Green Infrastructure assets can be realised spatially and thematically.

3. The Green Infrastructure Strategic Plan draws from a wide range of plans, programmes and strategies developed within the City and by partners. As part of a Research and Evidence Base, these documents have helped to inform the identification of the character and opportunities associated with Green Infrastructure across the City Council area and beyond, reflecting both the wide spatial reach of the Green Infrastructure Strategic Plan and its delivery through partnership working. The Green Infrastructure Strategic Plan is a starting point for identifying and targeting gaps in provision, providing a framework for new development and determining how existing assets can be used to better effect.

4. The assistance of a wide range of public and private organisations in helping to develop the Green Infrastructure Strategic Plan is gratefully acknowledged.

2. Purpose and Foundation of the Strategic Plan

1. The Green Infrastructure Strategic Plan provides a framework for the planning and management of Chelmsford's Green Infrastructure resources both in terms of the protection of its integrity and enhancement to the benefit of residents, workers and visitors in light of the significant scale of growth to be accommodated over the next 25 years and beyond.

2. The Green Infrastructure Strategic Plan is founded on the analysis of the form and function of the Green Infrastructure resource across the City and its hinterland set out in the research and evidence base. The evidence base identifies drivers for continuity and change which have shaped and will shape the way in which Green Infrastructure forms part of the City's character, along with the needs and opportunities for making best use of the various aspects of the resource. Together, these factors shape an approach to the planning and management of the Green Infrastructure resource which considers the protection, enhancement and restoration of Green Infrastructure assets, the definition standards for provision and the sustainable growth associated with development.

3. The Green Infrastructure Strategic Plan sets out the character of, and key issues associated with, Chelmsford's Green Infrastructure, aspirations and objectives for its planning and management, and an associated Action Plan.

3. The Character of Green Infrastructure

3.1 Definition

1. Green Infrastructure is a term used to describe greenspaces and other environmental features and ways in which they are linked together as a network. Green Infrastructure is a multifunctional resource which assists environmental functions (biodiversity, climate change adaptation and water management) and provides quality of life benefits for local communities (recreation, sustainable travel, well-being and quality of place).
2. Green Infrastructure should be considered as an essential part of local environmental character and quality, critical to the health and well-being of communities and the reference point for planning for growth.

Box 1: Definition of Green Infrastructure

"Green Infrastructure is a strategically planned and delivered network comprising the broadest range of high quality green spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering those ecological services and quality of life benefits required by the communities it serves and needed to underpin sustainability. Its design and management should also respect and enhance the character and distinctiveness of an area with regard to habitats and landscape types.

Green Infrastructure includes established green spaces and new sites and should thread through and surround the built environment and connect the urban area to its wider rural hinterland. Consequently, it needs to be delivered at all spatial scales from sub-regional to local neighbourhood levels, accommodating both accessible natural green spaces within local communities and often much larger sites in the urban fringe and wider countryside."

Source: Natural England (2009) Green Infrastructure Guide

Box 2: Green Infrastructure Assets

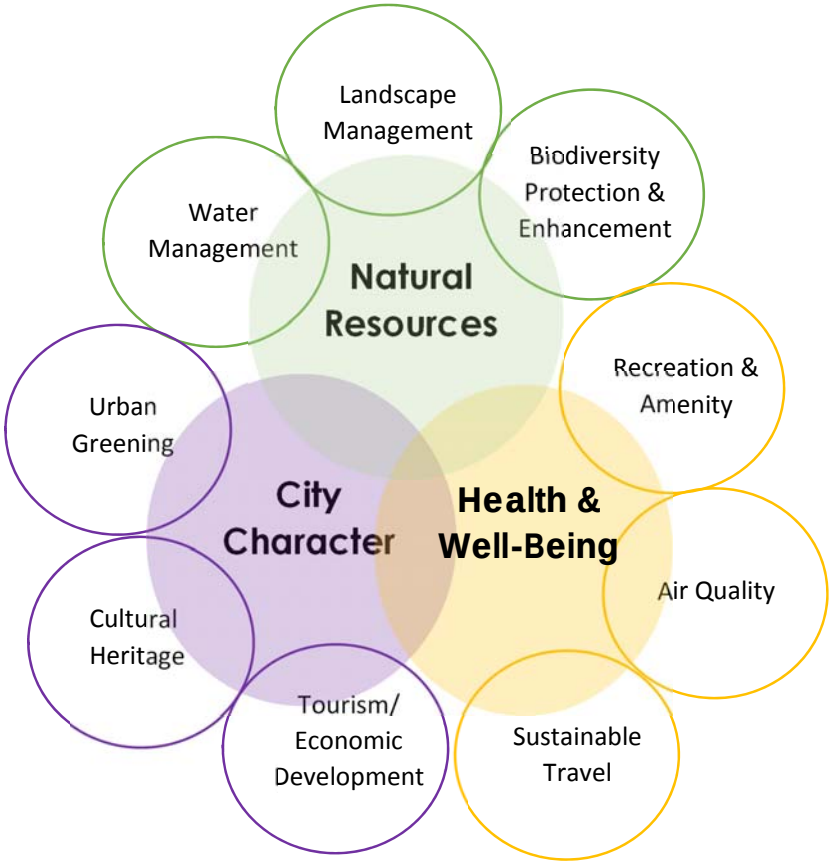
Parks and Gardens – urban parks, pocket parks, Country and Regional Parks, formal gardens and country estates.
Amenity Greenspace – informal recreation spaces, children's play areas, playing fields, communal green spaces within housing areas, domestic gardens, village greens, urban commons, other incidental space and green roofs.
Natural and Semi-natural Greenspaces – woodland and scrub, nature reserves, grassland, heath or moor, wetlands, open water bodies and running water, wastelands and disturbed ground, bare rock habitats.
Green Corridors – rivers/canals including their banks, road and rail corridors/verges, hedgerows, ditches, cycling routes, pedestrian paths and rights of way.
Other Greenspace – allotments, community gardens, city farms, cemeteries and churchyards, registered commons, village and town greens, heritage sites, development sites with potential for open space and links, land in agri-environmental management.

Source: TCPA (2008) The Essential Role of Green Infrastructure: Eco-towns Green Infrastructure Worksheet

3.2 Themes for Intervention

3. Figure 3.1 summarises nine focal points for intervention in turn focused on three mutually reinforcing themes: natural resources, city character and health and well-being. The themes and many of the interventions are interrelated, and together form a reference point for identifying and managing the Green Infrastructure 'agenda', which is 'multifunctional' in character (see below) and which is clearly complementary to the concerns and priorities of partner plans and strategies, notably the Local Plan, parks and recreation, biodiversity and cultural heritage.

Figure 3.1: Themes and Interventions



3.3 Green Infrastructure Functions and Connectivity

3.3.1 Green Infrastructure Functions

4. As identified above, Green Infrastructure plays many different roles, both as separate primary functions and simultaneously (known as 'multifunctionality'). Primary Green Infrastructure functions can be considered to be: landscape setting and quality of place, habitat provision and connectivity, greenspace provision and connectivity, flood attenuation and climate change adaptation. Developing the themes and interventions, Table 3.1 summarises the functions of Green Infrastructure which in turn is the starting point for determining actions which will enhance quality of life across Chelmsford and its hinterland.

Table 3.1: Green Infrastructure Functions by Theme

Theme	Functions
Access and Recreation	• Providing opportunities for recreation, play, learning and skills development. • Creating greenspaces for socialising and community events. • Enhanced connections between places, to services and between town and country. • Providing opportunities for walking, cycling and horse-riding for leisure and active travel.
Biodiversity	• Protecting, enhancing and restoring habitats and species. • Creating linkages between habitats for species movement, reversing fragmentation. • Enhancing opportunities for contact between people and nature. • Creating capacity for nature to respond to the effects of climate change.
Cultural Heritage, Landscape and Townscape	• Improving landscape and townscape quality and visual amenity. • Heritage protection. • Protecting and enhancing local distinctiveness and character. • Providing urban greening to help adapt to the effects of climate change.
Economy	• Creating an attractive environment for inward investment. • Enhancing local image for residents, workers and visitors. • Boosting property values. • Supporting local job creation through green business initiatives.
Health and Well-Being	• Providing a diverse range of recreational and leisure spaces to encourage physical activity. • Enhancing mental well-being through access to nature and attractive greenspaces. • Reducing CO2 emissions and enhancing air quality by providing sustainable travel opportunities and increasing vegetation cover. • Providing opportunities for local food production and sourcing.
Water Management	• Managing flood risk through river course management, Sustainable Drainage Systems (SuDS), buffer strips and green roofs. • Habitat management along watercourses. • Reducing pollution through SuDS and buffer strips and managing diffuse sources such as agricultural runoff. • Combining SuDS and habitat creation and enhancement.

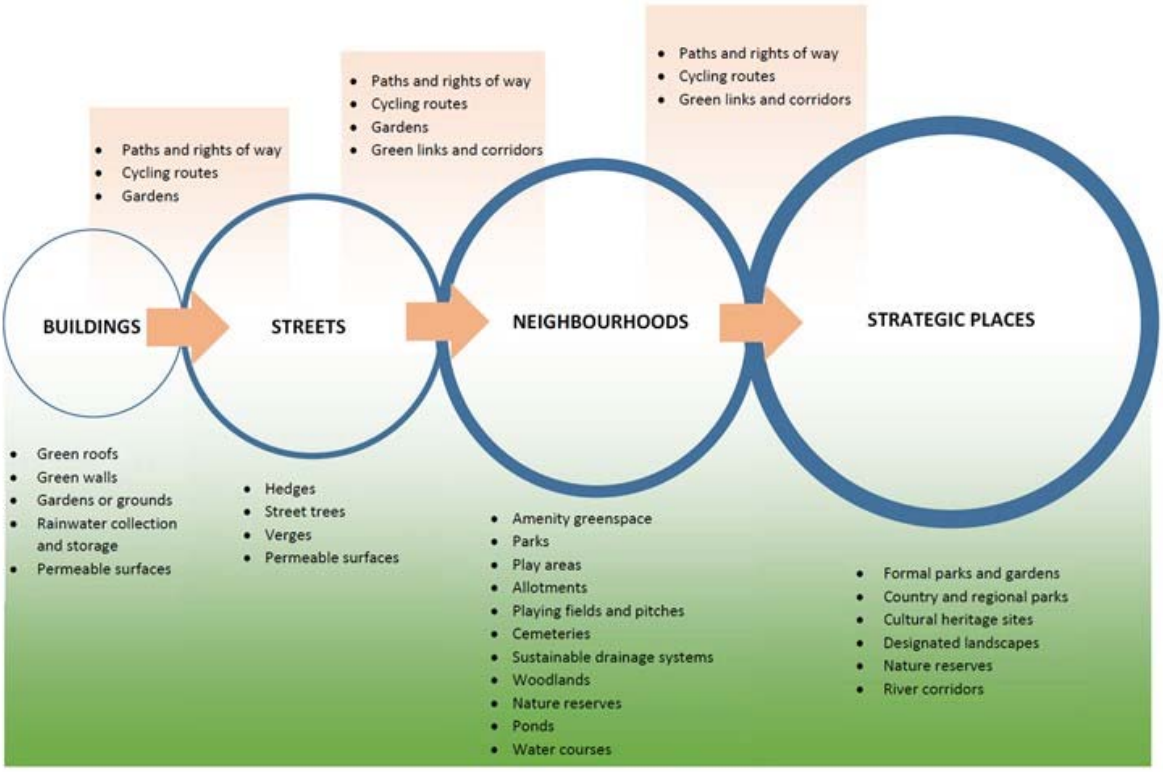
5. Whilst the case for attending to the needs and potential of Green Infrastructure is compelling, not least because of its role in integrating diverse agendas, the practical implementation of measures to secure the identified benefits presents a challenge. The starting point, however, is a well-connected network of Green Infrastructure assets.

3.3.2 Green Infrastructure Connectivity

6. The diverse qualities and functions of Green Infrastructure cannot be considered in isolation: they are connected both through their mutual dependence and physically at scales from individual buildings through to strategic places (Figure 3.2). It is the opportunities for, and challenges of, connectivity across biodiversity, and access and recreation in particular, which sets an important part of the Green Infrastructure agenda for Chelmsford.

7. Practically, connectivity refers to the presence of Green Infrastructure resources which allow the movement of people and species between places. Such Green Infrastructure resources can be corridors such as river valleys, or a series of interlinked greenspaces, but the objective is to provide for the opportunity for movement. As Figure 3.2 illustrates, this is best achieved through a scaled approach which considers the opportunities at between four clear levels.
8. Achieving connectivity can be more easily achieved with new development where it can be designed in through masterplanning. Working with existing assets can be more challenging, although in Chelmsford's case, the basis of a potentially high degree of connectivity is already established through the network of river valleys, parks and cycle network.

Figure 3.2: Scales of Connectivity in Green Infrastructure



Sources: Green Infrastructure Design & Placemaking (Scottish Government, 2001) & Monmouthshire Green Infrastructure SPG (2015)

4. Chelmsford's Green Infrastructure

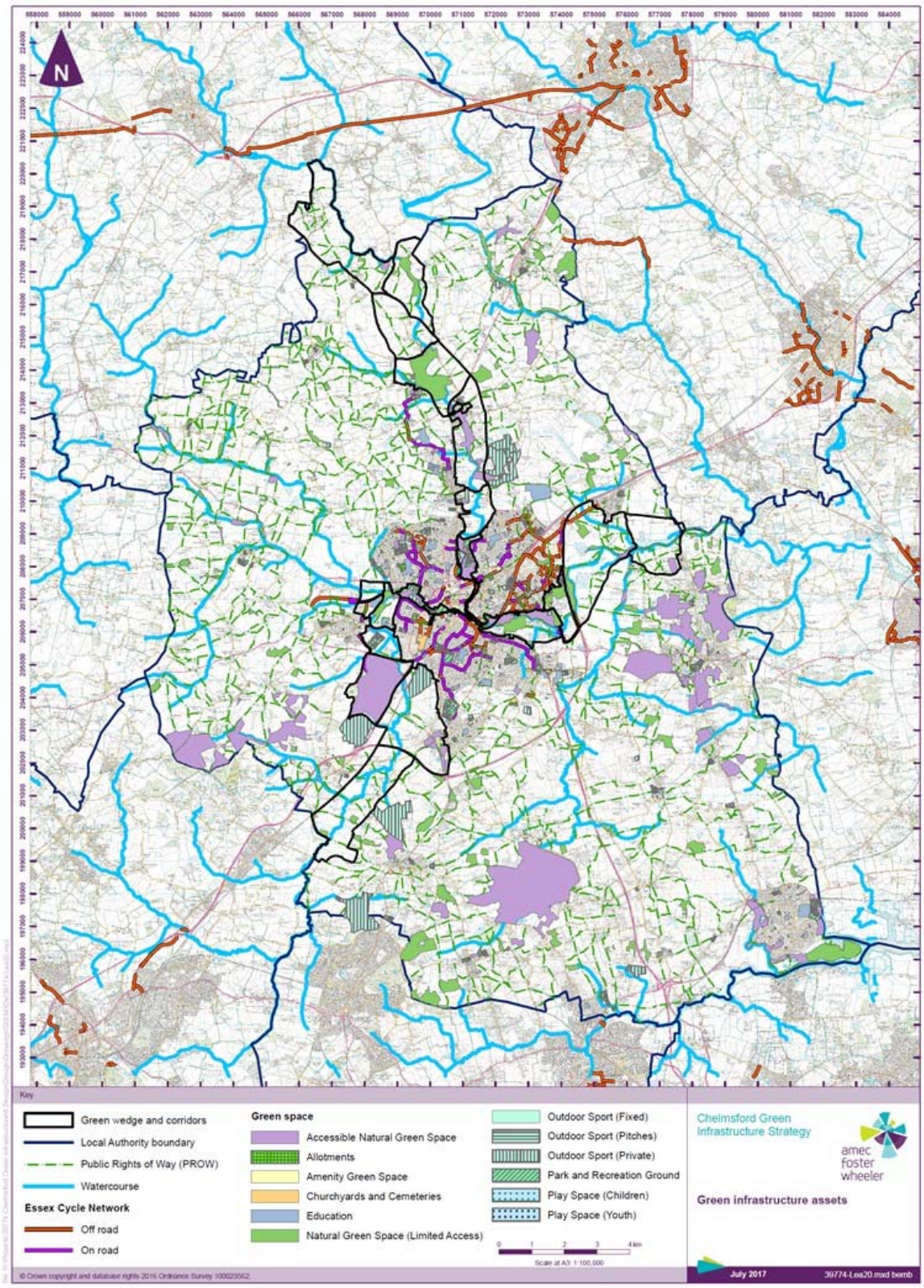
4.1 The Character of the Green Infrastructure Resource

1. Chelmsford is fortunate to have a rich and diverse array of Green Infrastructure resources which collectively form the basis for establishing a high quality and well-connected network across the City, its hinterland and into neighbouring authorities. The following pages summarise the principal qualities of the City's Green Infrastructure resources. The analysis is derived from a research and evidence base developed for the Green Infrastructure Strategic Plan[1] which provides significantly more detail on the components of the Gren Infrastructure resource.
2. The City of Chelmsford and its hinterland lies within the long-settled landscape of Essex and the coastal fringe, with evidence of human activity dating to the immediate post-glacial period, with significant Roman, Medieval and industrial influences. The modern geography of the area can be broadly split into four character areas[2]:
   - The urban area of Chelmsford and surrounding settlements, including numerous villages, hamlets and isolated dwellings of various eras and diverse character.
   - River valley landscapes (the Rivers Chelmer, Can and Wid and their tributaries) dissecting overlying boulder clay/chalky till, with flat or gently undulating floors, of wooded and intimate character in places.
   - Farmland plateau landscapes characterised by elevated and gently rolling farmland, offering periodic long-distance views across river valleys, of medium to large-scale predominantly arable fields divided by a network of lanes and minor roads, remnants of semi-natural and ancient woodland.
   - Wooded farmland on elevated, undulating hills or ridges and slopes, comprising a mixture arable and pasture, pockets of common land, wooded blocks, mature field boundaries and a mixture of extensive and framed views.
3. The corridors of the Rivers Chelmer, Can and Wid converge on the City Centre and influence its form and function. They are the focus of much recreational (formal and informal) and biodiversity interest, notably within the urban area along the Chelmer Valley from the City Centre to Springfield, and from Moulsham to Sandford. Wider biodiversity resources are spread across the City Council, with notable concentrations to the south west from Hylands Park to Blackmore, to the south from Galleywood to Hanningfield Reservoir, to the east around Danbury and Little Baddow, and to the north from Little Waltham to Great Notley. Notable focal points for recreational activity are Hylands Park, Galleywood Common, Hanningfield Reservoir, the River Crouch Estuary and the extensive woodland around Danbury (including Danbury Country Park). Heritage resources often coincide with biodiversity and recreational interests, including Hylands Park and

[1] Chelmsford City Council (2017) Green Infrastructure Strategic Plan: Research and Evidence Base
[2] Chris Blandford Associates (2006) Braintree, Brentwood, Chelmsford, Maldon and Uttlesford Landscape Character Assessments

Danbury Palace and Langleys (all Registered Parks and Gardens), Conservation Areas along the Chelmer & Blackwater Navigation, Danbury and the Walthams.

Figure 4.1: Green Infrastructure Assets Across Chelmsford



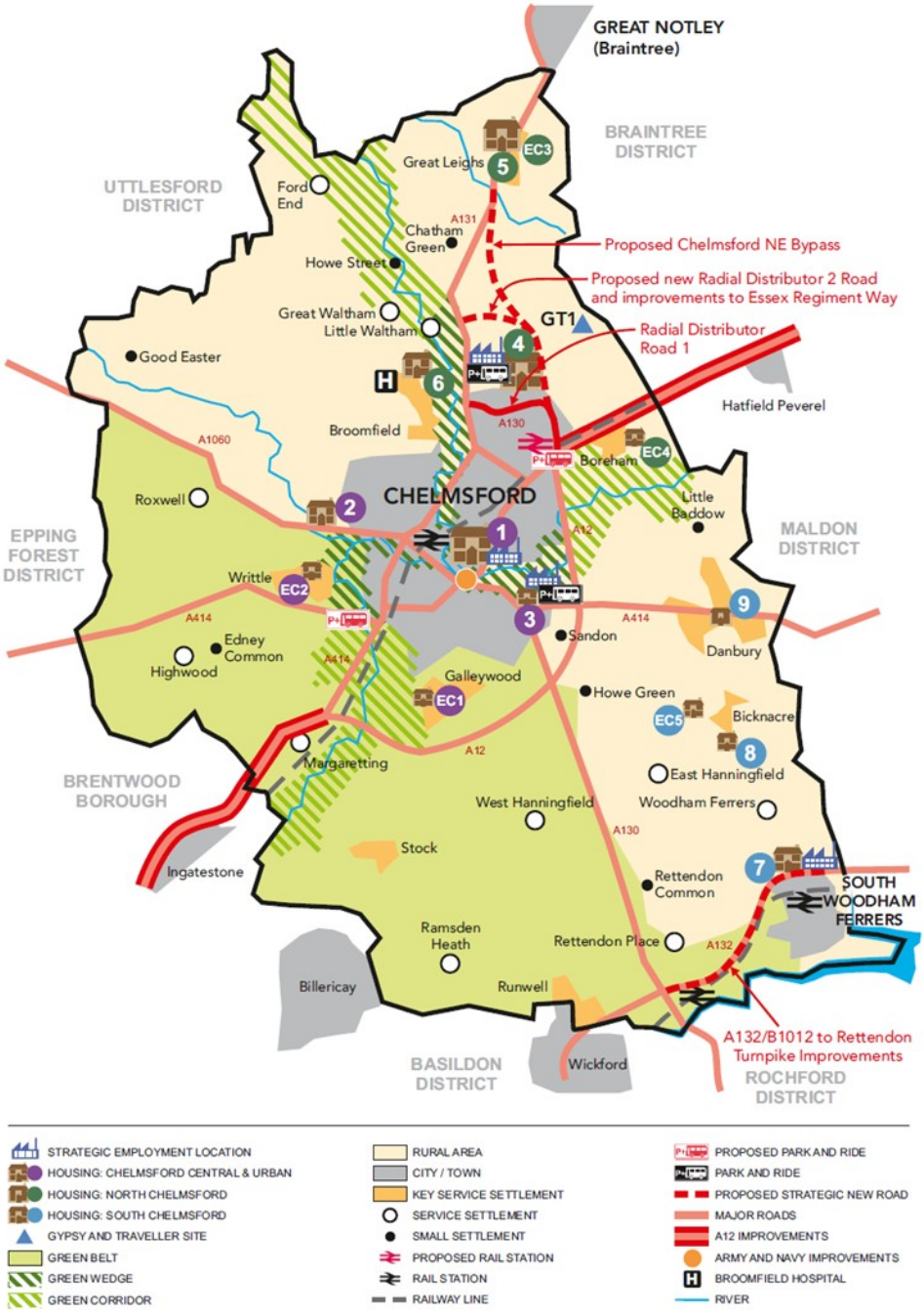
4. Agricultural activity dominates much of the City's hinterland, where much of the land is in highly productive arable cultivation (with pasture along the river valleys) and where modern farming practices (notably hedgerow and woodland loss) exert a significant influence over landscape character. The trend towards a 'simplified' landscape could continue, with more complexity on the immediate urban fringe in the form of small holding, leisure uses and pony paddocks, the latter often characterised by limited hedgerow and grassland management, post and wire/ranch fencing and various structures.

5. The proportion of tree cover across Chelmsford is around 6% (compared to 8.5% for England), but the river valleys through the City Centre are generally well-treed, with the suburbs less so. There are extensive, often ancient and biologically important tracts of woodland to the east around Danbury and to the south west of Writtle, with pockets of smaller woods across farmland surrounding the City. The relationship between good air quality and tree cover is well-known. Whilst air quality across the City is generally improving, tree and vegetation cover more generally is also an important aspect of climate change mitigation, helping to slow run-off and provide shade. Flood risk is most extensive to the east of the City along the Chelmer and Blackwater Navigation where the valley bottom opens out.

6. Open space provision across the City is generally excellent in terms of quantity, quality and accessibility, although inevitably there is variation both within the City and between the City and surrounding settlements. The Green Infrastructure resource as a whole, comprising open spaces, parks and gardens, allotments, woodlands, street trees, green roofs, fields, hedges, water bodies, footpaths and cycleways is complex in its pattern and accessibility.

7. Chelmsford has plans for significant levels of housing, employment and infrastructure growth. The Local Plan spatial strategy (Figure 4.2) seeks to deliver the bulk of the development in several strategic development locations. This creates opportunities for the strategic planning of Green Infrastructure, both as part of the developments themselves as well as linking to the surrounding Green Infrastructure resource and contributing to off-site provision.

Figure 4.2: Chelmsford Local Plan Proposed Spatial Strategy

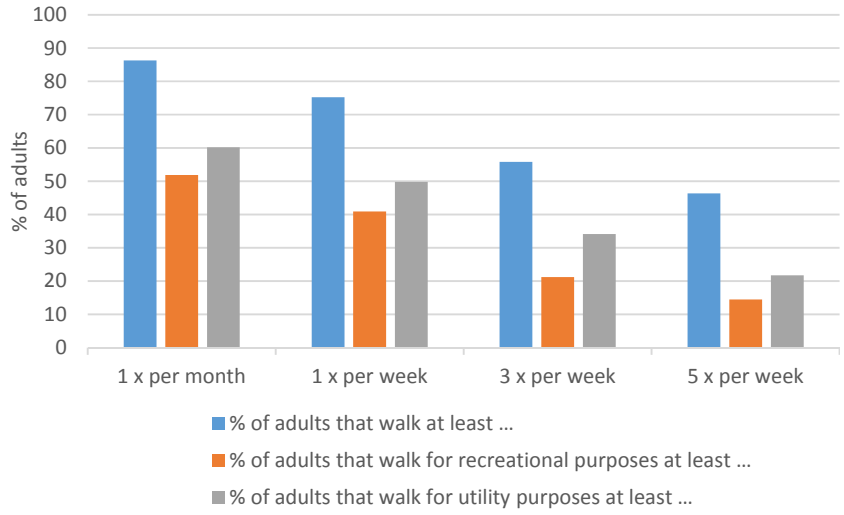


8. The spatial strategy includes a series of strategic housing allocations which will incorporate Green Infrastructure as a core principle of their development form, including links to the wider landscape context in which they will be located. The scale of these developments is such that they will exert a considerable influence on the localities in which they are located, introducing significant built form into primarily agricultural landscapes. The opportunities associated with masterplanning are potentially significant, both on- and off-site, through connections to the surrounding Green Infrastructure resource.

4.2 Access and Recreation

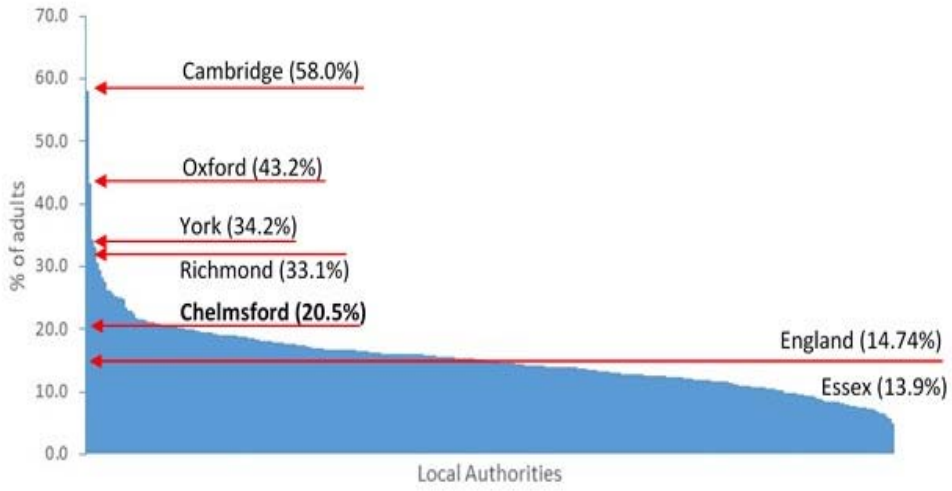
9. The profile of physical activity (as represented by walking) in Chelmsford is not untypical against that of Essex and the Country as a whole, with around 75% of adults walking at least once per week (Figure 4.3). By contrast, cycling activity (Figure 4.4) is above average, perhaps related to the City's network of cyclepaths, but some way behind the best performing cities.

Figure 4.3: Walking Activity Rates: Chelmsford



Source: Department for Transport statistics Table CW0105, Proportion of how often and how long adults walk for (at least 10 minutes) by local authority, 2014/15

Figure 4.4: Proportion of adults cycling at least once per month by Local Authority, 2014/15

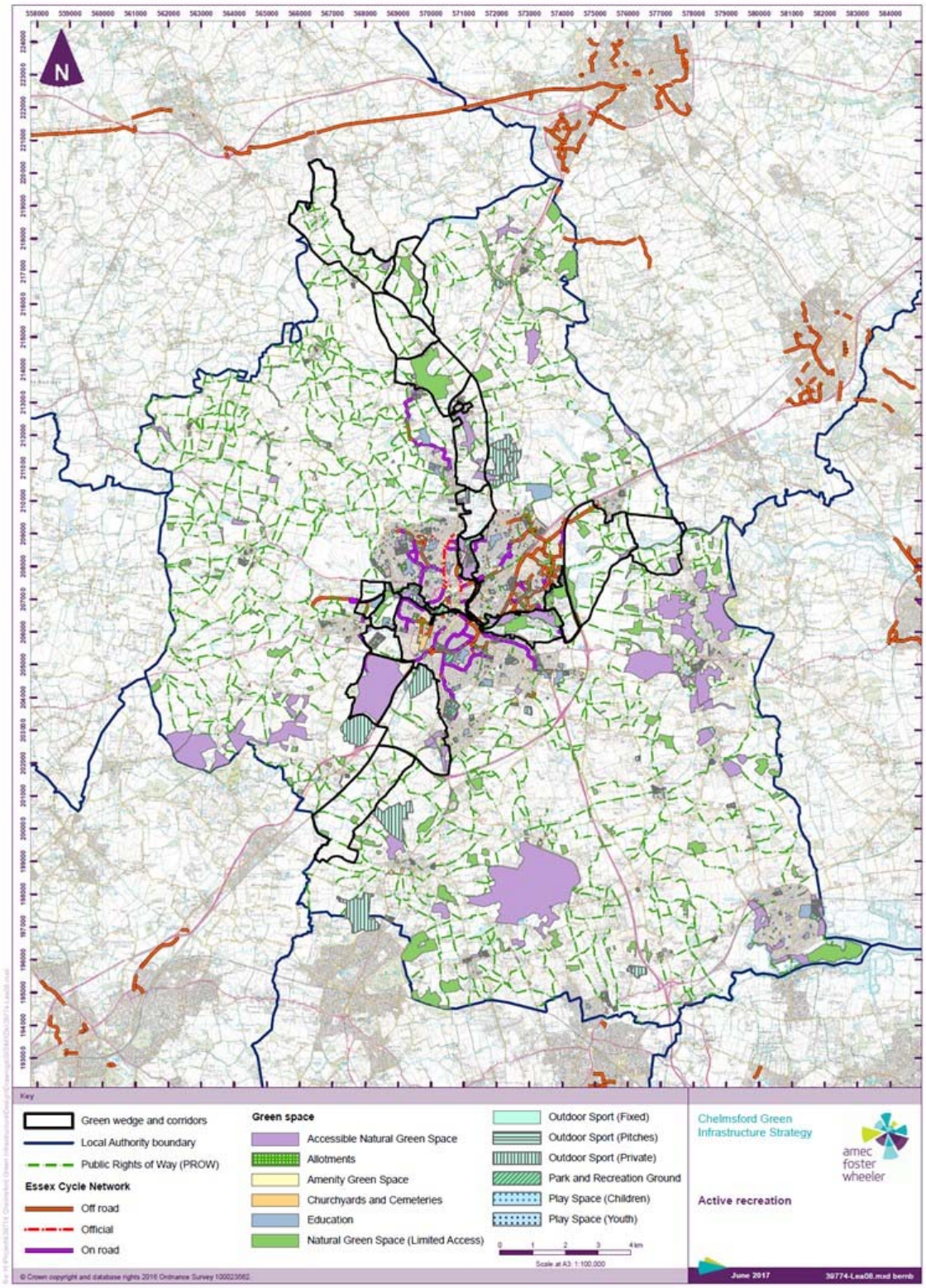


Source: derived from https://www.gov.uk/government/collections/walking-and-cycling-statistics

10. There are proposals for addressing missing links in the cycle network, whether as cycle lanes or advisory on road routes within the urban area e.g. Chelmsford Road between Writtle and Chelmsford, Broomfield Road, between Galleywood and Great Baddow and Mill Lane needing a connection across Essex Regiment Way, Chelmer Valley Road and connecting Beaulieu with the rest of Chelmsford.

11. Figure 4.5 shows the general pattern of access to greenspace by cycle and foot, a broad proxy for recreational opportunity, whilst the health-related findings of the Open Space Survey showing the important relationship between Green Infrastructure and health and well-being, and also its complexity.

Figure 4.5: Access to Greenspace by Cycle and Foot



12. Table 4.1 summarises the open space standards which have been recommended for adoption in the Local Plan.

Table 4.1: Summary of Open Space Standards

Typology	Quantity Standard (ha/1000 population)	Access Standard
Allotments and Community Gardens	0.3	720m or 15 min walk time
Amenity Green Space	0.4	480m or 10 min walk time
Parks & Recreation Grounds (public and private)	1.65	600m or 12/13 min walk time
Play Space (children)	0.05	480m or 10 min walk time
Play Space (youth)	0.05	600m or 12/13 min walk time
Natural Green Space	1	ANGSt and WASt

13. The standards[3] set for access to natural greenspace and woodlands are as follows:

The Natural England Accessible Natural Greenspace Standards (ANGSt)

- No person should live more than 300 metres from their nearest area of natural green space of at least 2 hectares in size.
- At least 1 hectare of Local Nature Reserve should be provided per 1,000 population.
- There should be at least one accessible 20 hectare green space site within 2 kilometres from home.
- There should be one accessible 100 hectare green space site within 5 kilometres.
- There should be one accessible 500 hectare green space site within 10 kilometres.

The Woodland Trust Woodland Access Standards

- No person should live more than 500 metres from at least one area of accessible woodland of no less than 2 hectares in size.
- There should also be at least one area of accessible woodland of no less than 20 hectares within 4 kilometres (8 kilometres round-trip) of people's homes.

14. These standards are widely used as a benchmark for provision. Strategically access to ANGSt resources across Essex appears to somewhat patchy, particularly in respect of 100ha+ and 500ha+ sites (Figure 4.6), although Chelmsford has comparatively few areas with no provision.

15. A summary of the extent to which ANGSt standards is set out in Table 4.2. Locally, Figure 4.6 reveals that there are deficiencies in City-wide access to open space, particularly in remoter countryside areas, although access to larger open spaces shows a clear southern bias. New development to the north of the City in particular, is likely to yield additional accessible greenspace of a substantial scale which will change the current pattern of provision.

Table 4.2: Meeting of ANGSt Standards across Chelmsford

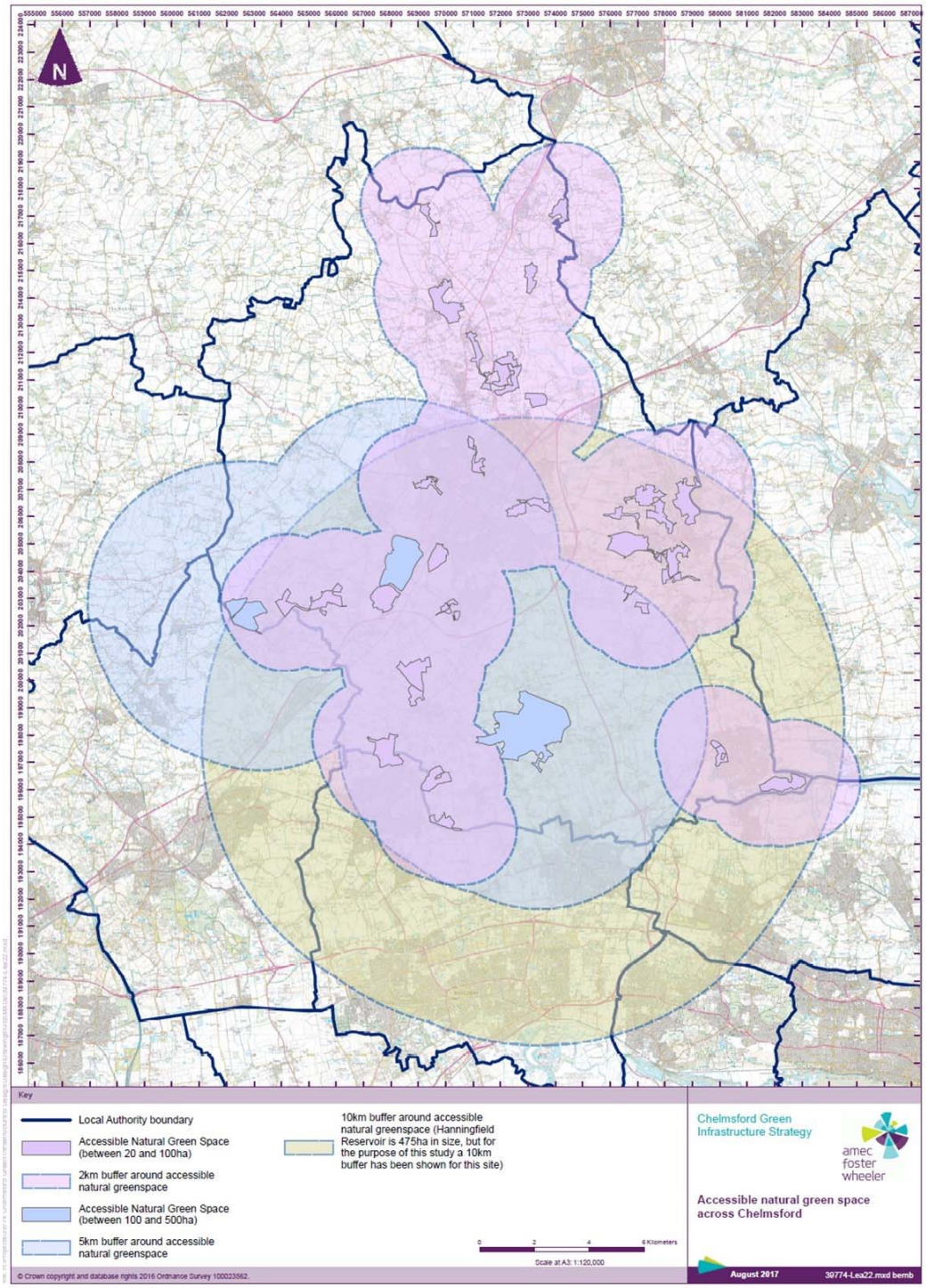
ANGSt Standard	Meeting of Standards
At least one accessible 20ha site within 2km of home	Standard met across approximately half the study areas with the largest gaps in the rural north, west and south and the eastern part of the urban area.
One accessible 100ha site within 5km of home	Standard met across half the study area with gaps largely in the north and east and part of the west.

[3] TCPA/Wildlife Trusts (2012) Planning for a healthy environment – good practice guidance for green infrastructure and biodiversity

ANGSt Standard	Meeting of Standards
One accessible 500ha site within 10km of home	Provision met across Chelmsford, rural south and South Woodham Ferrers. No provision in the rural north and gaps in rural west and urban areas.
At least one hectare of Local Nature Reserve per 1,000 population	Very limited provision – 3 LNRs (Chelmer Valley, Galleywood Common and Frankland Fields)

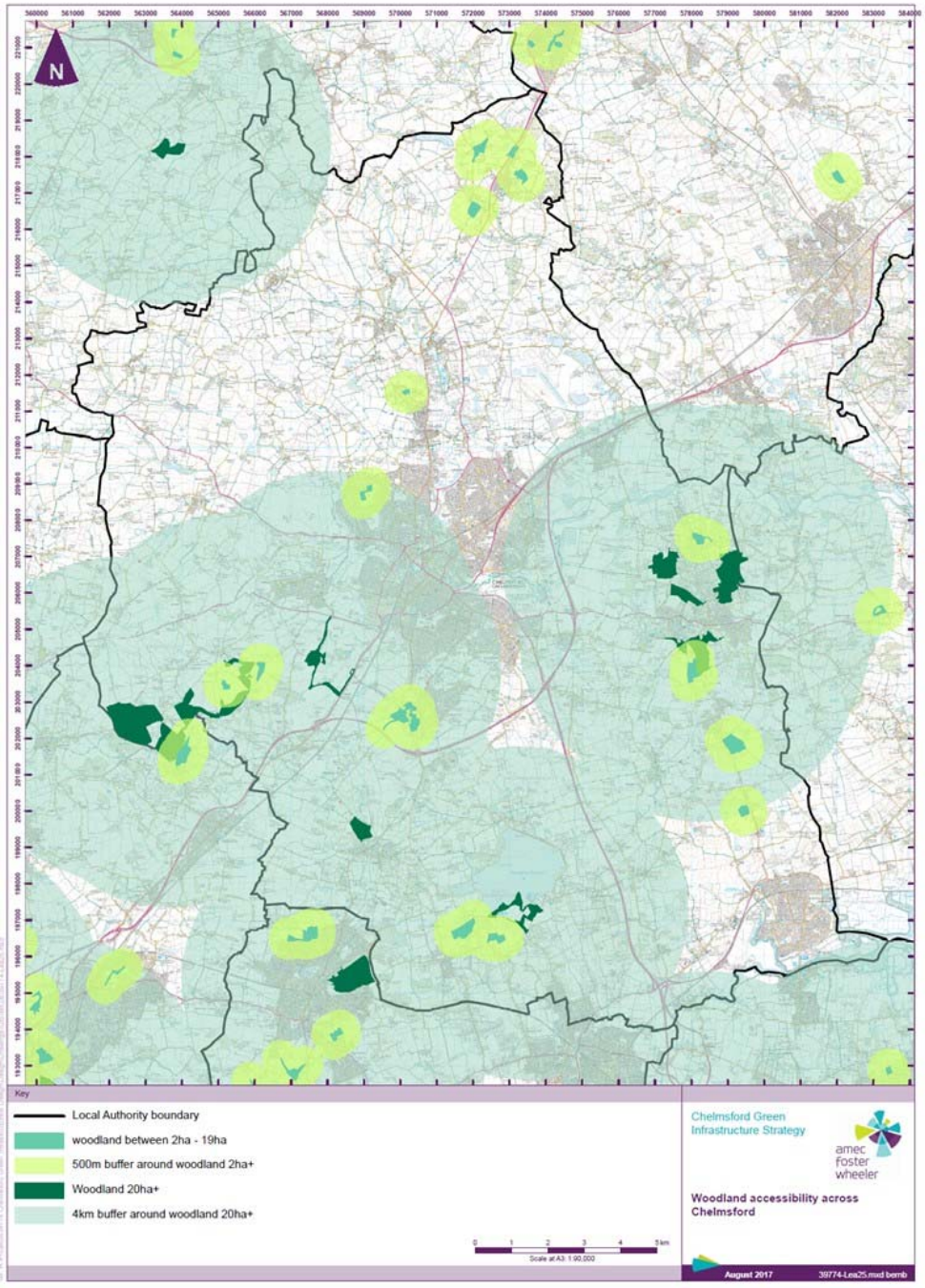
Source: Chelmsford Open Space Study 2016

Figure 4.6: Accessible Natural Greenspace across Chelmsford: 20ha, 100ha and 500ha



16. Figure 4.7 maps access to woodland across Chelmsford and its surrounding authorities, and Chelmsford respectively. They show both the limited extent of woodland cover generally, and the paucity of smaller woodlands in and around Chelmsford urban area in particular. Accessibility to larger woodlands is biased towards the south, notably around Danbury, Writtle and Hanningfield. Some of the larger woods within Chelmsford City Council's jurisdiction provide access opportunities for residents of neighbouring Boroughs, notably Writtle Forest for residents of Ingatestone and Hanningfield for residents of Billericay and Wickford.

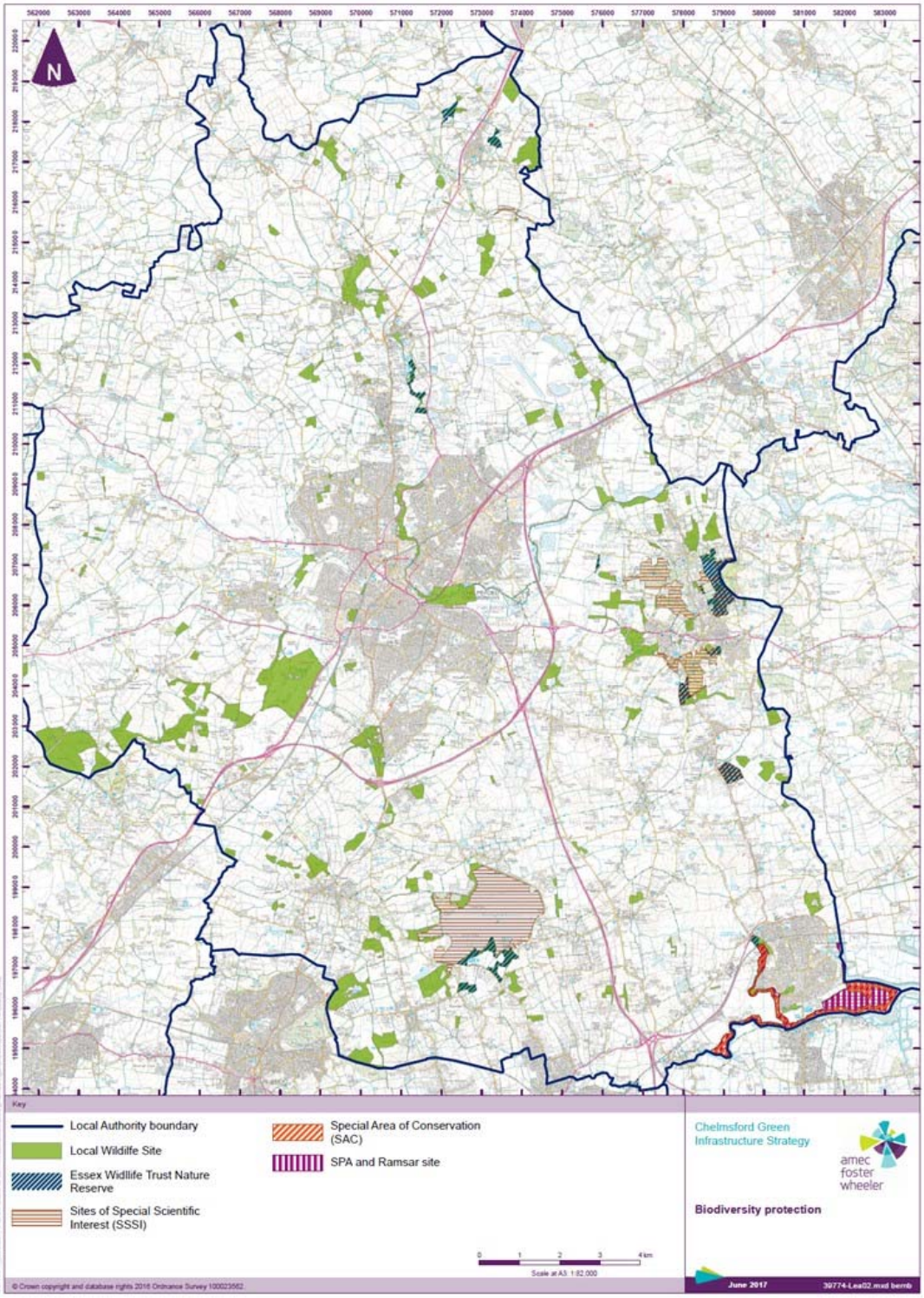
Figure 4.7: Access to Woodlands: Chelmsford



4.3 Biodiversity

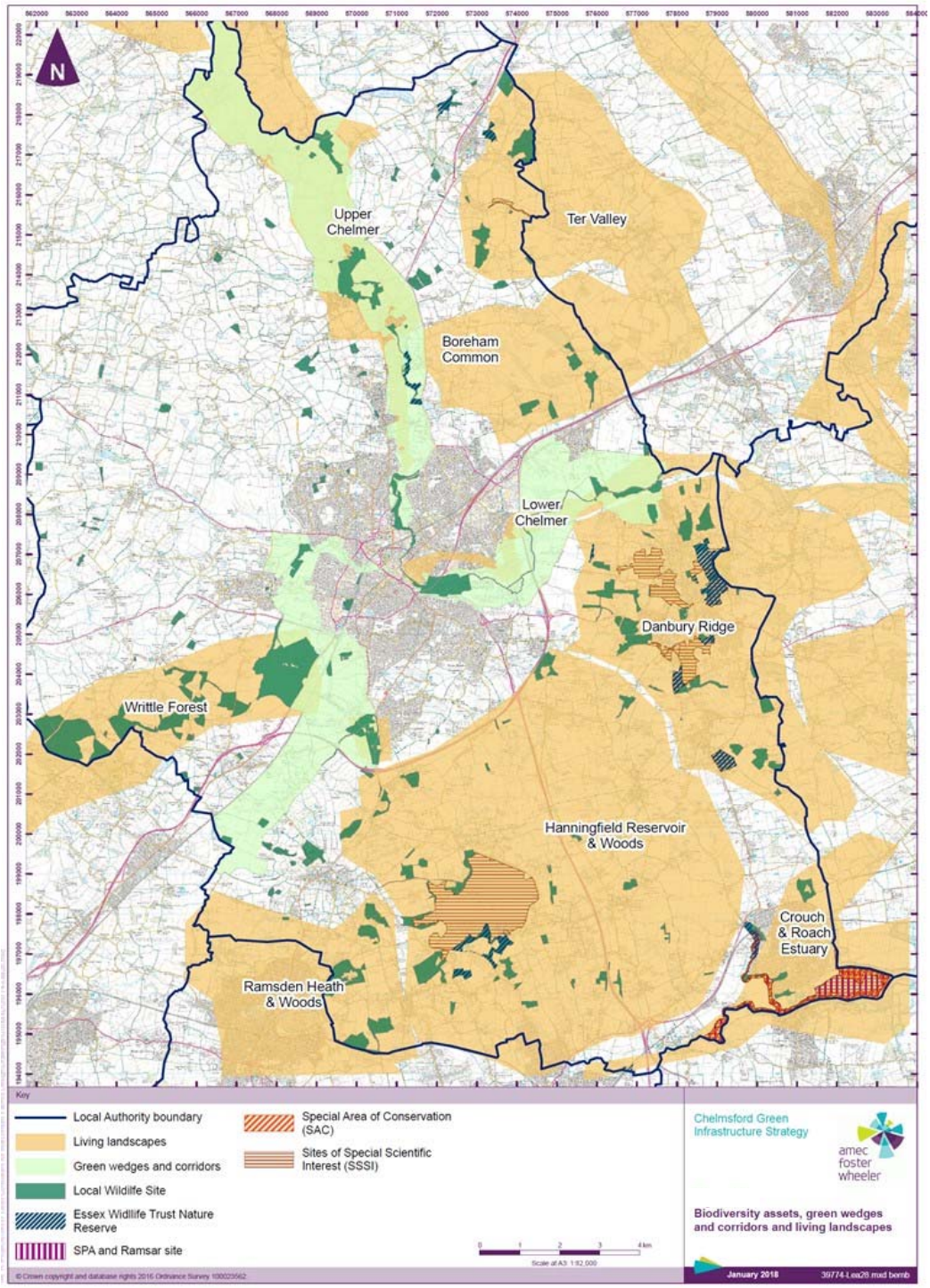
17. Figure 4.8 illustrates the designated biodiversity resources across the City Council area, showing notable clusters around Writtle, Danbury, Hanningfield, South Woodham Ferrers, the Walthams/Great Leighs, the City Centre River Valleys and Galleywood to Stock.

Figure 4.8: Designated Biodiversity Assets



18. These clusters are recognised in the Essex Wildlife Trust Living Landscapes Initiative[4] (Figure 4.9), for which vision documents and delivery plans are being developed. They present important focal points for the consideration of the way in which biodiversity interests sit within a wider landscape and socio-economic context.

Figure 4.9: Designated Biodiversity Assets and Living Landscapes Initiative Areas

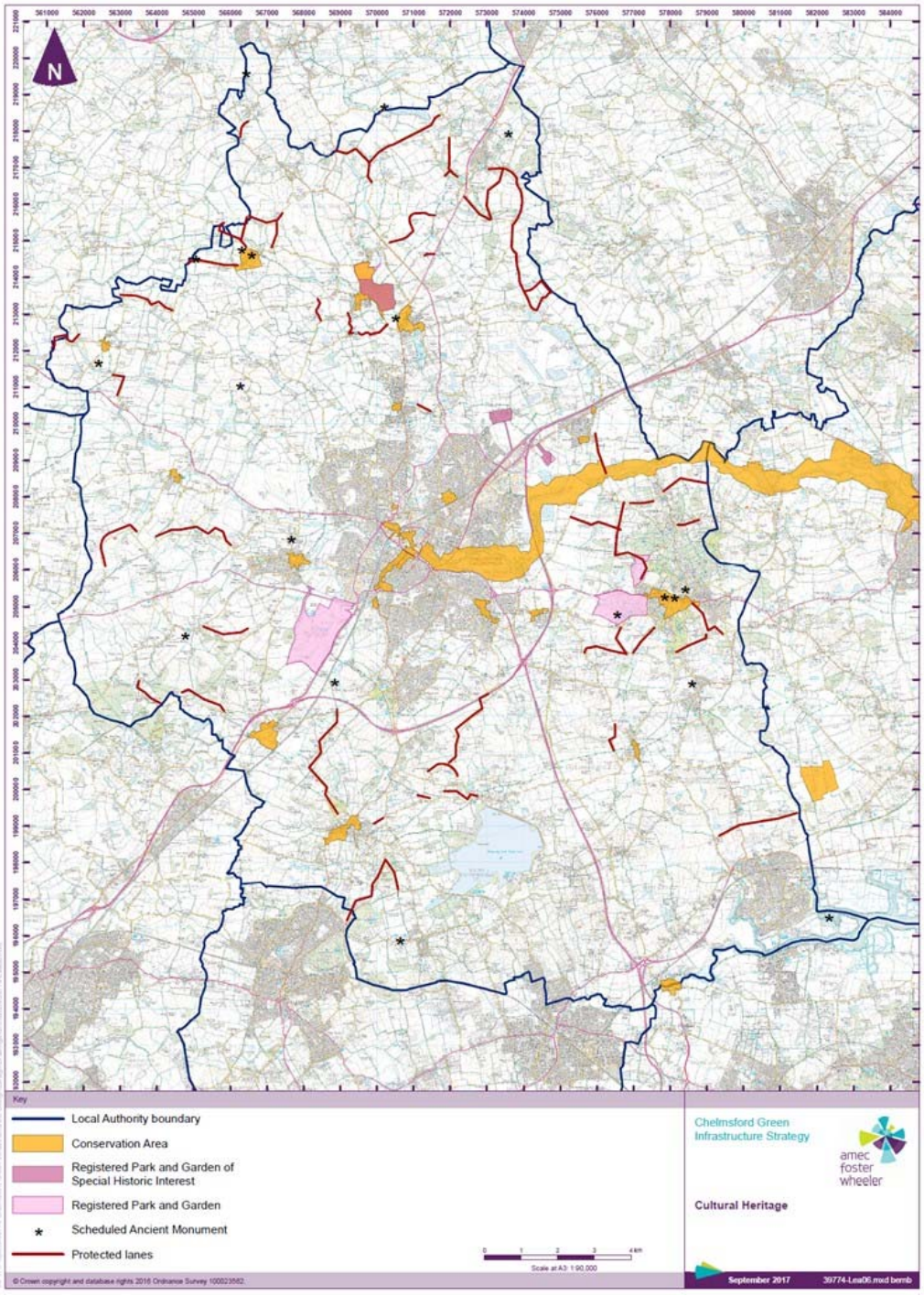


[4] http://www.essexwt.org.uk/living-landscapes

4.4 Cultural Heritage

19. Designated cultural heritage assets are illustrated in Figure 4.10, showing the importance of the river valleys both within the City Centre and along the Chelmer & Blackwater Navigation, the extensive registered parks and gardens of Hylands Park, Danbury Palace, Riffhams, Boreham House and New Hall and complementary assets such as Lingwood Common (Danbury) and Langleys (the Walthams).

Figure 4.10: Cultural Heritage Assets



4.5 Green Infrastructure Connectivity

20. There are various ways of analysing connectivity: geography of existing natural resources; connections between recreational resources and potential for establishing connections (Figures 4.11, 4.12 & 4.13). The geography of Chelmsford (focused on the confluence of river valleys, with a reasonably strong distinction between town and country, and a well-established network of recreational assets), means that there is a sound basis for identifying where more effective and efficient use might be made of existing resources and where added value can best be sought to meet the objectives set for the Strategic Plan.

Figure 4.11: Connectivity - River Valleys & Access Routes

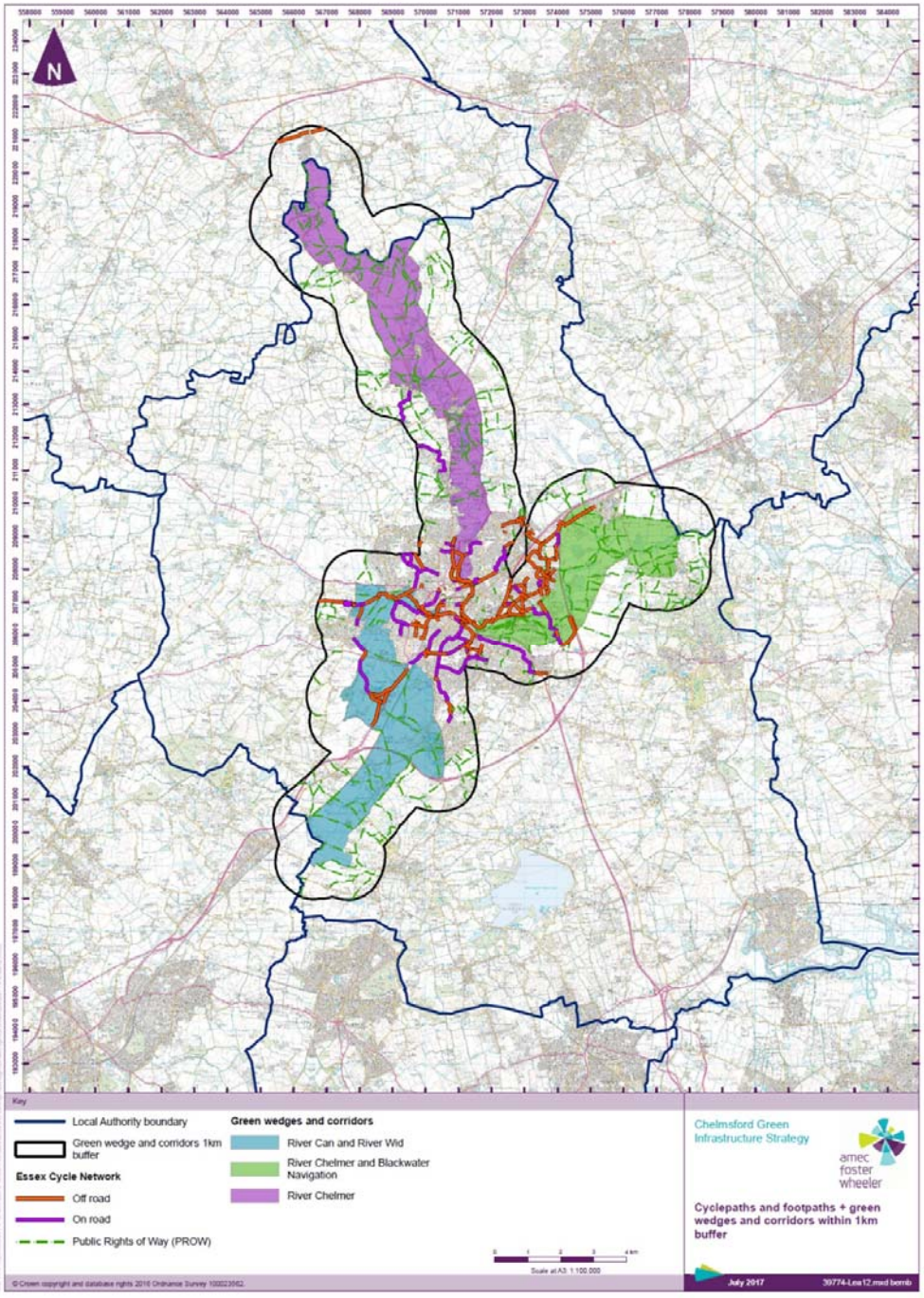


Figure 4.12: Connectivity - River Valleys

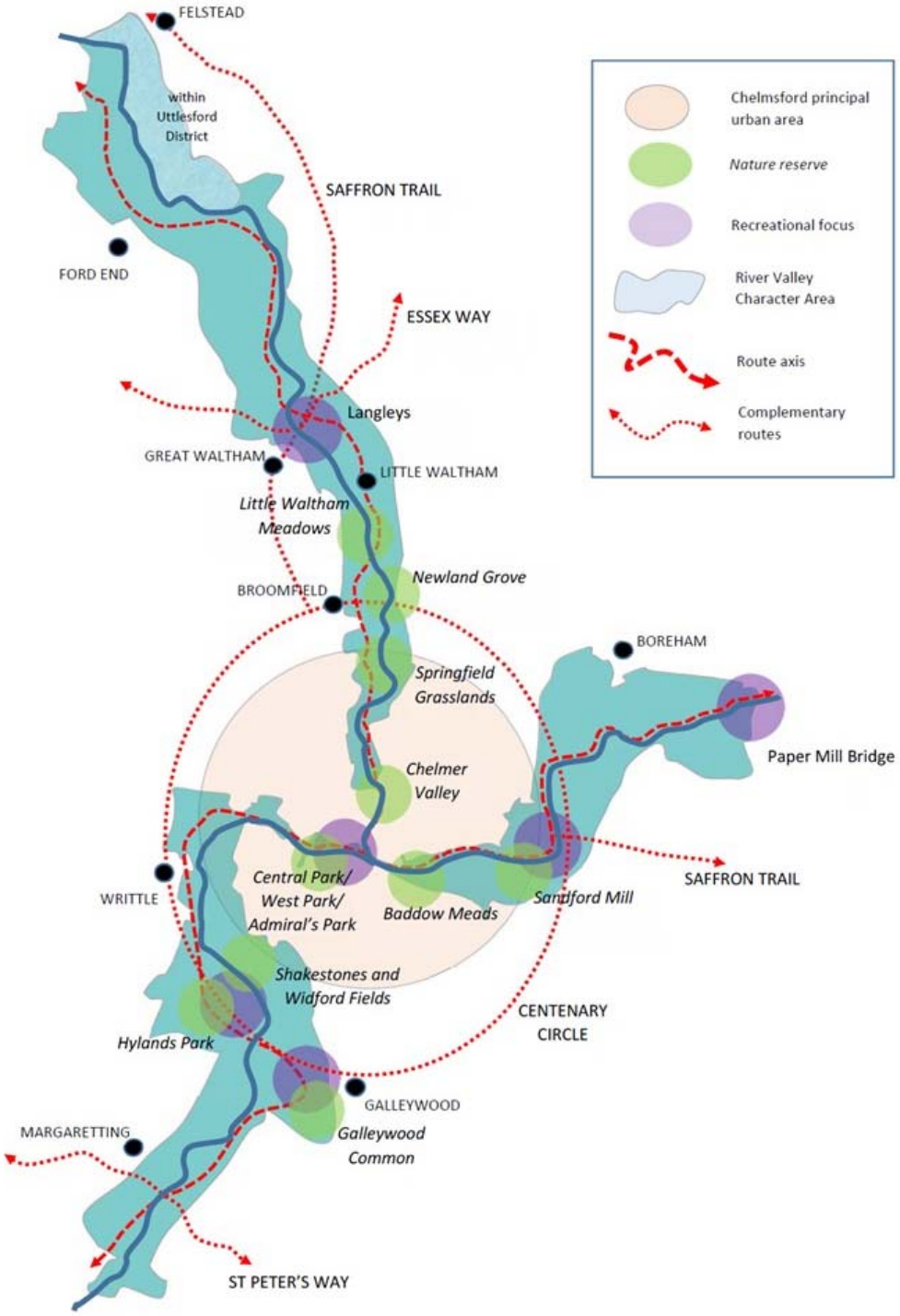
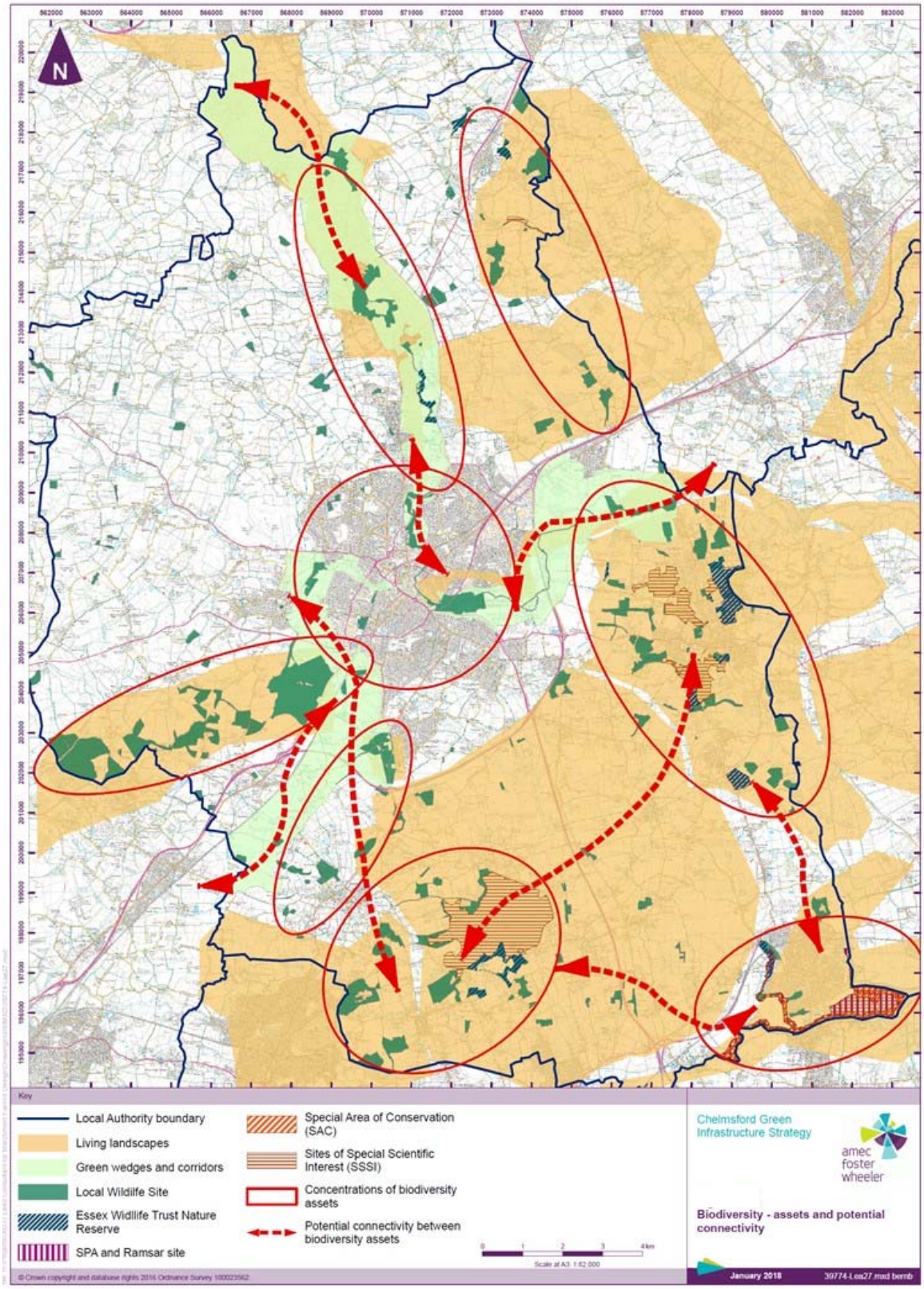


Figure 4.13: Potential Connectivity - Biodiversity



4.6 Issues Arising from the Analysis of Chelmsford's Green Infrastructure

21. The Research and Evidence base analyses the character of Green Infrastructure assets and across the City and its hinterland. Key messages from the analysis centre on the importance of, and opportunities associated with:

- **Reinforcing and extending the connectivity of, and accessibility to, Green Infrastructure resources** to create a robust network for the benefit of people and wildlife, which is integrated with the networks in adjacent authorities and contributes to realising the aims and objectives of the Chelmsford Local Plan.
- **Protecting and enhancing Green Infrastructure assets** focusing on maximising the functioning and quality of existing assets before embarking on any ambitious extension of the network.
- **Protecting and enhancing key cultural heritage assets** (including buildings, places, settings and landscapes) which are part of the character of Green Infrastructure in particular localities and City-wide.
- **Recognising the critical role that the river valleys play as a focus for the Green Infrastructure assets across the City and its hinterland**, forming the basis of a connected and robust network which reflects the interests of biodiversity, landscape management, recreational opportunity and water management.
- **Paying particular attention to the integrity of protected areas** such that they are fundamental to enhancing biodiversity throughout Chelmsford.
- **Ensuring that existing Green Infrastructure resources are used to their best advantage**, increasing their multifunctional role where appropriate and in doing so meeting the needs and aspirations of residents.
- **Enhancing the quality and accessibility of Green Infrastructure resources** such that they are attractive to use for recreation and sustainable travel.
- **Promoting Green Infrastructure as central to the character and well-being of local communities**, encouraging greater engagement in management and local 'ownership' where appropriate.
- **Ensuring that new development at all scales and in all locations addresses the needs and opportunities associated with the planning and management of Green Infrastructure**, in particular creating sustainable places which add to the Green Infrastructure resource, fulfil community aspirations for high quality environments and contribute to the coherence of the wider network.
- **Using the Green Infrastructure resource to help promote the City economically**, as part of its overall image as an attractive and thriving place to live, work and visit and as a source of new employment opportunities.
- **Addressing and preparing for the effects of climate change** through using Green Infrastructure resources such as flood management, urban cooling, air quality enhancement and opportunities for sustainable travel.
- **Using Green Infrastructure to advance health and well-being for residents** through access to high quality open spaces which are connected and provide a diverse range of recreational and amenity benefits.

22. These issues can be translated into aspirations for how the interests of the Green Infrastructure resource are protected, used and advanced, and in turn into specific objectives for their delivery.

5. The Green Infrastructure Strategic Plan

5.1 Aspirations for the Planning and Management of Green Infrastructure in Chelmsford

1. The Green Infrastructure Strategic Plan provides a framework for the planning and management of the Green Infrastructure resource through the various plans, programmes and strategies which guide the protection and development of the natural and cultural resources of the City and its hinterland. The Green Infrastructure Strategic Plan has taken account of a wide range of matters, including research and evidence gathering, consultation with key stakeholders and the emerging Local Plan and its evidence base.
2. The following aspirations for the planning and management of Green Infrastructure across the City and its hinterland reflect the form and function of the various aspects of Green Infrastructure character analysed in the research and evidence report:
   - Protect, enhance and restore Green Infrastructure assets of all kinds, as part of a multifunctional network which reflects the needs and potential of biodiversity, natural and historic landscapes, sense of place, sport and recreation, water management, productive and healthy farming landscapes, climate change adaptation, sustainable movement, and community health and well-being.
   - Facilitate greater appreciation and use of the City's Green Infrastructure assets, promoting a sense of place and ownership.
   - Realise greater connectivity for people and wildlife across the City through a network of high quality and accessible green spaces and corridors.
   - At the landscape and local scales plan and manage networks of natural and cultural assets to conserve, enhance and restore ecosystem function and human well-being.
   - Secure a step-change in environmental quality and performance to meet the goals of sustainable development, quality of life enhancement and climate change adaptation.
   - Where appropriate planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure.

5.2 Objectives and Guiding Principles for Green Infrastructure in Chelmsford

3. Informed by the analysis of Green Infrastructure character and functions across the City, the following objectives will help to guide sustainable development through the protection of natural and cultural resources, addressing climate change, realising economic opportunities and increasing health and well-being.

Access and recreation – to promote opportunities for recreation, play and everyday transport through an accessible and attractive network of open spaces, footpaths, cycleway, bridleways and waterways.

- Provide high quality recreational opportunities for existing and new communities, using City-wide standards of provision.
- Enhance opportunities for the greater use of cycling and walking as a mode of travel, developing links between residential areas, parks, green spaces and the wider countryside.
- Promote waterways and adjacent paths for leisure use.

Biodiversity – to create a well-connected network of healthy ecosystems through protection, enhancement and where possible restoration.

- Protect and enhance biodiversity resources.
- Secure a net increase in biodiversity through enhancement, restoration and new provision.
- Use the river valleys and other clusters of biodiversity as the basis for improving the connectivity of the biodiversity resource.

Communities and health – to support the development of thriving communities, local engagement and the promotion of healthy lifestyles.

- Use local and City-wide Green Infrastructure resources as the focus for community activity.
- Use city greening and the promotion of sustainable transport to help enhance air quality and address climate change impacts.
- Set new development within a planned Green Infrastructure setting which links to its wider context.

Economy – to support the development of a more robust and diverse economy and contribute to sectors such as tourism.

- Promote city greening to enhance the City's image, attract investment and enhance recreational and tourism activity.
- Promote opportunities for green infrastructure-related employment and training.
- Develop partnerships to secure investment in, and delivery of, Green Infrastructure.

Heritage, landscape and townscape – to protect and enhance the City's heritage, landscape and sense of place.

- Retain and enhance local heritage and landscape character through attention to the setting of heritage assets and wider landscape interventions such as tree and hedge planting.
- Develop exemplar initiatives to encourage greater recognition of the role and potential of Green Infrastructure.
- Use Green Infrastructure, notably the River Valleys, as a focal point for the City's identity.

Water management – to ensure that the City's watercourses are healthy and can help to provide a response to the challenges of climate change.

- Use the City's River Valleys (Green Wedges and Green Corridors) as a focus for securing multifunctional benefits.
- Incorporate Sustainable Drainage Systems into new development, and retrofit existing development where appropriate.
- Use green spaces to provide a flood storage/management role where appropriate.

5.3 Areas for Intervention

4. The geography of Chelmsford can be divided into five areas which form the basis for application of the aspirations and objectives of the Green Infrastructure Strategic Plan set out above. In this way, the particular qualities and needs of different areas of the City can be recognised and Green Infrastructure interventions targeted accordingly. The areas for intervention are:

    1. The River Valleys (Green Wedges & Green Corridors)
    2. City Centre & Suburbs
    3. The Urban Fringe
    4. The Rural Hinterland
    5. Areas of Significant Change related to planned housing development

5. These are illustrated in Figure 5.1 which shows the relationship between these areas geographically and the strategic linear recreational resources which run through and connect them. In turn, there are numerous local connections within these broad areas, both actual and potential, in the form of footpaths, cycleways and biodiversity corridors. Figure 5.1 also illustrates the importance of cross-boundary relationships, particularly through the river corridors, which form a natural connection, but also public rights of way and the broader agricultural context within which Chelmsford sits.

6. The areas for intervention shown in Figure 5.1 are used as the starting point for the development of an Action Plan for the protection, enhancement and restoration of Green Infrastructure assets across the City (see Section 6), specifying the delivery of existing work, requirements in the short to medium term, and longer-term aspirations which are more ambitious.

5.4 The City-Wide Strategy

7. Figure 5.2 illustrates the overarching strategic plan for the City's Green Infrastructure, comprising the protection and enhancement of the river valleys, key biodiversity areas, attention on the multiple roles of Green Infrastructure in the City and suburbs, establishing new and firmer connections between areas for recreational, travel and biodiversity purposes, and opportunities within and adjacent to areas of change.

8. The aspiration for the creation of an integrated network of Green Infrastructure across the City and its hinterland is centred on focal points, that may be biodiversity-related, residential or recreational, and strengthening and establishing connectivity between them. This can be achieved through focusing attention on: enhancing connectivity, the character of the City Centre and suburbs, and opportunities associated with areas of significant change.

Figure 5.1: Areas for Intervention

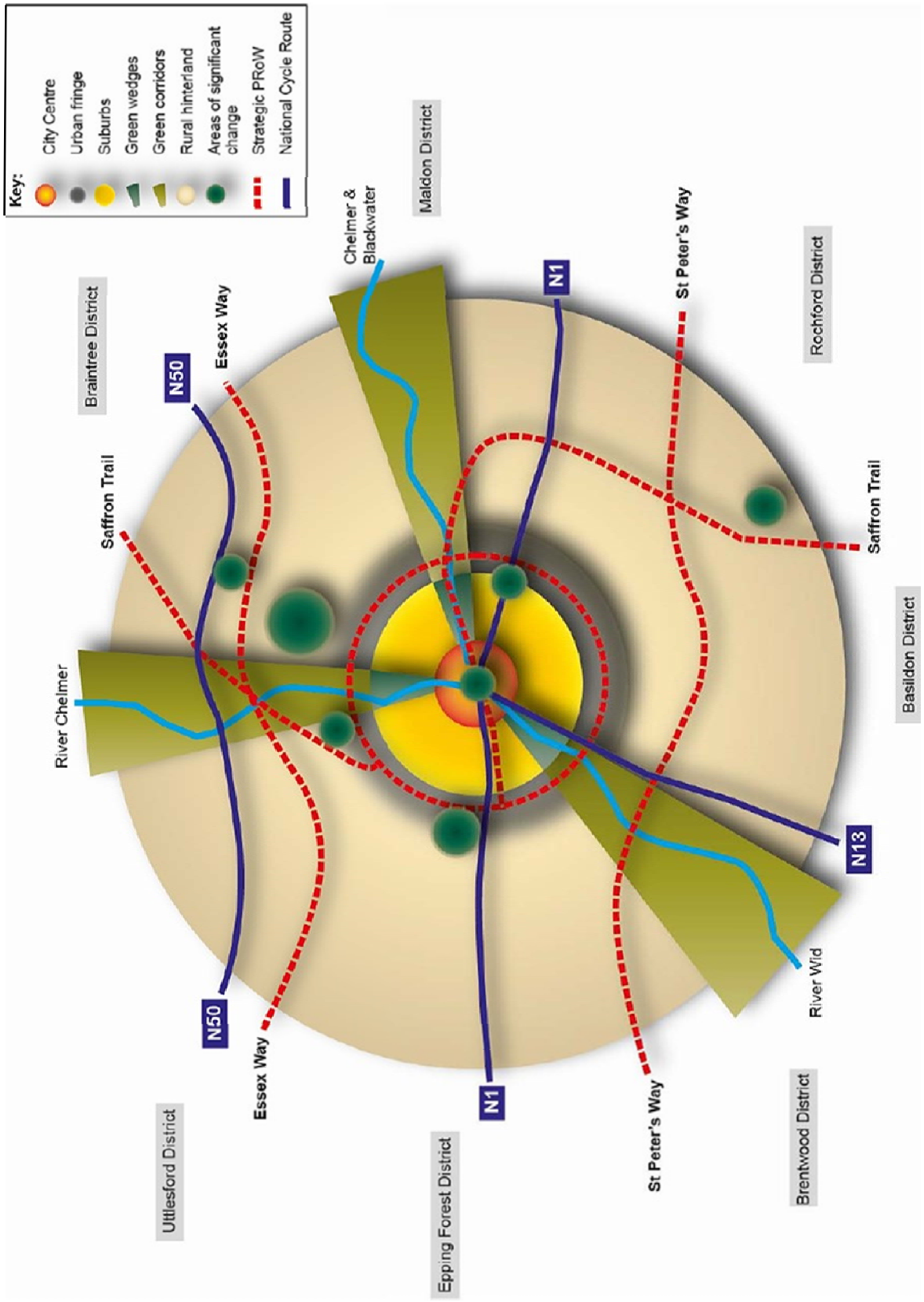
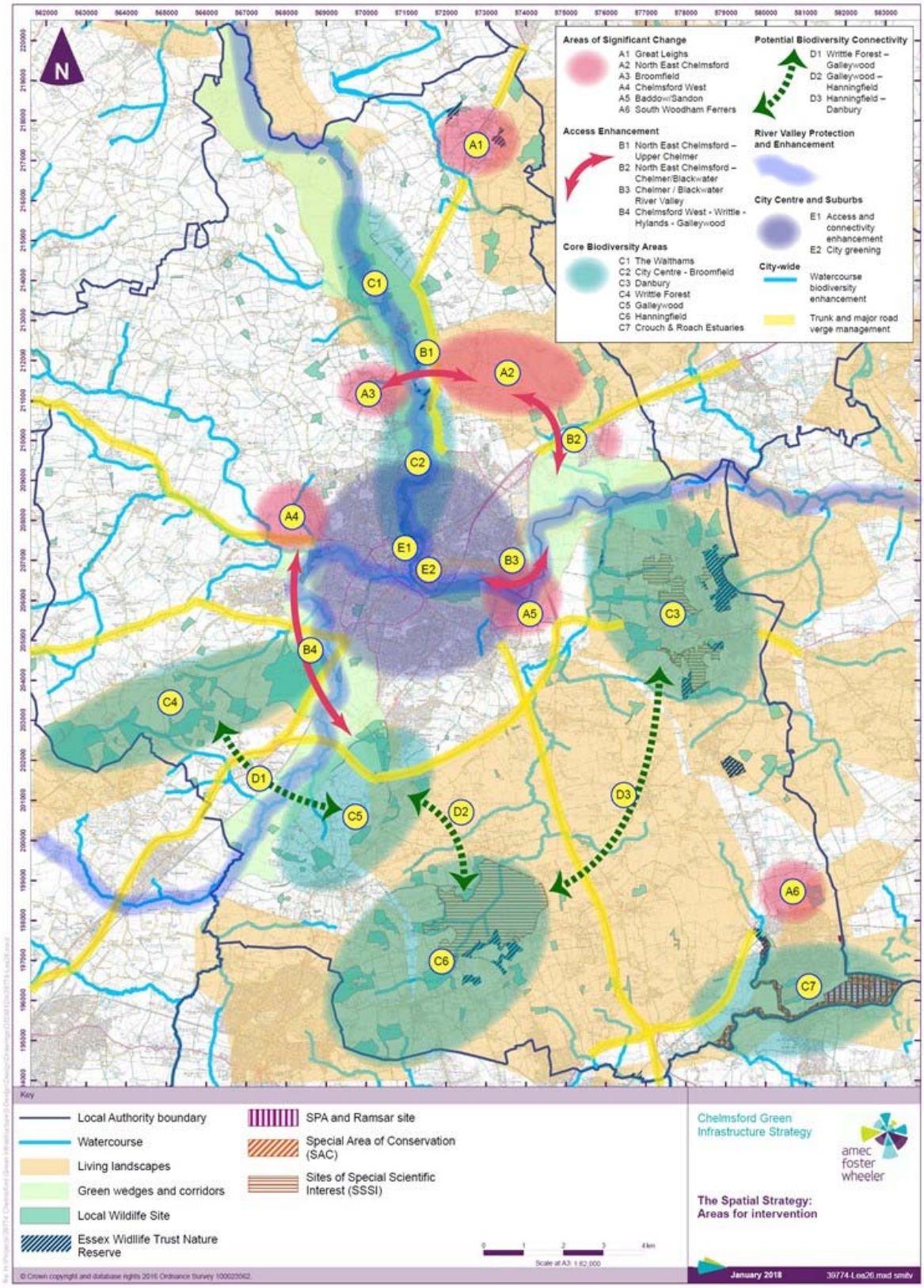


Figure 5.2: The Spatial Strategy for Chelmsford's Green Infrastructure (see section 6.6 Action Plan)



5.5.1 City Centre and Suburbs (Strategic Plan References E1 & E2)

9. The quality and accessibility of Chelmsford's parks and open spaces is a notable feature of the City's character. Fourteen City parks have Green Flag status, and three have achieved Green Flag Heritage Status. These are:
   - Admirals Park / Tower Gardens including the adjoining West Park (also Green Flag Heritage Site status)
   - Boleyn Gardens, Beaulieu Recreation Ground and Grand Vista
   - Central Park
   - Chancellor Park & Brook End Gardens
   - Chelmer Park and Jubilee Park
   - Chelmer Valley Local Nature Reserve
   - Chelmsford Cemetery & Crematorium
   - Compass Gardens & Saltcoats Park
   - Coronation Park
   - Hylands Estate (also Green Flag Heritage Site status)
   - Lionmede Recreation Ground
   - Melbourne Park & Andrews Park
   - Oaklands Park (also Green Flag Heritage Site status)
   - Springfield Hall Park

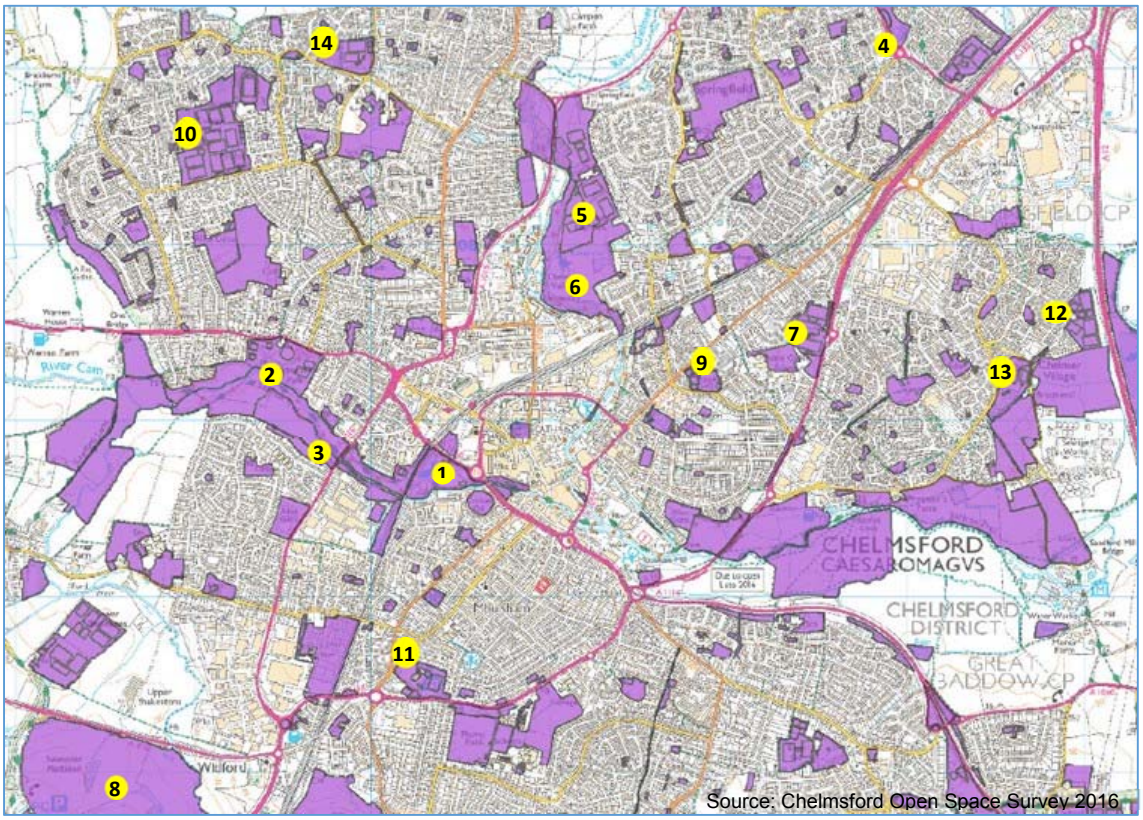
   Marconi Ponds Nature Reserve has a Green Flag Community Award.
10. These spaces are recognised as focal points for a variety of Green Infrastructure functions according to their character, in turn the basis for a connected network serving the City. Figure 5.3 illustrates the distribution of all open spaces, and Figure 5.4 their diverse character and some of the connections between them. The role of the river valleys (Green Wedges and Corridors) which both contain and form linkages between some of these resources is also apparent in Figure 5.4.
11. The City Council's parks and greenspaces (including Local Nature Reserves) are multifunctional resources which are managed in accordance with Green Flag criteria (which include environmental management and community involvement), ensuring a consistent approach across all assets. In turn, their management contributes to wider City Council agendas[5] relating to:
    - The provision of high quality public spaces.
    - Promoting a more sustainable environment (including biodiversity enhancement and managing flood risk).
    - Promoting healthier and more active lives.
    - Enhancing participation in cultural activities (including addressing social exclusion).

[5] Chelmsford City Council Corporate Plan

12. The opportunities for the enhancement of Green Infrastructure are diverse (see Action Plan at **Section 6.6**) but can be summarised as:

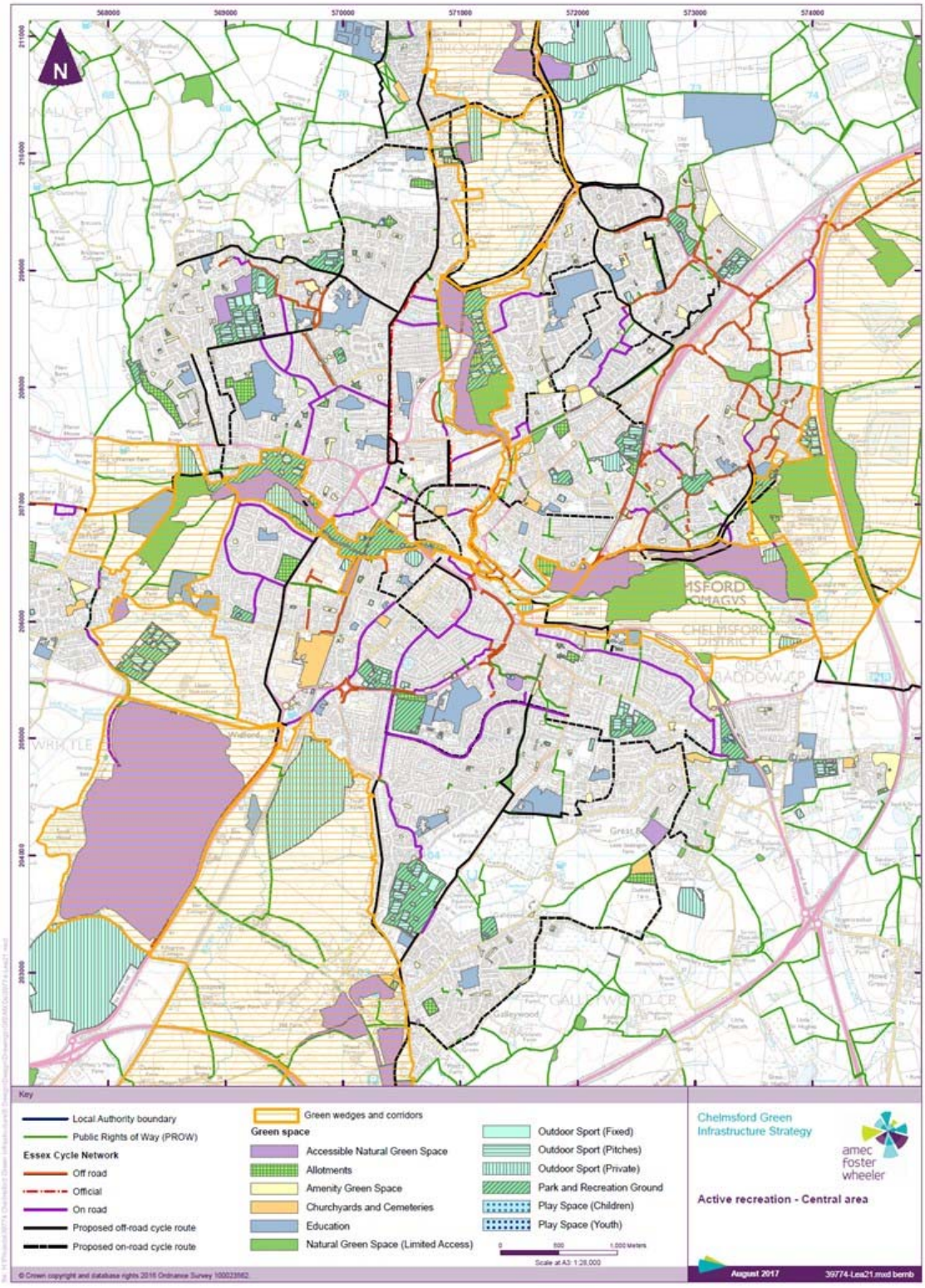
- Targeting areas of local deficiency in open space quantity and quality of provision, reflecting standards established for the City through the Open Space survey.
- Review parks and open space planning and management practices to test their compatibility with other Green Infrastructure initiatives to produce multifunctional spaces, in turn promoting resilience to climate change and other pressures.
- Improve cyclepath and PRoW quality, connections and circular routes, and the promotion of active travel for leisure and everyday trips, including as part of road improvement schemes
- Creation of a bespoke City greening initiative, contributing to an enhanced image, air quality improvement and climate change adaptation.
- Promotion of community-led management of open spaces.

Figure 5.3: Open Space Resources (full & limited access) in and around Chelmsford City Centre (City-managed Green Flag Parks indicated)



1 Central Park
2 Admirals Park/Tower Gardens
3 West Park
4 Boleyn Gardens & Beaulieu Recreation Ground
5 Springfield Hall Park
6 Chelmer Valley Local
7 Coronation Park
8 Hylands Estate
9 Lionmede Recreation Ground
10 Melbourne Park
11 Caklands Park
12 Chancellor Park
13 Brook End Gardens
14 Andrews Park

Figure 5.4: Recreation Resources and the River Valleys centred on Chelmsford City Centre



5.5.2 The River Valleys, the Urban Fringe and the Agricultural Hinterland (Strategic Plan References B1 to B4, C1 to C7 and D1 to D3)

13. Enhancing and establishing connectivity between various aspects of the Green Infrastructure resource fulfils a key principle of planning for Green Infrastructure. There is a strong relationship between the River Valleys, urban fringe and agricultural hinterlands, both in their physical connection through watercourses, transition between the built and environment and open countryside and in their shared management opportunities (for example in water quality and recreation).

14. There is valuable ongoing work which promotes more sensitive land management to the benefit of biodiversity, water quality and access enhancement. This should of course be continued, but there are opportunities for its extension and targeting. Opportunities for enhancement (see Action Plan at **Section 6.6**) centre on:

- Ensuring the continuation of, and where possible extending, existing land management and biodiversity initiatives, notably the Chelmer & Blackwater Catchment Partnership and grants available under the Catchment Sensitive Farming initiative (part of Countryside Stewardship).
- Targeting specific areas for promoting specific aspects of Green Infrastructure, notably tree planting, as part of broader 'city greening'.
- Using the detailed analysis of biodiversity protection and enhancement opportunities within the emerging suite of Living Landscapes Vision documents for core biodiversity areas and potential connections between them.
- Developing initiatives across the hinterland such as community orchards which have proven worth as focal points for community identity and biodiversity enhancement.
- Exploring the opportunities associated with Green Infrastructure-related farm diversification, such as energy crops and woodland management, including related skills and training development.
- Systematically reviewing access provision and opportunities for specific landscapes, such as the River Valleys, and between key destinations.

5.5.3 Areas of Significant Change (Strategic Plan References A1 to A6)

15. The Chelmsford Local Plan identifies six strategic development sites which will be associated with a significant change in the character of their receiving area. In so doing there will be opportunities to create new Green Infrastructure, protect and enhance existing Green Infrastructure on-site and in the vicinity, and in the case of the larger developments, establish wider connections to adjacent countryside, greenspace and access routes which will contribute to an enhancement of the connectivity of the City as a whole (see Action Plan at **Section 6.6**).

16. Whilst the approach to the incorporation of Green Infrastructure within new development will vary according to the detail of site character, and the opportunities and constraints presented, there are generic design principles

which, using Green Infrastructure as a structuring framework for site design, should guide the masterplanning of all development[6]:

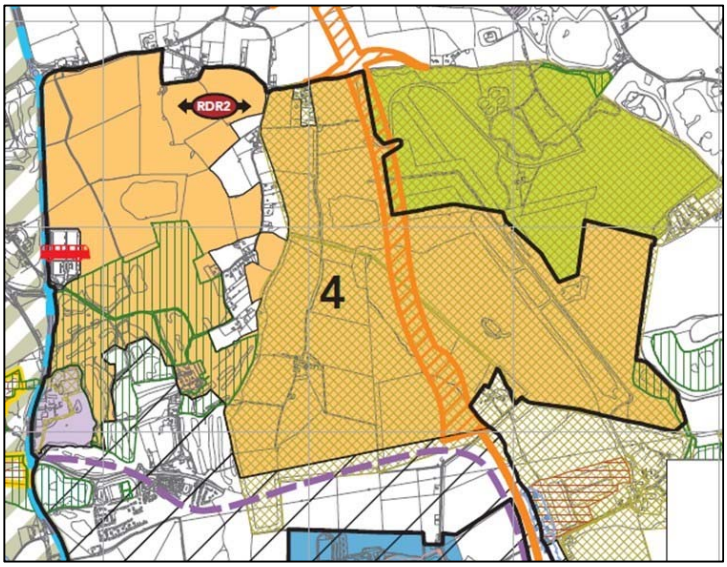
- **Landscape character** – Green Infrastructure should contribute to the management, conservation and improvement of the local landscape.
- **Historic environment** - Green Infrastructure should contribute to the protection, conservation and management of historic landscape, archaeological and built heritage assets.
- **Biodiversity** - Green Infrastructure should maintain and enhance biodiversity to ensure that development and implementation results in a net gain of Biodiversity Action Plan habitats and species.
- **Woodland** - Green Infrastructure should be delivered through the enhancement of existing woodlands and also by the creation of new woodlands and forest areas and linking existing woodlands.
- **Waterways** - Green Infrastructure should improve corridors along waterways and encourage increased access both on and by the water.
- **Sport and recreation** - Green Infrastructure should create new recreational facilities, particularly those that present opportunities to link urban and countryside areas.
- **Natural process and environmental systems** - Green Infrastructure should take account of and integrate with natural processes and systems.
- **Managing urban greenspaces** - Green Infrastructure should be managed and funded in urban areas to accommodate nature, wildlife and historic and cultural assets, and provide for sport and recreation.
- **Design** - Green Infrastructure should be designed to high standards of quality and sustainability to deliver social and economic, as well as environmental benefits.
- **Community involvement** - Green Infrastructure should provide focus for social inclusion, community development and lifelong learning.

17. These principles are elaborated on in detailed guidance on designing for Green Infrastructure set out in Section 6.4 and the Appendix to this Strategic Plan. The areas of significant change are:
    - North East Chelmsford
    - Great Leighs
    - Broomfield
    - Sandon/Great Baddow
    - South Woodham Ferrers
    - Chelmsford West

[6] From: Transform MKSM (2001) green infrastructure by design – a guide for sustainable communities in Milton Keynes south midlands

North East Chelmsford

18. As the largest proposed development, extending beyond the plan period, the site presents very significant opportunities to address in a comprehensive fashion the needs and aspirations for the structuring of the development pattern around Green Infrastructure.



In addition to the implementation of generic guidelines on site design, specific opportunities include:

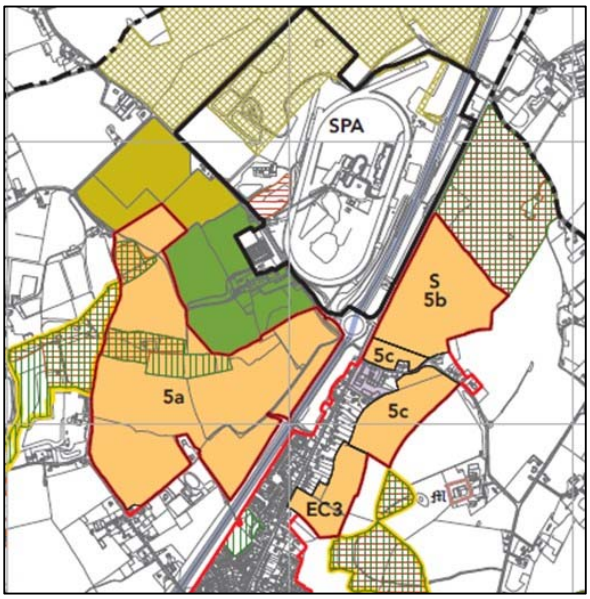
- Provision of access from the community into the Green Wedge of the Chelmer Valley to the west, at the junction of the Essex Regiment Way with Wheeler's Hill and the Chelmer Valley Park and Ride; to the south through the committed development at Beaulieu Park/New Hall to Beaulieu Parkway and the Chelmer Valley; and to the wider countryside to the east and south.
- Provision of a sub-regional scale Country Park, serving the new community and City as a whole.
- Provision of Green Infrastructure which is intrinsic to the character of the development and leads its design, creating a community which demonstrates the application of Garden Village principles.
- Creation of biodiversity assets which replace those lost through past and new development and form part of the Boreham Common Living Landscape to the east of the Chelmer Valley.
- Enhancement and extension of water meadows, amongst other environmental enhancements, within the Chelmer Valley (centred on the Essex Wildlife Trust Little Waltham Meadows Natural Reserve).

Great Leighs

19. Development will result in significant change to the landscape character of the locality, but offers (by virtue of the scale of development) opportunities to create internally coherence through a GI-led structure. In addition to the implementation of generic guidelines on site design, specific opportunities include:

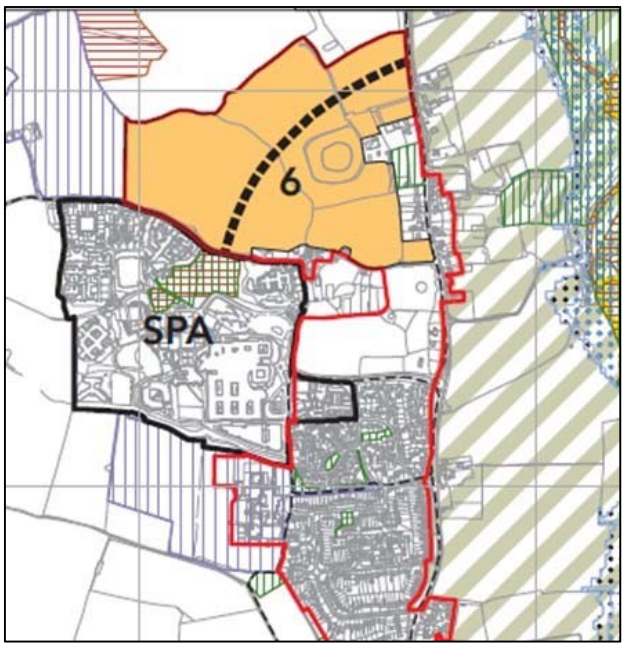
- Creation of footpaths and cycleways internally and between the new communities and the existing village.

- Recreational and biodiversity links to the wider countryside to the south, west and north.
- Creation of significant external edges to the east and west.
- Attention to the relationship of development with, and pressures on, the Phyllis Currie Local Nature Reserve.
- Protection of the context of Gubbion's Hall.



Broomfield

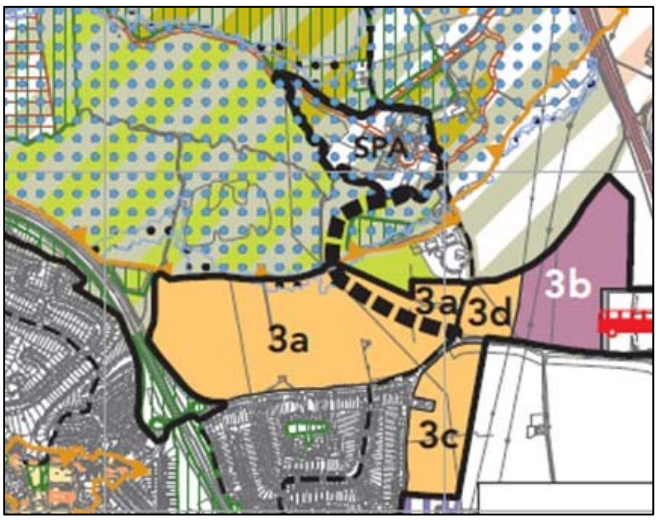
20. Development at Broomfield is part of open countryside, currently bounded by Woodhouse Lane. As such it has a degree of sensitivity which would have to be mitigated through:



- particular attention paid to the quality of its external edges, notably in the relationship with the Green Wedge to the northeast, where medium distance views across the River Valley are available.
- Enhancement of access opportunities through the site and out to the wider countryside, as well as links into Broomfield through the adjacent hospital, and to the Green Wedge from the southeast corner at the junction between Main Road and Woodhouse Lane.

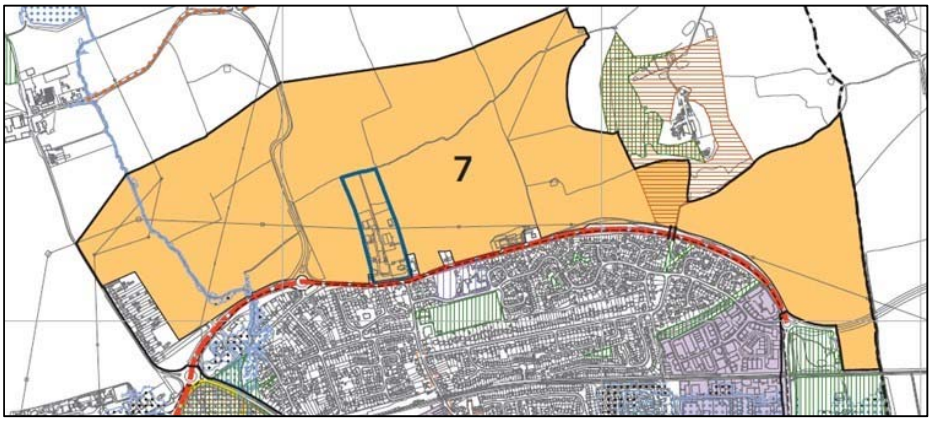
Sandon/Great Baddow

21. Development here is intended to be accompanied by creation of a new Country Park in the valley floor of the Chelmer and Blackwater Navigation. This will be a significant new recreational focal point for local communities and the City as a whole, being part of a wider network of resources to the east of Chelmsford. A principal theme of development in this location will be connectivity, ensuring integration between the new and existing community, enhancing links within and between the River Valley, using existing and new recreational resources (PRoW and cycleways) to achieve this. Detailed planning of the Country Park will need to pay particular attention to finding an appropriate balance between the increased recreational pressures and protection of existing and enhanced biodiversity assets. There are existing models of good practice in the open space from Admirals Park to Writtle, where a variety of multifunctional spaces have been secured.



South Woodham Ferrers

22. The scale of proposed development lends itself to substantial interventions in respect of the provision of Green Infrastructure as part of internal landscaping and broader fit with the receiving landscape.



In addition to the implementation of generic guidelines on site design, specific opportunities include:

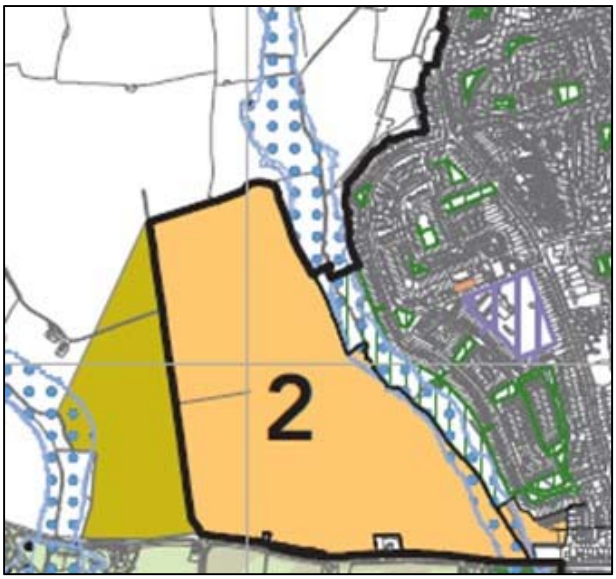
- Developing a green buffer along the northern and eastern edges of the site, using existing hedgerow lines and creating new hedge and treelines where the site connects to Bushy Hill. In both instances, a soft built edge should be created which forms a transition to the wider countryside context.

- Creating gateways to the north along the B1418 Main Road and Willow Road, and to the east along the Maldon Road, using Green Infrastructure as a means of defining local character and integrating new development with its local context.
- Conserving and enhancing the landscape and semi-natural habitats associated with Bushy Hill, enhancing access where possible as part of broad natural greenspace provision.
- Ensuring permeable routes through the development which connect with the existing urban area and the open countryside to the north.

Chelmsford West

23. Development is proposed to extend from the urban edge of the City westward towards the River Can. There are opportunities to create a significant westerly edge to the City, using Green Infrastructure to integrate built form into the wider countryside to the west. In addition to the implementation of generic guidelines on site design, there are specific opportunities to:

- Reinforce the existing Green Corridor to the west and north and access enhancements to the wider countryside to the north and northwest.
- Create substantial Green Infrastructure to the west, using enhancement of the corridor of the River Can as a starting point.
- Create a gateway to the southwest of the development, at the junction between the A1060 Roxwell Road and Lordship Road.
- Ensure significant pedestrian/ cycleway links across the A1060 Roxwell Road, into the Green Wedge, thereby encouraging sustainable travel opportunities.
- Enhance Green Infrastructure to the east, capitalising on its quality and potential as a multifunctional resource.



6. Delivering the Green Infrastructure Strategic Plan

6.1 Organisational Requirements

1. Delivery of the Green Infrastructure Strategic Plan relies on a mix of organisational and financial mechanisms, many of which are already in place, others which might benefit from additional integration. Principal areas for attention are:
   - Partnership Working and Strategy Integration.
   - Integration into Forward Planning and Development Management policy.
   - Integrating Green Infrastructure into New Development.
   - A Green Infrastructure Action Plan.
   - Sources of capital and revenue funding.

6.2 Partnership Working and Strategy Integration

2. Activity across the City is already significant with various biodiversity interest groups[7], recreational interests (such as horse-riding, cycling and canoeing) and community groups related to specific settlements. Residents at Broomfield have carried out a landscape survey, for example. More formally, seven Neighbourhood Plans are being developed which are likely to take specific account of Green Infrastructure interests, identifying the needs and opportunities associated with their communities: Boreham, Broomfield, Danbury, Little Baddow, South Woodham Ferrers, Sandon and Writtle.

3. Green Infrastructure has a significant connection with a wide range of plans, programmes and strategies. Table 6.1 sets out the principal strategies and plans in the City and where there are links to be established with the Green Infrastructure Strategic Plan, in terms of shared priorities and/or delivery of objectives.

[7] Wildlife groups across the City include: a swift group, a badger group, a dormice group, a bat group, a Mink Project run with Essex Wildlife Trust on the River Chelmer and in Hylands Park, Chelmsford Beekeeping Association, the Bumble Bee Trust, the Marconi Ponds Nature Reserve Group, and The Environmental Group (carrying out practical conservation work on various sites in Great Baddow and Galleywood). Some organisations run Corporate Volunteer Team Days e.g. Essex and Suffolk Water, AON, Ford and Barclays. To ensure professional standards, all the work by these groups is managed by Chelmsford City Council.

Table 6.1: Strategies & Plans and their Links to Green Infrastructure Delivery Themes

Strategy/Plan	Links to Green Infrastructure Delivery Themes					
	Biodiversity	Access & Recreation	Communities & Health	Heritage, Landscape & Townscape	Economy	Water Management
Chelmsford Local Plan (emerging)	■	■	■	■	■	■
Neighbourhood Plans (emerging)	■	■	■	■		
Chelmsford Corporate Plan 2012		■	■	■	■	
Chelmsford Biodiversity Action Plan 2013 - 2017	■	■				■
Chelmsford Parks & Greenspaces Strategy 2004 - 2014	■	■	■	■	■	■
Chelmsford Health and Well Being Plan 2016 - 2019		■	■			
Chelmsford Air Quality Management Area Action Plan 2008	■		■			
Chelmsford Cycling Action Plan 2017		■	■			
Essex Public Rights of Way Improvement Plan 2009		■	■			
Essex Sustainable Modes of Travel Strategy 2016		■	■			
Chelmsford Economic Strategy 2017				■	■	
Essex Biodiversity Action Plan 2010 - 2020	■	■		■		■
Essex Living Landscapes 2009	■	■		■		■
Chelmsford Public Health Strategy 2012		■	■			

6.3 Planning Policy and Implementation

4. Whilst many plans and programmes play a supporting role, it is with the Local Plan that the Green Infrastructure Strategic Plan will have the closest relationship, seeking to influence how policy is implemented. Box 6.1 sets out the generic principles which help to inform the Local Plan policies.

Box 6.1: Planning Policy & Delivery Principles

- **Landscape character** – contribute to the management, conservation and improvement of the local landscape.
- **Historic environment** - contribute to the protection, conservation and management of historic landscape, archaeological and built heritage assets.
- **Biodiversity** - maintain and enhance biodiversity to ensure that development and implementation results in a net gain of Biodiversity Action Plan habitats and species.
- **Woodland** - deliver the enhancement of existing woodlands and also by the creation of new woodlands and forest areas and linking existing woodlands.
- **Waterways** - improve corridors along waterways and encourage increased access both on and by the water.
- **Sport and recreation** - create new recreational facilities, particularly those that present opportunities to link urban and countryside areas.
- **Natural process and environmental systems** - take account of and integrate with natural processes and systems.
- **Managing urban greenspaces** - managed and funded in urban areas to accommodate nature, wildlife and historic and cultural assets, and provide for sport and recreation.
- **Design** - be designed to high standards of quality and sustainability to deliver social and economic, as well as environmental benefits.
- **Community involvement** - provide focus for social inclusion, community development and lifelong learning.

Source: Planning Sustainable Communities – a Green Infrastructure Guide for Milton Keynes & the South Midlands (mksm Environment & Quality of Life Sub Group, 2005)

5. The emerging Local Plan makes numerous references in strategic and site-specific policies to the role of Green Infrastructure in delivering sustainable growth across the City and its hinterland whilst enhancing quality of life for existing residents. These policies and the Green Infrastructure Strategic Plan complement one another.

6.4 Designing for Green Infrastructure

6. Design for Green Infrastructure is integral to any scheme masterplan and should be part of iterative process which tests and refines configurations to secure a balance between form, function, viability and sense of place. The starting point of the design process is the consideration of existing assets, the wider geographical context and analysis of function with the overarching aspiration of adding value at all scales from individual buildings to the site's landscape setting. The following guidelines[8] help to set the design parameters for the masterplanning process:

   - Create multi-functional habitat on buildings (roofs, terraces, facades, etc.)
   - Ensure that where possible streets and roads are tree-lined or contain hedgerows appropriate to local character, habitats and species.
   - Create SuDS enhanced for biodiversity by incorporating ditch habitat and pond networks. Avoid impermeable surfaces.
   - Create high-quality town parks which offer habitat provision for biodiversity and a variety of facilities, services, experiences and community events for all age groups.

[8] Based on: TCPA/The Wildlife Trusts (2012) Good practice guidance for green infrastructure and biodiversity

- Create natural green spaces and wild or free play areas in the urban setting.
- Create a range of sports facilities and pitches designed and maintained for use by the whole community, as part of the use of the principles of Active Design.
- Create larger-scale natural habitat within informal open spaces, country parks and play areas.
- Ensure that semi-natural spaces, including designated nature reserves, combine passive recreational access and activities with biodiversity value and a variety of habitats.
- Create an extensive viable network of green and blue corridors and natural habitat throughout the development which connects larger or more expansive open spaces for both people and wildlife.
- Create a network of streets, open spaces and parks, with safe routes linking them to homes and schools.
- Enhance the transport system and help further reduce the effects of air pollution through the provision of verges of priority habitat, hedgerow, wildflower-rich or rough grassland along railway lines, roads, streets, and pedestrian and cycle networks.
- Provide wildlife-friendly allotments, community meadows, orchards and woodlands, a series of community gardens offering social and amenity space.
- Provide public access to Green Infrastructure, except where there are sound reasons to restrict this, and facilities and services to enable full use of the Green Infrastructure by all sections of the community.

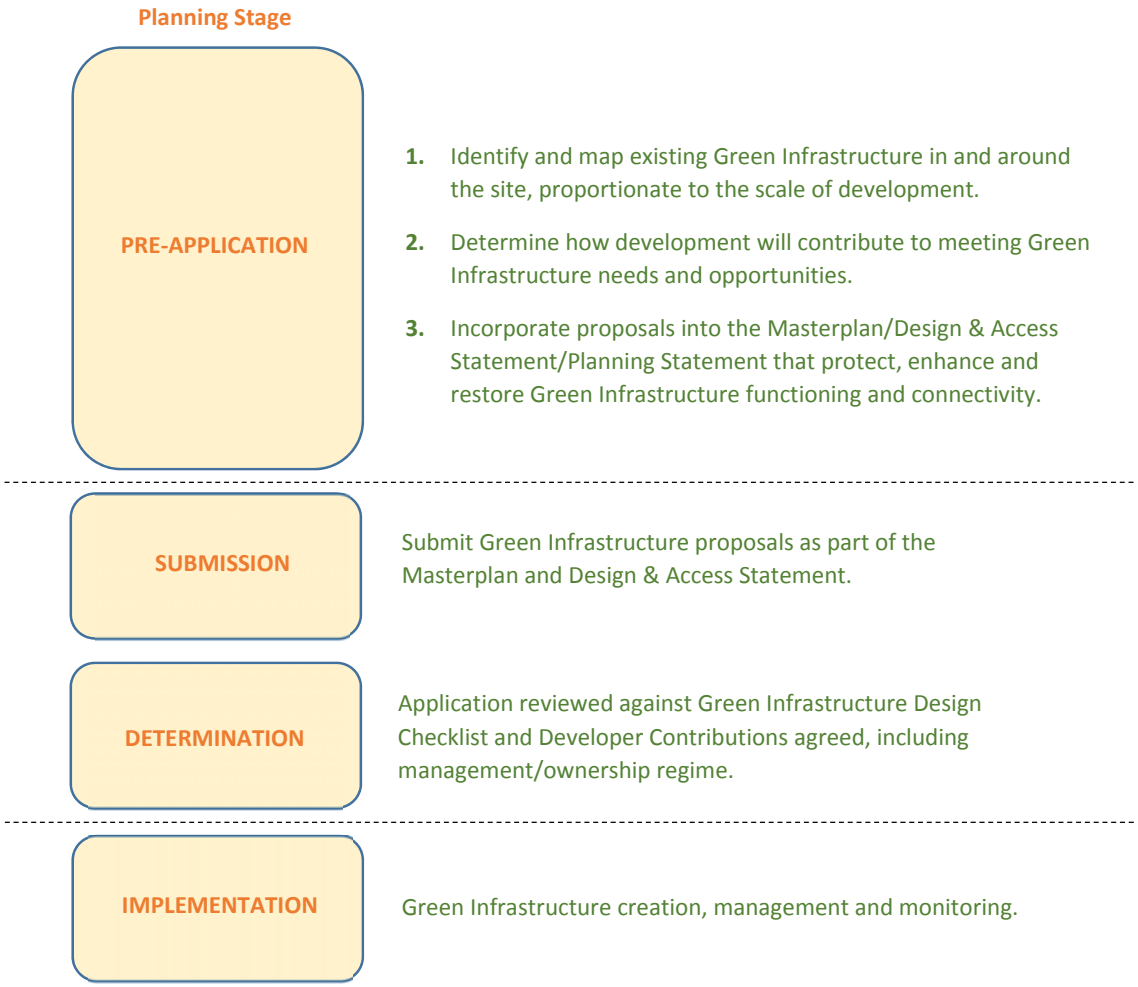
7. Their implementation should take place as part of a clear planning procedure and application of standards as part of the delivery of development, as set out in Figure 6.1 and Table 6.3. Specific design guidelines and a detailed checklist for the masterplanning of new sites are set out in the Appendix to this Strategic Plan. They are presented in the context of the following caveat:

   "The amount of Green Infrastructure that should be provided, along with its character and distribution, ultimately depends on the individual nature of the location and its specific circumstances, the type of development, and the contribution it can make to improving ecological connectivity. As Green Infrastructure can have a wide range of functions, there must be a sufficiently large area of land and water provided so that, in aggregate, these functions can be fulfilled. A principle of no net loss of Green Infrastructure could be used, with a general aim that a minimum of 40% of the total land should constitute Green Infrastructure (including private gardens and living roofs, as well as any individual site).[9]

8. The overall intention is to secure a contribution to the Green Infrastructure resource through the use of minimum standards of provision which would serve existing residents, and through the creation of assets which will perform a wider strategic role in respect of biodiversity, recreation and climate change adaptation, in particular.

[9] TCPA/The Wildlife Trusts (2012) Good practice guidance for green infrastructure and biodiversity

Figure 6.1: Integrating Green Infrastructure into New Development - Planning Procedure Overview



Source: Monmouthshire Green Infrastructure Supplementary Planning Guidance (2015)

Table 6.3: Green Infrastructure-Related Expectations in Respect of the Delivery of Development

City Council-wide Standard	Development criteria and examples	Developments to meet the criteria under the following circumstances
LANDSCAPE SETTING AND QUALITY OF PLACE **Green Infrastructure Strategic Plan objective: Heritage, landscape and townscape** – to protect and enhance the City's heritage, landscape and sense of place.		
Protect and enhance landscape, biodiversity and cultural heritage assets	Fit into the surrounding landscape setting, referencing the local vernacular where appropriate. e.g. attention to topography, the relationship between plateaus and river valleys, the context for heritage assets, views from PRoW, and gateway sites.	All development, but particularly major sites where there is likely to be a transformative effect on the local landscape.

City Council-wide Standard	Development criteria and examples	Developments to meet the criteria under the following circumstances
	e.g. use of local design cues and local materials.	
Long term design	Provide for the long term evolution of development. e.g. provision of structural tree planting to help create character and adapt to the effects of climate change.	All development
HABITAT PROVISION AND CONNECTIVITY **Green Infrastructure Strategic Plan objective: Biodiversity** – to create a well-connected network of healthy ecosystems through protection, enhancement and where possible restoration.		
Protect and enhance landscape, biodiversity and cultural heritage assets	Protect, enhance and create habitats, particularly where greater connectivity can be achieved. e.g. protection of existing key structural features (trees and hedgerows), and provision of new habitats using principles of multifunctionality. e.g. demonstrate habitat connectivity within the development and with surrounding biodiversity resources.	All developments, appropriate to type and scale.
GREENSPACE PROVISION AND CONNECTIVITY **Green Infrastructure Strategic Plan objective: Communities and health** – to support the development of thriving communities, local engagement and the promotion of healthy lifestyles. **Green Infrastructure Strategic Plan objective: Access and recreation** – to promote opportunities for recreation, play and everyday transport through an accessible and attractive network of open spaces, footpaths and cycleways.		
Provide high quality and accessible green spaces of a variety of types and scales	Provide amenity greenspace of at least 0.1ha within a 5 minute walk (300m) of all dwellings. Provide accessible natural greenspace of at least 0.1ha within a 15 minute (900m) walk of all dwellings. Achieve provision of at least 40% open spaces of various kinds.	All developments appropriate to type and scale
Provide safe, well-signed and managed options for walking and cycling	Create and integrate open space provision with a planned network of walking and cycling routes.	All development at an appropriate scale
Provide opportunities for active recreation for all residents	Incorporation of a diverse range of recreational opportunities which meet the needs of all residents. e.g. develop a hierarchy, by type and size, of appropriate facilities	Residential development, at appropriate scales
Provide links between residential areas and with the wider countryside	Develop and connect to sustainable transport routes which help to form part of the City's strategic network. Demonstrate how recreational pressure on external resources will be managed. e.g. provision of sites within the development that can intercept recreational requirements, otherwise/in addition to enhancement of the capacity of destination sites.	All development at an appropriate scale

City Council-wide Standard	Development criteria and examples	Developments to meet the criteria under the following circumstances
SUSTAINABLE ENERGY USE **Green Infrastructure Strategic Plan objective: Economy** – to support the development of a more robust and diverse economy and contribute to sectors such as tourism.		
Demonstrate the incorporation of innovative building and site design which helps to create greener and more distinctive places to live and work	Exemplar development, or wider scale schemes, which clearly show how green infrastructure is part of the intrinsic design approach. e.g. green roofs/walls; open spaces as focal points not incidental land use; generous structural tree planting as part of the public realm.	All developments appropriate to type and scale
FLOOD ATTENUATION AND WATER RESOURCE MANAGEMENT **Green Infrastructure Strategic Plan objective: Water management** – to ensure that the City's watercourses are healthy and can help to provide a response to the challenges of climate change.		
Incorporate sustainable drainage design into development	Provision of SuDs and other water management measures. e.g. stormwater ponds, swales, street trees, permeable paving.	All developments
Develop multifunctional solutions to flood management, biodiversity and open space provision	Demonstrate the use of multifunctional approaches to the planning and management of open spaces within the development.	All developments, appropriate to type and scale

9. The criteria set out in Table 6.3 are the starting point for design activity, and their fulfilment needs to be demonstrated through the consideration of masterplanning-specific detail. Design checklists are presented in the Appendix to this Strategic Plan.

6.5 Monitoring and Evaluation of Effects

10. Implementation of the Green Infrastructure Strategic Plan will secure or initiate the following outcomes:

- Specification of a strategic approach to Green Infrastructure across the City which recognises their interaction, connectivity and opportunities for delivering a step change in the protection and enhancement of biodiversity, cultural heritage and landscape assets.
- Significant enhancements in the connectivity of biodiversity and recreational resources, helping to progress work already initiated across Essex.
- Re-examination of approaches to city greening and the management of greenspaces which take into account their role in addressing the effects of climate change through adaptation.
- Standards to guide the implementation and enhancement of Green Infrastructure, including minimum standards in new developments, and clear expectations as to the range and quality of Green Infrastructure to be delivered.

- Initiation of actions to meet identified local shortfalls in access to natural greenspace and woodlands.
- Green Infrastructure-led development in areas of change which connects with and enhances existing networks of greenspaces, paths and cycleways, and biodiversity sites.
- Local Plan policies which ensure the consistent implementation of Green Infrastructure requirements in forward planning and development management.

11. Some of these outcomes will be captured in the Local Plan Annual Monitoring Report. Others will require specific attention as part of the monitoring of City-wide activity, for example greenspace management. In both cases, the Green Infrastructure Action Plan serves as the starting point for how and where these outcomes can be secured.

6.6 An Action Plan for Securing Green Infrastructure Protection, Enhancement and Restoration

12. Table 6.4 sets out an action plan, grouped by Strategic Plan theme, comprising various initiatives which are either ongoing, are considered essential to realising the objectives of the Green Infrastructure Strategic Plan over the short and medium term, or can be aspired to as part of a longer-term implementation. Indicative timescales and partnerships are noted.

Table 6.4: Green Infrastructure Strategic Plan Action Plan Themes and Initiatives

Theme	Initiatives	Focus	Partners
	**Access & Recreation**: to promote opportunities for recreation, play and everyday transport through an accessible and attractive network of open spaces, footpaths, cycleway, bridleways and waterways. ► Provide high quality recreational opportunities for existing and new communities, working towards City-wide standards of provision. ► Enhance opportunities for the greater use of cycling and walking as a mode of travel, developing links between residential areas, parks, green spaces and the wider countryside. ► Promote waterways and adjacent paths for amenity and leisure use.		
ONGOING ...	Add smaller satellite parks to Green Flag Parks e.g. Boleyn Gardens linked with Beaulieu Park.	City Centre & Suburbs Strategy Map E2)	CCC
	Address missing links in the cycle network identified in the Cycle Action Plan, notably: Chelmsford Road between Writtle and Chelmsford, Broomfield Road, between Galleywood and Great Baddow and Mill Lane needing a connection across Essex Regiment Way, Chelmer Valley Road and connecting Beaulieu with the rest of Chelmsford.	City Centre & Suburbs, Areas of Change (Strategy Map E1, B1, B3, B4)	ECC; CCC; Developers
	Local site management to address increasing and changing demands – Hylands Park; Hanningfield Reservoir SSSI; Danbury Common, Blake's Wood & Lingwood Common and Woodham Walter	Hinterland (Strategy Map C1 – C7)	EWT, landowners

Theme	Initiatives	Focus	Partners
	SSSIs; Galleywood Common; Danbury Park; Crouch and Roach Estuaries SPA & Ramsar; Essex Estuaries SAC (through coastal planning, restoration and re-creation of lost or damaged inter-tidal habitats).		
	PRoW & cycleway extension and enhancement under the Chelmsford City Growth Package.	City-wide	ECC; CCC
	Improve the quality of, and accessibility to, existing greenspaces.	City Centre & Suburbs (Strategy Map E1)	CCC
NEED TO …	Identify where there is likely to be additional recreational pressure on existing sites arising from new developments and mitigate through the provision of intervention sites and/or management to increase capacity.	Areas of change (Strategy Map A1 – A6) City-wide	CCC, Developers
	Improve access to Hylands Park by public transport.	Hinterland	ECC
	Improve cycle access to Hylands Park from Chelmsford at Writtle village (Bridge Street/Lodge Road).	Hinterland (Strategy Map B4)	ECC
	Address River Valley access enhancement, including along towpaths and to the Blackwater Navigation.	River Valleys (Strategy Map B3, River Valleys)	ECC, Interest Groups
	Secure long term provision of natural open space e.g. Boreham Airfield and the quarry.	Areas of Change (Strategy Map A2)	Developers
	Develop facilities for horse riders; where appropriate, new developments to investigate opportunities to give access to horse riders and implement where practical.	City-wide, areas of change (Strategy Map A1 – A6)	ECC, Developers
	Address barriers to access for disabled people; children and young people; households in more isolated rural areas and those in the more deprived urban wards.	City-wide, City Centre & Suburbs (Strategy Map E1)	ECC, CCC
	Be smarter with promotional activities (such as through Social Media) to promote and enhance cross-City trails, circular walking and cycling routes and national cycle routes (NCN1 and NCN13).	City-wide	ECC, CCC
	Promote water activities nearer to the town centre e.g. canoeing for young people e.g. water taxi on the River Can linking The Meadows with Central Park.	City Centre & Suburbs (Strategy Map E1, River Valleys)	CCC
	Create education trails, art installations and site/route interpretation.	City Centre & Suburbs (Strategy Map E1)	CCC
	Develop focal points, including a new Country Park at Sandon, including for a water-based facility.	Areas of Change (Strategy Map A2, A5)	Developers, CCC
	Use new developments to create connections with the river valley network.	Areas of Change (Strategy Map A1 – A6; B1, B4)	Developers CCC via the IDP

Theme	Initiatives	Focus	Partners
	Across the A130 between the Beaulieu Park and NE Chelmsford developments and the Upper Chelmer Valley. Across the A1060 between Chelmsford West and the River Wid/Can.		
	Encourage more commuting by cycling and walking through awareness-raising and analysis of residence-workplace data.	City Centre & Suburbs (Strategy Map E1)	ECC
	Explore opportunities to enhance access to natural greenspace in areas of deficiency.	City Centre & Suburbs (Strategy Map E1)	CCC
	Enhance links under the A12 and railway at Boreham, linking Beaulieu Park/NE Chelmsford to Chelmer Valley.	Areas of Change; River Valleys Strategy Map B2)	ECC, CCC, Developers
ASPIRE TO …	Improving links between the Chelmer and Blackwater Navigation and River Chelmer and River Can – through infrastructure projects such as improving bridges.	River Valleys (Strategy Map River Valleys)	ECC
	Address bridge engineering to accommodate increasing cycling and river use.	City Centre & Suburbs (Strategy Map River Valleys)	ECC
	Improve connections between urban and rural areas using the cycle and footpath network.	City-wide	ECC
	**Biodiversity:** to create a well-connected network of healthy ecosystems through protection, enhancement and, where possible, restoration. ► Protect and enhance biodiversity resources. ► Secure a net increase in biodiversity through enhancement, restoration and new provision. ► Use the river valleys and other clusters of biodiversity as the basis for improving the connectivity of the biodiversity resource.		
ONGOING …	Countryside stewardship (soil, water, habitats, species, landscape).	Hinterland River Valleys Watercourses	Landowners, EWT, EA (Catchment Partnerships), NE (Catchment Sensitive Farming)
	Chelmsford BAP update and implementation.	City-wide	CCC, EWT, ECC New CBAP will be produced in Autumn 2017
	Review parks and open space planning and management practices to test their compatibility with other Green Infrastructure initiatives to produce multifunctional spaces, in turn promoting resilience to climate change and other pressures.	City Centre	CCC Parks (Green Flag standard) Chelmer Valley LNR Volunteers
	Promote a net gain in biodiversity through landscaping and ecological enhancement as part of applications for new development.	Areas of Change (Strategy Map A1 – A6) City-wide	Developers, CCC

Theme	Initiatives	Focus	Partners
NEED TO …	Develop a full suite of Living Landscapes Vision Documents.	River Valleys/Hinterland	CCC/EWT community groups Review existing documents and develop plans in conjunction with revised EWT approach
	Develop a mechanism for delivering Biodiversity off-setting as part of new development, where appropriate.	Areas of Change (Strategy Map A1 – A6)	ECC Place Services
	Investigate potential for the extension of the Chelmer Valley LNR to the north and west, providing buffer zones and flood risk mitigation.	River Valleys	CCC, EWT
	Seek the involvement of landowners, managers and businesses in promoting aspects of the Green Infrastructure agenda e.g. tree planting.	City-wide City Centre (Strategy Map E2)	CCC EWT
	Develop City-wide and local targets for increasing tree and woodland cover and woodland management.	City-wide City Centre (Strategy Map E2)	CCC
	Promote verge management along trunk roads and major roads to help encourage linear habitat expansion.	City-wide	Highways Agency ECC Highways
ASPIRE TO …	Improve River Valley connectivity to help facilitate species migration.	River Valleys	EA/EWT/ECC Use Living Landscapes and WFD initiatives to deliver benefits across the catchment
	Promote the management of non-designated sites for wildlife, including gardens, business premises, allotments and brownfield land.	City Centre (Strategy Map E2)	CCC EWT
	Better promotion of EWT LWS and LNRs.	River Valleys/Hinterland (Strategy Map C1 – C7)	EWT, Woodland Trust, ECC
	Promote community-led biodiversity initiatives using past models e.g. Greening Galleywood.	City-wide City Centre (Strategy Map E2)	CCC (Neighbourhood Plans)
	Communities & Health: to support the development of thriving communities, local engagement and the promotion of healthy lifestyles. ► Use local and City-wide Green Infrastructure resources as the focus for community activity. ► Use city greening and the promotion of sustainable transport to help enhance air quality and address climate change impacts. ► Set new development within a planned Green Infrastructure setting which links to its wider context.		
ONGOING …	Improve cyclepath and PRoW quality, connections and circular routes.	City-wide, but particularly City Centre	CCC, ECC Highways, Developers

Theme	Initiatives	Focus	Partners
		& Suburbs (Strategy Map E1)	
	Ensure greenspaces are appropriate for the differing needs of various age groups and levels of mobility.	City Centre & Suburbs (Strategy Map E1)	CCC
	Improve safety and security, and help to minimise conflicts between uses, through good design and appropriate management.	City Centre & Suburbs (Strategy Map E1)	CCC
	Promote/make wider use of Parks and other open spaces e.g. for community events, markets, walking and cycling loops, outdoor gyms and natural play areas.	City Centre & Suburbs (Strategy Map E1)	CCC
NEED TO …	Target areas where access to greenspace could be improved to benefit health and well-being.	City Centre & Suburbs (Strategy Map E1)	CCC
	Promote city greening (trees, green roofs and screens) to enhance air quality and help mitigate climate change.	City Centre & Suburbs (Strategy Map E2)	CCC
	Improve the supply of, and access to, allotments and community gardens.	City Centre & Suburbs (Strategy Map E1)	CCC
	Promote active travel for leisure and everyday trips, including as part of road improvement schemes.	City Centre & Suburbs (Strategy Map E1)	ECC
ASPIRE TO …	Develop further Community Orchards (Galleywood; Chignals and Mashbury; Salthaven (South Woodham Ferrers).	City-wide	ECC/EWT, local communities (Neighbourhood Plans)
	Encourage community greening initiatives which perform multiple functions e.g. rain gardens.	City Centre & Suburbs (Strategy Map E2)	CCC
	Encourage community involvement in site management of amenity open space.	City-wide	local communities (Neighbourhood Plans)
	Develop community training and apprenticeships in environmental skills.	City-wide	ECC
	**Economy**: to support the development of a more robust and diverse economy and contribute to sectors such as tourism. ► Promote city greening to enhance the City's image, attract investment and enhance recreational and tourism activity. ► Promote opportunities for green infrastructure-related employment and training. ► Develop partnerships to secure investment in, and delivery of, Green Infrastructure.		
ONGOING …	Promote tree planting as part of applications for new development in established urban/suburban areas.	City Centre & Suburbs (Strategy Map E2)	CCC

Theme	Initiatives	Focus	Partners
	Reinforce and transform the image of the City as an attractive place to live, work and visit through City greening initiatives.	City Centre & Suburbs (Strategy Map E2)	CCC
	Improve cycle/pedestrian routes to promote a sustainable City image.	City Centre & Suburbs (Strategy Map E1)	ECC, CCC
NEED TO ...	Support farm diversification where this promotes use and enhancement of Green Infrastructure resources (such as woodland management and biomass/biofuels/flood management).	Hinterland	CCC, Landowners
	Promote the role of greenspace, countryside and brownfield sites in the production of renewable energy crops.	Hinterland	CCC, Landowners
	Encourage greater involvement of business interests in creating a greener City through awareness-raising, sponsorship etc.	City Centre & Suburbs (Strategy Map E2)	CCC
	Use exemplar schemes locally (e.g. Highwood Village Hall) and nationally (such as Green Roofs) to demonstrate commitment to addressing climate change and enhancing biodiversity.	City Centre & Suburbs (Strategy Map E2) Areas of Change (Strategy Map A1 – A6)	CCC, Developers
	Promote the link between the City's green infrastructure and tourism.	City-wide (Strategy Map E1 & E2)	CCC
ASPIRE TO ...	Investigate opportunities for the incorporation of green roofs as part of applications for new commercial development in the City.	City Centre & Suburbs (Strategy Map E2)	CCC
	Develop Green Infrastructure-related local enterprise initiatives, employment and training schemes.	City-wide	CCC
	Encourage greater connections between food producers and local markets, with associated economic, community and educational benefits.	City-wide	CCC
	Work with business to support the installation of building- and area-specific greening (green roofs and screens, tree planting) to address climate change, promote sustainability and enhance image.	City Centre & Suburbs (Strategy Map E2)	CCC
	**Heritage, Landscape, Townscape**: to protect and enhance the City's heritage, landscape and sense of place. ► Retain and enhance local heritage and landscape character through attention to the setting of heritage assets and wider landscape interventions such as tree and hedge planting. ► Develop exemplar initiatives to encourage greater recognition of the role and potential of Green Infrastructure. ► Use Green Infrastructure, notably the River Valleys, as a focal point for the City's identity.		
ONGOING ...	Use City Greening for image enhancement.	City Centre & Suburbs local communities (Strategy Map E2)	CCC

Theme	Initiatives	Focus	Partners
	Promote public access and enjoyment of the historic environment (i.e. permissive access/footpaths, interpretation, events [such as Heritage Open Days]).	City-wide	CCC, HE
NEED TO …	Enhance key gateways along transport corridors and highway verge management.	City Centre & Suburbs (Strategy Map E1)	ECC
	Protect and enhance landscape features which are key to the character of the City and their specific role as context for historic assets.	City-wide	CCC, HE, Landowners
	Promote high quality structural landscaping, tree planting and green roofs as part of new development.	City-wide; Areas of Change (Strategy Map A1 – A6)	CCC Developers
	Monitor landscape change through hedgerow removal / field amalgamation.	Hinterland	CCC, EWT, Landowners, HE
ASPIRE TO …	Target specific areas/ landowners for landscape management enhancement initiatives using existing models (e.g. RHS Hyde Hall, Hanningfield).	Hinterland	Landowners, EWT, NE
	Develop (a) heritage trail(s), combined with the promotion of cycling (for example guided heritage cycle tours).	City Centre & Suburbs (Strategy Map E1)	CCC
	**Water Management:** to ensure that the City's watercourses are healthy and can help to provide a response to the challenges of climate change. ► Use the City's River Valleys (Green Wedges and Green Corridors) as a focus for securing multifunctional benefits. ► Incorporate Sustainable Drainage Systems into new development, and retrofit existing development where appropriate. ► Use green spaces to provide a flood storage/management role where appropriate.		
ONGOING …	River restoration at Chelmer Valley Local Nature Reserve and Admirals Park to increase wildlife value.	River Valleys (Strategy Map E2)	CCC/EWT/EA Subject to funding
	River corridor/floodplain management to meet Water Framework Directive (WFD) objectives (e.g. tree/woodland management, pollution and flooding management, access) through actions in Catchment Flood Management Plans and River Basin Management Plans.	River Valleys Hinterland	EWT EA (Catchment Partnerships), NE (Catchment Sensitive Farming)
	Manage riparian zones alongside watercourses.	River Valleys	EA, NE (Catchment Sensitive Farming), CCC
NEED TO …	Address river access which is hampered by old weirs and structures that disrupt river flow rates.	River Valleys	EA
	Protect and extend flood storage areas.	River Valleys	EA/ECC/ private landowners

Theme	Initiatives	Focus	Partners
	Link SuDS and biodiversity, particularly at new developments.	Areas of Change (Strategy Map A1 – A6)	Developers
ASPIRE TO …	Extend the reach and scope of activities of the Catchment Partnership.	City-wide	EA
	Restore the natural course of rivers and streams.	River Valleys	EA, landowners

6.7 Funding Sources

13. The various sources of funding which could be drawn upon to help develop Green Infrastructure are set out at Table 6.5. The most appropriate source will depend upon the type of scheme being proposed (particularly the capital/revenue split) and by whom.

Table 6.5: Potential Green Infrastructure Funding Mechanisms

Funding Mechanism	Type of Green Infrastructure Support	Details	Type of Funding
Community Infrastructure Levy	New development	The money can be used to fund a wide range of infrastructure that is needed as a result of development and provides wider benefits. This includes flood defences, parks, and green spaces.	Capital and Revenue
Section 106 Agreements	New development	Funding must be intrinsically linked to the development.	Capital and Revenue
Agri-environment funding (Countryside Stewardship)	Land management	Agri-environment funding can be secured by landowners and managers for changes to the management of land which benefit the natural environment. Agri-environment funding is part of the Rural Development Programme for England.	Capital and Revenue
England woodland grant scheme	Land management	Funding is available for woodland creation and for the management of existing woodland. England Woodland Grant Scheme funding is part of the Rural Development Programme for England.	Capital and Revenue
National Lottery: Big Lottery	Community use within new or existing development	This funding is for community projects including acquisition and establishment of public open space.	Capital and Revenue
National Lottery: Heritage Fund	Community use within new or existing development	Community use within new or existing development / minerals/ infrastructure. The Heritage Lottery Fund operates a number of funds. This fund is to be used to conserve and enhance heritage assets including nature reserves and parkland.	Capital and Revenue
Hypothecated taxes	New development	A tax levied for a specific purpose. Taxes can be levied on new development and reserved for green infrastructure. This model has been successfully applied on both small and larg- scale development sites.	Revenue

Funding Mechanism	Type of Green Infrastructure Support	Details	Type of Funding
Endowments	New development	Used to create a long-term income for the management of land. It may be appropriate to dedicate these to a specific charitable trust which can use the income to manage the land. There are also a number of charitable companies which specialise in using endowments to manage land.	Revenue
Management Companies/ Community Development Trusts	New development	Land ownership is retained by the developers, but responsibility for the management is transferred to a management company with agreed standards and a management plan.	Revenue
Local Authority	New development	Long term management of Green Infrastructure transferred to the local authority.	Revenue
Charity/other	Ad hoc initiatives	The Peoples Health Trust Active Communities fund provides grants of between £5k and £50k over two years for community groups.	Revenue
		Woodland Trust MOREwoods grant funds the planting of woods, shelterbelts and field corners of at least half a hectare.	Capital

Source: Worcestershire Green Infrastructure Strategy

14. Funding of Green Infrastructure through planning contributions (through s106 agreements and contributions to CIL) needs careful targeting to ensure that these are used to best effect. Whilst s106 monies must be directly related to the development from which they are gathered, limiting the scope of their use, specific matters for consideration are:
    - Identifying where specific areas of deficiency can be addressed through enhancement of existing facilities to increase capacity or new provision to directly address need.
    - Specifying management interventions where additional recreational pressure is likely to directly impinge upon specific resources.
    - Identifying where the provision of 'interceptor sites' could alleviate pressure on potential vulnerable resources.
    - Assessing where additional access to open space is likely to be required as a result of urban intensification.
    - Ensuring that the provision and management of protected areas includes appropriate buffer zones to ensure maintenance of their integrity.
    - Seeking opportunities to accommodate changing access and recreation demands (in scale and type), through new provision and management practices such as multifunctional use.
15. Specification of Green Infrastructure-related matters in the Infrastructure Delivery Plan (IDP), to be funded through the Community Infrastructure Levy (CIL) and other sources, is required for items of strategic importance which will address changing demands on Green Infrastructure resources, particularly as a result of new development.

Glossary

AMR	Annual Monitoring Report
ANGSt	Access to Natural Greenspace Standard
CCC	Chelmsford City Council
CFMP	Catchment Flood Management Plan
CIL	Community Infrastructure Levy
CS	Countryside Stewardship
EA	The Environment Agency
ECC	Essex County Council
EWT	Essex Wildlife Trust
HE	Historic England
IDP	Infrastructure Delivery Plan
LNR	Local Nature Reserve
NCN	National Cycle Network
NE	Natural England
OS	Open Space
PRoW	Public Rights of Way
RBMP	River Basin Management Plan
RoWIP	Rights of Way Improvement Plan
s.106	Section 106 Agreement
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
WASt	Woodland Access Standard
WFD	Water Framework Directive

Appendix 1: Green Infrastructure Design Considerations

Design Guidelines

Consider opportunities to:

- Create multi-functional habitat on buildings (roofs, terraces, facades, etc.) to provide high quality wildlife habitat equal in quality and function to local priority habitats. Where feasible, residents/users should be able to access these assets or roof-level areas immediately adjacent. Other options include food roofs which can be developed as permaculture facilities.
- Include bat boxes, bricks or lofts and bird boxes on all housing, to reflect the species within the area.
- Ensure that where possible streets and roads are tree-lined or contain hedgerows appropriate to local character, habitats and species. Allowance can be made for installation of large trees in urban regeneration schemes, and, where appropriate and feasible, any street trees that are lost could be replaced by at least two trees which will reach the same stature and provide similar ecosystem services in the long term.
- Incorporate insect-attracting plants, hedgerows, log piles, loggaries and other places of shelter for wildlife refuge/hibernation within structural landscaping and open spaces.
- Avoid impermeable surfaces unless there are sound technical arguments overriding this requirement. SuDS can be focal to every scheme and enhanced for biodiversity by incorporating ditch habitat and pond networks. Where vertical permeability is not permitted (for example owing to a clay-capped site or contaminated aquifer), lateral-flow SuDS are still possible and viable.
- Harvest, store and re-use rainwater in low carbon systems and incorporate such systems into all strategies for Green Infrastructure to ensure that ecosystem services (such as urban cooling) can be maximised and maintained – thus increasing resilience to climate change.
- Make space for renewable energy resources, such as ground source heat pump installations for use in local combined heat and power plants.
- Create high-quality town parks which offer habitat provision for biodiversity and a variety of facilities, services, experiences and community events for all age groups. They could include landmark structures and spaces that foster the town's identity and sense of place. Parks should be easily accessible by public transport and by cycleways and footpaths forming part of the wider Green Infrastructure.
- Create natural green spaces and wild or free play areas in the urban setting. If managed correctly, these can be relatively low maintenance.
- Create a range of sports facilities and pitches designed and maintained for use by the whole community, not just schools and other institutions. The boundaries of sports pitches can be designed and managed for biodiversity.
- Create larger-scale natural habitat within informal open spaces, country parks and play areas. For example, consider setting play equipment and kick-about areas within wildflower habitat or rough grassland.
- Ensure that semi-natural spaces, including designated nature reserves, combine passive recreational access and activities with biodiversity value and a variety of habitats. Wherever possible, consider incorporation of appropriate educational facilities or features to encourage use by school groups.

- Create an extensive viable network of green and blue corridors and natural habitat throughout the development which connects larger or more expansive open spaces for both people and wildlife (including dark corridors for bats). Wherever possible and appropriate, habitat creation and enhancement should be designed around existing assets. For example, providing SuDS in a natural channel can also improve biodiversity and enhance green spaces for leisure use.
- Protect, enhance and buffer waterways both in-channel and along the banks.
- Create a network of streets, open spaces and parks, with safe routes linking them to homes and schools, allowing children to both play in their own neighbourhoods and move around without traffic danger by facilitating walking and cycling for utility, recreation and health promotion.
- Provide pleasant, safe and linear routes for non-motorised transport such as walking and cycling and links to public transport.
- Enhance the transport system and help further reduce the effects of air pollution through the provision of verges of priority habitat, hedgerow, wildflower-rich or rough grassland along railway lines, roads, streets, and pedestrian and cycle networks. Use species mixes for grass verges designed carefully to attract insects, and incorporate small areas of rough grassland or taller herbs to benefit other wildlife.
- Provide private garden space wherever possible. Consideration can be given to including provision of hedgerow habitat on at least one side of the garden. Other considerations include removing (or creating gaps in) fences to ensure connectivity between gardens, and designing garden walls to incorporate shelter for overwintering insects.
- Provide wildlife-friendly allotments, community meadows, orchards and woodlands, a series of community gardens offering social and amenity space, and attractive, cool and shaded outdoor areas readily accessible from people's homes.
- Provide public access to Green Infrastructure, except where there are sound reasons to restrict this (for example sites of a sensitive nature conservation value/purpose, private gardens, railway line sides). It may be appropriate to provide zoning guidance where some Green Infrastructure has only a visual and auditory function in order to maximise overall ecosystem services.
- Provide facilities and services to enable full use of the Green Infrastructure by all sections of the community. Such facilities include toilets, shelters, waste disposal arrangements, seating, public art, public transport access and secure bicycle parking, and signage for interpretation and way-marking – except where these would detract from otherwise wild or natural qualities. In more intensively used spaces, buildings such as pavilions, refreshment facilities, event arenas/staging and community halls might be compatible within Green Infrastructure areas (but should be excluded from Green Infrastructure area calculations).

Source: TCPA & Wildlife Trusts (2012) Good practice guidance for green infrastructure and biodiversity

Green Infrastructure Design Checklist

Green Infrastructure Function: landscape setting and quality of place

- How does the site respond positively to the adjacent landscape character and context whilst complementing existing Green Infrastructure functions?
- Have existing views into and out of the site been safeguarded and are there opportunities to create new views and vistas within the proposed development?
- What design measures have been incorporated into the masterplan to protect and preserve the surrounding landscape setting and enhance the distinctiveness of existing settlements?
- Has an overarching landscape framework been developed and does it respond in design terms to local landscape character assessments?
- Have existing landscape and historic features been identified and incorporated into the proposed Green Infrastructure and are there opportunities to conserve and enhance the setting of these features within the site?
- What landscape edge treatments have been considered for the site boundary and do they provide sensitive and appropriate levels of integration to the surrounding area?
- How will the scheme connect with the wider Green Infrastructure network in visual terms?
- Does the provision of Green Infrastructure within the masterplan create lasting value, identity and a distinct sense of place for the scheme?

Green Infrastructure Function: habitat provision and connectivity

- Has an Ecological Appraisal been carried out and used to inform the masterplan and does it take into account the habitats beyond the site boundary?
- What existing habitats and landscape features such as hedgerows, tree groups, water bodies and corridors such as rivers and canals have been integrated into the scheme and how has the balance between accessibility and preservation been addressed?
- Have new accessible areas of habitat been created and do these contribute to local targets e.g. Biodiversity Action Plans?
- Have native species of local provenance been specified within the landscape proposals?
- How have natural play, education or interpretation opportunities been incorporated into the scheme to connect people to nature?
- Has the biodiversity value of different Green Infrastructure elements been maximised (e.g. green roofs)?
- Have robust funding, management/maintenance and conservation plans been produced for the scheme?
- How does the scheme connect with the wider Green Infrastructure in ecological and habitat terms?
- Has the potential damage and impact on designated/sensitive sites and protected species been considered, and has the necessary mitigation been considered?
- Does the scheme contribute towards meeting local biodiversity needs/targets?
- What local wildlife groups and other stakeholders have been consulted and have they informed the masterplan?

Green Infrastructure Function: green space provision, connectivity and enjoyment

- Has an audit of existing Green Infrastructure assets (green spaces and links) on and off-site been undertaken and do proposals complement, enhance and support these assets?
- Have opportunities for providing a range of functions, facilities and activities been considered in relation to local needs for open/green space? For example, recreation grounds and sports pitches can incorporate ecological areas and can be used by both school and public users as part of the wider Green Infrastructure network.
- What provision has been made within the scheme to connect beyond the red line boundary into the wider access/green network? Do these links also connect into other off-site community facilities and green spaces offering opportunities for the wider community?
- Have connections and linkages been made between the scheme and any existing settlements and do these promote a reduction in car use and safe routes to school as well as contributing to the health and wellbeing of its residents?
- Where and what type of new access routes/green connections are being provided on-site? How best can these strengthen, enhance and join up with the existing green network?
- What consideration has been made between balancing the need for access and protecting areas of ecological and biodiversity value and how will this be managed?
- What consideration is there for 'access for all' and is it possible for all residents to access a range of Green Infrastructure from their home easily and conveniently?
- Has a management and maintenance plan been produced and is it funded robustly so the long-term quality of the Green Infrastructure is ensured?
- Which local community groups and other stakeholders have been consulted and have they informed the masterplan? Have opportunities for community involvement in the future management of green spaces been explored (e.g. providing support for the establishment of a 'friends group' if appropriate)?
- How will the scheme connect with the wider Green Infrastructure network?

Green Infrastructure Function: sustainable energy use

- Do proposals for the site make best use of off-site places nearby where energy or fuel is produced? i.e. short rotation coppice, bio fuels and wind generation?
- Have green/brown roofs and green walls been incorporated into buildings within the scheme to increase energy efficiency, conservation and provide shade? Green roofs and PV panels can be mutually beneficial - green roofs create a microclimate that enhances the operating efficiency of PV panels, while the panels can help to create greater habitat diversity on the roof.
- Have planting areas been designed to enhance/create beneficial microclimates across the development site? Does structural planting create shelter from prevailing winds in winter and shade in summer, improving the usability of public open spaces whilst promoting walking and cycling locally?
- Have street trees of an appropriate species and size been incorporated into the masterplan to create shade and cooling in external areas, reduce rainwater runoff and act as carbon sinks?
- How has existing or proposed woodland been incorporated? Woodland can provide many benefits including carbon sequestration, habitat creation and wood chip production for renewable energy.

- What opportunity is there to combine local food production, composting and waste recycling with the potential for energy from waste?
- Has built form been orientated to maximise solar gain whilst creating sheltered and sunny green spaces?
- Does the scheme incorporate solar water heating and solar electricity on roof space?
- What local provenance species have been chosen and are they the correct species to achieve objectives of cooling in summer, solar gain in winter and increased biodiversity?
- Have water bodies such as ponds and lakes been created to provide microclimatic cooling during the summer months?

Green Infrastructure Function: local food production

- Does the scheme meet adopted minimum standards for allotment provision?
- Have adequately sized rear gardens been provided to allow small-scale domestic food production?
- Do the proposals for the site make best use of off-site places nearby where the production of food can take place and is this close to where people will live?
- What opportunity is there to combine food production with other Green Infrastructure functions such as energy production, access and recreation?
- What is the potential for community orchards, city/school farms and other edible landscapes such as hedgerows to be incorporated into the scheme?
- Has the use of livestock been considered to reduce/maintain management costs within the Green Infrastructure network?
- Has a site-wide composting strategy for garden and food waste been developed? Garden and food waste can be utilised as compost for allotments and renewable energy production.
- What opportunities are there to explore the potential for locally grown food to be used by local schools and other community facilities? Have opportunities for community food growing been looked at?

Green Infrastructure Function: flood attenuation and water resource management

- Has an assessment of the ground water and water resource of the site taken place and what measures have been identified to improve the quality and quantity of water?
- Have studies of groundwater, contaminated land etc been undertaken to determine the suitability of the site for sustainable drainage systems?
- Have sustainable drainage systems been considered/incorporated into the scheme? Have they been linked together to provide water resource management, increased biodiversity and an accessible recreational resource?
- Have relevant flood strategies been identified and do they inform the design and approach to on-site water management and the wider masterplan?
- What provision has been made for water balancing measures such as storm water ponds or lagoons to replace groundwater levels and have sustainable drainage systems either as permeable paving or swales been considered?
- Have rainwater harvesting systems been incorporated to provide water for irrigation of gardens, public open spaces and use within ponds and other water features?
- Have rainwater harvesting systems been incorporated to provide grey water for non-potable uses such as WCs?

- Have green roofs been provided to slow the rate of runoff?
- Have the Water Framework Directive and relevant River Basin Management Plan(s) been taken into account with appropriate measures incorporated into the development?
- Have a variety of water elements to 'tell the story' of water from collection to discharge been included? These elements could include vegetated swales, wetlands, reed beds, flood meadows, lakes and ponds.

Source: MKSM (2010) Green Infrastructure by Design – adding value to development

Note: the Monmouthshire Green Infrastructure SPG (2015) summarises and summarises numerous examples of good practice in the detailed planning and design of Green Infrastructure.

The Ten Principles of Active Design[10]

1. Activity for all - Enabling those who want to be active, whilst encouraging those who are inactive to become active. Neighbourhoods, facilities and open spaces should be accessible to all users and should support sport and physical activity across all ages.

2. Walkable communities - Creating the conditions for active travel between all locations. Homes, schools, shops, community facilities, workplaces, open spaces and sports facilities should be within easy reach of each other.

3. Connected walking & cycling routes - Active travel (walking and cycling) should be prioritised over other modes of transport. Prioritising active travel through safe, integrated walking and cycling routes. All destinations should be connected by a direct, legible and integrated network of walking and cycling routes. Routes must be safe, well lit, overlooked, welcoming, well-maintained, durable and clearly signposted.

4. Co-location of community facilities - Creating multiple reasons to visit a destination, minimising the number and length of trips and increasing the awareness and convenience of opportunities to participate in sport and physical activity. The co-location and concentration of retail, community and associated uses to support linked trips should be promoted. A mix of land uses and activities should be promoted that avoid the uniform zoning of large areas to single uses.

5. Network of multifunctional open space - Providing multifunctional spaces opens up opportunities for sport and physical activity and has numerous wider benefits. A network of multifunctional open space should be created across all communities to support a range of activities including sport, recreation and play plus other landscape features including Sustainable Drainage Systems (SuDS), woodland, wildlife habitat and productive landscapes (allotments, orchards). Facilities for sport, recreation and play should be of an appropriate scale and positioned in prominent locations.

6. High quality streets and spaces - Well designed streets and spaces support and sustain a broader variety of users and community activities. Flexible and durable high quality streets and public spaces should be promoted, employing high quality durable materials, street furniture and signage.

7. Appropriate infrastructure - Providing and facilitating access to facilities and other infrastructure to enable all members of society to take part in sport and physical activity. Supporting infrastructure to enable sport and physical activity to take place should be

[10] Sport England (2015) Active Design https://www.sportengland.org/facilities-planning/active-design/

provided across all contexts including workplaces, sports facilities and public space, to facilitate all forms of activity.

8. Active buildings - Providing opportunities for activity inside and around buildings. The internal and external layout, design and use of buildings should promote opportunities for physical activity.

9. Management, maintenance, monitoring & evaluation - A high standard of management, maintenance, monitoring and evaluation is essential to ensure the long-term desired functionality of all spaces. The management, long-term maintenance and viability of sports facilities and public spaces should be considered in their design. Monitoring and evaluation should be used to assess the success of Active Design initiatives and to inform future directions to maximise activity outcomes from design interventions.

10. Activity promotion & local champions - Physical measures need to be matched by community and stakeholder ambition, leadership and engagement. Promoting the importance of participation in sport and physical activity as a means of improving health and wellbeing should be supported. Health promotion measures and local champions should be supported to inspire participation in sport and physical activity across neighbourhoods, workplaces and facilities.

Appendix 2: Selected Figures Reproduced at A3 Size

Please see separate document