

## **Green Essex Strategy**

A strategy that advocates for high quality green space and green infrastructure in Essex

2019

This Strategy has been prepared on behalf of the Essex Green Infrastructure Partnership (Steering Group & Partners), consisting of the following functions and organisations:

Steering Group: Essex County Council  
Culture & Green Spaces  
Environment (Land Operations)  
Highways Active Travel  
Highways Network Development  
Place Services  
Planning  
Sustainability & Resilience  
Wellbeing & Public Health

Green Infrastructure Strategy Partnership:  
Basildon Borough Council  
Chelmsford City Council  
Colchester Borough Council  
Epping Forest District Council  
Harlow Council  
Maldon District Council  
Rochford District Council  
Tendring District Council  
Essex Planning Officers' Association

Environment Agency  
Sustainable Places, Covering East Anglia Area of Norfolk, Suffolk & Essex

Green Arc  
<http://www.greenarc.org/> - Covering South East Hertfordshire, South West Essex and North East London

Forestry Commission  
Representing East and East Midlands Area

Hertfordshire County Council  
Landscape and Planning (Hertfordshire Green Infrastructure Strategy)

Natural England  
Local Partnership covering Essex Area

Sustrans

Network Development covering East Anglian Area

University of East Anglia  
School of Environmental Sciences: Centre for Social and Economic Research on the  
Global Environment (CSERGE)

University of Essex  
ESRC Business & Local Government Data Research Centre

RSPB  
Essex Area Manager for the RSPB

Woodlands Trust  
Regional External Affairs

Essex County Council  
Active Essex  
Adult Social Services  
Commercial & Project Development  
Economic Growth & Regeneration  
Flood Water Management  
Housing Growth  
Spatial Planning  
Sustainable Travel Planning  
Waste & Environment

## **Foreword**

The Green Essex Strategy, steered by the Essex Green Infrastructure Partnership, describes the need for green infrastructure in the county and sets a vision and objectives for the delivery of green infrastructure. This strategy provides a clear plan to guide the future planning and delivery of green infrastructure in Essex in light of the potential growth in development and population. Delivering the strategy vision and objectives will be a complex and challenging task. Success will be dependent on strong working relationships with our partners across specialisms and between sectors and the local community, and will require multi-agency cooperation and cross boundary working.

Our green infrastructure is not only crucial for the health and wellbeing of the people in Essex but is also important for the economy and environment. Green infrastructure can deliver multiple functions and benefits. It provides recreation with opportunities to encourage people to be physically active and connects people to nature. It provides and creates green corridors for our wildlife thereby making our biodiversity more robust, particularly in the face of the challenges presented by a changing climate. It can alleviate flooding and reduce poor air quality. We need to

make sure that this environment is maintained and enhanced so that it continues to support quality of life for existing and future communities.

Essex is a diverse county with fantastic examples of high-quality historic and natural environment and numerous green infrastructure assets. The saltmarshes, mudflats and grazing marshes of the coast, are recognised as some of the most important for wildlife in the UK. Whilst inland, wood-pasture that is 'present or found' (either) within the ancient woodlands of Epping and Hatfield Forest and Hockley woods; and the wetlands of Abberton Reservoir and the Lee Valley are some of the internationally important habitat sites in Essex. In fact, Essex has 1,908 designated sites.

Recreational resources ranging from our Country Parks (such as Hadleigh and High Woods), and Epping Forest, our Public Rights of Way and cycling network and our coastline are widely appreciated by local communities and visitors alike, making valuable contributions to the county's biodiversity and economy.

## CONTENTS

### FOREWORD - DRAFT

#### 1. INTRODUCTION

#### 2. OBJECTIVES OF THE STRATEGY

##### 2.1 Vision

##### 2.2 Green Infrastructure Objectives

#### 3. WHAT IS GREEN INFRASTRUCTURE?

##### 3.1 Green Infrastructure Assets of Greater Essex

#### 4. UNDERSTANDING OUR DRIVERS

##### 4.1 National

##### 4.2 Local and Regional

#### 5. THE ESSEX CONTEXT

##### 5.1 Summary of the Essex Demographic Context

#### 6. WHY INVEST IN GREEN INFRASTRUCTURE?

##### 6.1 Multi-functions and Benefits from our Green Infrastructure Assets

#### 7. DELIVERY OF STRATEGY'S OBJECTIVES

#### 8. DELIVERING THE GREEN INFRASTRUCTURE THEMES

##### 8.1 Marketing, branding and promotion (MBP)

##### 8.2 Re-designation of Green Infrastructure (Rd).

##### 8.3 Environment net gain and offsetting (ENG).

##### 8.4 Improve, repurpose and create new multi-functional green infrastructure (IRC).

##### 8.5 Natural flood management techniques (NFM).

##### 8.6 Connect people and wildlife to green infrastructure through active travel (CPW).

##### 8.7 Delivering environmental therapies and activities (ETA).

#### 9. IMPLEMENTATION OF THE GREEN INFRASTRUCTURE STRATEGY BY SECTOR

9.1	Planning
9.1.1	Supporting Large and Small developments
9.1.2	Green Infrastructure in Cities, Towns and villages
9.1.3	Mineral Extraction and Waste Restoration
9.2	Highways
9.2.1	Greenways
9.3	Coast
9.4	Flooding
9.5	Energy
9.6	Health
9.7	Education
9.8	Agriculture
10.	IMPLEMENTATION AND DELIVERY OF THE STRATEGY
10.1	Stakeholder engagement
10.2	Funding
10.3	Timelines for Delivery
11.	ACTION & OUTCOMES
12.	STRATEGY REVIEW
13.	REFERENCES
14.	LIST OF APPENDICES

## **Introduction**

The purpose of this strategy is to take a positive approach to enhance, protect and create an inclusive and integrated network of high-quality green infrastructure in Greater Essex, to create a county-wide understanding of green infrastructure – its functions and values, and to identify opportunities for implementing green infrastructure. The aim is to guide and shape planning and other services through setting principles that can inform plans and strategies, that will enable a coherent approach and partner collaboration in the delivery of multi-functional natural assets, which will provide environmental, social and economic benefits for Greater Essex. High quality green infrastructure is an essential part of a successful and liveable county. Our green infrastructure attracts residents and families, creates the setting for businesses to invest and it is part of the package that draws in visitors from the surrounding area and around the world.

By integrating high quality, well-maintained green infrastructure as part of wider plans for residential growth, improving health and wellbeing, attracting businesses and increasing tourism, green infrastructure will provide the following benefits through:

- Facilitating the delivery of multiple objectives
- Providing a multi-functional network of open spaces and ecological networks at all scales, from regional to neighbourhood scale.
- Shaping the growth of sustainable communities- social and economic.
- Forming an integral part of the planning system; and
- Planning to meet the existing and future needs of our communities.

Investment into green infrastructure has continued to change, especially with further budget reduction, driving the need for new funding and delivery models. Understanding of the environmental, social and economic value of green infrastructure has continued to develop, underpinned by new research and government's policy developments (i.e. The 25 Year Environment Plan). These factors have all provided key inputs to the strategy's development and are reflected in the following chapters.

#### Chapters

2. Objectives of the Strategy – Strategy's vision and objectives for green infrastructure in Essex.
3. What is Green Infrastructure? – Summary of our green infrastructure assets.
4. Understanding our drivers
5. The Essex Context – Summary of the local context of the challenges Essex face
6. Why invest in Green Infrastructure? (Multi functions and benefits of green infrastructure)
- 7, 8 & 9. Delivering the Objectives – through a set of headline proposals and actions
- 10, 11 & 12. Implementation, delivery and monitoring of the strategy

## **Chapter 2 Objectives of the Strategy**

### **2.1 Vision**

The following vision reflects the Essex Green Infrastructure Partnership's (Steering Group and Partners) position regarding the important future role of green infrastructure within Greater Essex:

We will protect and grow a high quality connected Green Infrastructure network that extends from our city and town centres to the countryside and coast and which; is designed for people and wildlife, whilst being self- sustaining.

The Green Infrastructure Strategy aims to deliver the vision through the seven objectives specified right:

The vision and objectives set out what this strategy is aiming to achieve, recognising that good infrastructure is not an end, but an enabler of better social, economic and environmental outcomes. There is the potential to deliver green infrastructure through a wide range of activities including new provision within developments and effective land management and maintenance of existing areas and assets, utilising natural flood management techniques and coordinating with other projects to deliver multiple benefits. Working in a more joined-up approach with partners and the local communities will enable pulling together of limited resources to secure the greatest gains for both the environment and the sustainable economy.

### **2.2 Green Infrastructure Objectives**

Protect: Protect existing green infrastructure, especially the most valuable

Improve: Improve existing green infrastructure so it is better functioning

Create: Create more high-quality green infrastructure, especially in areas of deficiencies  
Connectivity: Improve of the connectivity of green infrastructure for people and wildlife  
Inclusivity: Increase use and inclusivity of green infrastructure across all social groups and abilities  
Health: Provide green infrastructure facilities to promote health and wellbeing  
Sustainability: Secure funding for new and existing green infrastructure to ensure their sustainability

## **Chapter 3**

### **What is Green Infrastructure?**

#### **3.1 Green Infrastructure Assets of Greater Essex**

Green infrastructure is made up of natural and semi-natural assets and habitat types, of green and blue spaces, and of other environmental features that maintain and enhance ecosystem services<sup>1</sup>. It provides multi-functional benefits integral to the health and wellbeing of our communities and to the ecology and economy of the county. Green infrastructure is often referred to as a network of these natural and semi-natural assets and spaces, which are joined together connecting urban and rural areas and are habitually strategically planned.

Green infrastructure for this strategy includes the following assets:

- Parks and gardens
- Natural and semi-natural open spaces
- Reservoirs, lakes and ponds
- Coastal features
- Green corridors (verges)
- Waterways (watercourses)
- Greenways (Public Rights of Way, footpaths, cycleways and tracks, bridleways)
- Outdoor Sport Facilities (Sport pitches)
- Amenity green space (provision for play facilities etc.)
- Open spaces around premises (Educational premises open space and sport pitches)
- Cemeteries and churchyards
- Allotments, community gardens and city farms
- Productive spaces (arable land and meadows)
- Public Realm/Civic spaces (urban greening – Urban and street trees, road verges, green walls, Sustainable Urban Drainage and Natural Flood Management)

In 2017, key spatial environmental data held by Essex County Council (ECC) and its partners - both national and local - was collated and captured within the Essex Natural Capital Asset Check to establish a county level baseline of Essex's Natural Capital resources (ECC/Place Services, 2017). As part of the Asset Check, the

University of East Anglia (UEA) developed a countywide Geographic Information System (GIS) data mapping layer on the distribution of green infrastructure through the integration of spatial data sets (particularly open source information such as OpenStreetMap). Building upon this work UEA developed a green infrastructure GIS mapping model.

The green infrastructure data layer of the model shown in figure 1 provides several insights into the distribution of such natural assets within Greater Essex. Overall, the data indicates that there is 782km<sup>2</sup> of green infrastructure in Greater Essex (21% of the total county area) (BLGDRC 2016 & 2019). It highlights that Greater Essex already benefits from a wide range of green infrastructure resources, made up of many different types of green assets within our landscape, natural and historical environment, green spaces, blue infrastructure (water) and greenways (i.e. Public Rights of Way). (Graded agricultural land as green infrastructure was not included for the purpose of this map and can be found in separate map in Appendix 2).

### Key Elements of Essex's Green Infrastructure

This section outlines the green infrastructure and environmental character of Greater Essex, with further details set out in Appendix 3.

#### Landscape

Greater Essex has a rich and varied historic landscape of expansive plateaus, wooded hills and one of the longest coastlines in the country, much of which is of international significance for wildlife. Rural in character and shaped by a long history of settlement and farming; over 68% of the county is graded agricultural land, as mapped in Appendix 2, figure 2. Table 1 summarises the composition of the land area in Greater Essex.

Table 1: Summary of the total land area composition in Greater Essex

Total Area of Green Infrastructure	782 km <sup>2</sup>
	21%
Total Area of Agricultural Land Outside Green Infrastructure	2,497 km <sup>2</sup>
	68%
Remaining Land (e.g. Built-Up Areas)	397 km <sup>2</sup>
	11%
Total Land Area in Greater Essex	3,676 km <sup>2</sup>
	100%

#### Natural Environment

Greater Essex hosts a variety of important habitats, of which 13.4% of the total area (49,560 hectares) receive some level of protection through national and international designations. There are 1,908 designations, which include:

1 Areas of Outstanding Natural Beauty (and 1 AONB to be designated - Suffolk Coast and Heath includes part of Essex)

11 Special Protected Areas  
78 sites of Special Scientific Interests  
10 Ramsars  
3 Special Areas for Conservation  
6 National Nature Reserves  
1,698 Local Wildlife Sites  
1 Community Forest  
100 Special Roadside Verges

### Trees and Ancient Woodlands

The Forestry Commission's Inventory of Trees and Woodlands (2002) estimates the woodland cover of Greater Essex is 5.3% (19,455 hectares) of total land area, of which 3.5% (12,774 hectares) is defined as ancient woodlands over 2 hectares in size, of which 7,290 hectares is Ancient Semi Natural Woodlands (ASNW)<sup>2</sup>. There are over 5 million trees in Essex (BlueSky, 2017), and it is believed that of just over 1.5 million of these are outside woodlands in rural Essex and as trees planted along streets. Street trees help to define and frame the streetscape giving visual identity and enhancing the street scene. There is also a total of about 12,500 km of hedgerow in Essex.

### Historic Environment

The historic environment has played an important role in shaping the landscape, wildlife and economy of the County. It has developed through a history of human activity spanning over 450,000 years with some of the resource lying hidden beneath the ground in the form of archaeological deposits. Other elements, such as the area's historic landscape; the geology, soils, the pattern of fields, hedges, grazing marsh, woodlands, farms woods and tracks, which are of ancient origin, are a highly visible record of past human activity. The 'built' part of the historic environment is equally rich, with the character of towns, villages, hamlets, farms, roads and ports having been shaped by their historic buildings.

### Green Spaces

There is a wide and varied amount of green space in Greater Essex (as shown in figures 2 and 3) that represents a network of green, blue and sometimes brown components that lie within and between towns and villages and can cross Local Authority areas.

Essex CC manages seven of its own country parks and over 25 woodlands. It also plays an active role in the Thames Chase Community Forest, Lee Valley Regional Park, and Dedham Vale Area of Outstanding Natural Beauty and works in partnership with the Woodland Trust at Hainault Forest. There are also country parks and nature reserves in most districts, owned and managed by the local authority or conservation charities such as the Essex Wildlife Trust, RSPB, National Trust, the Land Trust and Woodland Trust.

### Water

Essex has five river catchments and three coastal streams, which are complicated and vulnerable catchments because of the low-lying land and coastal squeeze



issues, combined with the development needs and protection of SSSI's and Ramsar sites. The floodplains of the principal estuaries have extensive expanses of alluvial marshland, which are increasingly managed for nature conservation and contain large wetland areas.

Essex also has three significant reservoirs, which serve millions of households and also provide habitats for wetland wildlife, two of which are successfully managed by the Essex Wildlife Trust. There are also agricultural reservoirs that have been developed all over the eastern part of the county and that have the added commercial use benefit of fishing lake provision.

### Public Rights of Way

The Public Rights of Way network in Essex comprises approximately 6530km of footpaths (84%), bridleways (12%), restricted byways (0.01%) and byways (4%) which provide access to the countryside and links between green spaces, towns, villages and places of employment.

## Chapter 4

### Understanding our Drivers

#### 4.1 National

The National Planning Policy Framework (NPPF) updated February 2019 requires local planning authorities to make sufficient provision for conserving and enhancing the natural, built and historic environment, including landscapes and green infrastructure, through sustainable development and strategic policies within the local development and neighbourhood plans. The NPPF promotes the use of green infrastructure to delivery multiple functions and benefits, for example adapting to climate change; to improve air quality and pollution; and to enable healthy lifestyles and the creation of inclusive and safe places.

It recognises the importance for people to be able to access high-quality open spaces and be provided with opportunities for sport and recreation (including playing fields) and for the protection, enhancement of existing and creation of new public rights of way to improve public access to the countryside and coast. It allows opportunities to be taken to secure biodiversity and environmental net gains, through new habitat creation, protection for ancient woodland and veteran trees and establishing ecological networks. It recognises the wider benefits from natural capital and ecosystem services and that green infrastructure is an important part of the landscape setting of the built environment that can play an important part in achieving sustainable development.

The Natural Environment White Paper, *The Natural Choice: Securing the value of nature* (2011) highlighted 'the importance of green spaces to the health and happiness of local communities'. The White Paper sets out a framework to protect and enhance the natural environment and to support coherent and resilient ecological networks that reflect the value of ecosystems.

It refers to the role of planning and the role of urban green infrastructure as providing linkages to the ecological network and as an effective tool to managing environmental risks such as flooding and heat waves. It advocates that green spaces should be factored into the development of all communities. The White Paper seeks

to encourage local action, guided by local knowledge and statutory powers of local authorities, to work in a more integrated way to achieve multiple benefits (Defra, 2011).

The 25 Year Environment Plan, 'A Green Future: Our 25 Year Plan to Improve the Environment' was published in 2018 and sets out a framework to maintain and improve the environment for the next generation. The following six key areas have been identified around which action will be focused:

Clean air

Clean and plentiful water

Thriving plants and wildlife

A reduced risk of harm from environmental hazards such as drought and flooding

Using resources from nature more sustainably and efficiently

Enhanced beauty, heritage and engagement with the natural environment

The key topics include: using and managing land more sustainably; recovering nature and enhancing the beauty of landscapes; connecting people with the environment to improve health and wellbeing; mitigating and adapting to climate change; minimising waste and air pollution; tree planting and woodland creation; and embedding the principle of 'environmental net gain' and upgrading green infrastructure standard in the planning system.

Healthy Lives, Healthy People: Our Strategy for Public Health in England White Paper sets out the Government's long-term vision for the future of public health in England and recognises the relationship between the environment and good public health along with other factors such as education and employment to tackle health inequalities. The strategy states that the tackling of health inequalities can be achieved through empowering local government and communities, who will have new resources, rights and powers to shape their environments and tackle local problems (Government, 2010).

## **4.2 Local and Regional**

An Essex Growth Infrastructure Framework (GIF) was prepared to provide a view of emerging development and infrastructure requirements to support growth across Essex. The GIF provides a strategic framework across the county, for identifying and prioritising investment across a range of infrastructure, for planned growth up to 2036. It presents an overview of growth patterns and the infrastructure projects needed to support such growth, their costs, how much funding has already been secured or is expected towards their delivery and the funding gap. The framework estimated that new development will generate a demand for 1,585 hectares of green infrastructure, which will cost £251,860,000 including ongoing management. It identified a funding gap of £241,990,000 (ECC, 2017).

One of the four strategic aims in ECC's Essex Organisation Strategy is to 'help create great places to grow up, live and work'. The Strategic Priority: 'Help secure sustainable development and protect the Environment' (Part B of Priority 2) states that we will aim to "Improve the quality of life for Essex residents, by continuing to

improve our open green space and making the most of the Essex countryside for the wider benefit of all”

This will enable an opportunity to unlock our green assets to deliver multiple benefits, including support to health and wellbeing of our communities and aim to deliver a consistent policy approach for green infrastructure planning and investment to be applied across Essex, ensuring that opportunities are not missed to deliver inclusive growth (Essex County Council (2017)).

The Essex Rights of Way Improvement Plan (RoWIP) 2009, is a statutory document for improving the provision of access to the countryside through a Rights of Way network. The planning system will be used wherever possible to improve Public Rights of Way and pedestrian environments which is also reflected in the Local Transport Plan (2011) Policy 15 -Walking and Public Rights of Way, that encourages a move towards sustainable travel and healthier lifestyles.

The Active Essex Strategy (2017-2021) is focused on increasing and sustaining 1,000,000 people’s participation in and enjoyment of activities that benefit their physical and mental health and wellbeing. This Strategy promotes physical activity across all age groups and abilities, including the provision of a sustainable network of safe and accessible facilities, open spaces and active travel routes to get more people using open green spaces for exercise and health reasons

Minerals and Waste Local Plans aims to plan positively for the co-ordination and delivery of new green infrastructure within the restoration of the mineral and waste development areas.

Local Plans in Essex take a strategic approach to planning for the creation, protection, enhancement and management of biodiversity and green infrastructure networks as required by NPPF. There are direct and indirect references to the role of green infrastructure in delivering the aspirations of the Local Plan through policies and/or guidance, which need to be followed when a planning application is submitted.

Each of the Local Authorities has taken a different approach to managing, protecting and enhancing their green infrastructure network. Some have a specific green infrastructure strategy, while others either incorporate green infrastructure within their Infrastructure Delivery Plans, Open Spaces, Sport and Recreation Strategy or Recreational Access Management Strategy or have predominantly undertaken an audit and assessment of need identifying the green infrastructure deficiencies. Some have detailed action targeting specific areas, while others have more general recommendations or standards for action across their boundary area.

The cross over key priorities coming out of all the Local Authority green infrastructure strategies and equivalent planning documents, for the functions needed from green infrastructure are:

Access.

Health and Wellbeing.

Protect, maintain and enhance existing green infrastructure.

Balance the creation of new green infrastructure to address any deficiencies and gaps where required.

Protect and enhance:

Biodiversity.

Landscape character and designated protected sites (i.e. SSSI).

Mitigate and adapt to a changing climate (i.e. flood management).

Economy, with an emphasis on better promotion of existing green and open spaces.

### Other Drivers

The drivers outlined above are examples of the key national, regional and local policies, strategies and plans that influence action to protecting, managing and enhancing our green infrastructure network. There are several other national and local plans and strategies that also have an influence on planning for green infrastructure, such as Biodiversity Action Plans, 'Respecting our Past, Embracing our Future: A Strategy for Rural Essex-A new strategy for 2016-2020' and Walking Strategy. Figure 4 below illustrates the relationship between the green infrastructure strategy and other plans and strategies in Essex not covered in this section.

## **Chapter 5**

### **The Essex Context**

#### People and Projections

1,820,900 people in 2017 for Greater Essex. The county's population is expected to increase to 2,133,100 by 2041. With the greatest increases currently projected in Colchester, Basildon and Chelmsford. <sup>a</sup>

#### Development Growth

In 2016 there's approximately 784,000 households across Greater Essex local authorities. 179,657 homes needed across Greater Essex. <sup>b</sup>

#### Economic Growth

Greater Essex generates £36bn Gross Value Added (GVA) and supports over 816,000 jobs.

79,000 additional jobs needed forecasted by the East of England Forecasting model (2016 run). <sup>b</sup>

#### Social and Health

In Essex, two-thirds (66.3%) of adults aged 16+ are either overweight or obese (2013-15). While 20.9% of children in reception and 31.8% of children in year 6 are obese. <sup>c</sup> The projected annual increase in obesity rate is 2% in adults and 0.5% in children. <sup>d</sup>

Over 150,000 Essex residents are expected to be living with a mental health illness, with almost 50% of them having developed this condition in their early teens.

In Essex in 2014, 57.9% of people had the recommended amount of physical activity (2.5 hours a week). <sup>d</sup> Although fewer women take physical activity, at least 33.3% of females are active once a week compared to 38.3% of males. The Active Lives Survey (2017) highlighted that 65% of people are active with 22.1% of people are inactive. The total cost of physical inactivity in Essex to NHS was £58,213,764 per year. <sup>e</sup>

#### Environment

In 2017, 18 % of population in Essex has accessible woodlands, while 36% inaccessible woodlands at least 2 ha within 500 meters of where they live. <sup>h</sup>

2 Areas of Outstanding Natural Beauty (AONBs):  
78 Sites of Special Scientific Interest (SSSI)  
11 Special Protection Areas  
3 Special Areas for Conservation  
10 Ramsar Sites  
6 National Nature Reserves  
1,698 Local Wildlife Sites  
11,710 hectares of land managed/owned for conservation  
40 registered parks and gardens of Special Historic Interest  
3 of the best-preserved medieval forests in Britain (Hatfield, Epping and Writtle).<sup>f</sup>

#### Climate Change and Flood Risk

The annual concentration of human made fine particulate matter (air pollution) in Essex in 2016 was 9.6µg/M3 (adjusted to account for population exposure) compared to England's average of 9.3 µg/M3.<sup>c</sup>

Essex is one of the top 10 areas at risk of surface water flooding in UK. The number of houses in Greater Essex at risk from:

Surface water is approx. 36,000  
Rivers is approx. 10,000  
Sea is approx. 50,000

Essex can generally expect more frequent extreme weather events (such as storms, extreme cold weather); milder and wetter winters; and hotter drier summers by 2080.<sup>e</sup>

More detail of the Greater Essex demographic context is set out in Appendix 5.

Data Source: a: From an ONS 2016-based subnational population projections; b: Greater Essex Growth Infrastructure Framework (2017); c: Public Health Outcomes Framework: Wider Determinants of Health Tool, d: Joint Strategic Needs Assessment (2016) & Joint Health & Wellbeing Strategy for Essex; e: Sports & Physical Activity Profile: Greater Essex (2017); f: Essex Natural Capital Essex Check (2017); g: UK Climate Projections 2009; h: Space for people (2017).

With the opportunities and challenges Essex faces from continued development and population growth, it is vital that the purpose of our green infrastructure is reconsidered so that they are better able to provide the benefits needed by our residents. There is a need to mitigate the loss of our green spaces to new development such as housing, industrial premises and the transport infrastructure as well as from the other pressures Essex faces including the projected impacts of climate change on the county and its economy, and the growing demand on the health services. A well-planned and managed green infrastructure can help Essex meet these challenges.

## **Chapter 6**

### **Why Invest in Green Infrastructure?**

A major challenge for Essex is to maintain a healthy natural environment in line with the development and population growth in Essex and the creation of a green infrastructure network, while allowing for meaningful connections between people and nature – particularly in urban areas. A spatial analysis of the green infrastructure undertaken by UEA as part of the GIS green infrastructure data layer mapping found that there is a tendency for areas of green infrastructure to be higher in the south of the county (as mapped in figure 3 in Appendix 6), suggesting that investment of green infrastructure could be focused in areas of lower green infrastructure value in the north. Nonetheless, where areas within this study may show a low total percentage value of green infrastructure it does not necessarily mean the local authority area has no green infrastructure, but maybe they are not accessible and open to the public. Different local authority areas have different strengths and weaknesses in terms of their green infrastructure provision and will need to take into consideration their assessment of green infrastructure assets and features within District, City and Borough Councils green infrastructure strategies or equivalent policies and plans.

Historically grey infrastructure of rail, roads, pipes and powerlines have been the preferred option to the built environment as it is tried and tested but only serves one purpose, while green infrastructure which is just as important usually has more than one function. At its best green infrastructure can be designed to get the most benefit out of what nature provides us for free and therefore reduces what needs to be done by expensive technology and grey infrastructure alleviating social, environmental and budgetary pressures, to deliver better outcomes for residents and reduce dependency on strained public sector services.

By investing in the green infrastructure in Essex it can deliver a broad range of benefits in terms of environmental (i.e. improved air quality), social (i.e. enable recreation and improved health) and economic (i.e. attract business) values and benefit outcomes. Foregoing these values and benefit outcomes results in welfare losses and increased costs to society through increased environmental, social, and health services costs. To identify the benefits requires an assessment of our current green infrastructure provision (as summarised in chapter 3) and an understanding of our current position and challenges that green infrastructure face in Essex (as summarised in chapter 5) to identify potential opportunities.

## **6.2 Multi-functions and Benefits from our Green Infrastructure Assets**

Green infrastructure delivered at many different scales can have many functions which provide a range of environmental, social and economic services and benefits. Building upon UEA's green infrastructure GIS data layer, a comprehensive mapping of green infrastructure of Essex was carried out by the university to improve our understanding of the types of green infrastructure, its distribution, what it can do (how it functions) and the benefits it provides. Using a GIS computer programme, a mapping methodology developed by the Business and Local Government Data Research Centre at the University and an adapted approach developed by the North West Green Infrastructure Unit in Liverpool (Butlin, 2011), they were able to categorise the green infrastructure assets in Essex utilising the UK Habitat Classification (2018) into a green infrastructure typology and identify a range of green infrastructure functions they each perform as listed in table 6 of appendix 7.

Each category in the green infrastructure typology can perform multiple functions, taken from the following list:

- Recreational and active-living that support healthy lifestyles, both physical and mental;
- Green travel route
- Habitat provision - conservation and enhancement of biodiversity;
- Heritage and cultural assets - providing place quality and amenity;
- Food production and productive landscapes
- Pollution absorption and removal
- Flood attenuation and water resource management
- Coastal Storm protection
- Cooling effect
- Access to nature

Once each type of green infrastructure typology had been determined, the total number of functions for each was calculated, giving a map of multi-functionality as shown in figure 5. This figure also gives an example of the number of functions performed by a range of green infrastructure asset in Harlow.

These functions were then assessed against the range of green infrastructure benefits they provide directly and indirectly (as shown in table 5 of Appendix 7). Green infrastructure not only provides multi-functionality, but also supplies multiple environmental, economic and social benefits:

#### Environment Benefits

- Maintains/Restores habitat
- Improves watershed health/water quality
- Improves air quality
- Enhances biodiversity
- Flood alleviation and water management mitigates storm water/flooding
- Regulates climate i.e. reduce heat in urban areas
- Sequesters carbon
- Improves more sustainable modes of transport and transport links
- Increasing environmental quality and aesthetics
- Heritage preservation
- Increasing habitat area
- Increasing populations of some protected species
- Increasing species movement;

#### Economic Benefits

- Attracts businesses and workers
- Generates revenue
- Provides access to local businesses
- Increases land and property values
- Lowers energy costs
- Lowers health care costs
- Promotes renewable energy

Increases local food production & other products from land i.e. biofuel, timber, chip board and sources of raw materials such as lignin and cellulose.  
Increased tourism  
Attracts inward investment  
Promotes local economic regeneration  
Enables regeneration of previously developed land

#### Social Benefits

Enhances the quality of the place  
Enables recreation and Leisure – Relaxation/ play benefits  
Improves public health  
Promotes equity and access  
Fosters stronger communities: Social interaction, inclusion and cohesion  
Connects people with nature  
Educates people about nature's role  
Climate Change mitigation and Adaptation – community resilience  
Increasing life expectancy and reducing health inequality  
Improving levels of physical activity and health  
Improving psychological health and mental well-being - Eco therapy  
Boosts educational abilities

The number of benefits for each function against each green infrastructure typology were mapped (in figure 4 of appendix 7), with the results showing a potential correlation between the number of functions and the number of benefits provided by the green infrastructure. In the example of Harlow, the green infrastructure providing one function would tend to only provide the minimum of five benefits. What figures 5 (above) and 4 (in appendix 7) show is there are several areas in Harlow where, for example, the green infrastructure only provides one function, but through an onsite investigation and benefits mapping the potential could exist to highlight these areas as one to focus on to enhance, improve and or repurpose, so that green infrastructure provides multiple functions and benefits. Likewise, areas with high numbers of green infrastructure functionality and benefits could be identified as areas to protect from development.

There are a number of green infrastructure sites across Essex that provide six or more functions and greater than twelve benefits as demonstrated in the two case studies in figure 6:

Abberton Reservoir, as Essex Wildlife Trust's Nature Reserve

#### GREEN INFRASTRUCTURE TYPES

Grassland, Meadow, Ponds, Wetland, Woodland, scrub, Natural and semi-natural green space

#### GREEN INFRASTRUCTURE FUNCTIONS

Flood attenuation and water resource management, Habitat provision, Access to Nature, Recreation Public with restrictions, Access, movement and leisure, Aesthetics, Learning, Heritage and culture asset

#### GREEN INFRASTRUCTURE BENEFITS



### Environmental Benefits

Directly: Flood alleviation and water management, Landscape, Biodiversity  
Indirectly: Climate change adaptation and mitigation, Heritage preservation

### Social Benefits

Directly: Recreation and leisure, Sense of Place, Education  
Indirectly: Health and well-being

### Economic Benefits

Directly: Tourism  
Indirectly: Quality of place, Economic Growth and Investment  
Economic Benefits

### Case Study: Hadleigh Park

#### GREEN INFRASTRUCTURE TYPES

Accessible woodland; Grassland, Scrub, Hedges, Hay meadow (Natural and semi-natural green space), Grazing marsh, Saltmarsh, Ditches and Ponds (Wetland), Park, Sea wall (Coastal).

#### GREEN INFRASTRUCTURE FUNCTIONS

Recreation Public , Habitat provision, Access to Nature, Access, movement and leisure, Aesthetics, Learning, Heritage and culture asset, Flood attenuation and water resource management, Coastal storm protection, Food production and productive landscape, Green travel route, Pollution absorption and removal.

#### GREEN INFRASTRUCTURE BENEFITS

##### Environmental Benefits

Directly: Climate change adaptation and mitigation, Landscape, Biodiversity , Heritage preservation.  
Indirectly: Flood alleviation and water, Sustainable travel.

##### Social Benefits

Directly: Health and well-being, Recreation and leisure, Sense of Place,  
Indirectly: Community resilience, Education.

##### Economic Benefits

Directly: Quality of place, Tourism.  
Indirectly: Economic growth and investment, Land and property values, Labour productivity, Products from the land, Inward investment, Cost savings.

## **Chapter 7**

### **Delivery of Strategy's Objectives**

Based on the evidence from the previous chapters, the following proposals in table 2 have been identified in response to the issues for each objective and are targeted at areas or activities where "need" is greatest or relatively simple and cost effective to deliver. These proposals form the basis for getting agreement and support to take

forward actions, as they will require partner collaboration to successfully implement. They are examples of how green infrastructure can be delivered at the district and county scale over the short and medium term that will have the greatest impact to people's lives. The proposals can sit within targeted areas or in other parts of strategic areas or may cross-cut several areas in Essex (hence why some actions are repeated meeting multiple objectives).

Broadly, these proposals can be categorised into the following key project themes:

Marketing, branding and promotion (MBP).  
Re-designation of green infrastructure (Rd).  
Environment net gain and offsetting (ENG).  
Improve, repurpose and create new multi-functional green infrastructure (IRC).  
Natural flood management techniques (NFM).  
Connect people and wildlife to green infrastructure through active travel (CPW).  
Delivering environmental therapies and activities (ETA).

Objective: Protect existing green infrastructure, especially the most valuable

MBP - Highlight the most valuable green infrastructure in Essex in terms of their multi-functionality and benefits – through rebranding Essex as Green Essex with 1,908 designations.

Rd - Encourage and support the review of existing designations to ensure their currency and maintain the accuracy of site information.

Rd - Support the recognition and appropriate designation of new green infrastructure, e.g. Local Wildlife Site, Local Nature Reserve.

ENG - Embed an 'environmental net gain' principle for development, including housing and infrastructure.

IRC - Coordinate the protection of internationally designated green infrastructure through the Recreational disturbance Avoidance and Mitigation Strategy (RAMS).

Objective: Improve existing green infrastructure so it is better functioning

MBP - Create a green Essex network to develop, improve and promote Green Essex.

IRC - Support the development of new Visitor Centres and facilities

MBP - Better marketing & promotion of green infrastructure to increase use and income.

IRC - Public realm green infrastructure improved to reduce pollution and improve character and sense of place.

NFM - Create water gardens, green roofs and bio retention areas to absorb urban water.

NFM - Continue creating green spaces which also function as natural flood management and SuDs schemes.

IRC - Encourage better management of green infrastructure to benefit locally native species, focussing on recognised nature conservation priorities.

Objective: Create more high-quality green infrastructure, especially in areas of deficiency

CPW/MBP - Develop the coast path in Essex.

IRC - Increased access to the Outdoor Pursuits Centres.

IRC - Create green infrastructure in new developments such as Garden Communities.

IRC - Develop green infrastructure as part of Minerals and Waste restorations e.g. Pitsea Landfill.

CPW - Create town or village circular walks especially in areas of green infrastructure deficiency.

IRC - Strategically identify priority areas for the creation or improvement of green infrastructure that could provide most benefit for locally native species of recognised nature conservation priority.

IRC/ENG - Use planning policy to secure multi-functional green spaces within and beyond development site boundaries through the application of biodiversity net gain, biodiversity off-setting and the creation of compensation habitat.

IRC - Where possible, use new green infrastructure provision to buffer or extend existing designated sites.

CPW - Create town or village circular walks especially in areas of green infrastructure deficiency

Objective: Connectivity improvements connecting green infrastructure, people and wildlife.

CPW/MBP - Develop the coast path in Essex.

CPW - Develop inter connecting paths between green infrastructure.

CPW - Restore and Promote Essex promoted paths.

1. The Forest Way
2. The St Peter's Way
3. The Essex Way
4. The Roach Valley Way
5. The Coast Path (once designated as National Trail)
6. The Stour Valley Path
7. The Thames Estuary Path,
8. The Flitch Way
9. The Saffron Way
10. Blackwater Rail Trail
11. John Ray Walk

Objective: Increase use and inclusivity of green infrastructure across all social groups and abilities

ETA - Explore environmental therapies and challenges aimed at developing young people.

MBP - Promote youth orientated activities in green spaces e.g. mountain biking, Go Ape, Geocaching, etc.

Objective: Provide green infrastructure facilities to promote health and wellbeing

ETA - Explore environmental therapies delivered through mental health services.

MBP - Develop and promote Healthcare and wellbeing through green infrastructure activities.

Objective: Secure funding for new and existing green infrastructure to ensure their sustainability.

IRC - Develop new facilities that will generate revenues.

Create a Green Essex Fund for endowments, fund raising bids, donations etc.

## **Chapter 8**

### **Delivering the Green Infrastructure Themes**

#### **8.1 Marketing, Branding and promotion (MBP)**

There are several green spaces in Essex, where a considerable amount of time, effort and funding have been allocated to the running of these sites. All this effort would go to waste if these green spaces were not effectively promoted. Historically, there has been a widespread lack of awareness locally and nationally of the green infrastructure assets and facilities Essex has to offer and a lack of a coordinated promotion of these assets. There is, therefore a need to develop a marketing strategy which maximises existing marketing resources to its full potential and deliver a coordinate approach and a recognisable pan Essex branding to successfully promote and raise awareness of our green infrastructure across Essex. This should include our most valuable green infrastructure such as the coast and ancient woodlands of Epping and Hatfield Forest and Hockley woods. Whilst taking into consideration the monitoring, management and mitigation of visitor impacts to these protected areas.

Better marketing and promotion of our existing and new green infrastructure and their facilities such as our visitor centres, promoted paths (e.g. Essex Way and Flich Way), the new coast path in Essex, and activities available (especially youth orientated activities and green therapies) will encourage more people to use green infrastructure and connect with nature. This will also increase their income to enable these sites to continue to be managed, enhanced and maintained, providing environment net gains and significant economic opportunities to other business through sustainable natural tourism and green industries. This can only be achieved by better links and joined up working through the creation of a Green Essex network with key sectors, stakeholders and partners, such as Visit Essex, Culture and Green Spaces, Local Authority communications, PROW and Public Health teams. Although a big campaign may prove costly, current resources could be better utilised and over time the increase in visitor spend could be re-invested in to marketing, promoting and enhancing our green infrastructure.

Ensuring the visibility of our green space will make a significant difference to the interpretation of accessibility and provide opportunities for people to discover and explore a transformed green space or new greenway route and engage with nature. Making physical changes to our green spaces and woodlands through habitat management, creating good paths to and through green spaces, and the installation of benches is often not enough to encourage people to use them. It will require good signage, interpretation and promotion of these sites and those changes made through a range of information resources.

These resources could include:

- New interpretation boards,
- Artworks,
- Maps,
- Trail guides,
- Signage,
- Leaflets,
- Press articles,
- Websites (including a Green infrastructure information portal with information such as Essex promoted paths)
- Social media pages,
- Mobile applications like geocaching, GPS guided tours<sup>3</sup>,
- Hold an opening ceremony or organised guided walks or activities (such as youth orientated activities, green therapies, and physical activities)
- Develop events on the coast increasing the cultural offer of the coast
- Engage local people in active care of the natural environment, who will then inform others about the site.

These are some of the things that could continue to be developed over time with the input of our communities, Green Essex network partners and businesses. Local communities will need opportunities to contribute their ideas and to be made aware of plans and progress, which along with good communication is vital for successfully improving the quality, access, inclusivity and provision of our green infrastructure.

## **8.2 Re-designation of Green Infrastructure**

It is important to recognise the value of our green infrastructure in delivering environmental, social and economic benefits, and that they will themselves require protection to ensure these benefits continue to be provided for future generations. Further opportunities should be explored to enhance the new green infrastructure to potentially re-designate them as nature reserves, transforming them into wildlife and people friendly green spaces, whilst protecting them from future development. There is the opportunity to discuss with Local Planning Authorities, Natural England, Place Services (environmental consultancy in the public sector) and other key partners developing clear guidance on re-designating protected areas; to include other new green infrastructure as new designations based on a standard process and sound criteria such as size of the green infrastructure and its value in terms of the functions and benefits it provides, including high biodiversity value, recreational access, flood prevention etc. The UEA green infrastructure GIS mapping model analysis on the access to green infrastructure provision, and the functions and

benefits (6.1 of Chapter 6) mapping could be used as part of the assessment to measure against the re-designation criteria to seek to ensure that the selection for re-designation is as objective as possible.

The testing of this guidance could be applied to supporting the review of existing designations and the recognition and appropriate designation of new green infrastructure, such as the following as case study examples:

Wallasea Island managed by RSPB is a landmark conservation and engineering scheme covering more than 740ha, with two thirds of the reserve now transformed to saltmarsh, mudflats, lagoons and grazing marsh. Areas of the site have been designated as SSSI and Local Wildlife Site.

South Essex Marshes is a dynamic landscape of grazing marsh, creeks and salt marsh with farmland and settlements on the higher ground. The marshes provide areas of internationally important nature conservation areas and heritage sites, with the vision of unifying the South Essex Marshes areas as a single destination.

Thames Chase Community Forest within Havering, Thurrock, Barking and Dagenham and Brentwood areas covers 40 square miles of countryside around the London/Essex borders managed by the Thames Chase Trust.

Regular review of Local Wildlife Sites within each Local Planning Authority area will ensure that newly created or enhanced green spaces that meet selection criteria as a result of their habitats or species populations can be recognised and protected within the planning system. Designation of green space as a Local Wildlife Site should be seen by developers as an aspiration, adding value to the communities that they establish. In order to achieve this, the focus of green space design and creation should be on habitats that compliment those of biodiversity value in the surrounding landscape, focussed on recognised nature conservation priorities, including the Priority Habitats listed under section 41 of the Natural Environment and Rural Communities Act 2006.

### **8.3 Environment net gain off setting (ENG)**

Embedding an 'environmental net gain principle for development including housing and infrastructure (such as utilities and highways) is an action in the Government's 25 Year Environment Plan. The role of local plans and planning decisions in identify and encouraging opportunities for net gains in biodiversity in and around developments is set out in paragraphs 174 and 175 of the NPPF. However, the ambition is to expand the net gain approaches used for biodiversity to include wider natural capital benefits, such as flood protection, recreation and improved water and air quality. There is therefore, a need to recognise the role planning and the public realm (i.e. highways) has in the protection and improvement of existing and creation of new green infrastructure to enhance the character, quality and create a sense of place. It is also important to ensure that lost or degraded environmental features are compensated for by restoring or creating environmental features that are of greater value to wildlife and people. Through moving towards an environmental net gain and offsetting approach local planning authorities will be able to target environmental

enhancements to areas of most need and give flexibility to developers in providing them.

CIEEM, CIRIA and IEMA have produced good practice guidance on biodiversity net gain for developers, along with a practical guide and case studies<sup>4</sup>.

Within each local plan area, there is a strategic need to identify the areas where off-setting could have the most benefit for biodiversity and to consider what habitat types and ecological features would provide the greatest value in a sustainable way. Essex already requires all planning applications to complete the 'Essex Biodiversity Validation Checklist'<sup>5</sup>, which also offers guidance on how to submit the appropriate level of information about biodiversity, and further evidence that may be required, when making a planning application. Further work is needed to develop this into an environmental net gain principle for Essex.

By working with Place Services and partners to create the methodology of the environmental net gain principle in line with the Government's proposals to address the key issues of:

Defining and understanding the difference between 'biodiversity' & 'environmental' net gains

Ensuring the net gains meet the National Planning Policy Framework requirements  
Establish a mechanism for net gains, biodiversity offsetting, and developer contribution

Developing local policies to promote environmental net gains

Provide net gains and good practice development principles.

Government is proposing, as part of the methodology, to assess potential development sites, to use habitat surveys to identify habitat condition along with any opportunities and constraints for enhancement as part of green infrastructure. Then using a standard biodiversity metric utilising biodiversity loss and gain figures, to inform the development design. This metric will be populated with habitat information from the site assessment and landscape plans to demonstrate at an early stage that harm has been avoided as far as possible (especially for protected sites) and that new green infrastructure will be of good environmental quality.

It could also help to estimate the costs of achieving net gain and establish a tariff rate for offsetting and compensation costs. If net gain cannot be achieved on site, the metric would provide the right information to discuss habitat enhancement or creation during pre-application negotiations.

As part of this methodology, Essex can use the green infrastructure asset map from the green infrastructure GIS mapping model produced by UEA, as part of the baseline and the functions and benefits analysis (discussed in 6.1 of Chapter 6), to assess the losses and gains of functions and benefits from the development proposals. This approach will enable decisions over whether or not a planning application is supported or to identify opportunities to avoid harm, mitigate and enhance environmental features on site. If net gains cannot be provided on site, the opportunities to provide compensatory offsetting either on site or towards other environmental habitat projects in line with local and national priorities should be explored and delivered.

The guidance documents below are available and recommended for planners, urban designers, developers and communities to use when submitting a planning

application in Essex, to minimise the adverse effects on the natural environment, people's health and wellbeing and how to deliver green infrastructure through good design;

The Essex Design Guide (EDG) has pioneered local design, creating space for innovation and encouraging high-quality development. The EDG aims to create distinctive places where people want to live, build communities and make sure that the infrastructure and facilities are in place at the right time. This includes the important role landscape and green spaces play in our lives and explores how to deliver beneficial landscapes and green infrastructure through good design.

Health Impact Assessment as part of Essex Planning Officers' Association (EPOA)  
Healthy places guidance notes

Guidance on how to prepare a Health Impact Assessment has been developed and sits as an Appendix to the EDG. Health Impact Assessments are gradually becoming part of both developers' and planners' toolkits to ensure that adequate attention is paid to the role green infrastructure plays in improving the long-term health of people.

The Essex Biodiversity Validation Checklist (as mentioned above).  
This checklist guidance can be further developed to promote and provide guidance on the environmental net gain principle methodology in Essex and how to embed the use of the methodology within the following plans:

Highways plans  
Local Development and Neighbourhood Plans  
Garden Communities and Villages proposals.

## **8.4 Improve, repurpose and create new multi-functional green infrastructure (IRC)**

### Coastal Green Infrastructure Protection (RAMS)

The Essex Coast Recreational disturbance Avoidance and Mitigation Strategy (RAMS) project aims to collect funds from the development of new homes in order to adequately protect Essex coastal important lowland habitats and national and international designation sites from recreational harm. New housing growth will bring in new residents to an area potentially increasing recreational pressure on sensitive sites including disturbing nesting birds. Developers within identified areas of risk are expected to make on-site provision for recreation within the development site as well as contributing a sum determined by the number of new dwellings to off-site measures used to mitigate the impacts of visitors to the sensitive coastal areas through site specific projects.

Off-site measures could include:  
re-routing paths or screening paths,  
signage,  
interpretation,  
awareness raising,



provision of new country parks and green spaces as part of the new development, staff resources (i.e. wardens) and creation of the coastline.

These measures are costed in the Essex Coast RAMS Strategy document and will be delivered by Local Planning Authorities and partners to coordinate the protection of important coastal nature conservation sites in Essex and other coastal green infrastructure.

#### Green spaces facilities improvement and creation

Most communities, even small rural ones, have at least one public park or green space and some other community facilities, such as a library, or community centre. Improving those facilities, especially green spaces can mean different things for different communities. For some, the issue may be that adequate parks and green spaces facilities simply don't exist and need to be created. Others might find themselves with community facilities and green spaces that are adequate in some ways but need to be revitalised. A less obvious situation is one in which green spaces and facilities are in good shape and seem to be adequate, but are not being used.

People are more likely to use green spaces and other green infrastructure, if they are well maintained. Once an under-used site is cleared of litter, graffiti and opened up through cutting back overgrown areas to become accessible, for example see figure 7 case study example of Oakwood Pond in Harlow, sites will improve in a number of ways, the most common of which will be the planting or introduction of new plants and trees, and the creation of new habitats. As sites became easier to access, more visible, better used and more widely owned by local communities, it will contribute to local people's sense of civic pride, encourage on-going involvement (i.e. volunteering and formation of 'Friends Of' groups) and reports of littering, vandalism and fly-tipping will decrease.

Improving our Country Parks, green spaces and other facilities often takes a community effort. In some cases, it may take volunteers and/or donated labour and materials. In others, it may take an initiative that encourages the community, or even the local government to make changes. It generally requires both through participatory process liaising with the Country Parks teams, Outdoor Pursuits Centres and partners to support new visitor centre improvements and facilities and explore extending the outdoor pursuits offer to increase access to these sites. Actual users are tremendously important, and if a Country Park for instance is going to be used by youths, seniors, and families, then ideally all these user groups should be represented in the planning, so that the park will speak to all their needs, as well as integrating them where feasible.

-

Nevertheless, improving and developing new visitor centre, facilities and/or expanding the experience on offer will require financial sustainability for their ongoing management and maintenance. Not only are funds needed to develop new facilities, but it takes money and effort to maintain it as well. It is, therefore, important that these new facilities and outdoor pursuits generate revenue. To achieve this will require liaison with those responsible for the green space management, to identify potential income generating facilities and relevant funding streams developing a

fiscal plan which can enable the new facilities to be created. The aim of the plan is first to raise the funds to plan, design, and build or restore the facility which may involve applying for grants, seeking donations from businesses and individuals, crowd funding and fundraising events.

Following this, a strategy for generating regular income over the life of the facility and to be able to invest in the development of new facilities would be developed. Chapter 10 (10.2. Funding) goes into more detail of the potential funding sources and opportunities that will be explored.

-

An idea to be investigated is the potential creation of a Green Discovery Park. The aim of the Park would be to demonstrate self-sustaining environmental best practice and to showcase this to a wider audience. The Park would showcase green infrastructure, solar energy, sustainable urban drainage systems and natural flood management techniques, climate resilient plants, waste and recycling and electric vehicle charging points. A sustainable multi-functional visitor centre would also provide an inspirational, interactive and educational experience. This will require working with wide range of partners such as Country Parks, Minerals and Waste Planners, Land Operations and other Partners to identify an appropriate location which could be a country park or a minerals and waste restoration site, and then to coordinate the delivery and implementation.

There are also opportunities through the creation or improvement of green infrastructure to strategically identify priority areas that could provide most benefit for locally native species of recognised nature conservation priority, such as great crested newts. To encourage better management of the green infrastructure and to take into consideration the mitigation of recreational and development disturbance to these areas. Where possible, the provision of new green infrastructure can act as a buffer or extend existing designated sites.

#### Case Study: Oakwood Pond, Harlow

Oakwood Pond and the surrounding wooded area in Harlow lie to the west of Princess Alexandra Hospital. The pond and surrounding area have a rich history, dating back as far as the 1100s as a stew pond for the Canons Brook monastery and later forming part of the grounds of Upper House in the 1700s. Unfortunately, over recent years, the area had been neglected, fallen into a state of disrepair and plagued with problems from unsociable behaviour. This coupled with the loss of the ponds spring water inlet led to sever silting, dropping water levels and loss of aquatic life. The woodland characterised by many mature trees and scrub, surrounding the pond had also become overgrown, with scrubs and weeds taking hold of the less trafficked areas. Many local people avoided it.

#### IMPACT OF IMPROVEMENTS

This project has revitalised a forgotten and dilapidated area of Harlow. It is now a much-improved and loved amenity for the local community. Providing flood alleviation, educational and recreational benefits to the local area and has enhanced the biodiversity of the site. The water quality has improved through the restoration of aquatic plants and reinstating the pond thereby creating a popular fishing facility for the local community. The pond and surrounding areas have become more inclusive

by ensuring disabled access and providing a safe space for the local community to use to walk, sit and reflect, fish and observe wildlife. Therefore, creating an identity for the area and foster a sense of place.

#### HOW WAS THE GREEN SPACE IMPROVED?

The pond and the surrounding area were transformed by a combination of efforts by Essex County Council, Harlow District Council and local volunteers who have helped to unearth this beautiful area once again. The improvements to the ponds involved;

Clearing the silt and reinstating entirely lost areas of the pond for local flooding prevention for homes downhill from the site.

Reintroducing the water supply to the pond by reconnecting the spring water source.

Introducing and creating a diverse range of water, vegetation- and wood-based habitats to add to the biodiversity and filter the incoming water supply.

Clearing scrub, brambles and excess trees which opened up the area.

Installation of a new accessible fishing platform, paths, boardwalk, benches and interpretation panels around the pond. Creation of disabled access points and circular routes.

All improved access for the local community to and through the site to the town centre and the hospital and the general environment for both wildlife and local people.

#### Public realm green infrastructure improvements

Further opportunities to enhance and improve green infrastructure and create a sense of place is within the public realm. By reviewing the highways policies and maintenance plans along with developing and coordinating cycling and walking strategies, opportunities to increase access to green spaces, secure environmental net gain and to improve sustainable transport connections between green spaces should be pursued thereby aiding the reduction of air pollution. Measures could include (but not exhaustive)

More street and urban planting (i.e. trees, hedges, green walls and roofs),

Street furniture (i.e. benches, signage), whilst not contributing to cluttering of an area

Incorporating natural flood management techniques and Sustainable Urban Drainage Systems (SuDs) for storm water management,

Soft landscaping with a variety and quality of other habitat types that are both viable and appropriate, to create an overall lush green aesthetic and provide significant wildlife habitat and other ecosystem services,

Creating accessible and attractive routes making it easier to walk and cycle with better links to new developments, town centres, rural communities and green spaces,

Manage the greenways to provide a quality, cross boundary multi-functional green corridor to benefit people and wildlife,

(excluding private owned land), like the Paris Scheme in figure 8.

Better connecting public transport with green spaces (i.e. situating new bus stops next to open space entrances and interconnecting multi- user greenways between green infrastructure),

Explore opportunities to work with key landowners to increase benefits from publicly accessible land.

Undertake research into the environmental impacts from our maintenance work to adjust our practices for ecological benefits where possible.

Explore and implement an Essex Green Permit scheme to actively engage people to adopt, green up and manage land within the public realm

Highway authorities are responsible for the construction and maintenance of non-trunk roads, cycle ways, Public Rights of Way, street lighting, bridges and structures and other highway assets. It is therefore important that in the delivery of capital and maintenance programmes, increases resilience to extreme weather and flooding and should be part of the green infrastructure network where this is cost effective. By working with Essex Highways, Flood and Water Management and Health partners to identify funding to create a pilot green infrastructure project to take a strategic approach to plan and deliver natural flood management and SuDS schemes within the public realm - such as permeable surfaces, swales, wetlands and ponds (see 8.5 for Natural Flood Management) and to support people to lead healthier lives.

#### Case Study: “Vegetalisons Paris!” The Greening Permit of Paris

The aim is to create urban gardens, green roofs, mini orchards, keyhole gardens, living walls, and other green spaces adding up to a total of 100 hectares of new greenery by 2020.

By greening the area and making streets more attractive and biodiverse, the initiative builds community and sense of place. It gives people a role in public space, enhancing a sense of ownership and pride.

Paris has turned to its citizens with an invitation to green up their city to address air pollution and inadequate green space.

Locals are encouraged to be “gardeners of the Parisian public space”. Upon receiving a 3-year permit (that can be renewed), gardeners receive a starter pack of seeds and materials and can be creative, as long as they use sustainable methods, avoiding pesticides and promoting biodiversity in the city

Since 2015 achievements include:

1,227 projects realised

30 additional hectares of accessible green space

100 hectares of vegetation on walls and roofs, one third of which is dedicated to urban agriculture

20,000 new trees planted

Renovation of parks and gardens

#### Create green infrastructure as part of new developments

Green infrastructure provision in new developments can be varied and can include informal space, footpaths, bridleways, cycleways, SuDS, natural habitats, gardens and street trees. Whilst quality green infrastructure such as pedestrian and cycle routes contribute to the attractiveness of a development, particularly where sustainable transport routes are well linked to wider networks. The integration of green infrastructure into new developments closely reflects the principles of sustainable development identified in national planning policy. Local planning policies, therefore, will play an integral role in the delivery of quality green infrastructure through new development with best practice guidance on its design and management for multiple benefits.

Local Plans and policies can provide detail on the vision and standards for green infrastructure in terms of quantity and quality, the protection and improvement to existing, and the provision of new green infrastructure, to ensure it can be factored in from the beginning of all development proposals. The following planning documents have opportunities to embed green infrastructure planning within their plans:

Strategic Development Plans can identify the strategic project areas which can embed the wider concept of green infrastructure and networks and designate and protect strategic routes for active travel.

Local Plans set out the spatial strategy which can identify detailed locations of green infrastructure, identify areas where actions could strengthen the green infrastructure network and links, and policies that support the incorporation of green infrastructure in the design of a new place or regeneration of an existing area.

Supplementary Planning Documents and Guidance support the Local Plan and can set out more detailed design principles for place-making and the ways in which green infrastructure can be included in the design of a new place and provide a guide to the delivery of high-quality, well managed green infrastructure network.

Masterplans for larger development sites, provide designs for specific spaces within a site and seek multifunctional benefits which can be served with green infrastructure and may identify likely management costs at the outset and potential designing solutions to suit the budget.

All the Local Plans are being reviewed regarding their policies on green infrastructure in line with the NPPF. These plans are being encouraged to not only provide biodiversity net gains and offsetting but to expand this approach to include wider environmental natural capital benefits, such as flood protection, recreation and improved air quality within development proposals designs. Through the application of biodiversity net gain and off-setting and the creation of compensation habitat, planning policy can secure multi-functional green spaces within and beyond development site boundaries.

The following plans will also continue to be reviewed as and when required to improve and develop their green infrastructure policies and guidance:

Neighbourhood Plans

Essex Design Guide

Highways Plans

Garden Communities and villages proposals

Health Impact Assessment

Walking Strategy

Cycling Action Plan

Cycling and Walking Improvement Plans

Rights of Way Improvement Plans.

#### Minerals and Waste Green Infrastructure Restoration

Mineral and waste development can have a long-term impact on the character of an area but is only a temporary operation. Once the minerals have been extracted or the landfill filled, the land must be 'restored' to an appropriate after-use. In some cases, this can involve restoring the land to its previous use, but restoration of minerals and waste workings can provide significant opportunities for habitat creation, climate change mitigation and recreation through green infrastructure.

The key to planning and managing green infrastructure in minerals and waste restoration is to consider the site in its context. This includes considering the features of the site and the networks of habitats, sustainable transport routes and water courses that surround it, which could be safeguarded or enhanced. Then identify the strategic green infrastructure needs and corridors required to deliver green infrastructure functions and benefits linking to off-site green infrastructure and strengthening the green infrastructure network. With an agreement on the proposed long-term maintenance of the green infrastructure. This will require liaising with the Minerals and Waste Planners to consult on the use of green infrastructure within restoration programmes and during the delivery of the restoration to minerals and waste sites, such as Pitsea Landfill to ensure maximum green infrastructure value is being realised, consideration of nature conservation priorities and the potential to explore the opportunity for a Green Discovery Park. There is significant opportunity to further embed green infrastructure into policy and guidance on mineral and waste restoration and if this opportunity is to be fully embraced, will require providing green infrastructure training for Minerals and Waste Planners and other partners (such as Flood and Water management and Spatial Planners).

## **8.5 Natural Flood Management**

Essex is predicted to experience an increase in winter flooding events and summer droughts through climate change. Green infrastructure provides significant opportunities to deliver space for water and natural options for water resource and flood management. Sustainable Drainage Systems (SuDS) are the preferred approach to managing surface water. There are many different SuDS features available to suit the constraints of a site. These include green roofs, permeable paving, ponds, wetlands and shallow ditches called swales. The main purpose of sustainable drainage systems is to mimic the natural drainage conditions of a site before development. This is achieved by capturing water and allowing as much as possible to evaporate or soak into the ground close to where it originated at a controlled rate that does not increase flood risk.

Delivery of strategic flooding solutions through SuDS, incorporating more natural flood management techniques could provide clear opportunities to deliver benefits including creation and restoration of wetland habitat. This will entail further work and liaison with Essex Highways and the Flood Water Management teams to seek funding for the provision of green infrastructure and SuDS using natural flood management techniques providing multiple functions and benefits.

Natural flood management involves techniques that aim to work with natural features and characteristics to manage the sources and pathways of flood waters, rather than through engineered process. Techniques could include for example<sup>7</sup>:

The creation of water gardens

Green roofs and walls

Bio retention areas

Coastal and estuary management (i.e. saltmarshes,

Woodland creations and leaky dams

Using green infrastructure as part of the natural flood management solutions rather than hard landscaping and grey infrastructure of piping to attenuate flood provides savings on the cost of hard infrastructure solutions and multiple benefits can be reaped from the same green infrastructure. Essex has been exploring the implementation of natural flood management solutions and in the first project of its kind in Essex, a series of 'leaky dams' have been built into a Thaxted watercourse in Uttlesford and Kingsmoor area of Harlow to help reduce the risk of surface water flooding to a number of local properties whilst improving wildlife habitats. The leaky dams in figure 9 are an excellent example of financial and sustainable land management, with conservation of an important ancient woodland helping to deliver innovative flood alleviation measures.

#### Case Study: Thaxted, Uttlesford & Kingsmoor, Harlow

Felled trees and other woody debris were pinned into the river bank allowing water to flow freely when levels are normal. In times of flooding, the flow of water is slowed, reducing pressure on the dam by still allowing water through. Leaky dams also prevent flood water from washing away soil and silt from eroded river banks. An earth bund was created in a playing field directly upstream of the residential area in Kingsmoor to provide larger floodwater storage. Over time the leaky dams will improve local biodiversity by creating new and diverse habitats and restoring pond flora and fauna, such as newts. Kingsmoor scheme in October 2018 won 'Small Project of the Year' at the British Construction Industry Awards.

Place Services worked in partnership with Essex County Council's Floods Services, Harlow District Council, the Environment Agency and Thames Water to devise and construct the leaky dams and pond de-silting works within local woods. The dams were constructed by hand from logs sourced directly from the wood (or for Thaxted, felled trees were extracted from Garnetts Wood, Dunmow) as part of its ongoing management plan. The felled timber and woody debris were sustainably harvested as part of Place Services' Essex Woodland Project. These were moved across the woodlands and into position using heavy horses (known as Suffolk Punch) traditional to logging to minimise the impact on the trees and local wildlife and negate the need for heavy machinery.

Properties in both these areas were prone to surface water flooding and roads were often cut off. Through investigation of the areas a proposed scheme to reduce local flood risk was put forward. However, the woodland areas of these sites were ancient woodlands and in the case of Parndon and Risden Woods were SSSIs so it was essential that the proposals minimised ecological impacts.

### **8.6 Connect people and wildlife to green infrastructure through active travel (CPW)**

To ensure that access to green spaces is as easy as possible for all and to improve the character and sense of place, it is essential that greater connection with public realm, developments and transport planning is established. An analysis undertaken by UEA to map the provision of green infrastructure using the Natural England, the Accessible Natural Greenspace Standard (ANGSt)<sup>8</sup> found most areas have

sufficient natural and semi-natural green space, parks and gardens, except for Rochford, Tendering and Thurrock, which supports the findings in the Essex Growth Infrastructure Framework (2017)<sup>9</sup>. In some areas the percentage of accessible green spaces was low due to deficiency of green spaces in the first place. However, in many instances the provision of green spaces may appear sufficient, but they remain inaccessible or access may be limited. Rural communities were identified as being particularly affected by lack of access despite being in close proximity to more natural areas (ECC, 2017) (EWT, 2009).

Some areas may not always be well served due to settlement evolution and the presence of barriers to access, such as roads and people's perception of accessibility and its inclusivity. Certain groups in society that are particularly vulnerable to social exclusion<sup>10</sup> found specific barriers to access a green space were the cost to travel and any fees on site, fear for their safety, fear of segregation, accessibility due to lack of facilities and that they would not be welcome to use the site. These issues are particularly relevant to many parts of Essex. (More details on the ANGSt provision and inclusivity review in Essex in Appendix 9).

The needs of a wide range of users will be considered when planning improvements to greenways, travel routes, green spaces and public realm to encourage more people to connect with nature and foster a sense of place. Assessing whether there are enough benches, level paths, good signposting, clear sightlines and good maintenance all will help to make areas more attractive and welcoming places, encouraging more use by a wide range of different people.

Through placemaking public realm initiatives, such as planting street trees, hedges and verges will not only reduce air pollution, but act as a green corridor and greenway connecting people and wildlife. Along with improvements to existing green infrastructure assets, including improved connectivity with the Public Rights of Way and cycle network. These will provide a wide range of opportunities to explore the outdoors in both urban and rural areas and encourage the take-up of active travel with a shift towards walking and cycling for everyday travel.

There are ten Public Rights of Way routes in Essex (i.e. Essex Way, Flich Way) that are promoted along with certain cycle networks. More active use of these routes could be encouraged through opportunities to add to and improve them, as well as the wider Rights of way and cycling network, working with Highway Authorities, Country Parks, Active Essex, Local Health and Wellbeing teams, Parish Councils, District, City and Borough Councils and Village/ Community groups and other key Partners through:

targeted physical improvements and restoration to routes that can also be promoted for local and visitor use, including the development of the coast path in Essex, provide and promote circular routes around towns and villages,  
Seek sponsorship for a pilot circular walk(s) competition,  
Utilising the UEA green Infrastructure GIS mapping model to identify new routes which provide multiple functions and benefits by inter connecting paths between green infrastructure,  
manage existing and new greenways to benefit people and wildlife providing environment net gains;  
targeted promotion,



improved signage,  
improve entrances and pathways to and within sites for multi- users, and  
Open the first sections of the coast path in Essex, including improved access using links to sustainable transport  
Seek and utilising innovative funds such as Coastal Communities Fund to create, connect, improve and promote these paths and other greenways (See Chapter 10 10.2 Funding for more detail on funding sources).

### 8.7 Delivering environmental therapies and activities (ETA)

The evidence strongly suggests that high quality green spaces can help reduce health and social inequalities and can be a cost-effective way of addressing many social and wellbeing needs. Improving access and raising awareness of the green spaces, facilities and activities available has a role to play in encouraging people to incorporate more green exercise and nature contact into daily routines helping to improve wellbeing and social inclusion through nature-based solutions. As a result, high quality green space and nature-based solutions could be used to a greater extent as a treatment for mental and physical health through referrals to environmental therapy such as green exercise programme run by Active Essex and High Woods Big Garden in Colchester. There is, therefore, a need to continue to create opportunities for community participation and volunteering to actively engage and benefit people, especially those that ordinarily face barriers to visiting green spaces.

Through liaising with Public Health to assess health deficiency areas and coordinating work with Active Essex on their projects will help identify green physical activities utilising green spaces to encourage more people to be active. Whilst also working with:

Mental Health Agencies,  
Wider health partners,  
District/Borough and City Health and Wellbeing Boards,  
Country Parks,  
Outdoor Pursuit,  
Active Essex partners,  
Wildlife Trusts,  
Community voluntary sector, and  
Educational and children's services

To help build upon existing and develop, promote and deliver environmental therapy activities and programmes to a wide audience.

It will require targeted marketing and promotion of events including conservation activities, environmental therapy and green exercise such as those listed below to be carried out as part of the marketing strategy in

health walks,  
green gyms,  
eco-therapies,  
mountain biking and  
geocaching.

It is important to find a way of making the natural environment relevant and of interest to people, especially those who had little in the way of a track record of engaging with it. By providing opportunities for people to take part and enjoy activities through the provision of new green spaces and improving existing accessible green infrastructure for the benefit of nature. If these green spaces provide what local people want, they will be better used and offer a far better return on investment. Our green infrastructure should, therefore, be secure, accessible, inclusive, connected, easy to maintain and incorporate the highest quality design. For this to be achieved will require working with a wide range of stakeholders within the public, private and third sectors, including the local communities. There are opportunities to tighten working procedures with the planning authorities and other key sectors to improve our green infrastructure network.

## **Chapter 9**

### **Implementation of the Green Infrastructure Strategy by Sector**

It is the intention of this strategy to embed green infrastructure requirements within new development and for green infrastructure to become an integral part of the day-to-day considerations in other key sectors and services to ensure that future planning and design is coherent, structured and focused.

In that green Infrastructure strategic directions over the long-term looks to advance the case for green infrastructure and its importance to the future planning, design and place making across Essex.

There is the potential to deliver green infrastructure through a wide range of actions and projects including new development and effective land management practices. Although, the development and planning system will have a key role to play, the following sectors also have the potential to make a significant contribution to protect, improve, create and sustain our green infrastructure:

- Housing
- Minerals and Waste
- Highways and Transport
- Flood and coastal Management
- Energy
- Health
- Education
- Agriculture

The challenge for Essex is twofold: firstly, to ensure that green infrastructure is planned, designed, implemented and managed in the same coherent, integrated and strategic way as transport, telecommunications, energy and grey infrastructure; and, secondly, to bring the multifunctional benefits of green infrastructure to our communities and workplaces.

The main opportunities to plan, deliver and manage green infrastructure in Essex will be from integrating green infrastructure priorities and principles into other proposals and decision-making processes. These include:

- New developments such as housing and employment related developments
- Land management initiatives such as woodland grant schemes
- Minerals extraction and restoration

Infrastructure developments such as highways, transport, renewable energy and flood management related projects

This is by no means an exhaustive list but outlines the main opportunities likely to come forward. Which is best achieved by integrating with existing processes rather than by creating new ones and through strong partnership working to identify and drive forward more opportunities.

## 9.1 Planning

The planning system is one of the most important means of delivering green infrastructure. It can ensure that development respects, enhances and expands the existing green infrastructure network. While the quality of green infrastructure has the potential to improve and enhance most developments and it should be a key consideration for any other sector such as highways and utilities. Especially since, Essex expects to face a continued period of steady growth and if this growth is to be positive and sustainable it is important that the planning is guided by a parallel emphasis on green infrastructure. Green infrastructure therefore, should also be thought about at every scale of planning, from the strategic framework (allowing cross boundary issues to be considered) right down through the city, towns and villages and within streets to the individual home.

The role of the planning system could be influenced to improve the benefits of green spaces and green infrastructure through:

Continued assessment of green space and green infrastructure policies sections in Local Development Plans, Neighbourhood Plans and supporting planning documents, including a sound evidence base.

Reviewing, updating and signposting to the Essex Design Guide, and the ECC Developer's Guide to Infrastructure Contributions, and LPA guidance for Planning Obligations.

The role of the existing green infrastructure strategies and projects in Essex including Thames Chase Community Forest, South Essex Green Infrastructure strategy, the Green Arc, the Eastern Claylands Treescape project (Woodland Trust), etc.

Implementing the assessment of Access to Natural Green space standard (ANGSt) to ensure appropriate provision of green spaces.

Providing advice on taking green infrastructure proposals forward through special planning and practical delivery.

Embed the environment-net gain principle.

The following planning principles can help protect and improve our existing and create new infrastructure:

Development is directed to the most sustainable and least sensitive locations  
Planning and design of green infrastructure results in a coherent, meaningful and practical network of open green spaces.

Combine green and grey infrastructure through planning the integration and coordination of urban green spaces with other infrastructure, such as highways and

utilities. Which facilitates the establishment of a well-designed and maintainable public realm.

Greater awareness is achieved of the important contribution in responding to the impacts from climate change.

Create connectivity to ensure there are good links between urban, rural areas and green infrastructure widening the green infrastructure network.

Deliver and enhance multifunctionality to provide multiple benefits (i.e. recreation, flood management), creating synergies, while reducing conflicts and trade-offs.

Deliver social inclusive processes that are open to all and incorporate the knowledge and needs of diverse parties. That results in safe and accessible green spaces designed to respond to changing population needs

Green infrastructure is at the heart of decision making at every stage in the planning and design process for all developments from the outset.

Consideration for strategic planning and development management policies and decisions should seek to achieve the recommendations set out in Appendix 10 (10.1) as a matter of good practice, or mitigation.

### 9.1.1 Supporting Large and Small Developments

Local Plans have identified the need for housing and employment growth in Essex to be delivered through small and large developments, including new 'Garden Community' settlements. The allocation and delivery of these sites is strictly regulated through the planning process under NPPF and local planning policy. If high quality, sustainable and multifunctional green infrastructure is considered early in the design process and master planning of development sites it will not only provide enjoyable and healthy environments for its future residents/ employees but can improve developers financial return. For example:

it can make construction easier and more cost effective,  
high returns on properties,

financial saving from the fact that one green infrastructure solution on a single piece of land can provide multiple benefits, such as flood attenuation through SuDs, biodiversity enhancement, public open spaces, etc.,

It can reduce the costs of installing conventional grey infrastructure structures such as pipes and tanks for flood management - whilst still providing for other priorities on the site.

stimulating business growth and improving quality of life and health and well-being of its residents, and

It closely reflects the principles of sustainable development identified in the NPPF. Where green infrastructure has been considered as aspect of the design, planning permission may be granted with fewer conditions.

Green infrastructure can be incorporated on any scale and should be integral to planning the layout and design of new buildings and developments from the outset, the important aspect is determining the right design. It is a common perception that requirements for development sites to protect and enhance biodiversity, protect local landscapes, provide for informal recreation and facilitate sustainable drainage are separate issues, each incurring additional costs.

Providing these functions does not mean “doubling up” the costs. By combining these issues together and using a multi-functional approach, developers can reduce their costs, whilst at the same time delivering a high-quality development that is a key contributor to placemaking and the enhancement of local distinctiveness. Placemaking is central to enhancing the environmental and economic quality of Essex, and perceptions of the area among investors, potential employees and visitors.

There are some general principles which, if carefully followed, could increase the viability of green infrastructure:

Early assessment of existing green infrastructure on a site and incorporation of green infrastructure into master planning is crucial and can avoid costs of retrofitting at a later stage. It should be considered how these assets can provide various green infrastructure functions and deliver integrated benefits on the development site, including SuDs, off road walking and cycling routes and biodiversity enhancements. Alternatives to traditional infrastructure and design should be investigated.

Understanding what types of green infrastructure are specifically required for an individual site and its context helps to avoid either over- or under-provision of green infrastructure.

The location and design of new development should be based on an understanding of what green infrastructure is already there – such an approach can provide an opportunity to strengthen networks of green infrastructure or improve the quality of individual elements.

Identification of green corridors required to deliver green infrastructure functions, ensuring that on site green infrastructure links to off-site green infrastructure and that that networks benefits are strengthened.

Design of site to incorporate identified green corridors and enhancement opportunities within the built environment, including urban greening such as green roofs and street trees, and the inclusion of in-fabric opportunities for nesting birds and bats.

Long-term management of green infrastructure also needs to be considered at an early stage in planning for development to ensure it is taken into account in the viability assessment of the site. This includes consideration by local planning authority and the developers during the planning process on how the green infrastructure will be funded and managed in perpetuity.

Timely engagement with bodies responsible for various elements of green infrastructure can help to address some of the issues and identify the opportunities to incorporate wider green infrastructure networks on the site

Viability assessments also need to consider all the multi-functional characteristics of green infrastructure. For example, a new road introduced on a site will have to deal with run-off, and therefore a sustainable drainage scheme will be introduced as part of this. The sustainable drainage could benefit habitat enhancement through planting road verges with biodiversity-rich grasses.

New developments should increase biodiversity and implement an environmental net gain principle within the design of all green and blue infrastructure, utilising locally native species or those with a proven value to wildlife wherever possible. Careful design of green space can also reduce the cost of ongoing management, by focussing on low nutrient status habitats that have a greater benefit for biodiversity.

When new places are planned, the quantity, quality, accessibility and distribution of green infrastructure should be carefully considered.

Care should be taken to avoid costing various green infrastructure assets multiple times for each individual function they fulfil. For example, if a green corridor on a single piece of open land delivers benefits to flood risk management, biodiversity enhancements, landscape, etc. this can all be delivered through the same investment. (Worcestershire County Council, 2015).

Green infrastructure should be monitored and evaluated to see whether it is providing the benefits intended.

There are a significant number of proposed development sites in Essex, mapped in Figure 5 of Appendix 11. Integrating green infrastructure into the development of these sites offers significant opportunities for green infrastructure delivery in the county. Local planning authorities through their Local Development Plans, Supplementary Planning Documents, green infrastructure strategies or equivalent and the Essex Design Guide set out what they expect in terms of the quantity and quality of green infrastructure in new developments so that the cost of providing it can be factored into the price that the developer pays for the land. Other consideration for strategic planning and development management policies and decisions should seek to achieve the recommendations set out in Appendix 10 (10.1.1) as a matter of good practice, or mitigation.

### 9.1.2 Green Infrastructure in Cities, Towns and Villages

One of the key issues facing Essex is the relationship between its urban environment, settlements and with the wider natural and man-made landscape. For the larger settlements, such as Southend-on-Sea, Thurrock, Colchester, Chelmsford and Basildon issues to do with the boundary between settlements and the wider landscape have become important. Outside of these settlements, the majority of Essex is rural although there are towns and a number of rural villages and hamlets throughout the County. As population increases there is a need for developments to utilise every space better. Green infrastructure is widely known as a sustainable and cost-effective way of managing key environmental issues in our settlements. Therefore, more imaginative use and adaptation of space within the layers of existing city, towns and villages with green infrastructure to cater for the present and future needs of society will be necessary.

Reviews of existing spaces and green infrastructure within our settlements creates the potential to improve the overall sustainability and performance of places;

to make them more resilient to the effects of climate change;

to renew tired and single function open space; and

to provide for a wider range of uses with multiple benefits for people and wildlife, enhancing the quality of life and overall sustainability performance of communities in the future.

There are also important opportunities to re-establish missing links and to create new linkages in the surrounding areas to enhance and develop the existing green

infrastructure networks in our towns, city and villages. Especially, in some settlements and surrounding areas the rights of way network are fragmented. Creating multi-user greenways and/or links to Green spaces and green infrastructure is vital, therefore, gaps in the rights of way and other routes within the greenways network around towns and villages should be targeted to create good local access to green spaces, the countryside and coast and explore the potential for circular routes. There is a need to take into consideration the opportunities presented within the Walking strategy, Cycling and Walking Improvement Plans and Cycling Action Plans.

There may also be significant possibilities for green infrastructure within areas of former industrial or brownfield land, or areas proposed for re-development or neighbourhood renewal, recognising the high biodiversity value that such habitats can develop in some situations. At a domestic level retro-fitting green spaces around housing which have been lost to driveways (e.g. through permeable paving) can help alleviate local flood risks. In fact, size doesn't matter – green infrastructure can be introduced on any site, even if it's a small rain garden, or a green roof on an outbuilding.

As shown in the case study in figure 10, where the internal courtyards within the Essex Cardiothoracic Centre at Basildon University Hospital has been redesigned and refurbished as a rain garden. Any action to slow down rainwater or introduce biodiversity can reduce pressure on over stretched traditional systems such as our drainage network and generate an opportunity for nature.

Nevertheless, there are parts of our cities and towns that need to remain grey for their primary function like seawalls, pavements and bridges. These grey infrastructure features can also be “greened” to improve their economic, social and ecological value through for instance:

Green bridges

Enhancing railway embankments for wildlife

Installing green screens along guard rails and around schools

Green railway walls

Green roofs / roof gardens

Green walls

Sustainable drainage systems (NERC, 2017)

Green infrastructure must not be seen in isolation from ‘grey’ infrastructure, but as a means to improve its performance and benefits (NENW, 2009).

The recommendations in Appendix 10 (10.1.3) summaries what planners, landscape architects, developers and others involved in shaping our built and green environments should consider as a matter of good practice.

#### Case Study: Sponge 2020 – Hospital Rehabilitation Rain Garden

Basildon University Hospital is located in a Critical Drainage Area within South Essex, an area within the top 10 at risk from pluvial flooding nationally. In order to increase the resilience to surface water flooding Basildon and Thurrock University Hospital worked with Essex County Council and other stakeholders to retrofit Sustainable Drainage Systems (SuDS) in the hospital as part of the EU Interreg 2

Seas project Sponge 2020, which is part-financed by the European Regional Development Fund.

Through the installation of SuDS allows areas to be adapted to slow down the rate of water entering conventional drainage systems and reducing the flood risk. However, by incorporating more natural flood management techniques through the use of green infrastructure within the design and delivery of SuDS enabled the creation of a rain garden on the grounds of the hospital. This rain garden provides multiple functions and benefits of not only alleviating flooding, but a place for staff, visitors and patients to enjoy and relax, improve recovery rates, promote nature and adapt to climate change.

This project provides a great example of how green infrastructure can be implemented alongside other infrastructure such as SuDS and demonstrates:

Adaptation of critical infrastructure to utilise existing space to improve the overall sustainability and performance of a place to provide a wider range of uses with multiple benefits for people and wildlife.

Retrofitting of SuDs and green infrastructure in an urban environment.

Size doesn't matter – green infrastructure can be introduced on any site to alleviate flooding and encourage biodiversity.

Co-benefits and dual functionality of SuDs.

### 9.1.3 Mineral Extraction and Waste Restoration

Mineral and waste development and mineral extraction are a temporary operation; however, it can have a long-term impact on the character of an area. Once the extraction or waste operations have been completed, the land needs to be restored to an appropriate after-use - either to its former use or an alternative use. Site restoration provides opportunities for a range of benefits, including:

enhanced biodiversity through the provision of new and restored habitats and habitat linkages enabling species to migrate, disperse and colonise, and supporting and consolidating important designated sites;

reduced flood risk to communities, together with improvements to water quality and the ecological function of watercourses;

restoration and enhancement of landscape character;

of productive agricultural land and forestry;

provision of informal and formal recreational and sports facilities.

Historically most end-use of restored mineral and waste sites would include agriculture, open water or recreation. However, an increasing proportion of mineral workings and some ancillary waste sites (i.e. landfilling) are now being restored to amenity use and habitats of high nature conservation value. They also provide valuable opportunities for linking to habitats and features in adjacent or surrounding areas. Due to their scale and the significance of landscape and habitat change often involved with these sites, there is usually opportunity to integrate the delivery of green infrastructure assets into restoration schemes.



Such a method can help to provide a sustainable approach to mineral extraction and restoration and helps to support and offset impacts relating to climate change. Although mineral sites offer the greatest opportunities due to the large expanse of land areas such developments cover, smaller waste uses can also provide significant opportunities for mitigation and connection between sites, even if they are permanent development.

When planning and managing green infrastructure in minerals extraction, waste operations and their restoration it is important to consider the site in its context. This includes considering the features of the site and the networks of habitats, sustainable transport routes and water courses that surround it. Restoration of mineral and waste sites offers unique opportunities for the creation of high-quality green infrastructure, especially where they are located in close proximity to communities.

Essex County Council is the Minerals and Waste Planning Authority (MWPA) for Essex, while Thurrock Council and Southend-on-Sea Borough Council are the respective MWPAs for their administrative areas. The MWPA has a statutory responsibility to plan for future minerals supply and waste management and determines mineral and waste planning applications. Each have produced a Waste Local Plan and Minerals Local Plan that sets out strategy, policies and locations for this development. ECC's vision is to make the Essex Minerals Local Plan a national exemplar for sustainable development.

The Essex Minerals Local Plan will deliver significant long-term benefits for wildlife and people, transforming intensive agricultural land to wildlife-rich habitats through positive planning of minerals development. It expects all minerals developments to achieve a net gain in biodiversity and contribute to the enhancement of priority habitats and the local ecological network. It specifically seeks the creation of 200 ha of 6 Priority Habitats at 5 Flagship Schemes as shown in table 3.

A3-A7 Bradwell, Rivenhall  
50 ha (A3-5 'preferred sites': 28ha; A6-7 'reserve sites': 22 ha)  
A9 Broadfield Farm, Rayne  
50 ha  
A46 Colemans Farm  
20 ha  
A31 Maldon Road, Birch  
23 ha  
A20 Sunnymead, Alresford  
50 ha

Careful consideration of the environmental impacts of the minerals and waste development will be necessary as part of a planning application with proportionate levels of mitigation to be established. Especially with the final restoration and long-term aftercare to be beneficial to the Green Belt, biodiversity and habitat creation. ECC as MWPA prepared a Mineral Site Restoration for Biodiversity Supplementary Planning Guidance as a tool to provide guidance to developers on mineral site restoration and after use that aids the delivery of green infrastructure 11. Further

recommendations for planners and developers should consider are set out in Appendix 10 (10.1.3).

## 9.2 Highways

There are over 5,000 miles of roads within the public realm in Essex, together with a footway network of 4,000 miles (including footways shared with cycleways), and 4,000 miles of public rights of way. Essex County Council maintains this vast network and ensures that people and goods in Essex move safely and seamlessly. While the two unitary authorities, Southend-on-Sea Borough Council and Thurrock Council are responsible for the roads within their administrative area. Our transport network is essential to economic growth but also contributes to poor air quality through the vehicles using our roads. It impacts on biodiversity through ecosystem destruction and fragmentation, thereby negatively impacting ecosystem services. Our transport network has a huge impact on our environment and our quality of life.

However, green infrastructure can help mitigate against these issues and also enhance the value of the network by providing other functions such as:

Integration of transport and green infrastructure may enhance scenic value and connectivity resulting in increased benefits from leisure and tourism. Intelligent use of green infrastructure and appropriate planting in street and roadside design can be incorporated as a traffic calming measure which also help soften the street scene by creating visual interest, improving the microclimate and providing valuable wildlife habitats.

Highway green infrastructure such as road verges, roundabout centres, tree belts and other green spaces such as ditches and mowed grassland can make a major contribution to people's everyday experience of green spaces. Maintenance of some of the green infrastructure assets, e.g. verges, can be done by local residents, increasing the sense of ownership among the community and reducing maintenance costs for the councils (as shown in the "Végétalisons Paris!" ... case study in chapter 8, figure 8).

Moreover, providing people with high quality and attractive alternative to car use and public transport for short trips to work, school and other destinations relieves the pressure on the road network and has proven health benefits.

There are many areas of green space along the highway network and other linear routes that are not necessarily accessible but are nevertheless of visual importance. In some cases, these play an important role in creating visual separation between roads, housing and the surrounding countryside, as well as providing habitat value. Road and railway verges and waterway banks form important wildlife corridors and play a key part in the tourism appeal of the landscape for many recreational activities. Combining green infrastructure with permeable pavements may further reduce storm management costs and environmental pollution. Green walls or green embankments along infrastructure function as noise barriers, reduce air pollution through particulate filtering (Trinomics, 2018).

The planting of hedges has the greatest effect when safeguarding residents from car borne pollution. Roadside hedges could also be planted in “bio retention areas” which absorb the highway water as a SuDS feature, thus alleviating two important issues for our towns and cities, pollution and urban flooding. Hedges are also flexible in that they can be planted in troughs where underground services restrict tree planting. Furthermore, with good design, hedge trough can also accommodate seating, bins, cycle racks etc. Where there are large buildings close to the road, low hedges are far more effective than taller trees in reducing the impact of pollution from vehicles.

Roads also impact on the local connectivity and accessibility of the landscape severing links between places. Improvements to the connectivity and accessibility of existing green infrastructure and creation of new green infrastructure can be highly influenced by Highways. It is important to consider the user hierarchy when considering how people access green spaces. This is a well-established concept which places the most vulnerable road users at the top, pedestrians and people with disabilities, followed by cyclists, public transport and motorised transport as shown in figure 11. The objective is not to give priority for pedestrians and cyclists in every situation, but to ensure that the needs of vulnerable road users are considered first.

There is a possibility of reconnecting green spaces fragmented by the road network through the creation of green bridges that cross over the road linked with new pathway connections to carry people over (RiverLab, 2018). Land Use Consultants on behalf of Natural England undertook a study on the benefits of green bridges and found that they could become an important part of the sustainability of future transport projects by:

- creating a safe crossing point for wildlife movement
- joining up habitats and connecting colonies, as they are also used by wildlife as a home in their own right
- creating a crossing point for people and benefit pollinators
- integrating roads and railways into the surrounding landscape (NE, 2015).

Providing better connection between and improving access to green infrastructure assets including greenways is in support of a number of Highway Authority’s strategies and plans, such as the Local Transport Plan, Essex Cycling Strategy, Essex Sustainable Modes of Travel Strategy, Essex Rights of Way Improvement Plan, and Local Cycling and Walking Infrastructure Plans.

Further recommendations that the Transport Authorities, planners, developers and other partners should consider can be found in Appendix 10.2.

### 9.2.1 Greenways

Essex green infrastructure network can be used as a viable and sustainable transport option. In support of the Health and Wellbeing and Transport authorities promotion of active travel through walking and cycling. Greenway routes can be creatively designed to encourage leisure use, a method for accessing recreational activities, as well as providing commuting routes to work and school.

Our green infrastructure will be seen not just as destination but also as an attractive through route that links places and communities. This can provide significant incentives to encourage increased walking and cycling as a result of the high-quality journey as the route passes through diverse natural environments.

There are over 5,000 miles of roads within the public realm in Essex, together with a footway network of 4,000 miles (including footways shared with cycleways), and 4,000 miles of public rights of way. Essex County Council maintains this vast network and ensures that people and goods in Essex move safely and seamlessly. While the two unitary authorities, Southend-on-Sea Borough Council and Thurrock Council are responsible for the roads within their administrative area. Our transport network is essential to economic growth but also contributes to poor air quality through the vehicles using our roads. It impacts on biodiversity through ecosystem destruction and fragmentation, thereby negatively impacting ecosystem services. Our transport network has a huge impact on our environment and our quality of life.

However, green infrastructure can help mitigate against these issues and also enhance the value of the network by providing other functions such as: Integration of transport and green infrastructure may enhance scenic value and connectivity resulting in increased benefits from leisure and tourism. Intelligent use of green infrastructure and appropriate planting in street and roadside design can be incorporated as a traffic calming measure which also help soften the street scene by creating visual interest, improving the microclimate and providing valuable wildlife habitats.

Highway green infrastructure such as road verges, roundabout centres, tree belts and other green spaces such as ditches and mowed grassland can make a major contribution to people's everyday experience of green spaces. Maintenance of some of the green infrastructure assets, e.g. verges, can be done by local residents, increasing the sense of ownership among the community and reducing maintenance costs for the councils (as shown in the "Végétalisons Paris!" ... case study in chapter 8, figure 8).

Moreover, providing people with high quality and attractive alternative to car use and public transport for short trips to work, school and other destinations relieves the pressure on the road network and has proven health benefits.

A good network of public rights of way, footpaths and cycle routes exists in the county with the south part being better provided with accessible greenways (as shown in Appendix 12, figure 5). However, more work can be done on connecting these routes. Within urban areas, consideration should be given how the routes can be made more attractive, so they are used by residents more frequently for their daily trips, for instance, to retail and employment areas.

There are many long-distance trails and cycle routes that pass-through Essex, such as The Essex Way, Flitch Way and Thames Estuary Path. Whilst some parts of the path network are promoted paths, which include:

The Forest Way  
The St Peter's Way

The Roach Valley Way.  
The Stour Valley Path  
The Saffron Way  
Black Water Rail Trail  
John Ray Walk

Opportunities should be taken to add to and improve the promoted paths and to encourage more active use of the network through more targeted promotion and improved signage particularly on the urban fringes. Other smaller routes can also be found across Essex, providing potential opportunities:

to create an Essex Outer Greenway if some of the existing routes are connected. As well as prospects to link paths outside urban areas for leisure and recreation by, for example, a greater variety of short routes that can be completed by users with different needs including circular walks around towns and villages which can be reached within walking distance.

Expand upon existing schemes such as:

En-form Hadleigh Park Riders to be replicated in other green spaces teaching children and adults how to ride a bike.

The Cake Escape, which cafes throughout Essex signed up to encourage residents and visitors to cycle through some of the most beautiful places in Essex, could be expanded to include more greenways.

Appendix 10, 10.2.1 provide other recommendations that those responsible for greenways, including planners and developers should consider as mater of best practice.

### **9.3 Coast**

Essex has one of the country's longest coastlines stretching for over 300 miles. The many different uses of the Essex coast all exert varying pressures on this sensitive and highly valued natural resource. Much of the Essex coast is also particularly vulnerable to the effects of climate change including the loss of saltmarsh (which is itself, a natural form of coastal sea defence) and the increased risk of coastal erosion and flooding to numerous communities and landowners.

There are several types of coastal green infrastructure that provide protective services that can help reduce vulnerability and enhance resilience to these pressures often referred to as living shorelines.

These primarily include (but are not limited to):

Salt marshes. Coastal wetlands that form in saline tidal zones along protected shorelines.

Ridges of material submerged at or below sea, estuarine, or river surfaces. For example, biogenic (composed of organisms such as mussels and oysters) or geogenic (composed of rock, sand, or other inorganic substrates).

Seagrass beds. Submerged aquatic vegetation that grows in shallow marine and estuarine habitats.

Sand beaches and dunes. Deposits of sand and gravel shaped by waves, wind, and coastal vegetation.

By using coastal green infrastructure such as plants, sand, and natural barriers will reduce erosion and flooding. It also can lessen the associated impacts on human health and property. Restoring affected wetlands can reduce wave heights and property damage. In contrast to hard structures such as bulkheads and sea walls, vegetative shorelines provide multiple ecosystem benefits, including improved water quality, aquatic habitat, and carbon sequestration. Managed coastal improvements also provides potential sites for renewable energy and creates connected habitats for wildlife. Coastal areas provide opportunities for learning and leisure and deliver economic benefits through the creation of distinctive places for tourism such as coastal county parks and the coast path in Essex.

Further consideration for coastal strategic planning and decision making should seek to achieve the recommendations set out in Appendix 10 (10.3) as a matter of good practice.

## **9.4 Flooding**

Flooding remains one of the most frequent natural hazards in Essex and is predicted to experience an increase in winter flooding events and summer droughts through climate change. Green infrastructure provides significant opportunities to deliver space for water and natural options for flood alleviation and water management.

Under the Flood and Water Management Act 2010, Essex County Council and the two unitary authorities are defined as a lead Local Flood Authorities and are required to produce, implement and monitor a strategy for the management of local flood risk. This includes flood risk from surface water, ground water and ordinary watercourses. Although the Flood strategy does not reference green infrastructure, it does mention working with the natural environment.

“To encourage innovative new thinking, considering community needs, while working with the existing natural and built environment”. (ECC/Place Services, 2018)

Green infrastructure can contribute to making areas less vulnerable to flood risk whilst ensuring development doesn't increase flood risk to third parties. Through its key role in:

- sustainable drainage,
- drought mitigation,
- flood and water stress reduction,
- providing opportunities for attenuation or infiltration that can help to recharge aquifers
- maintaining levels in watercourses or other blue infrastructure features.

Green infrastructure can also influence water quality through limiting diffuse pollution and controlling water levels in watercourses. Whilst all the elements used to control flood waters can be valuable green infrastructure assets if developed and managed appropriately. Therefore, using green infrastructure rather than hard landscaping and grey infrastructure to attenuate flood will be more environment friendly and will provide savings compared to the cost of hard and grey infrastructure solutions which could pose problems for local ecosystems and communities. Multiple benefits can be reaped from the same green infrastructure. This can be in the form of small-scale

rain gardens or large scale Sustainable Urban Drainage system (SuDS) solutions. Leaky dams as shown in Figure 9 (Chapter 8, 8.5) is an excellent example of financially and sustainable land management, with conservation of an important ancient woodland helping to deliver innovative flood alleviation measures.

The implementation of SuDs is becoming an integral part of best management practices within the public realm, new and existing developments and is widely applied as a planning condition. SuDs work on the principles of managing surface water run-off on site as near to source as possible, slowing down run-off, treating it naturally and releasing good quality surface water to watercourses or groundwater. Keeping surface water on the surface increases the capacity for flood storage, provides easy access for maintenance and is cheaper to construct. Moreover, the end design solutions can become attractive amenity features with the development, provide opportunities for biodiversity enhancement, recreational corridors and deliver multi functions and benefits to a community. Especially when natural flood management techniques are considered within the flood management schemes design. SuDS may become a key driver for green infrastructure.

To ensure that green infrastructure maximise the opportunity for flood management and to improve water quality in Essex is for individuals and organisations involved in managing flood risk at a local level, including local authorities, developers, landowners, farmers, and voluntary sector organisations to:

Ensure that SuDS and other urban natural flood management measures are linked into the overall green infrastructure network.

Consider how the retained water from SuDS can be used for active and passive irrigation for urban plants and green spaces, for example by designing green corridors and street trees as stormwater planters.

Encourage take up of small-scale urban drainage measures such as green roofs, green façades, rain gardens and ponds to be implemented on an individual level by households and businesses.

Consider the use of incentives to facilitate this process.

Explore possibilities of returning arable land to woodland and grassland in mid and upper catchments to stabilise soils, reduce sediment and nutrient run-off and improve flood management.

Development alongside water courses and bodies to protect and enhance public access to be demonstrated in a Water Management Plan.

Use of SuDS and other urban flood management measures to be incorporated into new developments and into proposals to refurbish existing neighbourhoods.

Consideration for green infrastructure measures to improve water quality and alleviate flooding could be encourage through the delivery mechanisms, such as the SuDS Design Guide and Local Plans and should seek to achieve the recommendations set out in Appendix 10 (10.4) as a matter of good practice.

## **9.5 Energy**

The energy sector - the burning of coal, natural gas and oil for electricity and heat - is the largest single source of global greenhouse gas emissions and is responsible for

over 2,897 kt CO<sub>2</sub> which equates to over a quarter of all Greater Essex greenhouse gas emissions (Gov.UK, 2018). Energy transmission infrastructure, such as power stations also generally leads to fragmentation of natural habitats, ecosystem destruction and depletion of ecosystem services. Green infrastructure can play a role in reducing the negative impacts of the energy sector, by:

reducing energy consumption;  
contribute directly to energy production, such as providing bioenergy;  
and providing carbon uptake and storage (carbon sequestration).  
Some facilities and ways of energy production can serve as green infrastructure assets within an overall green infrastructure network.

Green infrastructure has significant potential to reduce energy consumption and the direct impact from energy transmission infrastructure on the landscape in Essex. For example, green areas such as urban parks, and tree-lined streets can play a role in reducing an area's overall energy demand and thus contribute to the moderation of the 'urban heat island' effect. Green roofs and walls and other green infrastructure features reduce heating and cooling needs and associate energy demands within buildings and decrease emissions from power stations.

Domestic buildings are responsible for 31.3% of CO<sub>2</sub> emissions in Essex. A 20% tree canopy over a house results in annual cooling savings of 8 to 18% and annual heating savings of 2 to 8% (Trinomics, 2018). Investment in green infrastructure can contribute to meeting the emissions reduction target of the UK Climate Change Act 2008.

There is an increasing pressure on those involved in the delivery of energy transmission infrastructure to mitigate some of the deleterious effects that such development has on the environment and there is a matching understanding that often quite simple actions involving the integration of some quantity of green infrastructure into these energy transmission infrastructure schemes is a potent way of helping to address the problem. Examples of such interventions that can be explored further are summarised in table 4.

## Green Infrastructure Energy Intervention

### Bioenergy

Green infrastructure can provide biomass heat and electricity generation derived from trees or agricultural residues (biofuel crops), which is deemed to be a renewable energy source. Green infrastructure can both capture and store carbon from the atmosphere, and provide biofuel, when it is managed in a way as to provide biomass (mowing, pruning, logging). If energy crops are to be regarded as green infrastructure, they must provide a net gain to the site-based biodiversity and the delivery of multiple ecosystem services. It depends on the species selected (indigenous or not) and the harvest cycle whether that is the case.

Utilising timber from Essex woodlands for wood fuel is not easily achievable due to the small size and disparate location of these woodlands. However, a study by AGB Environmental on behalf of ECC and Thames Chase explored the local authority woodland resource and found the potential opportunities of coordinating small cluster of woodlands across the districts and boroughs.



## Renewable Energy

Wind and solar farms could in some way be considered as a green infrastructure asset. These facilities are typically constructed on green infrastructure assets – Solar farms take up less than 5% of the land leaving scope to develop protected habitats to support local wildlife.

A study in 2016 investigates whether solar farms can lead to greater ecological diversity when compared with equivalent undeveloped sites. The results of the botanical surveys revealed that overall, solar farms had greater diversity than control plots, and this was especially the case for broadleaved plants. This greater diversity was partly the result of re-seeding of solar farms of species-rich wild flower mixes and/or agricultural grass mixes. The report suggest that the findings are not only beneficial for wildlife but could also provide ecosystem services important for people and agriculture. For example, by becoming net producers of pollinating insects, which are in decline across the UK, solar farms can promote the health of surrounding crops such as cereals, vegetables, soft fruits and orchard fruits (Hannah Montag, 2018).

## Nuclear

Bradwell in Essex is one of the proposed sites in UK for a new nuclear power station. Nuclear power projects are large energy infrastructure projects which, in most cases, would result in significant change of land use. This would likely lead to loss of green spaces to allow for construction and potential impact on the designated sites within the Essex estuary. There are opportunities involving the local communities to use green infrastructure within the landscaping of the nuclear site.

Further details on the green infrastructure energy interventions and recommendations to consider are set out in Appendix 10 (10.5).

## 9.6 Health

In addition to the important role green infrastructure plays in providing healthy and comfortable urban environments, access to green infrastructure also provides general health benefits. Green infrastructure not only provide clean air and clean water, its natural places to play while serving as health-improving green space. Protecting, enhancing, and expanding natural and open areas; planting street trees in paved areas; creating bioswales in road rights of ways and parking lots; adding green roofs and living walls to buildings; and increasing tree canopy can potentially make a significant difference on disease prevention, health promotion, equity, and ultimately, health care cost savings.

PERFECT (2018), a European project believed that if a large proportion of health care budgets were redirected to prevention it could fund the enhancement of green infrastructure to deliver health benefit outcomes and avoided mental and physical health costs. From increased provision of and access to public green spaces and avoided costs from treating ailments due to air and noise pollution. In general, more time outdoors and nearby green places (from countryside to green streets) creates an exposure to the healing effects of nature contributing to health.

Although considerations of the health and wellbeing benefits from green infrastructure should be integral to decision making across sectors, by completing a Health Impact Assessments. There are other opportunities to use green infrastructure to meet the needs of the community through the delivery and/or promotion of green care. Green care includes:

facilitated green exercise interventions;  
social green prescribing;  
ecotherapy; and  
other nature based solutions.

Health professionals working with providers of green spaces, sport activities (including those delivering equine therapy) and communities are well placed to use the natural environment as a resource, delivering green care. Make it possible for people to participate in therapeutic nature-based activities, wherever they live and giving people a greater choice of ways to get active in the outdoors. The case studies in figure 12 provides examples of where there are opportunities to work in partnership to coordinate delivery of green care. While appendix 10 (10.6) provides examples of recommendations for health professionals, sport and leisure, planning, transport, social care and economic development should consider as best practice to connect people with nature and improve health and wellbeing.

#### Case study: Essex Local Delivery Pilot

Essex is just one of 12 Local Delivery Pilots selected by Sport England nationally and all the pilots are deliberately focused on whole system change – the need for strong vision and leadership at the highest level and with the collaboration of all stakeholders, at all levels, being key. The aim is to create innovative partnerships that make it easier for people in these communities to access sport and physical activity, including use of green spaces.

The pilot is led by The Essex Health and Wellbeing Board and supported by Active Essex, Basildon Borough Council, Colchester Borough Council, Tendring District Council, the University of Essex and other partners. Basildon, Colchester and Tendring are three areas that represent 37% of all inactive people in Essex and by using them as the focus for the Delivery Pilot

Some of the findings from the test and learn pilots included:  
Success factors identified for example:

An accessible location which is safe, friendly, and welcoming.  
Strong and passionate leadership, typically comprising a paid leader supported by trained volunteers.

A collaborative approach with a range of engaged partners.

Effective use of community insight and engagement to understand the place and people and to co-produce projects and activities.

Factors that limit the success for example:

Individual barriers faced by residents (e.g. long-term physical condition, child care needs, lack of confidence).

Referral processes are currently not successful in introducing new participants to the projects.

There is a lack of knowledge and awareness by residents and providers of existing physical activity programmes.

([www.activeessex.org/essex-local-delivery-pilot/](http://www.activeessex.org/essex-local-delivery-pilot/))

Case Study: Netpark Wellbeing Project: Southend-on-Sea

NetPark is a digital art park developed by Metal and partners Calvium and the University of Brighton to create an added visitor attraction to the usual stroll in Chalkwell Park, Southend-on-Sea. Supported by the Digital R&D Fund for the Arts – Nesta, Arts & Humanities Research Council and public funding by the National Lottery through Arts Council England.

The NetPark Wellbeing Project uses the collection of NetPark apps to help people living with dementia as regular attendees of the weekly groups or taking short courses or days out . The art therapy group works with 10 people living with dementia, which also provides their carers with two hours free respite.

Achievements so far:

37 organisation involved

806 patients have suffered from, depression, bi polar, isolation Post Stress disorder, paranoia etc.

1,234 hours of free art therapy have been offered to those with dementia, By October 2017.

73% said symptoms reduced

43% said reduced GP visits

<http://www.netpark.zone/about>

## 9.7 Education

Green infrastructure provides learning opportunities as an ‘outdoor classroom’ relevant to both the National Curriculum and lifelong learning (e.g. forest schools and Continuing Professional Development). It is a valuable educational resource and has the potential to improve educational achievement, through improved concentration and self-esteem. By exploring the wider environment such as woodlands, ponds, wildlife areas help children and young people to learn a variety of skills through play and social interaction –stimulating the imagination and testing boundaries. These are essential for our children and young people to grow and learn.

Green infrastructure offers the following educational opportunities:

Formal and informal place-based learning in built and natural green infrastructure settings.

Using other green infrastructure for educational purposes that otherwise may not be perceived as educational (e.g., waste management facilities, and SuDs)

Employment and higher educational opportunities in the green sector especially serving the demand of specialist input to maintain, expand and monitor the green infrastructure assets and their overall function as a network.

Multi-benefit green infrastructure should be taught in all green infrastructure related sectors, by developing centres of excellence where possible. For example, in the field of green infrastructure and environmental technology covering subjects such as sustainable land management, renewable energy, bio-engineering and water management.

Greening learning facilities means educational establishments with green outdoor environments allow children and young people to have safe, ready-made access to green places and engagement with nature, whilst improving their health and wellbeing. It can also provide other benefits such as mitigating flood risk, air pollution and improved energy efficiency. Advancing environmental education of green infrastructure can help to showcase the social and ecological benefits of green infrastructure to peoples' everyday lives, thus increasing awareness of the value of nature. Appendix 10 (10.7) provides examples of recommendations for those responsible for education and greenspaces should consider in awareness raising and public engagement in delivering green infrastructure within schools and the community.

While some schools do deliver environmental education through Forest Schools, it is largely on an ad hoc basis. An environmental education framework needs to be developed to improve facilities and establish a programme of activities with schools and children centres which meets curriculum-based needs and wellbeing of families, as well as creating positive use of school grounds, parks, woodlands and other greenspaces. Another example, of engaging young people and children and their families to help them feel more confident in using local green spaces as a place for learning and exploring together is the Wellies in the Woods project as described in figure 12

#### Case Study: Wellies in the Woods

Wellies in the Woods delivered by Groundwork East provides play sessions for parents and children based around wildlife exploration, creativity with nature and getting active. The project offers:

a website funded by the Sylvia Adams Charitable Trust with outdoor activities, courses run by Groundwork East to help parents and children explore local wildlife and get creative with nature together, and training opportunities for staff at children centres and schools (and even social workers) to promote the importance of and continue to support families to enjoy the outdoors whatever the weather.

The activities are designed for children of pre-school age, but older children can also get involved. Wild play sessions are less about coaching or teaching and more about enjoying the outdoors through one-off or a short set of school holiday activities.

There are activities to do for each of the seasons.

<https://www.welliesinthewoods.org.uk/>

## 9.8 Agriculture

Agricultural practices have had a significant impact on shaping the landscape character of Essex, with 68% of Essex designated as graded agricultural land

(mapped in figure 2 of Appendix 2). Agriculture is an important industry in rural communities. The agricultural system can also play a significant role in maintaining the health of our natural and cultural heritage (highly valued landscapes, structures and biodiversity influenced by natural processes and a long history of land management). Engaging farmers, therefore, in delivering green infrastructure can offer substantial social and environmental benefits, such as:

Green infrastructure on agricultural properties can support farming production and provide additional ecological goods and services, such as biofuels etc.

Green infrastructure features can retain stormwater for use during droughts while also filtering runoff, which reduces phosphorus loads and contributes to improving water quality.

Buffers and hedgerows protect agricultural lands from wind and soil erosion, create green corridors providing vital habitat for wildlife, including pollinators. Along rights of ways on agriculture land they offer a more aesthetically pleasing alternative to standard chain link or wooden fences and provide visual screens, while helping define boundaries.

Woods and forests offer the potential for very significant benefits in carbon sequestration; provide outdoor spaces for exercise and recreation; and also contribute to improving agricultural productivity.

A number of farmers are engaged in countryside and environment stewardship activities and adopt management practices that include green infrastructure features, such as conserving and restoring wildlife habitats and woodland creation and management, but more can be done at a local level to support them. There is a need to take into account their local context to work out how best to engage with the agricultural community. Especially with the potential opportunities that could be presented from the withdrawal from the European Union's Common Agricultural Policy (CAP), that originally decided how the land is farmed, food is grown and the state of the natural environment. As well as the emerging new agricultural bill that would offer farmers environmental land management contracts, requiring them to sign up to specified measures to safeguard the natural environment, such as maintaining waterways, reducing harmful emissions and measures to reduce flooding, as well as public access to the countryside (Defra, 2018).

A key success factor in integrating agricultural-related green infrastructure is to:

Manage agricultural land to protect and enhance existing areas of wildlife habitat. Maximise opportunities for creating new habitats and filling gaps in ecological networks in agricultural landscapes, with particular attention to green corridor connectivity.

Increase participation agri-environmental stewardship schemes.

It may require many individual farmers to coordinate their management to link green infrastructure on a regional scale across agricultural landscapes.

Maximise the opportunity to promote the use of the farmland for outdoor recreation and improved public access that could enhance the natural heritage, provide economic value to the industry and educational value, through well designed recreational developments such as farm trails, visitor centres and access routes etc.

Choose robust native vegetation that is adapted to our climate and can withstand the nutrient loads associated with runoff.

Explore opportunities to implement green infrastructure on agricultural land through for example:

Bioswale (wet or dry) - simple landscaping features used to slow, collect, infiltrate, and filter stormwater.

Dry pond - a drainage feature that can help reduce surface flooding. It is a man-made depression that captures stormwater runoff during a heavy rainfall.

Wet pond - a stormwater facility constructed through filling and/or excavation that provides both permanent and temporary storage of stormwater runoff.

Filter strip - are gently sloping, vegetated strips of land that provide opportunities for slow conveyance and infiltration used to reduce sediment, organics, nutrients, pesticides, and other contaminants from runoff and to maintain or improve water quality.

Hedgerow - are rows of trees, shrubs and/or vines along roads, and between fields and residential areas.

Riparian buffer - a vegetated "buffer-strip" near a stream, which helps to shade and serves as a buffer to pollutants entering a stream from runoff, controls erosion, and provides habitat and nutrient input into the stream.

Although the planting of a large riparian buffer zone or hedgerow can seem like a daunting expense for farmers, partnerships can be made with conservation trusts, local council authorities and community groups (e.g. 'Friends of' groups, student groups, scouts etc.) to work together to implement green infrastructure on agricultural lands. This lowers costs for the farmers and may provide opportunities for public education.

Farmers have a key role to play as custodians of the countryside to protect and enhance the natural environment and cultural heritage and to meet the needs in areas where opportunities for access and recreation are limited. It is important to encourage and build on farmers ethos of caring for the environment.

## **Chapter 10 Implementation and Delivery of Strategy**

It is essential that this strategy translates its objectives and proposals into tangible actions and projects where they can be identified. This section sets out how green infrastructure actions and projects can be implemented and resourced.

The aim is to move away from looking at individual parts of the environment in isolation, towards a more joined-up, partnership approach which uses limited resources to secure the greatest gains for the environment and the sustainable economy, as well as the health and wellbeing of its communities. The green infrastructure approach provides opportunities to add value to existing programmes, by highlighting more sustainable solutions, making optimum use of existing budgets and resources to achieve multifunctional outcomes. This will help achieve the sustainability objective of the strategy.

The successful delivery of the strategy vision will be dependent on coordinated, targeted activity and strong working relationships with many partners including the local community.

## 10.1 Stakeholder Engagement

The purpose of the Essex Green Infrastructure Partnership is to optimise planning and delivery of green infrastructure in Essex. The partners represent a diverse range of interests, all focused on enhancing the natural and historic environment, whilst encompassing sustainability, health and wellbeing and the economy.

By working in partnership will help to achieve a coordinated, cross boundary and inter agency approach to delivery of green infrastructure across the county and beyond. Delivery will be achieved in a wide variety of ways and with different bodies taking the lead through for example:

Engagement with partners such as the Local Authorities on this issue, Planners and other key Service Areas

Public Consultation,

Essex Planning Officer Association engagement.

Workshop sessions, with key stakeholders to consulted and input into setting the strategic action priorities.

Further green infrastructure mapping is to be undertaken and updated to form the evidence base for the strategic action priorities.

Equally important to ensure the green infrastructure is valued by people is to seek input and involvement, from local communities to tap into their local knowledge and give them a chance to shape the design. Green infrastructure is all about 'place making', in which the communities are their true owners. Getting buy in and support makes all the difference in getting a scheme to work, be sustainable and encourage community ownership and involvement such as volunteering. Communities can provide useful information on what existing green infrastructure should be kept, the best places for new connections, routes and linkages, and what new additions they would like in their area, be it allotments, cycle routes or parks. This can help foster community pride in the place.

## 10.2 Funding

Whilst there are traditional funding pots for green infrastructure such as Lottery, Section 106, Charity Funding etc, this strategy has shown that green infrastructure meets the objectives of many other sectors, and as such, there are a variety of potential projects and funding sources which can fund green infrastructure. Below are some examples:

Government's High Street Fund bid where ECC are looking to invest £25 million in an Essex Town centre where reshaping of the centre will include green infrastructure.

The programmed Pitsea Landfill restoration of 371 hectare in 2023, will create another huge area of green infrastructure in South Essex.

Coast path implementation which is 100% funded by Natural England and first section of nine can now be implemented.

Surface Water Amelioration Schemes from Essex Highways could include green infrastructure to absorb water.

The Environment Agency and the water companies have funded new green infrastructure to create "Natural Flood Management".

Community Access Fund, funding access to Lee Valley across Essex for groups to visit and be coached in the Lee Valley Park.

The Active Essex partnership has won £10 million for the Essex Local Delivery Pilot from Government to enable local communities to access sport and other activities using local facilities, including green infrastructure.

Anglian Water have a campaign called “Make Rain Happy” and want to soften landscapes to absorb water and plant a million trees over 25 years.

Social Prescribing Government announced social prescribing in late Jan 2019 as a way to link GPs with walking groups etc to utilise green infrastructure.

Highways scheme to lower pollution such as the A127 study which is providing cycleway infrastructure which is often also green infrastructure.

Recreational disturbance Avoidance and Mitigation Strategy or at least ensure delivery of creating and improving green infrastructure within their mitigating projects. The 11 Councils in Essex will produce a shared mitigation strategy to identify the measures that are needed and how they will be funded and delivered.

Much can be achieved with existing resources including invaluable volunteer efforts. This is especially important since public sector finances continuing to be constrained and across the county, therefore, there will be a need to work more efficiently with the resources that are available. This means identifying opportunities to deliver across outcomes, working in partnership and accessing external funding wherever possible to deliver our priorities.

Funding for maintain green infrastructure, figure 14 are two examples where ECC has created financially self-sustaining green infrastructure; namely the Essex Country Parks and Essex Woodlands project.

There are a range of grants and funding options available that will be explored, although they rely on the preparation and submission of applications and the outcome of competitive bidding processes. As a result, there will be a need to establish a coordinated approach to identifying and maximising funding opportunities, establishing mechanisms for co-delivery as appropriate. Table 7 in Appendix 13 describe the variety of funding sources will be derived from. Making this happen can take many years, but the results can transform an area for the better.

To fund green infrastructure, we require a flexible funding mechanism. A Green Essex Fund could act as a fund for endowments, donations, successful bid and other green infrastructure purposes. Whilst managed by ECC it could be steered and used by the wider Green Essex Partnership.

### **10.3 Timelines for Delivery**

The strategy sets the framework for delivery but needs to be monitored and reviewed on an ongoing basis.

#### **Case Study: Essex Parks & Woodlands**

Essex County Council manages 7 Country Parks to provide recreation, allow flora and fauna to flourish and protect history. The parks’ maintenance and development are funded mainly through car parking costs, making the parks self-sustaining an important resource for today and the future. <http://www.visitparks.co.uk/>



The Essex Woodlands Project is an innovative and sustainable approach to the management of Essex County Council's woodland estate. It aims to sustainably manage remote (unstaffed) areas of woodlands in a way that minimises financial burdens on the Council. With little or no active management over the past ten years, the woodlands have suffered from overgrown paths, unmanaged habitats and historic features and outdated interpretation materials.

#### Case Study: Essex Woodland Project

Under a Countryside Stewardship agreement with the Forestry Commission and Natural England, Place Services will implement woodland management plan for 32 sites and a total area of 300 hectares. This includes 3 sites which are designated Sites of Special Scientific Interest (SSSI) and 22 areas of ancient woodland (over 400 years old). Maintenance work will be undertaken in a sensitive way with the use of Suffolk Punch horses and will be supported by rangers, volunteers and partner organisations such as The Conservation Volunteers.

<http://www.essexwoodlandproject.org/>

### **Chapter 11 Actions and Outcomes**

A future action plan will set out a programme of proposed actions for implementation of the green infrastructure strategy to achieve the green infrastructure objectives. It is primarily intended to provide a framework for coordination of green infrastructure planning and delivery as well as facilitating coordinated action by local partnerships and stakeholders in the public, private and voluntary sectors involved in the delivery and management of specific green infrastructure assets or sites. A wide variety of individuals, groups and organisations, in addition to Essex County Council and the Local Authorities in Essex will have an important delivery role to play.

The Council will continue to work with partners to validate and programme the delivery priorities and emerging strategic projects and tasks. The action plan will be monitored, updated and reviewed to focus on delivery as and when resources become available and will respond to changing priorities and opportunities. A priority will be to agree and put in place an appropriate governance structure to oversee development of the action plan and to monitor progress.

The following action plan is broken down into the key themes aligned to the objectives and the proposals mentioned in chapter 7:

Objective: Protect

Theme: Marketing, Branding & Promotion

Proposal: Highlight the most valuable green infrastructure in Essex in terms of their multi-functionality and benefits – through rebranding Essex as Green Essex with 1,908 designations.

Action: Working with Visit Essex, Essex Communications and partners to develop a pan Essex Marketing Strategy to create a brand for Green Essex.

Theme: Re-designation of Green Infrastructure

Proposal: Encourage and support the review of existing designations to ensure their currency and maintain the accuracy of site information.

Proposal: Support the recognition and appropriate designation of new green infrastructure, e.g. Local Wildlife Site, Local Nature Reserve.

Action: Discuss with Local Planning Authorities, Natural England and Place Services regarding re-designating the new green infrastructure as new designations e.g. Wallasea, South Essex Marshes, Thames Chase etc.

Theme: Environment Net Gain & Offsetting

Proposal: Embedding an 'environmental net gain' principle for development, including housing and infrastructure

Action: Create the methodology of the 'environmental net gain' principle using the UEA green infrastructure functions and benefits mapping so it can be used in the following guides/plans:

Essex Design Guide

Highways Plans and

Local Development Plans

Garden Communities and villages proposals

Walking strategy, Cycle & walking Improvement Plans, Cycle Action Plan

Rights of Way Improvement Plan

Essex Planning Officers' Association (EPOA) Healthy places guidance notes

Work with EPOA, Place Services and partners to develop the 'environmental net gain' methodology.

Coordinate the protection of coastal green infrastructure through the Recreational disturbance Avoidance and Mitigation Strategy (RAMS).

Theme: Improve, Repurpose and Create new Multi-Functional Green Infrastructure

Proposal: Coordinate the protection of coastal green infrastructure through the Recreational disturbance Avoidance and Mitigation Strategy (RAMS).

Action: Engage with Place Services and partners to develop the RAMS schemes to protect important nature conservation sites in Essex.

Objective: Improve

Theme: Marketing, Branding & Promotion

Proposal: Create a Green Essex Network to develop, improve and promote Green Essex

Action: Contact the Green Infrastructure Knowledge hub group to liaise about the establishment of the Green Essex Network. The GE Network would comprise of the main green infrastructure managers and would coordinate the development of Green Essex.

Theme: Improve, Repurpose and Create new Multi-Functional Green Infrastructure

Proposal: Support the development of new Visitor Centres and facilities

Action: Liaise with ECC Country Parks and partners to support new Visitor Centre improvements and facilities in the Country Parks.

Theme: Marketing, Branding & Promotion

Proposal: Better marketing & promotion of green infrastructure to increase use and income

Action: Working with Visit Essex, ECC Comms and partners to develop a pan Essex Marketing Strategy to:

Promote new Visitor Centres and facilities

Creation of a Green Essex promotion – a network for pan Essex green space and facilities marketing.

Theme: Improve, Repurpose and Create new Multi-Functional Green Infrastructure

Proposal: Public Realm green infrastructure improved to reduce pollution and improve character and sense of place

Actions: Working with health and flood partners to seek funding to create a Green Infrastructure Pilot project to support people to lead healthier lives.

Reviewing the highways policy and maintenance plans - researching into the environmental impacts from our maintenance work to adjust our practices for ecological and economic benefits.

Development and coordination of cycling and walking strategies to delivery green infrastructure with its projects.

Explore and Implement an Essex Green Permit Scheme, allowing locals to adopt and green up areas within the public realm.

Theme: Natural Flood Management techniques

Proposal: Create Water Gardens, Green roofs and Bio retention areas to absorb urban water

Action: Liaise with Essex Highways and Floods teams to seek funding for the provision of green infrastructure and SuDS (Sustainable Drainage Systems).

Proposal: Continue creating green spaces which also function as Natural Flood Management and SuDs schemes

Action: Seek funding from partners to address flooding but also create green spaces with multiple benefits and provide environment net gains.

Theme: Improve, repurpose and create new multi-functional green infrastructure

Proposal: Encourage better management of green infrastructure to benefit locally native species, focussing on recognised nature conservation priorities.

Action to be confirmed

Objective: Create

Theme: Connect people and wildlife to Green Infrastructure through active travel

Proposal: Develop the Coast Path in Essex

Actions: Liaise with Highways about the opening of the first section of the Coast Path in Essex.

Market and promote the Coast Path through Visit Essex, Comms and other partners. Improve access to the coast path in Essex using sustainable transport, signage etc utilising innovative funding such as the Coastal Communities Fund.

Collaborate with Visit Essex and Culture to develop events on the coast increasing the cultural offer of the coast.

Theme: Marketing, Branding & Promotion

Proposal: Increased access to the Outdoor Pursuits Centres

Action: Liaise with Outdoor Pursuits Centres, Active Essex and Country Parks to explore extending the Outdoor Pursuits offer.

Theme: Improve, Repurpose and Create new Multi-Functional Green Infrastructure

Proposal: Create green infrastructure in new developments such as Garden Communities, with best practice guidance on its design and management for multiple benefits.

Action: Continue to consult on green infrastructure on key documents, such as:

Essex Design Guide

Highways Plans

Local Development Plans

Garden Communities and villages proposals

Health Impact Assessments.

Proposal: Develop green infrastructure as part of Minerals and Waste restorations with reference to nature conservation priorities e.g. Pitsea Landfill

Actions: Consult on green infrastructure after use with Mineral and Waste Planners  
Liaise with Mineral and Waste Planners as minerals and waste sites are prepared for restoration and after care being made ready as green space to maximise green infrastructure value.

Explore opportunities to create a Green Discovery Park, showcasing green Infrastructure, Solar energy, SuDS, climate resilient planting, Waste and Recycling and Electric vehicle charging and sustainable visitor centre as a multi-functional and educational site.

Provide green infrastructure training for Minerals and Waste planners

Theme: Connect people and wildlife to Green Infrastructure through active travel

Proposal: Create Town or village circular routes especially in areas of green infrastructure deficiency

Action: Seek sponsorship for a pilot circular village route(s) competition. Liaise with Parish Councils, District, City and Borough Councils, Active Essex, Local Health and Wellbeing teams and/ or Village group to deliver circular route.

Theme: Theme: Improve, repurpose and create new multi-functional green infrastructure/ Environment Net Gain & Offsetting

Proposal: Strategically identify priority areas for the creation or improvement of green infrastructure that could provide most benefit for locally native species of recognised nature conservation priority.

Action to be confirmed

Proposal: Use planning policy to secure multi-functional green spaces within and beyond development site boundaries through the application of biodiversity net gain, biodiversity off-setting and the creation of compensation habitat.

Action: Work with EPOA, Place Services and partners to develop the 'environmental net gain' methodology.

Proposal: Where possible, use new green infrastructure provision to buffer or extend existing designated sites.

Action: Discuss with Local Planning Authorities, Natural England and Place Services (Environmental consultancy to lead) regarding re-designating and the approach to buffer or extend existing designated sites.

Objective: Connectivity

Theme: Connect people and wildlife to Green Infrastructure through active travel

Proposal: Develop the Coast Path in Essex

Action: See Above

Proposal: Develop Inter connecting paths between green infrastructure Using the UEA mapping to identify routes which realise most multiple benefits by connecting green infrastructure.

Action: Seek funding from various benefit funders to create inter connecting paths.

Proposal: Restore and Promote Essex promoted paths:

The Forest Way

The St Peter's Way

The Essex Way

The Roach Valley Way

The Stour Valley Path

The Thames Estuary Path,

The Flitch Way

The Saffron Way

Coast Path in Essex

Blackwater Rail Trail

John Ray Walk

Actions: Liaise with Public Rights of Way team and Country Parks to assess condition and prioritise promotion.

Seek funding (local and national) to fund promotion and infrastructure.

Objective: Inclusivity

Theme: Delivering environmental therapies and activities

Proposal: Explore Environmental therapies and challenges aimed at developing young people

Action: Liaise with Education service, Children's services, health partners, Outdoor pursuits and Country Park to build upon existing programmes.

Theme: Marketing, Branding & Promotion

Proposal: Promote youth orientated activities in Green spaces e.g. mountain biking, Go Ape, Geocaching, etc

Action: Promote activities in Country Parks, Outdoor Pursuits centres, Active Essex and partner sites to develop youth orientated activities.

Objective: Health and Wellbeing

Theme: Delivering environmental therapies and activities

Proposal: Explore Environmental therapies delivered through mental health services

Actions: Liaise with Mental Health Agencies, wider health partners and community voluntary sector to develop Green Activities such as green gym, eco-therapies, guided walks.

Better promoted and tailor Green Therapies to mental health service users.

Proposal: Develop and Promote Healthcare and wellbeing through Green Infrastructure activities

Actions: Liaise with Public Health and Health and Wellbeing Boards in District,/ Borough and City to assess health deficiency areas and propose green activities such as walking and other physical activities.

Work with Active Essex on their projects to better use green spaces to encourage more people to be active.

Objective: Sustainability

Theme: Improve, Repurpose and Create new Multi-Functional Green Infrastructure

Proposals: Develop new facilities that will generate revenues

Create a Green Essex Fund for endowments, fund raising bids, donations etc

Actions: Liaise with green space managers to identify potential income generation facilities, including a creation of a Green Discovery Park.

Identify the relevant funding streams to create new facilities.

Set up a fund in conjunction with Essex Finances and steered by the Green Essex Partnership.

## **Chapter 12 Strategy Review**

To ensure that the vision, objectives and actions proposed by this strategy continue to be met, evaluation and monitoring will be undertaken as shown in figure 15. This will allow its progress to continually be monitored, allowing the strategy to be responsive to legislative change and remain current and on track to achieve its vision. The planning, funding and provision of green infrastructure will continually be improved, and current best practice followed. This strategy is intended to be a 'live' document that is regularly reviewed so that it can maintain the essential characteristics of the county's environment into the future.

## Chapter 13 References

- Active Essex. (2017). Changing 1 million lives to get Essex active: Active Essex Our Strategy; 2017-2021. Active Essex.
- Active Essex. (2017). Sports & Physical Activity Profile: Greater Essex. Retrieved from Active Essex: <https://www.activeessex.org/wp-content/uploads/2017/11/JSNA-Report-Greater-Essex.pdf>
- Active Essex. (n.d.). Hadleigh Park. Retrieved from Essex County Council: <http://hadleigh-park.co.uk/>
- AECOM. (2018). North Essex Garden Communities, Garden Communities Charter, June 2016. Retrieved from Braintree.gov.uk: [https://www.braintree.gov.uk/download/downloads/id/5787/garden\\_communities\\_charter.pdf](https://www.braintree.gov.uk/download/downloads/id/5787/garden_communities_charter.pdf)
- Beckett, K. Freer-Smith, P.H. Taylor, G. (1998). Urban woodlands: their role in reducing the effects of particulate pollution. 99, 340–360: Beckett, K.P., Freer-Smith, P.H. & Taylor, G. (1998). Urban woodlanEnvironmental Pollution.
- BlueSky. (2017). National Tree Map. Retrieved from BlueSky Map Shop: <https://www.blueskymapshop.com/products/national-tree-map>
- BTCV. (2008). Inspiring People, Improving Places: The positive impact and behavioural change achieved through environmental volunteering with BTCV. BTCV.
- CABESpace. (2005). Decent Parks? Decent Behaviour? The link between the quality of parks and user behaviour. [www.cabe.org.uk/publications/decent-parks-decent-behaviour](http://www.cabe.org.uk/publications/decent-parks-decent-behaviour): CABE.
- CABESpace. (2010). Community green: using local spaces to tackle inequality and improve health. Design Council.
- CABESpaces. (2014). The value of Public Spaces, How high quality parks and public spaces create economic, social and environmental value, Design Council . [www.designcouncil.org.uk/sites/default/files/asset/document/the-value-of-public-space1.pdf](http://www.designcouncil.org.uk/sites/default/files/asset/document/the-value-of-public-space1.pdf) : CABE.
- Chambers & Ellis Butlin. (2011). The Value of Mapping Green Infrastructure. Retrieved from MerseyForest.org.uk: [https://www.merseyforest.org.uk/files/The\\_Value\\_of\\_Mapping\\_Green\\_Infrastructure\\_.pdf](https://www.merseyforest.org.uk/files/The_Value_of_Mapping_Green_Infrastructure_.pdf)
- CIRIA. (2007). Building Greener: Guidance on the use of green roofs, green walls and complementary features on buildings . CIRIA, Report No.C644.
- CLES & Groundwork. (2007). The contribution of the local economy to the local environment. [www.cles.org.uk](http://www.cles.org.uk).: CLES.
- Coombs, E, Jones, A. & Hillsdon. M. (2010). Objectively measured green space access, green space use, physical activity and overweight. Society of Science and Medicine; 70(6):816-22.

Countryside Agency. (2005). "WHAT ABOUT US?" Diversity Review evidence – part one Challenging perceptions: under-represented visitor needs. Forestry Commission, Defra, English Nature, Rural Development Services, Countryside Agency, Landscape Access Recreation

Davies, Z. G. Edmondson, J.L. Heinemeyer, A.. Leake, J.R. & Gaston, K.J. (2011). Mapping an urban ecosystem service: Quantifying above-ground carbon storage at a city-wide scale. *Journal of Applied Ecology*, 48(5), 1125-1134.

Defra. (2011). Natural Environment White Paper. Retrieved from Gov.uk: <https://www.gov.uk/government/publications/natural-environment-white-paper-implementation-updates>

Defra. (2018, February). Health and Harmony: the future for food, farming and the environment in a Green Brexit. Retrieved from Government UK: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/684003/future-farming-environment-consult-document.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/684003/future-farming-environment-consult-document.pdf)

Duffy, A.. Jefferies, C.. Waddell, G.. Shanks, G. Blackwood, D. & Watkins, A. (2008). A cost comparison of traditional drainage and SUDS in Scotland. *Water Science & Technology*, 57, 1451-1459.

BLGDRC. (2016 & 2019). Integrating Spatial Data Sources to Develop a Representative of Green Infrastructure for Local Government. ESRC Business & Local Government Data Research Centre.

Essex County Council. (2017). Essex Organisation Strategy. Retrieved from Essex.gov.uk: [https://www.essex.gov.uk/Documents/Organisation\\_Strategy.pdf](https://www.essex.gov.uk/Documents/Organisation_Strategy.pdf)

Essex County Council. (2012). Local Transport Plan. Retrieved from Essex County Council: <https://www.essexhighways.org/highway-schemes-and-developments/Local-Transport-Plan.aspx>

Essex County Council. (2016). Essex Joint Strategic Needs Assessment: Health and Wellbeing Report for Essex 2016. ECC.

Essex County Council. (2017). Greater Essex Growth and Infrastructure Framework: 2016-2036. AECOM.

Essex County Council. (2018). Essex Country Parks. Retrieved from Essex County Council: <http://www.visitparks.co.uk/>

Essex County Council & Place Services. (2018). Local Flood Risk Management Strategy. Collective Intelligence Sustainable Solutions.

Essex Health & Wellbeing Board. (2012). Joint Health & Wellbeing Strategy for Essex 2013-2018. ECC.

Essex Wildlife Trust. (2009). Analysis of Accessible Natural Greenspace Provision for Essex. [http://www.essexbiodiversity.org.uk/app/webroot/files/PDF\\_files/EWT\\_ANGSt\\_document.pdf](http://www.essexbiodiversity.org.uk/app/webroot/files/PDF_files/EWT_ANGSt_document.pdf): Natural England.

Essex Wildlife Trust. (n.d.). Abberton Reservoir Visitor Centre. Retrieved from Essex Wildlife Trust: <http://www.essexwt.org.uk/reserves/abberton-reservoir>

European Economics. (2017). The economic benefits of woodland: A report for the Woodland Trust . Woodland Trust.

Fields in Trust. (2018). Revaluing Parks and Green Spaces: Measuring their economic and wellbeing value to individuals . [www.fieldsintrust.org/Upload/file/research/Revaluing-Parks-and-Green-Spaces-Report.pdf](http://www.fieldsintrust.org/Upload/file/research/Revaluing-Parks-and-Green-Spaces-Report.pdf) : Fields in Trust.

Forestry Commission. (2002). National Inventory of woodlands and trees: England; County Report for Essex. Forestry Research; Forestry Commission.



Forestry Commission. (2010). The Case for Trees in Development and Urban Environment. [www.forestry.gov.uk/forestry/INFD-88NFN2](http://www.forestry.gov.uk/forestry/INFD-88NFN2): Forestry Commission England.

Forestry Commission. (2012). Economic benefits of greenspace: Research Report. [www.forestry.gov.uk/pdf/FCRP021.pdf/\\$FILE/FCRP021.pdf](http://www.forestry.gov.uk/pdf/FCRP021.pdf/$FILE/FCRP021.pdf) : Forestry Commission England.

Forestry Commission. (2013). Air Temperature Regulation by Urban Trees and Green Infrastructure. Forestry Commission Research Note. [www.forestry.gov.uk/pdf/FCRN012.pdf/\\$FILE/FCRN012.pdf](http://www.forestry.gov.uk/pdf/FCRN012.pdf/$FILE/FCRN012.pdf): Forestry Commission England.

Fields in Trust. (2018). Revaluing Parks and Green Spaces: Measuring their economic and wellbeing value to individuals . [www.fieldsintrust.org/Upload/file/research/Revaluing-Parks-and-Green-Spaces-Report.pdf](http://www.fieldsintrust.org/Upload/file/research/Revaluing-Parks-and-Green-Spaces-Report.pdf) : Fields in Trust.

Forestry Commission. (2002). National Inventory of woodlands and trees: England; County Report for Essex. Forestry Research; Forestry Commission.

Forestry Commission. (2010). The Case for Trees in Development and Urban Environment. [www.forestry.gov.uk/forestry/INFD-88NFN2](http://www.forestry.gov.uk/forestry/INFD-88NFN2): Forestry Commission England.

Forestry Commission. (2012). Economic benefits of greenspace: Research Report. [www.forestry.gov.uk/pdf/FCRP021.pdf/\\$FILE/FCRP021.pdf](http://www.forestry.gov.uk/pdf/FCRP021.pdf/$FILE/FCRP021.pdf) : Forestry Commission England.

Forestry Commission. (2013). Air Temperature Regulation by Urban Trees and Green Infrastructure. Forestry Commission Research Note. [www.forestry.gov.uk/pdf/FCRN012.pdf/\\$FILE/FCRN012.pdf](http://www.forestry.gov.uk/pdf/FCRN012.pdf/$FILE/FCRN012.pdf): Forestry Commission England.

[https://modern.gov.lambeth.gov.uk/documents/s56922/02%20value\\_of\\_green\\_space\\_report1.pdf](https://modern.gov.lambeth.gov.uk/documents/s56922/02%20value_of_green_space_report1.pdf) : GreenSpace.

Gorundwork East. (2018). Wellies in the Woods: Lets play outdoors. Retrieved from Wellies in the Woods: [https://www.welliesinthewoods.org.uk/?\\_sm\\_au\\_=iZVRHrnrDp5rqRN](https://www.welliesinthewoods.org.uk/?_sm_au_=iZVRHrnrDp5rqRN)

Houses of Parliament. (2013). Houses of Parliament Post Note: Urban Green Infrastructure. Parliamentary Office of Science & Technology, No 448, November 2013.

Houses of Parliament. (2016). Houses of Parliament Post Note: Green Space and Health. Parliamentary Office of Science & Technology, No 538, October 2016

Idwa. (2018). Long Distance Paths. Retrieved from Long Distance Walks Association: <https://www.ldwa.org.uk/index.php>

Jarques, S. (2015). Economic Impact of Tourism Essex 2015, Destination Research. Retrieved from Visit Essex: <http://mediafiles.thedms.co.uk/Publication/EE-EssW/cms/pdf/Economic%20Impact%20of%20Tourism%20-%20%20Essex%202015.pdf>

Landscape Institute. (2013). Public Health and Landscape Creating healthy places: Landscape Institute Position Statement. [https://www.landscapeinstitute.org/PDF/Contribute/PublicHealthandLandscape\\_CreatingHealthyPlaces\\_FINAL.pdf](https://www.landscapeinstitute.org/PDF/Contribute/PublicHealthandLandscape_CreatingHealthyPlaces_FINAL.pdf): Landscape Institute.

Local Communities & Government, C. &. (2012). National Planning Policy Framework. Retrieved from Gov.UK: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Local Communities & Government, C. a. (2018). National Planning Policy Framework. Central Government.

Met Office. (2009). UKCP09. Retrieved from UK Climate Projections: <http://ukclimateprojections.metoffice.gov.uk/21678>

Montag, H. Park, Dr.G. & Clarkson, T (2018). The effects of solar farms on local biodiversity. Retrieved from [www.solar-trade.org.uk](http://www.solar-trade.org.uk): [https://www.solar-trade.org.uk/wp-content/uploads/2016/04/The-effects-of-solar-farms-on-local-biodiversity-study.pdf?\\_sm\\_au\\_=iZVnktSjRrHSJRQJ](https://www.solar-trade.org.uk/wp-content/uploads/2016/04/The-effects-of-solar-farms-on-local-biodiversity-study.pdf?_sm_au_=iZVnktSjRrHSJRQJ)

National Trust, N. (2018). Our vision for the future of parks and Future Parks toolkit. Retrieved from National Trust: [www.nationaltrust.org.uk/features/our-vision-for-the-future-of-parks](http://www.nationaltrust.org.uk/features/our-vision-for-the-future-of-parks)

Natural England. (2009). Natural England Technical Information Note TIN055: An estimate of the economic and health value and cost effectiveness of the expanded Walking Health Initiative scheme. Natural England.

Natural England. (2010). The National Archives: Accessible Natural Greenspace Standard (ANGSt). Retrieved from Natural England: [http://webarchive.nationalarchives.gov.uk/20140605111422/http://www.naturalengland.org.uk/regions/east\\_of\\_england/ourwork/gi/accessiblenaturalgreenspacestandardangst.aspx](http://webarchive.nationalarchives.gov.uk/20140605111422/http://www.naturalengland.org.uk/regions/east_of_england/ourwork/gi/accessiblenaturalgreenspacestandardangst.aspx)

Natural Learning Initiative. (2012). Benefits of Connecting Children with Nature: Why Naturalize Outdoor Learning Environments. Natural Learning Initiative | College of Design | North Carolina State University.

Naylor, L. H. (2018). Appendix four:Greening the Grey: a framework for integrated green grey infrastructure (2017). Retrieved from University of Glasgow: <http://eprints.gla.ac.uk/150672/42/150672Appendix4.pdf>

Office for National Statistics. (2014). Census 2011. Retrieved from Office for National Statistics: <https://www.ons.gov.uk/census/2011census>

Office for National Statistics. (2016). Subnational Population Projections, 2014-based Projections. Office for National Statistics.

OpenNESS. (2017). Draft - Testing the resilience of biodiversity offsetting to climate change in Essex. University of Oxford: University of Oxford and Guy Duke, The Environment Bank Limited.

PERFECT. (2018). PERFECT Expert Paper 1: health, wealth and happiness - the multiple benefits of green infrastructure. Retrieved from Interreg Europe: [https://www.interregeurope.eu/fileadmin/user\\_upload/tx\\_tevprojects/library/file\\_1535017470.pdf](https://www.interregeurope.eu/fileadmin/user_upload/tx_tevprojects/library/file_1535017470.pdf)

Place Services. (2017). Essex State of the Environment: Essex Natural Capital Asset Check Base Line report. ECC.

Place Services. (2018). Essex Woodland Project. Retrieved from Essex Woodland Project: <https://www.essexwoodlandproject.org/>

Public Health England. (2018). Wider Determinants of Health. Retrieved from Public Health England: <https://fingertips.phe.org.uk/profile/wider-determinants/data#page/0/gid/1938133043/pat/6/par/E12000006/ati/102/are/E10000012>

QAResearch. (2016). Essex Resident Survey 2016 for Essex County Council. QA Research.

Qian, Y. & Follett, R.F. (2002). Assessing Soil Carbon Sequestration in Turfgrass Systems Using long-Term Soil Testing Data. *Agronomy Journal*, 94, 930-935.

TGIC. (2017, August 24). The Greening Permit In Paris. Retrieved from The Green Infrastructure Consultancy: <https://greeninfrastructureconsultancy.com/the-greening-permit-in-paris/>

The Ramblers & TCPA. (2018). Walking in urban parks and green spaces. The Ramblers and the Town and Country Planning Association .

Trinomics, Alterra, Arcadis, Regional Environment Centre, Risk & Policy Analysis, Stella Consulting (2018). Green Infrastructure in the Energy Sector. Retrieved from European Commission:  
[http://ec.europa.eu/environment/nature/ecosystems/pdf/Green%20Infrastructure/GI\\_energy.pdf?\\_sm\\_au\\_=iZVnktSjRrHSJRQJ](http://ec.europa.eu/environment/nature/ecosystems/pdf/Green%20Infrastructure/GI_energy.pdf?_sm_au_=iZVnktSjRrHSJRQJ)

UK Habitat Classification Working Group (2018). UK Habitat Classification. Retrieved from UK Habitat Classification Working Group:  
<http://ecountability.co.uk/ukhabworkinggroup-ukhab/>

VisitBritain. (2013). Overseas Visitors to Britain's Parks and Gardens Spend £7.8 Billion. <https://travelpnews.com/visitbritain-overseas-visitors-to-britains-parks-and-gardens-spend-7-8-billion-53245678976578/travel-press-release/2013/06/11/> : Visit Britain.

Woodland Trust. (2017, May). Space for People: Targeting action for woodland access: Policy Paper. Retrieved from Woodland Trust:  
<https://www.woodlandtrust.org.uk/mediafile/100818946/pp-wt-010617-space-for-people-2017.pdf?cb=4c81a1228a294644bf3bb298368d752b>

Worcestershire County Council. (2015). Viability, valuation and funding of green infrastructure on new development sites. Worcestershire County Council.

## List of Appendices

Appendix 1 – Glossary

Appendix 2 – Map of Productive Spaces and the Agricultural Land Classification

Appendix 3 – Environmental Character of Greater Essex

Appendix 4 - Green Infrastructure Asset Data

Appendix 5 – The Essex Context

Appendix 6 – Percentage of Green Infrastructure and Graded Agricultural Land in each Local Authority Area

Appendix 7 - Green Infrastructure Asset GIS Analysis

Appendix 8 – The Benefits to Essex from Green Infrastructure

Appendix 9 - Access and Inclusivity to Green Infrastructure Provision

Appendix 10 – Green Infrastructure Recommendations

Appendix 11 – Map of the Proposed Development Sites in Essex

Appendix 12 – Map of Public Rights of Way & Cycle Network

Appendix 13 – Potential Funding Sources

This information is issued by  
Essex County Council  
Contact us:  
[environment@essex.gov.uk](mailto:environment@essex.gov.uk)  
Land Operations and Sustainability & Resilience  
Essex County Council

Chelmsford  
CM1 2QH

Visit us at:  
[www.essex.gov.uk](http://www.essex.gov.uk)  
Essex\_CC

[facebook.com/essexcountycouncil](https://www.facebook.com/essexcountycouncil)

The information contained in this document can be translated,  
and/or made available in alternative formats, on request.

Published 2019