

Vol. 1: SOUTH ESSEX STRATEGIC GREEN
AND BLUE INFRASTRUCTURE STUDY

RESILIENT BY NATURE



The South Essex Strategic Green and Blue Infrastructure Study has been prepared on behalf of the Association of South Essex Local Authorities (ASELA), consisting of the following:

Basildon Borough Council

Brentwood Borough Council

Castle Point Borough Council

Essex County Council

Rochford District Council

Southend on Sea Borough Council

Thurrock Borough Council

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Prepared by:

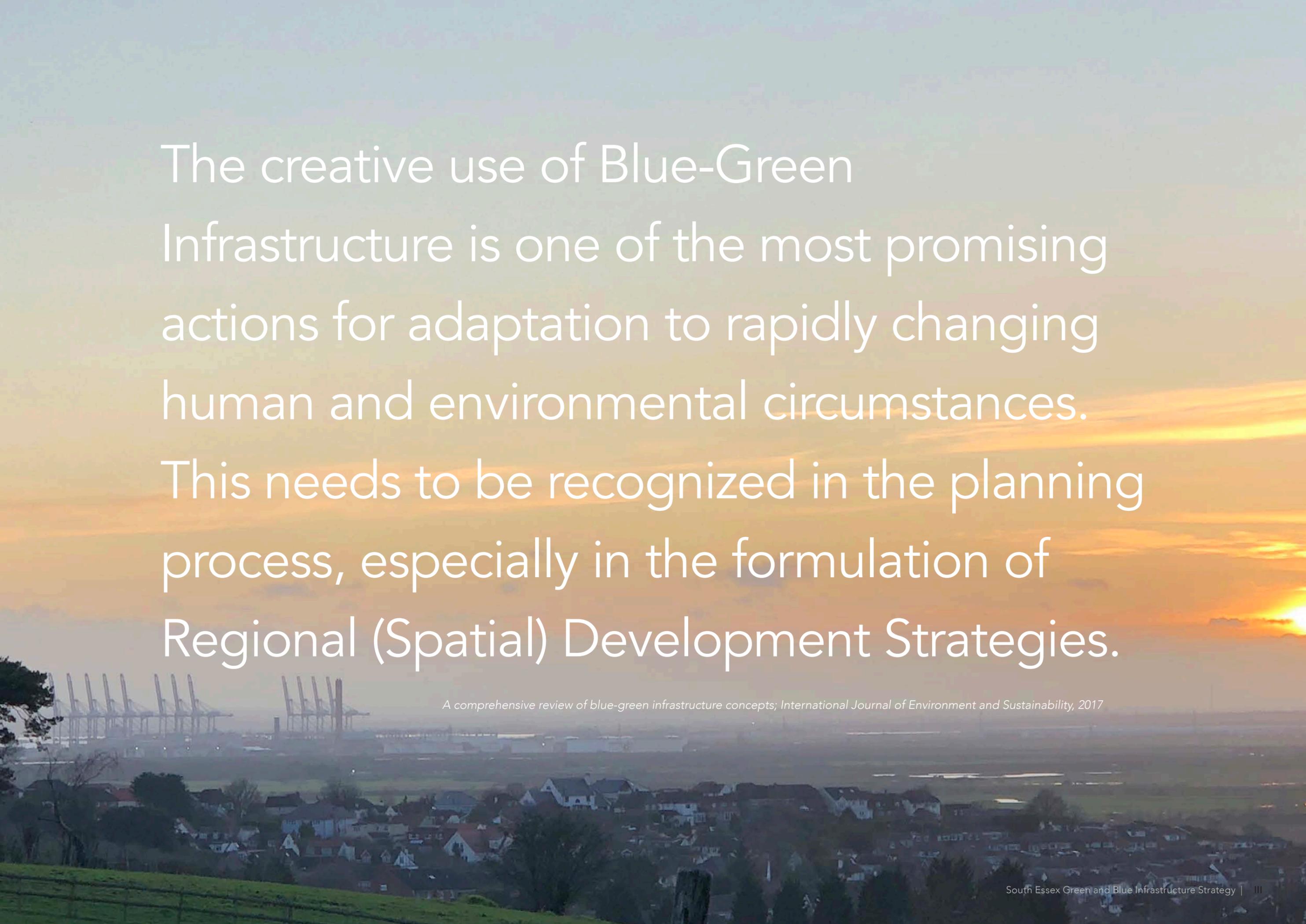
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The creative use of Blue-Green Infrastructure is one of the most promising actions for adaptation to rapidly changing human and environmental circumstances. This needs to be recognized in the planning process, especially in the formulation of Regional (Spatial) Development Strategies.

A comprehensive review of blue-green infrastructure concepts; International Journal of Environment and Sustainability, 2017

Executive Summary

“Live, ecological systems can be designed as infrastructures that shape contemporary urban economies.”

Landscape as Infrastructure, Pierre Belanger, 2017.

The South Essex Strategic Green and Blue Infrastructure Study (the “South Essex GBI”) sets an inspired vision for green and blue infrastructure across South Essex, and provides high-level objectives, strategic opportunities, and policies, driven by a coordinated approach. The South Essex GBI defines an integrated green and blue network, that will provide multiple benefits and which merits prioritisation and significant investment. Moreover, it defines a spatial arrangement, articulates key moves, and describes why these are important for ongoing investment, conservation, management and development.

The South Essex GBI will steer, and be supported by, individual Local Plans. It will assist the strategic and local plan-making processes by informing the management and delivery of visionary, exemplary and high-quality green and blue infrastructure across South Essex. This involves an integrated understanding of landscape infrastructure, including, but not limited to, green networks, nature designations, open spaces, regional parks, agricultural areas, and waterways within the study area.

The South Essex GBI strategy will contribute to the statutory Joint Strategic Plan (JSP). The Association of South Essex Local Authorities (ASELA), which have come together as partners responsible for the delivery of the South Essex GBI, include:

- Basildon Borough Council
- Brentwood Borough Council
- Castle Point Borough Council
- Essex County Council
- Rochford District Council

- Southend on Sea Borough Council
- Thurrock Borough Council

The South Essex Strategic GBI will be a key document, and will sit amongst a series of other identified key spatial strategies to create the JSP. It will guide Local Plans, setting a far more ambitious and creative goal than typical GBI studies. It sets out an inspiring and overarching vision of what can be achieved. The vision guides every move in the GBI strategy. It is:

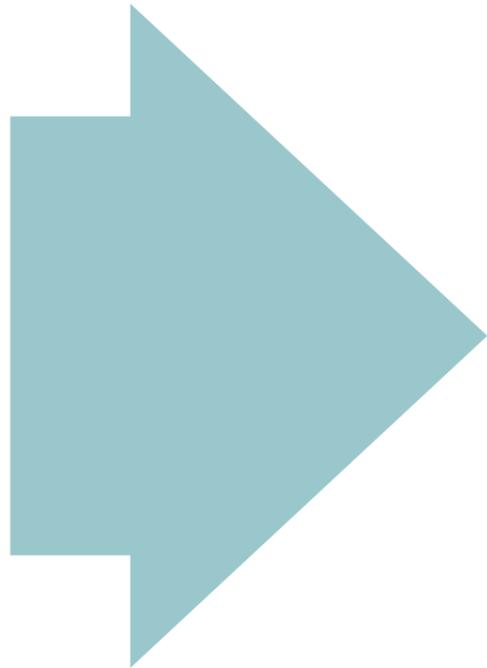
“We will proactively reimagine a better future for South Essex, by creating a rich tapestry of world-class productive, connected and dynamic landscapes, woven together to form the celebrated South Essex Estuary (SEE) Park.”

The vision is the creation of one single park system that encompasses all of South Essex.

The vision is broken down into a series of themes, objectives, and key moves, forming the structure of the South Essex GBI study.

TAB.1 Themes, Objectives and Key Moves

THEMES	OBJECTIVES
Climate Change	 Create a Resilient Infrastructure
Water Management	 Improve Connectivity
Landscape Identity	 Work with Hydrological Systems
Natural Resources	 Protect and Enhance Biodiversity
Connectivity	 Support Natural Resource Productivity
Conservation	 Celebrate a Sense of Place
Health and Wellbeing	 Promote Liveable and Healthy Places
Growth and Development	 Define a Resilient Growth Structure
Sustainability	 Ensure Sustainable Management



SEE PARK

KEY MOVES

1. Establish Regional Parkland

2. Build Landscape Connectivity

3. Integrate Water Management Systems

4. Optimise Agricultural Use

5. Reveal Unique Landscape Features

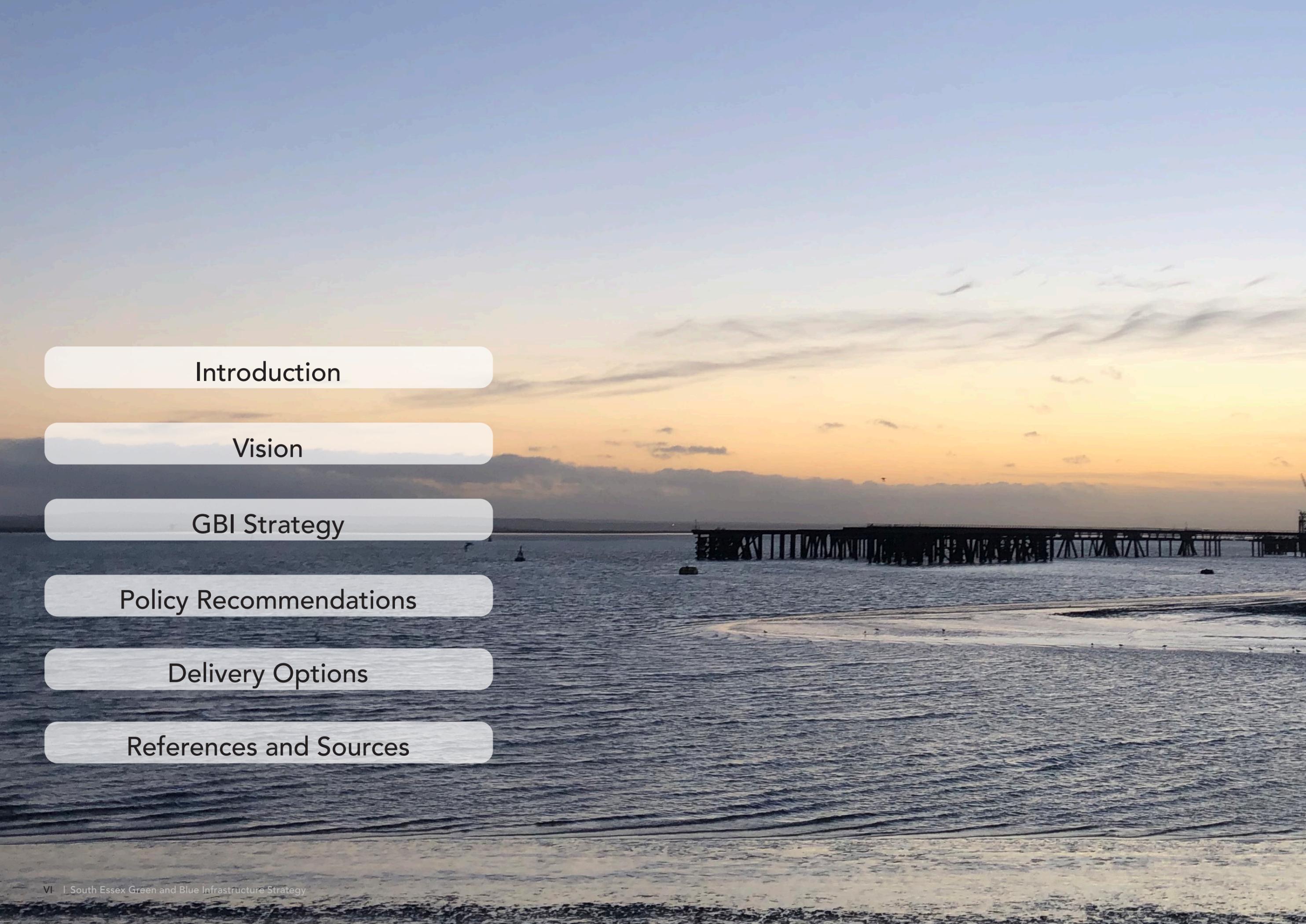
6. Plan for Growth and Development

The South Essex GBI provides an overarching structure providing many social, environmental and economic benefits. Key moves are drawn out of the themes, and provide a robust, comprehensive and unifying framework for South Essex. Moreover, the study will play a key role in shaping and informing the spatial contents of various documents, including local plans, and will contribute to standards across South Essex for provision of open green spaces.

The South Essex GBI identifies a plan for GBI across the whole area. However, a more detailed level of mapping and analysis has been applied to each district and borough council, to reflect where new development is envisaged and where more detailed opportunities are located. Thus, this strategic GBI seeks to inform and complement the development of local GBI studies, and even detailed masterplanning in these areas.

The South Essex GBI is not intended to be prescriptive, but does establish principles to demonstrate how best practice for the development of GBI can be applied on the ground. We recognise that there is a need for flexibility and that the key moves of the GBI can be implemented in different ways.

South Essex's landscape is one of its greatest assets, and this GBI Strategy aims to make the most of this superb asset, for the benefit of wildlife, local communities and the economy as a whole. South Essex, through this study, has the opportunity to create an infrastructure model of adaptability and resilience, not only for South Essex and London, but for other estuary communities around the world.



Introduction

Vision

GBI Strategy

Policy Recommendations

Delivery Options

References and Sources

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1 Introduction

1.1 Study Purpose and Approach

This Strategic Green and Blue Infrastructure Study will provide a place-specific vision for landscape infrastructure across South Essex, and will outline a coordinated approach to be supported by the Joint Strategic Plan and Local Plans.

Purpose of the Study

In order to deliver the *South Essex 2050* vision, the South Essex authorities are preparing a statutory Joint Strategic Plan (JSP), that will focus on key spatial planning priorities, including this *South Essex Strategic Green and Blue Infrastructure Study*. It will sit amongst the other following spatial strategies:

- Housing numbers, type and distribution (including delivery issues and affordable housing);
- Economic development priorities and strategic locations informed by an emerging Local Industrial Strategy;
- Transport Infrastructure requirements to deliver growth;
- Design and quality (including future proofing development/potential new technologies);and
- Social inclusion and other supporting infrastructure.

The South Essex Green and Blue Infrastructure (GBI) will describe an inspired vision, provide high-level objectives, strategic opportunities, and policies, and drive a coordinated approach that will steer, and be supported by, individual Local Plans. It will assist the strategic and local plan-making processes by informing the management and delivery of visionary, exemplary and high-quality green and blue infrastructure across South Essex. This involves an integrated understanding of landscape infrastructure, including, but not limited to, green networks, nature designations, open spaces, regional parks, and waterways within the study area.

An explanation of project background and context is included in Sections 1.3 and 1.4 of the report.

Approach to the Study

The approach taken for this GBI Study involves 3 main stages of work:

TAB.2 3 Stages of the approach of this GBI Study

STAGE 1: BASELINE

- Baseline** Task 1.1 - Inception Meeting
- Task 1.2 - Data Collection and mapping
- Task 1.3 - Baseline Synthesis
- Task 1.4 - Baseline Interim Report

STAGE 2: GREEN+BLUE INFRASTRUCTURE ASSESSMENT

- Stage 2a** Task 2.1 - Green Infrastructure Assessment
- Stage 2b** Task 2.2 - Blue Infrastructure Assessment
- Stage 2c** Task 2.3 - Future Opportunities
- Task 2.4 - Policy Recommendations and Justifications
- Task 2.5 - Stakeholder Workshop
- Task 2.6 - Stage 2 Report

STAGE 3: REPORT

- Local Open Spaces and Green Networks** Task 3.1 - Local Open Space Network and Capacity Assessment
- Task 3.2 - Establishing Provision to be Protected, Enhanced or Relocated
- Task 3.3 - Opportunities Analysis
- Task 3.4 - Delivery Options
- Task 3.5 - Policy Recommendations and Justifications
- Task 3.6 - Stage 3 - Final Strategic GBI Study Report

Stage 1 : Baseline Review of Existing Green and Blue Infrastructure Evidence

This stage involves a review of national, regional and local policy guidance, and further relevant evidence, best practice and strategy documents. A desk-top based analysis of mapped datasets for various GBI assets, provided by the ASELA, has been undertaken. Where the required data was not available or where the data was deemed incomplete or inconsistent between areas, Ordnance Survey OpenData has been used, as noted in the relevant map's caption. Information is documented and layered to prepare a comprehensive picture of existing green and blue infrastructure, and other relevant information, across South Essex.

Definitions of GBI, which form the basis of this study, have been developed and agreed by the ASELA Project Steering Group at this stage.

The final output of this stage of work is the:

SOUTH ESSEX STRATEGIC GREEN AND BLUE INFRASTRUCTURE STUDY: BASELINE REPORT

Stage 2 : Strategic Green and Blue Infrastructure Assessments

Building on the evidence base of Stage 1, the information gathered has been organised and studied to understand the opportunities and challenges of GBI in South Essex. Site visits undertaken have supported an understanding of place, identity, character, quality and quantity of GBI. This provides a strong basis for identifying drivers for GBI in South Essex.

Within Stage 2, a Stakeholder Workshop was held to test the ideas and glean important information and ideas. This stakeholder engagement has refined the vision, objectives and strategic GBI opportunities, and provided momentum to "Think Big." (See Vol. 2: SOUTH ESSEX STRATEGIC GREEN AND BLUE INFRASTRUCTURE STUDY: APPENDIX: *Stakeholder Workshop Summary*)

Thus, this stage focusses on the vision, supported by objectives and themes that provide an overarching structure relating to social, environmental and economic benefits. Key moves are drawn out of the themes, that address each one of the comments provided at the workshop. And spatial ideas are addressed within a GBI Layout that is considered at a South Essex-wide scale.

To support the big idea and objectives, preliminary policy recommendations have been set out. The final output of this stage is the:

STAGE 2 REPORT

Stage 3 : Local Open Spaces and Green Networks

The Stage 3 report further defines the South Essex GBI and strategic plan for a comprehensive and visionary infrastructure. The vision, objectives and key moves, established in the Stage 2 Report, are in Stage 3, given physical form with a developed GBI Layout. This spatial strategy sets out the GBI network at a South Essex-wide scale, and further defined area by area.

A more detailed look at local open space networks and capacity is included at this stage, with opportunity analysis provided area by area.

Policy recommendations and delivery options are developed to support the authorities' Local Plans, with Next Steps identified at the conclusion of the document. Furthermore, the Appendix provides information on funding schemes and case studies to support implementation plans.

All mapping is gathered on GIS, including the identification of existing and proposed GBI.

The final output of this stage is the:

STAGE 3 REPORT

*Thurrock and Brentwood are not included in this stage of work, as they have undertaken separate studies on green and blue infrastructure within their respective areas. However, they have been included in the documentation to provide a comprehensive view on South Essex.

Document Structure

The final report is broken down into 2 Volumes:

1. Vol. 1: SOUTH ESSEX STRATEGIC GREEN AND BLUE INFRASTRUCTURE STUDY

This volume contains the overarching purpose, vision, themes and objectives of the GBI. It sets out the key moves and South Essex-wide GBI strategy. These are supported by policy recommendations and delivery options.

2. Vol. 2: SOUTH ESSEX STRATEGIC GREEN AND BLUE INFRASTRUCTURE STUDY: APPENDIX

This volume provides more detail to support Volume 1, including funding schemes, case studies, a summary of baseline information by theme, and a detailed look at the local open space network and capacity assessment, including GBI Layouts at a district or borough level .

1.2 The Bigger Picture

Now, more than ever before, people are recognising the value of our green and blue infrastructure network.

Reimagining Infrastructure

These are challenging times. Humanity is being tested in ways that were unimaginable until recently. We are being called upon to think differently in order to address these new challenges with which we are confronted. The business as usual approach will not suffice.

In order to successfully cultivate South Essex for the long-term, landscape, environment, urbanisation and infrastructure will be considered in a coordinated manner. Failure to integrate systems in the past has led to under performance of masterplanning and over-exertion on technological infrastructures. Thus, green and blue infrastructure emerges out of a demand for new practices of planning and development to reconfigure the way we understand and shape the environment. It will prepare communities for the future by addressing ecological, economic, and social vulnerabilities that exist today.

COVID-19

The social distancing measures implemented to contain the spread of coronavirus (Covid-19) has highlighted the critical importance of high-quality green and blue spaces within easy reach. While it has long been understood that access to open spaces improves human wellbeing, the extreme situation of lockdown has brought to the forefront the disparity in people's experience, with some having access to green open spaces while others lack it, especially those living in dense urban areas, or rural areas comprised of private farmland with no public access. Ensuring inclusive spaces for all members of society deserves attention, and understanding the socio-economic demographic and their needs is crucial.

Moreover, the subject of provision of active travel networks for people on foot, cycling, horseback, and various other non-motorised transport, has been receiving due attention.

Thus, local plans should be revised to emphasise the provision of green and blue infrastructure, sustainable travel, and high-quality open spaces, especially in urban areas. This will not be easy – particularly in built-up high density areas where there is a real need to create green space – but this is no reason not to try. Indeed, in order to build more resilient, greener communities, green and blue infrastructure should move to the top of the agenda in every new local plan.

Change is already happening. The wheels have been set in motion for the creation and improvement of green space in England with the biodiversity net gain requirements set out in the emerging environment bill. The bill will mandate for residential, commercial, and infrastructure developers to demonstrate that biodiversity has been enhanced throughout all new projects.

Now is the time to reset our approach to planning and design of communities. Einstein's insight that the manner of thinking that creates a problem cannot be the means by which to solve it, rings true. Nature has been squeezed out of development for decades. **This is the time to pioneer an innovative landscape-led approach, and a critical reorientation to understand the importance of integrating natural systems, built environment and social equity, to meet the challenges of our time.**

“Ecological collapse is a much bigger danger than COVID-19 for humanity. Hopefully, this is a necessary wake-up call”

Yuval Noah Harari, on the History of Our Future, Global Optimism



FIG.1 Wallasea Island Nature Reserve in Rochford, managed by the RSPB, is the UK's largest human-made wetland. The Wallasea Island Wild Coast Project used excavated material from Crossrail's tunnels to re-profile the land to allow for the seawall to be breached, and a mosaic of lagoons and raised islands to be created. It transformed 670 hectares of farmland back into coastal marshland, as it was 400 years ago. It provides a thriving wetland for tens of thousands of migratory birds and helps to combat future impacts of climate change on people and wildlife including coastal flooding. Indeed, Wallasea Island is an exemplary project utilising mitigation and adaptation strategies.

Climate change and biodiversity loss are the most challenging issues of our time.

A Changing Climate

The case for addressing biodiversity loss, climate change and environmental risks to public health is clear. The UK Environment Bill recognises the urgency and accelerating impact of climate change in this country and around the world, noting the damage to nature with species loss, habitat erosion and the disappearance of cherished wildlife. Meaningful and urgent action is required to combat the environmental and climate crisis we are facing.

Being within an estuary environment, the effects of climate change are particularly evident in South Essex, and these effects will be amplified in coming decades. Warmer temperatures and drought, along with sea-level rise and changing rainfall patterns present challenges to address. Green and blue infrastructure provides a way to face these challenges.

Current projections show that sea level rise in the Thames is likely to be between 20cm and 90 cm by 2100, although due to uncertainty over polar ice melt, this could increase to 2m. North Sea storm surges are also a significant threat, while peak freshwater flows could also increase by as much as 40% by 2080. At these levels, homes, businesses, major regional transportation infrastructure, and scores of important ecological sites will be severely at risk. (FIG.3, provides a diagram of the Projected Flood Risk by 2050 and 2100, and depicts where flooding will occur.)

In order to respond to the climate emergency, we must deliver mitigation strategies, and also adapt to the climate-related changes we are experiencing. Mitigation measures are those actions that are taken

to reduce and curb greenhouse gas emissions, while adaptation measures are based on reducing vulnerability to the effects of climate change. Both approaches are needed.

Mitigation

Mitigation attends to the causes of climate change. The strategies are devoted to the reduction of the rate of increase, and scale of changes, in greenhouse gases (GHG), as these gases create global warming. The primary types of mitigation actions to reduce long-term vulnerability are: local plans and regulations; structural projects; natural systems protection; education programs; preparedness and response actions.

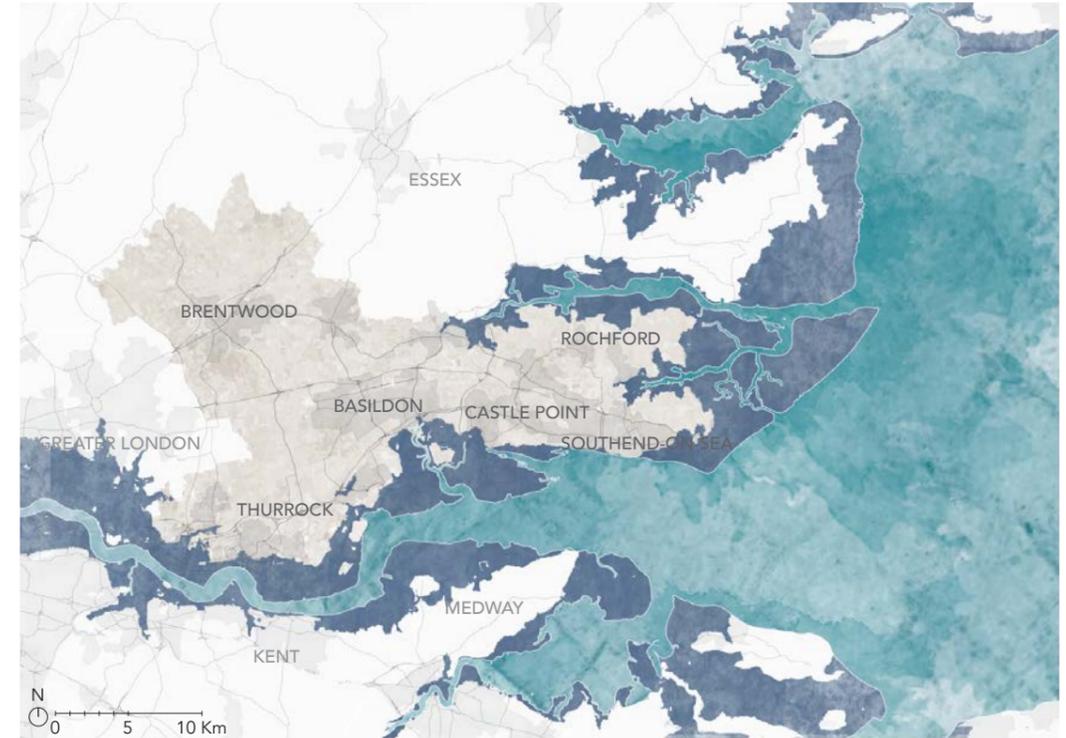
Adaptation

Adaptation addresses the impacts of climate change. It aims to improve the capacity of defence and resilience, which reduces the passive influence of climate change. It is a framework for managing future climate risk, prioritising and coordinating action, and it offers the potential of reducing future economic, environmental and social costs.

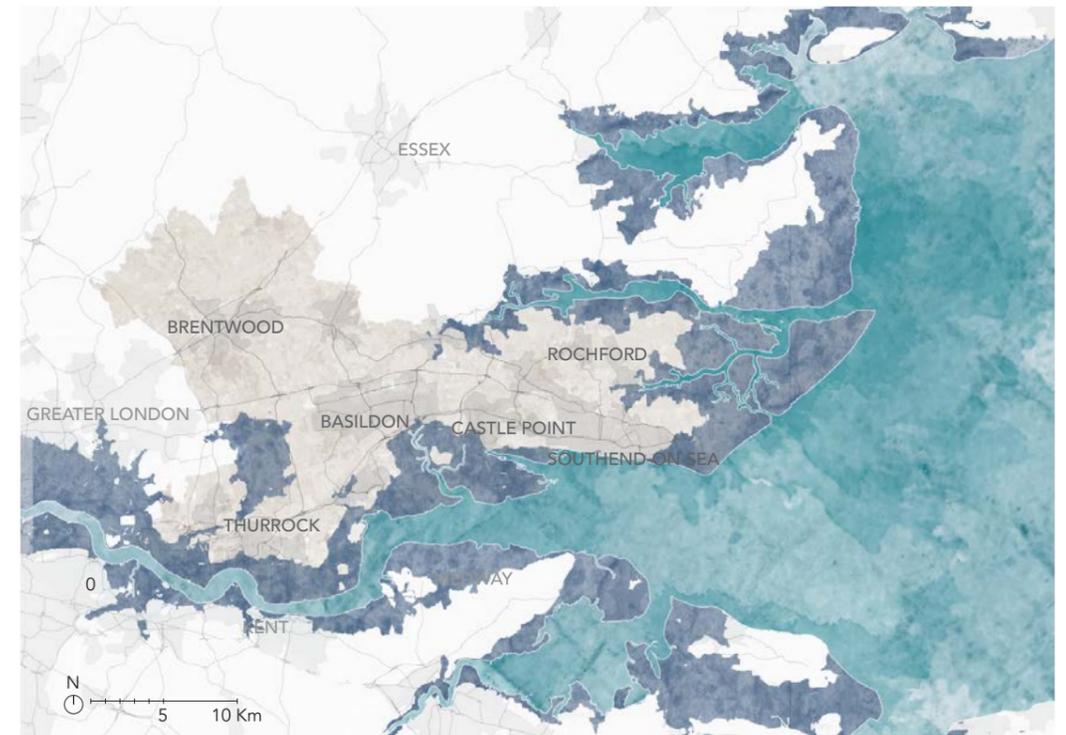
A business as usual approach will not meet the demands of a climate change crisis. We must devise a new language of adaptable and resilient landscape infrastructure, where human life is understood as part of nature rather than separate.

Green and Blue Infrastructure is a promising and exciting method for mitigation and adaptation to rapidly changing circumstances.

2050



2100



Projection Type: Sea Level Rise & Annual Flood

Pollution Scenario: Moderate Cuts

FIG.2 Projected Flood Risk by 2050 and 2100

Carbon Sinks are Our Best Climate Hedge

Green and blue infrastructure provides important carbon sinks for all the CO₂ we generate.

Climate change is mainly a problem of too much carbon dioxide (CO₂) in the atmosphere. This carbon excess is caused mainly by human activities such as burning fossil fuels or cutting down and burning forests.

There are many greenhouse gases (from methane to water vapour), but CO₂ creates the greatest threat of irreversible changes that accumulate in the atmosphere. There are two key reasons why:

1. CO₂ has caused most of the global warming and its influence is expected to continue. It has contributed more than any other driver to climate change in the last two centuries.
2. CO₂ remains in the atmosphere longer than other major heat-trapping gases: 40% will remain in the atmosphere for 100 years; 20% will reside for 1000 years; while the final 10% will take 10,000 years to turn over. Heat-trapping emissions we release today are determining the climate our children and grandchildren will inherit.

Carbon Sinks

Carbon sinks are natural or artificial deposits that absorb and store carbon from the atmosphere helping reduce the greenhouse effect. The main natural carbon sinks are plants, soil and the ocean. The performance of these is affected by climate fluctuations and the seasons. For example, during the warm summer months, plants and trees can absorb more CO₂, whereas during the winter they absorb less CO₂ which causes the atmospheric levels to rise.

The ability to balance CO₂ concentrations depends mostly on availability of carbon sinks to soak up excess CO₂, as they absorb about half of carbon emissions. Thus, carbon sinks play a vital role in preventing carbon levels to rise.

However, carbon sinks are struggling to perform well as their capacity has been compromised by climate variability. At the same time, scientists have shown that we now need to deliver negative emissions to keep global warming under 1.5 degrees Celsius to avoid a key tipping point for climate change.

In order to address this challenge, we need to restore our carbon sinks at a historic scale. Some significant ways to meet this challenge include, but are not limited to, the following strategies:

- Switching to sustainable forestry and agriculture;
- Planting trees;
- Restoring ecosystems that have been damaged; and,
- Protecting the wild places that are still intact.

The SEGBI will apply these strategies in recognition of the vital carbon sinks that GBI provides to offset carbon emissions.

FIG. 3 is an infographic that describes why carbon sinks are needed to process all the CO₂ generated by humans.

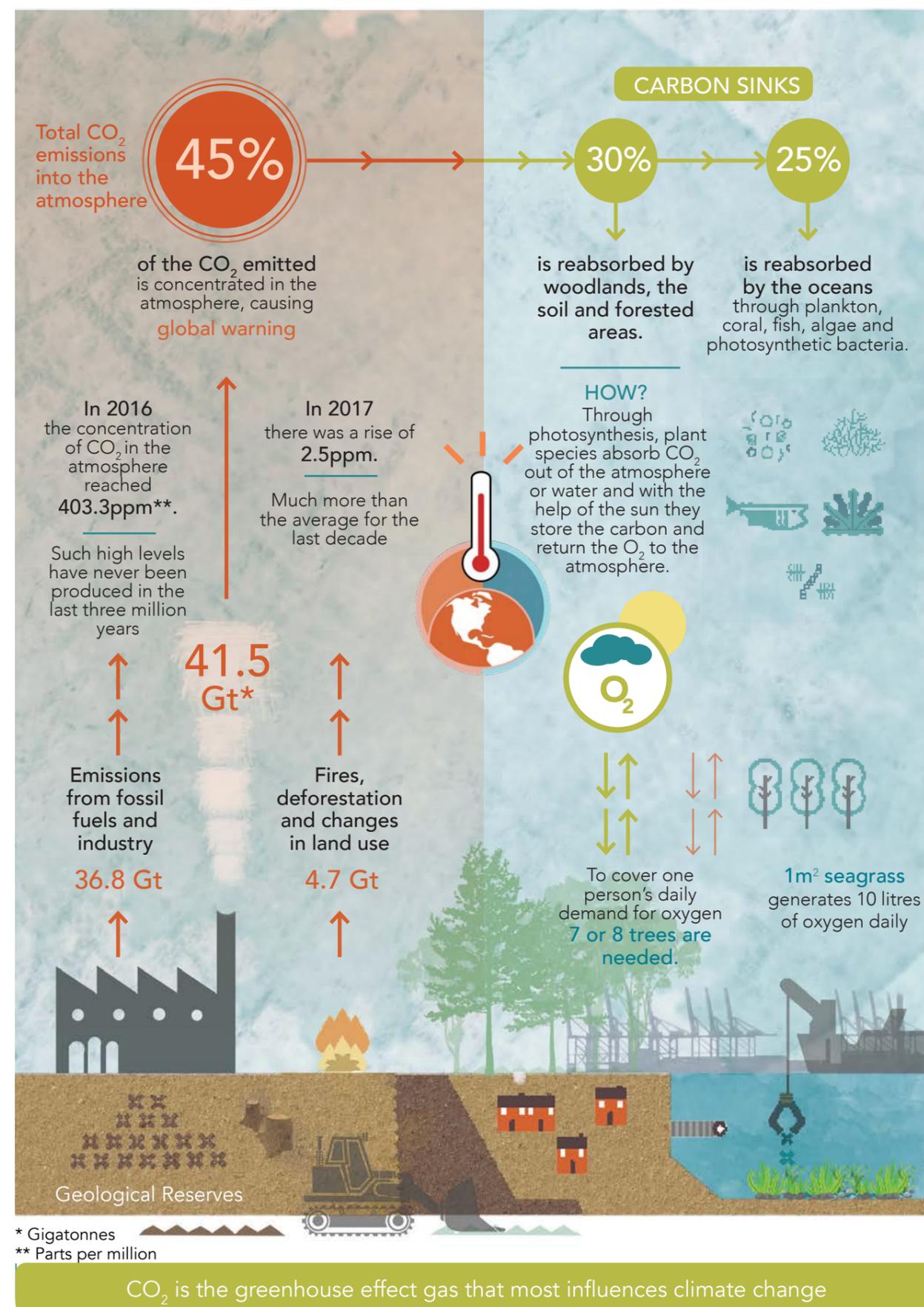


FIG.3 Carbon Sinks Diagram

Benefits of blue carbon

Land-based carbon sinks, that pull carbon emissions from the atmosphere, are getting a lot of attention recently. What is not so widely known, is that blue carbon sinks, though much smaller in size than the planet's forests, actually sequester and store more carbon at a much faster rate, and should also be recognised for possessing important absorption qualities.

Blue carbon is simply the term for carbon captured by the world's ocean and coastal ecosystems. Sea grasses and salt marshes along our coast capture and hold carbon, acting as carbon sinks. They are an essential piece of the solution to global climate change.

Unfortunately, South Essex has lost much of its coastal ecosystem. Five hundred years ago there were 30,000 hectares of intertidal salt marshes around the Essex coast, compared with only 2,500 hectares today.

These ecosystems serve many functions, including coastal habitat protection and food security. Unfortunately, if these ecosystems are degraded or damaged, an enormous amount of stored carbon is emitted back into the atmosphere, where it can then contribute to climate change. So protecting and restoring coastal habitats is a good way to reduce climate change. There are also other benefits to people, such as recreational opportunities, storm protection, and nursery habitat for commercial and recreational fisheries.

Another benefit is to incorporate coastal wetlands into the carbon market through the buying and selling of carbon offsets. This approach creates a

financial incentive for restoration and conservation projects by helping to alleviate carbon taxes aimed at discouraging the use of fossil fuels. When fewer greenhouse gases are emitted, the process benefits not only the environment but also the financial well-being of the community doing the restoration.

Implementing GBI strategies will play a vital role in the creation of carbon sinks that will help to absorb and decrease CO₂ concentrations in the atmosphere, and thus will help to combat climate change and biodiversity loss, along with numerous other benefits.

83%

GLOBAL CARBON

83% of the global carbon cycle is circulated through the ocean.

2%

COASTAL HABITAT COVERAGE

Coastal habitats cover less than 2% of the total ocean area.

50%

SEDIMENT CARBON

Coastal habitats account for approximately half of the total carbon sequestered in ocean sediments.

FIG.4 A global program called The Blue Carbon Initiative, is working to mitigate climate change through restoration and sustainable use of coastal and marine ecosystems. It is coordinated by Conservation International (CI) and the International Union for Conservation of Nature (IUCN), and the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific, and Cultural Organization (IOC-UNESCO).

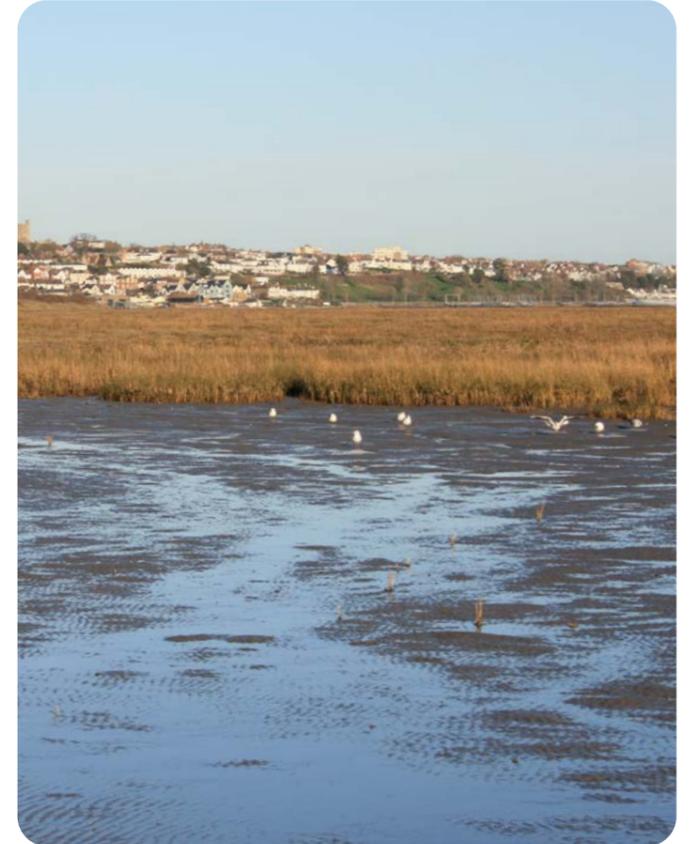


FIG.5 Salt marshes in Essex have been largely lost. Some remain, as this one at Two Tree Island

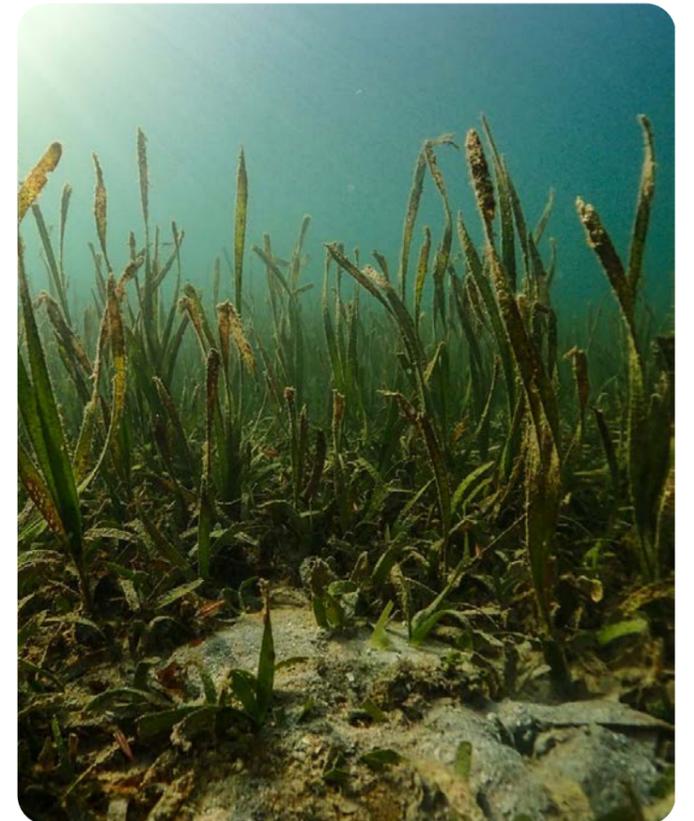


FIG.6 Seagrasses and salt marshes provide important carbon storage.

1.3 Background

Creating solutions that meet our current and imminent challenges with an integrated cross-boundary approach is fundamental to building a more resilient South Essex.

South Essex has a clear vision to be a pioneer in sustainable growth, and though faced with real challenges, it has also set ambitious performance and growth targets for the region. To build on the acknowledged strengths of the area, and to provide a framework for growth, the ASELA aim is to deliver a minimum of 90,000 new homes and over 52,000 new jobs by 2038. The Vision is for South Essex to become:

“The place to live, the place to visit, the place for business.”

South Essex 2050 Issues Paper, 2020

In light of the climate crisis, and in recognition that carbon must be reduced in the atmosphere, the ASELA has included the objective that, “South Essex should be a green and carbon neutral environment.”

Thus, GBI takes a lead role within this vision, and is supported by this green vision. It is within this context that the South Essex Strategic Green and Blue Infrastructure Study has emerged.

Thames Estuary Planning

South Essex sits within the Thames Estuary (formerly referred to as Thames Gateway), and has been identified as a national priority area for regeneration and growth. In 2016, The Thames Estuary 2050 Growth Commission was established to develop an ambitious vision and delivery plan for East London, North Kent, and South Essex. It is seen as an area with great potential: proximity to London; international trade via its ports, strong universities, further education and research institutions; and availability of land to deliver high-quality homes. However, the Commission notes that over the past few decades it has consistently

been unable to deliver the same levels of economic growth as other parts of the UK, and that a business as usual approach has not been effective. The Vision set by the Commission is that:

“By 2050, the Thames Estuary will be a tapestry of productive places along a global river. The Estuary will create 1.3 million new jobs and generate £190 billion additional GVA. At least 1 million new homes will be delivered to support this growth.”

Thames Estuary 2050 Growth Commission: 2050 Vision, 2018

However, due to climate change and sea level rise, the Thames Estuary faces real challenges as outlined in *The Thames Estuary 2100 project (TE2100)*, led by the Environment Agency (EA). A comprehensive action plan to manage flood risk for the Tidal Thames has been put in place, with actions and projects necessary to mitigate flood risk in South Essex. (Please see FIG. 7) The EA supports a Riverside Strategy Approach, which aims, “to ensure that future changes to the riverside take place in a planned and integrated way which maximise the potential environmental, social, cultural and economic benefit.”

To meet the *Thames Estuary 2050* vision, while responding to the *TE2100*, the TE Growth Commission notes that a clear spatial framework is required. It also states that connecting to, and enhancing, natural assets and green infrastructure must be a key priority in this region.

This priority on green infrastructure is also recognised in an earlier government publication titled *Creating*

“The Thames Estuary area provides the long term solution to managing the impacts of sea level rise on London. If appropriately planned, opportunities including maximising flood attenuation and improving air quality should be pursued alongside provision of replacement habitats and improved access for recreation and leisure (as promoted by the Thames Estuary 2100 Plan).”

Thames Estuary 2050 Growth Commission: 2050 Vision, 2018

sustainable communities: Greening the Gateway. It sets out an implementation plan for protecting and enhancing the local environment in the Thames Estuary, and acknowledges the critical role it plays in the strategy to create sustainable communities, in order to:

- Enhance the quality of life of new and existing residents;
- Support and protect biodiversity; and,
- Create a positive image of the Gateway to maximise commercial value and the viability of development.

Essex Planning

Essex County Council is pioneering this landscape-led approach with the establishment of the Essex Green Infrastructure Partnership which brings together national, regional and local authorities, environmental organisations and academic institutions to create a vision and strategy to guide planning and delivery of GBI across Essex. (Note: The Southend-on-Sea Borough Council has recently joined the online Essex GI Partnership group on the Knowledge Hub and been added and listed under partnership in the Essex GI Strategy. Actions will complement the South Essex GBI strategy.)

The *Essex Green Infrastructure Strategy*, led by the Essex Green Infrastructure Partnership, describes the importance of green infrastructure in the county, and outlines the benefits green infrastructure brings to the real world challenges faced by Essex, including health and wellbeing, growing population and economy, connectivity, productivity and flood alleviation. This

strategy identifies green infrastructure’s multifarious benefits and sets objectives for its delivery in light of potential growth and development, recognising that success is dependent on cross-boundary working (See Section 1.6 South Essex Strategic GBI).

South Essex Planning

Meanwhile, across South Essex there has been a growing recognition of the opportunity and need for a cross-boundary approach to strategic planning and growth, a shared vision of place, and a strong commitment to collaboration and delivery. With a joined-up approach, a much more significant and impactful plan for South Essex can be developed that will lead to many benefits and synergies across the boroughs. With this in mind, the ASELA was established, and is working towards a Joint Strategic Plan (JSP) under the banner of *South Essex 2050*, that focusses on key spatial priorities, including:

- Housing numbers, type and distribution (including delivery issues and affordable housing);
- Economic development priorities and strategic locations informed by an emerging Local Industrial Strategy;
- Transport Infrastructure requirements to deliver growth;
- Design and quality (including future proofing development/potential new technologies);
- Social inclusion and other supporting infrastructure; and,
- **Green and Blue Infrastructure Study** (to include consideration of connected green space/parks, Green Belt and the role of the Thames Estuary).

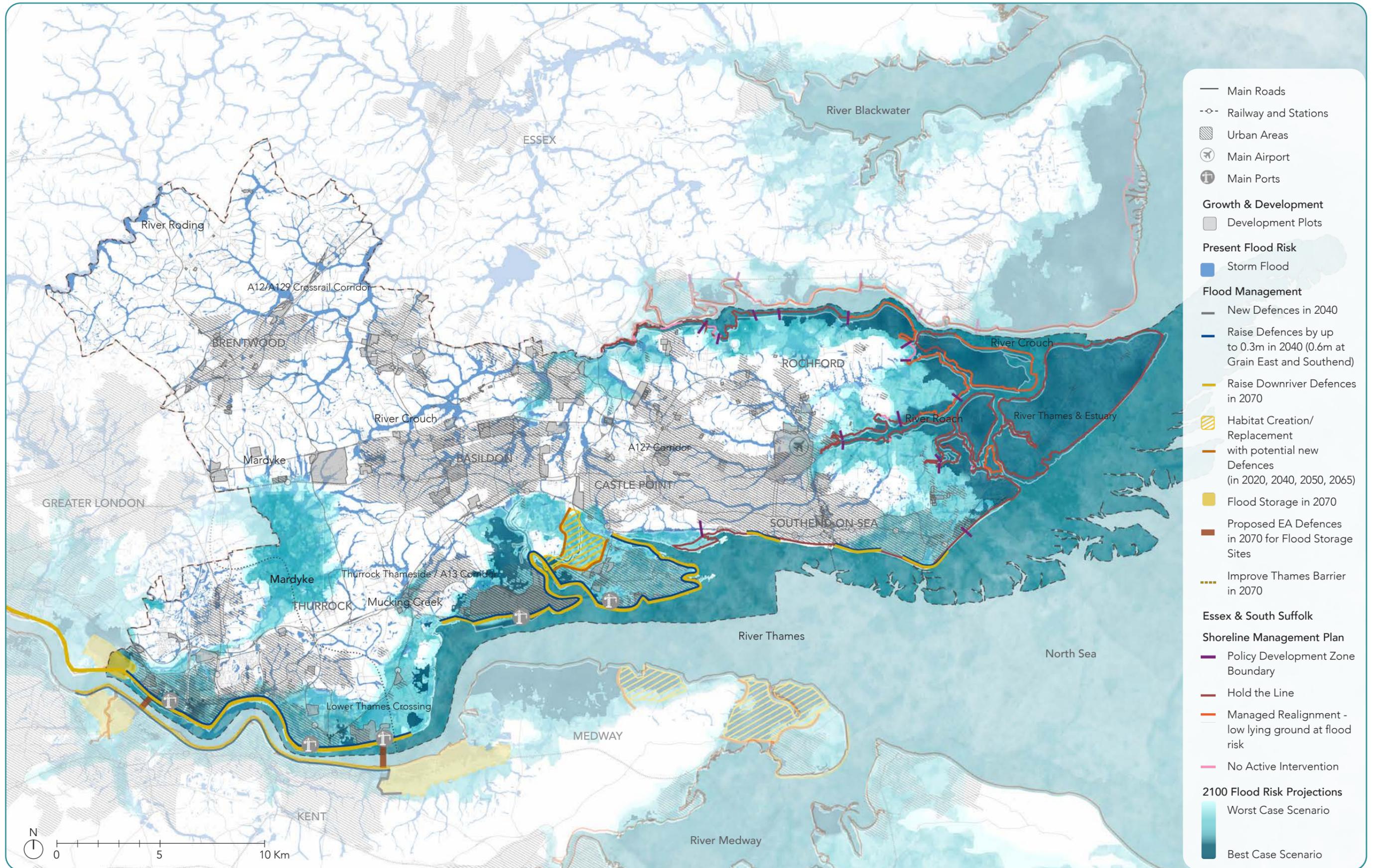


FIG.7 Projected Flood Risk, Flood Defences and Proposed Development (Source: Development Plots from Local Plans)

1.4 Policy Context

UK policy, at all levels, now recognises the need for an integrated landscape scale approach to planning, managing and improving the natural environment for the benefit of people and wildlife.

The momentum around GBI in the UK and beyond is growing. This is evidenced by The Green Infrastructure Partnership (GIP), launched in 2011, that grew out of an agreement by over 270 partner organisations from civil society, professional bodies, local authorities, developers, planners and social housing enterprises, and academics, among others to identify and develop solutions to help local decision makers adopt a GI approach in their day-to-day planning, development and delivery.

National Policy

'The National Planning Policy Framework' (NPPF) updated in June 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. It promotes the use of green infrastructure to deliver multiple functions and benefits, including: biodiversity net gains through new habitat creation and ecological networks; adapting to climate change; improving air quality and pollution; and enabling healthy lifestyles and the creation of inclusive and safe places.

'The Natural Environment White Paper, The Natural Choice: Securing the Value of Nature' (Defra, 2011) highlights, "the importance of green spaces to the health and happiness of local communities." It 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. The role of planning and of urban green infrastructure is explained as providing linkages to the ecological network and as an effective tool to manage environmental risks such as flooding and heat waves.

More recently, The 25 Year Environment Plan: 'A Green Future: Our 25 Year Plan to Improve the Environment' (2018) sets out a framework to maintain and improve the environment for the next generation. It focuses on clean air and water, connecting people with the environment to improve health and wellbeing, and mitigating and adapting to climate change. It embeds the principles of

'environmental net gain' and upgrading green infrastructure standard in the planning system. Strong, evidence-based arguments are made noting the economy's dependency on environment, and that increasing and enhancing 'natural capital' assets such as green infrastructure is not only desirable, but essential for England's future success. Furthermore, the government has started working on a project to create a 'Green Infrastructure Standards Framework' to be embedded into NPPF.

The Environment Bill puts the 25-Year Environment Plan into law, and mandates 'biodiversity net gain' requiring developers to ensure wildlife habitats are left in a measurably better state than they were pre-development. Habitat and the conditions before submitting plans will be assessed and improvements to biodiversity demonstrated, such as the creation of green corridors, planting trees, or creating local nature spaces. Green improvements on site are encouraged, but in the rare circumstances where this is not possible, developers will need to pay a levy for habitat creation or improvement elsewhere. This is a step towards natural capital net gain.

Finally, 'Healthy Lives, Healthy People: Our Strategy for Public Health in England White Paper' (2010) sets out the Government's long-term vision for the future of public health. It recognises the relationship between environment and health, along with education and employment, to tackle health inequalities to be achieved through empowering local government and communities to seek local solutions.

Emerging Legislation

Environment Bill, 2020

On 30 January 2020, the Government reintroduced the Environment Bill, which is currently making its way through Parliament. The Bill is part of the Government response to the clear and scientific case, and growing public demand, for a step-change in environmental protection and recovery. Acting as one of the key vehicles for delivering the bold vision set out in the 25 Year Environment Plan, the Environment Bill brings about urgent and meaningful action to deal with the environmental and climate crisis we are facing.

One of the provisions of the Bill is to establish the Office for Environmental Protection (OEP), a powerful new independent regulator that will hold the Government to account, including through the courts if necessary. Importantly, the OEP will scrutinise all Government policy to ensure the environment is at the heart of decision making. Crucially, it will have the power to run its own independent investigations and enforce environmental law, including taking Government and other public bodies to court where necessary. Some of the new policies which may impact the delivery of the project include:

1. Improving the air we breathe

- The Government has made a clear commitment to set an ambitious, legally binding target for the pollutant with the most significant impact on human health, fine particulate matter.
- The Bill strengthens the ability for local authorities to address air quality issues.

- The Bill enables greater local action on air pollution by updating, simplifying and strengthening the local air quality management framework (LAQM).

2. Delivering sustainable water resources

- Securing long-term resilient water and wastewater services, making sure that we have a cleaner, greener and more resilient country for the next generation
- The Bill reforms elements of abstraction licensing to link it more tightly to the 25 Year Environment Plan goal of restoring water bodies to as close to natural state as possible.
- Introducing additional requirements for Water Company planning for future water supply and wastewater and drainage networks, enabling more resilient solutions to drought and flooding
- The Bill creates a power to update the list of priority substances and their respective standards, which are potentially harmful to surface waters and groundwater.
- Enhancing flood and coastal erosion risk management by addressing a current barrier to the expansion of existing, or creation of new, internal drainage boards
- The UK Chancellor announced plans to increase funding for flood defences to £5.2bn in the Budget 2020, after a winter in which large parts of Britain were inundated. The extra money is intended to help build 2,000 flood and coastal defence projects, offering better protection for more than 300,000 homes over the next six years, as the country grapples with the consequences of climate change.

3. Restoring and enhancing nature and green spaces

- The requirement for a Biodiversity Net Gain relates to the Government's aim in its 25 Year Environment Plan to "leave the environment in a better state than we found it". Broadly, Biodiversity Net Gain, as set out in the Environment Bill, requires development to deliver at least a 10% improvement in 'biodiversity value' (10% biodiversity net gain).
- The Environment Bill strengthens the duty to cover the enhancement, as well as the conservation, of biodiversity, and requires public authorities to actively carry out strategic assessments of the actions they can take to enhance and conserve biodiversity.

4. Local Nature Recovery Strategies

- Local Nature Recovery Strategies are a new system of spatial strategies for nature, covering the whole of England. Each strategy will, for the area that it covers: map the most valuable existing habitat for nature, map specific proposals for creating or improving habitat for nature and wider environment goals and agree priorities for nature's recovery.
- This new mandatory system of spatial strategies for nature, will cover the whole of England. Locally led by an appropriate 'responsible authority', these will identify the opportunities and priorities for enhancing biodiversity and supporting wide objectives such as mitigating or adapting to climate change in an area.
- The Bill will give the Secretary of State the power to determine what area each LNRS should cover and to appoint a 'responsible authority' to lead its production and publication.
- LNRSs will guide smooth and effective delivery of biodiversity net gain and other nature recovery measures by helping developers and planning authorities avoid the most valuable existing habitat

and focus habitat creation or improvement where it will achieve the most.

5. Conservation covenants

- Conservation covenants are voluntary but legally binding agreements between a landowner and a designated "responsible body" such as a conservation charity, public body or for-profit body to conserve the natural or heritage features of the land.
- Conservation covenants can contain positive and restrictive obligations to fulfil conservation objectives for the public good. Generally, they will bind subsequent landowners and therefore have the potential to deliver long-lasting conservation benefits.

6. A new direction for resources and waste management

- The Bill helps extend producer responsibility schemes to make producers responsible for the full net costs of managing their products at end of life, reducing local authorities' financial burdens from waste management.

Agriculture Bill, 2020

A future where farmers are properly supported to farm more innovatively and protect the environment is a step closer following the introduction of the Agriculture Bill in January 2020. The landmark legislation will provide a boost to the industry after years of inefficient and overly bureaucratic policy dictated to farmers by the EU.

The bill sets out how farmers and land managers in England will, in the future, be rewarded with public money for "public goods" – such as better air and water quality, higher animal welfare standards, improved access to the countryside or measures to reduce flooding. The proposals will contribute to the Government's commitment to reaching net zero emissions by 2050, while at the same time, helping to boost farmers' productivity.

The Agriculture Bill will transform British farming, enabling a balance between food production and the environment, which will safeguard the countryside and farming communities for the future.

The Government has already announced that the funding available for Direct Payments for 2020 will be the same as for 2019, and the Direct Payments to Farmers (Legislative Continuity) Bill has been introduced to Parliament to enable Direct Payments to be made to farmers for the 2020 scheme year; giving much-welcomed certainty to farmers and food producers.

“A living system threading through the urban and rural landscape, connecting places that are attractive to people, wildlife and business, and providing clean air, food, water, energy, minerals and materials.”

South Essex Thames Gateway Green Grid, 2005

Regional Policy: Essex County

Health & Wellbeing: ‘The Joint Health and Wellbeing Strategy for Essex 2018-2022’ details how green spaces that support activity and connect people are vital to the prevention of illness. Health challenges, resulting from sedentary lifestyles, cost the UK circa £1bn per year, and £7.4bn when including costs to wider society. Air pollution is the largest environmental health risk. The World Health Organization estimates that the annual economic burden of health impacts from air pollution is in excess of 1 trillion Euros.

Biodiversity: South Essex is a rich resource for biodiversity and comprises numerous international, national and local designations. The majority of nature conservation sites are concentrated along the coast and estuaries, whilst inland there are significant pockets of ancient woodland, heathland, flower rich grassland, freshwater wetland, and mosaic habitats. ‘The Conservation of Habitats and Species Regulations 2017’ provides the legal framework for the conservation of natural habitats and of wild fauna and flora. ‘The Essex Biodiversity Action Plan 2010-2020’ focuses on 19 Priority Habitat Types highlighting deficiencies and setting targets for improvement. Designated open space and agriculture also plays an important role with all local authorities.

The Essex Coast Recreational Disturbance Avoidance and Mitigation Strategy (RAMS) aims to prevent bird and habitat disturbance from recreational activities. It does this through a series of mitigation measures, which encourage all coastal visitors to enjoy their visits responsibly. The Essex Green Infrastructure Strategy, 2020, aims to enhance the urban and rural

environment, through creating connected multi-functional GI that delivers multiple benefits to people and wildlife. It meets the Council’s aspirations to improve GI and green spaces in our towns, cities and villages, especially close to areas of deprivation.

South Essex

‘The Thames Gateway South Essex (TGSE) Green Grid Strategy’ (2005) laid the foundation for GI development across the sub-region. The Thames Estuary 2100 Plan (TE2100) also has policy units and action plans that relate to GI issues across South Essex.

ASELA was established to develop the ‘Joint Strategic Plan’ (JSP), a high level planning framework setting out the over arching spatial strategy, housing, employment, transport and infrastructure priorities. The ambition for ‘South Essex 2050’ is that all new development takes place in the most sustainable locations, to the highest quality, supporting local industrial strategy priorities, connected by an integrated transport system and a network of green spaces. Local plans will deliver the strategy on the ground.

Thurrock and Southend: As Unitary Authorities, Thurrock and Southend have developed their own strategies including ‘Thurrock Health and Wellbeing Strategy 2016-2021’, ‘Thurrock Biodiversity Action Plan’ (2007), and Thurrock has also developed a health and equalities impact assessment and habitat screening assessment for its Local Plan. Southend strategies include the ‘Southend Parks and Green Spaces Strategy 2015-2020’ and ‘State of Nature’ (2018), and as well as Southend Joint Strategic Needs Assessment (2017).

Green Infrastructure by Authority

Each South Essex Authority has identified GI development as a strategic, cross-boundary matter and undertaken work to set out principles, plans and frameworks for GI, based on the guidance laid out by the ‘Thames Gateway South Essex (TGSE) Green Grid Strategy’. As part of this a number of potential greenways were identified which extend across the Authorities’ boundaries. The current Authorities GI plans are summarised below.

Basildon: Basildon sets out its Green Infrastructure Strategy (Policy NE1) in its Local Plan (2018) as a Policy for conserving and enhancing the natural environment using the NPPF and the TGSE ‘Green Grid Strategy’ – which at that time included just the southern part of the Borough south of the A127. This new policy also seeks to include the northern part of the Borough and puts in place mechanisms to deliver new GI projects. It underlines cross boundary infrastructure corridors including habitat and recreational areas of the Thames Estuary.

Brentwood: Brentwood’s GI Strategy’ (2015) is anchored in the potential of GI to accentuate the unique character of a place, highlighting the Borough’s distinctive landscape features and geology such as the ancient countryside, East Anglian Chalk and the highest hills in Essex. The Thames Chase Community Forest is highlighted as are the multiple functions of GI to activate places. A baseline identifies 9 Landscape character areas in Brentwood and guides GI to strengthen the character of new developments with high quality public spaces and travel links. The strategy aligns with the 2007 ‘Open Space and Recreation Facilities Assessments’

proposing additional children’s play areas but requires updating. It promotes biodiversity and wildlife corridors through partnership working such as with the Forestry Commission, RSPB, farmers and landowners. It proposes sustainable transport options and cycle routes to improve health and wellbeing of residents, particularly around the proposed Dunton Hill Garden Village as well as the use of Sustainable Urban Drainage. It sets the ambition to increase multifunctional GI performing at least 5 functions, including a Greenways project.

Castle Point: Castle Point’s emerging Local Plan seeks to progress ambitions of the TGSE Green Grid Strategy by focusing on the amenity and biodiversity benefits of GI and its potential to reduce pollution. It proposes working in partnerships to extend the GI network through multi-functional projects that encourage management and enhancement of existing habitats, and the creation of new ones. It aims to provide links for wildlife, and people to the Greater Thames Marshes Nature Improvement Area, supporting species migration. GI will provide shading during higher temperatures as a climate change mitigation measure. Focuses for GI projects include:

- Preservation and enhancement of ecological and heritage assets, nature conservation areas;
- A net increase in biodiversity through priority habitats and species;
- Management of and a reduction in pollution to air, water and soil;
- Opportunities for local food production;
- Management of flood waters consistent with policy LP CC 6;
- Recreational benefits and access to coast,

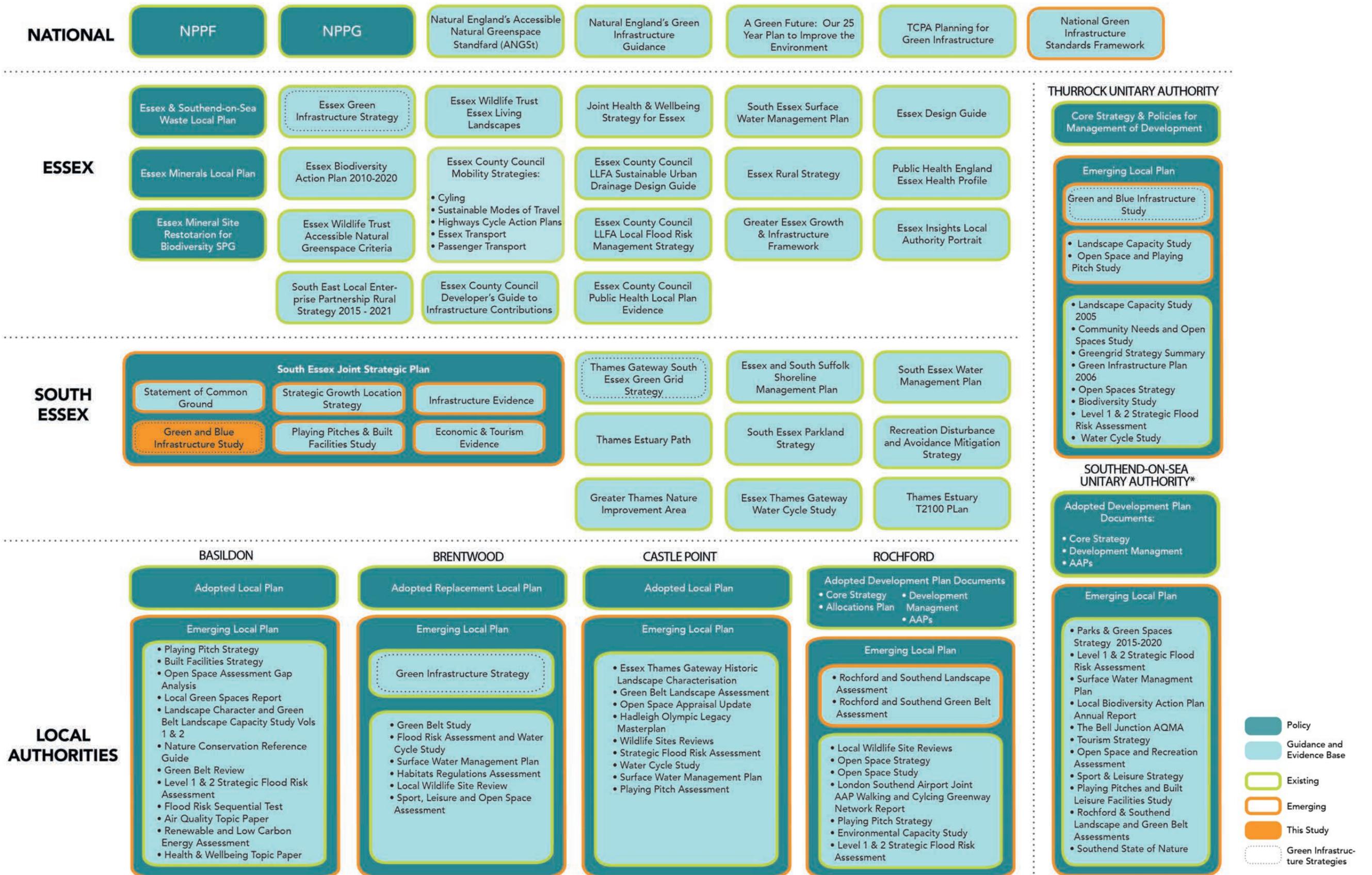


FIG.8 Policy Context Overview (not a comprehensive list of all documents) * Southend-on-Sea has many joint policies with other South Essex Local Authorities.

consistent with policy LP HS 3;

- Active travel modes to access education, employment and services, consistent with policies SP TP 1 and LP TP 3.

Rochford: Rochford's Core Strategy policy T7 set out GBI through the provision of greenways across the district into neighbouring areas that were identified through the TGSE Green Grid Strategy. It highlights the importance of multi-functional GBI for the health, sustainable travel, well-being and quality of life of the current and growing population. The new Local Plan will create opportunities for new and improved GBI across the District, along the coastline, connecting to neighbouring areas in South Essex. 'The Environmental Capacity Study' 2015 recognises that key green infrastructure can be found in the Upper Roach Valley in particular, including dedicated bridleways, Ancient Woodland and marked walking routes.

Southend-on-Sea: Southend developed a Topic paper dedicated to GBI and Climate Change which informs Local Plan development related to GBI policies. In addition, CP4 in the borough's core strategy refers to the protection of the borough's green assets.

Thurrock: Thurrock developed a Green Grid Strategy in 2007. It is producing a new borough-wide GBI strategy informed by a suite of studies including an Active Place Strategy, Active Travel Strategy and a Landscape Character Assessment. A growth location design charrette process is underway to develop masterplans for these key locations. There will be area GBI plans that show how new GBI provision links and enhances existing facilities and will set

out measures to ensure their future stewardship. In addition to major residential and employment growth it is necessary to consider what GBI can be delivered to mitigate the effects of the Lower Thames Crossing.

REFERENCES:

- Thames Gateway South Essex (TGSE) Green Grid Strategy (2005)
 South Essex 2050, Statement of Common Ground, 2018
 Essex Biodiversity Action Plan 2010-2020
 The Joint Health and Wellbeing Strategy for Essex 2013-2018
 EU Strategy 'Green infrastructure: Enhancing Europe's natural capital,' 2013
 EC report 'Strategic Green Infrastructure and Ecosystem Restoration,' 2019
 Healthy Lives, Healthy People: Our Strategy for Public Health in England White Paper, 2010
 'A Green Future: Our 25 Year Plan to Improve the Environment,' Defra, 2018
 National Planning Policy Framework (NPPF) updated February 2018
 Essex Green Infrastructure Strategy, 2020
 Health, wealth and happiness – the multiple benefits of green infrastructure, EU and TCPA, 2019
 Thurrock Health and Wellbeing Strategy 2016-2021, 2016
 Thurrock Biodiversity Study, 2006
 Thurrock Biodiversity Action Plan, 2007
 The Thames Estuary 2100 Plan (TE2100), 2011
 Southend Parks and Green Spaces Strategy 2015-2020
 Southend State of Nature (2018)
 Southend Joint Strategic Needs Assessment, 2017
 South Essex 2050, Statement of Common Interest, 2018
 Essex Biodiversity Action Plan 2010-2020
 The Joint Health and Wellbeing Strategy for Essex 2013-2018
 EU Strategy 'Green infrastructure: Enhancing Europe's natural capital,' 2013
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 'A Green Future: Our 25 Year Plan to Improve the Environment,' Defra, 2018
 National Planning Policy Framework (NPPF) updated February 2019
 Health, wealth and happiness – the multiple benefits of green infrastructure, EU and TCPA, 2019.

1.5 Other Relevant Green Initiatives

There are several green and blue strategic planning initiatives already underway in the Thames Estuary that support and complement this study.

This diagram maps the major initiatives:

- Thames Chase Community Forest;
- The Green Arc;
- South Essex Green Grid;
- Kent Thameside Green Grid;
- East London Green Grid;
- North Kent Regional Park;
- Thames Gateway;
- Thames Path City to Sea; and
- England Coast Path.

Refer to *South Essex Green and Blue Infrastructure Study Baseline Report 10.12.2019* for further details.

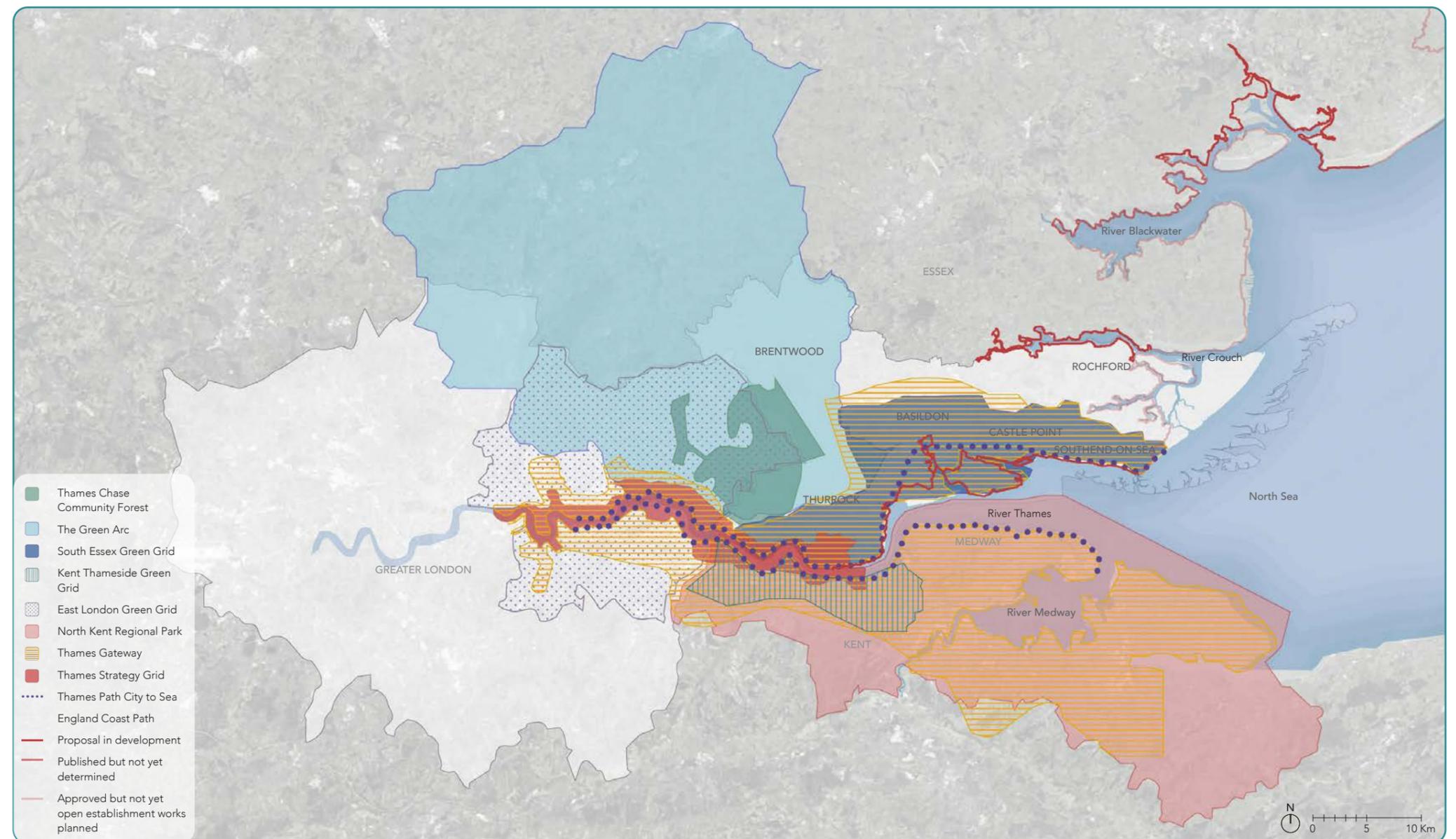


FIG.9 Other Relevant Green Initiatives

1.6 South Essex Strategic GBI

We have the opportunity to pioneer an innovative and resilient landscape infrastructure that proactively protects our natural assets for future generations.

Definition of Green and Blue Infrastructure

South Essex strategic GBI is an integrated network comprising all of our most current valuable green (land) and blue (water) spaces, both natural and semi-natural features and habitat types, and also including and anticipating future transformation. It connects urban and rural areas, villages and towns, rivers, lakes and sea, and other environmental features that maintain and enhance ecosystem services. It is a natural and cost-effective infrastructure that is designed and managed to provide significant multi-functional benefits: social, environmental and economic. Connectivity and adaptability are key, as many benefits of GBI can only truly be realised by an interconnected and resilient network.

GBI Benefits: We recognise the essential value of our natural environment and its role supporting our economic prosperity, health and wellbeing. Natural capital 'stock,' including water, soil, nutrients and organisms, are key assets that require planning, design and management in a way that is sensitive to, and includes provision for, natural features and ecosystem services. Connectivity between different GBI assets can maximise the benefits they generate.

GBI promotes a 'people first' approach by encouraging healthy and sustainable lifestyles, supporting both urban and rural communities, and investing in liveable places. To increase quality of life, a healthier, socially cohesive and biodiverse South Essex will be created by re-connecting our people with their environment, and connecting wildlife within and beyond our territory. Thus, our GBI will foster

biodiversity and safeguard, maintain and restore our most precious habitats by providing a permeable landscape for wildlife and enabling long term climate resilience. These also provide effective resilience measures to mitigate and adapt to climate change effects such as flooding, coastal change, water supply, droughts and pollution.

South Essex GBI will play a key role in supporting the economy's prosperity and stability. It integrates a sustainable use of natural resources for food and energy production, and regenerates or renews neglected and/or abandoned open spaces by creating dynamic and flexible environments.

These networks are made up of visible systems, unseen processes, and indivisible scales, all which must be thoughtfully considered and creatively represented to ensure intervention that leads to meaningful and long lasting maximisation of assets.

Please see *Vol.2 Appendix 2.0 Summary of Baseline by Theme* where an overview of existing GBI assets, opportunities, risks and vulnerabilities are analysed in order to achieve a better South Essex.

GBI Assets: Each category of GBI can perform the following functions: recreational and active-living that support healthy lifestyles; green travel routes; habitat provision and biodiversity; heritage and cultural amenities; food production and productive landscapes; pollution absorption and removal; flood attenuation and water resource management; coastal storm protection; cooling effect; and access to nature.

Green infrastructure for this strategy includes the following assets:

"It has never been more necessary to invest in green infrastructure. The role of green infrastructure in addressing the challenges of the 21st century cannot be underestimated... It is a natural, service-providing infrastructure that is often more cost-effective, more resilient and more capable of meeting social, environmental and economic objectives than 'grey' infrastructure."

Green Infrastructure: An Integrated Approach to Land Use, Landscape Institute Position Statement, 2013.

- Parks and gardens;
- Natural and semi-natural open spaces;
- Reservoirs, lakes and ponds;
- Coastal features (marshes, shoreline paths, etc);
- Green corridors (verges);
- Waterways (watercourses);
- Greenways (Public Rights of Way, footpaths, cycleways, tracks and bridleways);
- Outdoor Sport Facilities (Sport pitches);
- Amenity green space (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); and
- Public Realm/Civic spaces (urban greening – urban and street trees, road verges, green walls, sustainable urban drainage and natural flood management).

This definition strongly references the GBI definition within the *Essex Green Infrastructure Strategy, 2020, the Landscape Institute's Green Infrastructure Position Statement, 2013, Natural England's Green Infrastructure Guidance, 2009, and the National Planning Policy Framework.*

South Essex Green Assets

Some 69% of Agricultural Land

6,453 ha of Public Open Space

71% of the land is designated Green Belt

30 islands in Essex, many in SE

South Essex Blue Assets

100 miles of coastline

Approximately 125 species of fish live in the Thames, and over 400 species of invertebrates live in its banks.

FIG.10 South Essex Green and Blue Assets

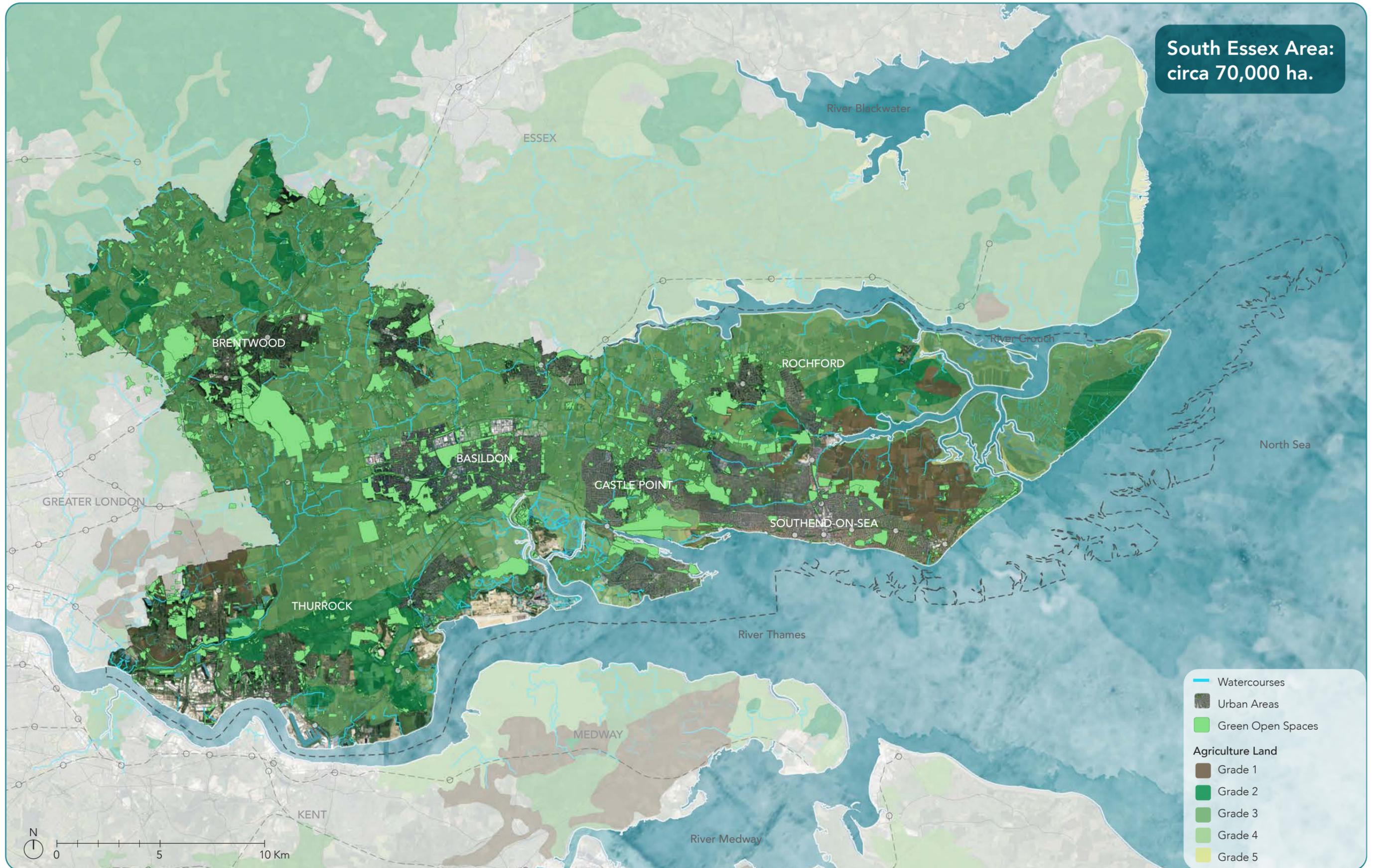


FIG.11 Green South Essex - rich with parks, natural open spaces and abundant agricultural land (Source: GIS Green Spaces and Agriculture from ASELA)

2 Vision

2.1 South Essex Estuary Park (SEE Park)

We will proactively reimagine a better future for South Essex, by creating a rich tapestry of world-class productive, connected and dynamic landscapes, woven together to form the celebrated SEE Park.

A Single Park System

The vision for South Essex - historically a place of disconnection, and an underperforming riverside environment - seeks to restore this fractured region. **By reimagining South Essex as one dynamic parkland, the tapestry of landscapes is mended.**

Inspired by the estuary itself - where the mixing of seawater and freshwater is constantly creating and transforming some of the most productive habitats in the world - the SEE Park is enriched by its inherent diversity and character of transition. From estuary, marsh and rivers, juxtaposed with impressive port facilities and iconic piers, to rural and hilly landscapes punctuated with ancient buildings, to significant wildlife and woodland sites situated next to urban cores, the South Essex landscape provides a complex and complete ecological infrastructure that is vital and unique to this region.

SEE Park will comprise a network of diverse green and blue assets threading through a vast area of approximately 70,000 hectares. There are many existing parks, gardens, nature reserves, and waterways in South Essex that will be complemented by new recovery sites, including flood zones, and former industrial, mineral, and extraction sites.

Alongside the restoration of individual sites, the connectivity of green and blue infrastructure will be improved. Paths and tracks will weave through urban, rural and wild areas. New corridors will connect riverside to hilltops, and will simultaneously link congested urban areas with rich woodlands and agricultural areas, once very difficult to access. Indeed, many new paths are already opening up, making it

possible to walk, cycle or ride on horse to the Thames, Roach and Crouch Rivers, and to other strategic routes through South Essex that are attractive and delightful. **The water itself is a defining element of South Essex, and so it is included as an integral part of the parkland system.** New life will be brought to the rich array of water environments.

The creation of the SEE Park shows a commitment to the shared vision to create a greener, more liveable South Essex that will improve the health, well-being and prosperity of people living here. It also raises awareness of the value of ecosystems in estuary environments, especially including those in urban areas, and of how these ecosystems can help address challenges including air pollution, flooding, and health problems caused by lack of access to quality green spaces.

The SEE Park, once an undiscovered and disconnected place, is reclaimed by this vision as a significant parkland, with a strong identity, and known as a place of connection, beauty and vitality, rich with leisure, life and growth.

Case studies of exemplary regional park systems and management models are included in Vol.2 Appendix Section 5.0 Case Studies.



FIG.12 An Existing Fragmented and Severed Landscape



FIG.13 A Proposal for A Reconnected and Completed Mosaic of Green and Blue Infrastructure

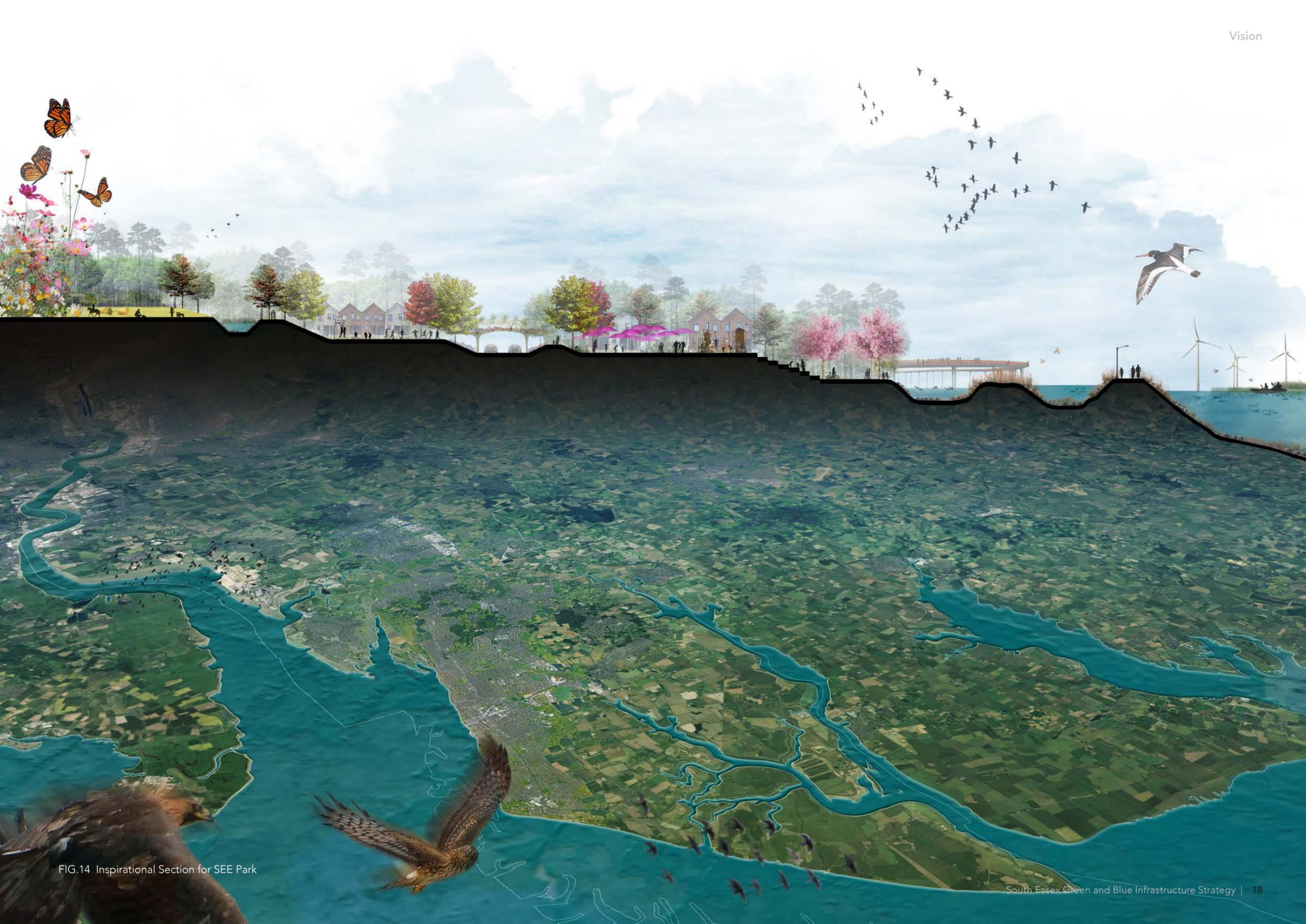


FIG.14 Inspirational Section for SEE Park

2.2 Themes and Objectives

Through the baseline assessment, a number of themes have been identified that drive the objectives for a new living infrastructure.

Themes and objectives for the SEGBI are explained in the table. They have been generated by considering the challenges and opportunities in the region that are most relevant to creating an effective GBI network.

GBI functions cut across all themes and objectives; though they may have obvious primary associations, GBI performs different functions simultaneously. For example, street trees add aesthetic quality to an urban area, but will also reduce airborne pollution, provide shade, reduce urban heat island effects, mitigate wind chill and turbulence and increase biodiversity. Indeed, GBI functions are multi-faceted.

Themes are outlined in the following table, but are explained in much greater depth through mapping and text in *Vol. 2 Appendix 2.0 Summary of Baseline by Theme*. The Themes are linked to key challenges faced by South Essex.

TAB.3 Themes - Challenges, Objectives - Opportunities, and GBI Functions

THEMES	CHALLENGES
 Climate Change	Climate Change is the defining issue of our time and we are at a defining moment. From shifting weather patterns that threaten food production, drought, and rising sea levels that increase the risk of catastrophic flooding. Without drastic action today, adapting to these impacts in the future will be more difficult and costly.
 Water Management	South Essex sits within the Thames Estuary, and on the coast of the North Sea. The area is under great threat of flooding. While the risk of flooding from rivers or surface drains is a concern, the tidal flood risk could be far more catastrophic. An effective plan must be in place to manage flood risk today and for future generations.
 Landscape Identity	Landscape identity is the perceived uniqueness of a place, and is an expression of how people and nature have shaped the land. South Essex is a place of variety and contrasts, of constant change, and vulnerable to the effects of its position within the Thames Estuary. Capturing its transitional history is key to revealing its essence.
 Natural Resources	South Essex's position within the Green Belt, and on the River Thames and North Sea, provides an optimal environment for harnessing the fertility of land, water, wind and sun. There is a large percentage of land allocated to productive purposes; however, the land could be used more efficiently and planned for resilience.
 Connectivity	Currently connectivity is challenging in the region, for people and wildlife alike, with many poor green and blue linkages between towns, villages, rural areas and waterfronts. Many existing routes, including the A13 trunk road and some railway lines create severance, while continuous active travel networks are under-provided.
 Conservation	The Earth is facing a dual crisis of rapid climate change and unprecedented biodiversity loss, including epic losses of wetlands worldwide. Both urban and rural areas must be planned with biodiversity in mind, and connectivity and adaptability must be improved to truly realise an interconnected and resilient network.
 Health and Wellbeing	Striking the right balance between social requirements, ecological systems and quality of life is a cornerstone of health across people, wildlife, and environment. However, quantity of green space is not enough; it must be high quality, easily accessed, inclusive, diverse, well-connected and well-managed.
 Growth and Development	South Essex is an area with great potential for growth; however, over the past few decades it has consistently been unable to deliver the same levels of economic growth as other parts of the UK. The aim is to deliver a minimum of 96,000 new homes and over 52,000 new jobs by 2038. Proposed building on floodplains is a risk.
 Sustainability	Living infrastructure requires management and maintenance, and constant review to ensure sustainability, resiliency and adaptability in the long-term. We must be stewards of the land, that utilise responsible conservation and sustainable practices to protect the fragile South Essex environment.

Objectives have been identified to support the SEGBI vision, and to ensure the strategy addresses the opportunities and threats South Essex faces in a holistic and multi-functional way.

OBJECTIVES

OPPORTUNITIES

GBI FUNCTIONS

Establish a Resilient Infrastructure

An innovative and adaptable landscape will be created, capable of meeting significant 21st century challenges, including climate change and biodiversity loss. A living infrastructure that addresses social systems and nature will co-evolve in a mutual and complex interaction in this constantly transforming estuarine environment.

Carbon Storage & Sequestration

Temperature Control

Work with Hydrological Systems

Design for a changing estuary will welcome, and accommodate, sea-level rise and increasing tidal and stormwater flooding events. The balance of green and blue infrastructure will shift in response to these effects brought on by climate change, and South Essex, like a sponge, will be able to absorb the change dynamically.

Storm Damage Control

Regulation of Flows

Celebrate a Sense of Place

South Essex is a blend of many things: land/sea, urban/rural, old/new, industrial/natural. It is also a place of constant change, like the true nature of a transitioning estuary. But it is precisely this change and contrast that make South Essex dynamic, diverse, attractive and unique. These qualities will be celebrated.

Water Purification

Storage of Freshwater

Support Natural Resource Productivity

Our landscape infrastructure will cultivate natural resources for productive purposes, including sustainable food, energy and other ecosystem services. Each site will be considered as part of a larger network, having multi-functional purposes, and a long-term strategy for creative after-use and re-purposing.

Image Enhancement

Tourism

Recreation

Improve Connectivity

The green and blue infrastructure will connect the people of South Essex, and connect them to their environment in a complete network of corridors. The wildlife and ecological networks will be improved between sites of high quality habitat stepping stones, allowing species to move and to adapt.

Soil Fertility

Diversified Products

Protect and Enhance Biodiversity

South Essex will face the challenge of biodiversity loss head-on, and will protect, conserve and enhance areas of habitat to support biodiversity in a connected network. Moreover, biodiversity net gain will be a requirement for all new development, ensuring that habitats and wildlife are left in a measurably better state.

Habitats

Biological Control

Promote Liveable and Healthy Places

South Essex green and blue infrastructure will protect and improve people's health and wellbeing by promoting favourable environmental conditions through green urban initiatives and by creating opportunities for outdoor recreation and daily experience of wildlife nearby their homes.

Pollination

Air Quality

Accessibility for Exercise and Amenity

Define a Resilient Growth Structure

Great demands for growth, including new jobs and homes, have been set for South Essex. But a delicate balance must be struck between urban growth and natural systems. Our green and blue infrastructure will address and define this balance and in turn create high-quality, appealing, healthy and distinctive places.

Noise Regulation

Investment and Employment

Ensure Sustainable Management

In order to ensure high-quality and effective green and blue infrastructure in the long-term, a strategy must be put in place to provide research, investment, and government legislation to support these efforts. An education and communication strategy should be developed to garner interest, support and continued momentum.

Labour Productivity

Research and Education

2.3 Challenges

Finding the areas in greatest need

South Essex GBI is driven by finding the areas that have the greatest needs and vulnerabilities, and that also have the potential to offer maximum benefits socially, economically and environmentally.

Key themes identified have been mapped and analysed together to generate a composite assessment of challenges and opportunities. Through this process, the areas at greatest risk, and the areas of most potential, are revealed. See FIG.15. Refer to Vol.2 Appendix, Section 2.0 for these maps.

The following pages provide a series of maps that summarise the challenges faced by the South Essex GBI. See FIG. 16-21.

Some of the key challenges, in no particular order, include:

1. Nature Conservation under Threat: There are scores of important ecological sites at risk of flooding in the Thames Estuary, many protected by national and international designations (Refer to FIG. 15 for a full list). For example, one of very few ancient landscapes remaining in South Essex is at Rainham Marshes, acquired by the RSPB in 2000. This significant site for nature and visitors is under threat of flooding. 'Coastal squeeze' is a key issue, especially in the Rochford and Southend-on-Sea areas where realignment is required. (Refer to Section 3.1 Key Moves, Regional Parklands, Island Wetlands)

2. The Thames Floodplain: The Thames Gateway is the UK's largest regeneration programme, stretching 60 kilometers from the London Docklands to Southend. The government has committed £9 billion to create thousands of new homes and jobs in the

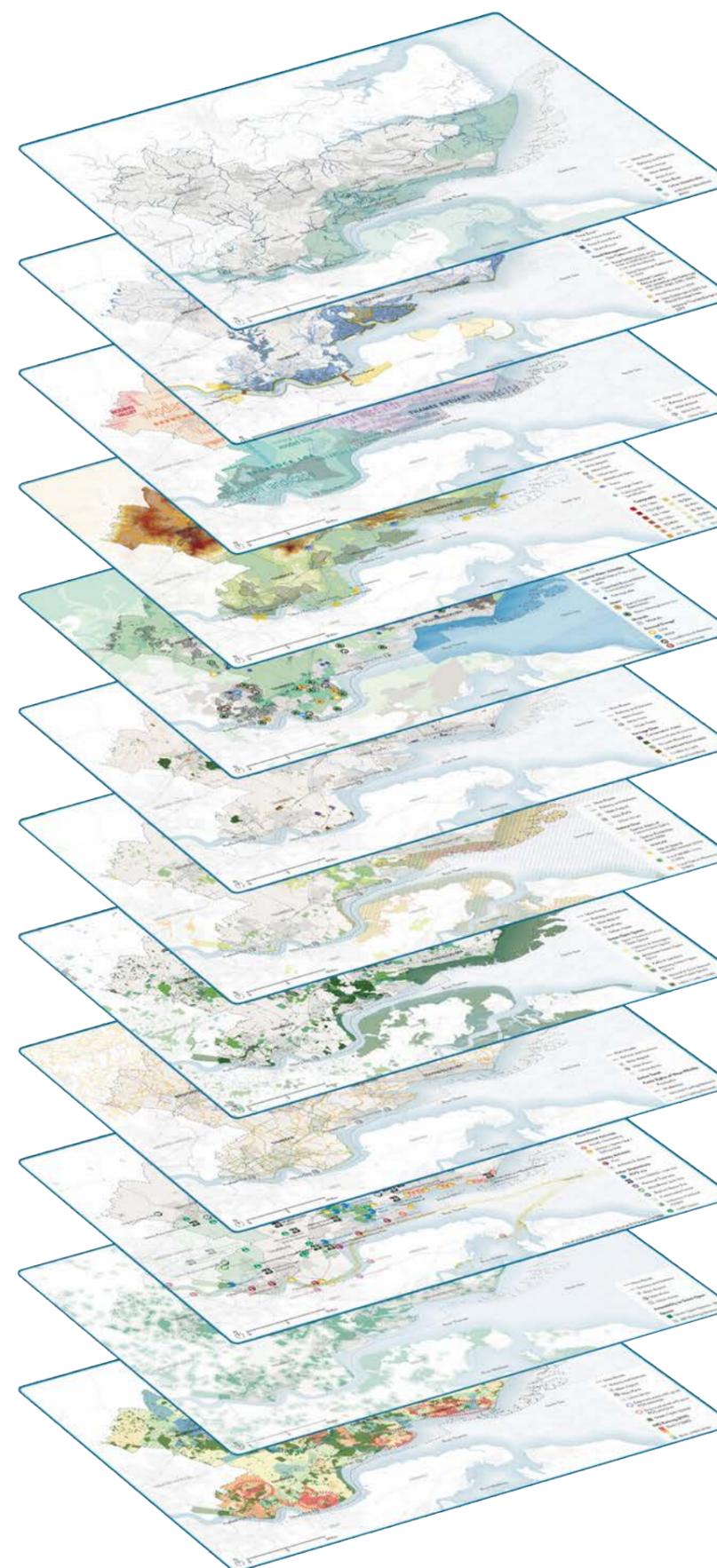
area. The Thames tidal floodplain cuts right through the Gateway, putting new homes and business at risk from flooding.

3. Lack of Access to Open Space: Deficient provision and distribution of open space, along with poor access to quality green open spaces within urban areas, require special attention by Local Authorities to improve the situation.

4. Lack of Connectivity: Routes for people and wildlife suffer from fragmentation and severance. Major regional transportation infrastructure, including the A13 trunk road, and the London, Tilbury and Southend railway lines are major barriers. Greenways, cycleways, and bridleways are fragmented, and PRoW's are often not registered or maintained for public access.

5. New Development: A number of sites are under development in the area, but not all of them are being planned and designed with green and blue infrastructure in mind. For example, the A13 widening could have achieved many benefits if landscape architects and ecologists had been involved in the redesign, for a small upfront cost, and significant benefits in the long-term.

6. An Abundance of Agricultural Land: A large area of South Essex lies within the Green Belt, with the majority as agricultural land. Development proposals must be sensitively knit into this green environment. Furthermore, while some of the agricultural land is in the Stewardship programme, more could be done to optimise this land for biodiversity net gain. Innovative agricultural practices can be used to activate tourism and the economy of South Essex. (Refer to Section 3.1.4 Key Moves, Harmonise Agricultural Use)



CLIMATE CHANGE

Adaptation

Mitigation

WATER MANAGEMENT

Waterbodies

Flood Risk

LANDSCAPE IDENTITY

Landscape Character Areas

Views and Vistas

Heritage

NATURAL RESOURCES

Productive Landscapes

CONNECTIVITY

Active Travel

Ecological Connectivity

CONSERVATION

Habitat Sites

Biodiversity

HEALTH AND WELLBEING

Open Space

Recreational Activities

Access to Green Open Space

Access for All

GROWTH AND DEVELOPMENT

SUSTAINABILITY

FIG.15 A Layered Approach to South Essex Mapping and Analysis

South Essex has significant habitat sites... that are at risk of flooding, and that have poor connectivity



FIG.16 Existing Protected Areas and Projected Flood Zones

South Essex has a layered network of routes....that are fragmented and severed by major transport corridors

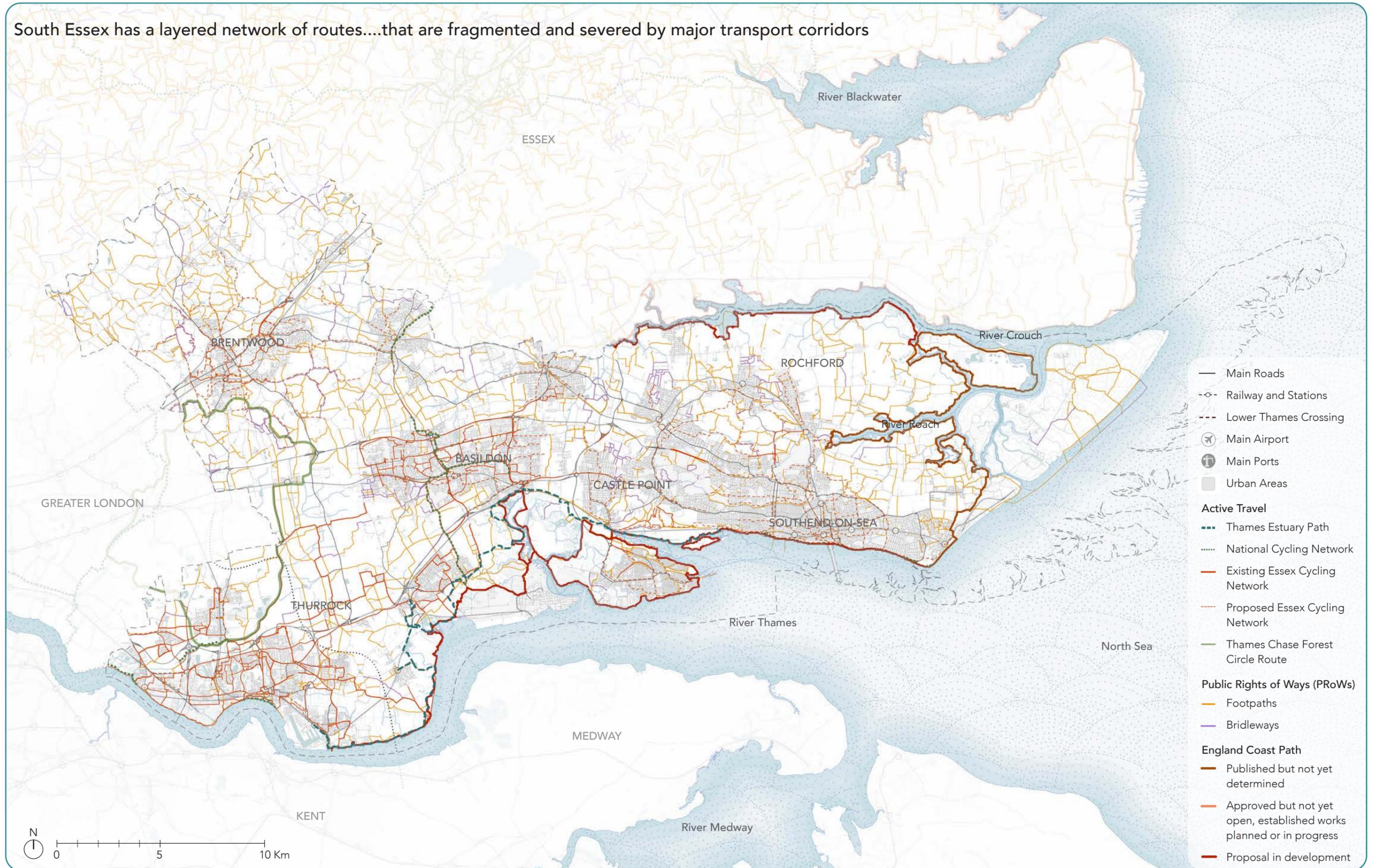


FIG.17 Existing Active Travel Routes, and PRoWs

South Essex has miles and miles of waterfront... that is sometimes difficult to access, and that is exposed to severe risk of flooding

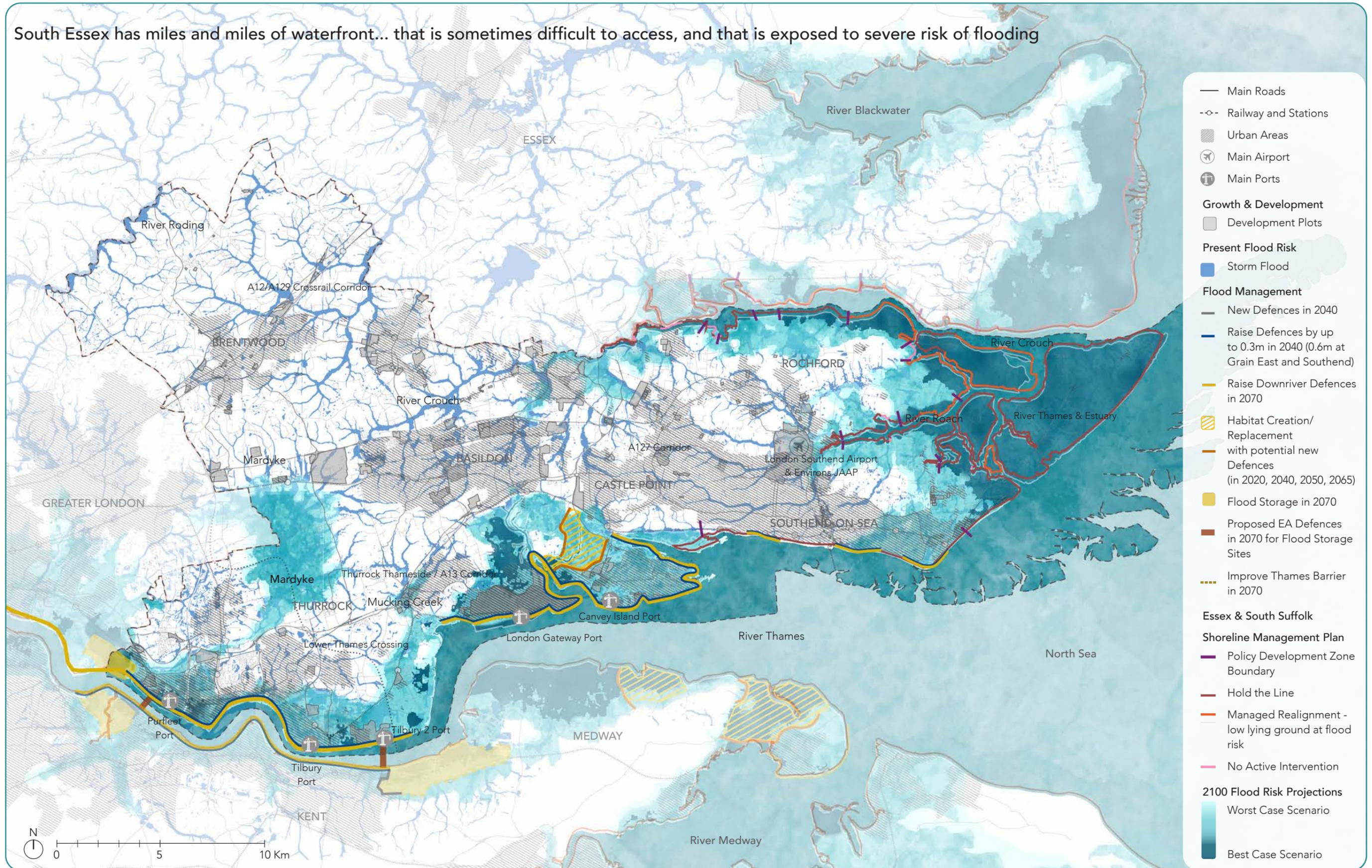


FIG.18 Watercourses, Projected Flood Zones, Proposed Flood Barriers and Marshlands, along with Proposed Development Sites (Source: Development Plots from Local Plans)

South Essex comprises approximately 70% agricultural land...that is of varying quality and poorly accessed

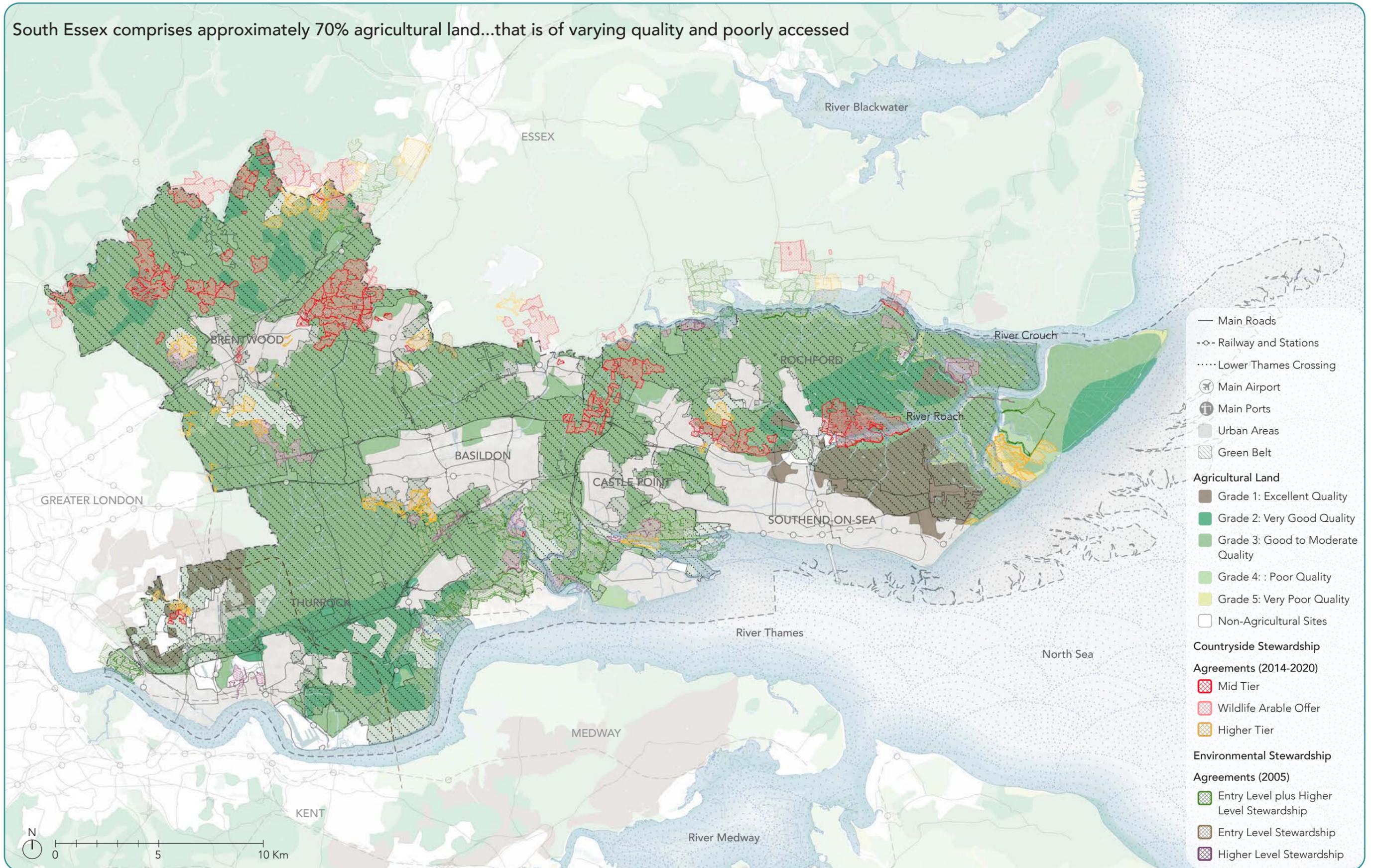


FIG.19 Agricultural Land (Source: GIS Agricultural Land and Green Belt from ASELA)

South Essex has many interesting sites....that are not being capitalised, and that are difficult to read and experience

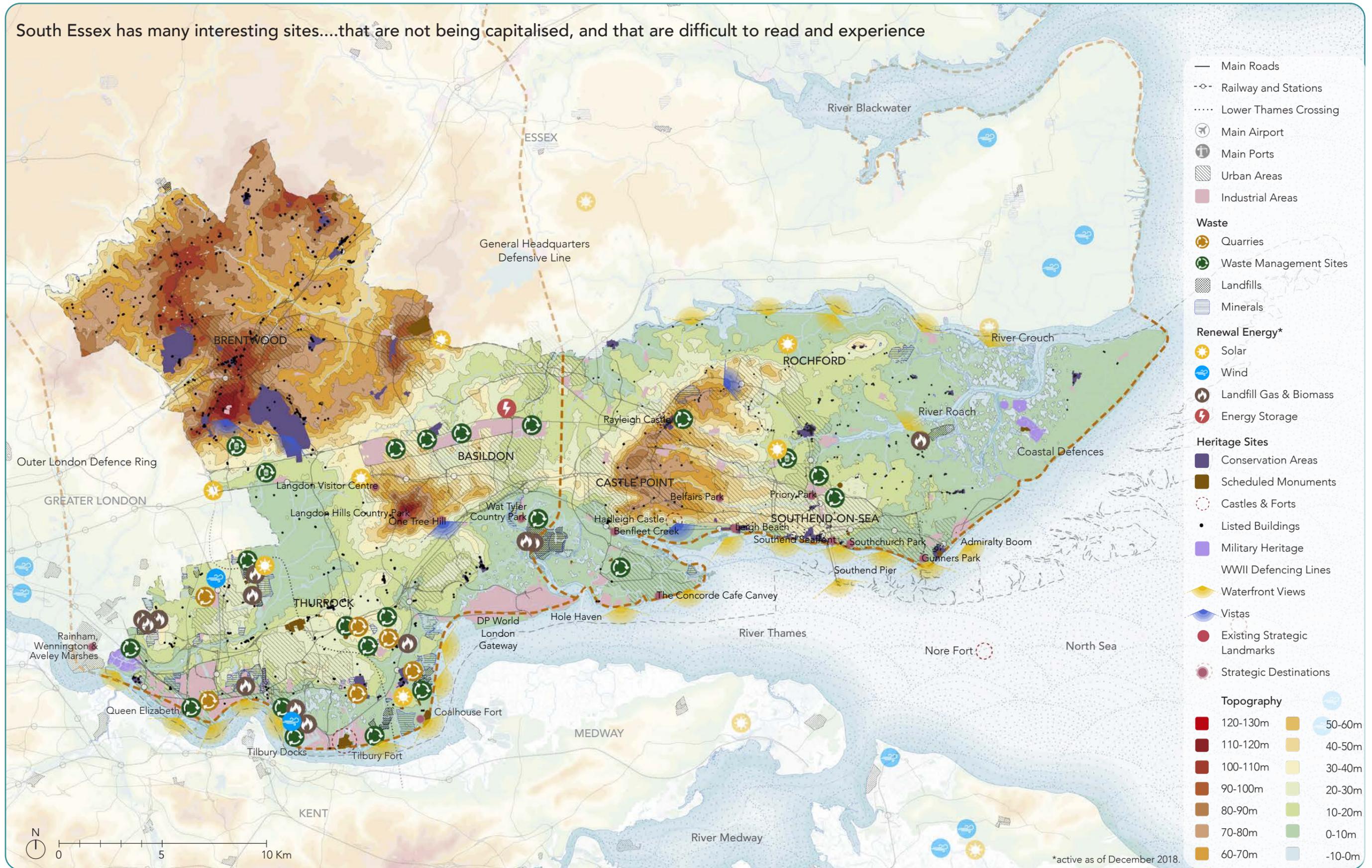


FIG.20 Heritage & Industrial Sites, and Key Views

South Essex has plentiful green space...that is difficult to access and enjoy by much of the population

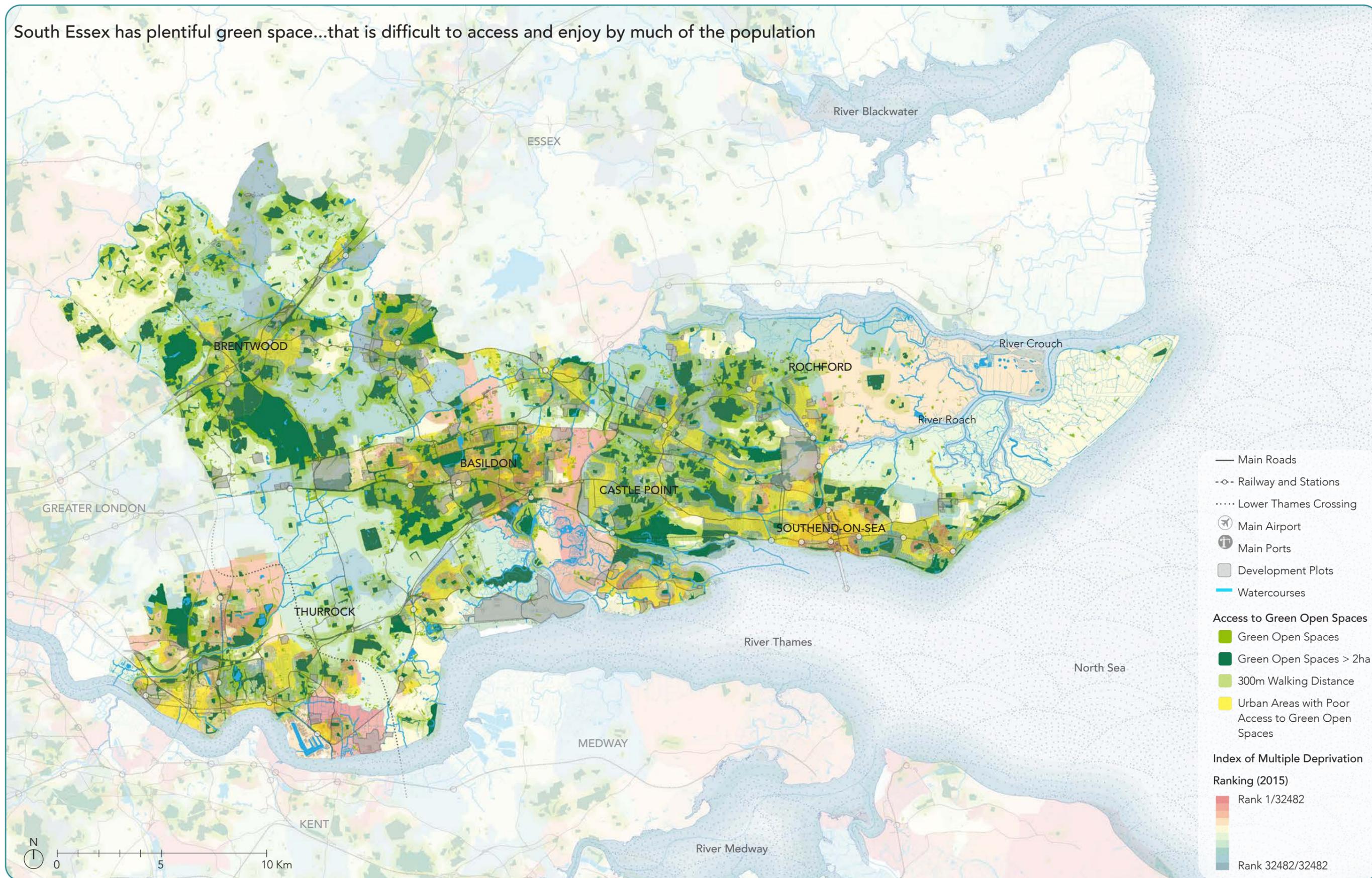


FIG.21 Public Open Space, Areas of Deprivation and Poor Access

Finding the areas of greatest need and greatest opportunity

In order to find the places that offer maximum benefits socially, economically and environmentally, through GBI improvements, areas of challenge and opportunity have been layered to reveal these sites.

The key themes and challenges mapped on the previous pages, analysed together, make it clear that the broad areas shown in FIG. 22 are composed of the areas at greatest risk, and the areas of great potential. These sites comprise:

- flood zones
- special habitat sites
- marshland
- parkland
- riverfront
- former industrial sites
- special historical features
- landmarks
- green and blue initiatives already underway

Agriculture is also significant, but because it covers so much of South Essex, it is not included on this diagram. (Refer to Section 3.1.4 for more information on agricultural transformation)

These highlighted areas feed directly into the overarching GBI structure for South Essex, described in Section 3.0 Key Moves.

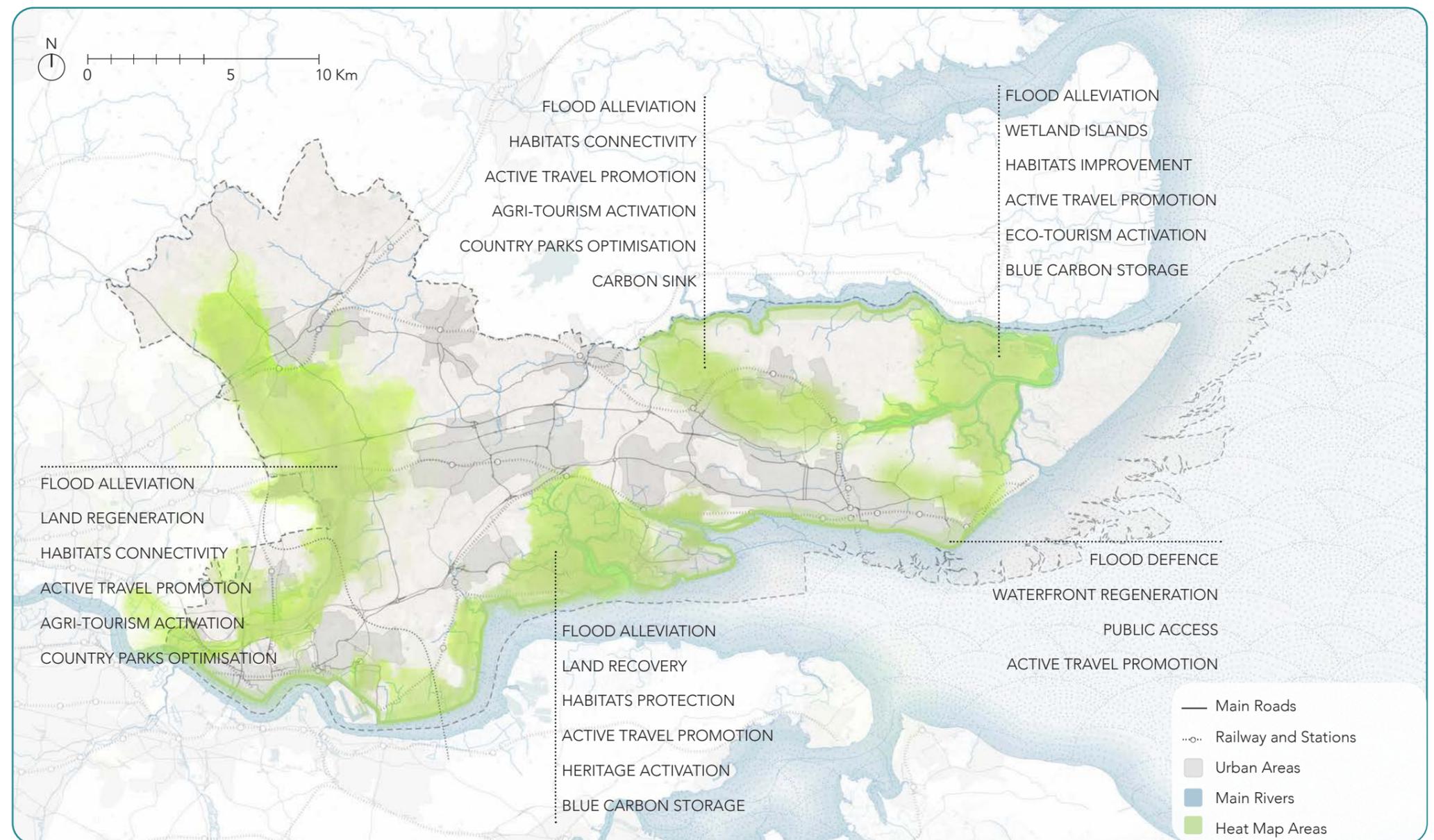


FIG.22 Heat Map: by layering the maps in FIG.16-20, large scale areas of potential GBI are revealed

2.4 Opportunities

Opportunity through resilience

The primary objective of the South Essex GBI is to establish a resilient and adaptable infrastructure. This Opportunity Wheel organises the many opportunities in South Essex that spring from that overarching objective, with all of the other supporting objectives, around a centre of GBI benefits.

Social benefits include opportunities to: promote liveable and healthy places that provide a diversity of leisure and recreation activities; celebrate a sense of place by acknowledging and promoting our heritage; and, improve connectivity by enhancing and creating linkages between communities and their environs.

Environmental benefits include: the protection, creation and enhancement of biodiversity by protecting and connecting habitats and woodlands; working effectively with hydrological systems by designing flood zones and wetlands or storing urban freshwater; and, the establishment of a resilient infrastructure that absorbs flood water and adapts to climate change.

A well-planned and well-managed GBI provides **economic benefits** for all. South Essex can benefit from boosting an economy that: supports natural resources productivity; promotes and brands the area by ensuring a sustainable management plan; and, targets developing sites by defining a resilient growth structure which involves landscape architects and ecologists who consider natural systems throughout the planning and design process.

The unifying idea that will bring all opportunities on the wheel together, is the concept of a single regional parkland to define all of South Essex. This is explained in greater depth in the Section 3.0: GBI Strategy.

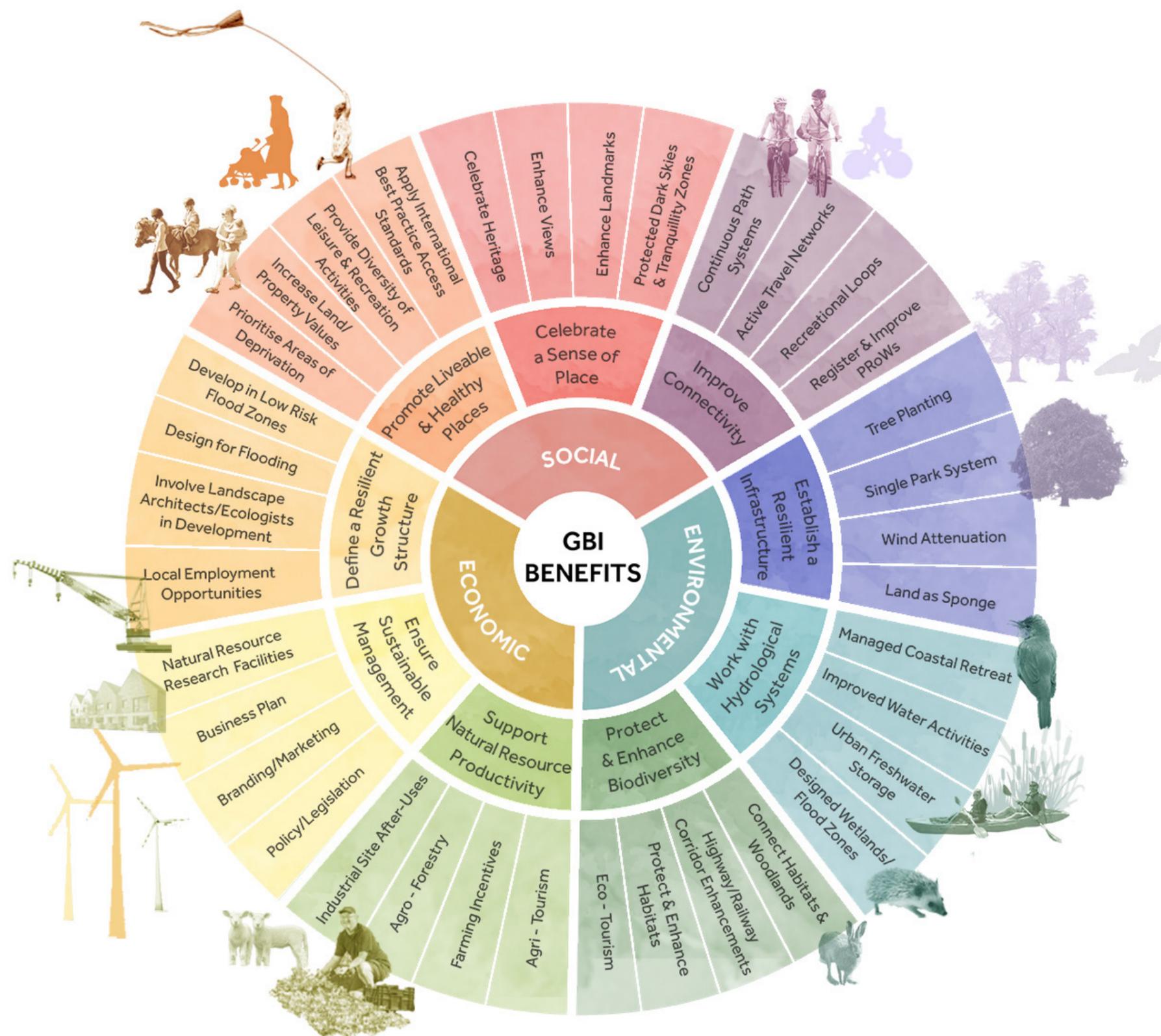


FIG.23 Opportunity Wheel

2.5 From Vision to Reality

In order for the SEE Park initiative to really take off, great enthusiasm, community buy-in, a robust plan and political will is required.

The SEE Park - a single and vast park system - will be conceived as an inspirational and sensitive parkland, where human life is understood as part of nature rather than separate from it. Human activities and development will integrate seamlessly into the GBI. This concept of living within a parkland setting presents a unique and attractive offer for modern living, accommodating homes, businesses, cultural and leisure activities.

To provide the plan with gravitas, South Essex might be **designated as a new regional parkland**, which shows a great commitment to not only protecting what already exists in the area, but to what South Essex will be in the future. Such a designation acknowledges the importance of protecting South Essex for people and wildlife, and for protecting London from the impact of sea-level rise.

This approach also fits into a wider plan for the creation of the Great Thames Park, set out in the Thames Estuary Growth Commission's 2050 Vision, and perhaps could be a first phase of the proposals. (The Great Thames Park is to be explored through a separate study, and is endorsed by the Government.) **The Thames Estuary proposals provide a key mechanism to enable the delivery of the SEE Park and other GBI initiatives in the South Essex area.** (This is discussed in more detail in Section 5.0 Delivery Options.)

In order for this initiative to really take off, it will require great enthusiasm, community buy-in, a robust plan, and political will. To generate this sort of momentum, the following actions will be considered:

1. Communication Strategy

- Community Engagement and Consultation
 - Involving the local community, ensuring an engaging consultation programme, and learning from local people is essential to creating the most meaningful outcomes
- Branding and Marketing
 - The SEE Park will become a popular concept, a household name, understood and attractive to many. A strong identity will be created to support this initiative.
 - In order for the idea to appeal to many people, an effective marketing campaign will be essential. Central to marketing will be the **development of a programme of events** that celebrates South Essex, including Agricultural and Marine Festivals, Bird and Sea Life Events.
- Education and Interpretation
 - Only when people understand the importance of the Park, how it addresses challenges, and the benefits it will bring, will the vision be embraced.
 - Understanding of the Park and its benefits will be revealed through a clear way-finding strategy, information points, and other resources, including a **SEE Park website and an interactive app. Important and engaging information about the Park, its features, activities and events schedule will be easy to access online.**

Moreover, a solid plan will be put in place to deliver this initiative. ASELA will continue to collaborate to see this vision through, and will generate the necessary plan of action to make the vision a reality.

2. Business Plan

- Setting the Vision
 - The SEE Park has enormous potential and could greatly contribute to the regional economy. To do this it needs a clear vision, (developed through community and stakeholder consultation) and a focus on delivery.
- Developing a Holistic Plan
 - Prioritise infrastructure projects in order to support future growth in the area, including homes and jobs. Along with other infrastructure projects, delivery of GBI will be key to securing sustainable growth.
- Job Creation
 - Many new jobs will be created for local people in order to meet the management and operational needs of the Park, boosting economic growth, increasing employment, skills and earning potential, and delivering infrastructure to support jobs and homes.
- Securing Long-term Investment
 - A single voice for the Thames Estuary will be strengthened through a Thames Gateway Strategic Group (TGSG). The Thames Growth Commission suggests that in return for streamlined governance arrangements, that revenue raising powers and tax (or other) incentives shall be granted to drive delivery.

A comprehensive environmental database and on-going analysis and monitoring of climate change, biodiversity, ecosystems and landscape infrastructure, will ensure SEE Park remains relevant.

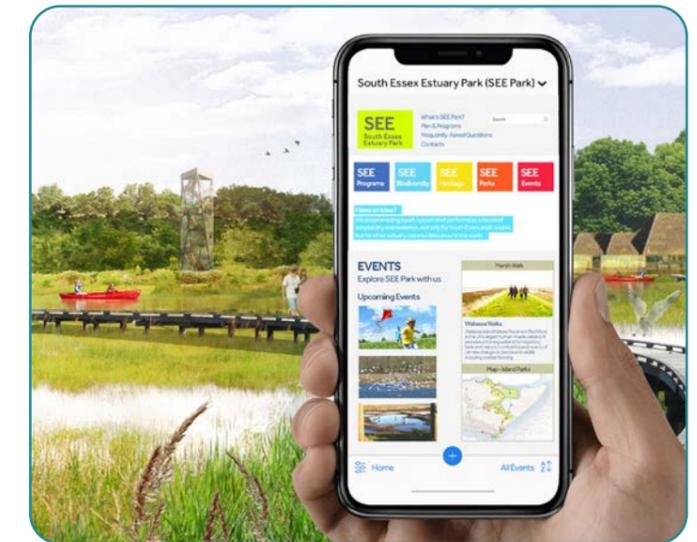


FIG.24 A SEE Park app allows people to understand the landscape in real-time, providing maps, information on wildlife, events and recreational trails.

3. Research and Innovation

- Research Facilities
 - An **Institute for Resilient Infrastructure** will be established as a centre for the research, design and funding and financing of integrated infrastructure to address contemporary and future city challenges.
 - The Institute needs to be up and running to ensure the Thames Estuary has the skills and knowledge needed to design and deliver key infrastructure such as the second Thames Barrier. (This is also recommended in the *Thames Estuary 2050 Growth Commission*.)
 - Moreover, it will **focus on green strategies that utilise nature as the primary tool in climate adaptation strategies.** Innovative methods to enhance the Park framework and efficacy will be explored and trialled in the SEE Park
 - It will identify delivery and governance models that can enable strategic infrastructure to be funded by the private sector.

Nothing less than a grand idea, unified voice, great enthusiasm, and sustained research and funding, will provide the necessary investment to turn the SEE Park vision into a reality. However, the reward will be great for many generations.

Section 3.0 GBI Strategy sets out the spatial arrangement of the SEE Park, and its major physical components.

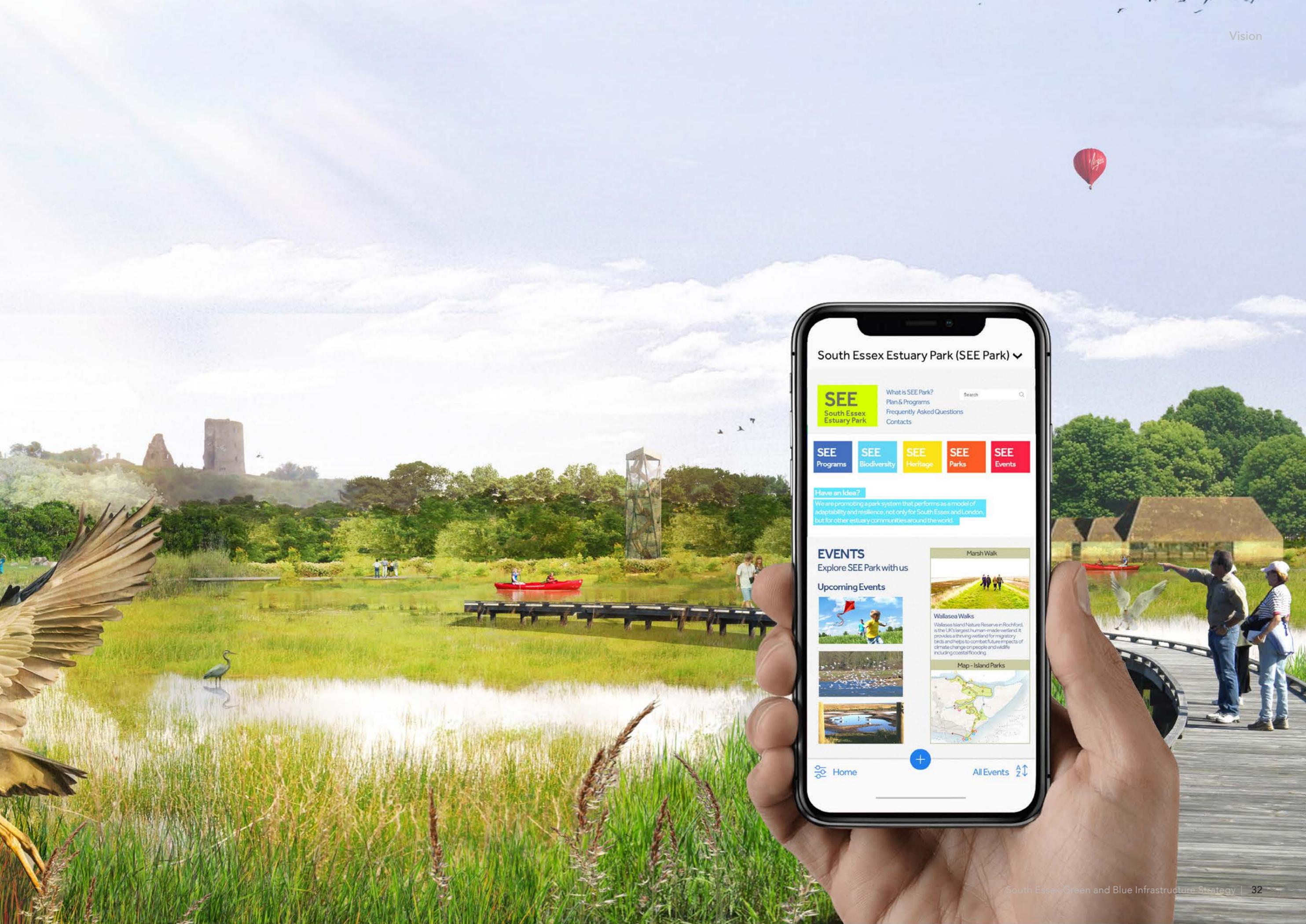
Engaging the community

SEE Park will only be successful if the community understands its benefits and feels that they are involved. **One way of better connecting people and their environment is by providing easy to access information about SEE Park digitally.**

The creation of a branded website and app for South Essex will provide information about South Essex GBI, providing maps of active travel routes, recreational trails, beautiful nature sites to visit, parks and related recreational activities, marine experiences, special events and local festivals, among many other things. Information could be provided in real-time, providing people with information about their immediate environs.



FIG.25 SEE Park digital information



South Essex Estuary Park (SEE Park) ▾

SEE
South Essex Estuary Park

What is SEE Park?
Plan & Programs
Frequently Asked Questions
Contacts

SEE Programs SEE Biodiversity SEE Heritage SEE Parks SEE Events

Have an Idea?
We are promoting a park system that performs as a model of adaptability and resilience, not only for South Essex and London but for other estuary communities around the world.

EVENTS
Explore SEE Park with us

Upcoming Events

- Marsh Walk
- Wallasea Walks
Wallasea Island Nature Reserve in Rochford, is the UK's largest human-made wetland. It provides a thriving wetland for migratory birds and helps to combat future impacts of climate change on people and wildlife including coastal flooding.
- Map - Island Parks

Home All Events

3 GBI Strategy

3.1 Key Moves

A series of strategic South Essex GBI moves will support the vision to embed South Essex within a park setting.

In order to achieve the vision, a number of necessary key moves have been identified. They provide a robust, comprehensive and unifying framework for South Essex. Together, the key moves will ultimately create a unique and appealing signature for living and working within a dynamic landscape setting.

Indeed, people are already getting out into the landscape, and appreciating the importance of being able to access green open spaces and natural areas by foot, bicycle and horseback. They are exploring and finding beautiful places they didn't know existed, but they are also finding that sometimes these places, and green and blue networks, are not well joined-up. Great improvements could be made.

GBI initiatives and projects that are already underway in the South Essex area have also been considered in the spatial strategy. It integrates and complements these initiatives and projects, to create a holistic and well-connected GBI that reaches well beyond the bounds of South Essex. By thinking strategically, the South Essex GBI will have a much greater impact than limited within its borders.

TAB.4 Objectives and SEE Park Key Moves

OBJECTIVES

-  **Create a Resilient Infrastructure**
-  **Improve Connectivity**
-  **Work with Hydrological Systems**
-  **Protect and Enhance Biodiversity**
-  **Support Natural Resource Productivity**
-  **Celebrate a Sense of Place**
-  **Promote Liveable and Healthy Places**
-  **Define a Resilient Growth Structure**
-  **Ensure Sustainable Management**



S E E P A R K

KEY MOVES

1. Establish Regional Parkland
2. Build Landscape Connectivity
3. Integrate Water Management Systems
4. Harmonise Agricultural Use
5. Reveal Unique Landscape Features
6. Plan for Growth and Development

This diagram, Fig. 26, presents the spatial strategy as a simplified diagram. It relates directly to the Heat map, FIG. 22, in Section 2.3, that reveals areas of greatest need and greatest potential to maximise GBI benefits socially, environmentally and economically.

It shows an overarching structure with vast and enveloping swathes of green infrastructure, on a fabric of rich agricultural land, and tied together with a robust network of green and blue links.

On the following pages, each one of these key moves is described and illustrated by precedent imagery, diagrams, sections and annotated with text.

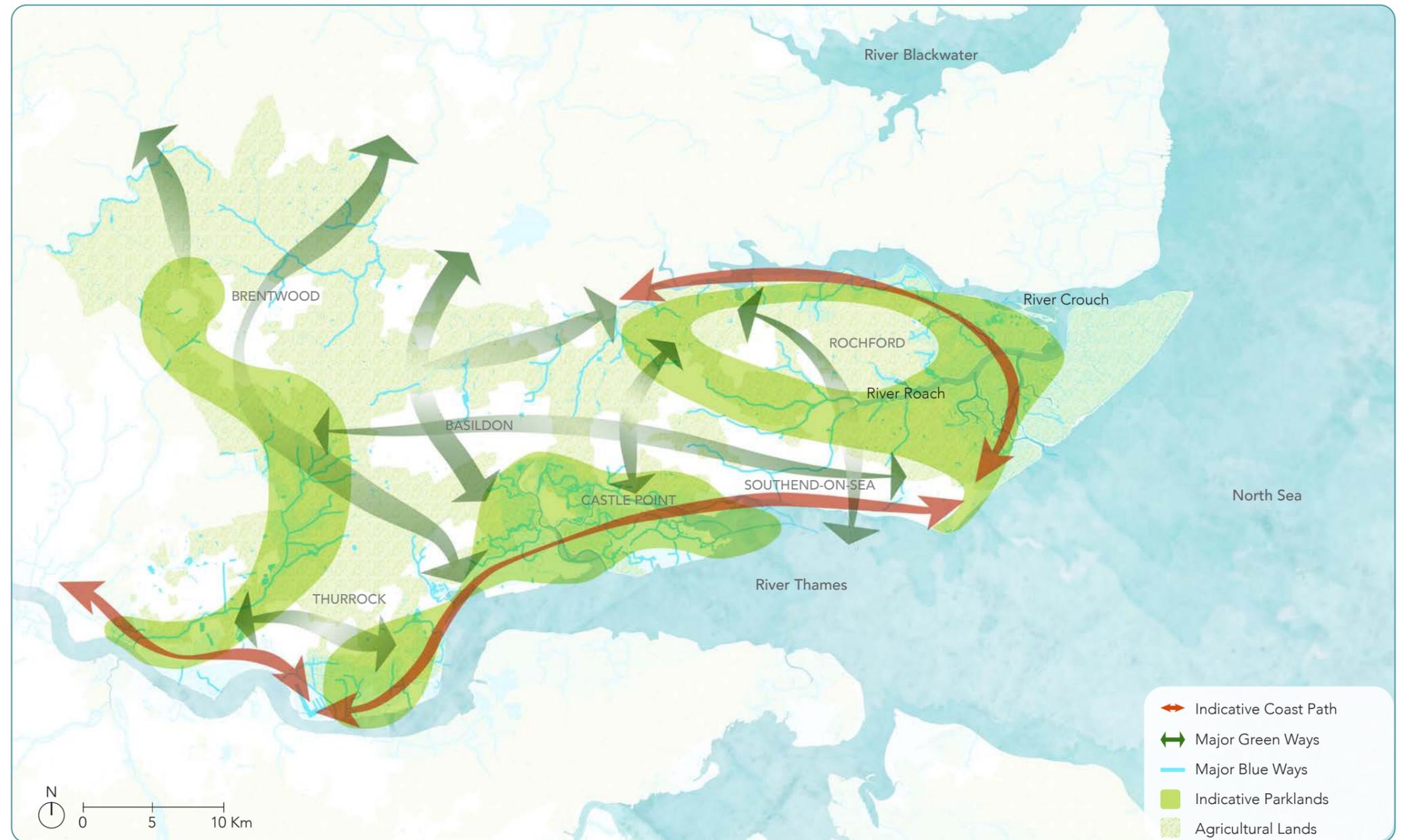


FIG.26 GBI Strategy Conceptual Diagram - an enveloping and well-connected green and blue infrastructure

① Establish Regional Parkland

This new parkland will create a single park system that will perform as a model of adaptability and resilience, not only for South Essex and London, but for other estuary communities around the world.

A new identity will be forged for South Essex with the creation of the SEE Park, framed by five large-scale landscapes, performing vital and multiple functions for the overall strategy: one to the west, two central, and two east. These sites have been carefully selected through detailed analysis, and include flood zones, habitats, existing parkland, riverfront, former industrial sites, agriculture land, and special historical features and landmarks. (See FIG. 30) They include the following areas:

1. Island Wetlands: Located on the far eastern shores of South Essex is a transitioning island landscape prone to flooding. Initiatives around Wallasea Island could be extended to create a much larger wetland nature park for wildlife, with designated areas accessible to people. Opportunities exist to pioneer soft approaches to flood mitigation (in line with the Shoreline Management Plan for the area), extending habitat zones and passive recreational and touristic uses (refer to RAMS). The southern part of the park, closer to Southend, will provide much needed green open space for existing and future residents, and will form important connections north into Rochford, and west towards the Central Woodland Arc.

2. Central Marshlands: Situated at South Essex's heart is a rich zone of habitats, flood alleviation, watercourses and reclaimed industrial sites. The juxtaposition and joining up of designated habitats and iconic heritage sites provides an inimitable identity, and exciting opportunities for leisure, culture, and passive recreation, while simultaneously providing flood mitigation and protecting habitats. The creation of this vast marshland is already underway. **The Turning the Tide: the South Essex Marshland Landscape Partnership scheme, produced by the Essex County Council, 2011, has set out the vision, analysis and rationale for creating the marshland.**

3. Central Woodland Arc: Also central to the county is a rich network of woodlands and country parks. These will be established as one extensive landscape, connecting Island Wetlands on the River Roach, to the western end of the River Crouch. Both existing residents and proposed developments will benefit. Flood attenuation will be included within the parks and habitat connectivity improved. Strong links between Central Marshlands and Central Woodlands will create a series of 'green loop' trails. See Section 3.3 FIG.150 for more information on 'green loops.'

4. Mardyke Valley: This landscape connects Rainham Marshes along the Thames River through Thurrock and the Mardyke Valley, up to Brentwood. Initiatives are already underway in the Mardyke Valley to promote green travel, and habitat creation, and connect with the Thames Community Forest, although more could be done to expand this landscape. The valley parkland will support existing and future residents, provide flood alleviation and support connectivity for wildlife and people. Thurrock is currently conducting a local GBI Study and will provide a focussed strategy for this area.

5. Brentwood Parklands: Running north to south on the western fringe of South Essex, this park will connect the Mardyke Valley with large areas of existing Brentwood country parks, and will form part of the Thames Chase Community Forest, along with other local green initiatives. Brentwood have produced a Green Infrastructure Strategy that will guide proposals in this area.

The Mardyke Valley and Brentwood Parklands form the eastern part of the Thames Chase Community Forest. Each of these parklands is described in greater detail on the following pages.



FIG.27 The Forest of Marston Vale, transformed 61 square miles between Bedford and Milton Keynes from an industrial zone to a community forest.



FIG.28 Landschaftes Park, Germany, part of the 450 square km Emscher Landscape Park, transformed industrial land. (See Vol.2 Appendix Section 5.0 Case Studies)

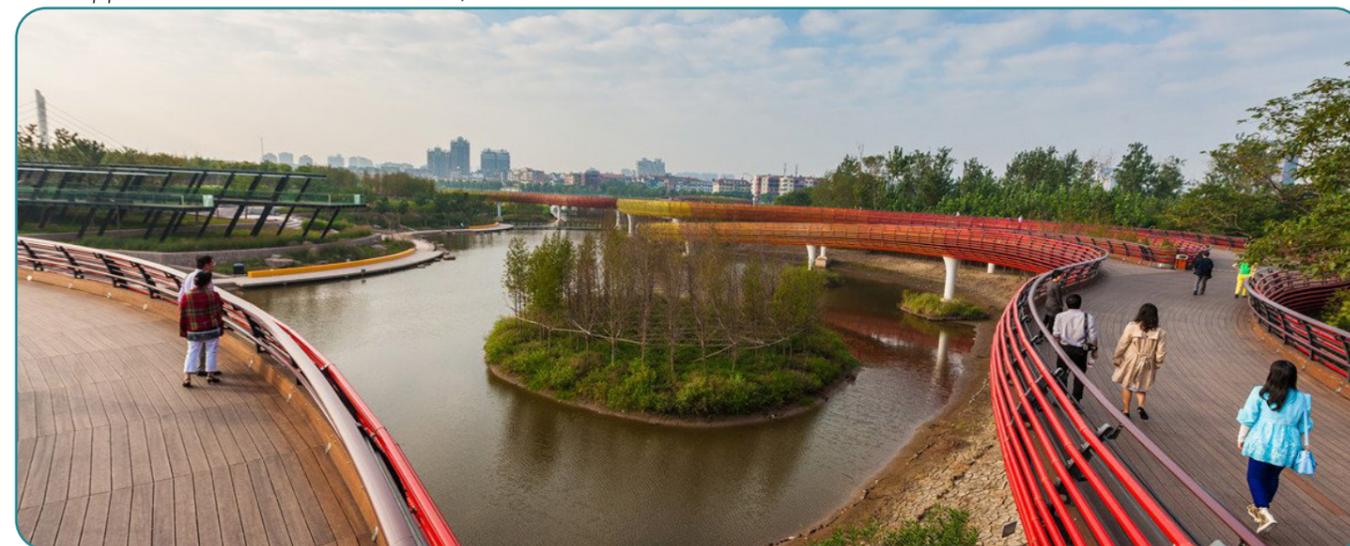


FIG.29 Yanweizhou Park in Jinhua, China, one of 30 'sponge cities' projects that aim to soak up floodwater and prevent disaster.

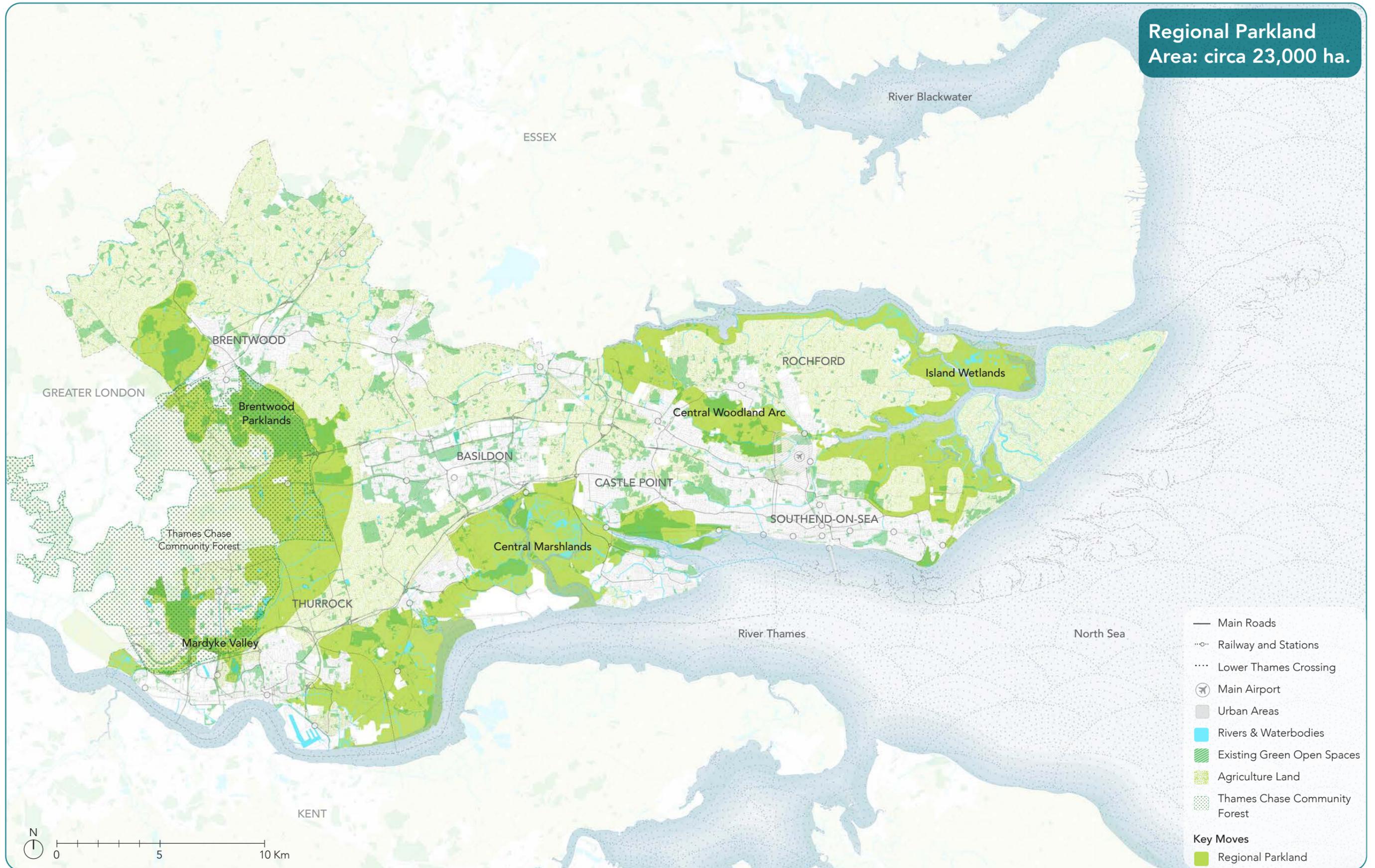


FIG.30 Key Moves: Proposed Regional Parkland - overlaid on the existing park and open spaces network (Source: GIS Green Spaces and Agriculture from ASELA)

Island Wetlands: At the far eastern end of South Essex, where land meets sea, a porous landscape will be restored into islands of parkland and intertidal habitats that create a transitioning landscape for people and wildlife.

Creating a protective cushion from a threatened landscape

Island Wetlands is a beautiful expression of the SEE Park network. Not only is it an alluring and delightful place for people to explore, but it addresses the challenges faced by Rochford and Southend by providing a living infrastructure that defends people and properties, enhances habitat sites, works with planned shoreline management schemes, the Essex Coast RAMS Strategy, and the Coast Path project, and provides much-needed public open space.

The east end of South Essex is an open area of coast, the point of convergence for the North Sea and River Crouch and Thames. It is a dynamic estuarine area dominated by muddy intertidal flats and salt marshes. There are many designated sites of national and international importance for birds and habitats.

Over time, what was once a much larger area of intertidal habitats, has been greatly reduced by reclamation of land for agriculture, which has had significant deleterious effects on wildlife and coastal processes. Along with rising sea levels, there is much cause for concern, especially for intertidal zones. Moreover, Southend is one of the most densely populated communities in Essex, and the whole frontage is at risk of erosion. Its population already suffers from a lack of access to quality open space.

In more recent years, new shoreline management schemes have been proposed by the Environment Agency to rehabilitate the estuary and to defend threatened properties; at the same time, proposals are underway to create a new continuous shoreline path as part of the England Coast Path network. Aside

from being a core component of the South Essex GBI, Island Wetlands also addresses the other key moves.

Connectors for people and wildlife are created north-south between Rochford and Southend. The major route is the planned Coast Path that will circulate throughout the park, inviting pedestrian access all along the shoreline. Existing habitat stepping stones - Lower Raypits, Wallasea Island, Barling Magna, Gunners Park and Shoebury Ranges Nature Reserve - will be supported by 'filling in the gaps' of green and blue infrastructure in this stretch. Connectivity to the west is supported with an extensive linear park along the marsh from the River Roach to Central Woodland.

Watercourses will be restored by opening up lost estuary channels, accommodating larger flows and allowing the intertidal zone to progress landward. Some areas of agriculture will once again become wetlands or much needed public open space, especially in the south end of the park.

A careful balance of activities will be considered to encourage people to connect with nature, while some areas of the nature park will be managed with wildlife as the priority. Wildlife will be supported through designation as a Dark Sky zone. In general, **recreational activities that are compatible with nature conservation objectives will be encouraged**, including walking, kayaking, canoeing, bird-watching, kite-flying, hot-air ballooning, and picnicking.

The Park will not only serve the local community as a welcoming, diverse, accessible, and inclusive open space, but will be an attractive destination for visitors. Eco-tourism and agri-tourism will be encouraged in appropriate locations to support the local economy, and to offer access to this special experience.

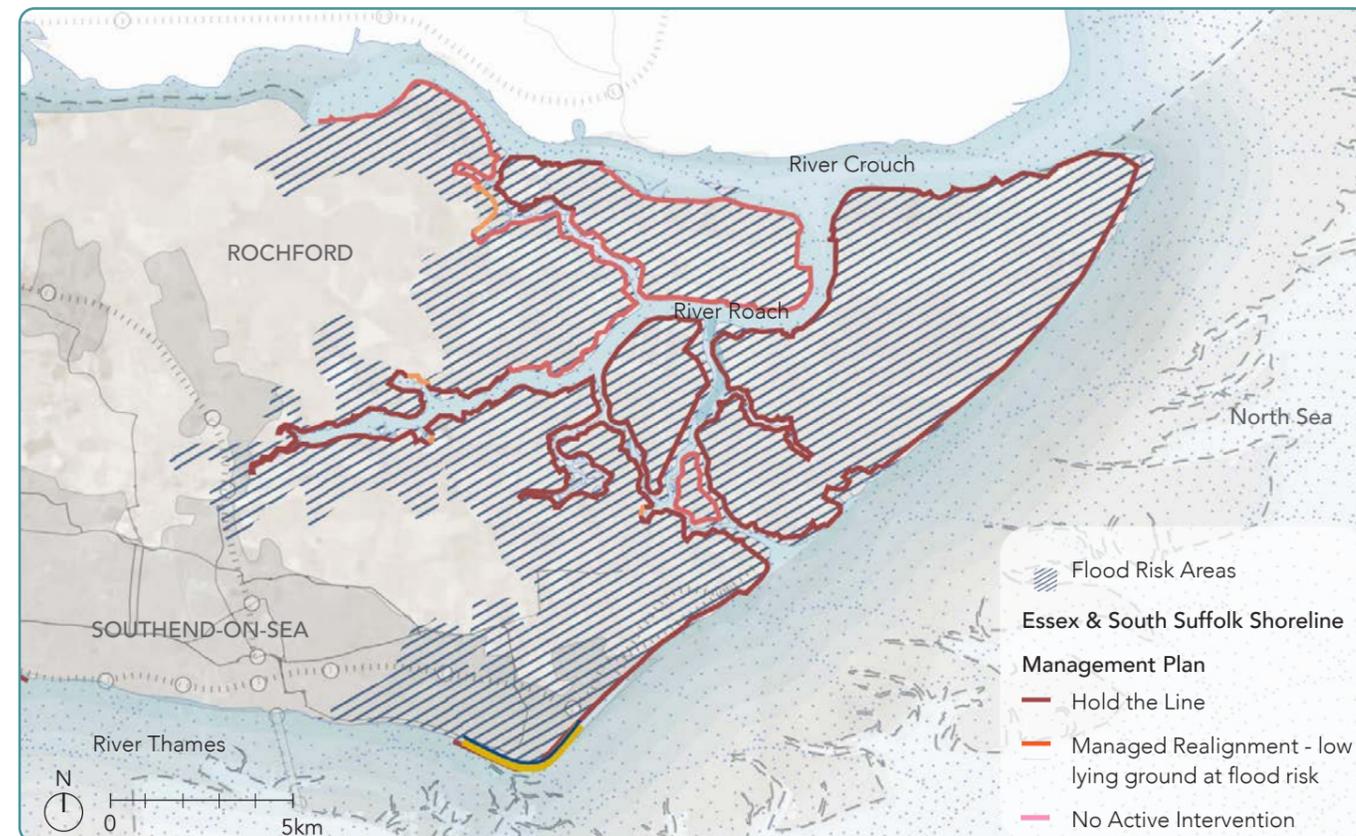


FIG.31 Flood Risk and Flood Defence Diagram: Island Wetlands

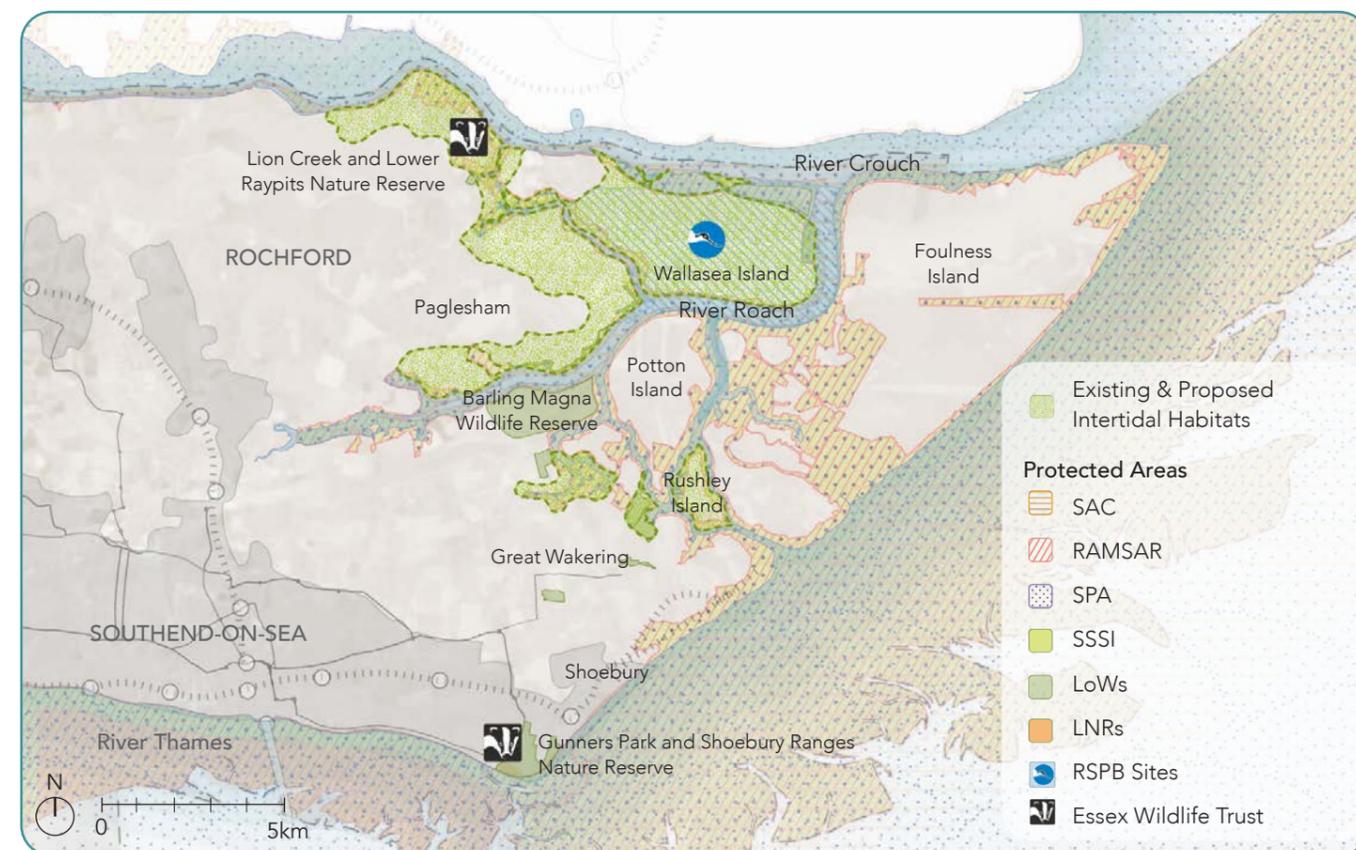


FIG.32 Existing & Proposed Intertidal Habitats Diagram: Island Wetlands

SHORT-TERM OPPORTUNITIES (2020 - 2025)

** Priority Project

1. Canewdon: Coast Path to be enhanced along the Crouch. Lower Raypits Reserve to be enhanced and extended, while plans for areas of agricultural land to transform to intertidal habitat, and possibly blue carbon sinks, are prepared. (Dwellings and infrastructure will remain protected.)

2. Wallasea: Already the UK's largest man-made wetland site (670 ha) will be enhanced with better access for people where appropriate, more facilities for visitors, interpretation, RSPB events and festivals, and an improved Coast Path route.

3. Paglesham: Coast Path to be enhanced to connecting Wallasea to Barling. Preparation begins for change in use from agriculture land to intertidal habitat and Island Wetlands. Landward realignment of flood defences will move towards a more natural estuary and creek evolution.

4. Barling:** Coast Path to be enhanced at Barling, with better access to Barling Magna Nature Reserve, the planned Barling Marsh, and the Essex Kite Park. (A landfill site behind the defences prevents defence realignment due to contamination issues.) Parkland will be designated along the River Roach to support future development and extend marshes, and will also extend southward, connecting to Southend.

5. Rushley: The plan needs to provide adequate time for adaptation and mitigation for people, businesses and organisations affected at Rushley. Heritage and archaeological assets to be assessed.

6. Great Wakering: Coast Path to be enhanced in this area. Some of the land is in use as military ranges, so short-term change is not likely. Marine opportunities to be enhanced around Wakering Boatyard, with floating homes, and non-motorised boating.

7. Shoeburyness:** Coast Path to be implemented, that extends from the point at Gunners Park to East Beach Park, and then north towards Great Wakering.

8. Southend Strategic Park:** Preparation of agricultural land to become a primary greenway running westwards, linking beyond the airport towards Basildon and Castle Point.

LONG-TERM OPPORTUNITIES (2025 - 2050)

** Priority Project

1. Canewdon: New flood defences will be put in place before breaching the current ones and will effectively be the new frontline. New nature reserve and parkland established with realignment of flood defences, creating a similar intertidal habitat zone to Wallasea Island.

2. Wallasea: Will provide a model of soft-engineering and managed shoreline realignment as a way to absorb wave action, store water and create habitats, that will also be applied to sites at Canewdon, Paglesham and Rushley Island.

3. Paglesham: New flood defences will be put in place before breaching the current ones. New parkland and nature reserve established, creating a similar intertidal habitat zone to Wallasea Island. Opportunities for blue carbon sinks on inundated agriculture fields.

4. Barling: Longer-term remediation the landfill site to be considered, to improve environment. Possible Airstrip transformation to parkland (to avoid conflict with bird habitat) with an emphasis on kite-flying and hot-air ballooning. Park implementation along both sides of the River Roach, connecting to the Central Woodlands.

5. Rushley: Flood defences to be realigned, transforming agriculture land into intertidal habitat and expansion of Island Park. Non-motorised boating opportunities.

6. Great Wakering: Extend habitat areas from Barling to Great Wakering. Longer-term landward realignment of flood defences to be considered to reduce pressure on flood defences and improve estuary health. Possible marine festivals introduced.

7. Shoeburyness:** Implement a linear park along the greenway, providing much needed open space, play and recreations areas, while providing a strong link to the larger regional park network.

8. Southend Strategic Park:** Primary greenway extended to become an expansive linear park running east-west, providing much needed open space, play and recreation areas.



FIG.33 Island Wetlands Opportunities

Central Marshlands: Located at the heart, the marshland brings together South Essex's unique qualities in one place, juxtaposing iconic industrial structures, wild marshes, cultivated fields and magical heritage sites.

Reimagining a vulnerable landscape into a place of hope

Central Marshlands is an exceptional landscape, rich in wildlife and accessible to people at the heart of the South Essex Thames Gateway. It is an internationally important wetland in a restored industrial landscape. Indeed, this living infrastructure is resilient and sustainable, and will not only bring benefits for the environment, habitats, species, and people who live in and use the area, but will also support vibrant communities and a thriving economy.

The creation of this vast marshland is already underway. The *Turning the Tide: the South Essex Marshland Landscape Partnership* scheme, produced by the Essex County Council, 2011, has set out the vision. The documents provide a great deal of analysis and rationale for creating the marshland.

The marshland area is mostly low-lying and is at severe risk of flooding; nonetheless, it has been inhabited since Roman times. The land was reclaimed and mainly used for agriculture until the last century where it became an important seaside resort for a period. In 1953 Canvey was catastrophically hit by the North Sea Flood due to its low-lying and flat arrangement, and stronger flood defences were since built. However, a new plan is in place to redevelop existing defences as part of the *Thames Estuary 2100 Plan*.

The petrochemical industry has also featured significantly in this area throughout the 20th century, along with other industrial uses including landfills. But important nature sites are already growing out of some of the abandoned land; for example, Canvey

Wick is a designated SSSI at the site of the partially built and abandoned oil refinery; Thurrock Thameside Nature Park on the former Mucking landfill; Canvey Heights Country Park which was reclaimed from the Newlands landfill site, and the ambitious South Essex Central Marshes scheme is underway.

Connectivity will be key to bring this vast landscape together, spanning a number of local authorities. Habitats will be seamlessly linked and provided adequate space for restoration. At the same time, a plan will be prepared to encourage better access for people in appropriate areas, including: improving physical access to and around the park for local community and visitors who value its natural character for outdoor recreation and study; and, inspiring, encouraging and supporting people to take action for wildlife.

Central Marshlands addresses the challenges of today in this vulnerable and compromised landscape, and offers a GBI solution that enhances current flood defence proposals, provides flood storage, complements and improves existing habitat sites, aligns with developing coastal path plans, while also celebrating its fascinating industrial heritage and ancient history. By doing so, Central Marshlands presents a new kind of park model that not only provides an important address for South Essex, but that brings health and well-being to people's lives, while protecting biodiversity, properties, and the regional economy.

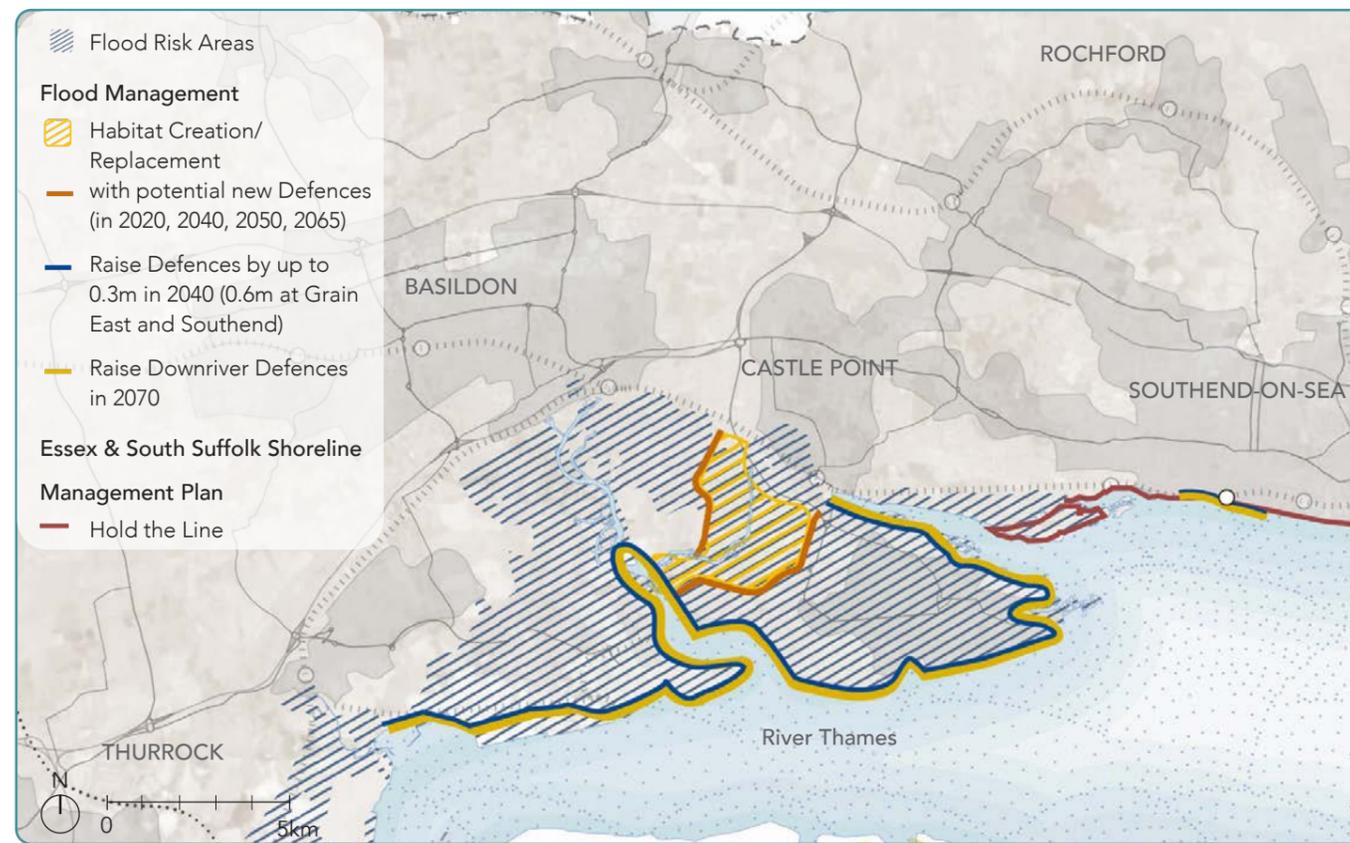


FIG.34 Flood Risk and Flood Defence Diagram: Central Marshlands

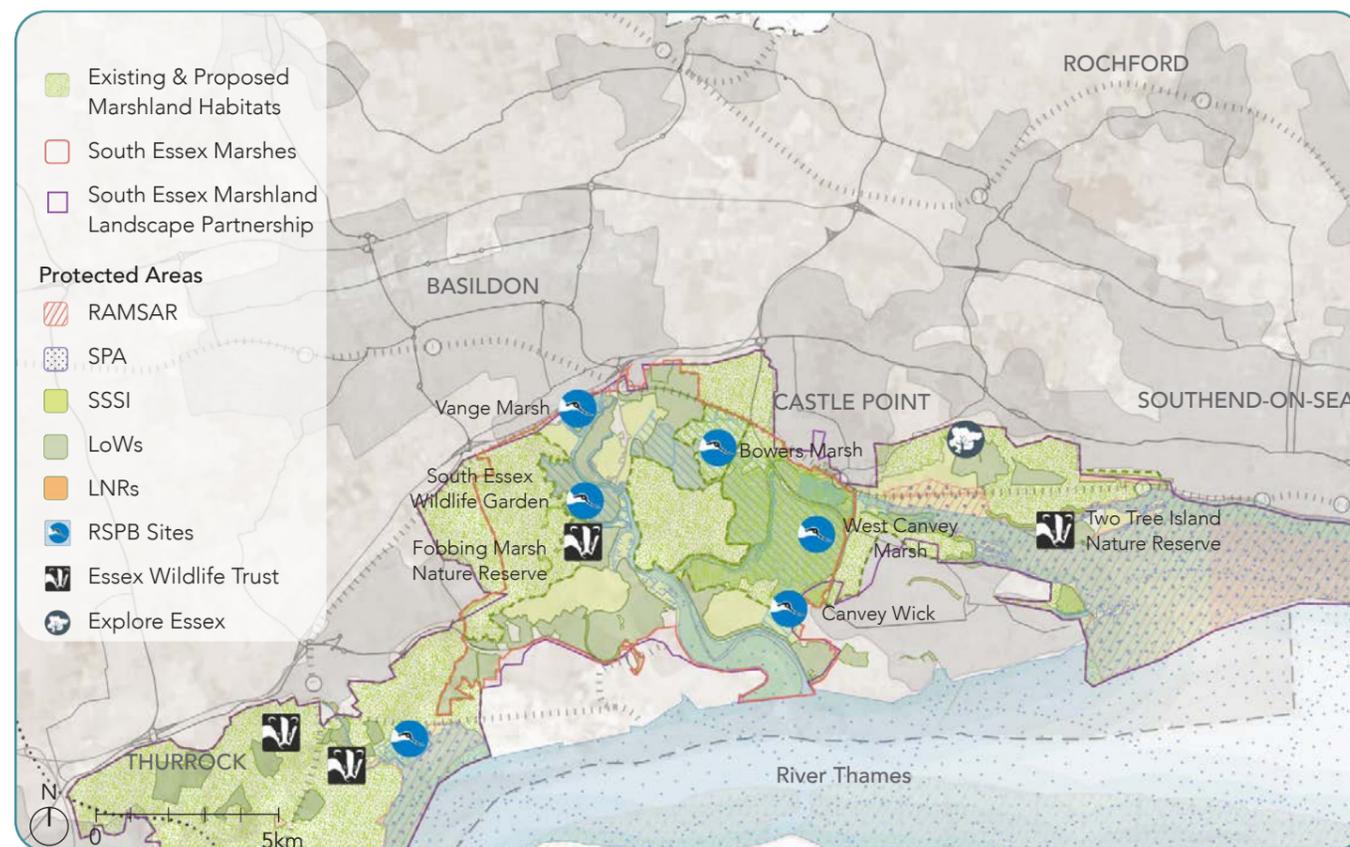


FIG.35 Existing & Proposed Habitats Diagram: Central Marshlands

SHORT-TERM OPPORTUNITIES (2020 - 2025)

** Priority Project

1. Hadleigh Marshes and Two-Tree Island:

Recreational waterfront access and environmental improvements to be undertaken along with flood defence's continued maintenance (to prevent contamination of the Estuary.) These freshwater marshes are already designated as community parklands in the Thames Gateway Parklands Vision.

2. Hadleigh Castle Country Park**:

Connections and public access to be improved to the estuary frontage and Coast Path route from this important historic site.

3. Canvey Wick**:

This unique brownfield site will be protected and improved, with existing industrial features to be enhanced as important landmarks at Hole Haven. (The western part of the island is already part of the proposed South Essex community parklands.)

4. St Mary's Marsh:

An intertidal habitat creation site will be implemented to replace lost habitat (TE2100), and will be designed to have good connectivity to Wat Tyler Park

5. Central South Essex Marshes (east):

This area will be protected, and will complete the network of existing marshes.

6. Wat Tyler Country Park:

No change required, except to ensure connectivity with other new initiatives. The park already boasts an exciting mixture of nature conservation and heritage initiatives as well as the Green Centre.

7. Fobbing Marshes**:

A proposed RSPB nature reserve, this site will also provide green space for residents, increase flood storage, provide habitats, and connect to Thurrock Thameside Nature Reserve.

8. Thurrock Thameside Nature Reserve Expansion:

This interesting nature park will expand south to create a wonderful waterside experience. Thurrock are currently conducting a local GBI Study and will provide a focussed strategy for this area.

9. England Coast Path and Flood Defences**:

The Coast Path and flood defence improvements will be combined with improvements for people and wildlife.

LONG-TERM OPPORTUNITIES (2025 - 2050)

** Priority Project

1. Hadleigh Marshes and Two-Tree Island:

Longer-term remediation of the contaminated land will open up management options and provide great environmental benefits to this area. It is an important setting for Hadleigh Castle to be enhanced, and the marsh will connect to the Coast Path along the entire estuary frontage.

2. Hadleigh Castle Country Park:

The park will be enhanced with better access for people where appropriate, more facilities for visitors, interpretation, events and festivals.

3. Canvey Wick**:

Improved public access and environmental improvements will be made to flood defences along with planned maintenance of defences. A pier for passenger ferries is proposed, along with a possible marina, making this an important destination, requiring visitor information and related facilities. (more detailed study required)

4. St Mary's Marsh:

Enlarge and extend the site to the west. (It may take up to 10 years after the realignment is implemented)

5. Central South Essex Marshes (east):

Due to the huge area to be adapted, this marshland will take years to develop.

6. Wat Tyler Country Park :

Continued enhancements and programme of events. As the marshlands grow around the park, a network of trails and other facilities will be improved.

7. Fobbing Marshes:

Due to the huge area to be adapted, this marshland will take years to develop.

8. Thurrock Thameside Nature Reserve Expansion:

There are plans to expand this site to 845 acres, helping to complete green infrastructure all along the waterfront to Tilbury. Thurrock is currently conducting a local GBI Study and will provide a focussed strategy for this area.

9. England Coast Path and Flood Defences:

The Coast Path will open in coming years, extending continuously along the shoreline. To be coordinated with the flood defence implementation.



FIG.36 Central Marshlands Opportunities

Central Woodland Arc: Enveloping much of Rochford, the Central Woodland Arc amplifies an already established woodland area, and establishes a generous loop connecting the Roach and Crouch Rivers.

Providing more room for the beauty of a woodland area

Central Woodlands is a place of many existing woodlands and country parks, including Cherry Orchard Country Park, Hockley Woods, and Gusted Hall Woods, and can be easily accessed by large centres of the population, serving residents of Rochford, Rayleigh, Hockley and Southend.

Cherry Orchard Country Park is an important part of the park, situated in the rolling countryside of the Roach Valley at the south of the District. It is a 200 acre beautiful wildlife park improved with thousands of native trees, providing unique recreational facilities for residents and visitors to the area. The woodland, lake, open grassland and network of connecting paths and bridleways also provide habitat for a huge range of animals and plants.

The park is taking shape out of a vision of turning an area of farmland into a public open space where everyone can enjoy all that the countryside has to offer. There are numerous public rights of way for walkers, cyclists and horse riders to enjoy. Areas of open grassland have been established. These will be extended into the larger park area, and mown to create species-rich meadows.

This location is easily accessible on foot or bike for local residents and supports active travel as well as providing a green lung for these residents.

The woodlands also provide an important habitat for wildlife, that will now enjoy an extensive connected network from the west end of the River Crouch, in an arc down to the end of the River Roach. A complete

green loop is envisioned for people and wildlife, circling much of Rochford. This will extend and restore some of the former woodland sites. For example, covering over 130 hectares, Hockley Woods are the largest remaining area of the wild wood, which covered Essex after the Ice Age 10,000 years ago.

Areas of flooding have been included in the area earmarked for the park, to allow large areas of flood attenuation and to protect people and properties. Existing and proposed development sites sit around the edges of the woodland, and enjoy easy access to the parkland.

Much of this area is in public ownership which will make investment straightforward.

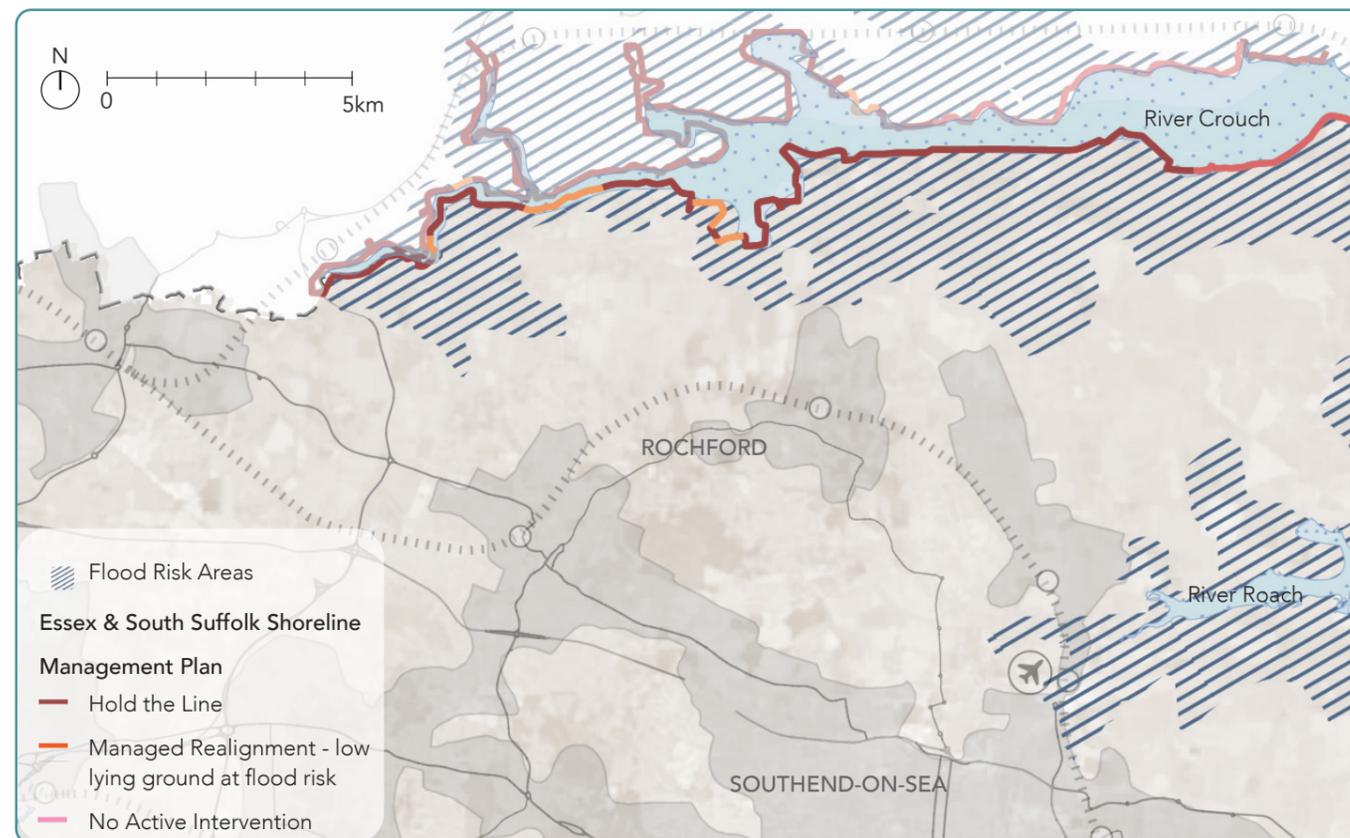


FIG.37 Flood Risk and Flood Defence Diagram: Central Woodland Arc

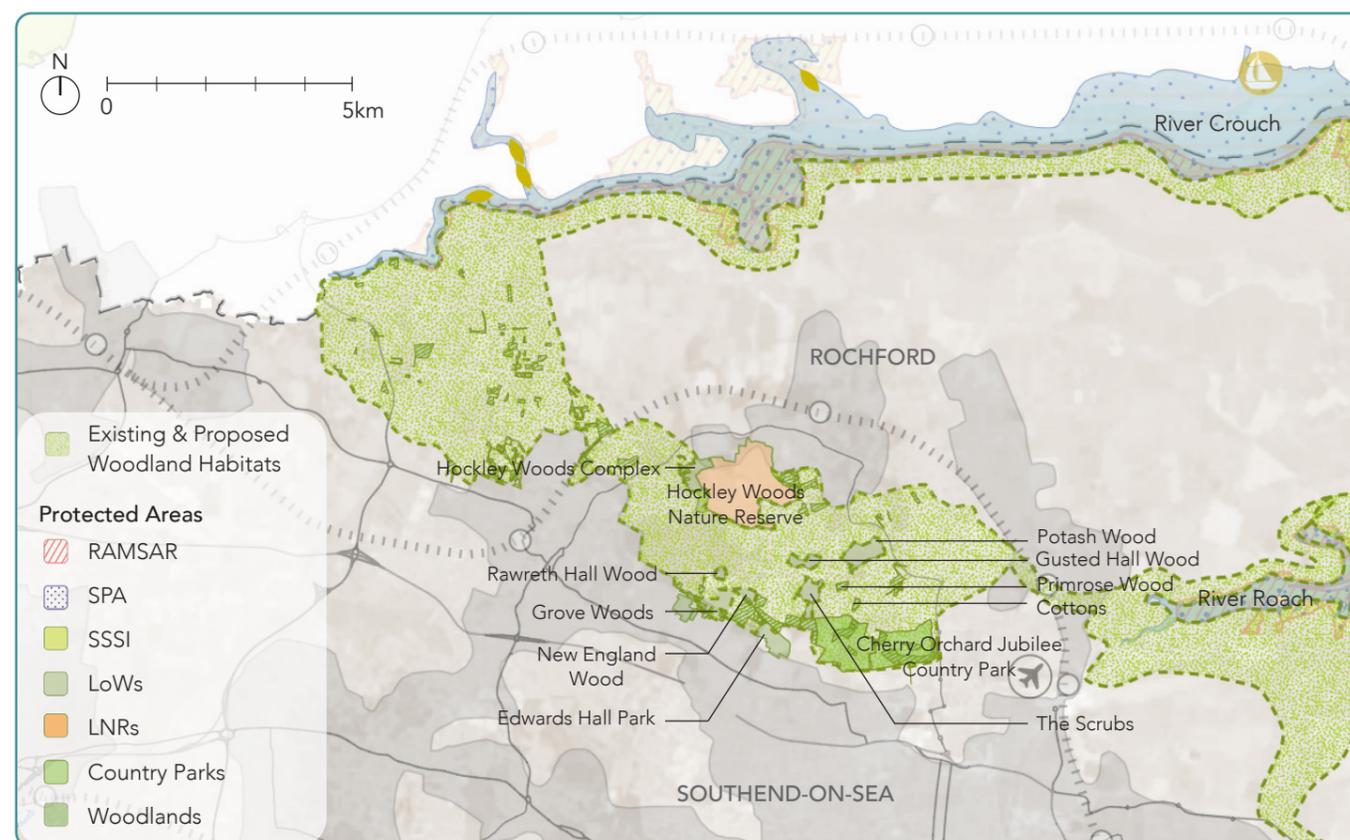


FIG.38 Existing & Proposed Habitats Diagram: Central Woodland Arc

SHORT-TERM OPPORTUNITIES (2020 - 2025)

** Priority Project

1. Battlesbridge: The north-west part of the park, connecting to the River Crouch, will be allocated as part of the parkland, providing open space for existing residents, and future developments in the area. Preparation begins for change in use from agriculture land to parkland.

2. River Crouch Coast Path and Flood Defences: Along with the implementation of the Coast Path and improved flood defences, public access along the northern part of the Central Woodlands will be enhanced.

3. Hockley Woods Nature Reserve: Preparation begins for change in use from agriculture land to parkland. Hockley Woods to be extended through farmland to connect to the west, south and east, to create a large cluster of woodlands. Areas associated with new developments will be undertaken and green pedestrian and wildlife corridors to be completed as a priority.

4. Cherry Orchard Jubilee Country Park: Develop a strategy to enhance the parks natural and recreational features, and improve visitor facilities.

5. River Roach Connection:** A strong link will be developed along the western arm of the River Roach, extending through to Cherry Orchard Jubilee Country Park, providing access for all users.

6. Rayleigh Connection:** A strong link will be developed from the Woodland Arc towards Rayleigh, enhancing an already popular route.

LONG-TERM OPPORTUNITIES (2025 - 2050)

** Priority Project

1. Battlesbridge: Implementation of the park scheme will be undertaken, completing the River Loop that connects the Crouch and Roach Rivers. Access also provided from the Battlesbridge Station. Flood attenuation to be built into the scheme as a first priority.

2. River Crouch Coast Path and Flood Defences: Shoreline improvements will be implemented over the next few decades. However, footpaths and public access along the shoreline will be improved before full implementation.

3. Hockley Woods Nature Reserve: Implementation of the park scheme will be undertaken, extending from Hockley Woods and bounded by Cherry Orchard Jubilee Country Park in the south. Due to its size, the park will require phasing, to be agreed through a public engagement and a park plan. This large parkland will serve many existing residents and future developments.

4. Cherry Orchard Jubilee Country Park: Continue to enhance the park and ensure high quality management and maintenance in the long-term.

5. River Roach Connection: This link will be enhanced in line with other schemes progress, including the Coast Path and new developments.

6. Rayleigh Connection:** Continued enhancement of footpaths/bridleways that allow you to get all the way from Rochford to Rayleigh.

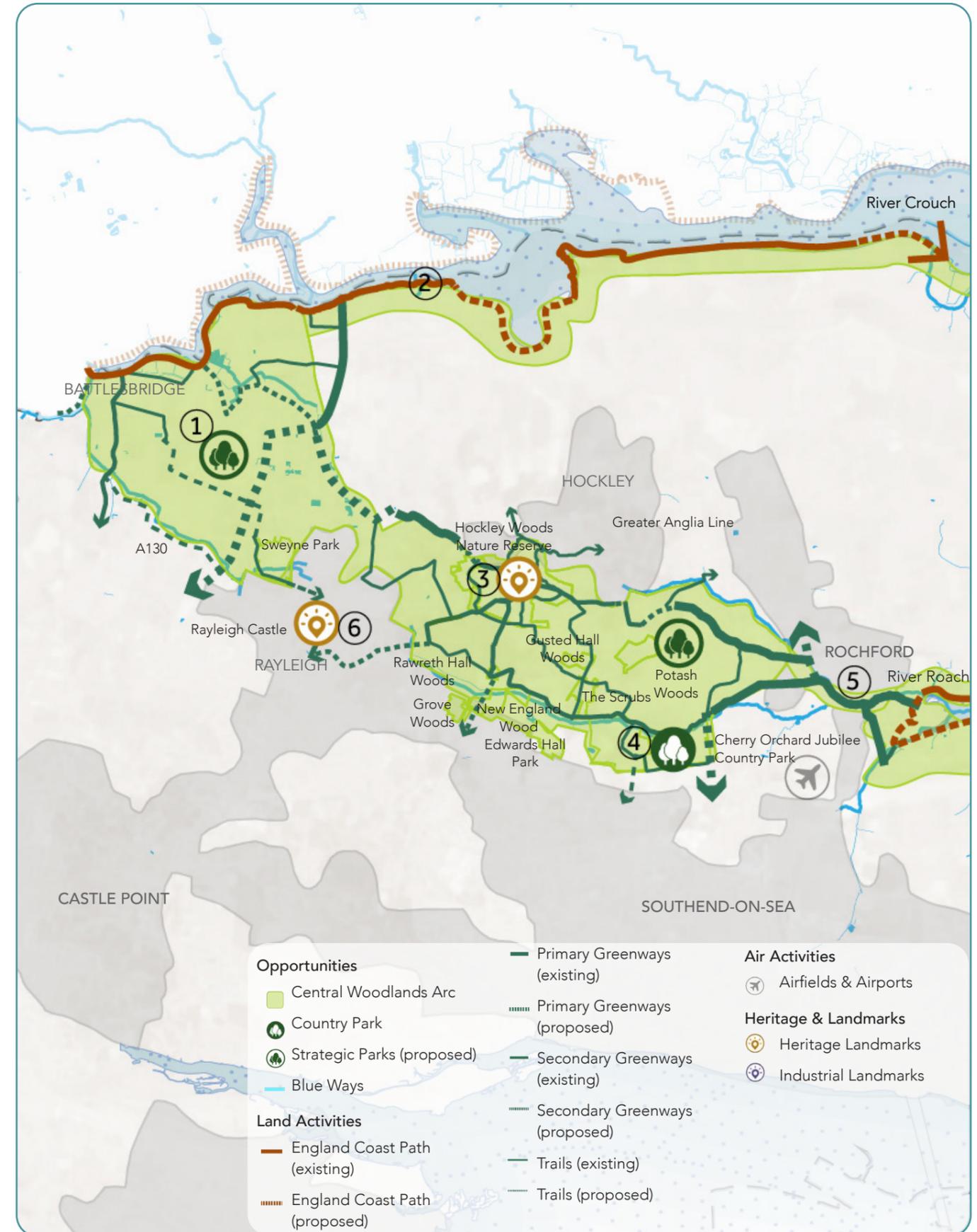


FIG.39 Central Woodland Arc Opportunities

Mardyke Valley and Brentwood Parklands (part of the Thames Chase Community Forest): A sweep of landscape scale infrastructure connects Brentwood and Thurrock in a broad stroke from north to south.

Mardyke Valley

This landscape connects Rainham Marshes along the Thames River through Thurrock and the Mardyke Valley, up to Brentwood, as a strategic recreational resource in proximity to the key urban areas in the south west of the Borough. Initiatives are already underway in the **Mardyke Valley to promote green travel, and habitat creation, and connect with the Thames Community Forest**, although more could be done to expand this landscape.

The valley is designated as Green Belt, and supports existing and future residents, provides flood alleviation and supports connectivity for wildlife and people. Habitats along the valley are varied, largely with agricultural land, small pockets of dispersed deciduous woodland and hedgerows, and grasslands and wetlands in the southern areas.

There are a number of non-statutory designated Local Wildlife Sites (LWS) along the south-western extent of the river Mardyke. The proposed Lower Thames Crossing is planned to cross the valley to the north-east of South Ockendon.

Thurrock is currently conducting a local GBI Study and will provide a focussed strategy for this area. Please see the *Thurrock Green and Blue Infrastructure Strategy: Appendices* for detailed information on the Mardyke Valley proposals. A summary is provided here:

Opportunities

- Create a network of walking, cycling and horse riding routes along the valley, as well as routes with disabled access. Avoid sensitive habitats and deploy appropriate interventions to avoid recreational disturbance such as through use of biodiverse native scrub/hedgerow/fencing, gates and other infrastructure to control access.
- Improve pedestrian/cycle connections and access from and between the surrounding settlements.
- Implement a series of smaller projects to enhance habitats and biodiversity along the valley
- Brownfield sites within the valley should be protected from development and managed sensitively
- Remediate landfill sites in northern parts of the project area through capping end of life sites and establishing suitable vegetation
- Enhance spatial flood defences along the valley such as by introducing large-scale SuDs. This should aim to create and enhance grazing marsh and other wetland habitats.
- Enhance recreational and biodiversity value of still water bodies along the valley
- Conserve and enhance access by providing suitable underpasses beneath the proposed Lower Thames Crossing.
- Conserve and enhance historic landscape features, building on the legacy of the Land of the Fanns Landscape Partnership.
- Develop and improve visitor facilities to enable inclusive access and learning opportunities.

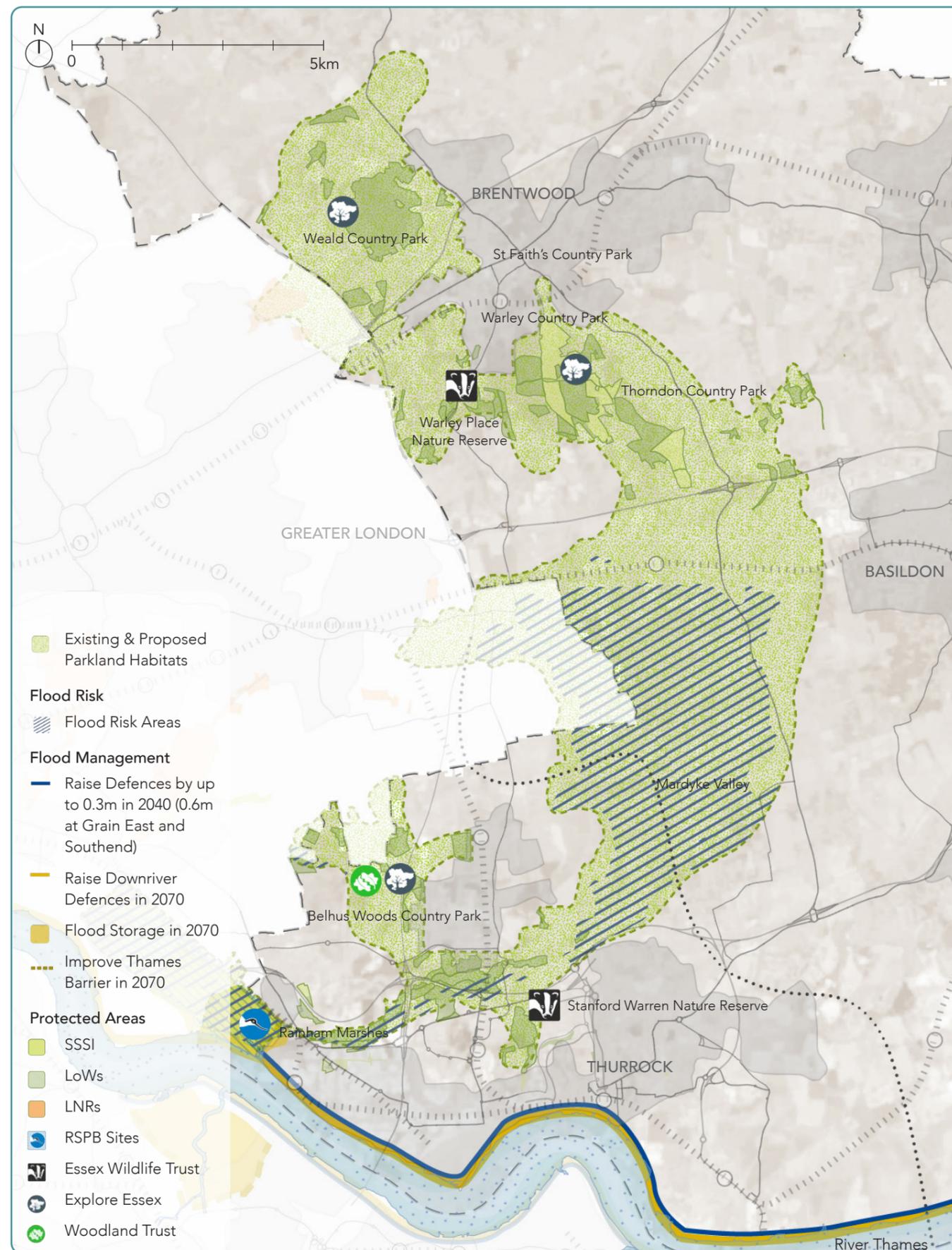


FIG.40 Existing & Proposed Habitats, Flood Risk and Flood Defence Diagram: Mardyke Valley and Brentwood Parklands

Brentwood Parklands

Running north to south on the western fringe of South Essex, this park connects the Mardyke Valley with large areas of existing Brentwood country parks, and forms part of the Thames Chase Community Forest, and Forest Circle Network.

This large scale green infrastructure expands upon Brentwood’s open space vision:

“To ensure a linked and integrated network of inviting and sustainable open spaces which together contribute towards quality of life for the residents of Brentwood and which underpin the Borough’s unique identity, and to ensure that open spaces aid in the protection, enhancement and promotion of the natural environment, biodiversity and cultural heritage of these areas.”

Brentwood Open Space Strategy 2008-2018

The Brentwood Parklands will create a high quality, distinctive landscape character, while at the same time providing a complete network of healthy, wildlife-rich natural ecosystems, and active travel routes, that connect into the Forest Circle network.

The parklands also help to achieve health and well-being objectives, by promoting sport and recreation, leisure and play. Simultaneously, the health of the environment is improved, and the effects of climate change are mitigated.

Please see the Brentwood Leisure Strategy 2018-2028, and the *Brentwood Green Infrastructure Strategy* for detailed information on the Brentwood GI proposals. A summary is provided here:

Opportunities

- Improve the network of walking, cycling and horse riding routes while avoiding recreational disturbance such as through use of biodiverse native scrub/hedgerow/fencing, gates and other infrastructure to control access.
- Improve pedestrian/cycle connections and access from and between the surrounding settlements.
- Innovate sustainable travel options for commuters travelling to key travel Gateways eg. Rail stations; and in particular attractive cycle routes between West Horndon, Dunton Garden Suburb and Brentwood Enterprise Park, setting new standards that can be rolled out to other commuter destinations.
- Sustainable Drainage Systems should be used on all new routes in line with the Brentwood Surface Water Management Plan.
- Collectively protect key landscape assets forming the distinctive character of Brentwood eg. Wooded farmland, fenland, river valley, and ancient woodlands with coppicing.
- Conserve and enhance the countryside to improve biodiversity and create more wildlife corridors between ecosystems.
- Develop and improve visitor facilities to enable inclusive access and learning opportunities.
- Incorporate more opportunities for sport, play and recreational facilities into the parklands

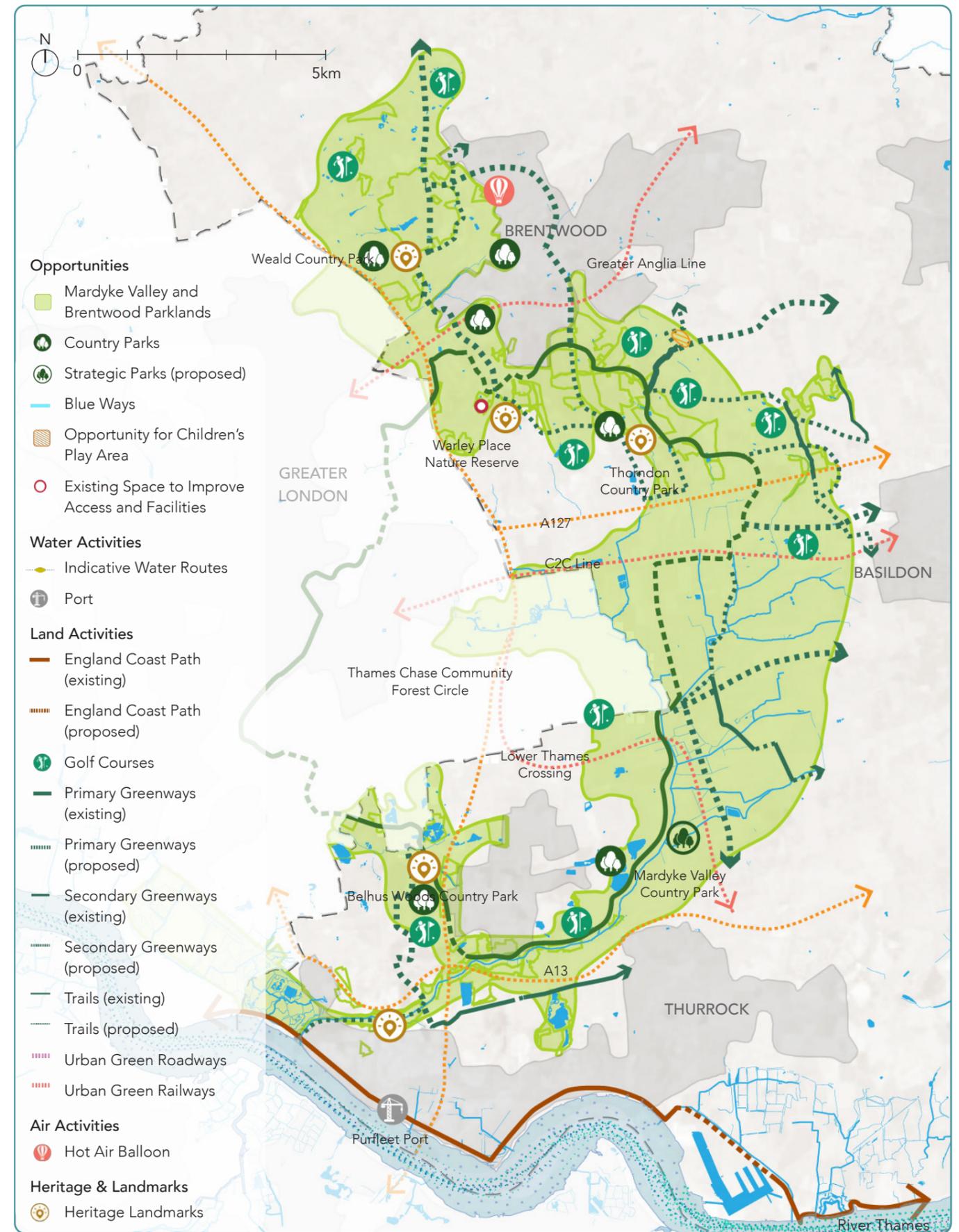


FIG.41 Mardyke Valley and Brentwood Parklands Opportunities

② Build Landscape Connectivity

A complete landscape network will bring natural and social connectivity across South Essex

Landscape connectivity is a key function of GBI, facilitating movement for people and wildlife across South Essex. They include both structural connectivity (or the physical arrangement) and functional connectivity (referring to movement of people and wildlife). **It is the quality, design, reach and simplicity of these green and blue corridors that will encourage people to use them as a viable alternative to using the car.** Moreover, the integration of high quality habitat across all corridors will support and strengthen our struggling wildlife. (Refer to *Vol.2 Appendix section 2.6 Conservation* for more information on Wildlife and Biodiversity.)

Paths and tracks will weave through urban, rural and wild areas. New corridors will connect riverside to hilltops, and will simultaneously link congested urban areas with rich woodlands and agricultural areas, once very difficult to access. Indeed, many new paths are already opening up, making it possible to walk, cycle or ride on horse to the Thames, Roach and Crouch, and other strategic routes through South Essex that are attractive and delightful. The water itself is a defining element of the system.

In order to describe the various types of landscape connector in this strategy, the section has been divided into three broad categories of Public Connectors, Wildlife Connectors and Transport Connectors, as follows:

1. Public Connectors: Creating an accessible, safe, legible and connected network of routes for people is a key part of the GBI strategy. **Not only will this allow people to move comfortably and conveniently around the district, but will encourage an active and healthy lifestyle, improve air quality, promote**

social interaction and create important connections between people and nature. In South Essex, with adequate planning, people will be able to easily travel between town and countryside in a fluid manner. To create a successful movement framework, the public network will need to:

- Offer a range of viable choices for how people make their journeys;
- Enhance existing routes and link them with new public corridors to create a comprehensive, navigable network;
- Ensure existing and new communities can benefit from this improved connectivity; and,
- Integrate with green corridors to benefit both people and wildlife.

2. Wildlife Connectors: Supporting the movement of wildlife through a range of locally-appropriate habitats is an integral part of the GBI strategy. **The purpose of these green corridors is to allow species to migrate and commute between islands of the highest quality habitat. Isolated nature reserves - fragmented by urban development, transport infrastructure and industrial sites - are not enough.** Species are unable to adapt and move quickly enough, so it is the ambition of this strategy to connect and extend many of the existing areas of vegetation, waterways and habitats, to form a more continuous and connected GBI, making it easier for wildlife to bridge across countryside, urban areas, shorelines and waterways.

3. Transport Connectors: Road and rail routes, and seawalls, often form barriers in the South Essex landscape and can often impair the movement and access for people and wildlife. They do, however, form an opportunity to extend and improve local wildlife habitat even further. This can be achieved by **increasing habitat provision along the highway or railway edges and providing crossings over or under routes,** together supporting an expansion of the connector strategy and improving public and wildlife moveability.



FIG.42 Greenway Seawall promenade, is continuous along the waterfront in Vancouver, Canada



FIG.43 Horse-riding in Essex



FIG.44 Cyclists in Greenway

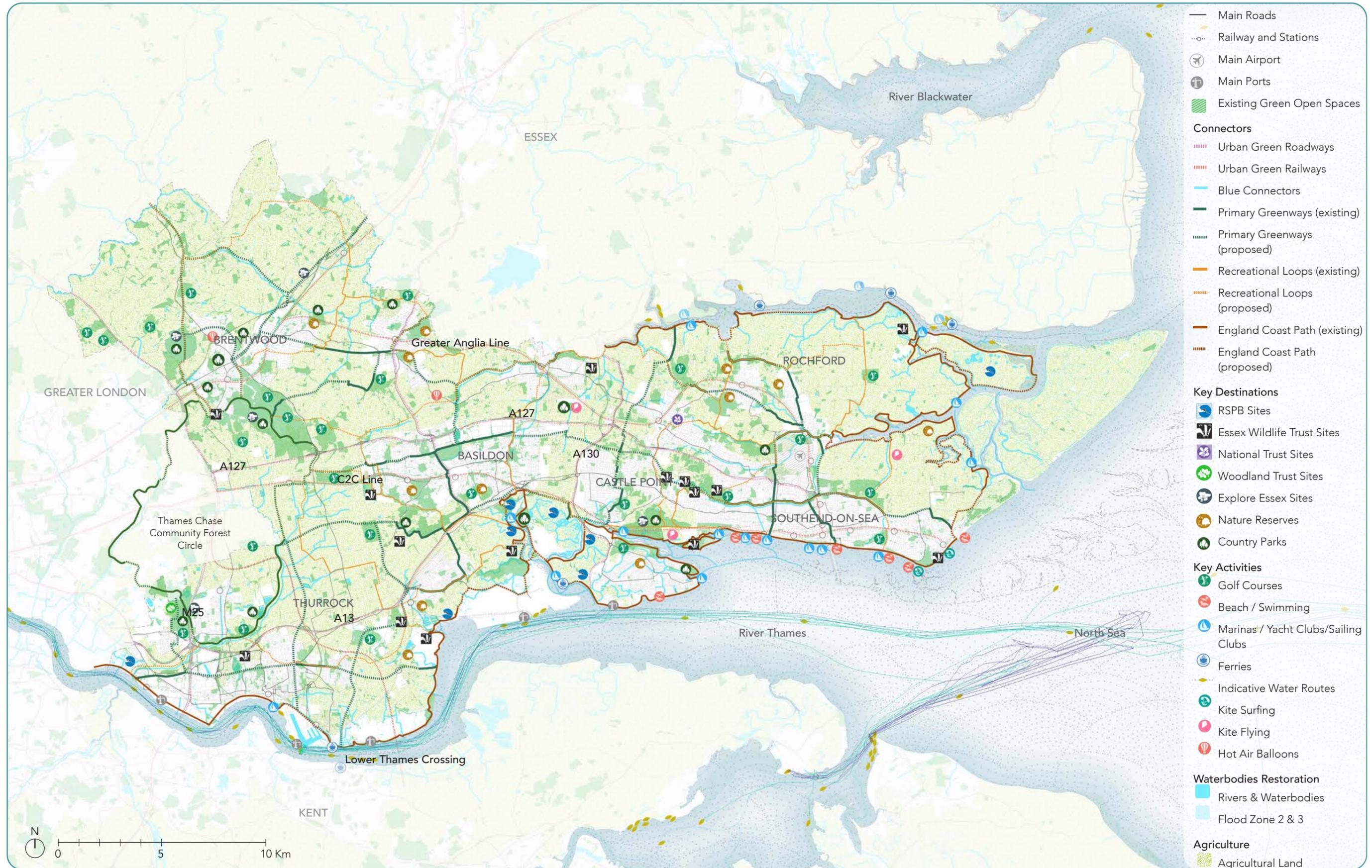


FIG.45 Key Moves: Building Landscape Connectivity - a proposed hierarchy of green and blue routes, both existing and proposed, are depicted on this diagram, providing urban to rural routes, connecting to key destinations, and supporting continuous green corridors for wildlife. (Source: GIS Green Spaces and Agriculture from ASELA)

Public Connectors expand opportunities for urban recreation, encourage people to travel by foot, bike, horse, or boat, and enhance the experience of nature and city life.

Green Connectors

Green Connectors will facilitate a range of modes of movement, including walking, cycling, e-personal vehicles and horse-riding. Many of these green connectors will be along waterways and the shoreline, complementing the role of Blue Connectors. They will form an **alternative circulation network through South Essex that will contribute to a more sustainable lifestyle for the area**, contributing positively to their resilience in the future as climate change continues to influence the environment.

For South Essex, the GBI strategy suggests a variety of route types are required to meet the needs of all users, and to fit appropriately into various contexts, including both rural and urban. They will connect homes with town centres, recreation with community gardens and allotments, sports with play, natural landscapes with agriculture, the seashore with industry. These green routes are an important part of the region's history, culture and its future.

Horse-riding is a special opportunity in South Essex, and trails will be integrated into the network, that improve links to liveries and stables. Improvements will not only be made in rural areas, but also connecting into urban centres.

Green connectors are multi-layered to provide a range of complementary functions, including the collection of surface water runoff, enhanced flood capacity, educational programmes and enveloped within an ecologically rich matrix of habitat. They also will be connected into the public transportation system to complete a much wider sustainable transportation network.

Existing Connectors

The existing network of pedestrian greenways, cycleways, public rights of way, trails, coastal paths and blueways provide a significant infrastructure already through urban and rural areas of South Essex. All making contributions to the accessible GBI, they are an integral part of the strategy to increase public connectivity across the district for those choosing walking, cycling, horse-riding, using e-personal mobility vehicles, or boats and other water-bound devices to get around.

Though these existing routes form the foundation of the green network on which to build, they are often fractured, and do not provide continuous, inviting and efficient routes. However, they provide a good starting point and in many situations will be **enhanced and extended**. Each route requires further assessment to identify if it is appropriate to become part of the multi-layered network. The protection of existing habitat, the hierarchy and connectivity of routes required, and suitability of the landscape will all contribute to building a navigable network across the district.

Amongst these routes, the coastal path will require carefully routing to complement the managed shoreline realignment changes to accommodate sea-level rise. **Shoreline routes are already under development, and will eventually allow continuous access to people along the waterfront.**

Indeed, existing routes will become an integral part of a wider network covering the area, providing its residents and visitors with an enjoyable way of experiencing the pleasures of the natural landscape.



FIG.46 Utilising existing greenways networks, for example Prittle Brook Greenway, Southend-on-Sea



FIG.47 The Great Fen, all terrain tramper allows access



FIG.48 A network of 14 citywide pedestrian and cycle routes, Vancouver, Canada.



FIG.49 Opportunities for horse-riding in urban parks

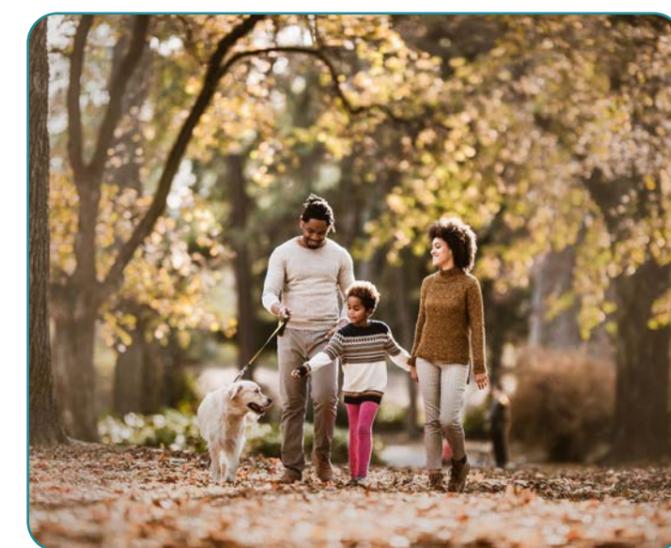


FIG.50 Family Walk on green street in Essex



Healthy street environment, incorporating sustainable urban drainage systems, trees and planting, and other amenities

Primary urban greenways prioritise people on foot, cyclists, and public transport

Horse-riding is invited into urban areas wherever possible, celebrating the rural character of South Essex, sustainable transport methods, and a recreational lifestyle

Primary greenways connect public open spaces and key destinations throughout South Essex.

Greenways are located to maximise benefits to residential communities, town centres and business locations, to provide easy access to the GBI network, and to encourage active travel

FIG.51 Public Connectors: Primary Greenways



Secondary greenways provide recreational routes for people on foot, bicycle, horseback, or e-personal mobility devices

Existing and proposed Greenways are often located along creeks or river corridors, softened with planting to enhance the corridor for people, wildlife, and environmental health

FIG.52 Public Connectors: Secondary Greenways



Many existing trails and PRoW's will be enhanced and extended to create a complete network of public connectors via foot, bicycle and horseback through rural areas

FIG.53 Public Connectors: Existing Routes through Rural Areas to be enhanced

Blue Connectors

Blue Connectors are in the form of creeks, rivers, canals, and coastline, and support swimming, kayaking, canoeing, sailing, motor boats, ferries, house boats and marinas in appropriate locations. They also play a vital role in the movement of wildlife, and many enjoy protected status in South Essex.

Water has always been an important part of the local vernacular in South Essex, whether it be the many influences from the busy Thames Estuary, the close proximity of the North Sea or the complex tributaries, intertidal areas and waterways that cross its landscape, including the Crouch and Roach rivers. South Essex's history is intimately connected with the use and modification of its waterways.

Creating a GBI that has built-in natural resilience to cope with evolving climate change prepares South Essex for the next chapter of its water story. The integration of blue connectors will provide an important contribution to support sustainable movement for people and wildlife through the area. Identifying and establishing improved access and use of the waterways and shoreline for a range of sustainable travel and recreational use will support local communities and tourism.

Currently, there are numerous marinas, yacht clubs, and slipways that allow access to the water. **Any new waterside developments will provide opportunities for people to engage with the water.** Moreover, the Essex Coast Recreational Disturbance Avoidance and Mitigation Strategy (the "Essex Coast RAMS") identifies a detailed programme of strategic mitigation measures which are to be funded by developer contributions from residential development schemes. **Floating homes and neighbourhoods will also be sensitively considered in appropriate locations, along the blue connectors, as a solution**

for rising sea-levels in South Essex.

South Essex is also home to **London's only deep-sea cruise terminal, situated at Tilbury. More could be made out of this opportunity, by improving connections to the terminal, and by working it into the green and blue network, (for example, linking to Tilbury Fort, and Coalhouse Fort) encouraging tourists to visit and enjoy the attractions of South Essex.**

The River Thames is a global river - connecting the Capital and five of the UK's largest ports to the rest of the world. It is a **gateway to UK trade and industry and a vital component of the national infrastructure strategy**, while also being a nationally significant habitat site. Impacts associated with continuing trade and industry must be carefully managed in order to ensure that the GBI strategy works.

New crossings, on all rivers, will require careful integration, and improving water quality and increased use of the river for leisure will enable the river to play a key role in the area's sustained growth. Opportunities will be incorporated into flood defence improvements, and on river and coast path improvement projects. All proposed water activities will be appropriate and sensitive, with respect for water quality and wildlife. (Refer to Essex Coast Rams Strategy)

Furthermore, the network of passenger ferries and marinas could be improved to support public transportation, with the possibility of a new ferry station and marina at Canvey Wick. (See FIG.36) (More detailed studies are required to identify appropriate locations for a marina in line with RAMS.)

This strategy builds on the many already underway, including the TE2100, The Riverside Strategy, Shoreline Management Plan, and Coast Path.



FIG.54 Outdoor services, like Essex Outdoors run by Essex County Council, encourage children to experience the water.

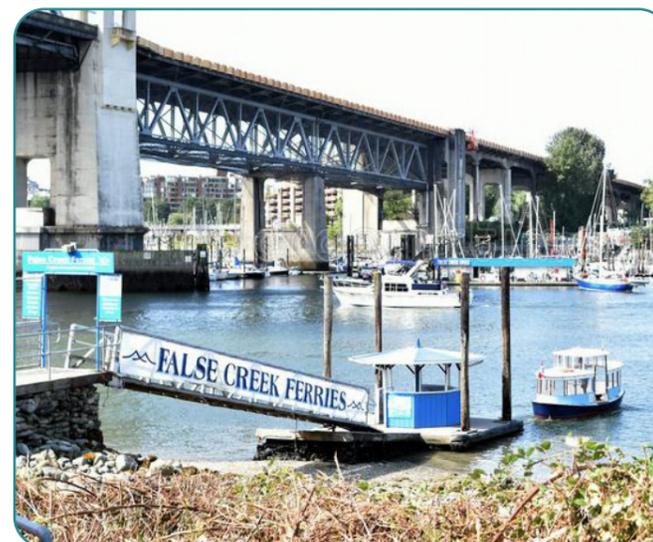


FIG.55 Passenger ferries in Vancouver Canada form part of the Greenways/Blueways network



FIG.56 Paddleboarding clubs in South Essex



FIG.57 Tilbury Docks active waterfront, with a cruise ship terminal and existing passenger ferries

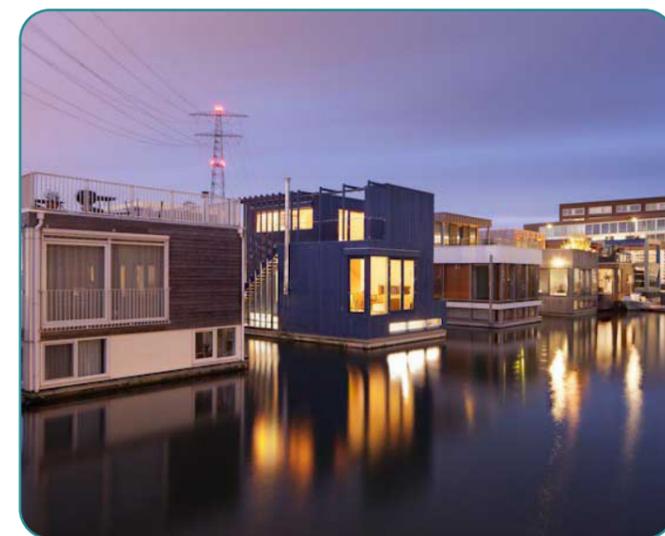


FIG.58 IJburg Amsterdam floating neighbourhood, a solution for rising sea-levels



Residential community with green and blue roofs

Shallow stream with native, marginal aquatic plants, with passive water recreation

Public pedestrian paths situated alongside streams

Soft flood defence to protect people and properties

Accessible, stepped coastal embankment stabilized with boulders and shrubs

Emergent coastal planting provides a soft and environmentally beneficial edge to flood defences

Access to the waterfront is supported by jetties and gangways, and served by small passenger ferries

Floating homes to be considered in appropriate locations as a means of providing housing in flood zones

FIG.59 Blue Connectors: Urban Shoreline



Visitor centres located in key locations throughout South Essex

Pedestrian paths allow access directly to water's edge

Planted revetment

Recreational routes provided along blue connectors

Lookouts allow vantage points over special waterfront views

Intertidal habitat zones are encouraged throughout the abundant marshlands

Iconic industrial structures are incorporated into parklands

Constructed wetlands with gentle water sports opportunities

FIG.60 Blue Connectors: Industrial /Wetland Area

Wildlife Connectors play a critical role in wildlife conservation

Rural Wildlife Connectors

These corridors will vary in size, shape, length and composition but will be increasingly important to ensure a functioning network of wildlife habitats across the whole district. **With a range of habitat fragmented across rural areas the GBI looks to improve habitat connectivity by reinforcing existing landscape vegetation such as woodlands, woodland buffer zones, hedgerows, native grasslands and wildflower meadows to establish green corridors.**

These habitats can be restored through rewilding, allowing natural succession to take place. This isn't appropriate in all cases, but rewilding is one of the most powerful and cost-effective ways to resist climate breakdown and wildlife loss at the same time.

A key outcome will be biodiversity net-gain, and connectivity established through areas of agriculture, currently supported by government agencies. Opportunities include:

- Creating an extensive network of high quality habitat to support a net gain in biodiversity.
- Integrating habitat rich corridors into agricultural land and connect with urban and water wildlife corridors.
- Reinforcing existing habitat stepping-stones and protected habitat into wider green corridors.
- Substantially increasing woodland planting in Green Loops to support environmental improvements, and creation of the South Essex Central Woodland Arc.
- Refer to the Section on Agriculture and Nature Conservation for more information.

Urban Wildlife Connectors

Wildlife corridors are effective nature conservation tools in urban green space planning. However, wildlife connectivity is often overlooked in fragmented urban environments. In order to increase connectivity, opportunities include:

- Creating green corridors through urban areas with native and adaptive plant species for wildlife, including streetscape planting, back garden networks, green roofs and walls, pocket parks, urban spaces, allotments and waterways.
- Relaxing maintenance regimes and using native plants or plants with documented value for wildlife. Selecting native, adaptive and pollinator tree and plant species.
- Ensuring that sustainable drainage systems are planted for wildlife.

Water Wildlife Connectors

Rivers, water bodies and coastline habitat typologies, have a considerable part to play in supporting net gains in local and migratory wildlife. Opportunities include:

- Re-naturalising river and coastal shorelines to support resilience to change and increased flooding.
- Reinforcing habitats to water shorelines and flood plains, with improved quality, connectivity and protection of their wildlife.
- Connecting water corridors with urban and rural wildlife corridors, along with methods to support sustainable urban drainage.
- Extending protection and nature reserve status to watercourses in support of increasing wildlife.



FIG.61 The grey heron will be protected and celebrated



FIG.62 Allotment gardens contribute to urban wildlife connectivity



FIG.63 Water vole will be supported in South Essex



FIG.64 Back garden wildlife network - badger



FIG.65 Hockley Woods are the largest residual area of the wild wood, which covered much of Essex after the Ice Age, 10,000 years ago, and provide important habitat.

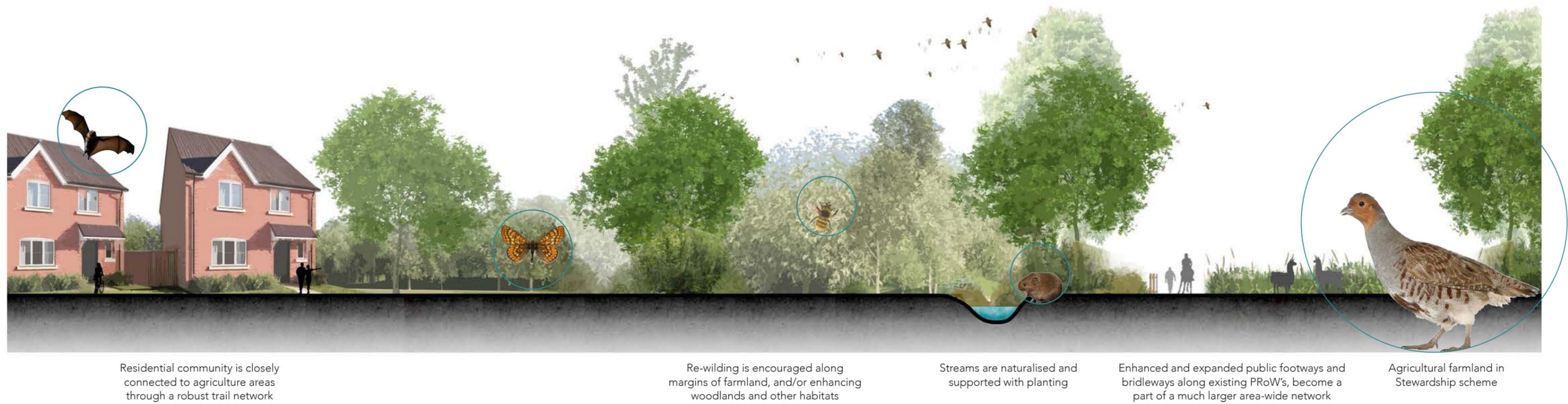


FIG.66 Wildlife Connectors: Rural areas have great potential to support wildlife species

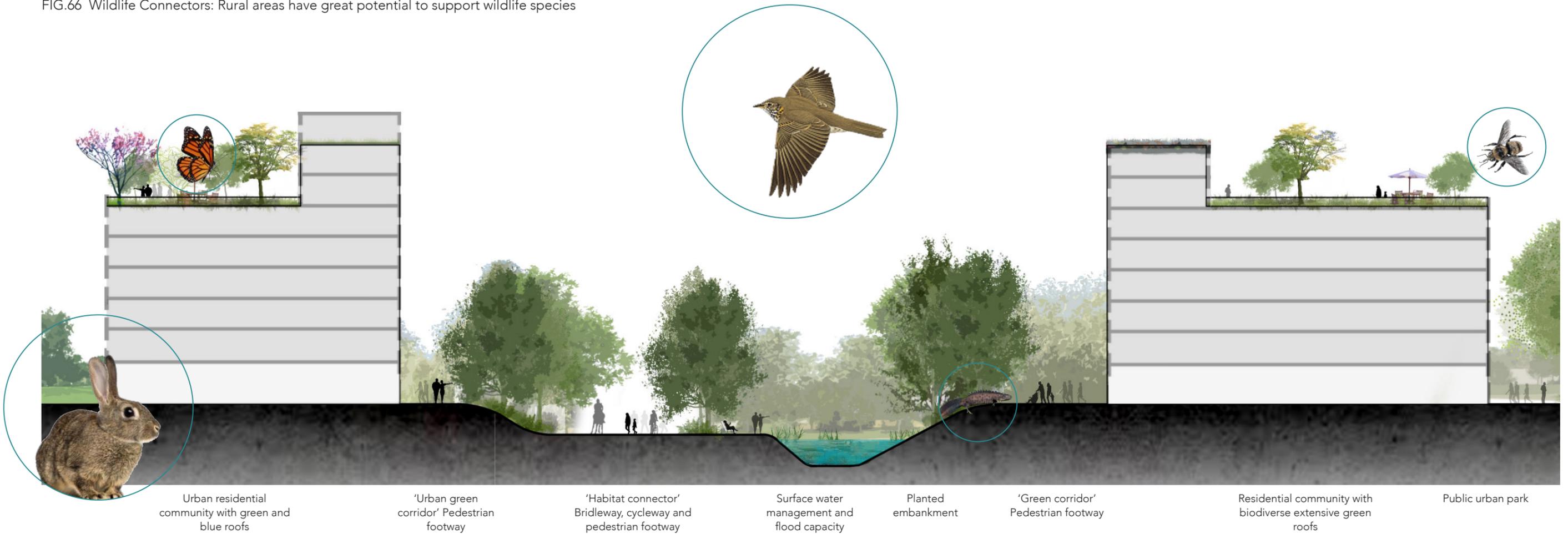


FIG.67 Wildlife Connector: Urban areas too can support South Essex's target species

Transport Connectors provide opportunities for the expansion of habitat networks across South Essex

Roads and Highways Connectors

Roadside verges are increasingly important wildlife corridors, assisting the movement of plants, flowers and invertebrates across an increasingly fragmented countryside. But there has been a 20% decrease in floral diversity on road verges since 1990, in part because of overzealous cutting. By working with ecologists and landscape architects, highway design could incorporate planting and features to encourage biodiversity and local ecosystems, bringing great value, and providing a low-cost solution.

The following features to be considered where possible:

- **Green medians:** vegetated medians are a potential improvement to the drainage system and provide aesthetic visual amenity.
- **Green shoulders:** road shoulders extended with a strip of vegetation as a transition area between engineered infrastructure and wildlife corridors providing aesthetic visual amenity.
- **Wildlife barriers:** fences and naturalised ditches/swales prevent species from accessing roads reducing the rate of wildlife-vehicle collisions. Fences also funnel animals towards crossing structures.
- **Horizontal levees:** a naturalised form of rainfall alleviation adjacent to road layout providing aesthetic visual amenity and vital for local plant and animal species.
- **Wildlife corridor:** linear habitats adjacent to roads restored and maintained with native trees and shrubs, and local wildlife meadows in order to provide refuge and facilitate movement of species.

- Local ecologists recommend a low-cost solution, that during road construction sands and construction materials, i.e. crushed concrete, be used on highway embankments to attract insects, including rarities associated with exposed and low-nutrient soils on the Thames Terraces.

Management regimes of highway's authorities must also be considered.

Railway Connectors

Railway corridors also provide links that are relatively undisturbed by people and can provide a range of habitats and high biodiversity, that connect wildlife through a network of habitat stepping-stones. Appropriate implementation and management of these areas is essential to increase biodiversity net gain and allow movement of species.

The following features to be considered where possible:

- **Wildlife barriers:** Fencing and other features that keep wildlife away from dangerous areas and channel it towards wildlife crossings.
- **Wildlife corridor:** linear habitats adjacent to railways to be enhanced, restored and maintained with native trees and shrubs, and species rich grasslands in order to provide refuge and facilitate movement of species.
- **Horizontal levees:** Sustainable drainage features that are designed to provide habitats.

Management regimes of rail companies must also be considered.

Green Crossings

Green crossings will be important features in the GBI network, connecting places currently severed by roads, railways or other elements. Bridges and tunnels will create safe crossing points for wildlife and people, facilitate movement of species between disconnected habitats, enable movement of beneficial pollinators, and integrate roads and railways within the landscape.

Green crossings take many forms including underpass or wildlife tunnels, viaducts, green bridges; culverts (for small mammals such as hedgehogs); and for butterflies and birds. Much guidance exists, including the Natural England Green Bridges Guide.

Wildlife crossings can be designed exclusively for wildlife use, mixed wildlife and human use, or as part of other infrastructure (e.g., creeks, canals).

Engineers will work together with ecologists and landscape architects when designing wildlife crossings across roads and railways to locate prime locations for wildlife crossings. Further studies are required to identify crossings within South Essex; however, as a principle, all new bridges could be designed as green bridges, and existing bridges could be upgraded to green bridges.



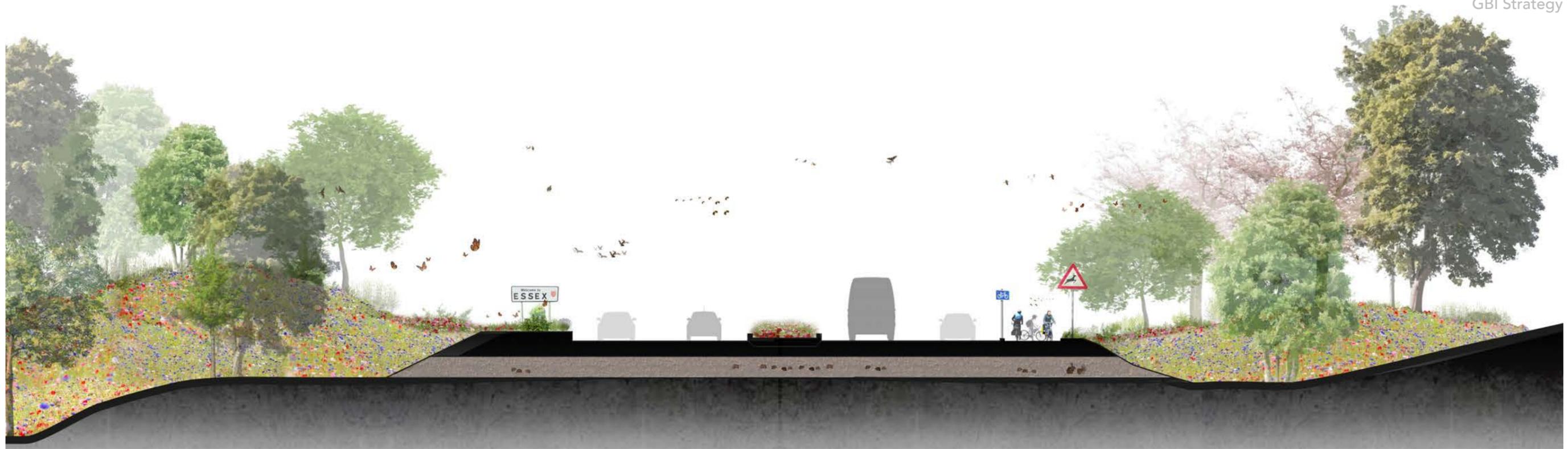
FIG.68 Roadside verges transformed into biodiversity rich zones.



FIG.69 Net positive biodiversity achieved along railways



FIG.70 Fauna Passage, Vandel, Denmark



Consider engaging ecologists and landscape architects to be engaged to work on new highway schemes, to identifying the best design solutions for biodiversity. For example, in South Essex, invertebrates thrive in the sands uncovered in highway construction.

Wildlife tunnels provide safe crossings for wildlife under busy roads

Central median planted with native wild flowers

Dedicated cycleway integrated into highway redesign

Consideration given to roadside verges possibly transformed into wildflower meadows where pollinators can flourish, as in other locations throughout the UK, or other type of wildlife corridor (promoted by The Road Verge Campaign, Plantlife charity)

FIG.71 Wildlife Road Connectors with Tunnel



Wildlife corridor adjacent to railway restored with native trees and shrubs, and local wildlife meadows, provides refuge and facilitates movement of species.

Green bridges create safe crossing points for wildlife and people, and connect habitats

Drainage features adjacent to railway provide a vital refuge for local plant and animal species.

Fences prevent larger species from accessing railways, and funnel animals towards crossing structures

Contiguous rail corridors can benefit wildlife. For example, The Green Transport Corridors project, with Highways England, Natural England and The Wildlife Trusts, forges new approaches to managing the transport corridor to benefit wildlife, and to work towards net positive biodiversity.

FIG.72 Wildlife Railway Connector with Green Bridge

③ Integrate Water Management Systems

Coordinating both land and water to manage water movement, embrace the changing environment, and re-establish natural conditions.

South Essex's blue assets provide incredible benefits to be celebrated; its shoreline, watercourses, and waterbodies comprise a significant part of the character and heritage of the area. However, they continue to be under considerable pressure, so an integrated water and landscape approach, provided through the GBI, is required.

By restoring natural conditions, our waterscapes will gain resilience and provide a framework for the sustainable and multi-functional use of the estuary, rivers, and other waterbodies. 'Coastal squeeze is a key issue along the shoreline and measures must be taken to allow for adaptation and mitigation. Managed shoreline realignment is a way to absorb wave action, store water and create habitats, while realignment of flood defences will move towards a more natural estuary and creek evolution. (Refer to Section 3.1 Regional Parkland, Island Wetlands and Central Marshlands.)

Opportunities also lie in improving access and recreational use of the waterways to ensure their beauty, heritage and use can be shared by the community and visitors to the region. Refer to Essex Coast RAMS Strategy for suitable activities and locations.

Shorelines, rivers and streams, waterbodies and sustainable water management systems are also exceptionally important for nature conservation; hence, the aim will be to protect, restore, enhance, and expand their ecological integrity and performance through the region. In supporting these natural systems, the managing of surface water in our urban areas will undoubtedly perform an ever-important role.

Extensive work has already been undertaken by governmental and non-governmental agencies, with support from grants and funding, to improve waterways and wetlands across the region. These initiatives are incorporated along with the following areas of focus:

- 1. Shorelines:** The accommodation of a changing shoreline in association with improved flood defences. Integrating the realignment of waterfront paths, marine conservation, adaptation of agriculture and enriching local habitat.
- 2. Rivers, Creeks and Ponds:** The reinstatement of natural processes, features and habitats of the river systems to restore biodiversity, the capacity to cope better with local flooding, improve connectivity and enhance use by people and wildlife.
- 3. Flood Storage:** The adaptability of open space, natural landscapes, green corridors, and agricultural areas in their ability to accommodate storm water events and climatic change.
- 4. Urban Surface Water :** Incorporating surface water attenuation, harvesting, and recycling of water, creating a ground water balance, and improving the ecological contribution that water brings to the urban environment.



FIG.73 Yanweizhou Park in Jinhua, eastern China, in dry conditions



FIG.74 Yanweizhou Park in Jinhua, eastern China, designed to be flooded, provides an interesting precedent



FIG.75 Canvey Island flood, 1953, naturally vulnerable to flooding events



FIG.76 Wallasea Island Wild Coast project, has undergone managed realignment of its shoreline



FIG.77 Walking trail at RSPB Wallasea Island, atop the flood defence.

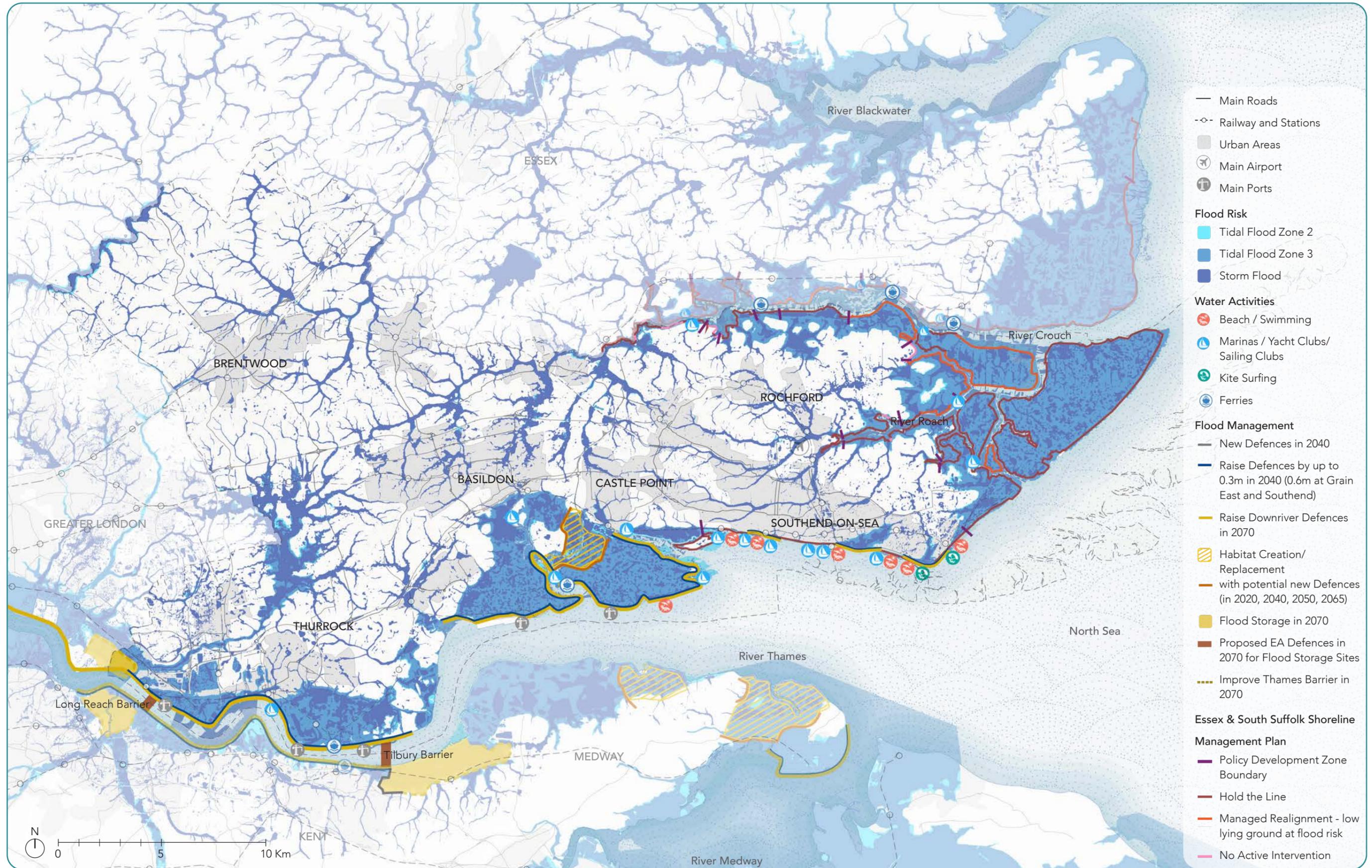


FIG.78 Key Moves: Integrate Water Management Systems

Shorelines

The goal for the many miles of shoreline in South Essex, is to ensure that future changes to the riverside and coastal areas take place in a planned and integrated way, which maximise the potential environmental, social, cultural and economic benefits.

The redesign of the shoreline will employ innovative approaches that combine natural systems to cope with sea-level rises, coastal squeeze, and the increasing intensity of storms, where possible and appropriate. This naturalised form of flood protection will aim to defend the coast against sea level rise, sequester carbon, clean pollutants, and revitalise marine and terrestrial native habitats, as well as collect, filter, and disperse stormwater. It is likely that flood defences will consist of a combination of man-made structures and naturalised areas of shoreline.

Along with environmental improvements, the shoreline design will facilitate access for residents and visitors to the coast.

This strategy builds on the existing TE 2100 and Shoreline Management Plans which go beyond purely managing flood risk, by aiming to:

- adapt to climate change challenges;
- ensure sustainable and resilient development in the floodplain;
- protect the social, cultural and commercial value of the tidal Thames, its tributaries and floodplain;
- enhance and restore habitats; and maximise the benefits of natural flooding.

The EA's Riverside Strategy Approach sets out that the riverside best serves the needs of the communities and the environment, providing integrated environmental, cultural, social and economic benefits. These are incorporated into Section 4.0 Policy Recommendations.

The Thames Estuary Partnership has developed the Estuary Edges project as a 'how to' guide on ecological design for soft natural riverbank edges to encourage wildlife on the Thames.

Refer to the Essex Coast RAMS Strategy for guidance on suitable activities along the shoreline. All waterbodies should be assessed for their potential to carry watersports and other waterfront activities, such as marinas and yacht clubs.

Refer to Section 3.1.1 Regional Parklands for location specific recommendations along the shoreline, in the Island Wetlands and Central Marshlands descriptions.



FIG.79 East Beach Park, South Essex Coast

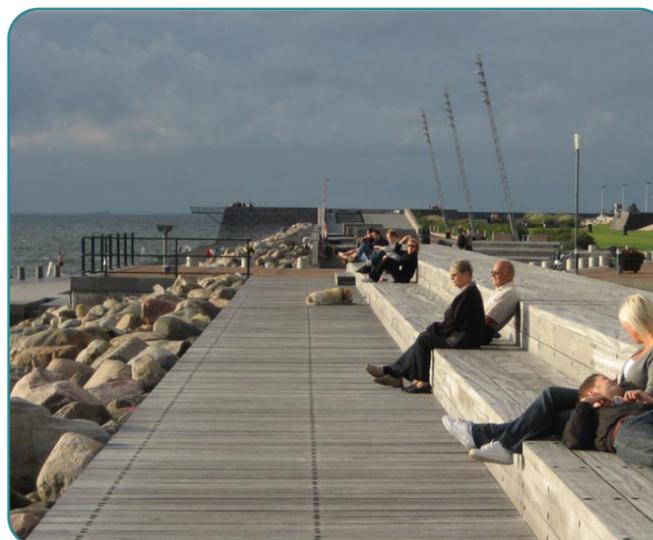


FIG.80 Promenade in Malmo, Sweden, provides ideas of engaging people with the riverside



FIG.81 Canvey Island Flood Defence will be improved, and public access provided to benefit adjacent residents



FIG.82 Waterfront at Shoebury Common Beach



FIG.83 Shoreline: in areas of agriculture



FIG.84 Shoreline: in urban areas

Rivers, Creeks and Ponds

Engineered changes over time have altered the movement of water, sediment and species through our waterbodies damaging habitats, removing spawning areas for fish, and causing problems with flooding, gravel management and erosion.

Waterbodies can provide a wide range of benefits, such as:

- climate change adaptation and resiliency;
- flood protection;
- wildlife corridor restoration;
- improvements to urban and rural green open spaces;
- enhancement and restoration of wetlands and riparian habitats;
- promotion of recreational activities and water quality control; and
- water supply enhancement.

In achieving their full potential, these waterbodies will become part of an expanding contribution to the green and blue infrastructure. Where possible, they will be restored and naturalised, taking many forms, including wetlands, marshes, mudflats, wet woodlands and soft shoulders.

The design of softer and wider rivers, creeks, lakes, and pond edges will provide the opportunity to better adapt to tidal flooding and increasing unpredictable storm events by attenuating and absorbing stormwater, slowly releasing runoff as storms and tides recede.

In addition, softer, wider, and greener rivers and creeks will become linear wildlife corridors, parks and trails that improve ecological and community connectivity. Moreover, they provide wonderful opportunities for recreational use.

Further bridges, or ferry crossings, are necessary to ensure connectivity is improved across many of the waterways in the district. Locations for these will be detailed at a more local level.



FIG.85 Wakering Boatyard



FIG.86 River Crouch Sailing Club

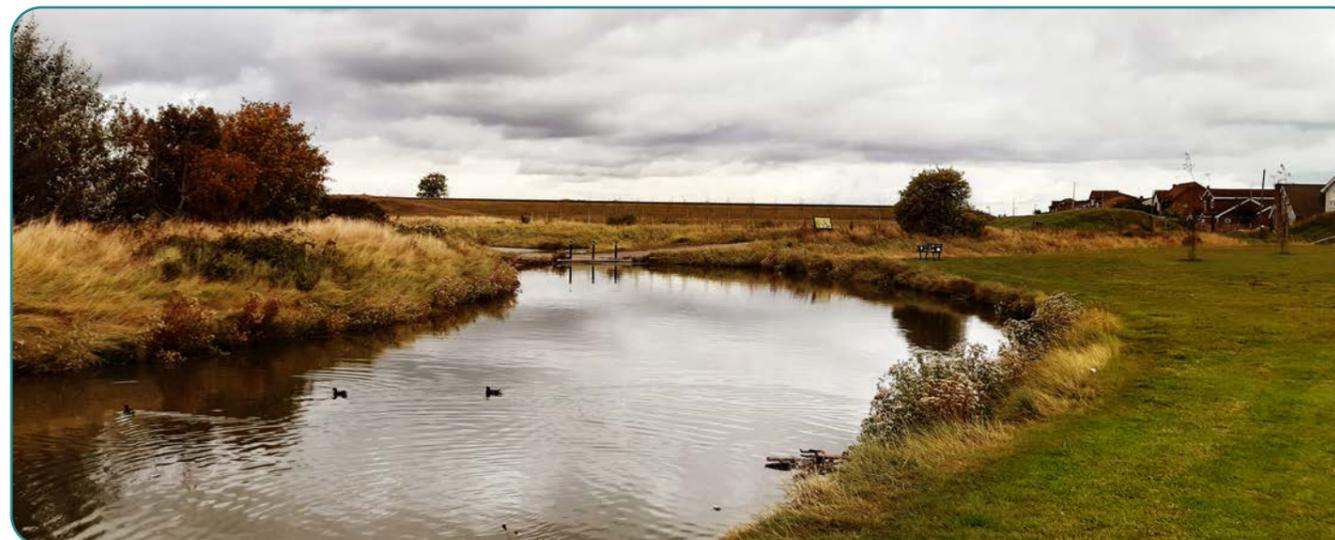


FIG.87 South Essex enjoys many rivers, creeks and ponds, such as Tewkes Creek, Castle Point



FIG.88 Shaanxi Wetland Park, China, one of 30 'sponge cities' projects that aim to soak up floodwater and prevent disaster, provides a good precedent.

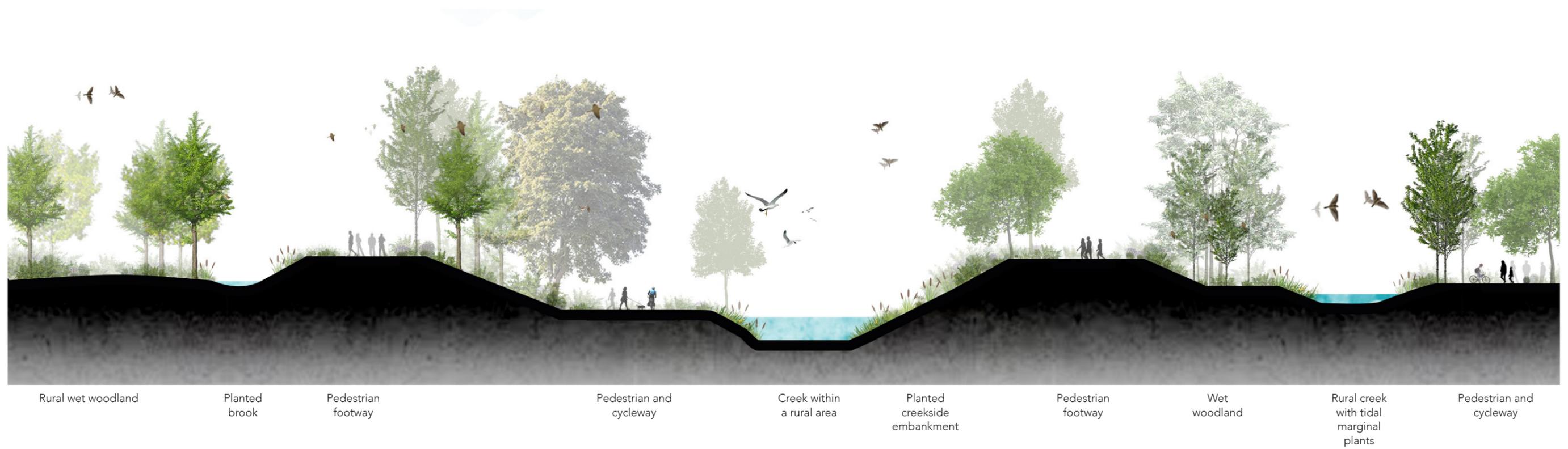


FIG.89 Waterway in Rural Area

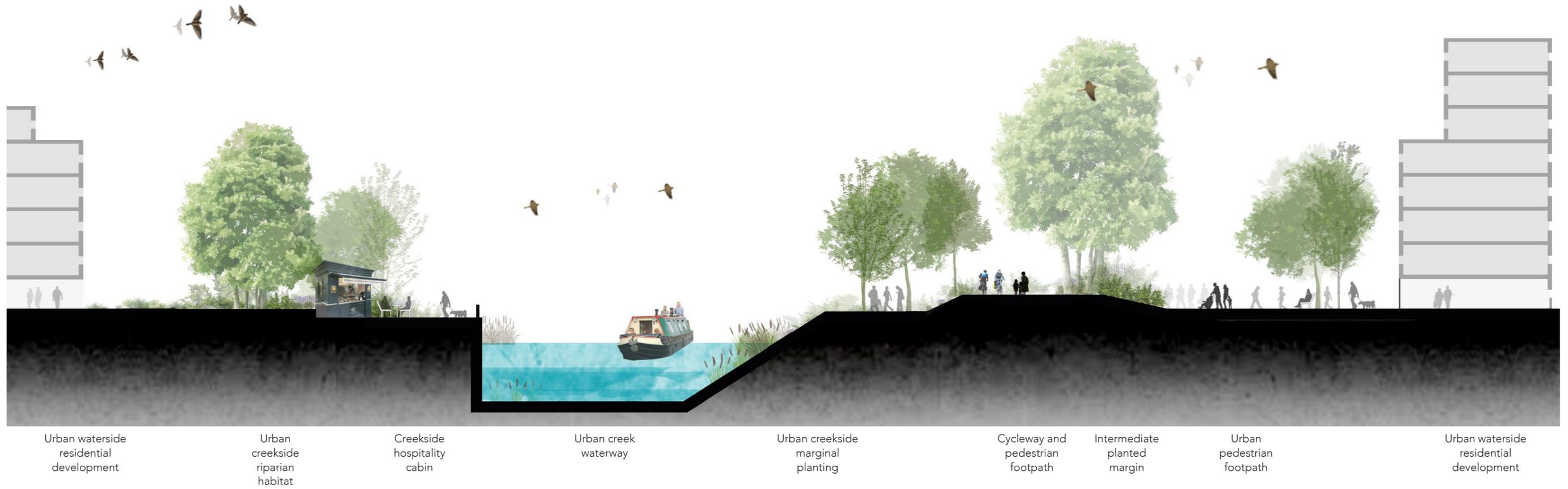


FIG.90 Waterway in Urban Area

Flood Storage and Urban Water Management

Flood storage reduces the peak of flood flow passed downriver, helps mitigate downstream flooding, and compensates for the effects of urban surface water run-off. The reduction of which is described in the Urban Water Management section.

Introducing an Integrated Catchment Management Strategy within the preparation of Local Plans can resolve water quality and availability and flood risk issues, while also improving local environments and public amenity, and increasing biodiversity.

The typical measures that involve temporary retention of floodwater, and the use of surfaces that inhibit runoff or enhance infiltration and recharge the groundwater, comprise of:

- swales;
- infiltration basins;
- wet ponds;
- extended detention basins;
- constructed wetlands; and
- wet woodlands.

These measures can be integrated within parks, open spaces, green corridors, nature reserves along with managed agricultural fields. Further guidance is provided in the Fluvial Design Guide, published by the Environment Agency.

Refer to the following Section on Optimise Agricultural Use for opportunities for flood attenuation on farmland.

In urban areas, managing surface water runoff at source is crucial since it helps to reduce uncontrolled storm flows and damage from flooding. Integrated management also includes the following benefits:

- improvements to local water quality;
- supplementing local water supply;
- benefits to biodiversity enhancement;
- protection and improvement of the environment; and,
- improvements to the public realm experience.

Urban Blue Corridors

Where new and existing urban developments are set back from watercourses, overland flow paths and surface water ponding areas will create a network of blue corridors that manage the natural movement of water flows in storm events and minimise urban flooding. They also enhance biodiversity, improve access to recreation and support adaptation to climate change. They include, but not limited to:

- overland flow paths;
- ponding areas;
- rivers and canals;
- wetlands;
- flood storage areas;
- historic river channels;
- floodplains; and
- multi-use parks and open spaces.

Sustainable Drainage Systems

These reduce run-off and store water close to where it falls, managing water at source to lower flood risk downstream whilst also providing pleasant open space to enhance the amenity of an area. They can help support water quantity during storms to reduce urban flooding, improve water quality through the management of pollution, improve biodiversity and can also reduce the consumption of energy used for cooling by reducing the urban heat island effect.

SuDS will aim to mimic nature and can be integrated into the urban environment to transport water, attenuate and slow water movement before entering water courses. They can be used to harvest water for re-use, allow water to infiltrate the ground to replenish ground water and local planting, or be used to store water allowed to evaporate over time. They typically include, but not limited to green roofs, blue roofs, rain gardens, filter strips and Bioswales, lagoons, permeable surfaces or paving, attenuation, and storage below ground. A range of guidance is published by CIRIA.



FIG.91 New developments will incorporate flood attenuation, providing functional and amenity value



FIG.92 Hammarby Sjostad, Sweden, designed with integrated blue corridors



FIG.93 Bioswale design

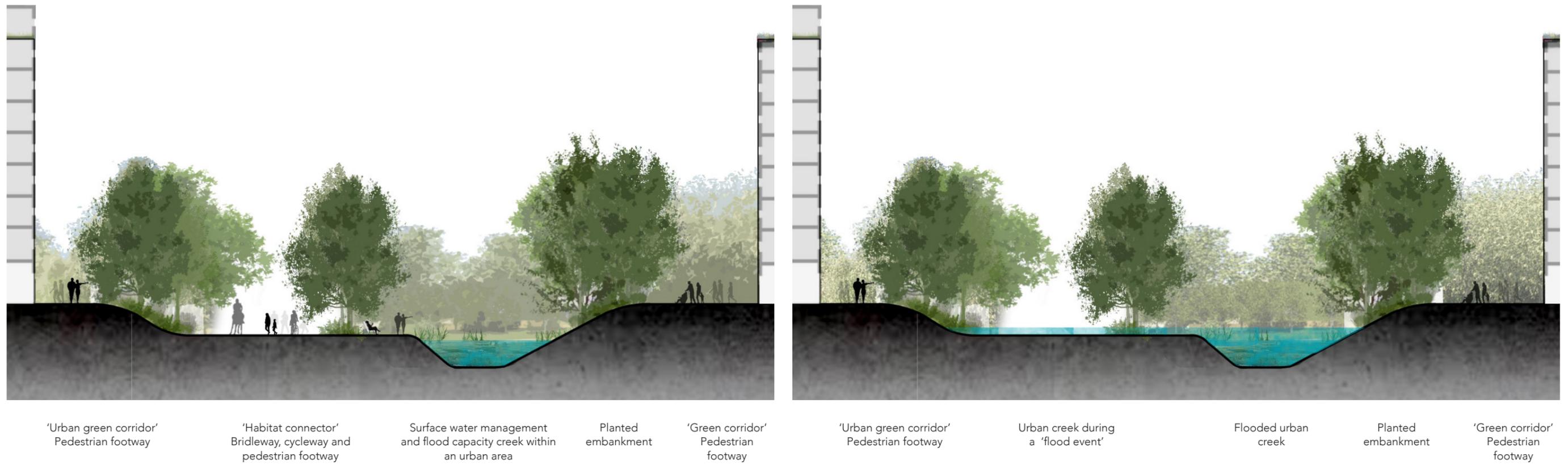


FIG.94 Stormwater Management Urban Area

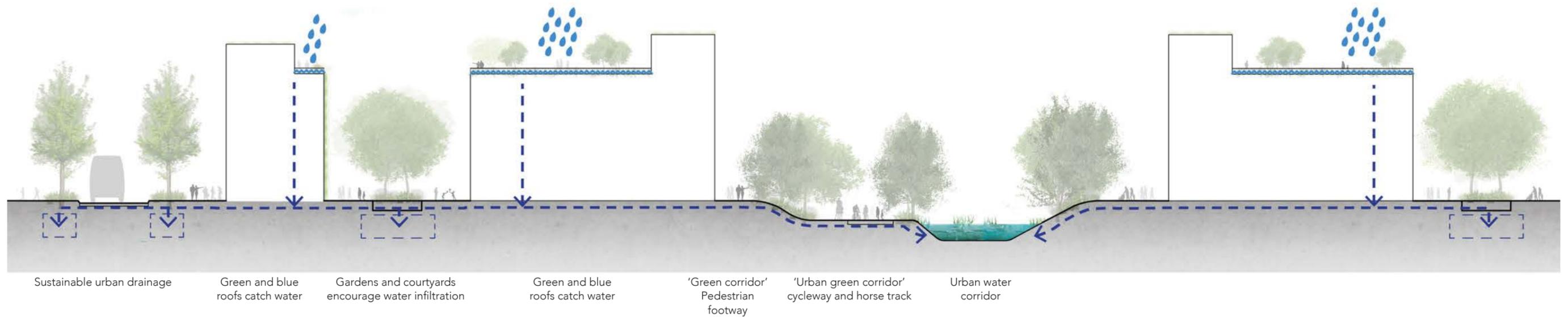


FIG.95 Urban Water Management

④ Harmonise Agricultural Use

With 70% of land comprised of agriculture, there is no denying that farmlands are key to the South Essex GBI.

Farming is a significant part of South Essex’s landscape and environmental heritage, accounting for approximately 70% of South Essex; thus, the largest user of land in South Essex, and a crucial component of the local GBI. How we manage the land for climate change, biodiversity, water and life, while still growing food and respecting history of the land is a key challenge. Farmland is the connective tissue of the South Essex landscape, supporting all other components of the living infrastructure. **These fertile lands can provide a mosaic of habitats - woodland, hedgerows, meadows - often greater than in other landscapes.**

The South Essex GBI recognises the importance of integrating agricultural lands into the overall strategy, and promoting its **sustainable management**. (Currently, globally, agriculture is responsible for 25% of all greenhouse gas emissions. This must change.) The GBI strategy will support farms enrichment, and explore new methods and adaptations to meet the changing climate and landscape in South Essex, in the following ways:

1. Agriculture and Nature Conservation: South Essex GBI acknowledges the **interdependence between sustainable agricultural practices and biodiversity conservation**, and will continue to work with farmers to support efforts to restore and enhance habitat diversity.

To support many threatened species, we must reconcile the pressures of food production with the need for nature conservation. Wildlife-friendly farming methods will be supported. Many efforts are already underway, influenced by the Countryside Stewardship program, and also the new Environment Bill. **Financial**

incentives to support sustainable land management practices are also becoming more available.

2. Farming and Flooding: Large areas of farmland are under threat of flooding, from both pluvial flooding and tidal flooding, especially with rising sea levels. **Allowance for flood attenuation should be encouraged** in farm fields. Some areas, for example at Canewdon and Paglesham, already have plans for conversion to intertidal habitats to anticipate sea-level rise and to allow natural change to occur in a controlled manner.

Continued research will explore new uses for flooded land, including **blue carbon sinks**, and perhaps sea-based farming (i.e. samphire, seaweed and shellfish), to **identify pioneering and lucrative blue farming methods**.

3. Agri-tourism: Promotion of small scale agri-tourism will bring many direct and indirect benefits to South Essex and has capacity to **create an additional source of income and employment opportunities for the farmers**. For example, **walking holidays or horse rides** through fields and along the coast, or visits to **rare native breed farms** are tourism opportunities in South Essex. **‘Farm-to-table’ experiences** could be offered, with farmers opening their barn doors so visitors can appreciate the fine art of “farming with the season” while sampling and purchasing local delicacies. The ‘farm-to-table’ experience will also help to increase the momentum of buying local produce.

The images adjacent provide inspiration of sustainable farming from other locations.



FIG.96 Farm-to-table dinner in the orchard, Frecon Farms



FIG.97 Hope Farm, RSPB site: demonstrating wildlife-friendly farming in East Cambridgeshire since 2000

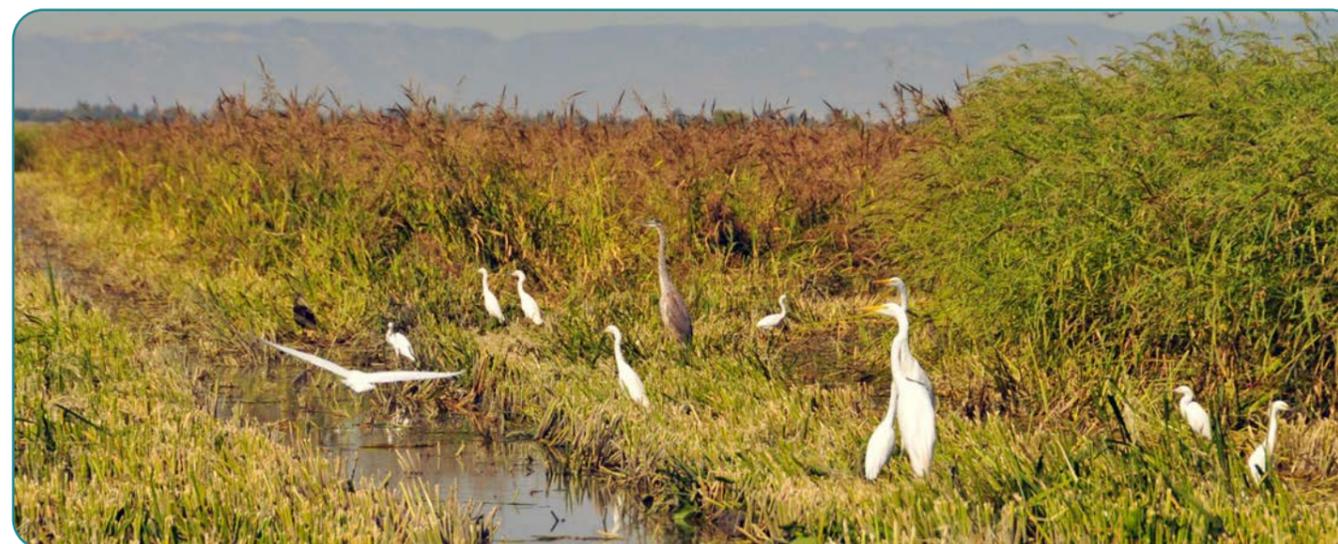


FIG.98 Flood protection, agriculture, fish and wildlife coexist on this wild rice field in California.

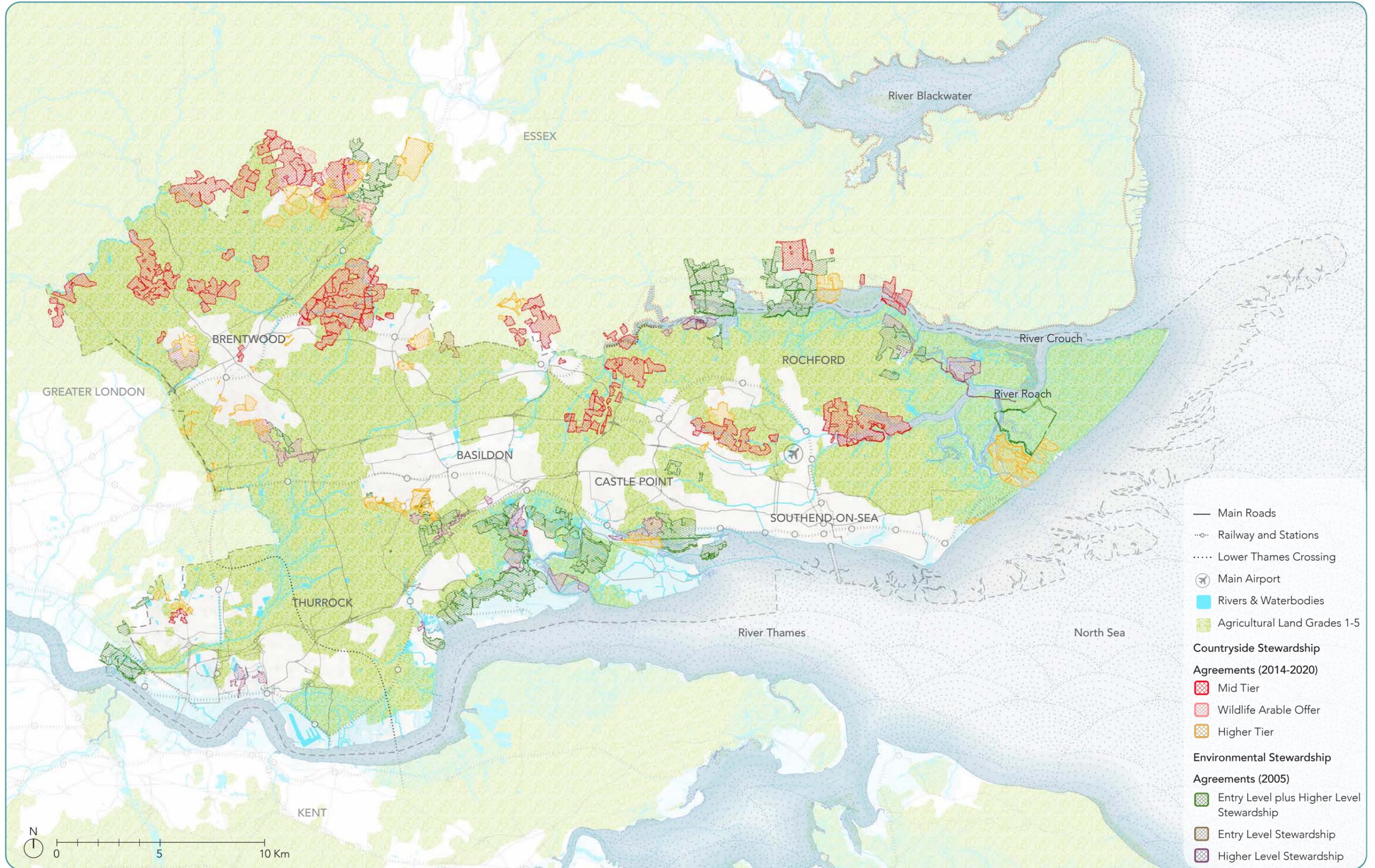


FIG.99 Key Moves: Current Agriculture Land, identifying land under Stewardship Agreements (Source: GIS Agriculture Land from ASELA)

Agriculture and Nature Conservation

With important nature conservation sites often isolated in the landscape, the GBI looks to improve habitat connectivity by reinforcing existing landscape vegetation such as woodlands, woodland buffer zones, hedgerows, native grasslands and wild-flower meadows to establish green corridors.

These habitats can be restored through re-wilding, allowing nature to take care of itself. This isn't appropriate in all cases, but re-wilding is one of the most powerful and effective ways to resist climate breakdown and wildlife loss at the same time.

A key outcome will be biodiversity net-gain, and connectivity established through areas of agriculture, currently supported by DEFRA. Opportunities include:

- Creating an extensive interconnected network of habitat to support a net gain in biodiversity.
- Integrating habitat rich corridors into agricultural land and connect with urban and water wildlife corridors.
- Extending and widening existing nature conservation sites.
- Substantially increasing woodland planting to support environmental improvements

Refer to the Section 3.1.2 on Wildlife Connectors for more information. Also, refer to *Vol.2 Appendix Section 2.6 Conservation* for more information on Wildlife and Biodiversity.

Woodlands - Stewardships

Environmental Stewardship is an agri-environment scheme run by the DEFRA which aims to secure widespread environmental benefits. Entry Level Stewardship aims to encourage large numbers of farmers and land managers across England to deliver simple yet effective environmental management.

Woodland Management Plan: Countryside Stewardship grant is a capital grant for farmers and land managers to produce a woodland management plan. This provides good incentive to make beneficial changes to the GBI in South Essex.

Hedgerows

A hedgerow is defined as any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less than 20m wide. Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2m of the centre of the hedgerow.

Hedgerows provide many benefits including: shelter for stock and crops and cut down wind speed, which prevents erosion; provide nesting sites and refuges for birds; help control insect pests as predatory insects overwinter in them; act as barriers to wind breaks, and insects in the hedgerow pollinate crops, particularly bumblebees, which need hedge banks. Providing a **rough grass verge also provides habitat** for insects, and other wildlife.

Integrating Protected Sites

Existing protected nature conservation sites are spread across the boroughs and districts with clusters around Thurrock, Brentwood, south of Basildon, Castle Point and Rochford, with more significant swathes along the coastline. The GBI strategy aims to connect habitats and improve access for people, creating multi-purpose corridors wherever feasible. Integrating protected nature conservation sites and their supporting landscape into a more developed ecological network of vegetative habitat will bring considerable benefits that:

- Increase movement between isolated populations of both flora and fauna.
- Increase the genetic variability within species.
- Increase food availability for a variety of wildlife species.
- Increase valuable cover and more shelter during bad weather.
- Improve connectivity between sites required by species with a variety of habitat types.

Establishing as a network so that it unites a series of protected landscape envelopes, enriches existing landscape typologies, and integrates into existing and proposed development will require early and comprehensive study and mapping across all boroughs in a co-ordinated fashion. But in doing so, will lead towards achieving an essential matrix of interwoven, connected habitats that support all local species, brings about positive change for vulnerable species and generates a net gain in biodiversity.



FIG.100 Hedgerows support wildlife

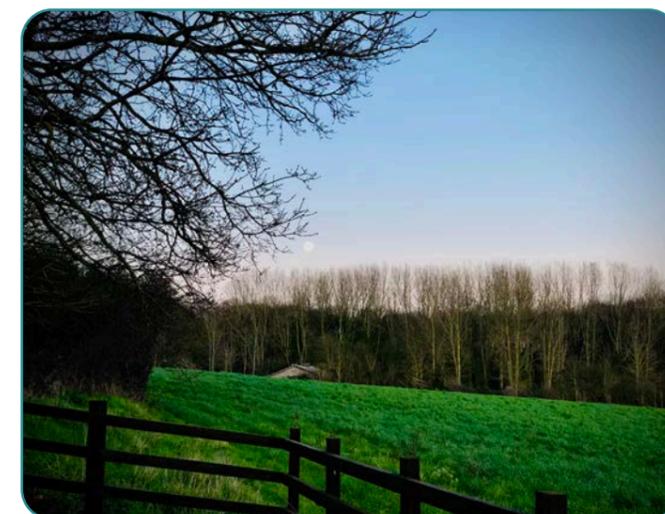


FIG.101 Farms are the largest user of land in South Essex, and a crucial component of the local GBI.



FIG.102 Rural hedgehogs in the UK have halved in number since 2000, partly due to removal of hedges.

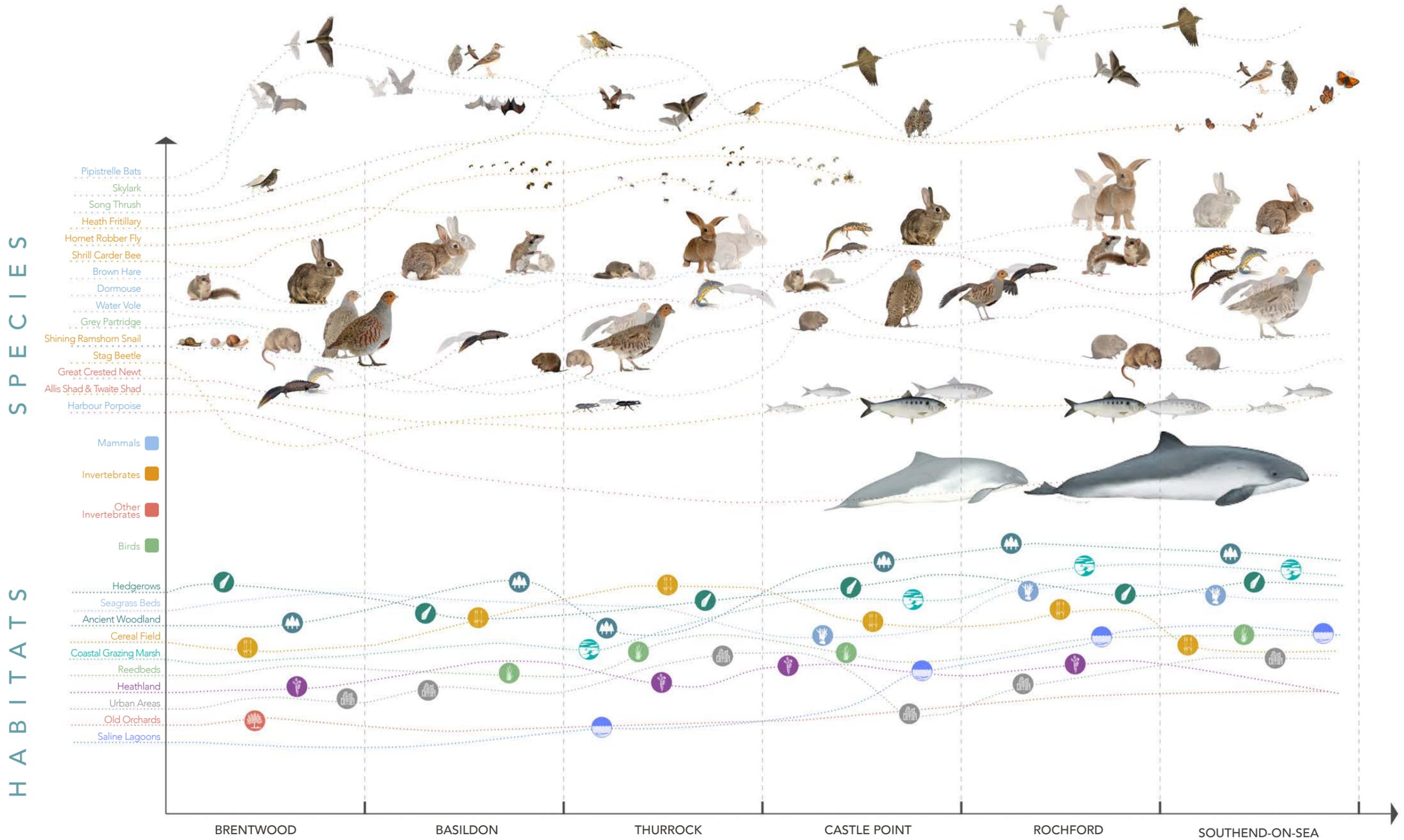


FIG.103 Priority Habitats and Species within South Essex

Farming and Flood Storage

Marine Farming and Blue Carbon Sinks

Farmland is located along South Essex shores in many locations reclaimed from former intertidal habitats. **With sea-level rising, and planned realignment of the flood defences, opportunities arise to transform some agriculture fields to important sites for habitats and flood attenuation, but also lucrative blue carbon sinks.** Conversations with affected farmers should commence as early as possible.

These flooded fields in South Essex could be a pioneer in what seems to be an inevitable **new generation of marine farming.** For example, seaweed grows quickly, effectively absorbs CO₂, provides healthy environments for growing a variety of shellfish and is a product in high demand. Other types of aquaculture to be considered include: marsh samphire, which grows on coastal mud flats, estuaries and salt marshes; and mussels, oysters and clams which are more environmentally robust species to farm.

In other locations, coastal and floodplain grazing marsh is generally dry in summer and often flooded in winter, although it lies behind flood defences. **Winter flooding can bring huge numbers of wildfowl to some sites in winter,** and as floodwater recede, mud-dwelling invertebrates become accessible as prey for wading birds. Most grazing marshes are used for pasturing cattle. For example, at Barling Marshes, red poll cattle will graze the marshes, **well suited for conservation grazing in coastal areas.**

Stormwater Attenuation

Rural sustainable drainage systems comprise individual or multiple linked component structures replicating natural processes, **designed to attenuate water flow by collecting, storing and improving the quality of run-off water within rural catchments.** They are measures that primarily intercept run-off or drainage pathways.

Measures include, but are not limited to: swales, wetlands, detention and retention ponds. The measures improve water quality and enable land managers to adapt to intensive rainfall that is more likely with our changing climate.

Wetlands

Constructed or restored wetlands are engineered systems designed to utilize natural processes for water quality improvements. Restored wetlands are areas of land restored to their previous flooded state to provide temporary water storage and break down pollutants.

These wetlands provide other benefits including: habitat for birds, wildlife and aquatic flora and fauna, and where appropriate, opportunities for bird and wildlife watching, walks, and picnics.

Guidance is provided by the Environment Agency, and other sources including the Wildfowl and Wetlands Trust.

Vegetated buffers alongside waterbodies

Naturalised vegetation strips, planted alongside waterbodies, trap sediments, decrease flows, and at the same time restore semi-natural habitats and provide shading of rivers, at a relatively low cost.

These strips are often up to 50m wide, and in some locations include woodland planting alongside the waterbody.

The **Institute for Resilient Infrastructure**, proposed by the Thames Estuary Growth Commission Vision 2050, and mentioned in Section 2.5 of this report, will be a good place to research and pioneer new methods of resilient agriculture.



FIG.104 Samphire cultivation in estuaries and salt marshes



FIG.105 Red poll cattle grazing on environmentally sensitive grazing marshes, proposed at Barling Marsh



FIG.106 Constructed wetlands and ponds on farmland provide flood storage and improve water quality



FIG.107 Agriculture in Marsh Areas

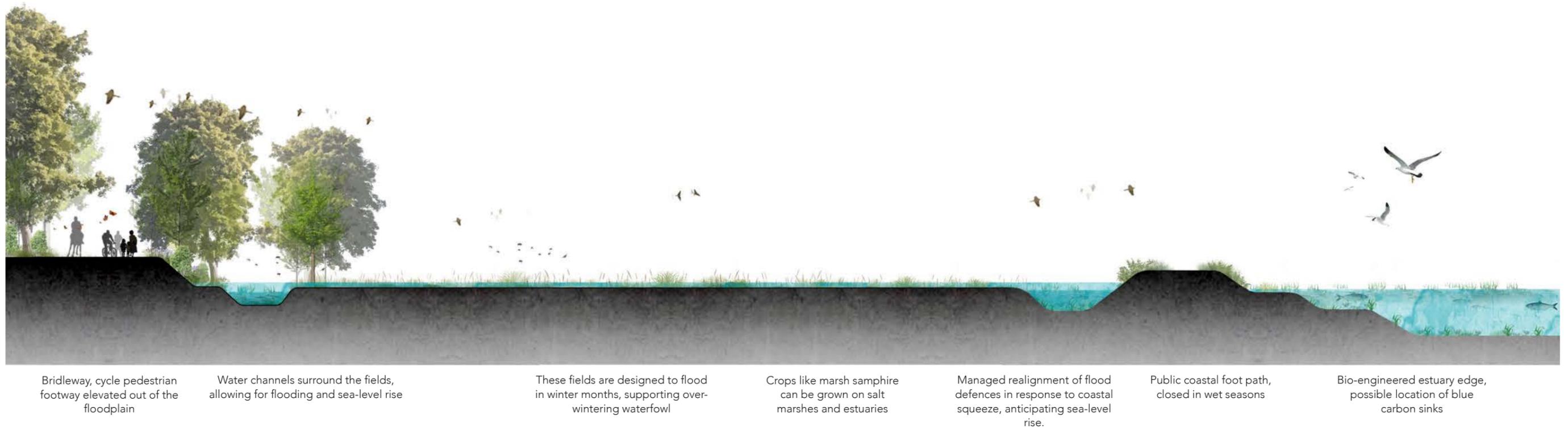


FIG.108 Agriculture in Marsh Area, Flooding in Winter Months

Agri-tourism

Promotion of small scale agri-tourism will bring many direct and indirect benefits to South Essex and has capacity to create an **additional source of income and employment opportunities**. For example, ‘Farm-to-table’ experiences could be offered, with farmers opening their barn doors so visitors can appreciate the fine art of “farming with the season” while sampling and purchasing local delicacies. The ‘farm-to-table’ experience will also help to catalyze the momentum of buying local produce.

Walking holidays or horse rides through fields and along the coast, are also appropriate types of tourism in South Essex, and will work into the network of greenways and blueways being established. A series of ‘green loops’ will provide attractive and continuous trails through the countryside, leading from one destination to another, and linking in with a larger network of green routes. (See Section 3.3 A Day in The Life for more information.)

Niche markets will be established. Visits to **rare native breed farms** provide tourism opportunities in South Essex. Moreover, in future, more **vineyards** may populate the area, as Essex has the driest climate in the UK, surprisingly similar to rainfall in Athens, Greece. Or alternatively, visits to samphire farms on the coast.

Local accommodation will be considered to support tourism, including **glamping, and farm-stays**.

Agriculture festivals will also be encouraged as an important visitor draw. These activities all contribute to the South Essex Estuary Park experience.



FIG.109 Luxury glamping at the Essex Sausage and Cider Festival



FIG.110 Alpacas are a delightful discovery in South Essex fields



FIG.111 School visit to the Apricot Centre

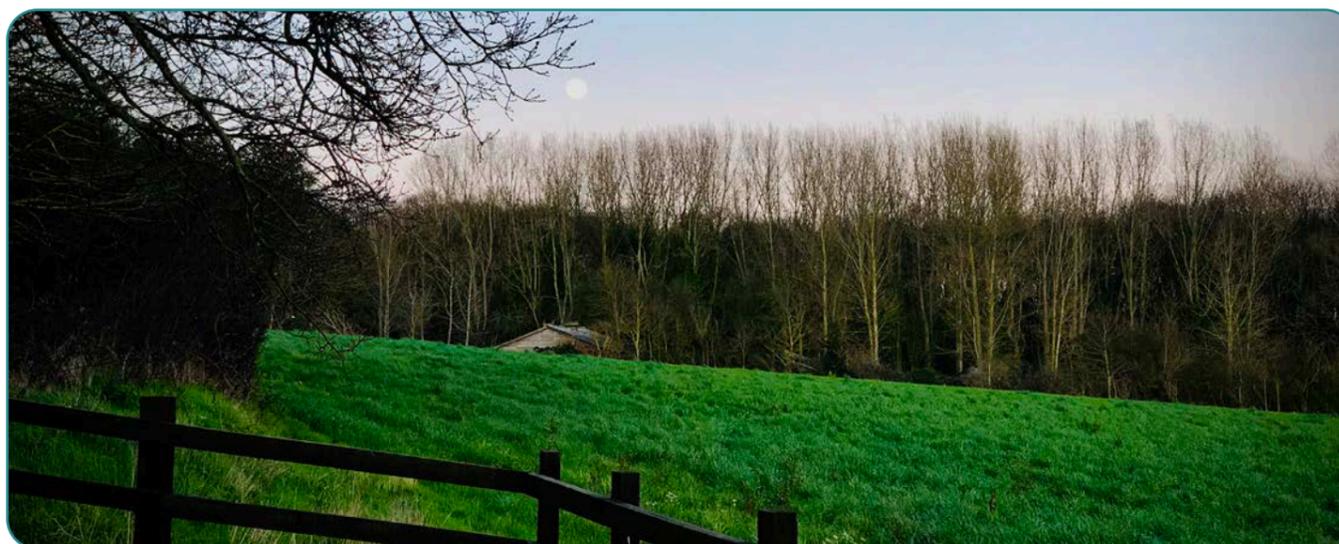
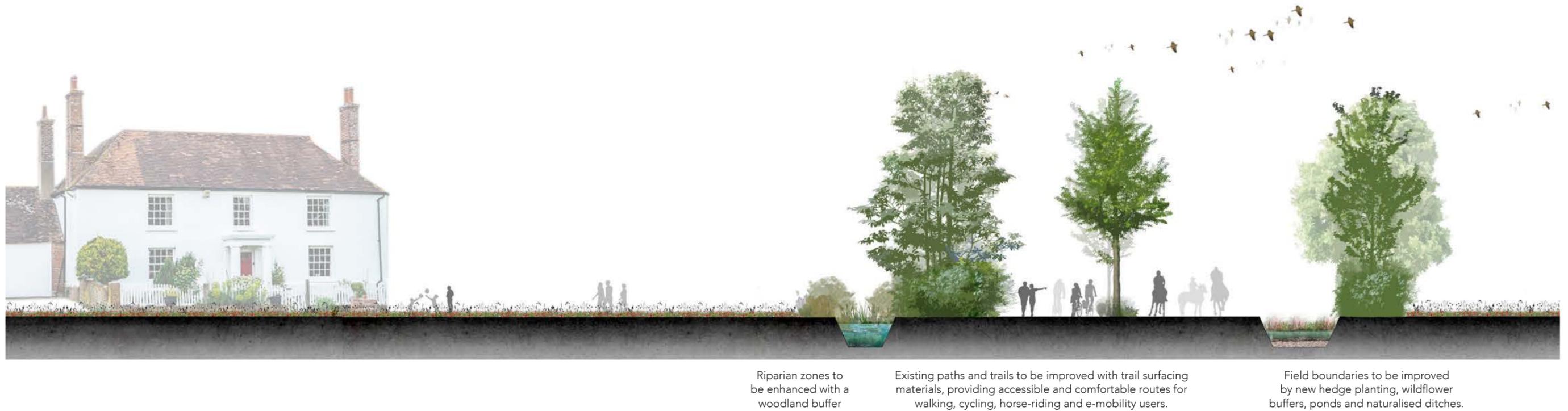


FIG.112 Rolling agricultural fields in South Essex, bounded by woodland.



FIG.113 Vineyards in Essex enjoy the driest weather in the UK



Riparian zones to be enhanced with a woodland buffer

Existing paths and trails to be improved with trail surfacing materials, providing accessible and comfortable routes for walking, cycling, horse-riding and e-mobility users.

Field boundaries to be improved by new hedge planting, wildflower buffers, ponds and naturalised ditches.

FIG.114 Public Connectors: Existing routes through rural areas to be enhanced



'Green corridor', bridleway, cycle and pedestrian trails through agricultural land create recreational loops through South Essex

Swales and woodlands provide flood attenuation

Orchard suitable for agri-tourism

Farmhouse provides B+B accommodation for tourists

Agri-tourism with sheltered outdoor classroom with wildflower meadow roof

Farm demonstration area

FIG.115 Agri-tourism: Sustainable farm and recreational trails

⑤ Reveal Unique Landscape Features

South Essex's unique features will be revealed and celebrated, framing iconic industrial structures, wild marshes, ancient woodlands and magical heritage sites, under spectacular skies.

South Essex possesses some wonderful heritage features and landscapes, and iconic landmarks. Though these features are isolated, they punctuate the landscape providing special moments in the larger experience of place. In general, these features will be protected, and enhanced to celebrate the unique quality they bring. **Access, connectivity, setting, supporting facilities, and programming will be a focus.**

1. Heritage Features: Culture and heritage sites reveal history and character of an area, and are an important draw for visitors and tourists. These provide memorable experiences of the landscape. South Essex has a number of these features; for example: Hadleigh Castle, Mountnessing Post Mill, and Norsey Ancient Woodland. However, while these are amazing sites, they could be improved with better access and services. More attention will be given to protecting their setting and access, supporting facilities and programming in order to attract visitors, encourage them to stay, and bring them back again. The ecological and archaeological setting will also be considered when improvements are planned.

2. Landmarks: These are environmental and cultural assets, mainly historic and industrial structures, or military sites. In South Essex, these features are often, but not always, situated alongside or in the water. The conservation and enhancement of the intrinsic value of our landmarks will provide a strong identity and will bring benefits for the community, while increasing tourism. Southend Pier, Hole Haven, Tilbury Docks, and Coalhouse Fort provide examples of important landmarks that will be integrated into the GBI network, by views, enhanced ecological settings and access where appropriate.

Though not features as such, the views and skies of South Essex are spectacular and will be protected and enhanced where possible.

3. Views: There are many stunning views in South Essex, many along the coastline, or over rolling green fields. These views, especially when they are towards other key features, such as heritage sites and iconic landmarks, will be enhanced and protected through view corridors and vistas that contribute to people's experience of the landscape.

4. Skies: A key attribute of South Essex is its expansive skies. The coast offers many of these open skies, but so too do many other parts of the county. These spectacular skies will be preserved and protected for the benefit of residents, tourists and wildlife. Special consideration will be given to the preservation of Dark Night Skies for people to enjoy the stars, and also to ensure proper nocturnal functioning of natural ecosystems.

The images to the right provide precedent images of other international landscape scale schemes that show how these special features can be integrated into the SEGBI.



FIG.116 Emscher Landscape Park, Germany, celebrates and integrates historic industrial relics into the parkland. (See Vol.2 Appendix Section 5.0 Case Studies)



FIG.117 South Downs National Park, Dark Sky Reserve. The eighteenth century Halnaker Windmill lit by moonlight. The Park lies about 100 km from London, among the most light-polluted metropolises on Earth.



FIG.118 Historic Map of South Essex, 1777.

Celebrate Heritage Features and Landmarks

Heritage features and landmarks in South Essex take a variety of forms including: ancient woodland and other historic natural landscapes; historic parks and gardens; ancient edifices, iconic industrial structures, often along the waterfront; military heritage sites, and other identifiable features, such as the Southend Pier.

These heritage features will be preserved, enhanced and integrated into the SEE Park system as vital contributors to the landscape character, quality of life and economy.

The spatial strategy underpinning heritage in the landscape is comprised of four main spatial components:

- Cultural Experience sites, destinations and supporting facilities forming the core elements, located in the heart of the county, for example at Hadleigh Castle. Elements of interpretation and engagement will enrich the locations of heritage, nature and culture.
- Satellite sites, offering natural and cultural experiences with basic tourist facilities in the outer areas of the county, for example at Wallasea Island.
- Visitor Hubs providing consolidated tourist facilities, supporting attractions and opportunities to interface with local people, close to the main natural and cultural destinations, for example at Central Marshlands.
- Heritage Trails that connect people on interesting walks through the county. (See Section 3.3 'Green Loops').

More attention will be given to protecting their setting and access, supporting facilities and programming, in order to attract visitors, encourage them to stay, and bring them back again. The following will be considered:

- Elements of interpretation and engagement to enrich the locations of heritage, nature and culture.
- The sensitive integration and improvement of visitor facilities.
- Improvements to access and entries of the sites
- Landscape setting, and views to, and from, the site to be enhanced.
- Ecological and archaeological setting to be protected and enhanced.
- Appropriate sites for visitor accommodation.



FIG.119 The ancient Hadleigh Castle sits atop the hillside overlooking Two Tree island and the River Thames. Though beautiful, the site will benefit from improved connections, access, and associated facilities

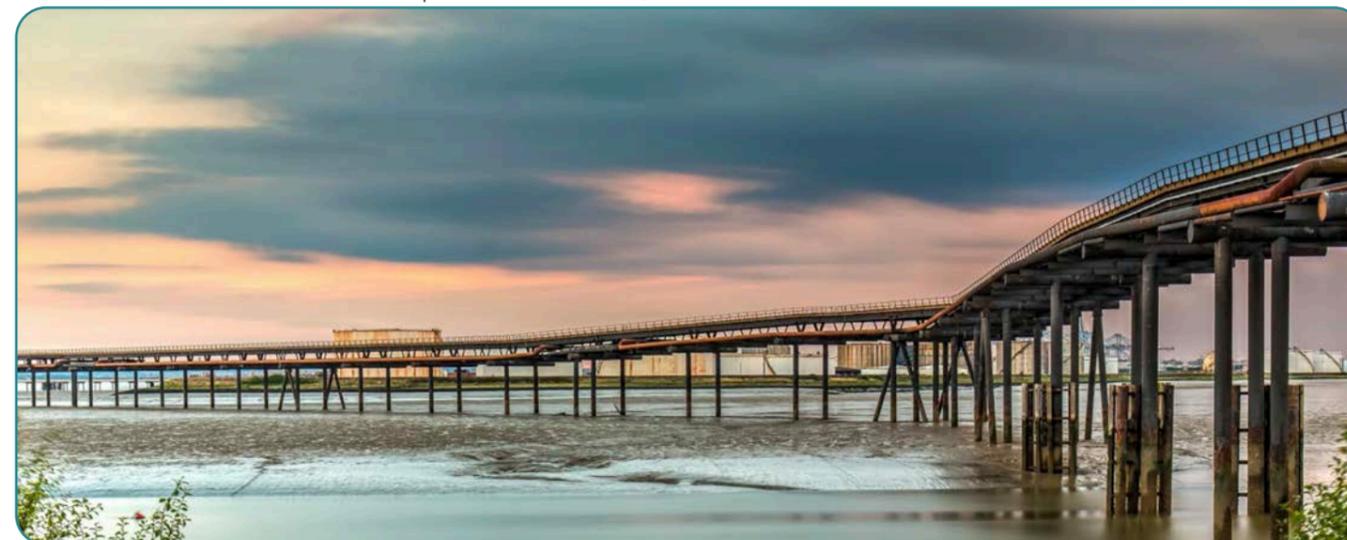


FIG.120 Hole Haven iconic industrial structure in the Central Marshland inspires exciting ideas about creative after-use as South Essex's version of "The Highline" elevated walk in New York.

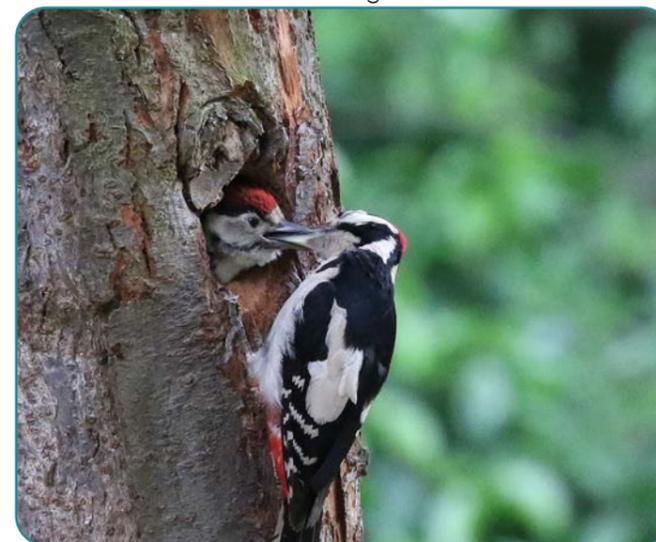


FIG.121 Norsey Ancient Woodland, Basildon

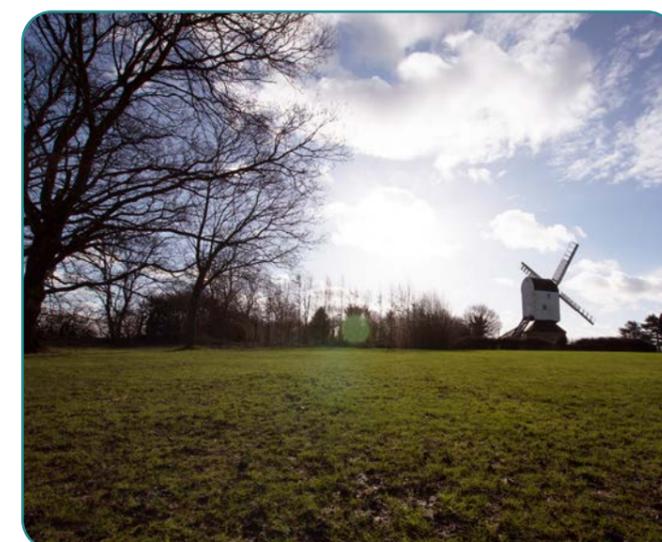


FIG.122 Mounnessing Post Mill

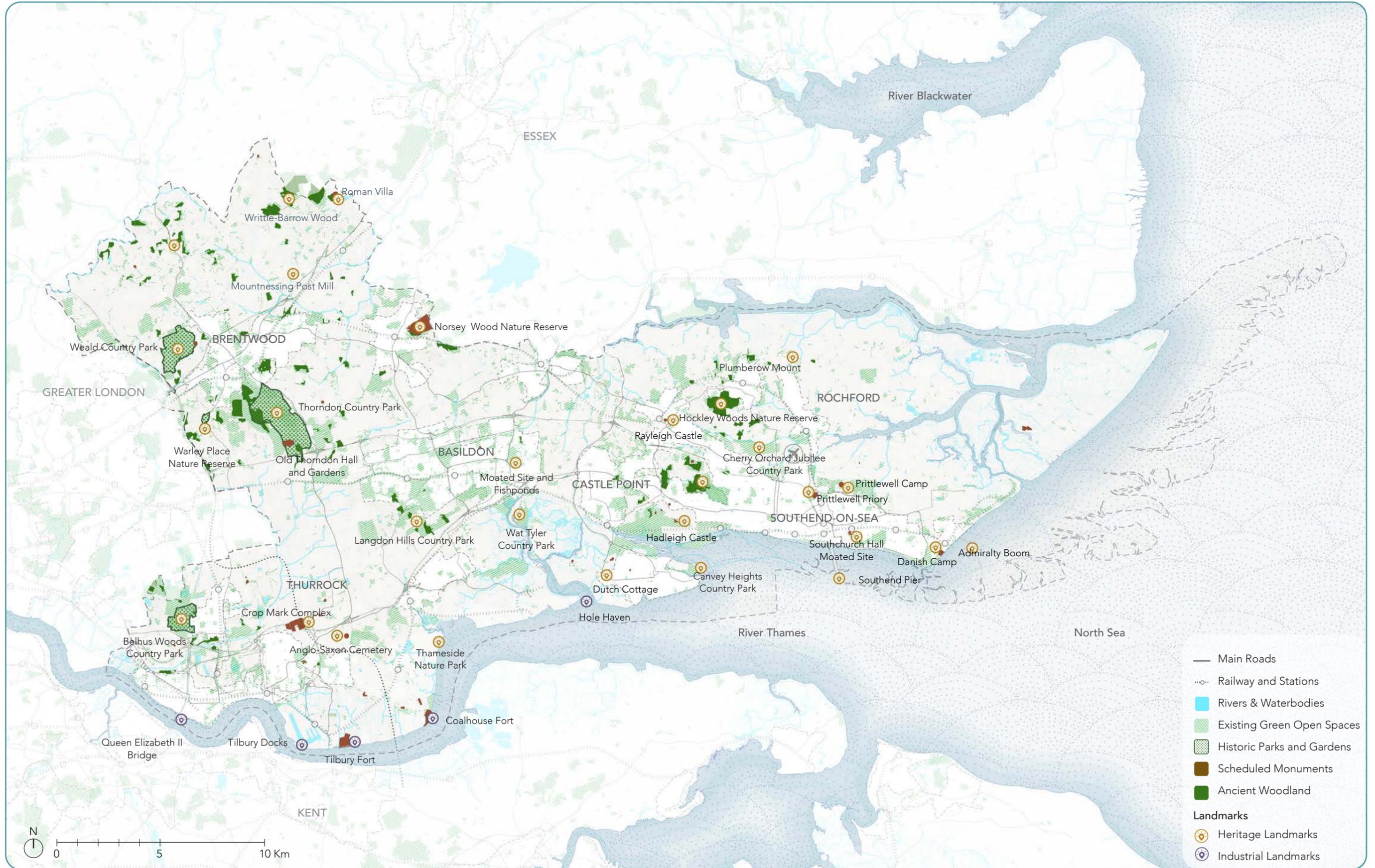


FIG.123 Key Moves: Embrace Heritage and Landmarks

Enhance Views

There are many stunning views in South Essex, many along the coastline, or over rolling green fields. These views, especially when they are towards other key features, such as heritage sites and iconic landmarks, will be enhanced and protected through view corridors and vistas that contribute to people's experience and enjoyment of the landscape.

Development controls will protect special views:

- Development proposals will only be permitted where they preserve the visual integrity, identity and scenic quality of South Essex in particular by conserving and enhancing key views and views of key landmarks and natural heritage views.

Development proposals will consider the conservation and enhancement of the following view types:

- Landmark views to and from viewpoints and tourism and recreational destinations.
- Views from publicly accessible areas which are within, to and from settlements which contribute to the viewers' enjoyment of protected areas.
- Views from public rights of way, open access land and other publicly accessible areas. And,
- Views which include or otherwise relate to specific features relevant to protected areas and their special qualities, such as key landmarks, heritage assets (either view of, or the view from) and biodiversity features.

Landscape and Visual Impact Assessment (LVIA) should be undertaken for all major development proposals as a tool to identify and assess the significance of the effects of change resulting from development on both the landscape as an environmental resource in its own right, and on people's views and visual amenity.

Key view corridors and vistas will be protected and all major development proposals should be subject to LVIA's. They will be carried out either formally, as part of the EIA process, or informally as a contribution to the 'appraisal' of development proposals and planning applications.



FIG.124 View from Hadleigh Castle over the marshes towards the River Thames

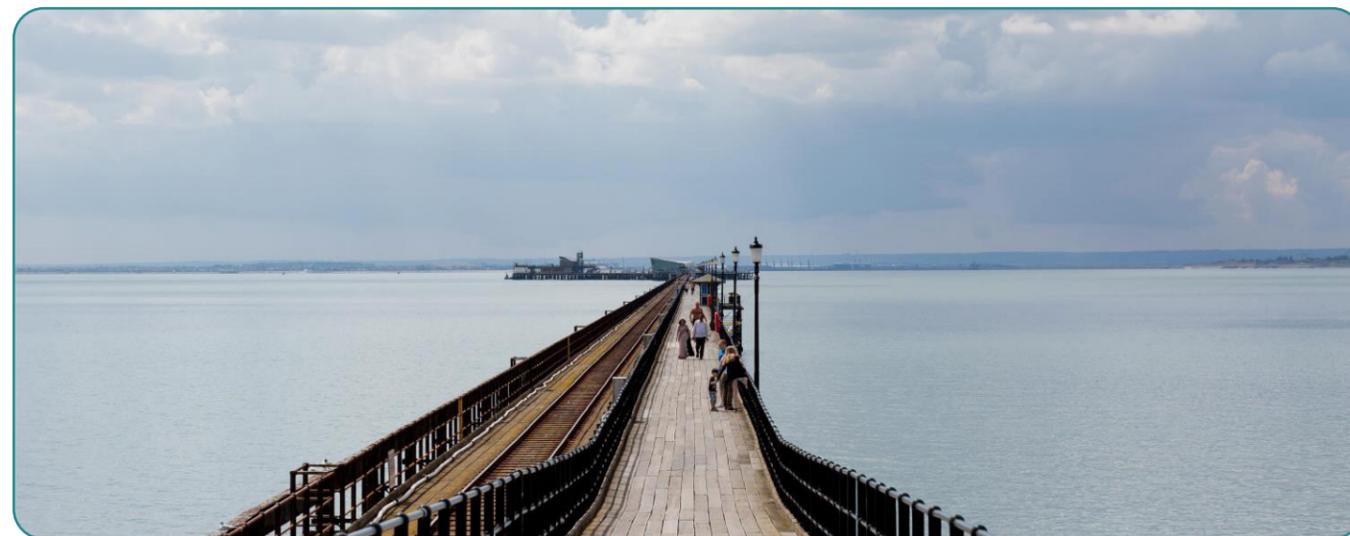


FIG.125 Southend Pier



FIG.126 Canvey Island, low-lying land provides expansive views

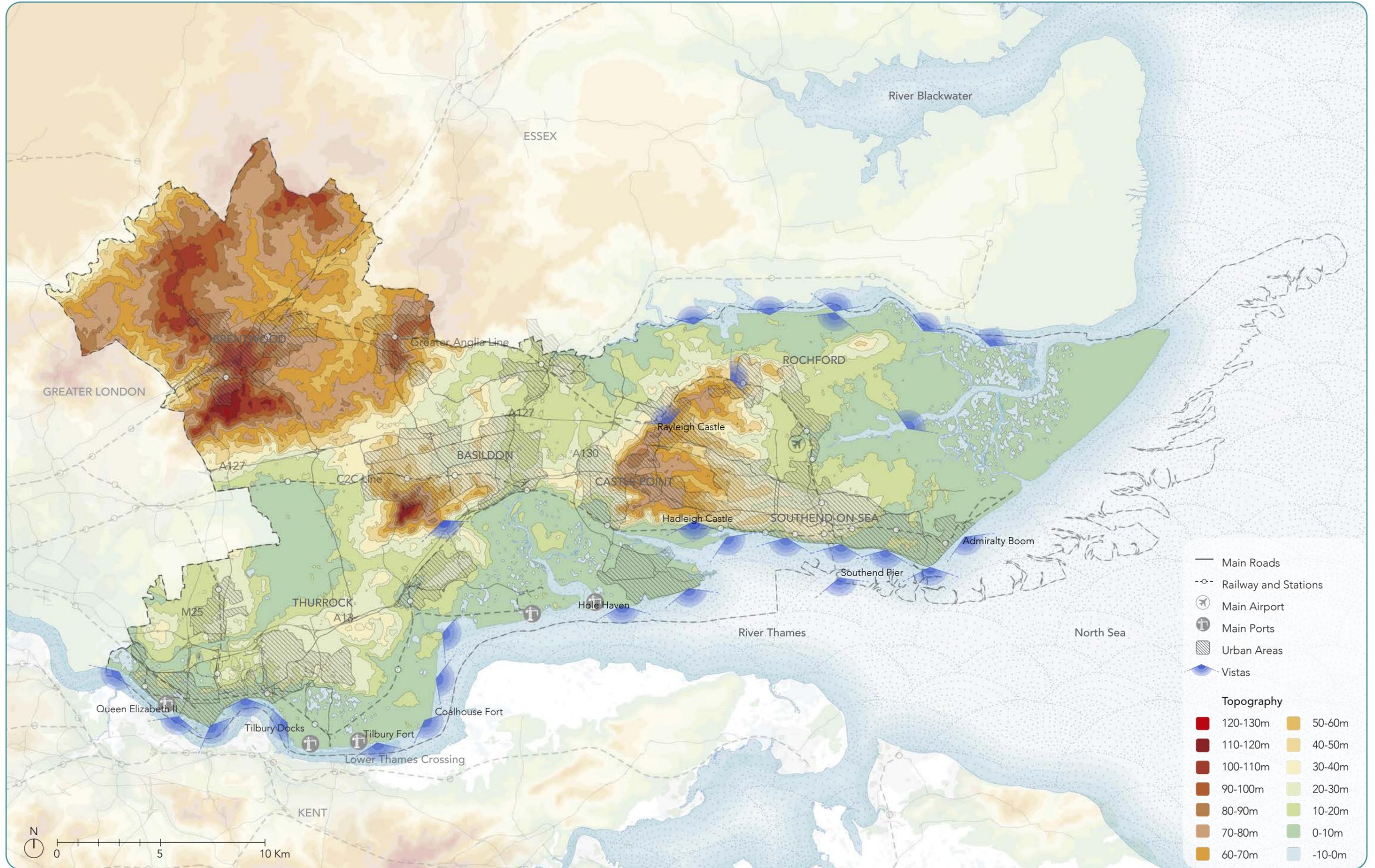


FIG.127 Key Moves: Promote Views

Protect Dark Skies

A key attribute of South Essex is its expansive skies. The coast offers many of these open skies, but so too do many other parts of the area. These spectacular skies will be preserved and protected for the benefit of residents, tourists and wildlife. Special consideration will be given to the preservation of Dark Night Skies for people to enjoy the stars, and also to ensure nocturnal functioning of natural ecosystems. Dark Skies designations can be integrated into the management of the SEE Park. And in more built-up areas, unnecessary light spill that is often a result of poor design, will be controlled to minimise the overall impact of light.

The International Dark Sky Places program provides a classification system, and guide on how to designate Dark Sky areas. Both rural and urban areas can be included. See TAB.5 below.

Currently in South Essex there are Astronomical Societies that take advantage of the starry skies. The coast is a great place to start, but other countryside areas also provide great locations for stargazing. Some recommended dark sky viewing sites are:

- Wallasea Island, Rochford: The east edge of South Essex provides a perfect place for stargazing, as its near the coast, away from any towns, with no obstructions. There are reports of astronomers being able to see the Milky Way, and meteor showers. This is an ideal location for a **Dark Sky Discovery Site**. This site will be within the proposed Island Wetlands.
- Hadleigh Park, Castle Point: This country park location, overlooking the marshes and coast, provides a great place to view the stars weather permitting. This site will be within the proposed Central Marshlands.

TAB.5 International Dark Sky Places Program Designation Types

TITLE	DEFINITION
Dark Sky Reserve	A public or private land possessing an exceptional or distinguished quality of starry nights and nocturnal environment that is specifically protected for its scientific, natural, educational, cultural, heritage and/or public enjoyment. Reserves consist of a core area meeting minimum criteria for sky quality and natural darkness, and a peripheral area that supports dark sky preservation in the core.
Dark Sky Park	A land possessing an exceptional or distinguished quality of starry nights and a nocturnal environment that is specifically protected for its scientific, natural, educational, cultural heritage, and/or public enjoyment. The land may be publicly owned, or privately owned provided that the landowner(s) consent to the right of permanent, ongoing public access to specific areas included in the IDA designation.
Dark Sky Community	A town, city, municipality or other legally organized community that has shown exceptional dedication to the preservation of the night sky through the implementation and enforcement of a quality outdoor lighting ordinance, dark sky education and citizen support of dark skies. Dark Sky Communities excel in their efforts to promote responsible lighting and dark sky stewardship, and set good examples for surrounding communities.



FIG.128 Spectacular sky views from Hadleigh Park. Also a good night-time sky observation area on clear nights.

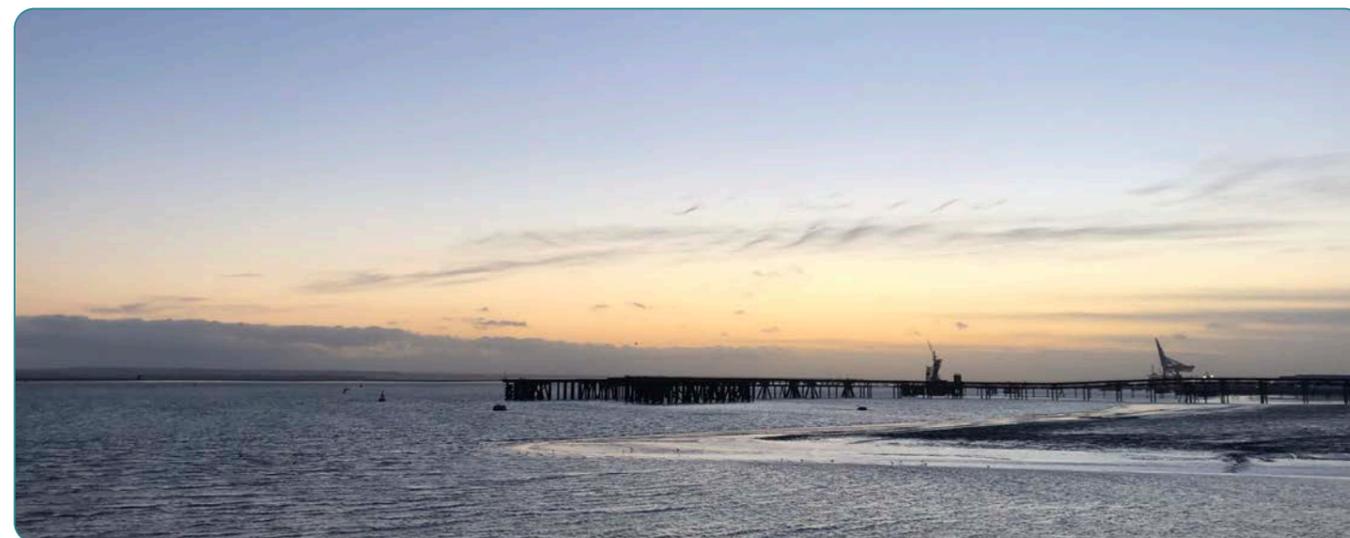
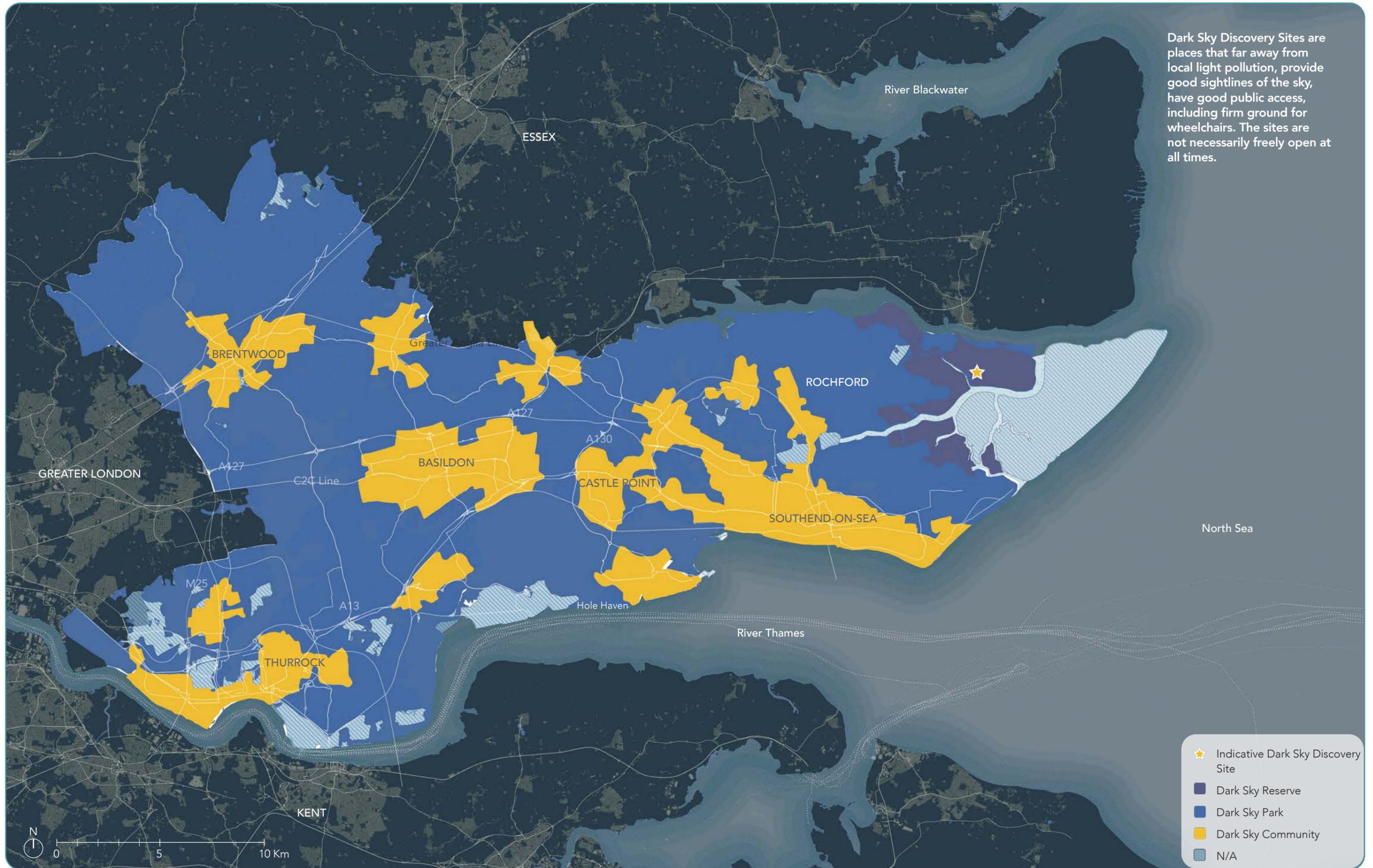


FIG.129 The South Essex waterfronts provide expansive views and opportunities for watching stunning sunsets.



FIG.130 The east end of South Essex, towards the Crouch River and North Sea, provides adequate seclusion for a Dark Sky Discovery Site



Dark Sky Discovery Sites are places that far away from local light pollution, provide good sightlines of the sky, have good public access, including firm ground for wheelchairs. The sites are not necessarily freely open at all times.

FIG.131 Indicative Dark Night Skies Designations Map

⑥ Plan for Growth and Development

The overarching recommendation is that the GBI measures should be a consistent consideration throughout, and incorporated into all plans for growth and development within the JSP.

The strategy for South Essex GBI will ensure that urban growth is not achieved at the expense of natural systems. All proposals should consider the most sensitive placement to complement the GBI, and to benefit most from it. Growth and development will be undertaken with recognition that human activities and developments do not sit apart from the GBI network of SEE Park, but rather are a part of it. Thus, a very high standard is set to integrate seamlessly into the parkland setting.

In turn, the South Essex GBI strategy is prepared with the knowledge of some of the major proposed development sites, and considers how to best complement new areas of housing and industry. GBI and regional parks are strategically positioned to benefit new developments with easy access to a network of green spaces.

The map on the next spread (Page 82, Fig.136) depicts how proposed development sites sit within the SEE Park. Though all proposed sites are not yet known or approved, it provides an idea of where large scale developments are being considered.

The Tables on the following pages set out:

1. Development Sites and GBI in South Essex
2. South Essex Open Space Categories
3. Significant Projects in South Essex

These must all ensure that urban growth is not achieved at the expense of natural systems.

Urban open space provision is outlined to set methods of integrating GBI into existing and proposed settlements at a granular level of detail. Urban Open Space is explained in the following pages. As urban open space applies to already developed areas, and areas to be developed in the future, the standards outlined provide South Essex with a strategy to work towards over time, as sites become available and as areas are redeveloped.

Natural England's Accessible Natural Green Space Standard (ANGSt), will be used to assess and plan for better provision of access to green space is a key tool to support consistent provision across South Essex.

The Policy Recommendations, Section 4.0, sets out the important considerations for growth and development. Of course, foremost being that a balance is maintained between the protection of natural systems and provision for urban growth, and that any developments that cause loss or harm to the GBI network should be avoided. Matters of health and wellbeing, urban open spaces and sustainable management are also considered through a series of policy recommendations.



FIG.132 London Wetland Centre, Barnes, an urban oasis for wildlife and people, close to central London.



FIG.133 Sustainably planned waterside community, B0o2 Hammarby, Sweden

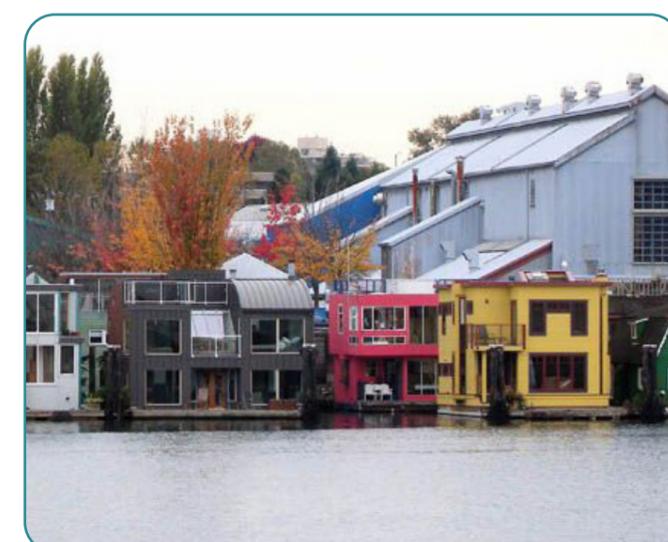


FIG.134 Floating homes at Granville Island, Vancouver, Canada

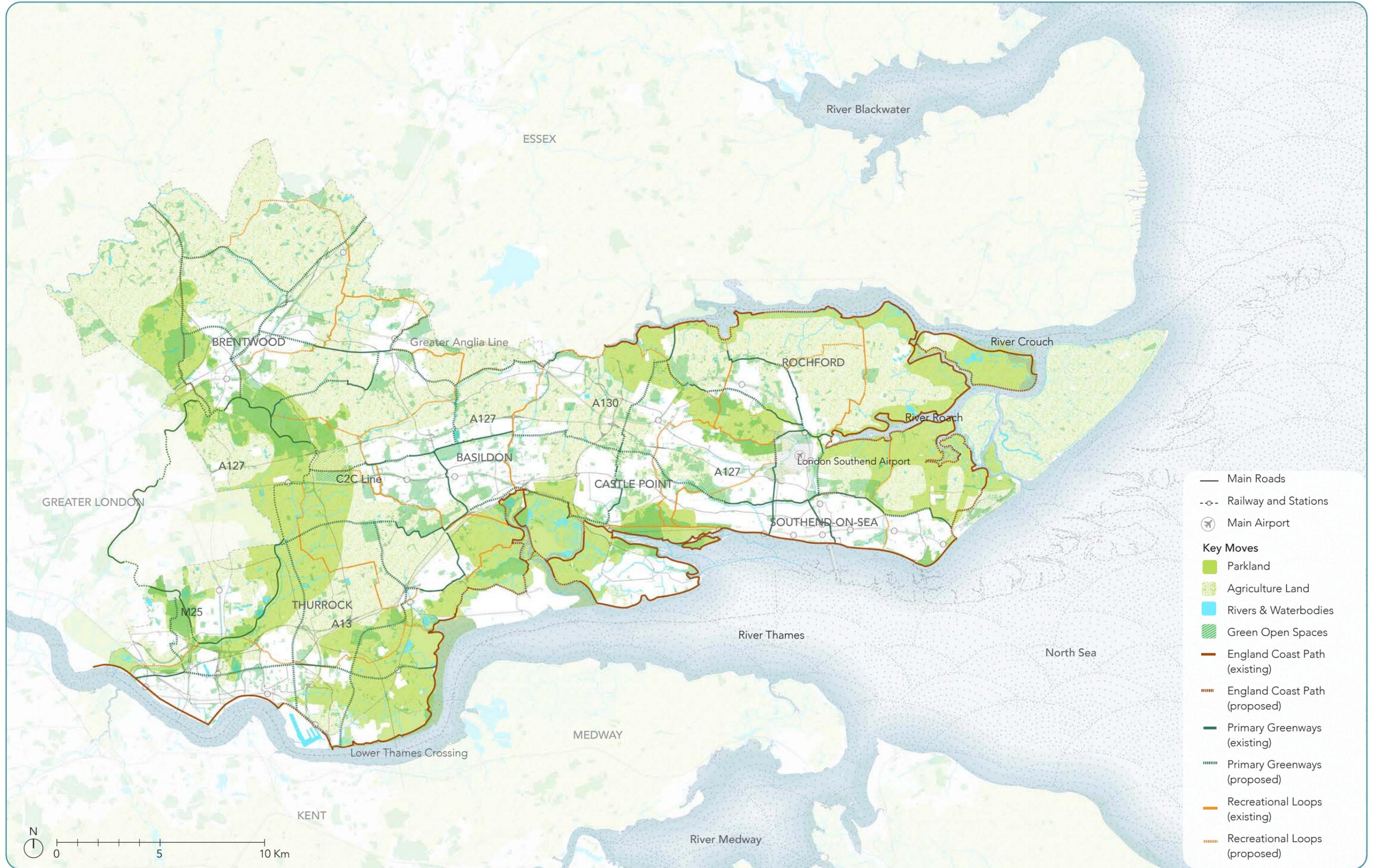


FIG.135 GBI Strategic Plan (Source: GIS Green Spaces and Agriculture from ASELA)

Growth and Development

TAB.6 Development Sites and GBI in South Essex

Council	Description
Basildon	<p>Basildon Borough Council Local Plan identifies a number of sites for future development for residential and commercial use and the Council are looking to bring forward the planning of three as a test of their potential:</p> <ul style="list-style-type: none"> • SW Billericay (95ha site) for 1,714 homes; • East Basildon (212ha site) for 2,593 homes; • Gardiners Land South (37ha site) for 813 homes.
Brentwood	<p>Brentwood Borough Council Local Plan identifies a number of small to large infill sites, close to the existing Brentwood town and surrounding villages. Some of the largest are along the A12, some in areas already deficient in POS, these might offer the opportunity for additional provision and green corridors provision to provide active travel options to the centre of town and the railway station.</p> <p>Bigger developments proposal include Dunton Hill Garden Village, as well as other sites close to West Horndon, Chilerditch and close to Cohbam Hall Wood, all in southern part of the Borough, close to the A127. These sites benefit from a natural setting but will however need access to some more formal provision which should be integrated as part of the GI proposals.</p>
Castle Point	<p>Castle Point Local Plan outlines a number of small to medium size sites allocated for residential development, some are close to Local Wildlife Sites of Potential Local Wildlife Sites, so there might be a good provision of natural POS while more formal provision of POS might be lacking already in the adjacent residential area.</p>
Southend	<p>Where the Southend Local Plan Core Strategy does not allocate sites, the Southend Central Area AAP does allocate a number of development sites. Reflecting this, a number of large site allocations appear at the junction to the A127 and the A13, and close to the Railway Station in the centre of town. This could provide opportunities for provision of new POS and linkages to existing GI. More linear development is proposed along the B1015 in association with public realm improvements. This could include additional tree planting along the road and a green link to Victory Sports Ground and other GI just north of the site. Additional sites are proposed in the southern part of the town, in place of large surface carparks and close to some existing linear POS and might offer opportunities for green connections between the seafront area and existing POS around the site.</p>
Rochford	<p>Rochford District Council Local Plan outlines a number of small to medium size sites allocated for residential development in most of the settlement: Great Wakering, Rochford, Hawkwell, Rayleigh and Hullbridge.</p> <p>The sites are located on non-designated land although in some cases quite close to the Coastal Protection Belt and Local Wildlife Sites, and in close proximity to existing POS.</p>
Thurrock	<p>Thurrock Council Local Plan outlines a few small to medium parcels of land allocated for housing development, although a similar amount of land is to be added to the Green Belt at London Gateway area. The sites are close to existing urban settlements and their impact on current POS provision will be assessed.</p> <p>Large areas to the south, along the Thames waterside, including Purfleet, Lakeside/West Thurrock, Grays, Tilbury and London Gateway have been earmarked as Regeneration Areas and these offer great opportunities for green links to the riverside and other GBI provisions.</p>

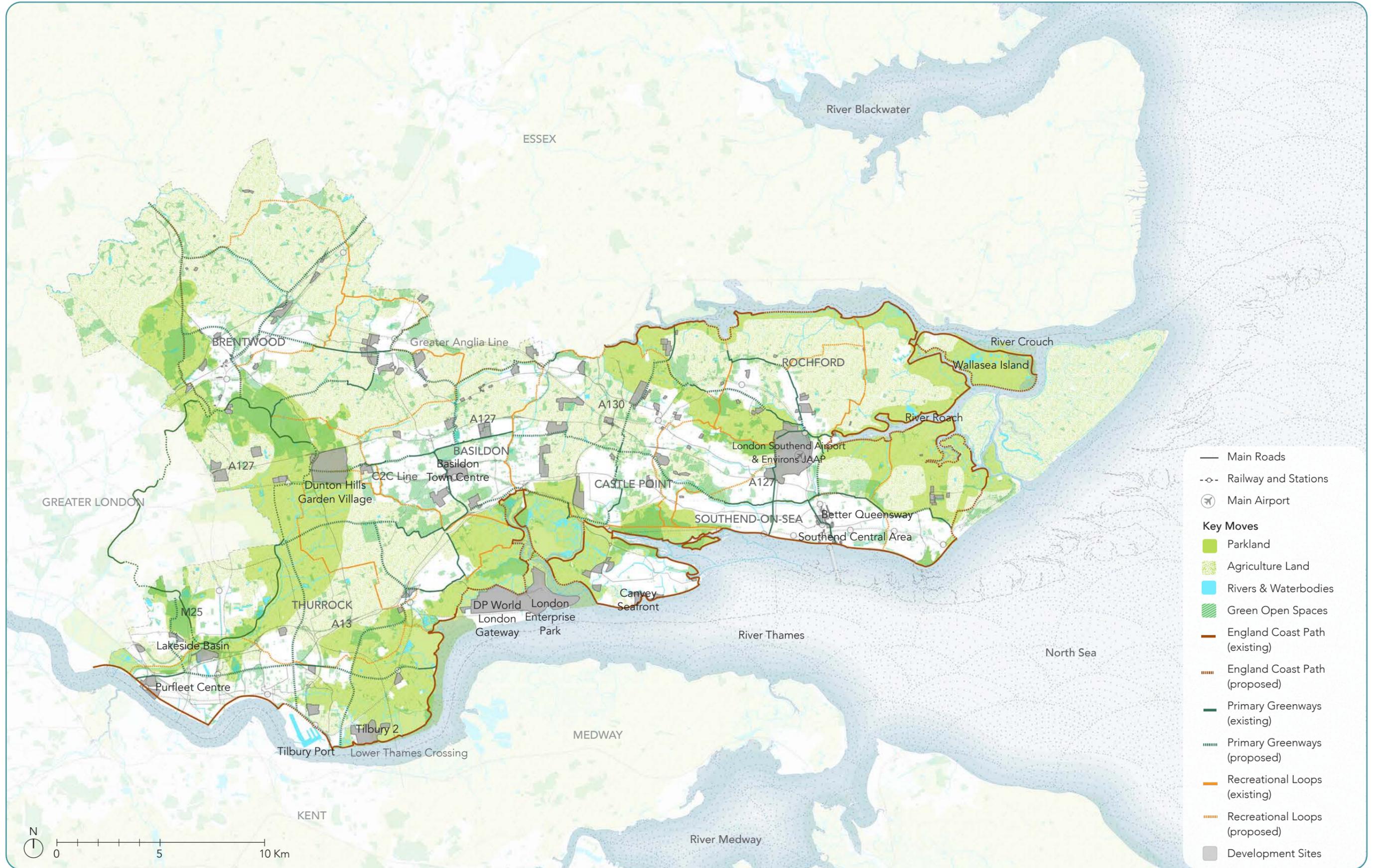


FIG.136 Proposed Development Sites Map (Source: GIS Green Spaces and Agriculture from ASELA, Development plots from Local Plans)

TAB.7 Major Travel Networks

Network	Description
The A13	The A13 carries a significant volume of strategic traffic, providing highway access to the south and connections to Thurrock-Canvey Island. Its national importance is growing in conjunction with the development of the London Gateway Port. There are strategic housing sites along the A13 corridor in Basildon. However, it suffers from significant levels of congestion. Both Basildon's and Thurrock's highway networks are impacted by the performance of the A13. Substantial improvements such as widening of the carriageway are required to facilitate growth. The Growth Infrastructure Framework recommends route-based strategy improvements for the A13 as a sub-regional project.
C2C/Essex Thameside trainline	The C2C/Essex Thameside trainline runs between Fenchurch Street and Shoeburyness, connecting London and the Thames Estuary towns in South Essex. Whilst being one of the best performing lines in the Country it is constrained by the size of Fenchurch Street which limits line capacity. The Growth Infrastructure Framework identifies that current commuting patterns place significant pressure on the rail network, with rail mode share highest in areas close to London, and that improvements would be required to facilitate growth. The Thames Estuary 2050 Growth Commission recommends an infrastructure project to expand connectivity through new rail loops between existing C2C routes in South Essex and Great Eastern Mainline.
The A127	The A127 is a vital artery linking Southend international airport with Rochford, Basildon and London and the M25. The 'A127 Economic Growth Corridor is key to the economic competitiveness of South Essex linking major business into the rest of the country. The route is used by more than 78,000 drivers daily, as a result it suffers from congestion and delays costing £35 million every year, due partly to a sub-standard layout. The South East Local Enterprise Partnership has secured over £42 million towards improvements and the A127 Task Force will address route challenges such as congestion and insufficient walking and cycling provision. In Basildon, the A127 corridor is home to one of the largest single concentrations of advanced manufacturing companies in the South of England. Over 8,000 businesses including multi-national companies provide over 35,000 jobs. Basildon's Local Plan proposes more business- and job-related growth in this area.
The Lower Thames Crossing	<p>The Lower Thames Crossing (LTC) will open up new links between North Kent and Thurrock, which may encourage expansion of businesses and trade across the Thames. This could also affect commuting patterns between South Essex and North Kent. However, uncertainties around its development are causing difficulties with spatial planning across the Authorities.</p> <p>Thurrock's Local Plan Issues and Options (Stage 2) 2018 identifies major impacts of the proposed LTC on the Local Plan development including impacts on the economy: existing businesses and future growth; on housing delivery; on restoration or reuse of land, on transport and connectivity; and environmental impacts (air, noise, cultural heritage, biodiversity etc.)</p>
The Great Eastern Main Line	A branch of the Great Eastern Main Line connects with Shenfield and serves South Essex towards London Southend Airport and Southend Victoria with a further branch to Southminster. Connections northwards from South Essex requires a change at Shenfield making rail an unattractive mode for north-south travel across Greater Essex, resulting in limited modal choice and high levels of car usage.
Crossrail	The Elizabeth line will connect Brentwood with London. There are two stations in Brentwood, Brentwood and Shenfield. When the full route opens, passengers will be able to travel through central London without having to change trains. TfL will be operating the stopping services from Brentwood. At peak times, Brentwood station will be served by 12 services an hour in each direction. Crossrail Ltd plans to bring the Elizabeth line into passenger service as soon as practically possible in 2021.
London Gateway and Port of Tilbury	The Port of Tilbury and the London Gateway Port provide important international connections for trade and industry, and employment opportunities. They are prioritised in the Thames Estuary 2050 Vision for development of the Inner Estuary and are referred to in the Thurrock adopted Core Strategy and emerging new Local Plan.
The London Southend Airport	<p>Following recent regeneration, including a new rail station, the airport currently services 1 million passengers every year, reaching destinations across the UK and Europe. It continues to grow and expects to serve 2 million passengers per year by 2020. However, this target will be impacted by Covid-19. Highway improvements have been implemented to manage growth in traffic, but access remains constrained by the A127. Public transport improvements will be important to growth.</p> <p>To support growth, various strategies have recommended improving connectivity between major population centres and key employment locations, providing smarter, active travel choices and improving efficiency of the existing network through better integration across all forms of transport, co-location of public services and joined up infrastructure modelling.</p>

TAB.8 Significant Projects in South Essex

Project	Description
DP World London Gateway	Located in Thurrock, this is the most significant UK port development in over 100 years. Occupying a 600ha site, the Deep-Sea Port opened in 2013, it includes a rail terminal and will house Europe's largest logistics park (830,000sqm). It has the potential to create more than 12,000 direct, permanent jobs and approximately 24,000 indirect jobs.
Thames Enterprise Park	Located on the site of the former Petroplus refinery at Coryton, the Thames Enterprise Park represents an exciting opportunity to create a 160ha Environmental Technologies and Energy Hub on the former refinery site alongside a new import/export and blending facility for oil products to serve the London and south east economies. The Enterprise Park mix of uses will also include manufacturing and warehousing and is ultimately expected to support more than 2,000 new jobs.
Port of Tilbury/ Tilbury Town	Covering an area of more than 340ha and hosting some 130 firms, the port has recently been extended with a 30ha expansion to the north. Once complete, the site will support more than 3,000 new jobs. Building on the economic strength of the port, a long-term regeneration programme in Tilbury seeks to increase employment levels and improve housing mix and quality. The programme will ultimately deliver 1,000 new homes and 3,800 new jobs. The Tilbury 2 proposed development on part of the site of the disused Tilbury Power Station east of the existing port, has been approved as a Nationally Significant Infrastructure Project (NSIP). It includes a terminal and aggregates handling and processing facility.
Purfleet Centre	Located on a 57ha brownfield site, the Purfleet Centre will support the delivery of 2,850 new homes and more than 2,700 new jobs alongside a new school, local services and facilities. At the heart of the proposals, are exciting plans to create a 46,000 sq. metre film and television studio complex building on the growth of the Creative and Cultural sector through the arrival of the Royal Opera House and National Skills Academy on the High House Production Park site.
Lakeside Basin (planned)	This is one of the UK's largest retail complexes and has ambitious plans to expand and diversify, increasing retail, leisure, commercial and residential uses as part of a 'regional' Town Centre supporting 6,000 to 9,000 additional jobs and up to 3,000 new homes.
Dunton Hills Garden Village (planned)	This is a strategic development in the South Brentwood Growth Corridor. It is located between three living landscape areas and other strategic allocations in the south of the Borough, such as the Enterprise Park and West Horndon Industrial Estate redevelopments (both of which are likely to vary the nature of the landscape). Provision is made for 7,752 new residential dwellings (net) to be built in the Borough over the Plan period 2016-2033 at an annual average rate of 310 dwellings per year to 2022/23, followed by 584 dwellings per year from 2023/24-2033, with Dunton Hills Garden Village to provide a significant portion of those. The development site presents a significant opportunity to establish a strategic framework that delivers a positive contribution to the local ecological network (Bentwood Local Plan pre-submission, 2019).
Canvey Gateway (planned)	Canvey Gateway will see the development of a £30m Business and Enterprise Park whilst the £60m development of the existing Knightswick Centre and surrounding land will be the cornerstone of a transformed Canvey Town Centre. In total it is anticipated that this will support the delivery of 1,500 new homes and 1,100 new jobs.
Canvey Seafront	Castle Point will focus growth around Canvey Seafront – The Council is promoting the regeneration of the seafront area and regeneration of Hadleigh Town Centre.
Basildon Town Centre (planned)	Basildon Town Centre has ambitious plans to redevelop the town centre and railway station, including the relocation of South Essex College's Basildon Campus from Nethermayne to Basildon town centre which is expected to bring a range of significant economic impacts.
Rochford Tourism Offer (planned)	Rochford will grow its tourism offer; taking advantage of its rural nature to develop a different tourism offer to the rest of South Essex and promote green tourism. A hallmark project will be around the Wallasea Island Wild Coast.
London Southend Airport	London Southend Airport has undergone a regeneration programme: the runway was extended, a train station opened, and the airport operates commercial flights to destinations across Europe, including flights to Dublin that enable connections to the USA. It expects to deal with 53,300 aircraft movements and 2 million passengers a year by 2020. However, this target will be impacted by Covid-19. The 'Joint Area Action Plan' (JAAP) prepared jointly by Rochford and Southend Authorities contains proposals for development of London Southend Airport and surrounding area to deliver more than 7,380 new jobs within 99,000sqm of commercial floorspace together with a high-end business park of circa 20.88ha which aims to attract advanced technology including Med-Tech business.
Better Queensway Project (planned)	The Better Queensway scheme will transform this area of central Southend into a vibrant new community with high quality housing and outdoor space, providing an attractive place for people of all ages to live, socialise and play. Key features of the proposed development include approximately 1,400 new homes, better connection to the town centre, a significant amount of public, shared and private areas, new commercial space and the establishment of a new community fund.
Southend Central Area	Southend Central Area has already seen significant public and private sector investment including £25m of infrastructure and public realm works; the UK's first joint municipal academic library (The Forum £27m); and the University campus development leading Town Centre regeneration as a sub-regional hub. These aim to unlock potential development sites and accelerate delivery along Victoria Avenue and in the Central Area to deliver 2,000 new homes and 6,500 new jobs. Southend will continue to grow its tourism economy, positioning itself as a major English seaside resort.

Urban Open Space

Definition

Urban open space provides a valuable outdoor resource that supports the community in their day to day exercise, play, and social interaction. Contributing greatly to the health and well-being and economy of the community in built up areas of South Essex. Urban open space also provides invaluable habitat for the wildlife living in urban areas.

The South Essex approach to urban open space is about providing access for outdoor living and instilling a sense of ownership within the community, where the residents and visitors feel connected to the landscape and their open spaces. Having these inclusive facilities provides a range of beneficial opportunities for healthy activity that not only establishes a sense of prosperous and harmonious pride within neighbourhoods but that also supports everyday life, good memories, and flourishing wildlife.

The significant range of existing urban open spaces in South Essex has been assessed and a summary of the findings illustrated in *Vol.2 Appendix Section 4*.

Aim

With the plan for sustainable growth and development across South Essex, there is the opportunity to re-establish what is important for a resilient community to overcome the challenges they face now and in the future. Whilst there will be increased pressure for available development space, we should be in no doubt over the importance of protecting existing trees and landscape and providing generous, multi-functional, good quality and accessible urban open space. These in turn would

support improved connectivity, a biologically rich ecosystem and an ability to be water adaptive when required.

Existing urban open space will need to work harder alongside streetscapes and buildings to support a range of community uses and habitat. These enhancements will be combined with an urgency to establish new objectives and standards for extending the network of open space, to ensure it is ready for future needs of the environment, and the people that will rely on it.

Existing urban open space will forge a series of stepping stones and networks that will need to work with a new, more seamless and flowing Green and Blue Infrastructure, providing extensive green corridors, natural settings and major open space when adapting to expected environmental change. **Their contribution to provide semi-natural habitats suitable for a wide diversity of species will need to be expanded alongside providing well-designed, managed and programmed open spaces placed at the heart of the community to improve cultural, economic, social and ecological values.**

Typically, public urban open spaces in South Essex include areas of:

- Natural and Semi-natural space;
- Parks and Gardens;
- Amenity Green Space;
- Play and Sport Provisions (Children and Teenagers, and Sports Provisions);
- Allotments; and
- Green Corridors.

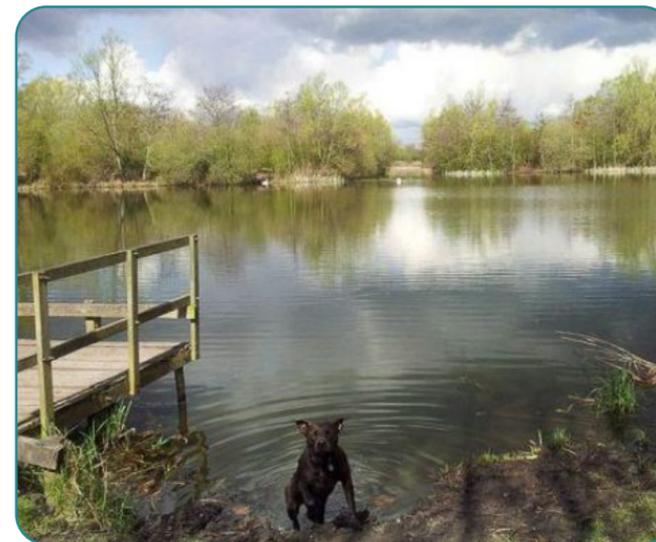


FIG.137 Belhus Woods Country Park, Grade II Listed



FIG.138 Basildon Heritage Trail



FIG.139 Hockley Woods



FIG.140 Parkland view in Southend

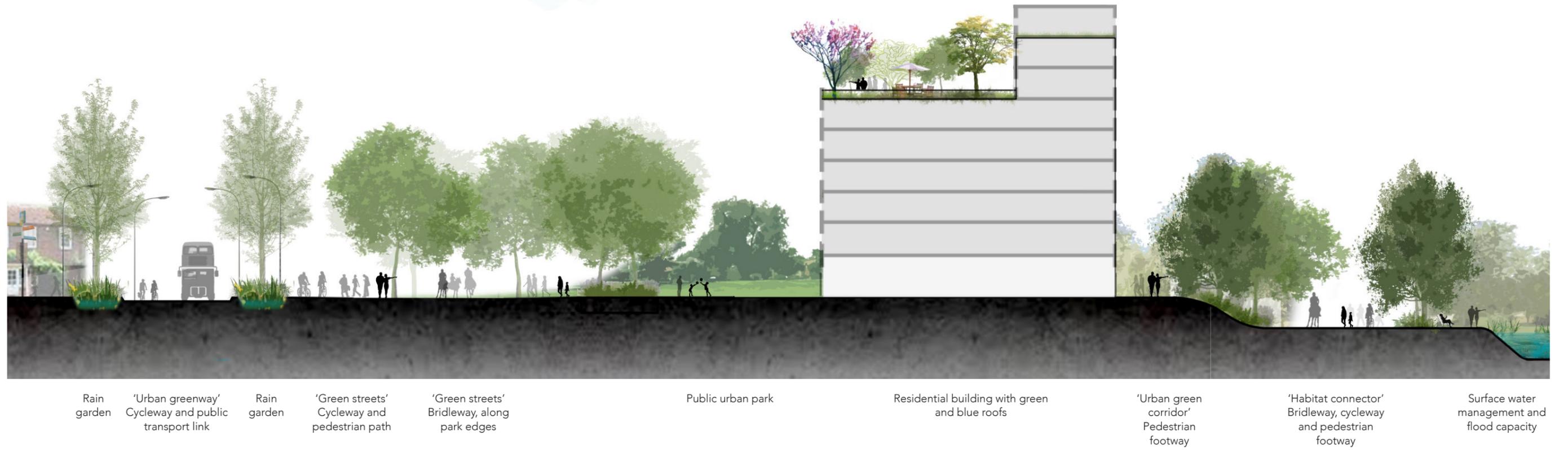


FIG.141 Urban Green and Blue Infrastructure

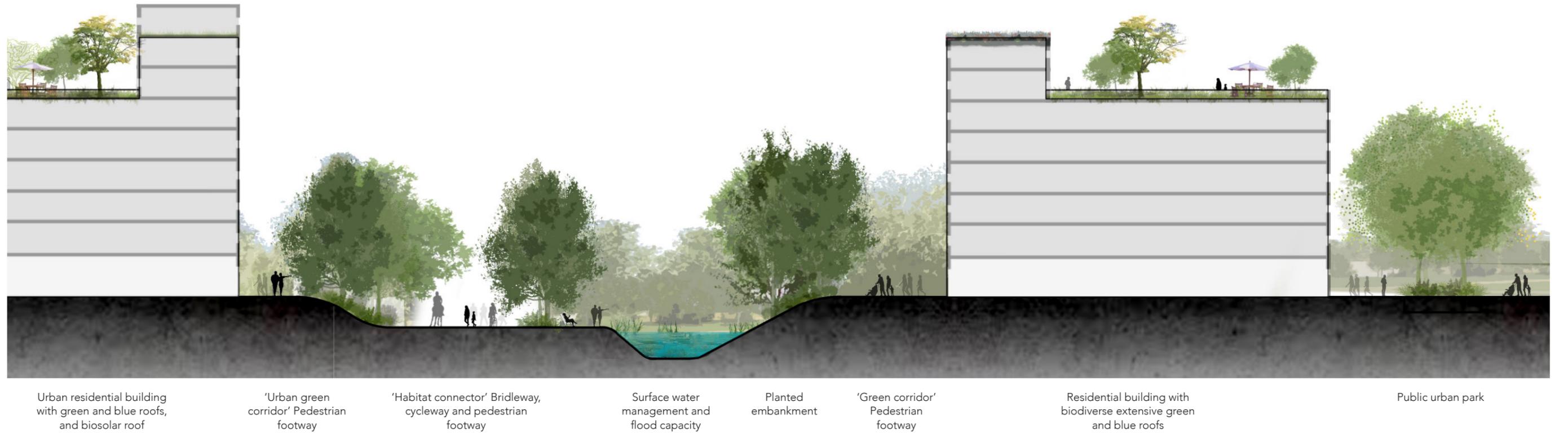


FIG.142 Urban Green and Blue Infrastructure, continued

Urban Open Space Opportunities

Establishing standards for open space provision is essential to deliver the amount and quality of open space required to support existing and new communities. **The following criteria supports Local Authorities when planning new developments, or expanding or transforming existing settlements, and should be considered alongside the strategic information contained within this report,** ultimately identifying the need for an increase in Green and Blue Infrastructure, better connectivity between all public open space and the expansion of high quality habitat.

Location

Urban open space will need to be provided in carefully selected locations to serve an increased residential population. Good design of urban public open space starts with its location and the many considerations involved, for instance: the level of connectivity and access required; the integration of existing protected features; closeness of community facilities and the concentrations of population proposed; alongside many other factors to determine the best possible location.

Urban open space must be accessible, inclusive and connected, to encourage its active use, whilst providing access to trees, open space and wildlife near to home life is proven to boost physical and mental well-being.

The character of the built environment also influences how public open spaces are used. Public urban open spaces should not 'fill up the gaps' within the development or use up undevelopable land. They require high quality design and good, well considered integration with in their surroundings from strategic planning through to detailed design.

Size and Distribution

There is a natural hierarchy of urban open space based primarily on size, with larger public spaces less numerous than smaller spaces, which are typically distributed at closer distances to support more frequent use by the local community. The adjacent TAB. 9 provides national benchmarks for a range of open space provision, suggesting recommendations of size and distribution.

South Essex supports the creation of new urban open space to ensure satisfactory levels of local provision are provided and to address areas of deficiency where required. It is recommended for Local Authorities to assess their current contribution to open space needs based on national benchmarking. In doing so, they ensure that deficiencies are identified, and plans can be made to support areas with the potential for change, planning requirements and the multiple benefits brought about by proposals established in this Green and Blue Infrastructure Strategy.

Alongside the urban open space provision, Grow-Your-Own remains a national, healthy obsession. To support this, the National Allotment Standard defined by the National Society of Allotment and Leisure Gardeners establishes a minimum provision of 20 standard plots of 250 square metres per 1,000 households or 0.5 hectares per 1,000 households for when applying to development needs.

Combining information contained within local planning policy and the Guidance for Outdoor Sport and Play produced by the National Playing Fields Association (Fields in Trust – 2015) provides a range of benchmarking for open space, formal sport and play provision applicable to the South Essex area.

Quality and Character

The design of the urban open space needs to balance multiple demands in order to create valued public spaces that are used by the community. For this, careful consideration should be given to the quality of landscape design and ensuring that they reflect local landscape character.

Provision should meet the community's access, inclusion and health needs and support a beneficial environment by providing high quality recreational, cultural, play and sporting facilities. Therefore, urban open space provision should provide vibrant, inclusive, accessible and safe spaces in order to deliver liveable communities.

Their design requires a variety of sizes, designs, physical features and typologies. It can be used to differentiate activity opportunities, define the purpose and character of each urban open space.

Natural England's paper "Free to Explore - Connecting people with their local environment" has found that people in urban environments, and in areas of deprivation, under use green spaces as they are often of poor quality and feel unsafe. Indeed, aspects to be addressed include safety, accessibility, and confidence and understanding about use of green spaces, to encourage more active participation. Management and maintenance are key aspects of green space quality and perception of safety, and should not be overlooked.

Connectivity with Natural Open Space

Connectivity and access to natural green space will be essential, Urban open space will provide part of this contribution with the aim that the population is fused into a network of urban open space that connects with larger areas of natural green space, such as national nature reserves, larger green corridors, large scale parks, country parks, and local nature reserves providing a variety of public access.

As such, **Natural England's Accessible Natural Green Space Standard (ANGSt), used to assess and plan for better provision of access to green space is a key tool to support consistent provision across the area.** Recommending the following:

Everyone, wherever they live, should have access to natural green space, recommending the following size and location guide:

- Of at least two hectares in size, no more than 300 metres (five minutes' walk) from home;
- At least one accessible 20-hectare site within two kilometres of home;
- One accessible 100-hectare site within five kilometres of home;
- One accessible 500-hectare site within ten kilometres of home; and
- A minimum of one hectare of statutory Local Nature Reserves per thousand population.

TAB.9 South Essex Open Space Categories

Open Space Category	Size Guideline	Distance from Home
<p>Regional Parks</p> <p>Large areas, corridors or networks of open space, the majority of which will be publicly accessible and provide a range of facilities and features offering recreational, ecological, landscape, cultural or green infrastructure benefits. Offer a combination of facilities and features that are unique within London, are readily accessible by public transport and are managed to meet best practice quality standards.</p>	500 ha	5 to 10 kilometres
<p>Country Park</p> <p>Large green spaces often at the edge of urban areas and which provide places to enjoy the outdoors and experience nature in an informal semi-rural setting. They typically include some facilities such as car parks, toilets, perhaps kiosks, paths and trails, and visitor information. There is not necessarily public right of access, although most are publicly accessible.</p>	100 ha	5 kilometres
<p>District Park</p> <p>Large areas of open space that provide a landscape setting with a variety of natural features providing a wide range of activities, including outdoor sports facilities and playing fields, children’s play for different age groups and informal recreation pursuits.</p>	20 ha	2 kilometres
<p>Local Park and Open Spaces</p> <p>Providing for court games, children’s play, sitting out areas and nature conservation areas.</p>	2 ha	300 metres
<p>Small Open Spaces</p> <p>Gardens, sitting out areas, children’s play spaces or other areas of a specialist nature, including nature conservation areas.</p>	under 2 ha	less than 300 metres
<p>Pocket Parks</p> <p>Small areas of open space that provide natural surfaces and shaded areas for informal play and passive recreation that sometimes have seating and play equipment.</p>	under 0.4 ha	less than 300 metres
<p>Linear Open Spaces</p> <p>Open spaces and towpaths alongside rivers, canals and other waterways; paths, disused railways; nature conservation areas; and other routes that provide opportunities for informal recreation. Often characterised by features or attractive areas which are not fully accessible to the public but contribute to the enjoyment of the space.</p>	variable	wherever possible

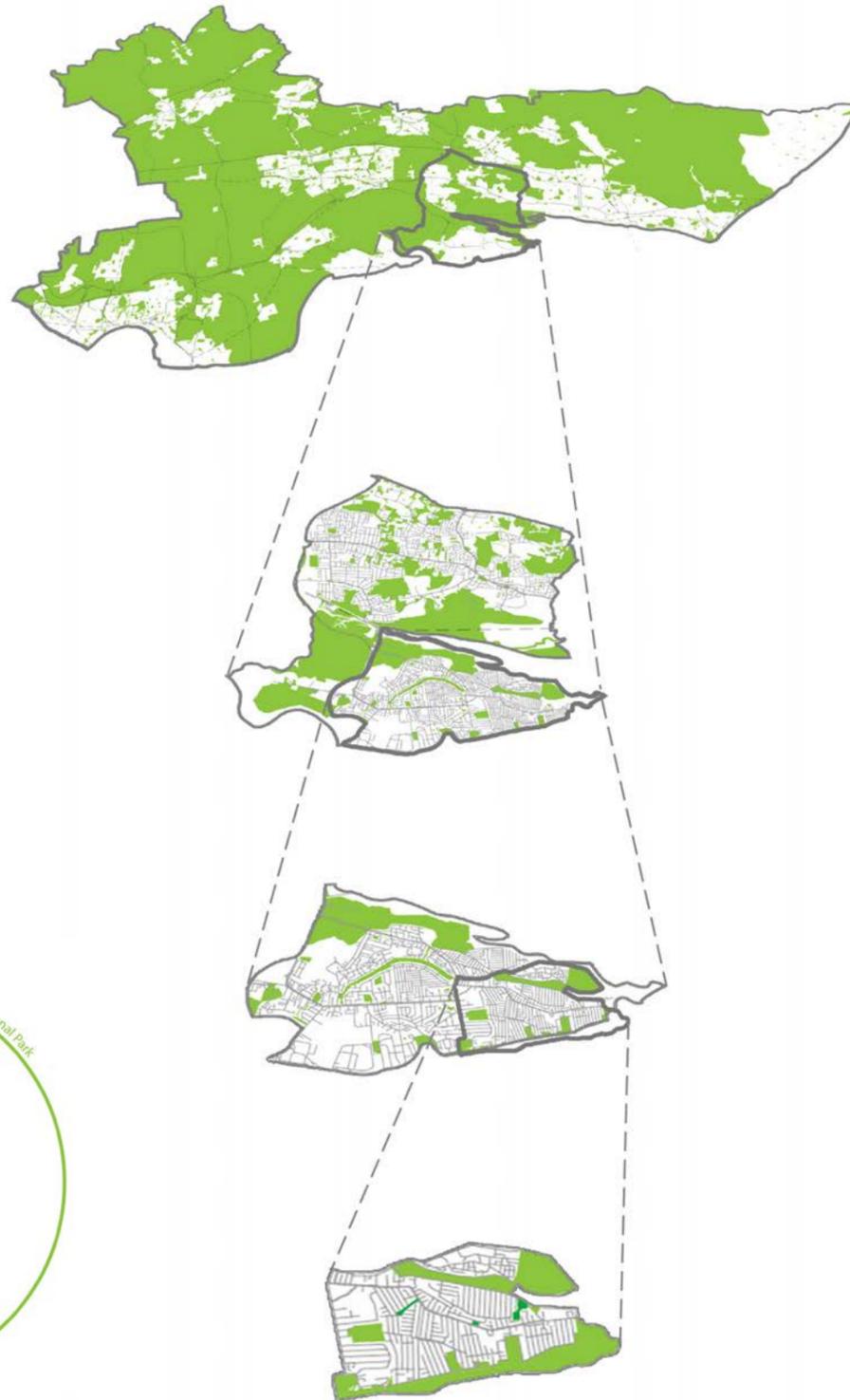


FIG.143 Walkability Radius

FIG.144 Open Space Hierarchy

3.2 GBI Layout

The Spatial Strategy brings together all the Key Moves to create a comprehensive GBI network across South Essex.

These maps provide an overview of the GBI structure, and represent the holistic view of South Essex as one unified area, linked through a series of green and blue elements.

FIG. 145 provides a look at the **Proposed Primary Greenway network** that will improve connections across all of South Essex. **The goal is to ensure good access from every residence and commercial centre.** Local Plans should be coordinated to ensure an overall structure is maintained and strong links are made across the region. This network of **17 county-wide greenways** provides an **evenly distributed network** throughout South Essex, connecting urban to rural areas, linking a number of destinations, and connecting to railway stations.

The benefits are many, and include:

- Expand the opportunities for urban recreation
- Encourage people to travel by foot and by bike
- Enhance the experience of nature and urban life

The map on the facing page, FIG. 146, presents a composite map of all Key Moves outlined in Section 3.1. It provides a closer look at the GBI, defining the spatial strategy at a greater level of detail. It also demonstrates GBI that is existing (though often in need of enhancement) and proposed, in order to fill the gaps and complete the mosaic of living infrastructure.

The following spread provides a zoom-in of the Proposed GBI Layout to provide a closer look.



FIG.145 Proposed Primary Greenways: This network of 17 county-wide greenways provides a generally evenly distributed network throughout South Essex, connecting urban to rural areas, linking a number of destinations, and connecting to railway stations.

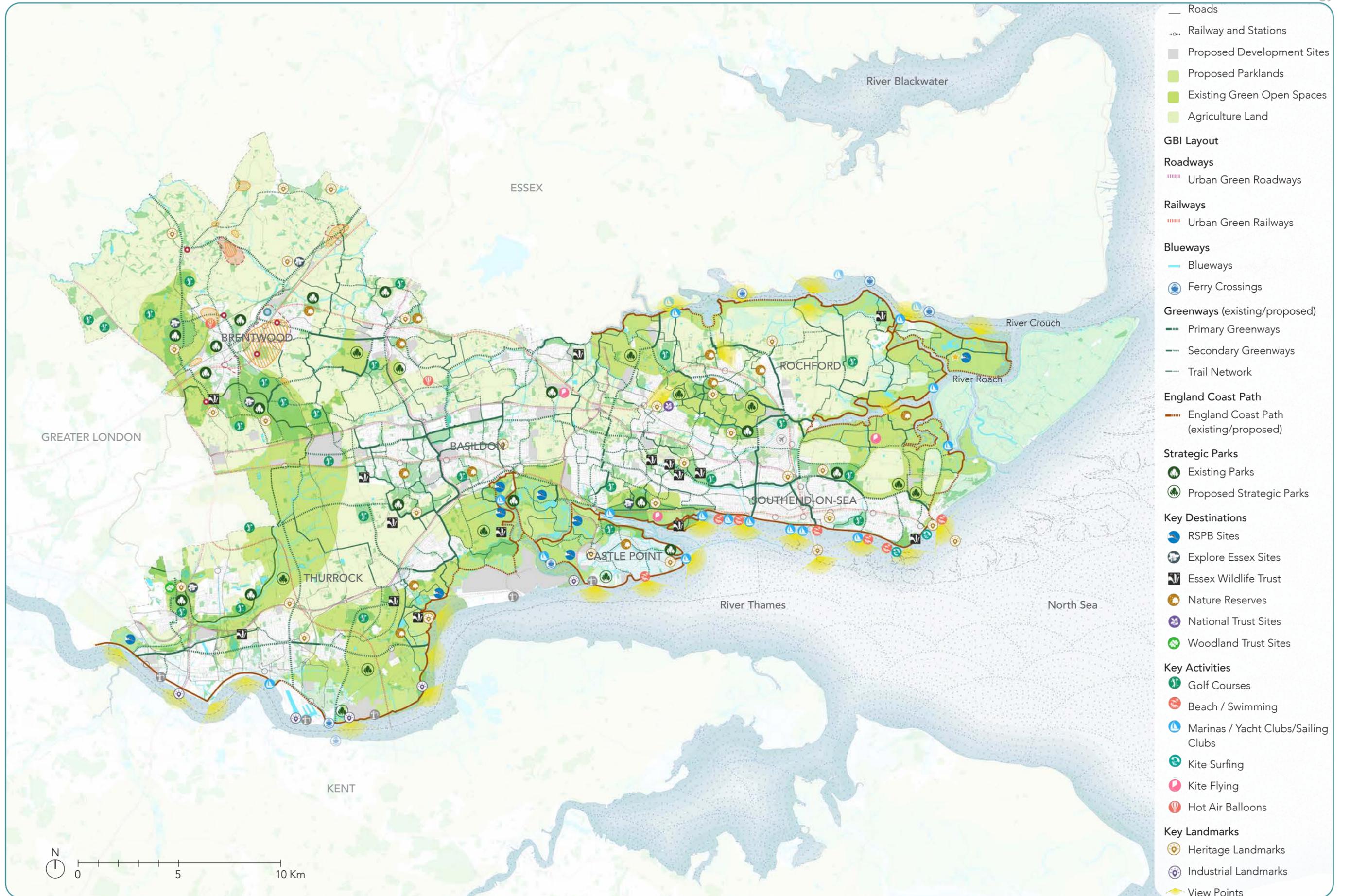


FIG.146 Proposed GBI Layout: South Essex (Source: GIS Green Spaces and Agriculture from ASELA, Development plots from Local Plans)

This zoom-in Plan of the proposed GBI Layout provides a strategic area framework, and notes a series of key features that provide the dominant structure, including:

- Urban Green Roadways
- Railways
- Blueways
- Greenways
- Strategic Parks
- Key Destinations
- Key Activities
- Key Landmarks
- Key Views

It is accepted that detailed implementation will impact on details, and as this overarching structure is developed, modifications will be necessary. For example, land ownership, will play a key role in how a site may be developed. Or, if a new settlement is built, it will impact the precise location of required park and other GBI elements. Thus, this structure is meant to be used as a guide, and developed in detail as more information becomes available.

Brentwood and Thurrock are faded out as they each have their own GBI strategies underway. However, the current proposals for Brentwood and Thurrock have been consulted, and the GBI strategy for the rest of South Essex blends with their proposals.

Further information is provided on each Borough and District Council in *Vol.2: Appendix Section 4*.

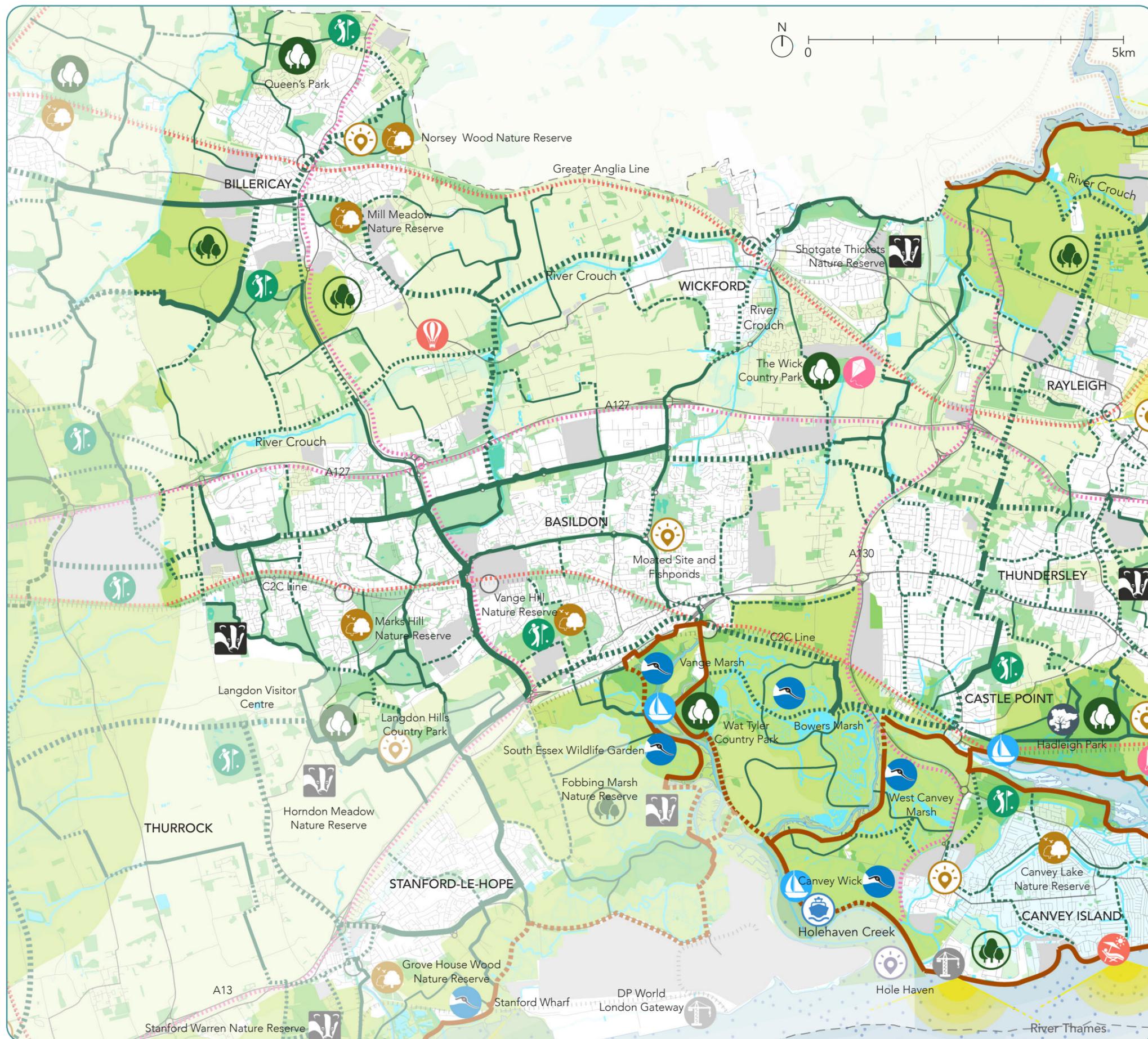


FIG.147 Proposed GBI Layout: Basildon and Castle Point (Source: GIS Green Spaces and Agriculture from ASELA, Development plots from Local Plans)



FIG.148 Proposed GBI Layout: Rochford and Southend-on-Sea (Source: GIS Green Spaces and Agriculture from ASELA, Development plots from Local Plans)

3.3 A Day in the Life

A Day-in-the-Life takes a look at the GBI Layout from the human perspective, exploring how the experience of the SEE Park is felt, and the journeys one might take over the course of a day, travelling from one's doorstep to urban, rural, and wild spaces.

SEE Park is a place that accepts that people are part of nature, and is committed to creating greener, more liveable communities, that will improve the health, well-being and prosperity of the people living here.

As people are part of nature, it is also important that nature is brought to their doorstep, bringing people face to face with the complexity, the beauties, and the importance of the natural world.

'A Day in the Life' provides a glimpse of the human experience in SEE Park, and how GBI will weave throughout, providing important connection between people and nature.

Green Loops

A series of 'Green Loops' will be created that offer a variety of journeys through the landscape, providing for a diversity of walking, cycling and horse-riding experiences. Covering the full landscape of South Essex, they invite unique recreational opportunities, and explore many of the special sites, features and nature-scapes of South Essex.

The Green Loop network forms an environmental infrastructure that allows for a range of car-free movement between destinations, offering a viable alternative and sustainable way to travel through South Essex, whether for recreation, as a visitor or commuting. As such these routes must be easily accessible as part of the wider GBI and have an equivalent status alongside transport routes, utilities, and the built environment.

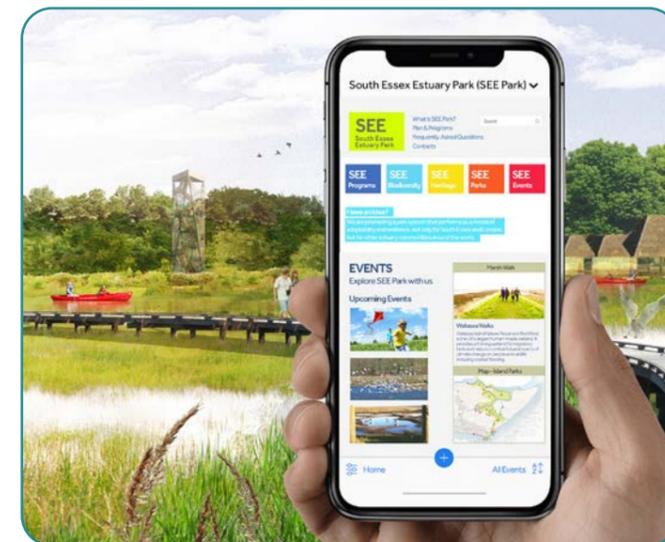


FIG.149 A SEE Park app allows people to understand the landscape in real-time, providing maps, information on wildlife, events and recreational trails.

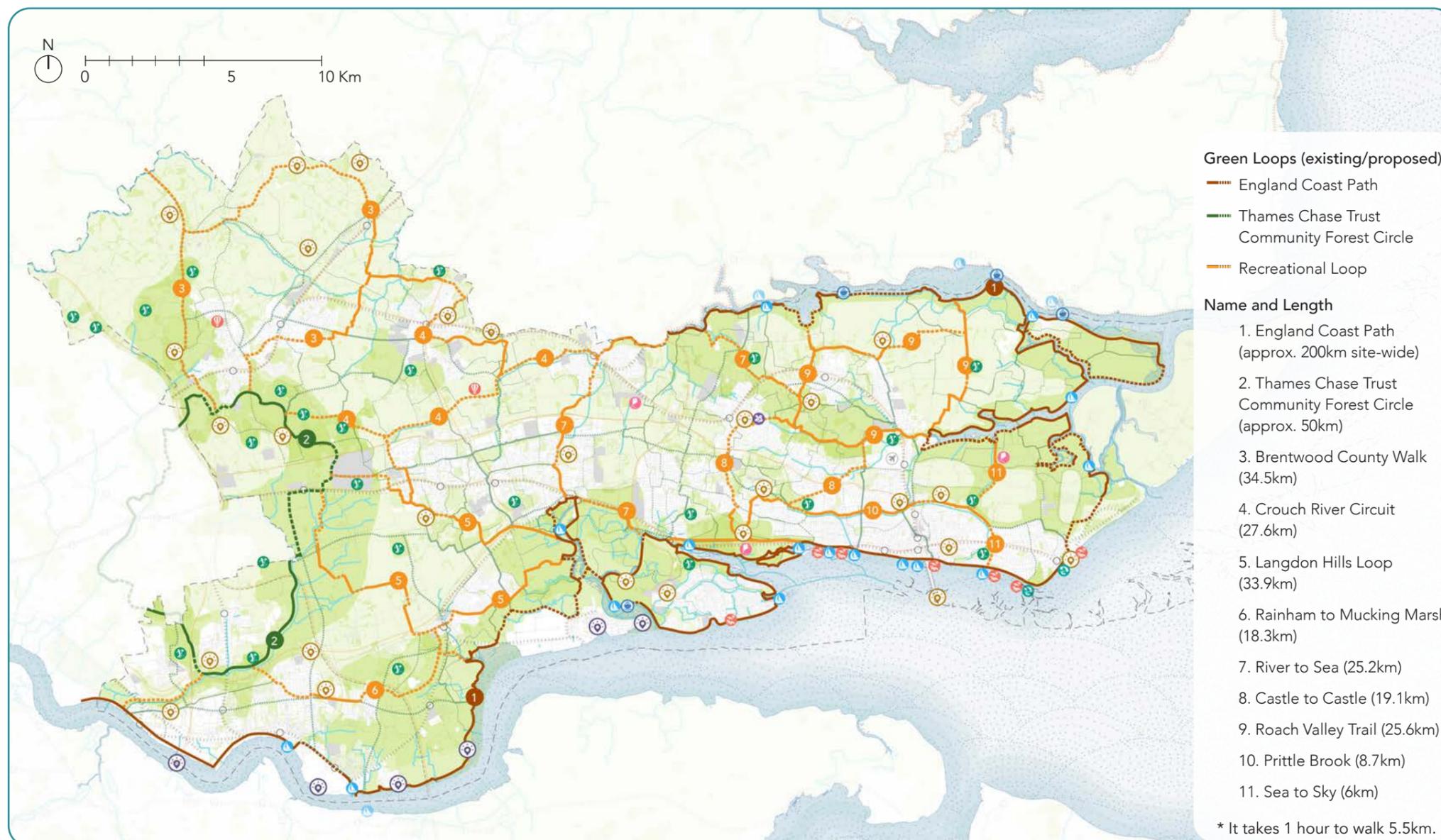
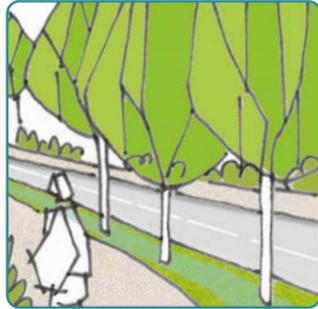


FIG.150 Green Loops: This network of 11 recreational green routes takes people on experiential journeys through the county, connecting to special sites and features, and also linking into the other network of primary green and blue networks, and recreational trails. These Green Loops offer opportunities for residents and visitors to enjoy the landscape, and to journey fluidly from urban to rural areas, industrial to natural sites, and from water to land.

TAB.10 Day in the Life

Doorstep → Countryside

Local Streets



Quiet tree lined routes with integrated pedestrian and cycle routes.

Local Centre Square



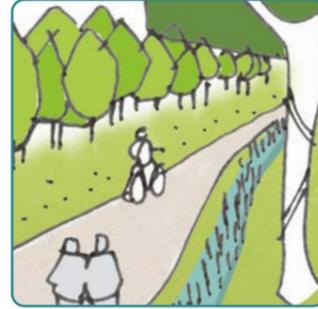
A community focused space with busy facilities, holds events and integrates urban storage for flooding events.

District Park



Provides open space for local recreation, sports and play facilities amongst an ecologically rich landscape setting.

Green Loop



Greenways providing a super route for cyclists, pedestrians, e-personal mobility devices and horses within an ecologically rich setting linking local countryside with urban centres.

Green Crossing



Green bridges allowing safe movement of pedestrians, cyclists, horses and wildlife across major transport routes.

Nature Reserve



Areas promoting the protection of local flora and fauna and providing facilities for ecologically based education.

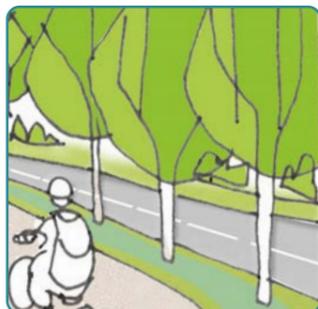
Agricultural Landscape



Amongst working farms, destinations for the enjoyment and learning of countryside practices and crafts.

Doorstep → Coast

Local Streets



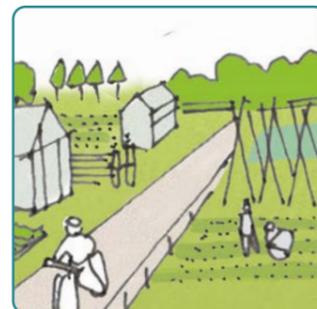
Quiet tree lined routes with integrated pedestrian and cycle routes.

Urban Green Corridor



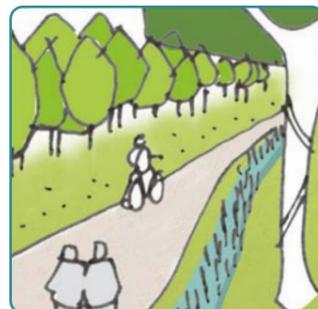
Green routes for cyclists, pedestrians, e-personal mobility devices, horses, wildlife, and surface water management within easy reach of urban areas.

Allotments



Community gardens and allotments close to urban areas for the growing of fruit and vegetables.

Green Loop



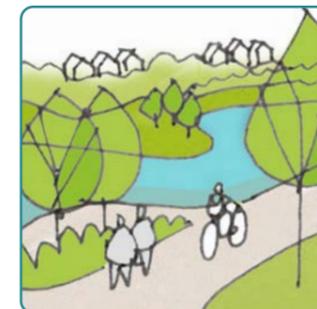
Greenways providing a super route for cyclists, pedestrians, e-personal mobility devices and horses within an ecologically rich setting linking the local countryside with urban centres and key destinations.

Blue Connector



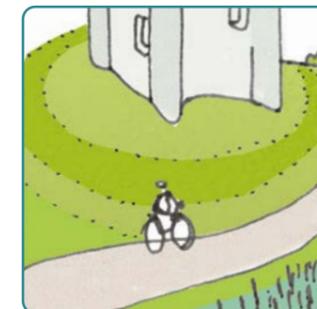
Routes within a natural setting, running alongside water courses for pedestrians, cyclists, horses, and wildlife. Water courses may allow for passage by boat and water-based activities.

Regional Park



Large scale landscape incorporating flood zones, habitats, existing parkland, riverfront, former industrial sites, agriculture land and special historic features and landmarks.

Landscape Features



Key destinations within the landscape for the appreciation of heritage, landmarks, views, and skies.

Coast Path



Regional routes alongside the shoreline capturing the experience of coastline through landscape features, agricultural land, heritage, habitats, and waterscapes.

4 Policy Recommendations

The following section sets out a series of considerations that could inform future JSP policy and guide how the objectives of the Strategy could be taken forward and developed within the JSP Local Plan.

under a single policy. The same structure can also be applied to the Local Plan policies.

The policy considerations are structured around the GBI 'Key Moves', whilst linking to the objectives and opportunities of the strategy.

The overarching recommendation is that the GBI measures should be a consistent consideration throughout the JSP, incorporated into many different policy issues (design, transport, GI etc) instead of held

① Establish Regional Parkland

TAB.11 Policy Considerations of Regional Parkland

Consultation	Management	Design Guidance	Protected Sites	Opportunities
<p>Ensure consultation with organisations and communities currently involved in the management of the area e.g. RSPB/local stakeholders.</p>	<p>Require the consideration of existing management plans and strategies in the development of proposals e.g. RAMS (Essex Recreation and Avoidance Mitigation Strategy); Thames Estuary Commission Growth Plan; and the preparation of new management plans.</p>	<p>Consideration should be given to the Authorities' existing and emerging Design Guidance, particularly in relation to:</p> <ul style="list-style-type: none"> • The protection and enhancement of assets of natural value. • The identification of assets that define landscape character. • The maintenance, conservation and improvement of identified assets. 	<ul style="list-style-type: none"> • Maintain and enhance the existing network of geological sites and biodiversity. • Support opportunities to create new habitats and assist with species migration. • Safeguard existing designated sites and species. • Do not support developments that have an adverse impact on the integrity of European sites, Sites of Special Scientific Interest and other designations. • Do not support proposals that cause loss or harm to the green infrastructure network unless the need for and benefits of the development outweigh any adverse impacts. • Require mitigation measures where adverse impacts are unavoidable. 	<ul style="list-style-type: none"> • Creation of green and open spaces to include multi-functional opportunities. • Connectivity between habitats and landscape across different boroughs. • Enhance current flood defences and provide flood storage, which complements and improves existing habitats. • Provide opportunities to enhance health and wellbeing. • Require the inclusion of biodiversity enhancements and the need for a biodiversity net gain. • Incorporate other nature recovery measures to avoid the most valuable existing habitat and focus habitat creation and improvement where it will achieve the most benefit.

② Build Landscape Connectivity

TAB.12 Policy Considerations of Landscape Connectivity

GREEN INFRASTRUCTURE NETWORK	PROJECTS	IMPROVE CONNECTIVITY	CONNECTORS	PROTECTED SITES	RE-WILDING/ POLLINATION	BIODIVERSITY NET GAIN
<ul style="list-style-type: none"> • Protection and enhancement of the existing Strategic Green Infrastructure Network. • Define an integrated network of multi-functional public open space and GBI infrastructure. • Connect with existing Green Infrastructure. 	<p>Consider the formal designation of the new green infrastructure projects to align with the emerging parks within the GBI strategy, including:</p> <ul style="list-style-type: none"> • Wallasea Island Wallasea Island (740ha currently RSPB, partly designated as SSSI and Local Wildlife Site). • South Essex Marshes. • Thames Chase (over 10,000ha, half of which is in Essex, currently managed by Thames Chase community forest. Includes 47 country parks, nature reserves, existing and newly planted woodlands, and informal open spaces that are open to the public). <p>Consider the inclusion of Strategic Infrastructure Projects within JSP CIL list of infrastructure projects. (This may be possible if the government approves new governance arrangements.)</p>	<ul style="list-style-type: none"> • Seek opportunities to improve the connectivity between new green spaces provided by the new development, the existing GBI network, and the wider countryside. • All major schemes must demonstrate analysis and links to the wider GBI network. • Require the creation of coherent, direct, safe, comfortable and attractive greenways and green corridors, linking to green spaces and green infrastructure as part of new developments. • Ensure the GBI network is accessible for all, including users who are disadvantaged, disabled or who have special mobility needs. • Encourage sustainable modes of transport, where possible. 	<ul style="list-style-type: none"> • Consultation with relevant authorities and private landowners to agree planting, building works and maintenance schemes. • Major infrastructure such as highways and bridges should demonstrate how a response to connective green infrastructure has been incorporated within design proposals. • Support the England Coastal Path in Essex, for pedestrian use only. • Support the connection and multifunctionality of existing paths and PRow's. 	<ul style="list-style-type: none"> • Maintain and enhance the existing network of geological sites and biodiversity. • Support opportunities to create new habitats and assist with species migration. • Safeguard existing designated sites and species. • Do not support developments that have an adverse impact on the integrity of European sites, Sites of Special Scientific Interest and other designations. 	<ul style="list-style-type: none"> • Develop an open space quality standard that includes provision for re-wilding and pollinator proposals as part of open and amenity space requirements. 	<ul style="list-style-type: none"> • Require the inclusion of biodiversity enhancements and the need for a biodiversity net gain using a recognised defined calculation method (e.g. Biodiversity metric 2.0).

③ Integrate Water Management Systems

TAB.13 Policy Considerations of Water Management Systems

ENGAGEMENT	RESILIENT INFRASTRUCTURE	CATCHMENTS	WATERCOURSES	WATER MANAGEMENT	FLOOD RISK	CLIMATE CHANGE
<ul style="list-style-type: none"> • Ensure early engagement with the Environment Agency, Port of London Authority and other landowners with regard to any structures or work to their infrastructure. • Require engagement with Environment Agency, Natural England and other water bodies with respect to flood management plans. • Early engagement will also be needed with the Lead Local Flood Authorities (LLFA), Southend BC and Essex CC, who lead in the management of local flood risks (i.e. risks of flooding from surface water, ground water and ordinary (smaller) watercourses and prepare and maintain a strategy for local flood risk management in their area. 	<ul style="list-style-type: none"> • Include measures to promote sustainability, including energy and water efficiency, appropriate wastewater management and flood mitigation measures. 	<ul style="list-style-type: none"> • Require Local Plans to undertake water cycle and catchment reviews. • Ensure flooding downstream is anticipated and aligned with woodland planting/rewilding plans. • Reference should be made to the Surface Water Management Plans (SWMPs) to identify where there are any Critical Drainage Areas (CDAs) or smaller sub-catchments at risk of flooding, and take measures to anticipate flood risk. 	<ul style="list-style-type: none"> • Encourage the enhancement and naturalisation of the shoreline and water bodies, including the recovery of tidal wetlands and marshes. • Protect and enhance existing water courses and open bodies of water. • Promote new water courses and open bodies of water as part of new developments. 	<ul style="list-style-type: none"> • Ensure that surface water is managed at source to improve water quality, reduce flood risk and enhance biodiversity. • SUDS to be considered in all development and as an integrated part of green infrastructure to reduce run off and store water. • SUDS and water courses to incorporate natural solutions to design e.g. natural flood management techniques. • Systems should be designed to provide multi-functional GI, which enhances natural capital, provides safe public access, and complements the aesthetic and amenity value. 	<ul style="list-style-type: none"> • Require development to include innovative design responses to flood risk that includes maximising the benefits of natural flood management. • Introduce an Integrated Catchment Strategy within the preparation of Local Plans to address water quality and flood risk. • Require the need to undertake Flood Risk Assessments, in order to meet the sequential and exception tests for development, as well as detailed site FRAs. • Consider the availability of water and water infrastructure for the lifetime of the development. • Require all major development proposals and masterplans to demonstrate a landscape-led approach. • Require all development to comply with the Thames Estuary 2100 Plan’s Riverside Approach to flood risk and defences. 	<ul style="list-style-type: none"> • Require all developments to demonstrate a positive and resilient approach to climate change. • Design solutions to have a positive impact on microclimate (e.g. shading and natural cooling). • Direct development to locations with the least impact on flooding or water resources.

④ Optimise Agricultural Land

TAB.14 Policy Considerations of Agricultural Land

AGRICULTURAL LAND

- Encourage the restoration and enhancement of agricultural land to enable sustainable agricultural practices alongside the restoration and enhancement of habitat diversity.
- Consider the potential for initiatives such as blue carbon sinks or sea based farming in areas of flood risk.
- Support the potential for agritourism.
- Support the introduction of natural environment services on agricultural land in line with the Environment Bill 2020, such as maintaining waterways, reducing harmful emissions to reduce flooding, as well as public access to the countryside.
- Engage with appropriate local bodies such as the Rural Community Council of Essex.

⑤ Reveal Unique Landscape Features

TAB.15 Policy Considerations of Landscape Features

HERITAGE	LANDMARKS	VIEWS AND SKIES
<ul style="list-style-type: none"> • Protect and enhance the setting and access of heritage features, including industrial heritage. • Consider the potential for heritage trails and visitor facilities, which provide interesting routes through the area, whilst protecting the setting and access of assets. • Encourage the establishment of 'conservation covenants' to conserve the natural or heritage features of the land. 	<ul style="list-style-type: none"> • Conserve and enhance the intrinsic value of the landmarks to provide a strong identity and encourage visitors to the area. • Ensure key landmarks are integrated within the GBI network by views, enhanced ecological settings and access. 	<ul style="list-style-type: none"> • Require LVAs for all major development proposals. • Enhance and protect key views through the establishment of viewing corridors and vistas of key features and landmarks. • Consider the potential to preserve 'Dark Night Skies' to both observe the stars and ensure the proper function of natural ecosystems.

⑥ Plan for Growth and Development

TAB.16 Policy Considerations of Growth and Development

GROWTH AREAS	HEALTH & WELLBEING	URBAN OPEN SPACE	SUSTAINABLE MANAGEMENT	PLANNING OBLIGATIONS/ FINANCIAL CONTRIBUTIONS	EXISTING PROJECTS WORKING GROUP / MONITORING	CARBON CREDITS AND OFFSETS
<ul style="list-style-type: none"> • Ensure a balance is maintained between the protection of natural systems and provision for urban growth • Do not support proposals that cause loss or harm to the GBI network, unless the need for and benefits of the development outweigh any adverse impacts • Ensure mitigation measures are identified, where adverse impacts are unavoidable 	<ul style="list-style-type: none"> • Ensure adequate access to natural space for new developments, in accordance with ANGSt / ECC- NERC Green and Blue Infrastructure standards, wherever possible. • Require delivery through on-site provision or financial contribution, as appropriate. 	<ul style="list-style-type: none"> • Ensure the protection and enhancement of existing urban open spaces • Support the use of land and buildings as new allotments, orchards or community gardens for local food production and growing spaces • Include the temporary use of vacant or derelict land or buildings and the use of incidental open space on housing estates and other open spaces • Major development proposals should contribute to the urban greening of South Essex by including measures as a fundamental element of site and building design • Measures should include – high quality landscape (including trees), green roofs, green walls, nature based SUDS • The JSP should include an Urban Green Factor (UGF) to identify the appropriate amount of urban greening required in new developments. (The Urban Greening Factor is a major policy initiative coming through the London Plan that will affect the work of LI members. To deliver against this new policy requirement will require the involvement of landscape professionals earlier in the design and planning process.) 	<ul style="list-style-type: none"> • Put in place a strategy to provide research, investment and government legislation to support the management of high quality and effective GBI in the long term • Ensure consultation with bodies to understand and link to initiatives in the wider area, such as the Thames Estuary Growth Plans • Major development proposals should demonstrate how communities could be engaged in the management of green infrastructure with long term stewardship and community ownership models encouraged. • Require management plans for green spaces to look at multi-functional opportunities, including a focus on biodiversity enhancements • Require proposals to be in accordance with the Thames Estuary 2100 Plan, Riverside Approach to ensure that future changes to the riverside take place in a planned and integrated way, which maximise the potential environmental, social, cultural and economic benefit. 	<ul style="list-style-type: none"> • Financial Contributions should include the need to support maintenance of new green infrastructure assets on site, within a development scheme • Secure provision for the future management and/ or maintenance of green infrastructure via planning obligations, where appropriate. 	<ul style="list-style-type: none"> • Establish a joint-working approach to ensure that the JSP is cognisant of existing projects such as the ECC/NERC-funded scheme to test all Essex local authorities' draft local plans against a green/ blue infrastructure minimum requirement. 	<ul style="list-style-type: none"> • Identify JSP supported Carbon Credit Schemes, where carbon is traded to reduce the carbon footprint of projects proposed within the South Essex area. • Identify local carbon offset projects, including initiatives such as the restoration of coastal wetlands or tree planting. • Identify other carbon offset projects in the UK and further afield where local schemes are not possible or appropriate.

“Our entire world is in danger. If we are to save it, people have to realise that the world is on our doorstep. That we are part of the world. That we have to conserve it...We are part of the natural systems, and if we wish to save ourselves, we have to save those natural systems...The world depends on an understanding of the natural world, and where does that start? For the majority of human beings, on their doorstep.”

Sir David Attenborough speech at the Landscape Institute Awards, 2019



FIG.151 Wetland View of Rochford (Source: Rochford District Council)

5 Delivery Options

5.1 Context

Regional Context

In January 2018, the Association of South Essex Local Authorities (ASELA) was formed, comprising Essex County Council and the local authorities of: Basildon; Brentwood; Castle Point; Rochford; Southend; and Thurrock. The authorities have embarked upon an ambitious process of developing a long-term growth ambition, which will underpin the strategic, spatial, infrastructure and economic priorities for the sub-region.

The 'South Essex 2050 Ambition' is now being taken forward through a number of workstreams including a Spatial Strategy, through a Joint Strategic Plan (JSP). The JSP and supporting documents will provide a clear vision for the future growth of South Essex, which can be used to influence and inform wider plans and strategies for the area, including the Local Plans of the individual authorities as well as the Thames Estuary Commission, London Plan, Government and other investment priorities.

The GBI Strategy provides an important evidence document for the preparation of the JSP and Local Plans and will sit amongst the other following spatial strategies, which will make up the Joint Spatial Plan, including:

- Housing numbers, type and distribution (including delivery issues and affordable housing)
- Economic development priorities and strategic locations informed by an emerging Local Industrial Strategy
- Transport Infrastructure requirements to deliver growth

- Design and quality (including future proofing development/potential new technologies)
- Social inclusion and other supporting infrastructure.

In developing the JSP, the GBI Strategy will be used as a key evidence document to guide the growth for the area, to ensure that the most sensitive areas are protected, and that appropriate consideration is given to the GBI spatial strategy, including the following key elements:

1. Establish Regional Parkland
2. Build Landscape Connectivity
3. Integrate Water Management Systems
4. Optimise Agricultural Land
5. Reveal Unique Landscape Features
6. Plan for Growth and Development

This evidence base will play a crucial role in devising the policies for the JSP and Local Plans but also in helping to determine where the most appropriate locations for the growth areas should be located, such as the selection of the site allocations.

The evidence should also be used when carrying out the Sustainability Appraisal/Strategic Environmental Assessment of the different iterations of the JSP and Local Plans, to ensure that the decision making process is robust and transparent and can withstand the necessary scrutiny of the Examinations in Public.

Local Context

Each Local Authority is responsible for preparing a Local Plan for their own area. In addition, each authority has identified GBI development as a strategic cross-boundary matter and undertaken work to set out principles, plans and frameworks for GBI, based on the guidance set out in the 'Thames Gateway South Essex Green Grid Strategy' and the 'Essex Green Infrastructure Strategy'.

In developing the Local Plans, it will be important that the GBI Strategy is used to guide the development and proposals at the local level, particularly with regard to the drafting and implementation of development management policies and the consideration of planning applications.



FIG.152 Essex Local Plan Tracker

5.2 SEE Park

The first phase of the Great Thames Park?

The Association of South Essex Local Authorities (ASELA) will work with stakeholders to support the delivery of the SEE Park as an interconnected network of green and blue infrastructure across the whole of South Essex.

A new identity will be forged for South Essex with the creation of the SEE Park, framed by five new regional-scale parks: one to the west, two central, and two east. These areas have been carefully considered through complex analysis, and include flood zones, habitats, existing parkland, riverfront, former industrial sites and special historical features and landmarks.

The creation of the **SEE Park also provides the opportunity to become part of the plan for the Great Thames Park, and perhaps a first phase of the proposals.** The Great Thames Park is proposed in the Thames Estuary Growth Commission’s 2050 Vision, which is to be explored through a separate study, endorsed by the Government. The Thames Estuary proposals provide a key mechanism to enable the delivery of the park and other GBI initiatives in the South Essex area.

Thames Estuary Commission Growth Plan 2050: The Thames Estuary 2050 Vision addresses the area’s under performance in comparison with other London corridors and recognises the scale and diversity of the area, as both challenges and opportunities.

The vision for the South Essex Foreshore is as follows:

“The rich patchwork of places which form the South Essex Foreshore will be celebrated. Empowered by a statutory Joint Spatial Plan the area will go beyond ‘business as usual’. Locally driven town centre

transformation will help create lively places that people choose to work, live, learn and play in. These policies and local initiatives will see development unlocked, post-industrial landscapes restored, and the filling of empty business spaces to create a thriving and creative economy.”

The Commission has identified key priorities for the area, which offer opportunities for the delivery of the GBI Strategy, including:

SE Foreshore Fund: The Creation of a fund, to which local authorities and local communities can make bids for funding. Projects should support town centre regeneration and/or community development. The fund will give local communities and organisations the opportunity to direct investment where it is most needed to support local aspirations and town centre regeneration. The Government has committed to make available a £20 million fund and provide support to the four local authorities and local communities in their funding bids.

Institute for Resilient Infrastructure: A centre for the research, design and funding and financing of integrated infrastructure will be established to address contemporary and future city challenges. The Institute will ensure the Thames Estuary has the skills and knowledge needed to design and deliver key infrastructure, such as the second Thames Barrier. It will also identify delivery and governance models that can enable strategic infrastructure to be funded by the private sector.

TAB.17 Park Types and Definition

Park Types	Definition
<p>National Park</p>	<p>National Parks are areas of land protected because of their unspoilt landscapes, outstanding or representative ecosystems, native plants and animals, and place of natural or cultural significance. In addition to their role in conservation, national parks provide opportunities for public nature appreciation, well-being, enjoyment, and as valuable scientific research.</p> <p>Each National Park is looked after by a National Park Authority, which includes members, staff and volunteers and is legally responsible for the production of a National Park Management Plan, a five-year plan for the park. Local communities, landowners and other organisations are asked for their opinions and help in achieving the plan. The Plan sets the National Park authority aspirations and the roles of other organisations who work in the park. At the end of the five years, a new plan is made.</p>
<p>Regional Park</p>	<p>Regional Parks are lands reserved to protect and conserve areas in natural or modified landscapes but are also suitable for sustainable public recreation and enjoyment. Regional parks offer open spaces for cultural and recreational activities, which may not be permitted in national parks, state conservation areas or nature reserves.</p> <p>A Regional Park designation is used to define distinctive and extensive areas where management and spatial planning can bring about regionally significant economic, environmental and social benefits. Regional Parks help to drive regeneration through strong partnerships between the public, private and voluntary sectors.</p> <p>Individual Regional Parks are unique and develop their own definition and vision based on their local characteristics, needs and aspiration. This means they can adapt to local circumstances, embrace innovation and entrepreneurship, and engage community support. Importantly, all Regional Parks use environmental enhancement as a foundation for social and economic improvement programmes.</p> <p>Local authorities manage the regional parks with the support, and in partnership with recreation and land management interests. Members can include area councils, neighbouring councils, county councils, statutory consultees, relevant stakeholders, volunteers and staff.</p>
<p>Wetland Park</p>	<p>Wetland parks are wetlands with public amenity and ecological functioning, and often involve conservation, education and tourism facilities. The wetlands are areas where the land is covered by shallow water or the soil is saturated to the surface for at least 14 consecutive days during the growing season. The term wetland includes wet meadows, salt marshes, swamps, bogs and a variety of other aquatic environments.</p> <p>Wetlands provide many societal benefits: food and habitat for fish and wildlife, including threatened and endangered species; water quality improvement; flood storage; shoreline erosion control; economically beneficial natural products for human use; and opportunities for recreation, education, and research.</p>

5.3 Landscape Scale Case Studies

A number of case studies have been identified that offer ideas of how to position the SEE Park. A summary is provided here (with more information included in the Appendix).

TAB.18 Landscape Scale Case Studies

Marston Vale Community Forest, UK

The Forest of Marston Vale is the 61 square miles between Bedford and Milton Keynes and was historically a very different place than it is today. To help the area recover from the effects of harmful industries, the Government made the area a Community Forest – one of 12 in the UK – in the early 90’s. The idea was that planting trees and using woodlands would make life better for people, and wildlife. Now that the area is greener, the key challenge is keeping the balance between the environment and new developments like housing and warehouses. This involves insuring that every time a new development goes ahead, the overall environment benefits from a net environmental gain.



FIG.153 Marston Vale Community Forest

London National Park City, UK

Launched in July 2019, the London National Park City is a place, a vision, a movement and a way of organising. A defining quality of a National Park City is to stimulate an atmosphere in which millions of people take everyday actions to improve the quality of their lives and enhance the fabric of the city. Everyone in the city can both benefit and contribute. Taking inspiration from the successes of National Parks, National Park Cities are a new kind of “national park” which sit outside of legislation in England but may well fit in the criteria for national park families in other countries. The National Park City Foundation is an independent charity that has been formed to help make the London National Park City a success and to champion the National Park City concept.



FIG.154 London National Park City

Emscher Landscape Park, Germany

The history of this aquatic landscape reflects the history of its region as almost no other natural area in Germany does. At the height of industrialisation, the Emscher’s original sate was irreversibly altered. Many stretches of this once winding river became a heavily polluted concrete wastewater drain. The Emscher was an element of the regional, industrial infrastructure. Many industrial relics of the smoky old Ruhr area now lie idle. Instead of smoking chimneys, green landscapes predominate in many places. This economic change has led to a new perception of nature. The Emscher is no longer regarded as just an instrument of industrial production but is seen as a valuable living space that contributes to upgrading the region and enhancing quality of life.

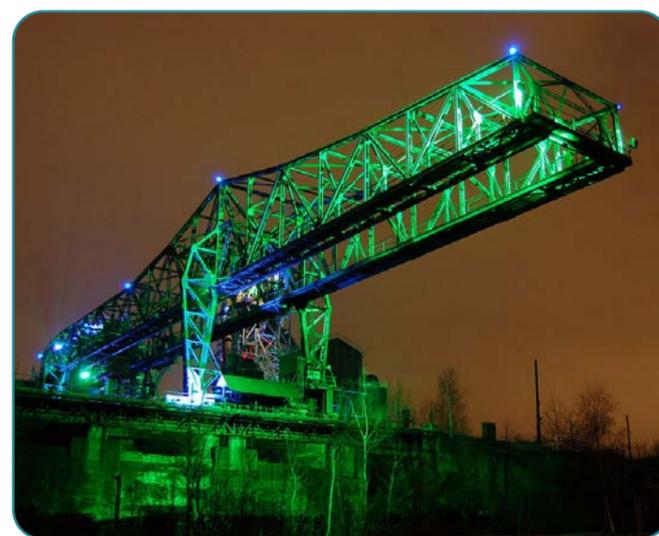


FIG.155 Emscher Landscape Park

XiXi National Wetland Park, China

Located in the west of Hangzhou, and 5km away from the West Lake, Xixi National Wetland Park is a farmland and wetland in China that covers 7,088,86 square metres. Here you can find many ancient buildings and garden relics from the Ming and Qing Dynasties. The total area of the wetland is about 11.5 square kilometres. 70% of the wetland is a water area, including a river harbour, pool, lake and moor. Six rivers flow through the park, interspersed with many branching streams and fishponds in the confluence. All of these contribute to the unique landscape of Xixi wetland. Usually, tourist groups only visit the central part, leaving the eastern and western parts as silent places. The eastern part is a natural scenic spot, while the western part is comparatively an artificial spot.



FIG.156 XiXi National Wetland Park

River Ijssel, The Netherlands

The Netherlands is one of the most densely populated countries in the world and more than half of it is below sea level. Flood protection is therefore a very high priority for the Dutch Ministry of Infrastructure and the Environment within the compass of water management. The cadence of Dutch history has been punctuated by sea floods and the response to these. For the most part the danger stemmed from the sea. In 1993 and 1995, however, flooding hit the Netherlands from behind its defences. In 1995 large tracts of farmland were inundated and 250,000 people were evacuated. As a consequence, the Dutch government implemented anti-flooding measures in the region of the rivers. The 'Room for the River' approach was born.



FIG.157 River Ijssel

Loch Lomond National Park, Scotland

Loch Lomond & The Trossachs National Park is home to some of the most iconic wildlife and landscapes found in Scotland. Across the Park, 67 sites are designated for their special nature conservation value and the Park holds strategically important populations of species, such as Atlantic Salmon, golden eagle and native oak woods amongst others. These landscapes have been created and shaped by both natural and human forces over millennia and are continuously evolving. In recent history significant land use changes have included the spread of commercial forestry, the abandonment of grazing land for livestock in some areas and the growth of renewable energy production such as run of river hydro schemes in parts of the Park and wind farm developments just outside the Park boundary.



FIG.158 Loch Lomond National Park

Emerald Necklace, Boston, USA

The historic Emerald Necklace park system in Boston was designed by the legendary Frederick Law Olmsted through almost twenty years of work. In this urban park system, Olmsted created special retreats, places for both active and passive recreation, and green spaces offering relief and refreshment from the pressures and tensions of everyday life. The Emerald Necklace consists of a chain of parks linked by parkways and waterways. This linear system of parks, once a polluted and marshy area, now offers opportunities for recreation in a wooded environment, ecologically important urban wilds that provide nesting places for migratory birds, and improved air quality of the city. It stretches from Back Bay to Dorchester connecting people and nature.



FIG.159 Emerald Necklace, Boston

Vancouver Greenways, Canada

The City of Vancouver sits in the top ranks of the Liveable City Index, notably for its long-term commitment that has been made to the creation of a green environment for its population. In early days of city planning, large swathes of land in the city centre, and at the university grounds, were put aside for parkland. Furthermore, access along the waterfront was dedicated as public space. The city continues to invest in its green and blue infrastructure, as it recognises the incredible value it has brought to the success of the city. To carry on this legacy, Vancouver has a department dedicated to Greenways and Blueways, mainly focussing on the implementation of city-wide pedestrian and cycle corridors; these knit Vancouver together, connect regional parks, and provide continuous waterfront access.



FIG.160 Vancouver Greenways

5.4 National Park Management Models

Some of the fundamental questions and indicators for designing such a model are outlined below.

TAB.19 Fundamental Questions and Indicators for National Park Management Models

<p>1. How can comprehensive participation across urban and communal borders be enabled and arranged early on?</p>	<p>2. Which organisational structures facilitates long-term and stable planning?</p>	<p>3. How can new and converted infrastructure be integrated into the urban and natural settings?</p>	<p>4. How can new infrastructure be experienced positively by the people of the region?</p>
<p>DELIVERY</p> <p>Creativity, an assured direction, cooperation and participation should be the essential features of the delivery process. The synthesis of these features leads to new social, cultural and institutional practices, and is supported and made concrete by countless decentralised projects.</p> <p>PARTICIPATION</p> <p>Participation refers to activities in society that encourage people and groups to get involved and actively participate in processes and decisions. By involving citizens early on in the process they will become the custodians and stakeholders of the process.</p> <p>INFORMATION</p> <p>Making information available to all participants also allows them to form an opinion about the project and also communicate it, making the process transparent.</p>	<p>NEW MANAGEMENT MODELS</p> <p>In terms of organisational structures, it is a matter of developing new management models that can be used to manage complex future tasks cooperatively.</p> <p>REGIONAL GOVERNANCE</p> <p>Management tasks which extend beyond the boundaries of local authorities, districts or specialist disciplines. Such tasks deliberately range beyond these boundaries and can increase a region's stability in the face of ecological, economic and social crisis or resilience.</p>	<p>INTEGRATED APPROACH</p> <p>An integrated perspective on nature and technology is required to show that while ecosystems are worth protecting in themselves, they also provide people, and not only those in the immediate environment, with very valuable services.</p> <p>RENATURALISATION</p> <p>Renaturalisation of the region cannot be about restoring its original natural condition. The landscape of past centuries cannot be recreated under today's conditions. Instead these watercourses will have to exist as urban waterways in this changed environment. Industry and housing have spread out and this is a major challenge for the ecological development of the waterways.</p> <p>CONFLICTS</p> <p>People will continue to make a diverse range of demands on the Thames in the future. The interest of nature conservation, flood protection and local recreation will not always be able to be accommodated without conflict. Sustainable changes to bodies of water that are compatible with all these uses must be made.</p>	<p>OPEN SPACE</p> <p>Free space in urban areas enables citizens to participate in the design of their region and create an ecological urban landscape.</p> <p>URBAN GREENING</p> <p>Enhancing Green and Blue Infrastructure in the region has the potential to create open spaces along the river, which local people can design and use as they like. For instance, so-called urban gardening has become popular in recent years and involves hobbyist gardeners planting flowers or vegetables in public spaces such as meadows and trees along the streets. This not only enhances the beauty of the urban environment but also improves the microclimate by adding fresh, green plants.</p> <p>QUALITY OF LIFE</p> <p>The ecological conversion of the area will also considerably improve quality of life by creating a self-contained local recreation area with walkways, bike paths and public green spaces that will attract both people of the region and tourists. The revitalising of the region will be accompanied by new cultural life along the river.</p>

5.5 Cross-Boundary Working

The South Essex LPAs of Basildon, Brentwood, Castle Point, Rochford, Southend-on-Sea and Thurrock, together with Essex County Council, have agreed to prepare a new Joint Strategic Plan (JSP) for the area. In January 2018, the Association of South Essex Local Authorities (ASELA) was formed, comprising Essex County Council and the local authorities of: Basildon; Brentwood; Castle Point; Rochford; Southend; and Thurrock. The authorities have embarked upon an ambitious process of developing a long-term growth ambition, which will underpin the strategic, spatial, infrastructure and economic priorities for the sub-region.

Many of the issues dealt with in the policy considerations cross administrative boundaries. It is therefore important that there is a mechanism to ensure these recommendations are implemented accordingly. For instance, the landscape, habitats and public rights of way do not stop at the administrative boundary. It is vital that the South Essex local planning authorities, regardless of their stage in plan-making, co-operate effectively and seek agreement on strategic cross-boundary issues as set out in the JSP Statement of Common Ground, June 2018.

The Statement of Common Ground has been prepared to support the Duty to Cooperate as required by national policy, it also sets out the project management arrangements for the JSP. The JSP is an iterative process, however, and this first stage SCG is being used by the Authorities as a 'pre-commencement' document for the JSP.

The benefits of Strategic Planning through the JSP include the following:

- Informs strategic infrastructure priorities +

discussions with neighbouring authorities and organisations

- Reflects wider growth and development aspirations for the area e.g. the Thames Estuary Plan, Housing need, Employment land
- Enables collaborative working across administrative boundaries and ensures that the Duty to Co-operate is met.

Other examples of cross boundary initiatives include:

Essex Planning Officers Association (EPOA) which is a main mechanism for cross-border cooperation.

Town and County Planning Association (TCPA): New Communities Group

The TCPA New Communities Group (NCG) was established in 2009 by TCPA and the Department for Communities and Local Government. Its members are ambitious local authorities and development corporations planning and delivering **exemplary large-scale new communities**, from Garden City inspired new towns and villages to urban regeneration and extension schemes. The current Ministry of Housing, Communities and Local Government and Homes England works closely with the Group to align support and learning for members.

The group collectively helps to develop plans, provide political support and encourage a sharing of knowledge and best practice through seminars, workshops, study visits, parliamentary briefings, ministerial meetings and newsletters. Together the group is providing innovative local leadership for plans delivering in the region of **280,500 new homes**.

Brentwood Borough Council is currently a member of the NCG and is also establishing a clear set of locally specific '**garden village**' principles to support the early stage work on spatial master planning and project development.

5.6 Next Steps

In order to make the vision set out in this strategy a reality, this GBI study must be incorporated into the South Essex JSP, and must cut across all aspects of planning, growth and development.

The next steps for taking forward the GBI strategy in the context of the JSP and Local Plans include the following:

South Essex Joint Spatial Plan

The Joint Spatial Plan will provide a high-level framework for the distribution of development across South Essex up to 2038 and will complement other work being undertaken by the Local Authorities. The adopted Plan will include an overall spatial strategy as well as contain strategic growth areas and policies setting out the amount of housing, employment and supporting infrastructure needing to be provided over the period to 2038, in aid of the delivery of the South Essex 2050 Ambition.

The benefits of Strategic Planning include:

- Inform strategic infrastructure priorities and discussions with neighbouring authorities and organisations
- Reflect wider growth and development aspirations for the area
- Enable collaborative working across administrative boundaries

Plan Process

The JSP will follow the following key stages:

SPATIALLY PLANNED PROCESS

TAB.20 Spatial Plan Process Key Stages

Issues and Options

- Collation of Evidence, including the GBI Strategy, to inform decisions
- Review Implications of any new policies and legislation e.g. Environment Bill and Agriculture Bill
- Consider infrastructure proposed/agreed/required including the viability and deliverability of proposals
- Identify potential growth areas
- Identify other initiatives of significance in the wider area e.g. Thames Estuary Plan, Neighbouring Authorities

Preferred Options

- Identify spatial strategy for development
- Prepare strategic policies for area
- Identify strategic growth areas

Sustainability Appraisal/Strategic Environment Assessment and Habitats Regulations Assessment

- Assess policies and options for growth against the evidence base
- Establish the likely significant effects of the proposals
- Determine the cumulative effects
- Identify necessary mitigation measures
- Outline reasons for the selection/rejection of options
- The SA/SEA/HRA will need to be carried out for each iteration of the Plan

Consultation on the Proposals

- Consultation will need to be carried out for each iteration of the Plan
- Review representations received and amend Plan and supporting information accordingly
- Report on how consultation has been taken into account in the Planning process.

Preparation of Publication Version of Plan

Submission of Plan for Examination

LOCAL PLAN PROCESSES

Local Plans

The individual Local Authorities are responsible for preparing the Local Plan for their area, which will be guided by the strategic policies and supporting evidence of the JSP.

Local Plan Process

The key stages of the Local Plan process are as follows:

TAB.21 Local Plan Process Key Stages

Issues and Options

- Use policies and proposals identified in JSP as starting point
- Review evidence base at Strategic level and identify any areas that may need to be updated/amended
- Collate evidence on GBI requirements and priorities at the local level to help determine local plan policies
- Engage with neighbouring authorities on proposals that cross boundaries to ensure that the Duty to Co-operate duties are fulfilled
- Ensure that site allocations reflect the policies and proposals in the JSP

Preferred Options

- Identify spatial strategy for development in local area
- Consider strategic policies in JSP that will impact Local Plan
- Prepare local policies for area
- Identify local growth areas
- Prepare Development Management Policies
- Test Viability and Deliverability of proposals
- Set framework for negotiations and management of development Developer contributions (see PAS guidance on Developer Contributions, February 2020)

Sustainability Appraisal/Strategic Environment Assessment and Habitats Regulations Assessment

- Assess policies and options for growth against the evidence base
- Establish the likely significant effects of the proposals
- Determine the cumulative effects
- Identify necessary mitigation measures
- Outline reasons for the selection/rejection of options
- The SA/SEA/HRA will need to be carried out for each iteration of the Plan

Consultation on the Proposals

- Consultation will need to be carried out for each iteration of the Plan
- Review representations received and amend Plan and supporting information accordingly
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	FIG.31 Flood Risk and Flood Defence Diagram: Island Wetlands	URBAN	-
	Flood Risk Areas	-	https://coastal.climatecentral.org/map/
	Essex & South Suffolk Shoreline Management Plan	-	"Essex and South Suffolk Shoreline Management Plan 2 "

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
	FIG.32 Existing & Proposed Intertidal Habitats Diagram: Island Wetlands	URBAN	-
	Existing & Proposed Intertidal Habitats	-	URBAN research + proposal
	Protected Areas - SAC, SPA, RAMSAR, SSSI, LoWs, LNRs	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Protected Areas - RSPB	-	https://www.rspb.org.uk/
	Protected Areas - Essex Wildlife Trust Sites	-	https://www.wildlifetrusts.org/
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
	FIG.33 Island Wetlands Opportunities	URBAN	-
	Island Wetlands	-	URBAN proposal
	Strategic Parks (proposed)	-	URBAN proposal
	Blue Ways	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Greenways (Primary, Secondary and Trails)	-	URBAN proposal + + AllTrails Map https://www.alltrails.com/
	England Coast Path (existing and proposed)	-	Natural England - England Coast Path Stretch Progress April 2020 + AllTrails Map https://www.alltrails.com/
	Indicative Water Routes	-	https://www.marinetraffic.com(Marine Live Map 200203_14:00)
	Activities - Marinas / Yacht Clubs / Sailing Clubs/River Crossing, Golf Courses,	-	GIS Data Source: Association of South Essex Local Authorities (ASELA) + Google Map
	Activities - Beach / Swimming	-	Google Map + MAGIC MAPS + https://www.thebeachguide.co.uk/south-east-england/essex/swimming
	Activities - Kite Surfing	-	The Beach Guide https://www.thebeachguide.co.uk/south-east-england/essex/kitesurfing
	Activities - Airfields & Airports	-	Airfields of Britain Conservation Trust: http://www.abct.org.uk/airfields/airfield-finder/ AND UK Airfields: http://www.ukairfields.org.uk/essex.html
	Activities - Kite Flying	-	Site: Essex Kite Park
	Activities - Indicative Dark Sky Discovery Site	-	URBAN proposal
	Heritage & Landmarks	-	URBAN research based on information received from ASELA
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
	FIG.34 Flood Risk and Flood Defence Diagram: Central Marshlands	URBAN	-
	Flood Risk Areas	-	https://coastal.climatecentral.org/map/
	Essex & South Suffolk Shoreline Management Plan	-	"Essex and South Suffolk Shoreline Management Plan 2 "
	Flood Management	-	Thames Estuary 2100 Plan 2012
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
	FIG.35 Existing & Proposed Habitats Diagram: Central Marshlands	URBAN	-

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE
	Existing & Proposed Marshland Habitats	-	URBAN research + proposal
	South Essex Marshes Boundary	-	Central South Essex Marshes Living Landscape, prepared by RSPB 2010
	South Essex Marshland Landscape Partnership Boundary	-	Turning the Tide: the South Essex Marshland Landscape Partnership, BY Essex County Council 2011
	Protected Areas - SAC, SPA, RAMSAR, SSSI, LoWs, LNRs	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Protected Areas - RSPB	-	https://www.rspb.org.uk/
	Protected Areas - Essex Wildlife Trust Sites	-	https://www.wildlifetrusts.org/
	Protected Areas - Explore Essex Sites	-	https://www.explore-essex.com/
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
FIG.36	Central Marshlands Opportunities	URBAN	-
	South Essex Marshes Boundary	-	Central South Essex Marshes Living Landscape, prepared by RSPB 2010
	South Essex Marshland Landscape Partnership Boundary	-	Turning the Tide: the South Essex Marshland Landscape Partnership, BY Essex County Council 2011
	Central Marshlands	-	URBAN proposal
	Country Parks	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Strategic Parks (proposed)	-	URBAN proposal
	Blue Ways	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Greenways (Primary, Secondary and Trails)	-	URBAN proposal + + AllTrails Map https://www.alltrails.com/
	England Coast Path (existing and proposed)	-	Natural England - England Coast Path Stretch Progress April 2020 + AllTrails Map https://www.alltrails.com/
	Urban Green Roadways/Railways	-	URBAN proposal
	Indicative Water Routes	-	https://www.marinetraffic.com(Marine Live Map 200203_14:00
	Activities - Marinas / Yacht Clubs / Sailing Clubs/River Crossing, Golf Courses	-	GIS Data Source: Association of South Essex Local Authorities (ASELA) + Google Map
	Ports	-	Google Map + MARINE TRAFFIC: https://www.marinetraffic.com/en/ais/home/centerx:0.4/centery:51.5/zoom:11
	Activities - Beach / Swimming	-	Google Map + MAGIC MAPS + https://www.thebeachguide.co.uk/south-east-england/essex/swimming
	Activities - Airfields & Airports	-	Airfields of Britain Conservation Trust: http://www.abct.org.uk/airfields/airfield-finder/ AND UK Airfields: http://www.ukairfields.org.uk/essex.html
	Activities -Kite Flying	-	Site: Essex Kite Park
	Activities - Ferry	-	URBAN proposal
	Heritage & Landmarks	-	URBAN research based on information received from ASELA
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
FIG.37	Flood Risk and Flood Defence Diagram: Central Woodland Arc	URBAN	-
	Flood Risk Areas	-	https://coastal.climatecentral.org/map/

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE
	Essex & South Suffolk Shoreline Management Plan	-	"Essex and South Suffolk Shoreline Management Plan 2 "
	Heritage & Landmarks	-	URBAN research based on information received from ASELA
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
	FIG.38 Existing & Proposed Habitats Diagram: Central Woodland Arc	URBAN	-
	Existing & Proposed Woodland Habitats	-	URBAN research + proposal
	Protected Areas - SAC, SPA, RAMSAR, SSSI, LoWs, LNRs	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Country Parks	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Woodlands	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
	FIG.39 Central Woodland Arc Opportunities	URBAN	-
	Central Woodlands Arc	-	URBAN proposal
	Country Parks	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Strategic Parks (proposed)	-	URBAN proposal
	Blue Ways	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Greenways (Primary, Secondary and Trails)	-	URBAN proposal + + AllTrails Map https://www.alltrails.com/
	England Coast Path (existing and proposed)	-	Natural England - England Coast Path Stretch Progress April 2020 + AllTrails Map https://www.alltrails.com/
	Airfields & Airports	-	GIS Data Source: Association of South Essex Local Authorities (ASELA) +
	Heritage & Landmarks	-	URBAN research based on information received from ASELA
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
	FIG.40 Existing & Proposed Habitats, Flood Risk and Flood Defence Diagram: Mardyke Valley and Brentwood Parklands	URBAN	-
	Existing & Proposed Parkland Habitats	-	URBAN research + proposal
	Flood Risk Areas	-	https://coastal.climatecentral.org/map/
	Flood Management	-	Thames Estuary 2100 Plan 2012
	Protected Areas - SSSI, LoWs, LNRs	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Protected Areas - RSPB	-	https://www.rspb.org.uk/
	Protected Areas - Essex Wildlife Trust Sites	-	https://www.wildlifetrusts.org/
	Protected Areas - Explore Essex Sites	-	https://www.explore-essex.com/
	Protected Areas - Woodland Trust Sites	-	https://www.woodlandtrust.org.uk/
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
	FIG.41 Mardyke Valley and Brentwood Parklands Opportunities	URBAN	-

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE
	Mardyke Valley and Brentwood Parklands	-	URBAN proposal
	Blue Ways	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Greenways (Primary, Secondary and Trails)	-	URBAN proposal + AllTrails Map https://www.alltrails.com/
	England Coast Path (existing and proposed)	-	Natural England - England Coast Path Stretch Progress April 2020 + AllTrails Map https://www.alltrails.com/
	Urban Green Roadways/Railways	-	URBAN proposal
	Indicative Water Routes	-	https://www.marinetraffic.com (Marine Live Map 200203_14:00)
	Golf Courses	-	URBAN research based on information received from ASELA
	Hot Air Balloon Sites, Ports	-	URBAN Research + Google Map
	Heritage & Landmarks	-	URBAN research based on information received from ASELA
	Opportunity for Children's Play Area, Existing Space to Improve Access and Facilities		Brentwood Borough Council Green Infrastructure Strategy 2015
	Basemap	-	GIS Data Source: OS Open Data +Association of South Essex Local Authorities (ASELA) + Google Satellite Map
② Build Landscape Connectivity	FIG. 42 Greenway Seawall promenade [...]	Christer Waara / CBC	-
	FIG.43 Horse-riding in Essex	https://www.spainshallestate.co.uk/newpage1	-
	FIG.44 Cyclists in Greenway	Cycle Superhighways, Capital Region of Denmark	-
	FIG.45 Key Moves: Building Landscape Connectivity [...]	URBAN	-
	Existing Green Open Space	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Blue Ways	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Greenways (Primary, Secondary and Trails)	-	URBAN proposal + AllTrails Map https://www.alltrails.com/
	England Coast Path (existing and proposed)	-	Natural England - England Coast Path Stretch Progress April 2020 + AllTrails Map https://www.alltrails.com/
	Urban Green Roadways/Railways	-	URBAN proposal
	Key Destinations - RSPB	-	https://www.rspb.org.uk/
	Key Destinations - Essex Wildlife Trust Sites	-	https://www.wildlifetrusts.org/
	Key Destinations National Trust Sites	-	https://www.nationaltrust.org.uk/
	Key Destinations - Explore Essex Sites	-	https://www.explore-essex.com/
	Key Destinations - Woodland Trust Sites	-	https://www.woodlandtrust.org.uk/
	Key Destinations - Nature Reserves	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Activities - Marinas / Yacht Clubs / Sailing Clubs/River Crossing, Golf Courses, Hot Air Balloon Sites	-	GIS Data Source: Association of South Essex Local Authorities (ASELA) + Google Map
	Activities -Beach / Swimming	-	Google Map + MAGIC MAPS + https://www.thebeachguide.co.uk/south-east-england/essex/swimming
	Activities - Kite Surfing	-	The Beach Guide https://www.thebeachguide.co.uk/south-east-england/essex/kitesurfing

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE
	Activities -Ports	-	Google Map + MARINE TRAFFIC: https://www.marinetraffic.com/en/ais/home/centerx:0.4/centery:51.5/zoom:11
	Activities -Airfields & Airports	-	Airfields of Britain Conservation Trust: http://www.abct.org.uk/airfields/airfield-finder/ AND UK Airfields: http://www.ukairfields.org.uk/essex.html
	Activities -Ferries	-	URBAN research + proposal
	Activities - Kite flying	-	Essex Kite Park
	Activities - Indicative Water Routes	-	https://www.marinetraffic.com (Marine Live Map 200203_14:00)
	Water Restoration - Waterbodies + Flood Zone 2&3	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Agricultural Land	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Basemap	-	GIS Data Source: OS Open Data + Association of South Essex Local Authorities (ASELA)
	FIG.46 Utilising existing greenways networks [...]	URBAN	-
	FIG.47 The Great Fen [...]	https://www.greatfen.org.uk/explore/all-terrain-tramper	-
	FIG.48 A network of 14 citywide pedestrian and cycle routes [...]	https://vancouver.ca/images/	-
	FIG.49 Opportunities for horse-riding in urban parks	MAHMOUD TAMIMI, Flickr	-
	FIG.50 Family Walk on green street in Essex	https://barnimages.com/walking-a-dog/	-
	FIG.51 Public Connectors: Primary Greenways	URBAN	-
	FIG.52 Public Connectors: Secondary Greenways	URBAN	-
	FIG.53 Public Connectors: Existing Routes through Rural Areas to be enhanced	URBAN	-
	FIG.54 Outdoor services, like Essex Outdoors [...]	https://www.essexoutdoors.com/	-
	FIG.55 Passenger ferries in Vancouver Canada[...]	URBAN	-
	FIG.56 Paddleboarding clubs in South Essex	https://www.essexmums.com/localistings/listings/supsect-stand-up-paddleboard-south-essex-club-tuition/	-
	FIG.57 Tilbury Docks active waterfront [...]	https://mfame.guru/wp-content/uploads/2016/08/ship.jpg	-
	FIG.58 IJburg Amsterdam floating neighbourhood [...]	https://www.e-architect.co.uk/images/jpgs/amsterdam/drijvende_woning_de_boomhut_s060412_ke1.jpg	-
	FIG.59 Blue Connectors: Urban Shoreline	URBAN	-
	FIG.60 Blue Connectors: Industrial /Wetland Area	URBAN	-

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE
	FIG.61 The grey heron will be protected and celebrated	https://ih1.redbubble.net/image.7750259.1312/flat,800x800,075,f.jpg	-
	FIG.62 Allotment gardens contribute to urban wildlife connectivity	https://static.wixstatic.com/	-
	FIG.63 Water vole will be supported in South Essex	SAMUEL BAYLIS /The Mammal Society	-
	FIG.64 Back garden wildlife network - badger	https://media.mnn.com/assets/images/2015/10/richard_peters_badger.jpg.1080x0_q100_crop-scale.jpg	-
	FIG.65 Hockley Woods [...]	http://hockleywoods.com/wp-content/uploads/2012/02/bluebells-hockley-woods.jpg	-
	FIG.66 Wildlife Connectors: Rural areas have great potential to support wildlife species	URBAN	-
	FIG.67 Wildlife Connector: Urban areas too can support South Essex's target species	URBAN	-
	FIG.68 Roadside verges transformed into biodiversity rich zones	https://www.adaptnetwork.com/environment/rotherham-8-mile-river-of-flowers-support-wildlife/	-
	FIG.69 Net positive biodiversity achieved along railways	G-Man G-Man	-
	FIG.70 Fauna Passage, Vandel, Denmark	NatureEyes/Lars S. Madsen	-
	FIG.71 Wildlife Road Connectors with Tunnel	URBAN	-
	FIG.72 Wildlife Railway Connector with Green Bridge	URBAN	-
③ Integrate Water Management Systems	FIG.73 Yanweizhou Park in Jinhua, eastern China, in dry conditions	https://waterbucket.ca/gi/2017/11/20/china-is-building-30-sponge-cities-that-aim-to-soak-up-floodwat	-
	FIG.74 Yanweizhou Park in Jinhua, eastern China, designed to be flooded, provides an interesting precedent	https://waterbucket.ca/gi/2017/11/20/china-is-building-30-sponge-cities-that-aim-to-soak-up-floodwat	-
	FIG.75 Canvey Island flood, 1953 [...]	https://beyondcanvey.files.wordpress.com/2013/01/canveyisland1953.jpg	-

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE
	FIG.76 Wallasea Island Wild Coast project [...]	https://www.ice.org.uk/getattachment/What-is-civil-engineering/What-do-civil-engineers-do/wallasea-island-wild-coast-project/RSPB-Breach-1-Jubilee-Marsh-Oct-2016.jpg.aspxcanveyisland1953.jpg	-
	FIG.77 Walking trail at RSPB Wallasea Island [...]	URBAN	-
	FIG.78 Key Moves: Integrate Water Management Systems	URBAN	-
	Flood Risk	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Activity- Beach/ Swimming	-	Google Map + MAGIC MAPS + https://www.thebeachguide.co.uk/south-east-england/essex/swimming
	Activity- Marinas / Yacht Clubs/Sailing Clubs	-	GIS Data Source: Association of South Essex Local Authorities (ASELA) + Google Map
	Activity - Kite Surfing	-	The Beach Guide https://www.thebeachguide.co.uk/south-east-england/essex/kitesurfing
	Flood Management	-	Thames Estuary 2100 Plan 2012
	Essex & South Suffolk Shoreline Management Plan	-	"Essex and South Suffolk Shoreline Management Plan 2 "
	Basemap	-	GIS Data Source: OS Open Data + Association of South Essex Local Authorities (ASELA)
	FIG.79 East Beach Park, South Essex Coast	URBAN	-
	FIG.80 Griffintown Canal [...]	https://savegriffintown.files.wordpress.com/2008/03/image23.jpg	-
	FIG.81 Canvey Island Flood Defence [...]	URBAN	-
	FIG.82 Waterfront at Shoebury Common Beach	URBAN	-
	FIG.83 Shoreline: in areas of agriculture	URBAN	-
	FIG.84 Shoreline: in urban areas	URBAN	-
	FIG.85 Waking Boatyard	URBAN	-
	FIG.86 River Crouch Sailing Club	https://www.eyottsailingclub.org.uk/	-
	FIG.87 South Essex enjoys many rivers, creeks and ponds [...]	URBAN	-
	FIG.88 Shaanxi Wetland Park [...]	https://waterbucket.ca/gi/2017/11/20/china-is-building-30-sponge-cities-that-aim-to-soak-up-floodwat	-
	FIG.89 Waterway in Rural Area	URBAN	-
	FIG.90 Waterway in Urban Area	URBAN	-
	FIG.91 New developments will incorporate flood attenuation [...]	https://www.urbangreenbluegrids.com/projects/hammarby-sjostad-stockholm-sweden/	-

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE
	FIG.92 Hammarby Sjostad [...]	https://www.urbangreenbluegrids.com/projects/hammarby-sjostad-stockholm-sweden/	-
	FIG.93 Bioswale design	https://www.reliance-foundry.com/wp-content/uploads/bioswale-design.jpg	-
	FIG.94 Stormwater Management Urban Area	URBAN	-
	FIG.95 Urban Water Management	URBAN	-
④ Harmonise Agricultural Use	FIG.96 Farm-to-table dinner in the orchard, Frecon Farms	https://www.ciderculture.com/articles/page/52/	-
	FIG.97 Hope Farm, RSPB site [...]	www.rspb.org.uk	-
	FIG.98 Flood protection [...]	www.ucanr.edu	-
	FIG.99 Key Moves: Current Agriculture Land [...]	URBAN	-
	Rivers & Waterbodies, Agricultural Land	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Stewardship Agreements	-	MAGIC Maps - https://magic.defra.gov.uk/MagicMap.aspx
	Basemap	-	GIS Data Source: OS Open Data + Association of South Essex Local Authorities (ASELA)
	FIG.100 Hedgerows support wildlife	https://www.rspb.org.uk/globalassets/images/farming/1009364-hedgerow.jpg	-
	FIG.101 Farms are the largest user of land in South Essex [...]	URBAN	-
FIG.102 Rural hedgehogs in the UK [...]	https://phys.org/news/2018-01-humble-hedgehog-british-gardens-countryside.html	-	
FIG.103 Priority Habitats and Species within South Essex	URBAN	-	
FIG.104 Samphire cultivation in estuaries and salt marshes	http://www.mygardeningnetwork.com/wp-content/uploads/2017/04/samphire-cultivation-at-home.jpg	-	
FIG.105 Red poll cattle [...]	http://alanwoodseurope2010.blogspot.com/2010/06/uggeshall-red-polls-on-their-home-turf.html	-	
FIG.106 Constructed wetlands and ponds [...]	https://enfielddispatch.co.uk/wp-content/uploads/2018/10/Firs-Farm-Wetlands-10.jpg	-	
FIG.107 Agriculture in Marsh Areas	URBAN	-	

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE	
	FIG.108 Agriculture in Marsh Area, Flooding in Winter Months	URBAN	-	
	FIG.109 Luxury glamping at the Essex Sausage and Cider Festival	https://www.gigsandtours.com/content/v-festival-lux-camp	-	
	FIG.110 Alpacas are a delightful discovery in South Essex fields	URBAN	-	
	FIG.111 School visit to Apricot Centre	https://www.permaculture.co.uk/sites/default/files/images/School-visit-at-Apricot-Centre.jpg	-	
	FIG.112 Rolling agricultural fields in South Essex [...]	URBAN	-	
	FIG.113 Vineyards in Essex [...]	https://4fmz4447iq3op9jurtw7721a-wpengine.netdna-ssl.com/wp-content/uploads/2017/02/West-Street-Vineyard-1.jpg	-	
	FIG.114 Public Connectors: Existing routes through rural areas to be enhanced	URBAN	-	
	FIG.115 Agri-tourism: Sustainable farm and recreational trails	URBAN	-	
⑤ Reveal Unique Landscape Features	FIG.116 Emscher Landscape Park [...]	By Carschten - Own work, CC BY-SA 3.0 de, https://commons.wikimedia.org/w/index .	-	
	FIG.117 South Downs National Park [...]	South Downs National Park Authority	-	
	FIG.118 Historic Map of South Essex, 1777	URBAN	-	
		Historic map layer within South Essex boundary	www.map-of-essex.uk	Map of the County of Essex 1777 by John Chapman & Peter André
		Basemap	-	GIS Data Source: OS Open Data + Association of South Essex Local Authorities (ASELA)
	FIG.119 The ancient Hadleigh Castle [...]	URBAN	-	
	FIG.120 Hole Haven iconic industrial structure [...]	bing images photo	-	
	FIG.121 Norsey Ancient Woodland	https://www.norseywoodsociety.uk/birds	-	
FIG.122 Mountnessing Post Mill	https://www.shutterstock.com/search/upminster	-		
FIG.123 Key Moves: Embrace Heritage and Landmarks	URBAN	-		
FIG.124 View from Hadleigh Castle over the marshes towards the River Thames	URBAN	-		
FIG.125 Southend Pier	blogspot.com photo	-		
FIG.126 Canvey Island, low-lying land provides expansive views	URBAN	-		
FIG.127 Key Moves: Promote Views	URBAN	-		
FIG.128 Spectacular sky views from Hadleigh Park [...]	URBAN	-		

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE	
	FIG.129 The South Essex waterfronts [...]	URBAN	-	
	FIG.130 The east end of South Essex, towards the Crouch River and North Sea [...]	Dave Head, shutterstock	-	
	FIG.131 Indicative Dark Night Skies Designations Map	URBAN	-	
⑥ Plan for Growth and Development	FIG.132 London Wetland Centre [...]	https://www.wwt.org.uk/wetland-centres/london/	-	
	FIG.133 Sustainably planned waterside community [...]	https://farm1.static.flickr.com/202/472791326_dc260af7ac.jpg	-	
	FIG.134 Floating homes at Granville Island [...]	URBAN	-	
	FIG.135 GBI Strategic Plan	URBAN	-	
		Key Moves - Parkland	-	URBAN proposal
		Agriculture Land, Watercourses, and Green Open Spaces	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
		England Coast Path (existing and proposed)	-	Natural England - England Coast Path Stretch Progress April 2020 + AllTrails Map https://www.alltrails.com/
		Primary Greenways (existing and proposed)	-	URBAN proposal + AllTrails Map https://www.alltrails.com/
		Recreational Loops (existing and proposed)	-	URBAN proposal + AllTrails Map https://www.alltrails.com/
		Basemap	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	FIG.136 Proposed Development Sites Map			
		Development Sites	-	Local Plans
		Key Moves - Parkland	-	URBAN proposal
		Agriculture Land, Watercourses, and Green Open Spaces	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
		England Coast Path (existing and proposed)	-	Natural England - England Coast Path Stretch Progress April 2020 + AllTrails Map https://www.alltrails.com/
	Primary Greenways (existing and proposed)	-	URBAN proposal + AllTrails Map https://www.alltrails.com/	
	Recreational Loops (existing and proposed)	-	URBAN proposal + AllTrails Map https://www.alltrails.com/	
	Basemap	-	GIS Data Source: OS Open Data + Association of South Essex Local Authorities (ASELA)	
	FIG.137 Belhus Woods Country Park	URBAN	-	
	FIG.138 Basildon Heritage Trail	URBAN	-	
	FIG.139 Hockley Woods	http://hockleywoods.com/	-	
	FIG.140 Parkland view in Southend	URBAN	-	
	FIG.141 Urban Green and Blue Infrastructure	URBAN	-	
	FIG.142 Urban Green and Blue Infrastructure, continued	URBAN	-	
	FIG.143 Walkability Radius	URBAN	-	
	FIG.144 Open Space Hierarchy	URBAN	-	
3.2 GBI Layout	FIG.145 Proposed Primary Greenways	URBAN	-	

SECTION	FIGURE NUMBER	IMAGE CREDIT	REFERENCE/SOURCE
	England Coast Path (existing and proposed)	-	Natural England - England Coast Path Stretch Progress April 2020 + AllTrails Map https://www.alltrails.com/
	Primary Greenways (existing and proposed)	-	URBAN proposal + AllTrails Map https://www.alltrails.com/
	Recreational Loops (existing and proposed)	-	URBAN proposal + AllTrails Map https://www.alltrails.com/
	Parkland	-	URBAN proposal
	Agriculture Land, Watercourses, and Green Open Spaces	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Basemap	-	GIS Data Source: OS Open Data + Association of South Essex Local Authorities (ASELA)
	FIG.146 Proposed GBI Layout: South Essex	URBAN	-
	Development Sites	-	Local Plans
	Proposed Parklands	-	URBAN proposal
	Existing Green Open Spaces, Agriculture land	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Roadways- Urban Green Roadways	-	URBAN proposal
	Railways- Urban Green Railways	-	URBAN proposal
	Primary & Secondary Green Crossings		Thames Gateway South Essex Green Grid Strategy 2005
	Blueways- Blueways	-	GIS Data Source: OS Open Data
	Blueways- Ferry Crossings	-	URBAN research + proposal
	Greenways (existing/proposed)	-	URBAN proposal + AllTrails Map https://www.alltrails.com/
	Strategic Parks (proposed)	-	URBAN proposal + Thames Gateway South Essex Green Grid Strategy 2005
	Strategic Parks (existing)	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Key Destinations - RSPB	-	https://www.rspb.org.uk/
	Key Destinations - Essex Wildlife Trust Sites	-	https://www.wildlifetrusts.org/
	Key Destinations National Trust Sites		https://www.nationaltrust.org.uk/
	Key Destinations - Explore Essex Sites	-	https://www.explore-essex.com/
	Key Destinations - Woodland Trust Sites	-	https://www.woodlandtrust.org.uk/
	Key Destinations - Nature Reserves	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Activities - Marinas / Yacht Clubs / Sailing Clubs/River Crossing, Golf Courses, Hot Air Balloon Sites	-	GIS Data Source: Association of South Essex Local Authorities (ASELA) + Google Map
	Activities - Beach / Swimming	-	Google Map + MAGIC MAPS + https://www.thebeachguide.co.uk/south-east-england/essex/swimming
	Activities - Kite Surfing	-	The Beach Guide https://www.thebeachguide.co.uk/south-east-england/essex/kitesurfing
	Activities - Ferries	-	URBAN research + proposal
	Activities - Ports	-	Google Map + MARINE TRAFFIC: https://www.marinetraffic.com/en/ais/home/centerx:0.4/centery:51.5/zoom:11
	Activities - Airfields & Airports	-	Airfields of Britain Conservation Trust: http://www.abct.org.uk/airfields/airfield-finder/ AND UK Airfields: http://www.ukairfields.org.uk/essex.html

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	Activities - Kite Flying	-	Essex Kite Park
	Key Landmarks	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	View Points	-	URBAN research + Information from ASELA
	Basemap	-	GIS Data Source: OS Open Data + Association of South Essex Local Authorities (ASELA)
	FIG.147 Proposed GBI Layout: Basildon and Castle Point	URBAN	(Layer Sources please refer to FIG.146)
	FIG.148 Proposed GBI Layout: Rochford and Southend-on-Sea	URBAN	(Layer Sources please refer to FIG.146)
3.3 A Day in the Life	FIG.149 A SEE Park app allows people to understand the landscape in real-time [...]	URBAN	-
	FIG. 150 Green Loops	URBAN	-
	Recreational Loops (existing and proposed)	-	URBAN proposal + AllTrails Map https://www.alltrails.com/
	England Coast Path (existing and proposed)	-	Natural England - England Coast Path Stretch Progress April 2020 + AllTrails Map https://www.alltrails.com/
	Thames Chase Community Forest	-	The Thames Chase Plan 2014
	Parkland	-	URBAN proposal
	Agriculture Land, Watercourses, and Green Open Spaces	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
	Basemap	-	GIS Data Source: Association of South Essex Local Authorities (ASELA)
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	FIG.152 Essex Local Plan Tracker	URBAN	Adapted by Jam Consult
	FIG.153 Marston Vale Community Forest	Bluesky UK Tree Map, https://www.geospatialworld.net/news/bluesky-uk-tree-map-assists-community-forest-rebuilding-environment/	-
	FIG.154 London National Park City	Roman Hobler, https://www.flickr.com/photos/hobler/27820513163	-
	FIG.155 Emscher Landscape Park	Tobias Arnst, de.wp	-
	FIG.156 XiXi National Wetland Park	https://www.chinadiscovery.com/zhejiang/hangzhou/xixi-national-wetland-park.html	-
	FIG.157 River Ijssel	Paul Oostveen, http://www.dronestagr.am/high-water-in-the-river-ijssel-netherlands-2/	-
	FIG.158 Loch Lomond National Park	https://www.loch-lomond-waterfront.co.uk/about-us/	-

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	FIG.160 Vancouver Greenways	Christer Waara / CBC	-

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