



# **Essex Climate Action Commission: Land Use & Green Infrastructure**

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## **Technical Annex**

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# The Special Interest Group:

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*NB: Where possible this paper has been written in plain English but by nature of the subject matter it contains sustainability concepts and jargon explained in Appendix 1: Glossary*

# Land Use & Green Infrastructure

## 1. Summary

The Land Use & Green Infrastructure Special Interest Group has been meeting since July 2020 and has developed recommendations for a Land Use & Green Infrastructure Climate Action programme, covering both the whole County and a Climate Focus Area within the County.

The objective of the Land Use & Green Infrastructure Climate Action (LUGICA) programme is to achieve a transformation in land management in Essex that delivers net zero carbon as quickly as possible and to do it in a way that also delivers multiple benefits such as net gain for biodiversity, improved soil health, improved air quality, reduced flooding, reduced urban heat island effect, and improved amenity, liveability and wellbeing of Essex communities.

It is recommended that the catchments of the Blackwater and Colne Rivers are the Climate Focus Area, covering approximately 30% of Essex. The catchments form a natural transect from inland headwaters, to middle catchment rivers to coastal estuaries. In this way the Climate Focus Area acts as a demonstration site for rolling out ambitious far-reaching strategies to achieve net zero carbon targets and recover biodiversity.

The core recommendation of the Land Use & Green Infrastructure Climate Action programme is that by 2050, 30% of land in Essex is defined as Natural Green Infrastructure and is being managed for nature, and 100% of farmland and other non-farmed land is being managed according to sustainable principles. The idea of the Climate Focus Area is to reach these climate action targets quicker through a focusing of effort and resource, to trial and test new approaches, and to act as a pilot and pathfinder to the rest of the County. There are recommended targets for steps along the way to 2050 to ensure the bulk of the work to deliver net zero is achieved by 2030.

The purpose of the ambitious Green Infrastructure target is not only to help deliver net zero carbon, but at the same time deliver widescale ecosystem restoration through nature recovery networks in the county where habitats for wildlife are bigger, better and more joined up.

More than 60% of Essex is farmland so a critical part of the Land Use & Green Infrastructure Climate Action programme is to engage and catalyse farmers and landowners to adopt “sustainable land stewardship” practices.

Managing more land in Essex for nature and managing other land sustainably will contribute significantly to improved ecosystem function across landscapes, which in turn, will promote resilience and sustained provision of ecosystem services. This will

happen in rural areas and will promote substantial “greening” of our towns, villages, and new developments.

There is a role for everyone to play to make this happen, not just farmers and landholders. Local authorities, parishes, communities, businesses and individuals in Essex can all make a difference through the way they manage their land – from public spaces to private gardens, roofs and window boxes – through engagement with their local communities, and through their purchasing power and food choices.

The Land Use & Green Infrastructure Climate Action programme proposal is a ground-breaking proposal in the UK, recommending a change in the way we manage our natural assets, the Essex farmland, our coast, and the places we live. It proposes a better and more sustainable way of living now and for future generations.

## 2. Background to Climate Change in Essex

### 2.1 The Current Situation in Essex

Essex is one of the most developed counties in England, with low coverage of “natural” areas, a highly farmed landscape, and a population of 1.9 million people and growing fast. Over the last century it has seen the removal of woodlands and hedgerows, the ploughing of meadows, the loss of freshwater and salt marshes and the extension of its rural towns and villages into large urban conurbations. The erosion of its natural habitats threatens the very existence of numerous species in Essex.

Essex is facing substantial climate change challenges relating to its land use and green infrastructure in the high impact scenarios:

- Most of Essex will experience a 4.4 degree rise in summer temperatures by 2050 compared to 1981-2000 in the high impact scenario (UKP Regional)
- By 2099 the mean impact forecast for Essex (based on Tollesbury) is for a 0.45 metre rise in average sea level
- Essex already has substantial issues with coastal and surface water flooding, and over the next 30 years, this risk is projected to double without additional adaptation action
- In a high emissions scenario, Grade 2 (very good) and 3 (good) agricultural land, which represents most of Essex farmland, will be reduced to Grade 4 (poor)

In recent years there has been a realisation globally that halting the loss of natural, undeveloped areas and creating new ones combined with adapting land management practices can deliver multiple benefits. These include reducing emissions of carbon and creating ways to absorb more carbon, increasing biodiversity and improving the health of ecosystems, reducing flooding, lowering air pollution and improving human health and wellbeing. In order to achieve this, Essex needs to consider an ambitious Climate Action programme, as set out in this paper.

## 2.2 The Essex Land Use and Green Infrastructure Climate Action programme: Aim and Objectives

The overall Aim for the Land Use and Green Infrastructure Climate Action programme is:

*“to achieve net zero carbon as quickly as possible for the whole of Essex and to do it in a way that also delivers multiple benefits such as net gain for biodiversity, improved soil health, improved air quality, reduced flooding, reduced urban heat island effect, and improved amenity, liveability and wellbeing of Essex communities.”*

The LU&GI Climate Action programme has 4 overall Objectives addressing the land and agriculture change.

1. To achieve net zero carbon across the whole of Essex before 2050
2. To create a Climate Focus Area (CFA) which will achieve net zero by 2040 becoming a pilot and exemplar.
3. To promote Sustainable Land Stewardship and “Natural Green Infrastructure” which will both absorb carbon by increasing organic matter in plants, roots and organic soil matter and lower carbon emissions by reducing energy and chemical inputs.
4. To ensure the substantial proposed landscape scale changes also delivers multiple benefits such as net gain for biodiversity, improved soil health, improved air quality, reduced flooding, reduced urban heat island effect, and improved amenity, liveability, and wellbeing of Essex communities.

## 2.3 The Climate Change Challenge for Agriculture and Land Use

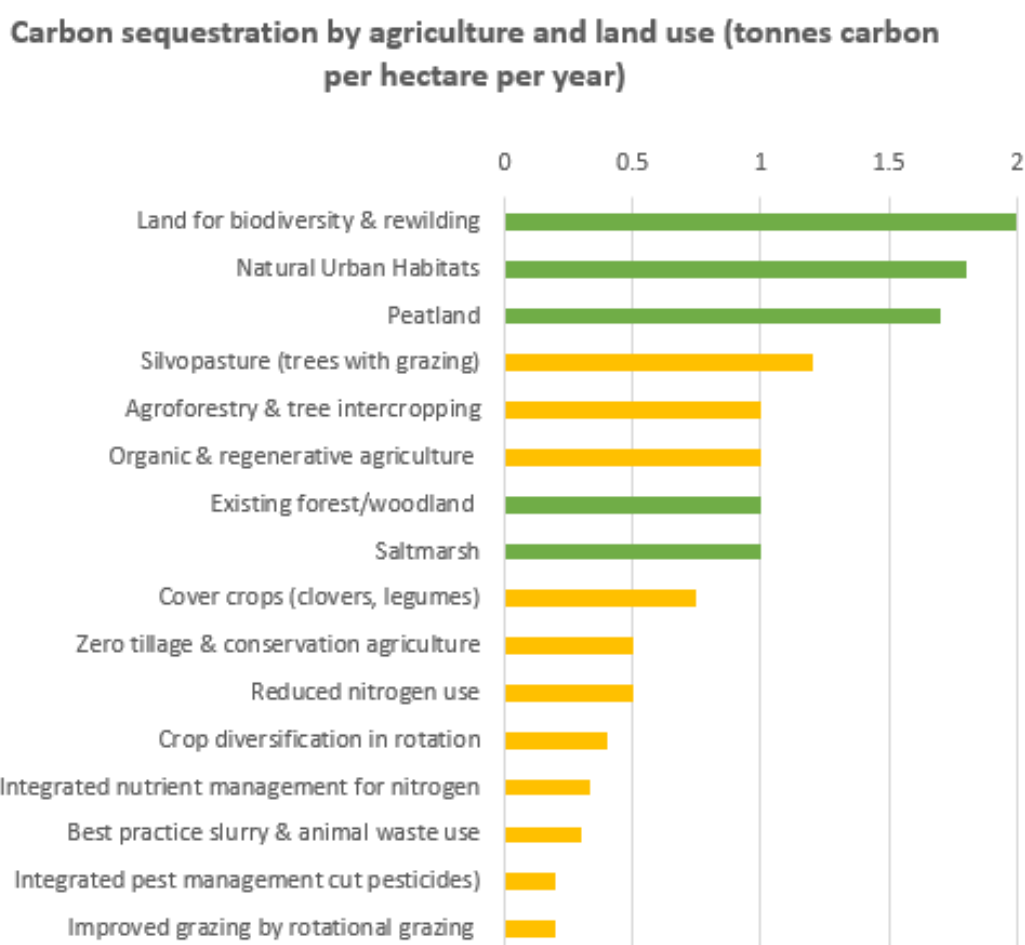
Agriculture and land use contribute 24% of CO<sub>2</sub>eq emissions (IPCC). There are numerous strategies for lowering global carbon emissions from agriculture and land use by changing land management practices, set out in Table 1 below. Most of those shown could be described as Sustainable Land Stewardship. The exceptions in the table are biodiversity and rewilding, forestry and woodlands, peatlands and salt marsh and these can be described as Natural Green Infrastructure. It is notable that the three most potent land use changes to sequester carbon all include Natural Green Infrastructure changes.



A second strategy to reduce emissions is a personal strategy to shift demand for foods with lower emissions through changes in personal diets and other personal choices and behaviours, set out in section 7.2.1.

## 2.4 Sustainable Land Stewardship

The majority of the farm systems set out in Table 1 can be described as Sustainable Land Stewardship: for example, low or no-tillage farming practices, organic and regenerative agriculture and agroforestry. The broad principles defining Sustainable Land Stewardship are summarised here (see also Appendix 1)



**Table 1:** Carbon sequestration by agriculture and land use. For references please see Appendix 9: Carbon Footprint Schedules for Individual Behaviours and Agriculture/Land Use

1. Use of crop and animal varieties that lessen the need for chemical inputs such as fertilisers and pesticides, which have adverse effects on the environment and human health.
2. Incorporating natural biological processes as much as possible into land management and agriculture to increase fertility and pest control.
3. Reducing physical processes and chemical technologies that have adverse impacts on ecosystem functioning and human health.
4. Using local human knowledge and resources in land stewardship and ecosystem restoration wherever possible.
5. Reducing overall use of valuable natural resources and enhancing environmental practices that support adaptation to climate change and avoid exacerbating carbon emissions.

Sustainable Land Stewardship can improve carbon absorption by increasing microbial activity in soils and storing greater amounts of organic matter in soils. Less intensive use of mechanisation in low or no-tillage and chemical input systems can further lower carbon emissions. As a result, wildlife and water systems are less likely to be damaged, more carbon will be locked into the land, less carbon will be used to manage the land and human health will benefit through more nutritious foods and a healthier environment.



**RECOMMENDATION 1: LAND USE - Farmland in Essex adopt Sustainable Land Stewardship practices: 50% by 2030; 75% by 2040 and 100% by 2050**

## 2.5 The Role of Biodiversity and Climate Change

It is widely accepted both internationally, and in the UK that conservation and enhancement of biodiversity are critical to tackling climate change. The loss of biodiverse areas releases carbon into the atmosphere, and increasing biodiverse areas sequesters carbon back into nature.

The International Convention on Biological Diversity will consider proposals in 2021 to protect at least 30% of the world's lands and seas by 2030. The UN launched the UN Decade for Ecosystem Restoration in April 2021. The EU has committed to protect 30% of land and seas by 2030 to halt the decline of biodiversity and restore carbon sinks to address climate change. And the UK announced a pledge in September 2020 to protect 30% of the UK's land by 2030.



## 2.6 Natural Green Infrastructure (NGI) in Essex

Essex hosts a variety of important habitats and landscapes including 1,978 designated sites which receive some level of protection. They include:

- 2 Areas of Outstanding Natural Beauty (AONB's)
- 12 Special Protection Areas
- 86 Sites of Special Scientific Interest
- 11 Ramsar Sites
- 3 Special Areas of Conservation
- 1 Marine Conservation Zone
- 7 National Nature Reserves
- 1,707 Local Wildlife Sites
- 49 Local Nature Reserves
- 1 Community Forest
- 100 Special Roadside Verges

There are also a large number of natural sites that are not designated, and these were recorded by the Essex Green Infrastructure Strategy 2020.

In 2020, ECC published the Green Infrastructure Strategy setting our Green infrastructure ambitions in Essex and importantly defined the different types of Green Infrastructure across Essex.

Working with the University of East Anglia, the Green Infrastructure study mapped the different types of Green Infrastructure and the following are those which can be described as Natural Green Infrastructure (NGI). This is a more accurate indication of “natural” areas in Greater Essex and includes:

- Natural and semi-natural open space (grasslands, heathland, scrub and woodland)
- Country parks
- Ancient Woodland
- Reservoirs, lakes, and ponds
- Coastal features (beaches, sand dunes, rocks, foreshore, tidal water, saline water)

Natural Green Infrastructure also exists in and around other land use area such as:

- Urban areas
- Non-farmed land such as horse pasture, golf courses, former landfill or extraction land, operational land managed by large statutory undertakers or corporates etc.
- Residential housing and light industrial areas
- Roads and the Public Realm

In such areas existing Natural Green Infrastructure exists in the form of rough grassland, scrub, regenerating woodlands, secondary woods, ancient woods, old ponds, marshland, golf course “rough” areas, wild road and railway verges, derelict land and derelict allotments and gardens.

The Green infrastructure Strategy stated Natural Green Infrastructure covers 518 km<sup>2</sup> or 14% of Greater Essex

### **Nature Benefits**

- Natural landscapes are essential to absorbing carbon and creating a net zero environment
- Biodiversity is fundamental for the effective functioning of natural ecosystems
- Healthy natural ecosystems provide humanity with essential benefits and services to thrive
- Landscapes rich in biodiversity have the necessary resilience to survive change and catastrophic disturbances, especially flooding and extreme heat events
- Degraded ecosystems are less able to support our living landscape, our farmlands, our woods, and our community spaces
- The state of nature in the UK is in crisis and land use practice is a large contributing factor

### **Making Space for Nature**

- To flourish nature needs space, naturalness and connectivity. New studies suggest protecting 30% of priority areas and existing natural ecosystems

could safeguard 70% of species from extinction and also sequester a substantial amount of carbon dioxide<sup>1</sup>

- The UN and UK Government pledge to protect at least 30% of land and sea by 2030<sup>2 3</sup>
- Essex to commit to the global 30 x 30 strategy

**RECOMMENDATION 2: BIODIVERSITY - 30% of all Land in Essex will enhance biodiversity and the natural environment by creating Natural Green Infrastructure: 25% by 2030 and 30% by 2040**

**By 2030 Proposals**

- To meet the target of 30% for nature recovery by creating an additional 585km<sup>2</sup> of natural green infrastructure, bringing the total area across Essex to 1,103km<sup>2</sup>
- Create a Nature Recovery Network, using natural river corridors, the coast, other green linear features and new green infrastructure to establish effective interlinked wildlife corridors across the County
- Integrate nature gain strategies into planning and management of all working and cultural landscapes
- Each parish to produce a complementary and integrated biodiversity action plan

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<sup>1</sup> Strassburg, B.B.N., Iribarrem, A., Beyer, H.L. et al. Global priority areas for ecosystem restoration. Nature 586, 724–729 (2020)

<sup>2</sup> <https://www.leaderspledgefornature.org/>

<sup>3</sup> <https://www.gov.uk/government/news/pm-commits-to-protect-30-of-uk-land-in-boost-for-biodiversity>

### 3. Role of Nature based Solutions in Flood Management & Water Conservation

Nature based solution for Flood Management have many benefits:

- Nature based flood solutions create large areas of Natural Green Infrastructure
- Natural Green Infrastructure allows water to percolate into groundwater improving water quality and reserves
- Natural Green Infrastructure acts as a huge sponge for water: growing plants sucking up water and organic soils absorbing water
- Linear River and Coastal nature-based flood schemes create wildlife corridors which enhance biodiversity and contribute to Nature Recovery Networks
- Natural Green Infrastructure supports water conservation in the landscape, tackling increasing water scarcity and drought



We will develop Integrated Water Management Solutions through Natural Flood Management approaches to:

- Reduce flood risk
- Accumulate carbon
- Enhance biodiversity
- Restore degraded ecosystems
- Support River Basin Management Plans and WFD targets.



We will improve resilience to sea level rise through: restoration and creation of new mudflats, salt marsh and wash lands, natural sea barriers

- Reduce flood risk
- Accumulate carbon
- Enhance biodiversity
- Build resilience

**RECOMMENDATION 3: FLOODING** - For those properties still at risk of flooding (currently 75,000), where we develop schemes to increase their flood resilience, we will aim for  $\frac{3}{4}$  of the schemes developed by 2050 to include Integrated Water Management and Natural Flood Management techniques



## 4. Role of Urban Natural Green Infrastructure

Natural Green Infrastructure in urban areas has numerous benefits:

- Increases biodiversity and creates wildlife corridors (“green veins”, “greening-the-grey”)
- Lowers the “heat Island effect” in built up areas
- Provides “green-exercise” with benefits to physical and mental health
- Reduces pollution
- Reduces urban flooding via natural areas and designed wild SuDS features
- Improves water quality and percolates down to underground water reserves
- Absorbs carbon in plants and organic matter



**RECOMMENDATION 4: URBAN GREENING** – 30% greening of our towns, villages and new developments by: increased green space creation, naturalising existing green space, greening the public realm and developing sustainable drainage systems (SuDS)

## 5. Proposed Essex Climate Focus Area

### 5.1 The Climate Action Focus Area proposal

We recognize that the above proposals for the whole of Essex are challenging but achievable, and in order to demonstrate this achievability we are proposing the concept of a Climate Focus Area (CFA), as a demonstration site for best practice in sustainable land use management. Targeting a designated area within the county allows for more focused, ambitious and intensive action within shorter time frames where learning and acquired new knowledge of positive impacts can quickly be disseminated across the county. In order to implement this, we have chosen a representative area of Essex, the catchments of the Blackwater and Colne rivers, where a focused effort can be made to combat climate change, leading the way for the rest of Essex to follow.

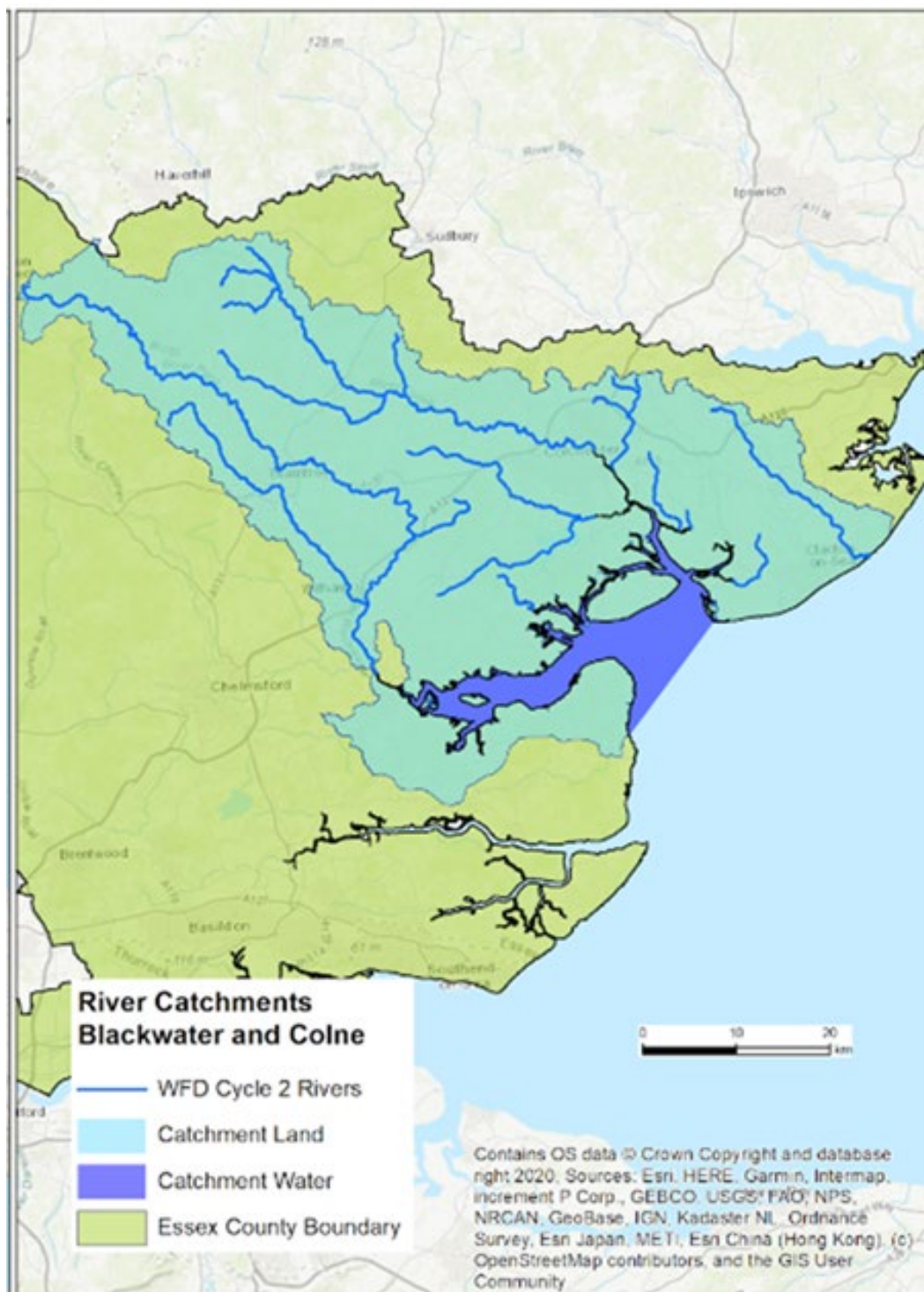
The Essex Climate Focus Area has the following characteristics:

- Comprises the Blackwater and Colne catchments (see Appendix 2), an area of 930 km<sup>2</sup> or 27% of the area of Essex.
- Part of Northern Thames Basin and Greater Thames Estuary National Character Areas.
- Rich in geodiversity, archaeology and history, and diverse landscapes ranging from ancient woods, to open arable areas, Essex heathlands, and areas of urbanisation throughout. Includes coastland of shallow creeks, drowned estuaries, low-lying islands, mudflats and broad tracts of tidal salt marsh and reclaimed grazing marsh
- Catchment areas provide natural corridors linking Essex hinterland with the coast
- The Climate Focus Area lies in the centre of the county, includes coastal and inland areas, rural as well as urban, in order to make it as relevant as possible to different people and communities of Essex.
- The Climate Action Area includes part of the five boroughs and districts of Uttlesford, Braintree, Colchester, Maldon and Tendring, which have a combined Natural Green Infrastructure of 296 km<sup>2</sup> or 13% of the combined area of the five local authority areas. (see Appendix 3)

## 5.2 The objectives of the Climate Focus Area

- a) The Climate Focus Area is to achieve net zero carbon as quickly as possible, focussing funding, partnership and energy in a single area.
- b) The Climate Focus Area will recover biodiversity and natural ecosystems by actioning radical changes in land use practice with a focus on nature-based solutions and an ecosystem approach.
- c) The Climate Focus Area will be a Pathfinder and Pilot area, where lessons will be learnt quickly and the acquired knowledge shared with the rest of Essex
- d) The Climate Focus Area will be a multi-sectoral project, integrating the recommendations of the Transport, Built Environment, Energy and Waste and Community Special Interest Groups.
- e) The Climate Focus Area will focus on local foods and shortening of the food chain from farm to plate, as well as serious consideration of the present food inequalities currently present in Essex
- f) The Climate Focus Area will be a Demonstrator area for economic benefits that can come from new and enhanced green landscape, e.g. wood products, nature tourism, leisure and recreation opportunities
- g) The Climate Focus Area will act as an investment Attractor. It will enable companies to showcase sustainable practices, processes and products by investing in land and landowners and by trialling new sustainable land stewardship techniques. These will provide opportunities for innovative inward, impact investment and help direct the way forward for Climate Smart business.

### 5.3 Existing Features of the Essex Climate Focus Area



River Catchments Blackwater and Colne: 30% of Essex as Climate Focus Area

## 6. Climate Action Targets for the whole of Essex and the Climate Focus Area

By 2030:

- All farmland to adopt sustainable land stewardship practices
- 30% of land cover to be managed as Natural Green Infrastructure
- 30% of urban areas under Natural Green Infrastructure
- Native tree cover to double (c.5% to 10% cover)
- Every Parish to have a biodiversity action plan
- Every Parish to have a climate emergency strategy

**RECOMMENDATION 5: CLIMATE FOCUS AREA - Create a Climate Focus Area to accelerate action and provide exemplars: adopting Sustainable Land Stewardship practices: 100% by 2030 and Natural Green Infrastructure: 30% by 2030**

## 7. Community Consultation

### 7.1 Local Community Participation

Climate Action is becoming a mass movement and communities are demanding and expecting action. Bringing the community alongside Carbon Net Zero planning with the defined Climate Focus Area will be critical to the success of any actions building towards the goals of the Land Uses & Green Infrastructure SIG for 2030 and beyond.

Any actions and developments must have the buy in of the individuals and the groups that live and work within this pilot region, and the system to agree management changes and actions must be identified by the community to ensure buy in. Lessons for sharing this widely across Essex is a key part of the consultation and reporting process. The risk of not using a bottom up consultation process is that our proposals will not be accepted by communities and households and our proposed actions become harder to implement or be understood.

Participatory planning will support individuals and communities to have their voices integrated in any climate action proposals delivered by the SIG. The Land Use & Green Infrastructure Climate Action recommendations are designed to be inspiring and capable of being adopted by communities around the intrinsic benefits of climate responsibility for long term sustainability for themselves and their families. They also link to health and wellbeing, and economic sustainability within a beautiful and inspiring landscape to live in.

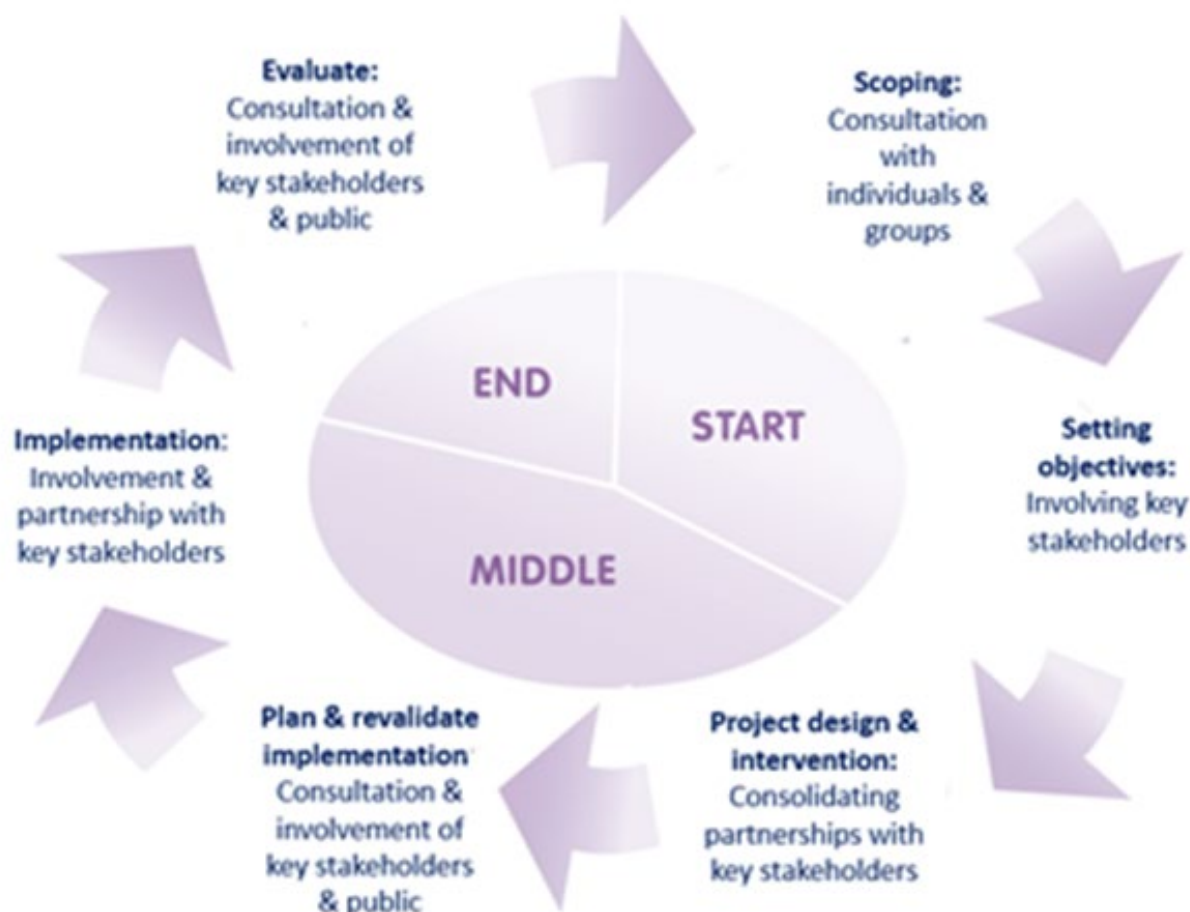
Consultation with local people and communities, whether they live in rural areas, villages, or towns is critical to the success of the LU & GI Climate Action programme for reasons:

1. To glean local knowledge
2. To engender support
3. To enable local people to take Climate Action at differing levels

The local community participatory planning methodology will include a combination of direct consultation, co-design workshops and a social media consultation building on the Essex is Green Facebook conversation and potentially utilizing a host of other media such as Twitter, Instagram and other social media platform such as Tik Tok, YouTube etc platforms. Direct consultation will include a “Consultation Roadshow and Workshop” events visiting the principle towns and communities in the Climate Focus Area. Creating connections with parish councils in the early stages of developing the engagement process, to support this initiative, will be key.

## The engagement and planning cycle

modified and adapted from [B.Ambrose-Oji](#), [P.Tabbush](#), [B.Frost](#), [C.Carter](#), [K.Fielding](#) (2011) **Public Engagement in forestry: A toolbox for public engagement in forest and woodland planning**. Forestry Commission



The Community Engagement Objectives are:

1. Enable and support community groups, schools, individuals and businesses to innovate and implement climate actions they identify for themselves.
2. Harness local knowledge and build local support to achieve sustainable land stewardship and natural green infrastructure recommendations.
3. Develop a strategy working within communities from the start to ensure local inclusion and accountability.

A community engagement staged proposal should be comprehensive and potential elements are set out below:

1. Co-design an initial concept document for Essex wide community participation based on the recommendations of the Land Use and Green Infrastructure SIG
2. Develop initial co-creative steering group of local community stakeholders, local government networks, specialists and others to map further participation and inclusion within the County and establish Terms of Reference
3. Together, map and establish existing activity (e.g.: NGOs, schools & Parish Councils)
4. Together, establish a campaign strategy to support individual, business and community action with short term identified goals leading to longer term goals by 2050
5. Create a framework for local groups to become independent in pushing forwards actions, communications, feedback and planning into the future across the County

(For full Community ideas see Appendix 7)

### **Advice and support for Essex wide Individuals, Businesses and Communities to improve Land Use and Green Infrastructure**

- Land Use & Green Infrastructure SIG recommendations shared with farmers, landholders, local government, communities and individuals on benefits of biodiversity enhancement, greening land use and greening our towns, gardens and rural areas through representative groups (e.g.: FWAG & Parish Councils)
- Integrate, cross post, and make use of advice and support through other forums such as Essex is Green and Green Change Makers groups.
- Communicate advice and information to stimulate behaviour change and personal choices.



## **7.2 Local Community Action: Enabling People and Communities to Reduce their Carbon**

The Land Use & Green Infrastructure Climate Action programme will seek to engage all people to lower their carbon emissions. This could take two forms:

1. Personal choices and behaviours
2. Land Use & Green Infrastructure Climate Action Advice

### **7.2.1 Personal Choices and Behaviours**

Some personal actions may be quick wins for individuals to lower their personal carbon. For example:

- Plant 10 trees to sequester a tonne of carbon in 10 years
- Move to a plant-based diet which would save 8 tonnes in 10 years
- Eating organic or sustainable food will save a tonne of carbon in 2 years
- Eating locally grown food would save a tonne of carbon over 3 years
- 2 meat free days per week would save a tonne of carbon over 5 years

A full list of 29 personal choices to lower carbon are set out in Appendix 9. These cover food, energy, mobility, waste and leisure and set out personal choices and behaviours to reduce annual carbon footprint shown in tonnes of carbon per person per year.

### **7.2.2 Essex Climate Action Advice**

This advice will relate to the use of land an individual may control or manage. It will be based on the principles of the Land Use & Green Infrastructure Climate Action programme ie to manage land sustainably and create areas of natural Green infrastructure.

Advice could include initiatives such as:

- Put aside 30% of your garden or allotment for wildlife
- Set up communal composting projects
- Adopt public space as communal gardens or wildlife areas
- Help neighbours cultivate and re-wild their gardens
- Compost food and garden waste

- Create more greenery where you live and work e.g. climbers, green walls, green roofs, planters, troughs, trees, hedges
- Create green spaces or wildlife areas in the community where people can relax and recuperate
- Join local environment groups to improve your local area

**RECOMMENDATION 6: - ENGAGEMENT - Ensure collaboration & engagement by carrying out a participatory community process, catalysing communities, farmers, landowners, and individuals, encouraging personal and community action in the Climate Focus Area and the whole of Essex**

## 8. Monitoring & Data

Information is vital in ensuring that the implementation of the Land Use & Green Infrastructure Climate Action programme for the whole of Essex and the Climate Focus Area (CFA) is well planned, implemented and well monitored. To effectively engage people in the programme we will require a rich source of locally relevant, robust and evolving data to help explain the current status of the whole of Essex and the CFA, what changes might be possible, what Essex and the CFA might look like in the future, and how success will be measured. Essex and the CFA will need to connect to actions and measures at the local, regional, national and global levels to demonstrate impact against widely used benchmarks.

A Knowledge and Decision-Support System, based on a common sustainability framework will be co-designed with communities, and made available to all for local decision-making and progress monitoring. This will enable everyone to gain real insight into the interrelationships and trade-offs required to achieve sustainability and help inform Climate Focus Area actions and wider rollout to Greater Essex. The underlying data and information for the CFA will be curated by ECC (Appendix 4)

The Knowledge and Decision-Support System will be based on a multi-capitals (natural, social, human, produced), sustainability framework, connected to the National Office of Statistics, plus a range of internationally recognised indicators and metrics, to be determined as part of the implementation of the CFA. The collection of data and information will be community-led.



The Monitoring and Data proposals are:

- Co-design a monitoring and evaluation programme within an Essex Climate Observatory and involve citizens and researchers in data gathering activities across the Climate Focus Area
- Co-design an integrated sustainability appraisal framework to support the Climate Action Programme in Essex, the Climate Focus Area and stakeholders' needs
- Collate and curate relevant data within an Essex Knowledge Platform and Decision Support Framework
- Establish a baseline audit for the Climate Focus Area

The Knowledge and Decision-Support System will make it possible to answer questions such as:

- What trends can we observe in the natural environment and what is causing them?
- What will be the effects of climate change and economic activities on natural capital and ecosystem services?
- How and where does the natural environment support and influence the social and financial sustainability of the Climate Focus Area and the whole of Essex?
- Which are the relevant ecosystem services needed to deliver the targets sets for the Climate Focus Area and Essex and what is their condition? From which habitats/ ecosystems do they emanate? Whom do they benefit and to what extent?

**RECOMMENDATION 7: KNOWLEDGE & DECISION SUPPORT – Developing Effective Monitoring & Evaluation, an integrated Sustainability Appraisal Framework, an Essex Climate Observatory, and a Knowledge and Decision Support Framework**

## 9. Potential Funding for the Land Use & Green Infrastructure Climate Action Programmes

Whilst Commissioners need to concentrate on “what” is required, some consideration is also required on “how” their recommendations will be delivered and funded. This will be achieved by a mindset change in relation to the environment, realising the importance of Climate Change requires Essex County Council to lead, inspire and empower all stakeholders in Essex to combat this threat to our existing ways of life.

In order to deliver this ambitious and innovative programme Essex County Council need to exhibit the following behaviours, which could be supported by the listed funding programmes:

### **Providing Leadership – Demonstration and Convening**

Environment Land Management Scheme (DEFRA),

Countryside Stewardship (DEFRA)

Nature Recovery Networks (NE)

Biodiversity Net Gain, (NE)



**Acting As A Catalyst – Using Ecc Funds As Seed-Capital**

Innovative Resilience Programme (EA) & Investment Readiness Fund (EA)

Green Bonds

Impact Investment

Private finance

Environmental Charitable Trusts such as the Esmée Fairbairn

**Empowering Others – Participating In World-Class Activities**

Water Resources East

University combined bids

Horizon 2020 City Forests

UKRI Environmental Challenges and Prosperity

There is draft list of funding programmes and organisations in Appendix 5. Commissioners are also keen that Essex County Council could use some of its own funding as the seed funding for investments in the CFA.

**RECOMMENDATION 8: UNLOCK FUNDING AND PARTNERSHIP SUPPORT -  
Develop a Funding and Partnership development Programme**

## Appendix 1: Glossary

**Adaptation** – Adjustment in natural or human systems to a new or changing environment.

**Agro-ecological Farming** – Ecology is the study of relationships between plants, animals, people, and their environment - and the balance between these relationships. Agroecology is the application of ecological concepts and principals in farming.

**Agroforestry** – Agroforestry is a collective name for land-use systems and technologies where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence. In agroforestry systems there are both ecological and economical interactions between the different components. Agroforestry can also be defined as a dynamic, ecologically based, natural resource management system that, through the integration of trees on farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels. In particular, agroforestry is crucial to smallholder farmers and other rural people because it can enhance their food supply, income and health. Agroforestry systems are multifunctional systems that can provide a wide range of economic, sociocultural, and environmental benefits.

There are three main types of agroforestry systems:

1. Agrisilvicultural systems are a combination of crops and trees, such as alley cropping or homegardens.
2. Silvopastoral systems combine forestry and grazing of domesticated animals on pastures, rangelands or on-farm.
3. The three elements, namely trees, animals and crops, can be integrated in what are called agrosylvopastoral systems and are illustrated by homegardens involving animals as well as scattered trees on croplands used for grazing after harvests.

**Biodiversity** – 'Biological diversity' means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.

The variety of life at every hierarchical level and spatial scale of biological organisations: genes within populations, populations within species, species within communities, communities within landscapes, landscapes within biomes, and biomes within the biosphere.

**Biodiversity Net Gain** – An approach which aims to leave the natural environment in a measurably better state than beforehand.

**Carbon** – Carbon is essential to life. This is because it is able to form a huge variety of chains of different lengths. It was once thought that the carbon-based molecules of life could only be obtained from living things. They were thought to contain a ‘spark of life’. However, in 1828, urea was synthesised from inorganic reagents and the branches of organic and inorganic chemistry were united.

Living things get almost all their carbon from carbon dioxide, either from the atmosphere or dissolved in water. Photosynthesis by green plants and photosynthetic plankton uses energy from the sun to split water into oxygen and hydrogen. The oxygen is released to the atmosphere, fresh water and seas, and the hydrogen joins with carbon dioxide to produce carbohydrates.

Some of the carbohydrates are used, along with nitrogen, phosphorus and other elements, to form the other monomer molecules of life. These include bases and sugars for RNA and DNA, and amino acids for proteins.

Living things that do not photosynthesise have to rely on consuming other living things for their source of carbon molecules. Their digestive systems break carbohydrates into monomers that they can use to build their own cellular structures. Respiration provides the energy needed for these reactions. In respiration oxygen re-joins carbohydrates, to form carbon dioxide and water again. The energy released in this reaction is made available for the cells.

**Carbon Net Zero** – A “net-zero” target refers to reaching net-zero carbon emissions by a selected date, but differs from zero carbon, which requires no carbon to be emitted as the key criteria.

Net-zero refers to balancing the amount of emitted greenhouse gases with the equivalent emissions that are either offset or sequestered. This should primarily be achieved through a rapid reduction in carbon emissions, but where zero carbon cannot be achieved, offsetting through carbon credits or sequestration through rewilding or carbon capture and storage needs to be utilised.

**Climate Action Focus Areas** – UNESCO actions on climate change will target the following thematic action focus areas:

- a) Supporting Member States to develop and implement climate change education and public awareness programmes and policies
- b) Promoting interdisciplinary climate knowledge and scientific cooperation for climate change mitigation and adaptation
- c) Promoting cultural diversity and cultural heritage safeguarding for climate change mitigation and adaptation
- d) Supporting inclusive social development, fostering intercultural dialogue and promoting ethical and gender equality principles in relation to climate change mitigation and adaptation



**Climate Adaptation** – Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory, autonomous and planned adaptation.

**Anticipatory adaptation** – Adaptation that takes place before impacts of climate change are observed. Also referred to as proactive adaptation.

**Autonomous adaptation** – Adaptation that does not constitute a conscious response to climatic stimuli but is triggered by ecological changes in natural systems and by market or welfare changes in human systems. Also referred to as spontaneous adaptation.

**Planned adaptation** – Adaptation that is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state.

**Climate Change** – A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the United Nations Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as: 'a change of climate which is attributed directly or indirectly to human activity that alters the composition the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition, and climate variability attributable to natural causes.

**Climate Friendly Farming** – Farming that helps mitigating climate change with improved management techniques that promote carbon storage in the soils and reduce contributions to carbon pollution from chemicals and manure lagoons. Can include non-animal farming.

**Coastal Erosion and Deposition** – Coastal erosion is the breaking down and carrying away of materials by the sea. Deposition is when material carried by the sea is deposited or left behind on the coast.

**Community Consultation** – Community consultation is a reciprocal process and a genuine partnership between the community and a service provider that embodies human rights principles in a tangible way.

**Community Involvement** – Community involvement is the power to bring positive, measurable change to both the communities in which you operate and to your business.

**Conservation** – Active management of the biosphere to ensure the survival of the maximum diversity of species and the maintenance of genetic variability within species. It includes the maintenance of biosphere function e.g. nutrient cycling and ecosystem function. The term also includes the concept of sustainable resource use so that the environment may yield the greatest sustainable benefit to current generations while maintaining its potential to meet the needs and aspirations of future generations. Conservation of species and biological processes must be simultaneous with conservation of abiotic resources or it is unlikely to succeed.

**Countryside Stewardship (DEFRA)** – Provides financial incentives for farmers, woodland owners, foresters and land managers to look after and improve the environment.

**Drought Risk** – Likelihood of incurring damages and economic losses during and after a drought. It depends on the interactions between three dimensions:

- a) The severity and the probability of occurrence of a certain drought event
- b) The exposed assets and/or people
- c) Their intrinsic vulnerability or capacity to cope with the hazard.

**Ecosystem** – A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

**Ecosystem services** – Benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other non-material benefits.

**Environment Land Management Scheme (DEFRA)** – The scheme means farmers and other land managers may be paid for delivering the following public goods:

- Clean air
- Clean and plentiful water
- Thriving plants and wildlife
- Protection from environmental hazards
- Beauty, heritage and engagement with the environment
- Reduction of and adaptation to climate change

**Estuary** – Area of the mouth of a river where it broadens into the sea, and where fresh and seawater intermingle to produce brackish water. The estuarine environment is very rich in wildlife, particularly aquatic, but it is very vulnerable to damage as a result of human activities.

**Flood Risk** – Flood risk is a combination of the probability (likelihood or chance) of an event happening and the consequences (impact) if it occurred. Flood risk is dependent on there being a source of flooding, such as a river, a route for the flood water to take (pathway), and something that is affected by the flood (receptor), such as a housing estate. Without a pathway linking the source to the receptor, a flood may be a hazard, but not a risk. This concept is known as the source-pathway-receptor model.

**Green Bonds (climate bonds)** – A type of fixed-income instrument that is specifically earmarked to raise money for climate and environmental projects. These bonds are typically asset-linked and backed by the issuing entity's balance sheet, so they usually carry the same credit rating as their issuers' other debt obligations.

**Green Circular Economics** – In a Green Economy the reduction of the environmental impact of business enterprises results in economic advantages for the companies themselves. The identification of the factors that push firms to develop such strategies is a fundamental step to further promote green economics and to move our society toward a Circular Economy. A Circular Economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.

**Green Infrastructure** – An interconnected network of natural areas and open spaces that conserves natural ecosystem values and functions, sustains clean air and water, and provides a wide array of benefits to people and wildlife.

**Greenhouse Effect** - The infrared radiative effect of all infrared-absorbing constituents in the atmosphere. Greenhouse gases, clouds, and (to a small extent) aerosols absorb terrestrial radiation emitted by the earth's surface and elsewhere in the atmosphere. These substances emit infrared radiation in all directions, but, everything else being equal, the net amount emitted to space is normally less than would have been emitted in the absence of these absorbers because of the decline of temperature with altitude in the troposphere and the consequent weakening of emission. An increase in the concentration of greenhouse gases increases the magnitude of this effect; the difference is sometimes called the enhanced greenhouse effect. The change in a greenhouse gas concentration because of anthropogenic emissions contributes to an instantaneous radiative forcing. Surface temperature and troposphere warm in response to this forcing, gradually restoring the radiative balance at the top of the atmosphere.

**Greenhouse gas (GHG)** – Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of terrestrial radiation emitted by the earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapour (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>) and ozone (O<sub>3</sub>) are the primary greenhouse gases in the earth's atmosphere. Moreover, there are a number of entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine- and bromine- containing substances,

dealt with under the Montreal Protocol. Beside CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub>, the Kyoto Protocol deals with the greenhouse gases sulphur hexafluoride (SF<sub>6</sub>), hydrocarbons (HFCs) and perfluorocarbons (PFCs).

**Habitat** – Habitat means the place or type of site where an organism or population naturally occurs.

**Horizon 2020** – Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.

**Human Wellbeing** – Human well-being is a broad concept, one that includes many aspects of our everyday lives. It encompasses material well-being, relationships with family and friends, and emotional and physical health. It includes work and recreation, how one feels about one's community, and personal safety.

**Impact Investment** – Investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return.

**Indigenous Species (native species)** – A species that has been observed in the form of a naturally occurring and self-sustaining population in historical times. A species or lower taxon living within its natural range (past or present) including the area which it can reach and occupy using its natural dispersal systems.

**Innovative Resilience Programme (EA)** – A £5.2bn capital funding programme for flood defences in England 2021-2027. Included within this is £200million for innovative flood resilience projects, to help 'at risk' areas adapt to a changing climate and improve their resilience to flooding.

**Land Use** – Land use is the function of land – what it is used for. Land use varies from area to area. In rural areas (countryside) land use can include forestry and farming. In urban areas (towns and cities) land use could be housing or industry. Land use in urban areas in MEDCs varies from land use in urban areas in LEDCs. Urban land use models attempt to simplify the way land is used in urban areas.

**Landscape Approach** - Dealing with large-scale processes in an integrated and multidisciplinary manner, combining natural resources management with environmental and livelihood considerations.

**Landscape Connectivity** – The degree to which the landscape facilitates or impedes movement among resource patches.

**MARISCO Process** – MARISCO represents a toolbox and an approach to adaptive ecosystem-based management. It facilitates the integration of a dynamic risk and vulnerability perspective into the management of conservation projects and sites.

Explore this website that provides opportunities for learning and training in adaptive Management of vulnerability and Risk at Conservation sites.

**Mass Extinctions** – The extinction of a large number of species within a relatively short period of geological time, thought to be due to factors such as a catastrophic global event or widespread environmental change that occurs too rapidly for most species to adapt.

**Microbial Biomass** – Microbial biomass (bacteria and fungi) is a measure of the mass of the living component of soil organic matter. The microbial biomass decompose plant and animal residues and soil organic matter to release carbon dioxide and plant available nutrients.

**Mitigation** – Measures which aim to reduce impacts to the point where they have no adverse effects.

**Natural Capital** – There is no single, internationally accepted definition of natural capital. A number of commonly used or adapted definitions are presented below. Functionally, many of the definitions are similar, including concepts such the 'stocks' of 'natural resources' that create a 'flow' of 'benefits to people'.

The following organisations and documents define natural capital as:

- The stock of renewable and non-renewable natural assets (e.g. ecosystems) that yield a flow of benefits to people (i.e. ecosystem services). The term 'natural capital' is used to emphasise it is a capital asset, like produced capital (roads and buildings) and human capital (knowledge and skills) (Dasgupta Review on The Economics of Biodiversity)
- Another term for the stock of renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people. (Natural Capital Coalition)
- The stock of renewable natural resources (e.g. forests, plants, animals, air, water, soils) that combine to yield a flow of benefits to people. (Natural Capital Finance Alliance 2)
- The stock of ecosystems that yields a renewable flow of goods and services that underpin the economy and provide inputs and direct and indirect benefits to businesses and society. (The Natural Capital Declaration)
- Natural assets in their role of providing natural resource inputs and environmental services for economic production. Natural capital includes land, minerals and fossil fuels, solar energy, water, living organisms, and the services provided by the interactions of all these elements in ecological systems. (UNEP)
- Natural assets in their role of providing natural resource inputs and environmental services for economic production. Organisation for Economic Co-operation and Development (OECD)

- Stock that yields a flow of natural services and tangible natural resources.

**Natural Capital Assessment** – The process of measuring and valuing relevant (“material”) natural capital impacts and/or dependencies, using appropriate methods.

**Natural Capital Asset** – The specific components of natural capital, such as water, atmosphere, or land, that provide ecosystem services 1. As in economics, an asset describes a store of value representing a benefit or series of benefits accruing to an economic owner by holding or using the entity over a period of time.

**Natural Flood Management** – Natural flood management is when natural processes are used to reduce the risk of flooding and coastal erosion. Examples include: restoring bends in rivers, changing the way land is managed so soil can absorb more water and creating saltmarshes on the coast to absorb wave energy.

**Natural Habitats** – Areas composed of viable assemblages of plant and/or animal species of largely native origin and/or where human activity had not essentially modified an area's primary ecological functions and species composition.

**Natural Heritage** – Natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view; geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation; natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.

**Natural Resources** – Assets (raw materials) occurring in nature that can be used for economic production or consumption.

**Nature Recovery Networks (NE)** – A Nature Recovery Network is a joined-up system of places important for wild plants and animals, on land and at sea. It allows plants, animals, seeds, nutrients and water to move from place to place and enables the natural world to adapt to change. It provides plants and animals with places to live, feed and breed.

**Nature-based Solutions (NbS)** – Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

**No-net Loss** – The point at which the project-related impacts on biodiversity are balanced by measures taken to avoid and minimize the project's impacts, to understand on site restoration and finally to offset significant residual impacts, if any, on an appropriate geographic scale (e.g local, landscape-level, national, regional).

**Nutrient Density** – Ratio of nutrient content to the total energy content.

**Offset (Biodiversity)** – Measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure and ecosystem function and people’s use and cultural values associated with biodiversity.

**Organic Farming** – Organic farming is a method of crop and livestock production that involves much more than choosing not to use pesticides, fertilizers, genetically modified organisms, antibiotics and growth hormones. Organic production is a holistic system designed to optimize the productivity and fitness of diverse communities within the agro-ecosystem, including soil organisms, plants, livestock and people. The principal goal of organic production is to develop enterprises that are sustainable and harmonious with the environment.

**Planning for Real** – Nationally recognised community planning process based on a 3D model. The process allows residents to register their views on a range of issues, to work together to identify priorities, and in partnership with local agencies go on to develop an action plan for change.

**Plant Based Diet** – Plant-based or plant-forward eating patterns focus on foods primarily from plants. This includes not only fruits and vegetables, but also nuts, seeds, oils, whole grains, legumes, and beans. It is not necessarily a vegetarian or vegan diet, but rather a proportionately bigger choice of foods from plant sources.

**Public Participation Study** – Public participation can be any process that directly engages the public in decision-making and gives full consideration to public input in making that decision.

**Regenerative Agriculture** – Describes farming and grazing practices that, among other benefits, reverse climate change by rebuilding soil organic matter and restoring degraded soil biodiversity – resulting in both carbon drawdown and improving the water cycle.

**Regulating Ecosystem Services** – The benefits obtained from the regulation of ecosystem processes, including, for example, the regulation of climate, water, and some human diseases.

**Resilience** – The capacity of a natural system to recover from disturbance.

**Restoration** – The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. An ecosystem has recovered when it contains sufficient biotic and abiotic resources to continue its development without further assistance or subsidy. It would sustain itself structurally and functionally, demonstrate resilience to normal ranges of environmental stress and disturbance, and interact with contiguous ecosystems in terms of biotic and abiotic flows and cultural interactions.

**Rewilding** – The practice of helping large areas of land to return to a wilder and more natural state.

**River Catchment** – Area of land where water collects when it rains, often bounded by hills. As the water flows over the landscape it finds its way into streams and down into the soil, eventually feeding the river. Some of this water stays underground and continues to slowly feed the river in times of low rainfall.

**Semi-natural Habitats** – Semi-natural habitats have ecological assemblages that have been substantially modified in their composition, balance or function by human activities. They may have evolved through traditional agricultural, pastoral or other human activities and depend on their continuation to retain their characteristic composition, structure and function. Despite not being natural, these habitats and ecosystems often have high value in terms of biodiversity and the services they provide.

**Soil Erosion** – Detachment and movement of topsoil or soil material from the upper part of the profile by the action of wind or running water especially as a result of changes brought about by human activity (such as unsuitable or mismanaged agricultural methods).

**Soil Health** – Continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans.

**Soil Organic Matter** – Soil organic matter (SOM) is the organic component of soil, consisting of three primary parts including small (fresh) plant residues and small living soil organisms, decomposing (active) organic matter, and stable organic matter (humus).

**Soil Salinisation** – The build-up of salts in soils.

**Soil Water Retention** – Soils can process and hold considerable amount of water. They can take in water, and will keep doing so until they are full, or until the rate at which they can transmit water into and through the pores is exceeded. Some of this water will steadily drain through the soil (via gravity) and end up in the waterways and streams, but much of it will be retained, despite the influence of gravity. Much of this retained water can be used by plants and other organisms, thus contributing to land productivity and soil health.

**Species** – Convention Definition: "Species" means any species, subspecies, or geographically separate population thereof.

Scientific Definition: Biological Species Concept. Groups of actually or potentially interbreeding natural populations, which are reproductively isolated from other such groups.

**Species Diversity** – Biodiversity at the species level, often combining aspects of species richness, their relative abundance, and their dissimilarity.



**Sustainability** – A characteristic or state whereby the needs of the present and local population can be met without compromising the ability of future generations or populations in other locations to meet their needs.

**Sustainable Agriculture** – To meet society’s food and textile needs in the present without compromising the ability of future generations to meet their own needs.

**Sustainable Development** – Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

**Sustainable Drainage Systems (SuDS)** – Approaches to manage surface water that take account of water quantity (flooding), water quality (pollution) biodiversity (wildlife and plants) and amenity.

**Tree cover** – Tree canopy cover is the layer of leaves, branches, and tree stems that cover the ground when viewed from above.

**Urban Habitats** – Urban habitats are essentially altered or transformed by human use. Land may be predominantly occupied by constructions or infrastructure and the ecosystems and species assemblages that occurred there previously may be completely or almost completely lost. As well as grey space, brownfield sites, roofs and balconies, urban areas may also include elements of greenspace. Not only can these areas support surprisingly rich and diverse rich ranges of plants and animals, they also offer great potential for biodiversity enhancement and ecological restoration.

**Water Body** – Mass of water distinct from other masses of water.

**Water Conservation and Re-use** – using water wisely and not contributing to unnecessary wastage. Using less water keeps more in our ecosystems and helps to keep wetland habitats topped up for animals like otters, water voles, herons and fish. This is especially important during drought periods and in areas like South East England where there is a big demand on water supplies.

**Watercourse** – Natural or man-made channel through or along which water may flow.

**Watershed** – The land area that drains into a particular watercourse or body of water. Sometimes used to describe the dividing line of high ground between two catchment basins.

**Watershed divide** – Summit or boundary line separating adjacent drainage basins.

**Wilderness** – A large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation.

An area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean an area of undeveloped Federal land retaining its primeval character and

influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which:

- a) Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
- b) Has outstanding opportunities for solitude or a primitive and unconfined type of recreation
- c) Has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and
- d) May also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

## Appendix 2: The Essex Climate Action Focus Area: the Blackwater and Colne Catchments

### The River Blackwater

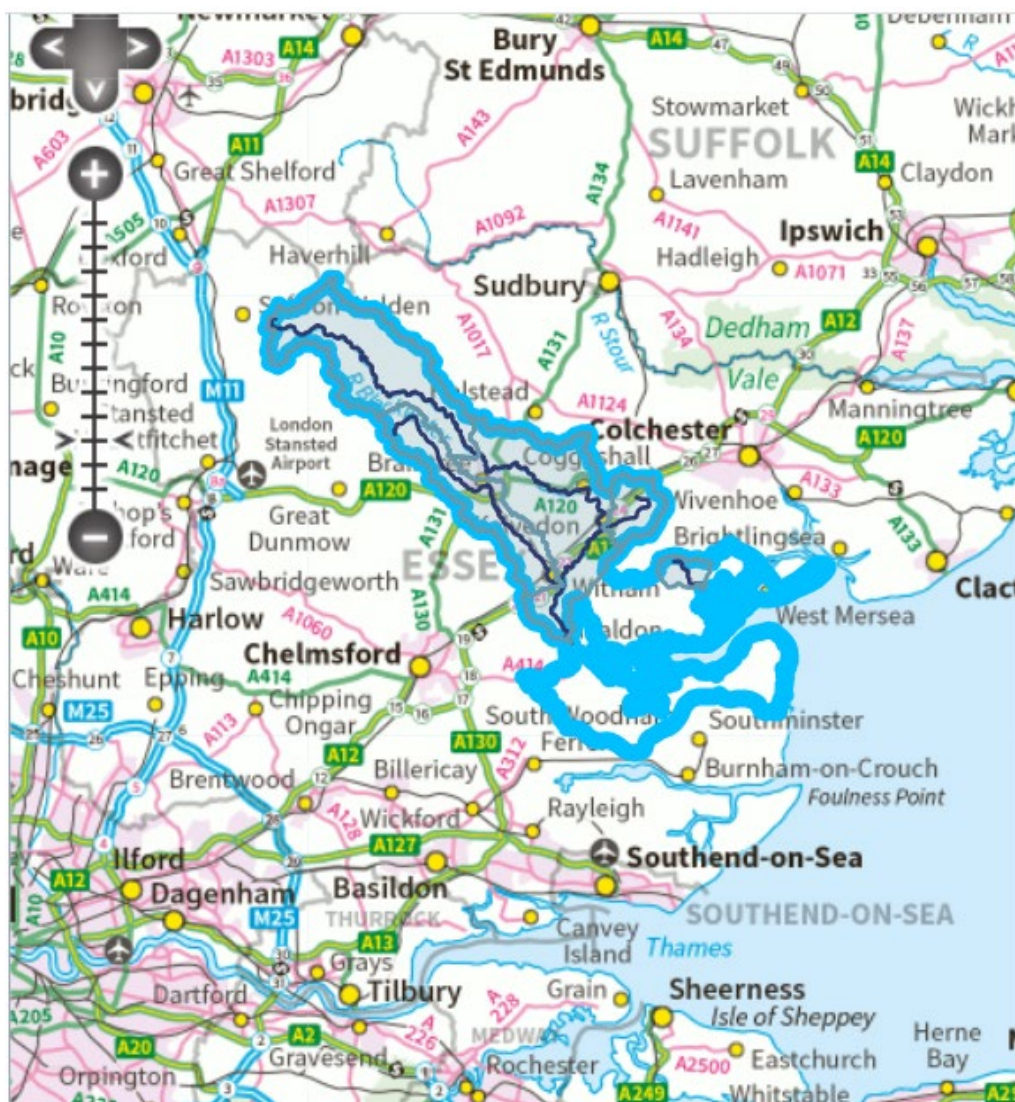
Area 352.374km<sup>2</sup> = 10.15% of ECC

Big Towns: Braintree, Coggeshall, Kelvedon and Witham, where it meets the River Brain, and on to Maldon and Heybridge

Green infrastructure:

- Blackwater Estuary
- Belchers and Broadfield Wood SSSI
- Bocking Blackwater
- Bovingdon Hall Woods SSSI
- Brockwell Meadows LNR
- Cuckoo Woods LNR
- Lofts Farm Pit Heybridge SSSI
- Hangman's Wood & Deneholes SSSI
- Chantry Wood
- Sparkey Wood
- Kelvedon Hall Wood
- Robins Brook
- Great Monks Wood
- Markshall Wood
- Grange Wood

The River Pant rises near Swards End to the south east of Saffron Walden. It is a predominantly rural catchment and flows in a south easterly direction through Great Sampford and Finchingfield towards Braintree, where it becomes known as the river Blackwater. The name derives from a discharge from a textile works at Bocking which once turned the river black. From Braintree the river meanders its way through Coggeshall, Kelvedon and Witham, where it meets the River Brain, and on to Maldon. The river Blackwater supports a high class fishery and is an important source of public drinking water.



**Towns:**



Braintree (2011 population 41,634)



Coggeshall (2011 population 4,727)



Kelvedon (2011 population 3,587)



Witham (2011 population 25,353)



Maldon (2011 population 14,220)



Heybridge (2011 population 8,175)

## Green infrastructure:

### Blackwater Estuary

- *Nature Conservation Review Site*
- *National Nature Reserve*
- *Ramsar Site*
- *Special Area of Conservation*
- *Special Protection Area*

*Blackwater, Crouch, Roach and Colne Estuaries MCZ Marine Conservation Zone*



Blackwater Estuary



Belchers and Broadfield Wood  
SSSI



Bocking Blackwater Local Nature  
Reserve



Bovingdon Hall Woods SSSI



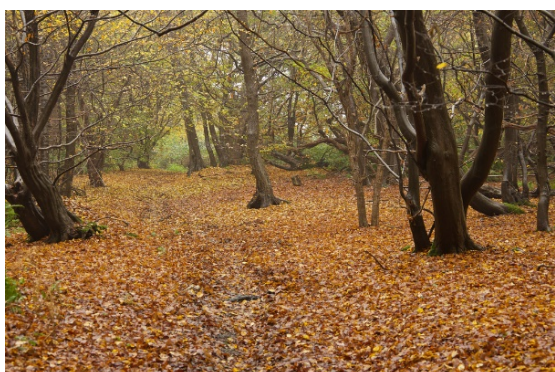
Brockwell Meadows Local Nature  
Reserve



Lofts Farm Pit Heybridge SSSI



Chantry Wood



Sparkey Wood



Robins Brook



Markshall Wood

*Cuckoo Woods Local Nature Reserve*

*Hangman's Wood & Deneholes SSSI*

*Kelvedon Hall Wood*

*Great Monks Wood*

*Grange Wood*

## Colne Essex

Catchment Area 571.019km<sup>2</sup> and 16.45% of ECC

Brightlingsea, Clacton-on-Sea, Colchester, Halsted, Frinton-on-Sea, Maldon and Tendring

Green Infrastructure:

- Colne Estuary (Mid-Essex Coast Phase 2) *Ramsar*
- Blackwater, Crouch, Roach and Colne Estuaries MCZ
- Colne Estuary *NNR*
- Colne Estuary *SSSI*
- Colne Valley *LNR*
- Upper Colne Marshes *SSSI*
- Hartley Wood





The river Colne rises near Steeple Bumpstead and flows south east through Halstead & the Colne Valley to Colchester, where it becomes tidal before joining the Blackwater Estuary and ultimately the North Sea. The headwaters of the catchment are predominantly rural in nature, giving way to a more urban environment downstream at Colchester. There are a number of abstractions along the river for irrigation and water is abstracted and pumped to Abberton Reservoir for public drinking water supply.

## Big Towns



Brightlingsea (2011 population, 8,076)



Clacton-on-Sea (2011 population, 107,237)



Colchester (2011 population 173,074)



Halsted (2011 population 11,906)



Frinton-on-Sea (2011 population, 4,002)



Maldon (2011 population, 14,220)



Tendring (2011 population, 736 (village), 138,048 (district))

## Green Infrastructure



Colne Estuary (Mid-Essex Coast Phase 2) Ramsar



Colne Estuary NNR



Colne Valley LNR



Upper Colne Marshes SSSI



Colne Estuary SSSI



Hartley Wood

## Appendix 3: Natural Green Infrastructure

Green Infrastructure can be defined as a carefully planned network of high quality natural and semi-natural assets and habitat types, of green and blue spaces, and other strategical planned environmental features that maintain and delivers our ecosystem services (*Essex Green Infrastructure Strategy 2020*).

For the purpose of the Essex Green Infrastructure Strategy the types of assets that fall within Parks & Gardens typology are:

Urban park	Regional park
<ul style="list-style-type: none"> <li>• Pocket park</li> <li>• Neighbourhood park</li> <li>• Community park</li> <li>• District park</li> </ul>	<ul style="list-style-type: none"> <li>• Country park</li> <li>• Garden</li> <li>• Vegetated garden</li> <li>• Un-vegetated garden</li> </ul>

Natural and semi-natural green space	
<ul style="list-style-type: none"> <li>• Grasslands</li> <li>• Heathland</li> <li>• Scrub</li> <li>• Woodland</li> <li>• Woodland; broadleaved</li> <li>• Woodland; mixed</li> </ul>	<ul style="list-style-type: none"> <li>• Woodland; coniferous</li> <li>• Wetlands</li> <li>• Vacant/derelict land</li> <li>• Disused quarry</li> <li>• Abandoned ruderal and derelict areas</li> </ul>

### Coastal features:

Coastal	Tidal water
<ul style="list-style-type: none"> <li>• Beaches and sand dunes</li> <li>• Foreshore / rocks</li> </ul>	<ul style="list-style-type: none"> <li>• Open saline water</li> </ul>

Natural greenspaces are places where human control and activities are not intensive so that a feeling of naturalness is allowed to predominate. Natural and semi-natural greenspace exists as a distinct typology but also as discrete areas within the majority of other greenspace typologies ('Nature Nearby' Accessible Nature Greenspace Guidance, Natural England 2010).

<b>Authority Name</b>	<b>Braintree</b>	<b>Colchester</b>	<b>Maldon</b>	<b>Tendring</b>	<b>Uttlesford</b>	<b>Totals</b>
<b>Authority Area</b>	611.6	333.1	358.7	337.7	641	<b>2282.1</b>
<b>Natural and semi-natural open space</b>	51.4	41.1	25	20.2	42.8	<b>180.5</b>
<b>% Natural and semi-natural open space</b>	8.4	12.3	7	6	6.7	<b>7.9</b>
<b>Ancient Woodland</b>	12.7	4.8	4.2	5.5	14.8	<b>42</b>
<b>% Ancient Woodland</b>	2.1	1.4	1.2	1.6	2.3	<b>1.8</b>
<b>Country Parks</b>	0.86	1.53	1.56	0.43	4.53	<b>8.91</b>
<b>% Country Parks</b>	0.1	0.5	0.4	0.1	0.7	<b>0.4</b>
<b>Reservoirs, lakes and ponds</b>	0.3	5	0	0.8	0.2	<b>6.3</b>
<b>% Reservoirs, lakes and ponds</b>	0	1.5	0	0.2	0	<b>0.3</b>
<b>Coastal features</b>	0.1	14.3	27.4	16.8	0	<b>58.6</b>
<b>% Coastal features</b>	0	0	0.1	0	0	<b>2.6</b>
<b>Total GI</b>	65.4	66.7	58.2	43.7	62.3	<b>296.31</b>
<b>% GI in Authority</b>	10.7	20	16.2	12.9	9.7	<b>13</b>

Area and percentage of GI by typology for Braintree, Colchester, Maldon, Tendring, Uttlesford (km<sup>2</sup>)

## Appendix 4: Potential Frameworks and Data Sources for the CFA Knowledge System

### Multicapitals approach

This enables natural, social, human and produced capitals within the CFA to be assessed throughout its lifetime

It uses the common Systems for Environmental Economic Accounting (SEEA) and the Ecosystems Accounts (SEA)<sup>4</sup> for both biophysical and economic valuation but will require a focussed activity related to the CFA and the county. The CFA could benefit from existing experience of the multi-capitals approach in business in the region<sup>5</sup>.

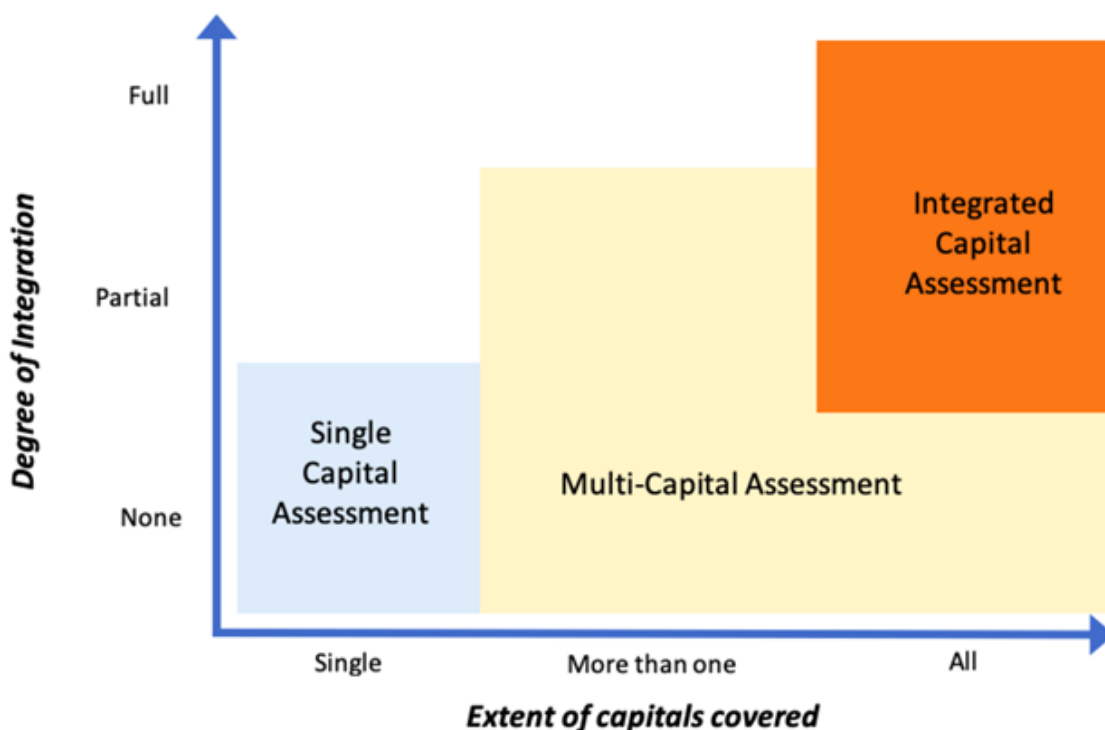


Figure 1 - Increasing Integration resulting from Multi-capitals appraisal (<https://capitalscoalition.org/principles-of-integrated-capitals-assessments/>)

<sup>4</sup>The System for Environmental Economic Accounting (SEEA) is the accepted international standard for environmental-economic accounting, providing a framework for organizing and presenting statistics on the environment and its relationship with the economy. It brings together economic and environmental information in an internationally agreed set of standard concepts, definitions, classifications, accounting rules and tables to produce internationally comparable statistics. The SEEA Central Framework (CF) looks at environmental assets (e.g. water resources, energy, forests, fisheries), their use in the economy and flows back to the environment in the form of waste, air and water emissions. The SEEA Experimental Ecosystem Accounting (EEA), on the other hand, takes the perspective of ecosystems, considering how environmental assets interact with natural processes within a given spatial area.

<sup>5</sup> Anglian Water Integrated Report – 6 Capitals Thinking <https://www.anglianwater.co.uk/siteassets/household/about-us/air-2020.pdf>

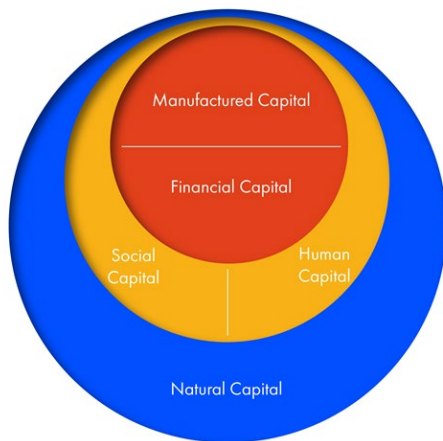


Figure 2 - The Multiple Capitals model  
 (https://www.forumforthefuture.org/the-five-capitals)



Figure 3 - Six Capitals Thinking (Anglian Water 2020).  
 https://www.anglianwater.co.uk/site/assets/household/about-us/air-2020.pdf

Guidelines and technical notes can be found at [www.teeb.org](http://www.teeb.org); [www.capitalscoalition.org](http://www.capitalscoalition.org). Quantitative data for natural capital and ecosystem services is available through the Natural Capital Assessment Gateway, and for human and produced capitals through the Office of National Statistics<sup>6</sup>. Social capital covered in various official statistics (e.g. Barometer of Social Capital, General Social Survey (GSS), General Social Capital Survey, UK Social Capital Measurement Framework, World Bank Integrated Questionnaire for the Measurement of Social Capital and SOCAT, World Values Survey)

<sup>6</sup> <https://ecosystemsknowledge.net/natural-capital-assessment-gateway> ; <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/humancapitalestimates/2004to2018> ;

**CFA Knowledge System: methodologies and approaches**

<b>Component</b>	<b>Type of analysis: Stocks</b>	<b>Type of analysis: Flows/performance</b>	<b>Type of valuation approach</b>	<b>Analytical methods</b>
<b>Natural capital</b>	Quantitative; state indicators	Quantitative based on time series of indicators	Revealed/expressed willingness to pay; group valuation; market prices	Geospatial analysis; statistics; dynamical modelling
<b>Human capital</b>	Quantitative; state indicators	Quantitative based on time series of indicators	Revealed/expressed willingness to pay; group valuation; market prices	Statistics; models
<b>Produced capital</b>	Quantitative; state indicators	Quantitative based on time series of indicators	Revealed/expressed willingness to pay; group valuation; market prices	Geospatial analysis; statistics; dynamical modelling
<b>Ecosystem Services</b> <i>Regulating Provisioning</i>  <i>Cultural Aspects</i>	Quantitative; state indicators  Qualitative thematic analysis	Quantitative based on time series of indicators  Qualitative time series of themes	Revealed/expressed willingness to pay; market prices; group valuation  Group valuation	Geospatial analysis; statistics; dynamical modelling;  Semantic and lexical analysis; non-linear multivariate statistics;
<b>Social capital</b>	Qualitative thematic analysis; interviews; social network analysis	Qualitative time series of themes; social network time series	Group valuation of cognitive, structural and relational capital	Semantic and lexical analysis; non-linear multivariate statistics;



“What will be the effects of climate change and economic activities on natural capital and ecosystem services?; “Which are the relevant ecosystem services needed to deliver the targets sets for the CFA and what is their condition?” From which biomes and ecosystems do they emanate? Whom do they benefit and to what extent?” The process of attaining comparable answers to such critical questions benefits from the adoption of a common conceptual framework, and the System for Environmental Economic Accounting (SEEA) which is supported by the Office of National Statistics for the delivery of the Sustainable Development Goals.

The CFA knowledge system will be built around a geospatial database, which will enable continuous updating of the state and condition of different conservation and biodiversity status areas, including habitats and land use classes. Key data sources include the latest high resolution earth observations (e.g. Sentinel, Landsat and upcoming science missions which can be imported into the Essex CC GIS platform, plus *in situ* observations from monitoring programmes undertaken by government agencies, non-governmental organisations and research programmes<sup>7</sup>.

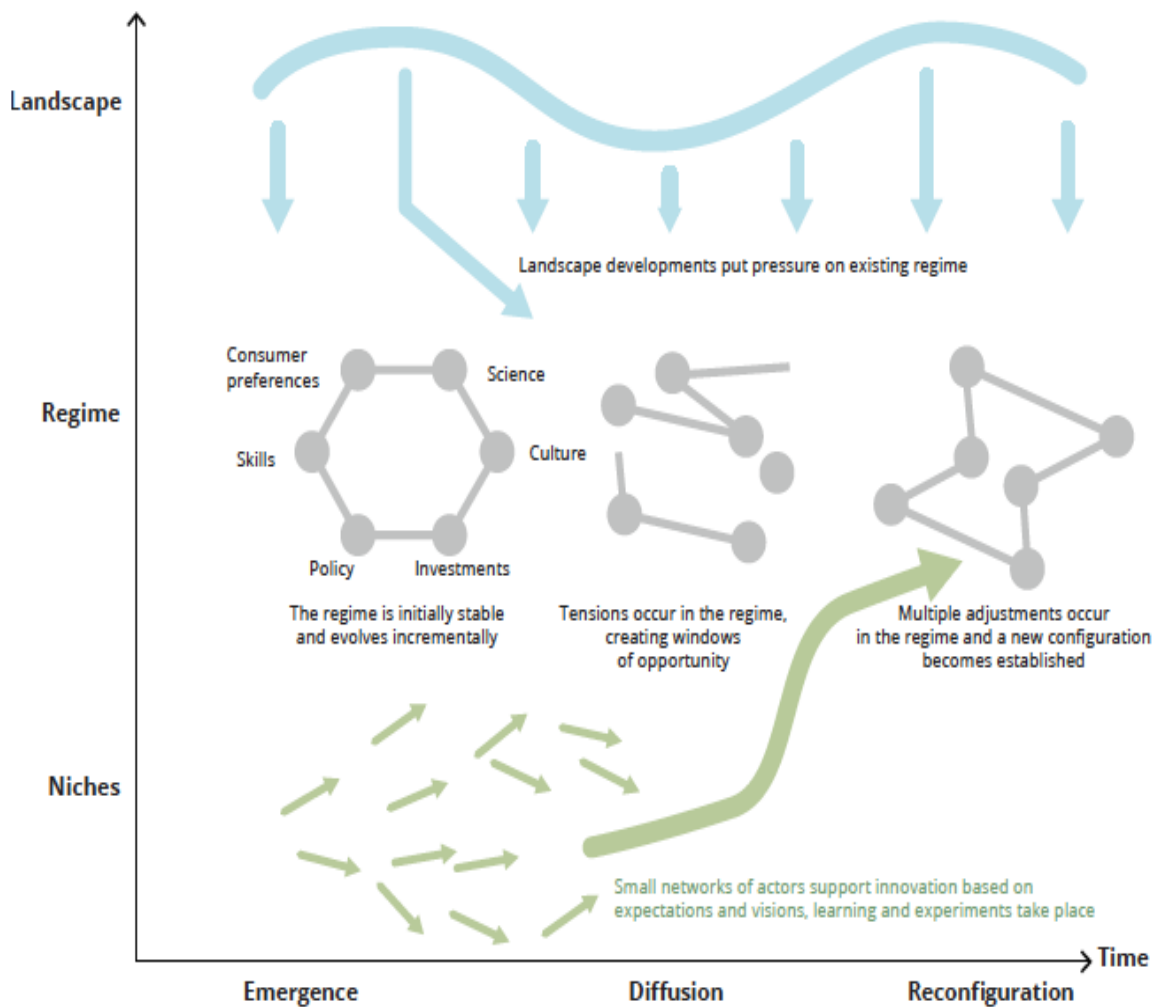
### **Transition mapping and scenario development:**

This aspect of building the knowledge system requires an openly accessible deliberative platform to support an evidence-based participatory approach. Several co-production and modelling platforms exist such as the Prosperity UK, EcoBalance, InVEST, ARIES, Land Utilisation Capability and Ecosystem Services Visualisation Framework<sup>8</sup>.

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<sup>7</sup> A rapid review has identified open access and public data sources for soil health (structure, nutrients, carbon), biodiversity (species, pollinators, habitat extent and condition), carbon stocks, ecosystem services, land use and change, groundwater and surface water (quantity, quality) climate events and risks (flood, drought, coastal erosion-sea-level rise), greenhouse gas emissions; infrastructure; green economy; key sector outputs and productivity; human wellbeing, education, social deprivation, innovation investments, plus a range of indicative data sources for the SDGs.

<sup>8</sup> <https://www.ucl.ac.uk/bartlett/igp/prosperity-index>; <http://naturalcapitalproject.stanford.edu/software>; [www.ecobalance.io](http://www.ecobalance.io) ; <http://naturalcapitalproject.stanford.edu/software>; [www.lucitools.org](http://www.lucitools.org); <https://wrt.org.uk/project/ecosystem-services-visualisation/>

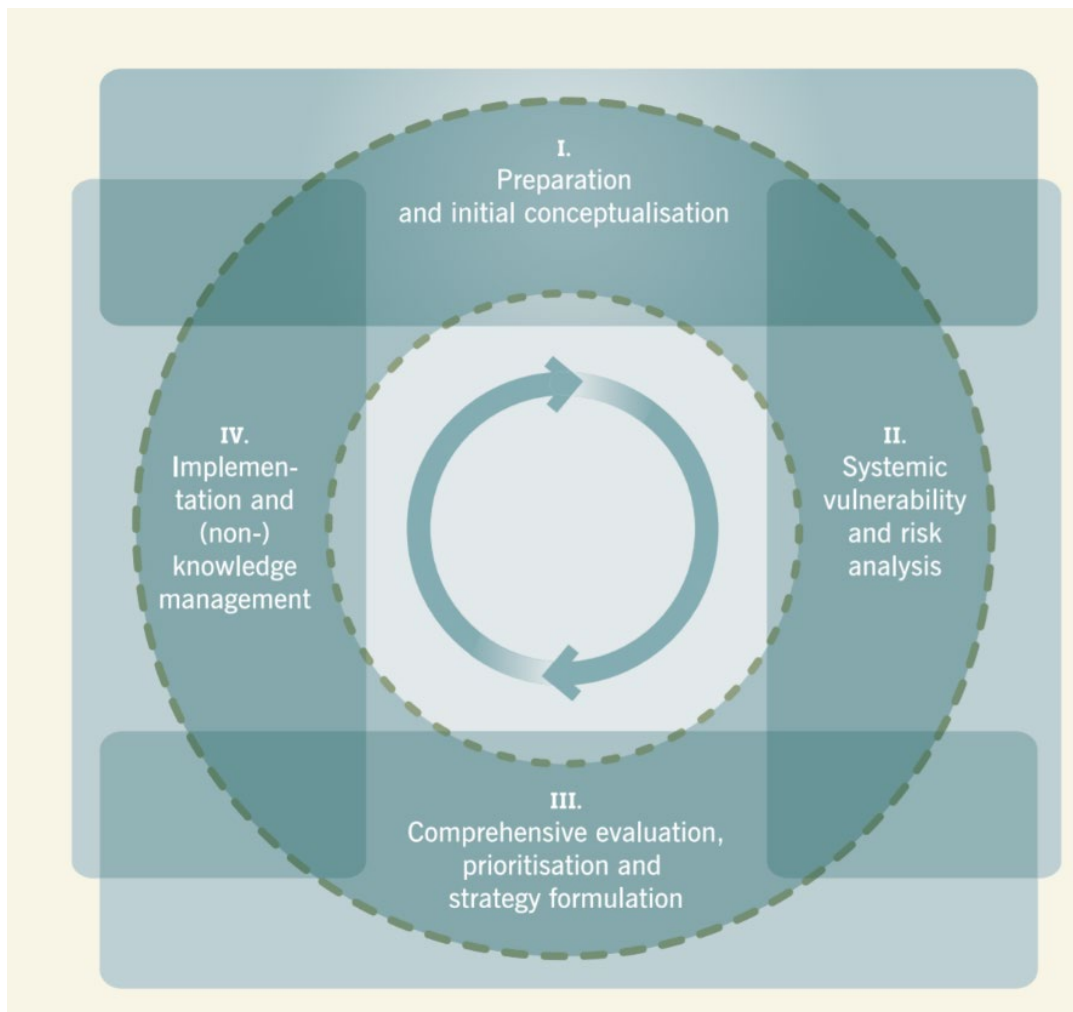


Example of multilevel perspective on transition pathways across landscapes, regions, and niches

**Adaptive management approaches:**

These need to occur across all policy domains to support CFA implementation in other areas of Essex. One example is MARISCO<sup>9</sup>, a toolbox and approach to adaptive ecosystem-based management which facilitates the integration of a dynamic risk and vulnerability perspective into the management of conservation projects and sites.

<sup>9</sup> <https://www.marisco.training/about-us/>



Example: MARISCO overview of the four phases of participation and deliberation

## Appendix 5: Potential Funding Mechanism Options for CFA

### Countryside Stewardship scheme (opens for 2022 agreements)

Farmers and land managers are being encouraged to apply for [Countryside Stewardship \(CS\) agreements](#) to help them protect and improve the natural environment, as the new scheme opens today (Tuesday 9 February).

Through CS, farmers can apply for funding to improve their local environment – from restoring wildlife habitats and creating woodlands to managing flood risk. Following close working with industry, changes have been made to the scheme this year to broaden out the options available and make it easier to apply.

CS will eventually be replaced with the new Environmental Land Management scheme and by entering an agreement now, farmers will be best-placed to benefit from the new agricultural policy once it is fully rolled out in 2024.

### Environmental Land Management scheme (ELMS)

Environmental Land Management scheme is due to be fully rolled out by the end of 2024, replacing the schemes currently available under the EU's Common Agricultural Policy (CAP). The new ELMS, founded on the principle of "public money for public goods", will be the cornerstone of our agricultural policy after we have left the EU. ELM will provide farmers, foresters, and other land managers with an opportunity to secure financial reward in return for delivering environmental benefits.

The public goods ELM will pay for include:

- Clean and plentiful water
- Clean air
- Protection from and mitigation of environmental hazards
- Mitigation of and adaptation to climate change
- Thriving plants and wildlife
- Beauty, heritage and engagement

As part of this wider system, the core aim of ELM should be to deliver environmental benefits, paying farmers, foresters and other land managers for interventions and actions that improve and enhance our environment, or for maintaining current land management practices that secure environmental public goods.

*Further reading:*

[https://consult.defra.gov.uk/elm/elmpolicyconsultation/supporting\\_documents/ELM%20Policy%20Discussion%20Document%20230620.pdf](https://consult.defra.gov.uk/elm/elmpolicyconsultation/supporting_documents/ELM%20Policy%20Discussion%20Document%20230620.pdf)

<https://www.fwi.co.uk/business/payments-schemes/environmental-schemes/environmental-land-management-scheme-what-we-know-so-far>

## Nature Recovery Network (NRN)

The Nature Recovery Network is a commitment in the UK Government's 25-Year Environment Plan, intended to improve, expand and connect habitats to address wildlife decline and provide wider environmental benefits for people.

The concept for the Nature Recovery Network is simple. Our existing protected sites constitute our best areas for wildlife and provide many other economic and social benefits. They should form the core of any future network. However, for nature to recover we have to also look beyond protected sites and take action to extend and link our existing sites, both to support wildlife and to recover the range of economic and social benefits that nature provides.

### **The Defra Group approach for delivering the Nature Recovery Network:**

Defra's overall approach to building the Nature Recovery Network is six-fold. They will seek to:

1. Building nature recovery into existing and planned policies;
2. Forging strong national and local partnerships, building on what is already in place;
3. Working with private and public landowners to improve, expand and connect wildlife-rich habitats;
4. Broadening the funding base for nature;
5. Developing mapping, data and other support tools;
6. Developing monitoring and reporting on progress.

A NRN allows plants, animals, seeds, nutrients and water to move from place to place and enables the natural world to adapt to change. It provides plants and animals with places to live, feed and breed. It creates the corridors and areas of habitat they need to move in response to climate change. A Network could include nature reserves and Local Wildlife Sites, and parts of National Parks. It would also contain peat bogs, heaths, meadows and cliffs; road verges, parks, gardens, hedges and woods; and rivers, streams, ponds and lakes. At sea, it would include reefs and sandbanks, rocky shores and seagrass beds

*Further reading:*

<http://publications.naturalengland.org.uk/publication/6105140258144256>

<https://www.wildlifetrusts.org/nature-recovery-network>

[https://www.confor.org.uk/media/247417/nature-recovery-network\\_discussion-document\\_defra-group\\_april2019.pdf](https://www.confor.org.uk/media/247417/nature-recovery-network_discussion-document_defra-group_april2019.pdf)

## **Innovative Resilience Programme (EA)**

The Flood and Coastal Resilience Innovation programme has 4 main aims:

1. To galvanise local authorities, businesses and communities to test and demonstrate innovative practical actions within their areas.
2. To improve the resilience of 25 areas to flooding and coastal change, reducing the costs of future damage and disruption from flooding and coastal erosion.
3. To improve evidence on the costs and benefits of the innovative actions and demonstrating how different actions work together across geographical areas.
4. To use the evidence and learning developed to inform future approaches to, and investments in, flood and coastal erosion risk management (post 2027).

In the March 2020 Budget, the government announced £200 million, between 2021 and 2027, for a “place-based resilience programme” to support 25 local areas, urban, rural and coastal, from the North, the Midlands and the South, to take forward practical and innovative actions that improve their resilience to flooding and coastal erosion.

There are a number of parts to the programme, the largest of which is around £150m for the innovative actions in 25 places (around £6m per place). The programme will also support work in the Thames and Humber estuaries.

Lead Local Flood Authorities (LLFAs), or Coast Protection Authorities (CPAs), will work together with other stakeholders in their areas to deliver actions which will improve their resilience to flooding and/or coastal change. The Prospectus includes a menu of potential resilience actions that might be delivered through the local authority-led partnerships.

## **Investment Readiness Fund (EA)**

The [Natural Environment Investment Readiness Fund](#) will provide grants of up to £100,000 to environmental groups, local authorities, businesses and other organisations to help them develop nature projects in England to a point where they can attract private investment.

This will create a pipeline of projects for the private sector to invest in, and develop new funding models that can be replicated elsewhere, demonstrating the UK’s leadership in nature finance in the run-up to COP26 in November.

Examples of projects that could be eligible for the fund:

- The creation of new woodlands and the restoration of peatlands, providing habitats for wildlife, green spaces for the public and carbon sequestration to help the government achieve its net zero target. This will generate carbon units which can be sold to businesses that want to offset emissions.

- The creation of new coastal wetlands, which benefit wildlife and reduce tidal flooding, while also attracting investment from developers needing to deliver biodiversity net gain and even delivering revenue through eco-tourism.
- The restoration of river catchments, helping to both improve water quality and reduce flood risk. As well as benefitting nature and people, these environmental benefits will deliver financial incentives to water companies (with reduced costs for water treatment) and encouraging them to invest.

## Water Companies

Announced as part of the body's price review for the next five years, the fund will finance a string of new projects aimed at making the UK's water sector more resilient to climate change, biodiversity loss and population growth.

Among these projects are the installation of a new reservoir in Hampshire; the construction of a pipeline linking water supplies from North Lincolnshire to Essex and a £469m investigation into alternative water sources in case of drought

In addition to providing funding itself, Ofwat is urging water utilities to outline further investment of their own into environmental initiatives through to 2025.

The body will require firms to cut leakage by 16% over the next five years and to reduce river and stream pollution by one-third. Moreover, it says it will keep encouraging companies to invest in nature-based climate solutions such as peatland restoration and tree planting, over man-made solutions. In August, the UK's nine major water and sewerage providers, including Yorkshire Water, Anglian Water and United Utilities committed to [planting 11 million](#) trees in order to improve the natural environment across 6,000 hectares of English land.

*Further reading:*

<https://www.edie.net/news/4/Ofwat-unveils--13bn-climate-package-for-UK-water-companies/#:~:text=Regulator%20Ofwat%20has%20unveiled%20its,with%20climate%20adaptation%20and%20mitigation>

<https://www.ofwat.gov.uk/pn-23-19-ofwat-gives-green-light-to-massive-investment-programme-to-transform-water-sector/>

## **Biodiversity Net Gain**

The Environment Bill requires all consented developments (with certain modest exceptions), in England to demonstrate a 10% gain in biodiversity when compared to the pre-development baseline using the Natural England metric.

Net gain for biodiversity could be delivered by:

Applying sensitive design that avoids the loss of high-quality habitats, minimises the impact of a development on site, enhances habitats in poor condition and delivers desirable places to live by creating new habitats on site.

Using off-site local and strategic compensatory habitat creation and enhancement only where net gain cannot be reasonably achieved on site, for example on land provided by habitat banks, land-owners or brokers as part of a flexible market which supports identified biodiversity priorities and contributes to local and accessible nature.

Where opportunities for on-site and locally-sourced compensation are not available, achieving gains through payment of a tariff. A tariff would be designed to incentivise habitat protection and strategic compensation (in line with the mitigation hierarchy), raise revenue to invest in strategically important habitats that benefit local communities, support nature recovery and reliably achieve net gain overall at a national scale

Developers may be required by planning authorities to fund offsite biodiversity net gain projects relevant to their local needs and strategic priorities.

*Further reading:*

[https://consult.defra.gov.uk/land-use/net-gain/supporting\\_documents/netgainconsultationdocument.pdf](https://consult.defra.gov.uk/land-use/net-gain/supporting_documents/netgainconsultationdocument.pdf)

## **Water Resources East (WRE)**

Formed in 2014 by Anglian Water, it's aim is to learn from international best practice on how to develop a more collaborative approach to water resource management planning in a region under significant pressure due to population growth and economic ambition.

In response to these challenges, WRE has developed the following overarching strategy for the region:

- Identifying ways in which all users of water in Eastern England can be as water efficient as possible.
- Promoting the need for additional storage of water within the landscape, increasing resilience and seeking to identify multi-sector opportunities to link water scarcity with flood risk management solutions.



- Seeking to transfer water from areas of surplus to areas of deficit, seeking to increase connectivity whilst maximising the use of open water channels.
- Actively exploring other potential sources of water for our region, for example transfers, desalination, and water re-use.

WRE works across sectors and collaboratively with all interested parties – those who use, have an impact on, and are affected by future water resource change. WRE can facilitate multi-sector investment and encourages collective ownership of future challenges faced by the region.

The WRE will produce an overarching working strategy and supporting action plan, which will be researched and agreed by the programme partners. This will deliver more robust, resilient and cost-effective solutions that would be offered through traditional approaches.

*Further reading:*

<https://wre.org.uk/wp-content/uploads/2020/04/WRE-Initial-statement-of-resource-need-FINAL.pdf>

<https://wre.org.uk/about-us/>

## **Green Bonds**

Green bonds are bond issues whereby the proceeds are ring-fenced and exclusively applied to finance or re-finance in part or in full new and/or existing environmental and climate action projects. Green bonds have historically been issued by multilateral lenders such as the World Bank, the European Investment Bank and corporates. However, local authorities are also increasingly looking at using green bonds to finance some of their environmental projects. West Berkshire was the first to do so and raise £1M in five days. The majority of the green bonds issued are green “use of proceeds” or asset-linked bonds. Proceeds from these bonds are earmarked for green projects but are backed by the issuer’s entire balance sheet. There have also been green “use of proceeds” revenue bonds, green project bonds and green securitised bonds.

There are different kinds of bonds can be potentially applicable to GI depending on the nature and purpose of the facilities being financed, such as conventional municipal bonds, climate bonds, and other special purpose bonds.

## **Other Funders**

- Investment Readiness Fund (EA)
- East Coast Wetland Programme (RSPB & EWT)

- Impact Investment
- Private finance (via for example Farm Cluster Groups) – but only if the metrics and framework deployed by Climate Focus Area are also useful in other public (ELM) and private (ecosystem services & investment) markets
- Environmental Charitable Trusts such as the Esmee Fairburn
- National Lottery Heritage Fund

## Appendix 6: Climate Focus Area Potential Stakeholders

- Landowners
- Farmers
- NFU
- CLA
- Farming Advisors
- ECC Planning
- Essex Highways
- ECC Environment & Climate Action
- ECC Public Health
- Borough and Districts
- The Environment Agency
- Natural England
- Forestry Commission
- RSPB
- National Trust
- Essex Wildlife Trust
- Woodland Trust
- The business community
- Water Resources East
- Parish and Town Councils
- Sports and Recreation organisations

Stakeholders would be invited to a series of meetings, online and written consultations and on-site workshops.

## Appendix 7: Further Community Engagement, Involvement and Action

Drawing on other work done with community engagement and Climate change: The UK Audit Commission (2003) identified the following principles underpinning successful community engagement, based on an extensive review of UK local government community engagement initiatives:

- Commitment to user focus underpinned by core values such as honesty, inclusiveness, fairness, and realism.
- Clarity of purpose: shared understanding about whether the primary purpose is information provision, consultation, encouraging involvement in decisions, etc.
- Understanding your communities: careful consideration of the best ways of working with diverse communities of place, population and interest.
- Communicating appropriately: employing a wide and effective range of communication strategies appropriate for diverse audiences.
- Delivering change: ensuring that the outcomes of engagement strategies have a genuine impact on relevant decisions and outcomes.

It must be recognised that the community must be given a sense of ownership and voice in what happens in their areas where they live and work. The consultation must be built with this integrity and respect in mind and should take place from a bottom up approach rather than top down.

The risk to successful transition can lie in a lack of community and individual buy in. Communication must ensure that all citizens understand the urgency of this work, and what the direct and indirect benefits will be as a result of action and commitment to the common purpose of the Climate Action Commission.

A full plan of community engagement and communication strategy needs to be urgently agreed and budgeted for and cannot rely on other mechanisms such as Green Essex to do the communication. Other existing communication tools can be harnessed to support the community outreach and ongoing support but not be the only mechanism.

**Draft ideas for engagement:**

1. Create an initial concept consultation draft document/video that can be shared with all Councillors and MPs in the CFA defined areas, aiming to develop an agreed presentation and outreach communications plan for their direct communities. Identify through them, key members of the community who can help the development of the communication strategy, in both groups and individuals.
2. Create a mobile consultation (document and video) that can visit each parish council in the CFA areas. Presentations to each parish council is critical and a consultation with councillors put in place to gather their thoughts and ideas for wider consultation. Parish councils help identify key community groups and individuals who can help develop the strategy to reach the whole community in a consultation process.  
  
Create the same consultation with the NGOs and other organisations that work within the environment or climate change delivery area and draw on their contributions.  
  
Engage local businesses through the Chambers of Commerce to take part in the consultation.
3. Community and individual outreach again to help draw down ideas and actions that each body can implement themselves or suggest would be meaningful in their areas or sphere of influence.
4. Create a school outreach programme, potentially using MARISCO, to gather the thoughts and ideas of pupils across the FA - of all ages.
5. Condense and analyse the outcomes from the schools, community and individual outreach - seeing where these can be allocated to the wider goals and ambitions of CACC, and CFA wider objectives and add to those in existence with any new thinking.
6. Create a range of local steering groups in communities and schools to help deliver actions and monitor success or challenge along the way.
7. Create a website or communication strategy for individuals to measure how actions however small can feed into the carbon reduction targets as set by the wider agenda. Work with ECC communications team to set up an app or similar structure to ease engagement.
8. Build a feedback mechanism for monitoring and evaluation and regular review planning and direction resetting where necessary.

Key principles for effective climate change community engagement policy and practice initiatives as identified in the Australian study include:

- government leadership about the need for urgent action to address climate change
- understanding the importance of action at appropriate scope and scale
- balancing a realistic sense of climate change challenges with a sense of possibility and empowerment
- respecting and promoting local knowledge and ownership
- building relationships based on mutual trust and respect
- communicating accessible, reliable information
- maximising community relevance, inclusion and innovation
- valuing and drawing on existing skills, resources and networks
- maximising continuity and sustainability
- encouraging reflection, learning and sharing of best practice
- creating strategies to engage vulnerable and “hard to reach” groups

**Further immediate actions:**

1. Identify and source new partnerships, and those within existing networks, to develop goals, terms of references agreed and plans of action e.g.: SIG, ECC communications team, local NGOS, schools.
2. Human resources identified for work to take place, budget agreed and funds made available for proposed plan to be enacted.
3. Timetable for action developed.
4. Follow up, sustainability and support proposals agreed beyond 2030 e.g.: ongoing community communications.
5. Best practice manual as a living document to share widely with lessons learned and achievements.

## Appendix 8: Sustainable Land Stewardship Definitions

### *Definition set out by Prof. Jules Pretty*

Sustainable agricultural systems should exhibit a number of key attributes at the production end of food systems. They should:

1. Utilize crop varieties and livestock breeds with a high ratio of productivity to use of externally and internally derived inputs.
2. Avoid the unnecessary use of external inputs.
3. Harness agroecological processes such as nutrient cycling, biological nitrogen fixation, allelopathy, predation and parasitism.
4. Minimize use of technologies or practices that have adverse impacts on the environment and human health.
5. Make productive use of human capital in the form of knowledge and capacity to adapt and innovate and of social capital to resolve common landscape-scale or system-wide problems (such as water, pest or soil management).
6. Minimize the impacts of system management on externalities such as greenhouse gas emissions, water, carbon sequestration, biodiversity, and dispersal of pests, pathogens and weeds.

### **Summarised:**

1. Use efficient crop and animal varieties lessening the need for fertilizer and pesticides
2. Limit external inputs
3. Exploit natural biological processes to increase fertility or beneficial pest control
4. Minimize physical and chemical technologies that have adverse impacts on the environment and human health;
5. Use local human resources and knowledge
6. Lower use of valuable resources and production of damaging resources

**Regenerative Agriculture set out by Archie Ruggles Brise**

The Regenerative Agriculture movement tends to work with the following

(ref <https://www.chelseagreen.com/2020/5-principles-of-soil-health/>):

1. Limited soil disturbance
2. Keeping soil covered (by growing plants or cut material)
3. Diversity (in cropping and animals)
4. Living Roots in fields at all times
5. Integrated Animals (in cropping systems) – i.e. mixed farming systems rather than specialist monocultures.



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