

10 Green infrastructure, landscape, heritage, flood and erosion risk management and the coast

10.1 Ambitions

The implementation of the regional economic strategy (RES) and regional spatial strategy (RSS) depends on managing the East of England's environmental resources sustainably. This is essential for securing the future supply of environmental services, to help us adapt to climate change and to make the transition to a low carbon economy. Respecting the value of the region's natural and historic environment also holds the key to experiences critical to our health and well-being.

Aspects of this theme contribute to high-level objectives of both strategies. The region's environment provides a wide range of essential natural services – food and raw materials, clean air and water, a moderation of climatic extremes and defence against flooding, a habitat for ourselves and other species of wildlife, and space to lead healthy and happy lives. The region's distinctive landscapes and settlements make the region an attractive place within which to live and work and for others to visit and this value needs to be sustained throughout the delivery of both strategies.

Given the large land area involved, the region's farmland is a critical factor in the successful delivery of the RES and the RSS. Agricultural policy and practice has an important bearing on how well we sustain wider environmental services, adapt to climate change, increase food security and decide on the right places to develop. Forestry policy, and the expansion of woodland in the region, also have significant contributions to low carbon and climate change adaptation objectives.

Managing flood and coastal erosion risk is a key challenge in delivering the RES and RSS. There is a strong correlation between sustainable management of the natural environment and the choice between investing in further 'hard' defences and developing more 'natural' solutions (which can bring wider benefits). Cost-benefit considerations under future public expenditure constraints, coupled with increasing recognition of the realities of climate change, would point to an increasing need to work with, rather than against, natural processes to manage these risks in a sustainable way.

The region's coast makes a key contribution to regional ambitions with important economic regeneration and environmental protection issues to manage. There are challenging adaptation needs to address in response to sea-level rise and climate change. How the region manages the governance of the complex social, economic and environmental inter-relationships at play along the region's coast is an important concern.

Managing these challenges is important to delivery of the RES gross value added (GVA) target. Firstly, effective flood risk management is important for securing business confidence and investment. Secondly, the quality of our environment affects personal and business investment decisions, and is important for the tourism economy. Thirdly, a number of the region's coastal economies are under-performing and improvement would have a positive overall impact on the region's GVA.

This theme comprises four inter-linked implementation programmes that address flood and erosion risk management, coastal management, the natural and historic landscape and green infrastructure.

These programmes contribute to ambitions in both the RES and the RSS to:

- adapt to climate change, achieve a low carbon economy and improve resource efficiency, fundamental for meeting the region's CO₂ target
- meet regional targets for enhancing biodiversity, landscape and natural habitats
- deliver green infrastructure in supporting sustainable communities

- adopt an integrated approach to managing coastal issues
- secure the sustainable management of the region’s natural and historic resources and the services these provide.

10.2 Status

Delivering the growth set out in the RES and the RSS in a sustainable way depends upon meeting the challenges set out in these programmes. This includes a long-term approach to managing flood and coastal erosion risk. The region needs to build a stronger consensus over an approach that reconciles the realities of climate change and natural processes with the appropriate needs of existing communities. Delivering a cost-effective, risk-based approach which meets this challenge is emerging.

Well-designed and managed green infrastructure is an essential prerequisite for sustainable development, as much as conventional ‘grey infrastructure’ requirements, such as roads and sewers. The existing good examples of green infrastructure in the region need to be followed in the emerging growth areas. The challenges of funding for green infrastructure in a more constrained financial environment need to be resolved.

A comprehensive approach to managing the wider environment is evolving, with plans to create and restore large-scale regional landscapes such as through the Great Fen Project, the Alde/Blythe Project, the Wetland Vision and with restoration of rivers such as the Nar and Wensum. These kinds of project need to be applied more widely across the region, and at a faster rate, to deliver both the environmental resilience and ecosystem services necessary to support the growth.

The region’s long length of coastline contributes to both strategies and competing demands here need to be better managed. The particular economic, social and environmental challenges faced on the coast require an integrated approach and the right governance arrangements to deliver this. The Coastal Initiative is currently trialling ways to integrate social, economic and environmental objectives, reflecting the particular risks from climate change and sea-level rise.

With the recent acknowledgement of the need to address food security, the call for greater quantities of renewable energy crops and pressure for land for growth in the region, there is a conflict surrounding land use. Farmers currently are able to receive financial rewards for managing the landscape in an environmentally beneficial way via Environmental Stewardship administered by Natural England. This is being reinforced by the Campaign for the Farmed Environment, which was recently launched as a voluntary initiative for farmers to retain the benefits of ‘set aside’ following its abolition in 2008. The pressure to produce more food for a growing global population will be a real challenge and will impact on the existing landscape.

10.3 Programmes

	Programmes	Programme component
1	Flood and erosion risk management	(1a) Delivering the actions of Catchment Flood Management Plans (CFMPs) and Shoreline Management Plans (SMPs)
		(1b) Coastal and flood risk management over the next three years
		(1c) Long-term investment strategy for managing flood risk and coastal erosion
2	Integrated coastal management	(2a) East of England Coastal Initiative
		(2b) Regional Habitat Creation Programme

	Programmes	Programme component
3	The natural and historic environment	(3a) Restoring regionally significant landscapes and settlements
		(3b) Meeting Biodiversity Action Plan targets for habitats and species
		(3c) Heritage at risk monitoring and grant funding
		(3d) Environmental stewardship, catchment sensitive farming and the water framework directive
		(3e) Biodiversity monitoring and recording
4	Delivering green infrastructure	(4a) Delivering multi-functional green infrastructure

Programme 1: Flood and erosion risk management

Description and strategic fit

This programme addresses the sustainable flood risk and erosion management necessary to support the region's growth. It includes the management of flood risk arising from the sea, rivers and ground/surface water run-off. The East of England contains many low-lying areas at particular risk from fluvial or coastal flooding and also places where soft sea-cliffs are eroding rapidly. Climate change and sea-level rise are combining to exacerbate the risks from flooding and coastal erosion. The trend for a higher frequency of extreme weather events, as the climate continues to change, will make flood events more frequent and less predictable. Localised surface water flooding events are also likely to become more frequent.

In the East of England, an estimated 23,000 properties are currently affected by a 1 per cent Annual Exceedance Probability (AEP) fluvial event, rising to approximately 40,000 properties at risk from the future 1 per cent AEP fluvial event.⁽¹⁾ A risk-based approach to flood and coastal erosion management is essential to limit the distress, damage and loss of life that can occur. The Floods and Water Bill clarifies that upper tier authorities have lead responsibilities for local flood risk management (surface water, groundwater and ordinary watercourses). The Environment Agency is now responsible for the strategic overview of all sources of flooding. A long-term strategic approach is set out in Catchment Flood Management Plans (CFMPs) and Shoreline Management Plans (SMPs) which are prepared by the Environment Agency. This Implementation Plan advocates the delivery of the initiatives set out in such plans in order to deliver the objectives of the RES and the RSS.

Investment in the delivery and maintenance of traditionally engineered 'hard' flood defences will continue to be necessary to defend certain parts of the coastline most at risk from flooding, to safeguard existing communities and maintain growth and investment. Increasingly, this will need to be augmented by allowing naturally functioning systems to help manage flooding in a sustainable and cost-effective way. Applying this eco-systems approach to managing flood and erosion risk can have the added advantage of bringing forward additional benefits and provide a cost-effective solution to addressing a wider range of the objectives of both the RES and the RSS.

This programme supports delivery of RSS Policy WAT4.

¹ East of England Regional Assembly Regional Flood Risk Appraisal, March 2009

Implementation

Leadership

The Floods and Water Management Bill clarifies that upper tier authorities have lead responsibilities for local flood risk management (surface water, groundwater and ordinary watercourses). The Environment Agency is now responsible for the strategic overview of all sources of flooding. Governing regional bodies and Government departments will also play an important role.

Monitoring

Monitoring of the RSS and Local Development Framework annual monitoring will provide the basis for this programme’s monitoring.

Resources

Resources come from central government spending via grant-in-aid to the Environment Agency, flood management spending by local authorities and Internal Drainage Boards, contributions to flood risk spending from other pots (eg Growth Area Funding), external contributions through direct provision or funding via s106 or Community Infrastructure Levy. The long-term approach to managing flood risk should not assume that the costs of flood risk will be met centrally. There are direct beneficiaries from flood risk management work that needs to be aligned with those who pay. The Environment Agency’s external contributions policy outlines how beneficiaries can bring investment forward and/or deliver improved solutions.

Programme components

1a Delivering the actions of CFMPs and SMPs		
Supporting the delivery of a longer-term more sustainable approach to fluvial and coastal flood protection.		
Key Delivery Agents	Budget	Results
Environment Agency, Regional Planning bodies, local authorities.	No long-term budget has been fixed.	<p>Outputs:</p> <ul style="list-style-type: none"> regional and local planning policies and development management decisions, which reflect the actions of CFMPs and SMPs. <p>Outcomes:</p> <ul style="list-style-type: none"> new development or regeneration which avoids, mitigates or is resilient to flood risk and contributes to funding for new or retro-fitted flood risk management measures.

1b Coastal and flood risk management over the next three years
The short-term funding programme for defence and resilience measures in areas at most risk from flooding and coastal erosion.

1b Coastal and flood risk management over the next three years

Key Delivery Agents	Budget ⁽²⁾	Results
Environment Agency, Internal Drainage boards, local authorities.	£75 million 2010-2011 £98 million 2011-2012.	<p>Outputs:</p> <ul style="list-style-type: none"> prioritised defence and resilience measures for communities at most risk from coastal erosion or fluvial/coastal flooding based on affordability/sustainability criteria. <p>Outcomes:</p> <ul style="list-style-type: none"> confidence for further investment and development in locations where policy is for further growth.

1c Long-term investment strategy for managing flood risk and coastal erosion

The longer-term investment response to flood risk and coastal erosion reflecting the adaptation needs arising from climate change. The Environment Agency's long-term investment strategy gives evidence and analysis of the investment needed to adapt to climate change and manage the increased risk over the next 25 years.

Key Delivery Agents	Budget	Results
Environment Agency, Internal Drainage Boards, regional planning bodies, local authorities.	£1,040 million (plus inflation) per year is needed nationally by 2035 to maintain current levels of protection.	<p>Outputs:</p> <ul style="list-style-type: none"> delivery of the Environment Agency's long-term investment strategy 2010 2035 (LTIS) published in June 2009. <p>Outcomes:</p> <ul style="list-style-type: none"> a planning and investment framework better geared to meeting EU Floods Directive and adaptation needs for future climate change scenarios stronger community resilience, flood proofing of plans and a framework for external funding.

² Figures apply to the Environment Agency Eastern Region's central and eastern areas and applies to Environment Agency funding only.

Programme 2: Integrated coastal management

Description and strategic fit

This programme highlights the broad implementation priorities for integrated policy delivery on the region's coast.

Our coast is studded with often quite remote settlements of varying size, interspersed by larger historic towns, such as Great Yarmouth and King's Lynn and major ports like Felixtowe, Harwich and Tilbury. The coastal economy is supported by key employment sectors, such as tourism, fishing, support to offshore industries and manufacturing. Change in these sectors has led to significant pockets of social and economic deprivation, such as in Great Yarmouth and Lowestoft.

The region has 723 km of predominantly low-lying coastline. It provides for some of the region's highest value landscapes and most of the region's nationally and internationally important wildlife habitats. The combination of sea-level rise and increased storminess as a result of climate change is threatening many coastal locations through increased coastal erosion and/or flood risk.

Sea-level rise, the effects of climate change and the loss of sediment are increasing the erosion of natural habitats, such as salt marsh, which provide a natural flood defence and can avoid expenditure on engineered defences. Existing hard defences prevent coastal habitats migrating inland in a natural response to erosion. This results in the habitat loss termed 'coastal squeeze'.

The East of England's coastline is a valuable part of the region's heritage. Stretches of the Suffolk and North Norfolk coasts are designated Heritage Coasts and form parts of Areas of Outstanding Natural Beauty. Our coastal settlements contain a considerable part of the region's historic built legacy.

The particular environmental, social and economic challenges on the coast call for the integrated approach, embraced by the East of England Coastal Initiative. This is an innovative, multi-agency project that is responding to a number of the long-term challenges facing the region's coast and seeking to bring together partners at the national, regional and local levels to address these.

This programme supports delivery of RSS Policy SS9 and plays a role in delivering the objectives of the Spatial Economy goal in the RES.

Implementation

Leadership

A partnership of local authorities (and local stakeholders) with regional bodies, government departments and key agencies (Environment Agency, Natural England, Homes and Communities Agency (HCA) and others) will take a lead on delivering this programme. A range of non-government organisations will also play an important role.

Monitoring

The main source of monitoring will be through Local Area Agreements and Local Development Frameworks, monitoring of the RSS and Agency State of the Environment reporting.

Resources

Funding will come from a wide range of local, regional and national pots.

Programme components

2a East of England Coastal Initiative		
Delivering the environmental, economic and social objectives for the coast in an integrated way building on models trialled through the Coastal Initiative.		
Key Delivery Agents	Budget	Results
The East of England Coastal Initiative Coastal - a partnership initiated by GO-East and involving EEDA, EERA, HCA, the Environment Agency, Natural England, coastal local authorities and Sustainability East.	Coastal change pathfinder funding: £3 million to North Norfolk DC £1.5 million to Waveney DC £0.3 million to Great Yarmouth BC £1 million to Tendring DC.	<p>Outputs:</p> <ul style="list-style-type: none"> improved community engagement in decision-making affecting the coast a stronger evidence base over issues influencing coastal planning consensus on priorities for each of the four coastal pathfinders: King's Lynn and West Norfolk/North Norfolk; Great Yarmouth and Lowestoft; Haven Gateway; and Thames Gateway. <p>Outcomes:</p> <ul style="list-style-type: none"> a more integrated, better evidenced and more inclusive basis for implementing policy affecting the coast better aligned and streamlined governance for managing coastal change and adaptation.

2b Regional Habitat Creation Programme		
The measures necessary to deliver compensatory habitat lost as a result of coastal defence measures in order to comply with the EU Habitats Directive. Minimising the need for compensatory habitat through the development of coastal habitats as a natural defence, and increasing this resource through managed realignment of hard defences where appropriate.		
Key Delivery Agents	Budget	Results
Environment Agency and conservation partners (Wildlife Trusts, RSPB, National Trust and private landowners).	Precise figure not available.	<p>Outputs:</p> <ul style="list-style-type: none"> the funding and delivery of natural habitats to compensate areas through coastal squeeze and flood risk management measures on the coast adapting natural coastal defence systems, and applying managed realignment where appropriate, to

2b Regional Habitat Creation Programme		
		<p>minimise the loss of natural habitat through flood-risk and coastal erosion measures.</p> <p>Outcomes:</p> <ul style="list-style-type: none"> the coherence of the network of internationally designated coastal habitats is maintained additional habitat is created for people and wildlife.

Programme 3: The natural and historic environment

Description and strategic fit

This programme captures measures needed to conserve, restore, and enhance the region’s distinctive natural and historic environment, its landscapes, built heritage, wildlife habitats and native species.

The East of England is noted for its high-quality environment and its characteristic natural and historic landscapes and settlements. Protecting and enhancing this heritage is part of the vision of both the RES and the RSS. These natural and historic resources are important to the region’s economy and form an important driver for investment and population growth in the region. They deliver a wide range of services, which are vital to the growth ambitions of both strategies but must be sustainably managed to accommodate the pressure that this growth places upon them.

Enhancing the natural and historic environment can improve the region’s quality of life, boost tourism and the economy, add to its distinctive appeal which attract new residents and investment, provide opportunities for a healthy lifestyle and support our adaptation to climate change.

However, the region’s natural and historic landscape has suffered from the demands placed on it by intensive agriculture, development, infrastructure and providing resources, such as freshwater. There has been recent good progress to restore some semi-natural landscapes and improve the conditions of the region’s special sites and populations of rare species. However, in general, our natural areas remain highly fragmented and much needs to be done to restore their extent and ability to function healthily to maximise the benefits they can deliver. Elements of our historic environment remain at risk with their future yet to be assured.

This programme supports RSS Policy ENV1, ENV2, ENV3, ENV4 and ENV6, as well as furthering the aims of the Spatial Economy goal in the RES.

Implementation

Leadership

This ranges from local authorities, governing regional bodies to government departments, with a strong role for the private and third sector, non-government organisations and government agencies.

Monitoring

Monitoring of the RSS and Local Development Frameworks, together with agencies’ state of the environment reporting will form the basis of monitoring for this programme.

Resources

A variety of local, regional and central government funding streams in partnership with the private and third sector.

Programme components

3a Restoring regionally significant landscapes and settlements		
Re-creating distinctive regional landscapes at a large-scale through multi-agency and partnership working and funding.		
Key Delivery Agents	Budget	Results
Partnership of central government, regional bodies, local authorities, private and third sector.	<p>£10 million annually from partners, contributions and match funding from available sources such as the Heritage Lottery Fund and EU.</p> <p>Wildlife habitat restoration and creation funding from Environment Agency Regional Habitat Creation Programme, Natural England Wetland Vision and agri-environment scheme funding and NGO habitat creation and restoration projects.</p>	<p>Outputs:</p> <ul style="list-style-type: none"> • focussed investment on wide-scale restoration of regionally distinctive landscape, natural or historic environment • the implementation of the region's 12 priority large scale projects (identified by the East of England Biodiversity Forum) - Blackwater Estuary, Brecks Biodiversity Project, Bythe to Alde, Great Fen Project, Green Arc, Greensand Ridge, Norfolk and Suffolk Broads, Marston Vale Community Forest, Thames Estuary, Thames Chase Community Forest, Wallasea, Wicken Fen Vision. <p>Outcomes:</p> <ul style="list-style-type: none"> • enhancing the multiple dividends of landscape restoration in terms of ecosystem services, climate change adaptation, health, recreation, biodiversity enhancing the visitor economy.

3b Meeting Biodiversity Action Plan targets for habitats and species		
Delivery of the specific regional targets for habitat and species restoration set out in Biodiversity Action Plans.		
Key Delivery Agents	Budget	Results
Local Biodiversity Partnership, Natural England, Environment Agency, Forestry Commission,	£100,000 per annum for heathland restoration. Proportionate funds for other habitats and species.	Outputs:

3b Meeting Biodiversity Action Plan targets for habitats and species

<p>local authorities and NGOs such as Wildlife Trusts, RSPB, National Trust.</p>	<p>Agri-environment scheme funding</p> <p>Also funding from Enriching Nature programme 2, eg SITA £300,000 per annum for three years plus other landfill tax credit operators, money available nationally.</p>	<ul style="list-style-type: none"> a range of programmes geared to the recovery of habitats and species in the region prioritised under the UK Biodiversity Action Plan. <p>Outcomes:</p> <ul style="list-style-type: none"> a long-term recovery in the health and condition of the habitats and species population targeted. Contributions to wider environmental programmes and spillover benefits to other regional objectives.
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3c Heritage at risk monitoring and grant funding

Delivering the funding necessary to safeguard and bring into productive use the region’s valuable built and historic heritage.

Key Delivery Agents	Budget	Results
<p>English Heritage, local authorities, Heritage Lottery Fund (HLF) and owners.</p>	<p>c. £2 million grants from English Heritage across all asset types. £1m HLF funding for Places of Worship. Additional HLF funding on a project-by-project basis.</p>	<p>Outputs:</p> <ul style="list-style-type: none"> buildings, monuments, areas and landscapes taken off, or prevented from being added to, the At Risk Register. <p>Outcomes:</p> <ul style="list-style-type: none"> increasing investment in region’s tourism base buildings brought back into economic use.

3d Environmental stewardship, catchment sensitive farming and meeting the Water Framework Directive

Delivering the measures necessary to integrate sustainable agriculture and food security with the need to protect wider environmental services, including water quality.

Key Delivery Agents	Budget	Results
<p>Environment Agency, Natural England, local authorities.</p>	<p>Funding to meet Water Framework Directive objectives for the region.</p>	<p>Outputs:</p> <ul style="list-style-type: none"> more environmentally friendly farming practice and land use.

3d Environmental stewardship, catchment sensitive farming and meeting the Water Framework Directive

	Agri-environment funding administered by Natural England.	Outcomes: <ul style="list-style-type: none"> • better conservation of the landscape, historic and wildlife value of farmland, maintaining soil quality and long-term food security, a reduction in diffuse pollution and soil erosion. • better water quality.
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3e Biodiversity monitoring and recording**Developing a coherent and comprehensive basis to recording and monitoring the region's biodiversity to inform wider policy and implementation.**

Key Delivery Agents	Budget	Results
Local authorities, Wildlife Trust, Natural England, Environment Agency, Local Biological Records Centres, Government Office for the East of England (GO-East) and EEDA.	Additional funding required, potential sources may include specific programme funds from the Department for Environment, Food and Rural Affairs (Defra).	Outputs: <ul style="list-style-type: none"> • the development of a Regional Biodiversity Information Group. Outcomes: <ul style="list-style-type: none"> • regionally consistent biological information that can be used to accurately monitor the health of the region's priority habitats and species.

Programme 4: Delivering green infrastructure**Description and strategic fit**

All the programmes in this theme help deliver green infrastructure in its broader sense. Delivery of green infrastructure takes place at different geographical scales and includes the large-scale restoration of landscapes and habitats covered in the previous programme. This programme refers specifically to the delivery of green infrastructure to underpin the sustainable delivery of growth.

The delivery of multi-functional green infrastructure is critical to the ambitions of both the RES and the RSS and is increasingly recognised as an essential component to creating sustainable communities. Policies and plans for development growth recognise the existing and potential environmental features that can be incorporated into the design of growth areas to provide a range of essential benefits.

Green infrastructure can contribute to wider objectives addressed across the Implementation Plan and can deliver multiple benefits such as climate change adaptation, flood attenuation, creation of biodiversity habitats and accommodation of safe cycleways/footpaths and opportunities for health and recreation. It also encompasses the water environment, with water bodies, river systems and the sea coast (sometimes referred to the 'blue infrastructure') forming an integral part.

At the urban planning scale, green infrastructure ranges from parks and gardens, amenity green space (including private gardens), incidental greenspaces (allotments, cemeteries, etc.), woodland and other semi-natural areas to the green corridors that connect these.

Planning for green infrastructure involves an understanding of the range of existing green infrastructure resource and the opportunities for adding new spaces to this in order to create a linked-up system that is able to deliver the necessary multiple benefits (such as sustainable drainage systems, ecological mitigation, wildlife corridors, sustainable transport, etc.). This will require evidence gathering and partnership working at the plan-making stage to ensure that growth strategies evolve alongside opportunities to provide a supporting green infrastructure. Good examples found in the region, such as the Hamptons development in Peterborough, need to be rolled out more widely wherever growth takes place.

As important as plan-making, is the delivery and future management of green infrastructure. Local authorities need to work closely with developers, agencies and statutory undertakers, and the wider community, to work out what needs to be provided and how it is to be funded. External contributions, either financially or through direct provision, need to be worked out carefully in advance. With a large-scale development there will be a pooling of contributions to the provision and future maintenance of green infrastructure.

The programme primarily supports the RSS Policy ENV1 and plays a role in supporting the objectives of the Spatial Economy goal in the RES.

Implementation

Leadership

Local authorities will play a leadership role in delivering this programme.

Monitoring

The main source of monitoring will be Local Development Framework monitoring linked to delivery of Local Area Agreements and Comprehensive Area Assessment.

Resources

Developer contributions via s106 or Community Infrastructure Levy. Additional advance funding may be required from the public purse, from local authority funds and from support through Growth Area Funds, the HCA or other public sources. Budgets must factor in provision and long-term management and maintenance of green infrastructure.

Programme components

4a Delivering multi-functional green infrastructure		
Providing a regional steer to the funding, delivery and maintenance of a green infrastructure foundation to the varying levels of development growth.		
Key Delivery Agents	Budget	Results
Regional agencies and partnerships, local authorities, agencies and statutory undertakers, developers.	Funding spread across a wide range of public bodies, agencies and developers.	Outputs: <ul style="list-style-type: none"> regional advocacy and good practice to ensure the delivery and maintenance of a multi-functional green infrastructure sufficient to support new development growth

4a Delivering multi-functional green infrastructure		
		<ul style="list-style-type: none"> greater prioritisation of developer contributions towards green infrastructure via Community Infrastructure Levy or alternative local arrangements encouraging long-term management of green infrastructure through commuted payments to vest future maintenance of green infrastructure assets to appropriate body. <p>Outcomes:</p> <ul style="list-style-type: none"> sustainable communities, resilient to climate change and offering a wide range of benefits through a multi-functional green infrastructure.

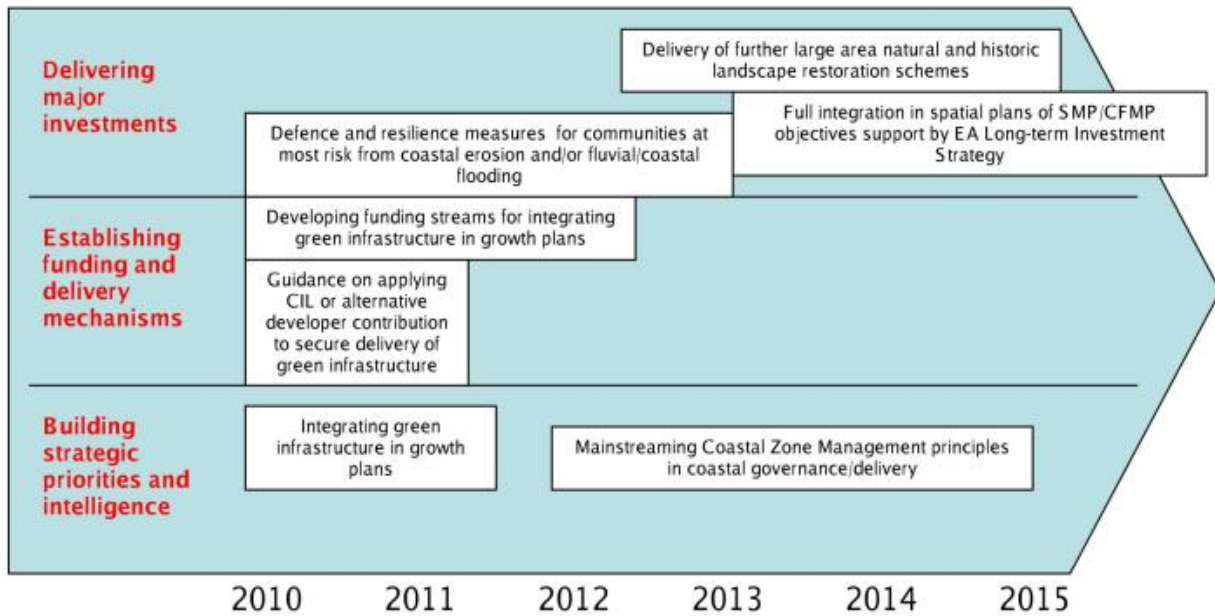
10.4 Key milestones and phasing

The programmes for this theme contain a range of actions and priorities. Over a three-to-five year timescale, the priority is to:

- integrate the design, funding, delivery and future management and maintenance of green infrastructure frameworks in all plan reviews promoting significant growth
- ensure that funding is provided to create and maintain flood defences for all at-risk settlements
- deliver a model for integrated coastal zone management for the four pilot locations
- expand the landscape-scale restoration model currently being delivered to additional priority areas where key environmental services can be enhanced.

Figure 13 below sets out the sequencing of the key interventions that are anticipated to be made in the first five years of the Implementation Plan.

Figure 13: Phasing of key milestones



10.5 Synergies

There are strong synergies both across this theme and to other themes in this document. The delivery of green infrastructure takes place at varying levels, from the delivery of development growth at varying scales to the restoration of much more expansive areas of landscape. Both have similar aims to enhance the level of essential natural services provided. There is a particular link between managing the natural environment and managing flood and erosion risk. Allowing or managing areas to function in a more natural way can offer a sustainable and cost-effective way to manage flood risk, whilst recognising that the future of many communities and areas will continue to rely on providing and maintaining hard defences. With climate change increasing the incidence of extreme weather patterns, natural areas will generally have a greater role in providing increased resilience to climate change impacts.

Policy on the coast provides a particularly urgent context where, due to factors relating to geographical location, natural change and the influence of climate change, an integrated approach to environmental, social and economic policy is needed. Consequently, many of the programmes under other themes such as the Integrated Employability Offer in the Skills and Employability theme are fundamental to meeting the objectives set out for the coast in this theme.

Green infrastructure, and natural solutions to land management issues more generally, offer synergies with other themes in this plan. They encourage, and offer opportunities for more sustainable modes of travel, which links to the delivery of regional transport objectives. Environmental enhancement will often be a necessary means to mitigate or compensate for the impact of transport proposals, such as a road or rail scheme or extensions to a port. The programme ensuring that transport contributes to the performance of small market towns, rural and coastal areas in the Transport theme is of particular relevance here.

Green infrastructure is an important ingredient in the recipe for creating sustainable communities and delivering regional housing growth and providing the multiple benefits flagged up in this chapter. There are links to the utilities theme with close links to a sustainable approach to water supply, water quality, carbon capture and community energy schemes.

There are critical links between the natural environment and providing opportunities for health and well-being and for tackling issues such as mental health and obesity. In cost terms, there is payback potential through investing in green infrastructure as part of a preventative approach to healthcare. There are, of course, major opportunities too in terms of education (the natural environment providing an 'outdoor classroom') and for cultural and sporting events.

As well as meeting social policy objectives, the natural and historic environment is of huge value to the regional economy, although this is not easy to quantify in monetary terms. Apart from its clear value to the tourism sector, the high-quality natural and historic environment in the East of England holds value as a driver for the regional economy more generally, and is a major influence for investment decisions.

Most crucially, an increased emphasis on managing the natural environment sustainably to carry on delivering a range of essential services, such as through green infrastructure, becomes all the more important in the region's response to the need to mitigate and adapt to climate change.

10.6 Delivery and capacity

The delivery components of this scheme are not always amenable to exact quantification and many will result from a wide range of partners, implementation initiatives and funding streams and, in turn, deliver a wide range of benefits. The early-year capital and revenue funding to flood defences by the Environment Agency is easier to display in monetary terms than, for example, the desired array of green infrastructure schemes that will be delivered alongside growth throughout the region and where funding cannot be precisely defined.

For the coastal theme, the initiatives will be trialled initially in the selected pathfinders and addressed in the relevant sub-area sections of this document. The Coastal Initiative is an example of fostering partnership and multi-agency working and governance arrangements, which capture the integrated delivery of environmental, economic and social policy objectives.

The delivery of green infrastructure is largely the responsibility of the local planning authorities and growth area partnerships working with developers, agencies and other stakeholders. At a regional level, the role is to develop and disseminate good practice to help meet the green infrastructure objectives of the regional strategies.

Restoring large-scale areas of semi-natural landscape will involve a multi-agency and partnership approach taking place at the locality in question with match-funding from various sources. The regional bodies and partnerships will need to provide support and advice, funding where available and allow for the sharing of good practice.

The capacity to sustain the natural environment so as to deliver the competing range of demands placed upon it is not infinite. The concept of environmental limits to the capacity should increasingly form an important aspect of the approaches adopted to meet regional needs. This makes joint-working and partnerships all the more critical if the region is to ensure that its environmental capital is not exhausted through the pressure of competing and conflicting demands.

Underpinning delivery of this theme is a need for improved research and intelligence. In particular, a greater understanding is needed on where to develop environmental services, such as green infrastructure, food and biomass, and natural flood capacity. Improved research is needed on the embedded energy values of the historic environment, the inherent sustainability of using local building materials and the environmental benefits of traditional building methods adapted for new-build projects.