Resilient Coasts

Outline business case

East Suffolk Council in partnership with Great Yarmouth Borough Council & Coastal Partnership East

29th April 2022

Issue and revision record

Revision	Date of Issue	Originator	Checker	Approver	Description

Comment sheet

Changes from EoI Submission to OBC
1. Change in title due to need to distinguish project from the NNDC CTAProgramme
2. Change in pilot locations due to need to distinguish project from the NNDC CTAProgramme
3. Costs have been reprofiled in light of the OBC stage being introduced post-EOI.

Summary of submission

Project name:	Resilient Coasts
Project short name:	N/A
Project reference:	**ESF008**
Total project value:	**£9,131,724**
OBC submission value for approval:	**£9,131,724**
Public contributions (£):	**£720,000**
Private contributions (£):	**£0**

Primary source of risk:
Coastal erosion

Secondary sources of risk:
Coastal flood risk

Milestone Full Business Case Approval	TBC
Milestone – Readiness for service	**July 2028**
Project completion	**July 2028**

Short description of the project

Our Vision is to create a toolkit of options that enable the people, economies and environment of Norfolk and Suffolk to transition to a climate resilient coast. Our Legacy will be to create a 30 year catchment-based, coastal management approach that creates climate resilient place by 2045

Managing East Anglia's soft eroding coast is currently challenging and reactive. With 2500 homes at risk of erosion, and thousands more relying on infrastructure and utilities in coastal change management areas, we need a broader approach to coastal management. This project will allow our coast to transition from reactive to planned solutions that deliver improved outcomes. Our Coastal Adaptation Toolkit will plug existing gaps, offer a suite of tools based on new evidence, and support co-created community resilience 'master plans' for pilot areas. Ultimately, this project will create a sustainable transition framework, serving as a blueprint for resilient coasts that are socially, economically and environmentally viable, while having the scope to flex and develop as coastal change occurs.

Short description of the benefits

The Resilient Coasts project will deliver practical solutions to deal with climate change and sea level rise that are co-created and implemented by communities. the project aims to facilitate a sense of ownership that increases community resilience to tidal flooding and coastal erosion.

High risk communities with no resilience options will benefit from a suite of innovative tools that will allow them to plan and transition in response to coastal change to viable, sustainable places whilst delivering wider outcomes of local plans and strategies.

Our project will add value to traditional coastal management and planning approaches and go beyond other resilience work initiatives by offering the first dedicated joint UK erosion and tidal risk resilience project. This will generate significant learning locally, nationally, and across public and private sectors. The project will provide evidence for policy change and underpin how coastal practitioners manage the coast as we learn to adapt to coastal change now and in the future.

Lead authority	**East Suffolk Council**
Delivery partners	**Great Yarmouth Borough Council and Coastal Partnership East**
Project risk (£)	**1,184,400; 20%**
Optimism bias value (£)	**1,776,600; 30%**

Expenditure Profile:

Costs per year (£k)	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	Total (£k)
Flood and Coastal Resilience Innovation Programme Funding	569.5	1,526	2,370.9	2,195.	1,182.2	567.8	8,411.7
Contributions		140	140	150	150	140	720
Total Project Expenditure	569.5	1,666	2,510.9	2,345.3	1,332.2	707.8	9,131.7

Project Manager:	**Sharon Bleese (pending appointment of FCRIP Senior Coastal Resilience Advisor lead officer)** **CPE Coastal Manager** **Sharon.Bleese@eastsuffolk.gov.uk** **[07825 118235]**
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Contents page

Appendices

1. Executive Summary

1.1 Strategic Case

- The Climate Change Committee Risk Assessment (CCCRA,2021) states that much of the UK coast is at high risk of climate change impacts through increased storminess and sea level rise. The report highlights significant impacts to communities, businesses, infrastructure and loss of coastal habitats. The report also flags that the viability of our coasts is not well understood and recommends we that action is taken now to deliver adaptive and resilient approaches.

- Norfolk and Suffolk have some of the fastest eroding coasts in Europe, with over 2500 homes at risk. Thousands more properties are at direct and indirect erosion and flood risk including tourism accommodation, business premises and nationally and locally important infrastructure, utilities and assets that support viable communities and economies within the lifetime of the Shoreline Management Plan (SMP).

- Recent national reports and enquiries have highlighted the limited options available to those facing property loss through erosion compared to flood risk areas. There are currently no financial mechanisms to support property owners individually or collectively to adapt their homes and businesses or support roll-back and relocation. Erosion risk mapping data is not up to date and many people living and working on the coast are unaware of the risks of a changing coast and how it can affect them. The CCCRA (2021) report also signposts the need to broaden our approach from 'properties at risk' data to the viability of a place.

- The impacts of coastal change on mental health and wellbeing are also not well understood but early evidence suggests erosion impacts have a significant impact. Nature based solutions for the open coast are also extremely limited with no equivalent natural flood management frameworks for coastal erosion frontage. The value of eroding cliffs to sediment supply and natural coastal management is documented in Shoreline Management Plans as critical on some frontages to the overall sustainable management of the coast. However, there are currently no natural capital evaluations of this benefit and therefore no financial mechanisms to support this approach.

- There have been several national reports and enquiries into coastal towns and management. Recommendations that more is done to support coastal adaptation and resilience have been integrated into the government's Flood and Coast Erosion Risk Management (FCERM) Strategy (2020) and subsequent Action Plan (led by the Environment Agency) alongside new government coastal policy (2020) (led by Defra).

- The national policy and strategy framework for transitioning our coast is now in place and the Flood and Coast Resilience Innovation Programme (FCRIP) funding for our Resilient Coasts project will support the delivery of innovative approaches to overcome coastal management challenges with our coastal communities along the East Suffolk and Great Yarmouth coastal areas.

- The project will achieve practical changes which increase coastal resilience and deliver wider public benefits such as enhanced knowledge of risk, improvements to mental health and well-being, greater coastal access, flexible property and coastal defence solutions, enhanced public realm and amenity and overall reduced risk of coastal change impacts.

- The project will be consistent with delivery of the Shoreline Management Plan (SMP) actions for the Suffolk SMP7 managed by East Suffolk Council and parts of the Norfolk SMP6 that relate to the Great Yarmouth Borough Council frontage.

- The Resilient Coast project will go beyond other resilience work programmes to deliver a revolution in coastal management that is needed to meet the challenges of climate change and sea level rise.

- The project will deliver a complete suite of mapping, planning, engagement, technical, financial and policy tools to support coastal transition for Norfolk and Suffolk communities, which could be applied to the rest of the UK coast.

1.2 Core themes of project and work packages

The Core themes of the project align with the ambitions of the Environment Agency's FCRIP programme and FCERM Strategy as well as several key national, regional and local plans, policies and strategies summarised in table 1.2.1.

Resilient Coasts aims to support the creation of climate ready places, people and policy supported by resilient innovative funding and finance approaches through the following six themes:

Figure 1.2.1 Summary of the Resilient Coasts project Strategic Themes.

Our six themes will be delivered through a series of 8 work packages

WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8
Understanding Risk	Coastal Spatial Mapping	Adaptation Funding and Financing	Community Transitioning Toolkits (behavioural change)	Integrated investment Strategy	Community Adaptation Masterplans	Policy Challenge	Costed Asset Management Plan

Figure 1.2.2 Summary of the Resilient Coasts project work packages

These work packages will be developed with our communities and partners and are designed to lead to a suite of co-created tools that can be used by communities and practitioners to produce community resilience masterplans for any coastal location. Further details on the project deliverables that will underpin the masterplans are provided in section 1.3 below.

The programme will create a resilient coast in Norfolk and Suffolk by:

- engaging with our communities
- creating emergency and incident response plans
- seeking to minimise damage and disruption to local businesses
- creating new tools for monitoring and managing our coast
- delivering options that support naturally functioning coastal areas
- investigating areas for improvements to policy and practice, notably, innovative funding, finance, and behavioural change.

Programme Outputs

The Resilient Coasts project will embed FCRIP resilience actions into a series of outputs that are summarised in figure 1.3.1 below

Figure 1.3.1 The key outputs of the Resilient Coasts project

Each of the above outputs is now described in more detail:

- **GIS Coastal Zone Erosion Risk map and Spatial Plan** that informs planning and development decisions and includes new erosion and flood risk data, SMP policies, location of property and infrastructure, social and economic information, planning policies, land available for relocation and roll back and nature-based solutions. It will form the basis of future decision making supporting more integrated local community and central and local government policy ambitions.

- **Engagement toolkit** that builds upon current good practice and new approaches to support our coastal communities transitioning towards greater local and strategic understanding of resilience and adaptation to coastal change. The toolkit will be for communities and practitioners to co-create solutions over different timescales from imminent erosion risk to longer term change and include visualisations and virtual tools to support how our coast may change and how we can respond.

- **Adaptation Funding Mechanism** will bring together new innovative funding and finance approaches to support resilience and adaptation measures for communities, businesses, nature and individuals facing coastal change. The tools will include different options for at-risk communities depending on the level of risk and time available to implement options. Through identification of broader benefits (including natural capital evaluation) and beneficiaries mapping it will include new funding sources to create a sustainable fund to implement coastal resilience.

- **Integrated Infrastructure Investment Plan** will draw together 3rd party information about investment plans for infrastructure, assets and utilities that are in the coastal zone and support coastal communities and economies. The IIIP will encourage 3rd parties to consider their resilience response to coastal change and aim to align investment across different sectors to co-invest in resilience measures and deliver wider outcomes.

- **Costed Asset Management Plan** will include the costs of implementing a range of coastal asset management approaches that support coastal resilience. The Plan will include the costs of decommissioning existing assets that need to be removed to support SMP policy as well as identify where asset removal will be needed and when. In addition, the plan will also include costs for innovative technical solutions that offer short term erosion protection or include broader environmental and social benefits that could attract alternative funding and support wider outcomes. The plan will support coastal management funding discussions with existing central government funds alongside new funding routes.

All the above outputs will support co-created community discussions for each coastal place. The communities and practitioners will have access to the tools above and be supported to create the **Community Adaptation Masterplan** which will encompass the options and opportunities available in any specific coastal location based on the communities needs and the offer of their place. The Masterplan will be the local resilience route map in each place that sets out the technical solutions, planning and development needs, engagement requirements and funding availability based on the risk data and SMP policy. Our pilots will all have a Masterplan in place by the end of the FCRIP programme.

All the above deliverables will form a new **Resilient Coasts Adaptation Toolkit** which will be shared locally and nationally through so that lessons learnt can be applied around the UK coast well before the programme ends. We aim to deploy and share adaptation tools as they are created.

Finally, we will also identify any potential policy and legislative challenges and opportunities throughout the project. It is hoped that Resilient Coast will offer the evidence to inform more streamlined routes for adaptation and resilience delivery post-FCRIP.

1.2 Economic case

For erosion, the business as usual (BAU) baseline is a reactive approach. This results in limited rollback opportunities because there is no proactive engagement with communities to encourage them to consider adaptation when there is time to adapt. As a result, the local authority incurs significant costs dealing with emergency interventions once properties get to the point where they are at imminent risk of erosion. For flooding, BAU involves no direct intervention with a gradual increase in flood risk over time due to climate change and sea level rise.

For erosion, the Resilient Coasts Project looks to build on the time before erosion is projected to occur to work with communities to encourage them to prepare and implement community masterplans that will mean they are ready to roll back and adapt to coastal erosion. Work to develop a funding mechanism will mean Rollback opportunities are affordable to all, rather than just those who can finance Rollback themselves. For flooding, the project will work with the community of Great Yarmouth to explore future flood risk options, including improved visual amenity in the form of Millennium Terraces as well as improvement to resilience and flood risk reduction.

The costs of the Coastal Transition project are £9.1 million, with 75% of this targeted at the erosion aspects (£6.8 million) and 25% at the flooding aspects (£2.3 million).

Under BAU, the value at-risk erosion damages are £7.4 million over 100 years for erosion and £36 million over 50 years for flooding. There are no value potential or learning benefits. Under Coastal Transition, value at-risk damages avoided for erosion are £7.4 million, plus £4.4 million value potential benefits. Value at-risk damages avoided for flooding are £8.8 million. There are also an estimated £0.3 million learning benefits for the local community.

This gives giving total benefits of £20.9 million (£12.1 million from erosion aspects and £8.8 million from flooding aspects). The benefit-cost ratio for the Coastal Transitions project (erosion) is therefore 2.3.

The learning benefits are conservatively estimated at this stage and there is significant potential to roll-out the learning to other areas looking to adapt. This includes areas at risk of coastal erosion but could also cover the need to adapt to flooding or, with further research, potentially other issues as well.

1.3 Commercial case

The lead local authority for the Resilient Coasts project is East Suffolk Council in partnership with Great Yarmouth Borough Council and delivered by Coastal Partnership East officers from across the two councils. Procurement strategies and approaches for Coastal Partnership East members (East Suffolk Council, and Great Yarmouth Borough Council) are included as links in Appendix 4A. Our Local Authority Procurement processes comply with all those required by local government and include European Union directives and regulations (and any successive changes), Public Contract Regulations 2015, individual local authority financial and contract procedures. All our work is subject to regular scrutiny and audit internally and externally and must demonstrate value for money to the taxpayer.

Due to the innovative nature of the Resilient Coasts project our procurement approach requires our flexible and efficient procurement routes to market based on specific programme objectives to ensure value for money. We have considered the contractual and procurement risks associated with delivery in section 4.2. As we already have a range of well-established routes to market and access to all the specialist services we need through these routes we are confident we can mitigate these risks and demonstrate efficient routes to market to both test costs and procure services.

To mitigate some key risks, we have endeavoured to build skills and capacity within the area through FCRIP funded resource that's dedicated to the Resilient Coast project. This serves to protect the project from external factors that could impact procurement listed in 4.2 and embeds skills and capacity where it's needed. We will also be utilising resource in kind from several partners to increase innovation and further mitigate procurement and capacity risks.

Procurement needs and routes to market are given in the Commercial Case section 4.4. We will demonstrate efficiencies and commercial and innovation opportunities throughout the project which are summarised in section 4.5. We have undertaken pricing and scoping work for all aspects of the project with industry leads and tested the market using Scape Framework and advice from our stakeholders. We also have existing information on community-led approaches and delivery costs that demonstrate value for money.

Full details of our management and governance structure are provided in Section 6.2 of the Management case and Appendix 6A, which outline governance in relation to decision making and procurement outcomes.

1.4 Financial case

Table 11 outlines the headline costs. Further detail can be found in section 5 (Financial case) and appendix 5A (detailed costs breakdown).

The costs totals are in-line with:

- the revised EOI submission
- the FCERM7 OBC studies application
- the project FCRIP funding allocation

Table 11: Expenditure Profile (2021-2027)

Costs per year (£k)	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	Total (£k)
Outline Business Case Development cost *See project FCERM7 and 3 for itemised breakdown.	569.5	-	-	-	-	-	**569.5**
Staff costs	-	286	345.5	350.5	350.5	317.7	**1,650.1**
External consultant costs	-	482.7	583.7	383.7	115	94	**1,659**
Full-Business Case Development Cost	-	-	-	-	-	40	**40**
Construction, supervision and delivery costs of resilience actions	-	195	425	1,130	345.3	-	**2.095.3**
Monitoring, learning, evaluation and dissemination	-	85	95	40	45	30	**295**
Risk (20%)	112.5	227.8	391.8	162.8	175.8	113.7	**1,184.4**
Optimism Bias (30%)	240.6	341.7	587.7	244.2	263.7	98.7	**1,776.6**
Inflation	33,8	47.8	82.28	34.8	36.9	13.8	**248.7**
Total	**569.5**	**1,666**	**2,510.9**	**2,345.3**	**1,332.1**	**707.8**	**9,131.7**

Table 12 outlines the current project funding profile. The contributions are in the form of officer time being provided to the project by Coastal Partnership East.

It is anticipated that further funding will be drawn-in, particularly through the Adaptation Funding Mechanism.

Table 12: Funding Profile (2021-2027)

Costs per year (£k)	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	Total (£k)
Funding allocation	569.5	1.526	2,370.9	2,195.3	1,182.2	567,836	8,411.7
Contributions (CPE Officer time)	-	140	140	150	150	140	720
Total	**569,5**	**1,666**	**2,510.9**	**2,345.3**	**1,3322**	**707.8**	**9,131.7**

1.5 Management case

The purpose of the management dimension of the Resilient Coasts outline business case is to demonstrate that robust arrangements are in place for the delivery, monitoring and evaluation of the project (Appendix 6D) including feedback into Coastal Partnership East and the partner local authority's strategic planning cycles.

Demonstrating that the project can be successfully delivered requires evidencing that it can be delivered in accordance with best practice, subject to independent assurance and that the necessary arrangements are in place for change and contract management, risk management and evaluation. A detailed readiness assessment is in Appendix 6H and demonstrates the readiness of the team, our partners and communities to manage the Resilient Coast project.

The management case includes a summary of risk and has a full programme, clearly highlighting the critical path. A statement of project assurance outlines scrutiny at both project and constitutional level. Contract management is outlined, siting examples of where this might be applied through NEC3 and NEC4 contracts in addition to the lead authority's own contract management system.

The project is spread across eight work packages, each providing a different product or outcome a project plan is included in Appendix 6G. Multiple methods for monitoring and evaluation are required and included in Appendix 6C. Robust project governance is critical to the project and this case provides the framework to ensure an open, honest and transparent system of governance, which is open to scrutiny. The Governance structure and arrangements are detailed in Appendix 6A and section 6.1. The inclusion of the Section 151 Chief Finance Officer for the lead authority on the Resilient Coasts Board, ensures financial assurance and scrutiny at a high-level.

1.6 Recommendations

- We recommend that the EA assurance team approve the Resilient Coasts Project to a total value of £9,131,7000.
- We recommend that the EA assurance team allocate £8,411,700 to East Suffolk Council as the Lead Authority to enable the delivery of the Resilient Coasts Project.
- We recommend that the EA assurance team acknowledge the CPE officer time in-kind contribution of £720,000.
- We recommend that the EA assurance team support the involvement of the national team across their relevant programmes of work into the Resilient Coasts projects to maximise any synergies and learning.

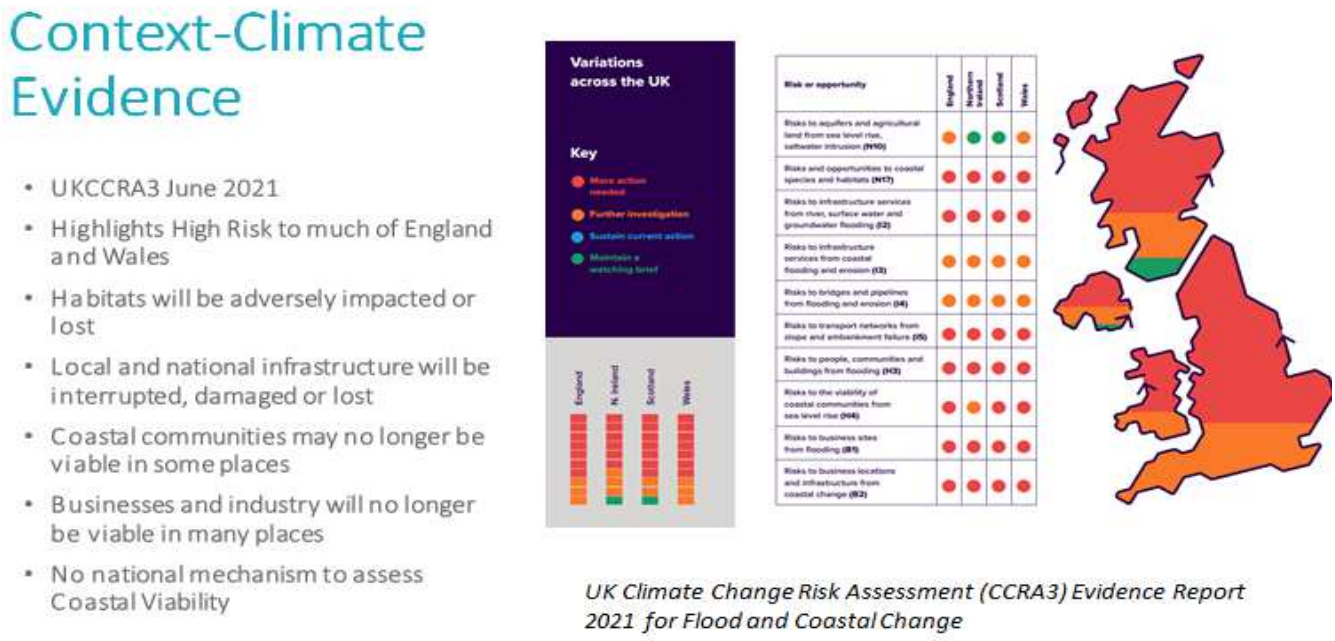
2 Strategic case

2.1 Strategic context

2.1a Overview

Climate change risk

The coast of England and Wales is at high risk of coastal change and the UK Climate Change Risk Assessment report (CCRA21) for flood and coastal change recognises that urgent action is needed to adapt and prepare our coasts to these risks. The report recommends action across all sectors for the next five years but the flood and coast sector briefing is specific about several approaches we need to take. These include engaging communities about the risks, raising awareness about potential impacts, exploring managed realignment and relocation away from the coast, increasing infrastructure and asset resilience and taking integrated approaches to managing adaptation approaches.



UK Climate Change Risk Assessment (CCRA3) Evidence Report 2021 for Flood and Coastal Change

Norfolk and Suffolk have some of the fastest eroding coasts in Europe, with over 2,500 homes at direct risk of erosion. Thousands more properties and businesses will be indirectly affected by loss of property, infrastructure and utilities within the lifetime of the Shoreline Management Plans.

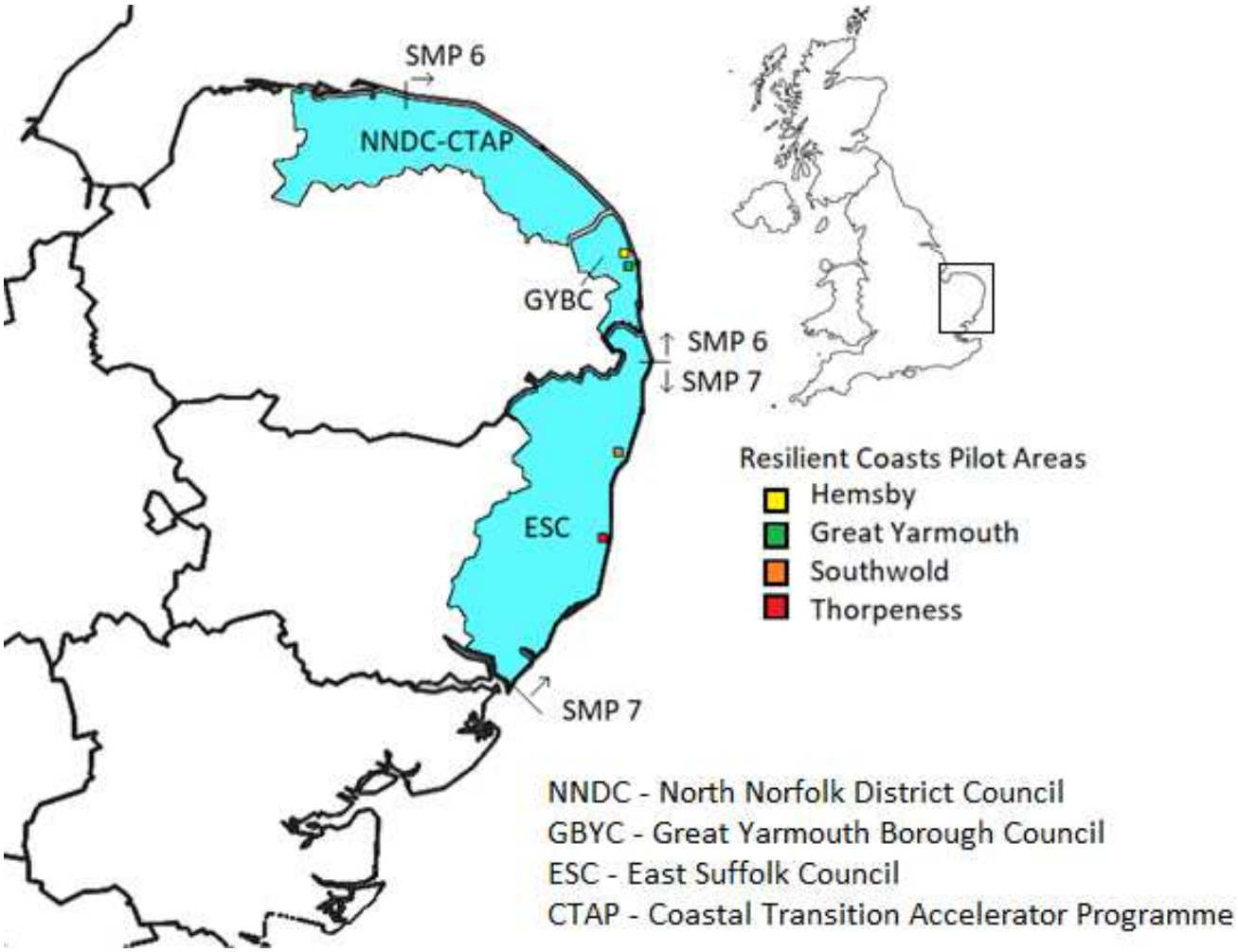
Recent national reports and enquiries have recommended that more is done to support coastal adaptation and resilience. The national policy framework for transitioning our coast is now in place.

The project partnership is led by East Suffolk Council with Great Yarmouth Borough Council and work will be delivered by Coastal Partnership East (CPE). CPE are a shared service of officers across these councils along with North Norfolk District Council. Already responding proactively to coastal change, the three councils cover most of the Norfolk and Suffolk coast, agreed to a partnership model in 2016 to address the jointly shared coastal management issues. The partnership enables resources to be managed more effectively and with a higher degree of efficiency resulting in more positive and sustainable outcomes for our communities in the long-term.

The project will implement an ambitious resilience programme for the Norfolk and Suffolk coast, along the East Suffolk Council and Great Yarmouth Borough Council frontages delivering real adaptation and resilience options for our communities.

The Resilient Coasts project will deliver a complete suite of planning, engagement, technical, financial and policy tools to support coastal transition for Norfolk and Suffolk communities, which could be applied to the rest of the UK coast.

The project places are with the Great Yarmouth Borough Council and East Suffolk Council areas, as outlined in the map below. As illustrated, the project will take into account the other projects and plans, such as the Shoreline Management Plans SMP 6 and 7.



2.1.b How does this investment align with the national ambitions of the Programme and associated policies and plans?

The following table outlines how the project investment aligns with the national ambitions of the FCRIProgramme:

OBC key aspects for the Resilience Innovation Programme

Aspect	Key review questions	OBC Case	PMO	Spatial Map	Adaptation Fund Scope	Behavioural Change	Investment Strategy	Community Masterplan	Policy Change	Costed Asset Plan
			WP0	WP1&2	WP3	WP4	WP5	WP6	WP7	WP8
1	Place-based resilience and investment	Strategic	-	-	-	✓	✓	✓	-	-
2	Community and partnership	Strategic	-	-	-	✓	✓	✓	-	-
3	Optimising the investment	Economic	✓	✓	-	-	✓	-	-	✓
4	Benefits framework, learning and innovation	Economic	✓	✓	✓	✓	✓	✓	-	-
5	Procuring outcomes	Commercial	✓	-	-	-	✓	✓	-	✓
6	Funding and finance	Financial	-	-	✓	-	✓	-	-	-
7	Governance	Management	✓	-	-	✓	✓	✓	✓	-
8	Managing innovation	Management	✓	-	✓	✓	✓	✓	-	-
9	Delivery route map	Management	✓ Comms and adaptation pathway plan	-	-	-	✓	✓	-	✓
10	Managing risk and uncertainty	Management	-	-	-	✓	✓	✓	-	✓
11	Monitoring, evaluation and dissemination	Management	✓	✓	✓	✓	✓	✓	✓	✓

Alignment with national policies and plans

The Resilient Coast project aligns with, and in some case is delivering on behalf of, several national policies and plans which are summarised in Appendix X. Notably the project is delivering key actions from the governments FCERM strategy and associated action plan in relation to coastal adaptation and innovative funding and finance tools. The project will be trialling new government coastal management policy, notably for property rollback and relocation. The project also meets key recommendations set out by the CCRA (2021) sector briefing for the flood and coast sector in relation to advancing adaptation options and the need for broader community engagement about coastal change over the next five years. The Resilient Coasts project is also delivering actions within the Local Government Association 2022/23 Workplan under Coastal Adaptation and FCERM funding and policy.

2.1c. How does this investment align with regional and local plans and ambitions?

The Resilient Coasts project aligns with, and in some case is delivering on behalf of, several regional and local policies and plans which are summarised in Appendix 2B.

The project is delivering a range of outcomes for the Local Authority partner plans and strategies which have coastal adaptation and resilience embedded in their Communities, Environment and Economic strategies. The project will also shape new planning policies including refreshing Coastal Supplementary planning Documents, Coastal Change Management Areas and informing the next round of Local plan reviews. the investment will support delivery of existing SMP policies and any subsequent need for policy reviews. The project also supports community and stakeholder

engagement ambitions on behalf of the Anglian RFCC who already support all 4 of our pilot project communities. Biodiversity net gain and natural capital opportunities will be explored and linked through to the Local Nature Recovery Framework and Biodiversity Action Plans. The project will also produce new polices, funding mechanisms and adaptation tools that will be deployed and tested at regional levels.

2.2a Environment and other considerations

Our whole coast is incredibly valuable to wildlife, highly prized for its wild landscape and geologically and geomorphologically important for its cliffs, shingle beaches and nesses, dune complexes and estuarine intertidal habitats.

Most of the coast is nationally and, or internationally designated as a Special Area of Conservation (SAC), Special Protection Area (SPA), Site of Special Scientific Interest (SSSI) and afforded significant legal protection as a result. In addition, a variety of additional planning and consenting needs are required as a result of these areas being within the Norfolk Broads National Park, Norfolk Coast AONB and the Suffolk Coast and Heaths AONB.

As coastal protection authorities (CPA's) we operate under the Coastal Protection Act (CPA, 1949). The Act sets out the roles and responsibilities of CPA's and gives us permissive powers to undertake certain coastal management activities. Outside of these powers CPA's are subject to the same environmental, planning and marine consents and licences as other developers through the lead planning authority and Marine Management Organisation respectively and subject to the same statutory and non-statutory consultations.

Our Shoreline Management Plans SMP 6 and 7 which cover the ESC and GYBC coastal and estuarine frontages and our East Inshore, East Offshore and South Inshore Marine Plans, have identified all the designated and special areas and potential implications of delivering these strategic plan policies along our coast. Our SMPs have been agreed with all the relevant statutory and non-statutory bodies associated with the natural and historic environment, notably Natural England (NE), and Heritage England (HE). We ensure that all our activities meet SMP policies, and we are following all the appropriate environmental regulation, consenting and permitting processes with our partners NE, HE, the lead local planning authority, the Marine Management Organisation, and Eastern Inshore Fisheries and Conservation Authority.

We appreciate the issues associated with coastal management within the constraints of heavily designated areas and have significant experience of working in this environment.

We will seek opportunities within the programme to enhance the environment, habitats and landscapes wherever possible. We will ensure we add value through new initiatives in order to understand how we can value the natural capital of our coast, enhance biodiversity and support local nature recovery where there are opportunities to do so.

What is the regional/local environmental context for this investment?

Coastal Partnership East are responsible for 92km of the 173km of coastline in Norfolk and Suffolk, from Holkham in North Norfolk to Landguard Point in Felixstowe. There are approximately 352,000 people who live in the direct coastal zone and many more that work on and visit our coast. Over 2500 homes are at erosion risk (based on current NCERM data) with significantly more affected by

indirect coastal change impacts to critical infrastructure like water treatment works, coastal access roads and utilities.

The nature of the coast is varied with a range of undefended soft eroding cliff frontages, sand dunes, shingle ridges and largely sand and shingle beaches many of which are highly designated. In terms of the distribution of population the coast is largely rural interspersed with several smaller seaside towns like Thorpeness, Aldeburgh, Pakefield and Hemsby and a few large Victorian resorts and ports like Felixstowe, Lowestoft and Great Yarmouth. These communities vary greatly in their socio-economic demographic with pockets of high wealth often alongside areas of high deprivation.

The Resilient Coast Project will encompass two thirds of this frontage with the remaining North Norfolk District Council frontage taking forward further adaptation work in the £11M FCRIP Coastal Transition Accelerator Programme. See map in section 2.1a.

The Norfolk and Suffolk coast is of recreational, environmental, economic and cultural importance but it is also home to industry (energy, ports and logistics, digital, food and drink and creative sector) agriculture and tourism. In addition, there are many second and holiday homes situated in our coastal towns and villages.

As our coast is at high erosion risk it is one of the best places to trial innovative approaches and really test what is possible. The learning form this project will be timelier for other coastal locations who are not facing such significant coastal change at this time.

The Resilient Coasts project will develop and deliver a suite of adaptation and resilient tools that will bridge existing gaps and barriers to increasing the physical and societal resilience of our coastal places. This coastal adaptation toolkit can be applied to all coastal management frontages and at-risk communities in Norfolk, Suffolk and the UK.

2.2b What key environmental requirements will this investment need to meet?

The programme will need to demonstrate increased resilience in our coastal environment. For the purposes of this project, we take this to mean:

- no significant environmental impact to our coast or heritage through our short-term or long-term activities
- compliance with existing SMP policies
- reduction in the use of carbon in all we do or mitigation to offset impacts
- reduction in the potential for property loss and damage to impact coastal environments
- innovation in engineering design to minimise environmental impacts
- robust evidence that can support any policy or legislative change requirements raised in the project.
- no disruption to the national coastal path and public rights of way
- reduction in health and safety risks to the public from coastal change

2.2c What are the key environmental opportunities related to this investment?

<u>This project will create significant environmental opportunities including:</u>

- evidence of natural capital value of eroding cliffs for habitats, biodiversity, natural coastal defence value and public amenity which currently does not exist for eroding frontages.
- evidence for natural erosion management approach that is equivalent to the existing natural flood management delivery framework
- evidence for a biodiversity net gain framework that currently doesn't exist for the open coast
- evidence to support erosion risk as a nationally important risk to public health and wellbeing
- evidence to support any potential SMP policy review that improves resilience from an existing SMP policy position

These opportunities will support potential investment towards a resilient coastal environment that supports natural coastal management and creates sustainable coastal landscapes and habitats for wildlife and people.

These opportunities will also support delivery of SMP managed realignment and no active intervention policies and local plan policies notably to unlock the interdependence of the wider coast for sediment release and a balanced coastal system.

These opportunities could also link to regional habitat creation programmes and wider local nature recovery plans to create viable coastal environments that attract broader investment.

2.3 Objectives (programme and project)

The work delivered in the FCRIP proposal will enable our **coastal communities** in the Resilient Coast project area **to transition to a lower risk and climate-resilient future over the next 20 years.**

The pilot communities businesses and environments will **transition to become resilient to climate change and sea level rise by 2045 to** do this we will co-create **costed Community Adaptation/Resilience Masterplans to provide their adaptation route map by 2026/27**

All our Coastal Communities will have access to Adaptation Toolkit and Masterplan approaches that allow them to **plan for transition and create Sustainable Resilient Places by 2026/27.**

We aim to identify the value of natural capital on our coast to support the naturalisation of SMP NAI frontages along our pilots and twins **by 2045** and for remaining coastal communities in line with SMP policy.

We will have identified **infrastructure at risk including coastal management assets** in our pilots and twin locations, considered adaptive solutions and developed high level costed investment plans to **address/mitigate the risk by 2026** with asset owners.

We will have a new erosion risk database based on NCERM2 that is linked to flood risk mapping. This will link to a n**ew Resilient Coasts spatial map** identifying adaptation and resilience actions, including land availability and SMP policies. This will inform communities, partners and practitioners of the joint coastal risks and opportunities along our coast by 2025.

We will **raise community awareness** about detailed coastal change risk in all our pilots by 2024 and to the wider coastal communities through strategic engagement approaches to create climate – ready people and support climate ready places by 2027.

All our work will be aligned with EA Strategy, Defra policy and SMP refresh to support delivery of National and Local Coastal adaptation and resilience on our coast linked to wider local authority and community aspirations for society, economy and the environment.

All our work will be aligned with our ESC and GYBC wider Local Authority plans and strategies to deliver broader social, economic and environmental outcomes. We will inform the next review of the ESC and GYBC Local Plans by 2027. We will update the local coastal planning policy with new resilience and adaptation learning by 2024.

CPE will use the Resilient Coasts project to develop a legacy- a **30-year plan of adaptation and resilience actions to support transition to a more resilient coast by 2045 using the Coastal Adaptation Toolkit.**

To enable us to effectively measure improvements in resilience an initial baseline will be undertaken using the Zurich Flood Alliance approach and methodology. This is led and supported by the London School of Economics and although widely used internationally, was first piloted in the UK in Lowestoft.

The table below shows the objectives over the course of the project, the outputs and how this influences each stage of the establishment and improvement of place-based resilience levels.

Year(s)	Objective	Output
Years 1 & 2	Establish initial resilience level baseline: Workshops – community, businesses, partner and responder Surveys as above Collection and examining of flood risk/erosion risk data from existing sources.	Baseline resilience established. Action plans in place
Years 3 & 4	Action plan recommendations embedded into pilot area plans across all work packages.	Pilot area work package plans reflect resilience actions. Evaluation points in work package plans include progress against actions. Master plans demonstrably include resilience actions.

Year 5	Re-evaluation of resilience baseline. Workshops – community, businesses, partner and responder Surveys as above	Current resilience level established. Further actions and recommendations identified. Action plans updated
Year 6	Embed further actions and recommendations into Master Plan progress in pilot areas. Map across learning and outputs to twin project areas.	Clear directional actions have shaped the pilot area Masterplans and an improvement in level of resilience can be demonstrated based upon a firm initial baseline. Clear directional actions will shape twin area Master Plans and a baselining of resilience, where this doesn't exist, will be established to ensure future progression to a position of evidence-based improved resilience.

What are the objectives of the investment?

Taking a Place-based Approach across different archetypes to get the widest range of examples and tools across CPE frontage

The overarching programme outcome is to create a resilient coast in Norfolk and Suffolk. We will do this by:

- engaging with our communities to ensure they have the information they need to understand erosion and tidal flood risk and have the support to co-create community infrastructure resilience solutions, which reduces risk based on innovative data analysis and the use of virtual tools

- creating emergency and incident response plans to better prepare communities and businesses for the risks they face

- seeking to minimise damage and disruption to local businesses by developing and promoting economic options that allow our coastal economy to thrive and build on the opportunities the coast provides

- creating new tools for monitoring and managing our local coastal defence and infrastructure and utilities assets with partners and seeking opportunities for integrated investment to deliver resilience

- delivering options that support naturally functioning coastal areas that provide sediments to the wider coastal system and naturalise defended areas through new asset management planning and monitoring

- investigating areas for improvements to policy and practice, notably innovative funding and finance and behavioural change to better support the resilience actions, we need to undertake to deliver a more resilient Norfolk and Suffolk coast

CPE will deliver our initial outcomes for our four pilots in the Resilient Coasts project but also seek to draw in additional funding to deliver to more locations if possible.

Programme overarching outputs and outcomes:

- we will deliver a Coastal Adaptation Toolkit that includes planning, development, asset management, monitoring, funding and finance, engagement and behavioural change tools

- the core innovative resilience elements of which are a co-created Community Adaptation Masterplan supported by an Innovative Adaptation Funding Mechanism, a Behavioural Change Toolkit, Costed Asset Management Plan and an Infrastructure Investment Plan

- the toolkit will also include coastal management planning and development policies and evidence-based GIS risk mapping to underpin decision-making. These are detailed further in Section C

Are the objectives SMART (specific, measurable, achievable, realistic and time bound)?

All elements of the programme will have agreed SMART objectives and are set out in section 2.3. This will ensure that a measurable reduction in social, environmental and physical risks will be delivered in all pilot locations.

Summary project description and mix of actions

The project will gather new evidence and test new approaches to create an adaptation toolkit that can be used by communities and coastal practitioners to support resilient coastal change. the project will deliver Climate Ready people, places and policy through a series of work packages and themes working to ensure integration across themes. all activities will be co-created with relevant communities and partners to ensure the project delivers a robust approach that can be tailored for any coastal location locally or nationally. The project takes a ''business as usual economic baseline and we will demonstrate benefits from learning, damages avoided and value potential to ensure there is an uplift in the resilience of coast and it's communities over the course of 2021-2027. we also aim to have a long-term plan to 2045 to ensure we have adaptation and resilience embedded in the delivery of all our coastal, terrestrial and marine management activities.

The project aims to achieve the following outputs and outcomes:

- **GIS Coastal Zone Erosion Risk Map and Spatial Plan** that informs planning and development decisions and includes new erosion and flood risk data, SMP policies, location of property and infrastructure, social and economic information, planning policies, land available for relocation and roll back and nature-based solutions. It will form the basis of future decision making supporting more integrated local community and central and local government policy ambitions.

- **Engagement toolkit** that builds upon current good practice and new approaches to support our coastal communities transitioning towards greater local and strategic understanding of resilience and adaptation to coastal change. The toolkit will be for communities and practitioners to co-create solutions over different timescales from imminent erosion risk to longer term change and include visualisations and virtual tools to support how our coast may change and how we can respond.

- **Adaptation Funding Mechanism** will bring together new innovative funding and finance approaches to support resilience and adaptation measures for communities, businesses, nature and individuals facing coastal change. The tools will include different options for at- risk communities depending of the level of risk and time available to implement options. Through identification of broader benefits (including natural capital evaluation) and beneficiaries mapping it will include new funding sources to create a sustainable fund to implement coastal resilience.

- **Integrated Infrastructure Investment Plan** will draw together 3rd party information about investment plans for infrastructure, assets and utilities that are in the coastal zone and support coastal communities and economies. The IIIP will encourage 3rd parties to consider their resilience response to coastal change and aim to align investment across different sectors to co-invest in resilience measures and deliver wider outcomes.

- **Costed Asset Management Plan** will include the costs of implementing a range of coastal asset management approaches that support coastal resilience. The Plan will include the costs of decommissioning existing assets that need to be removed to support SMP policy as well as identify where asset removal will be needed and when. In addition, the plan will also include costs for innovative technical solutions that offer short term erosion protection or include broader environmental and social benefits that could attract alternative funding and support wider outcomes. The plan will support coastal management funding discussions with existing central government funds alongside new funding routes.

All the above outputs will support co-created community discussions for each coastal place.
The communities and practitioners will have access to the tools above and be supported to create the following:

Community Adaptation Masterplan which will encompass the options and opportunities available in any specific coastal location based on the communities needs and the offer of their place. The Masterplan will be the local resilience route map in each place that sets out the technical solutions, planning and development needs, engagement requirements and funding availability based on the risk data and SMP policy. Our pilots will all have a Masterplan in place and be delivering outcomes by the end of the FCRIP programme in 2027.

All the above deliverables will form a new **Resilient Coasts Adaptation Toolkit** which will be shared locally and nationally through so that lessons learnt can be applied around the UK coast well before the programme ends. We aim to deploy and share adaptation tools as they are created.

Finally, we will also identify any potential policy and legislative challenges and opportunities throughout the project. It is hoped that Resilient Coast will offer the evidence to inform more streamlined routes for adaptation and resilience delivery post-FCRIP.

How do the mix of actions work together to maximise resilience?

The following resilience actions will be addressed by the project:

- **Joint community and voluntary sector** action to improve preparation and recovery – we will embed innovative measures that engage communities and the voluntary sector in collaborative decision making, so that they are empowered to manage the risk of flood and coastal change. This joint approach will enable communities to better prepare for and manage the risks they face

- **Nature based solutions** – we will implement nature-based solutions which increase resilience to coastal flooding and coastal erosion and mitigate the impacts of climate change

- **Community infrastructure resilience** – we will undertake activities which improve the resilience of existing public or community owned infrastructure to flooding and coastal change

- **Monitoring and management of local assets** - we will create new innovative monitoring approaches and asset management systems to better understand coastal erosion risk, in order to create resilient asset management plans for the decommissioning of defences at no active intervention frontages

- **Minimise damages and disruption to small and medium sized businesses** - we will work with small and medium sized businesses to identify resilience actions which could minimise disruption and damage to businesses from flooding and coastal change

- I**nvestigate policy challenge areas –** we will continue to investigate and conduct a thorough local assessment of selected policy challenge areas. In particular, we aim to create innovative funding and finance mechanisms from the public and private sector to support coastal adaptation in Norfolk and Suffolk. We also aim to build resilience into major new developments in areas with flood risks, for example, in Great Yarmouth, and consider sustainable planning and development in Coastal Change Management Areas through new planning, development and building control policies

2.4a What new evidence will be established to support a broader range of future FCERM actions?

- We will translate national and SMP policy into reality in order to prepare the coast for a climate change resilient future. The programme will evidence the value of better information, based on local knowledge and reduce uncertainty. This is particularly important for businesses, who need greater certainty to invest in coastal resilience and adaptation projects. It will also provide confidence to those looking to invest in adaptive coastal properties or in affected communities more broadly.

- We will deliver large scale community engagement to enable behavioural change in relation to climate change and coastal risk. The programme will develop evidence around the social benefits gained from coastal adaptation. This includes testing new techniques, such as the Behavioural Change Toolkit, which aims to generate community co-creation and buy-in, and significantly improve engagement, whilst developing a sense of community in a changing place.

  The toolkit will be delivered by working in close partnership with a diverse range of community members. This will help address future challenges and empower communities to consider the full range of benefits that coastal adaptation can enable, while providing organisations and agencies to understand the rationale and origin for negative opinions and behaviours. This community-led approach can also generate lower costs and better value for money by delivering more sustainable and acceptable solutions at community level, as opposed to only focussing on those at short-term risk.

- The programme will deliver solutions that allow families and businesses to move out of at-risk areas sooner by reducing financial and social barriers that prevent them from adapting. The result will be a reduction in cost to the public as the number of people, homes and buildings that are displaced, destroyed or demolished through erosion and flood will be minimised.

- We will work directly with those most affected by risk to agree practical solutions. The programme aims to reduce the stress and uncertainty faced by those (in particular) with limited options by empowering communities with the knowledge to help themselves and their wider community. This in turn will help other stakeholders to understand the rationale and origin of negative mindsets and behaviours and lead to cost savings through reduced (resource) costs of dealing with multiple issues, concerns and complaints. The programme will also draw on evidence from studies carried out during the COVID-19 pandemic that analyse the costs resulting from the loss of access to key community and social networks, as well as facilities.

- We will investigate and prepare financial tools to create an adaptation or transition fund to finance short-term and long-term coastal actions. The programme will pilot the options being developed by the Coastal Loss Innovative Funding & Finance (CLIFF) project which tests financial products created to facilitate coastal adaption in communities at risk, at the household level. This project has been developed by taking a detailed cost and benefits approach, based on the financial viability of the products, which will be tested and evidenced as part of the Resilient Coasts Project.

- We will work with communities, businesses, planners, infrastructure owners and developers to co-create long-term flexible transition masterplans and actions. The programme will evidence better, broader data on the costs and benefits of coastal change that will facilitate improved planning by reducing uncertainty. This will enable the delivery of long-term plans with broad benefits by encompassing different land uses. By avoiding issues such as coastal blight that can potentially impact the value and saleability of coastal property, this will maximise the value of land, allowing different uses and supporting communities for longer. This is compared to short-term solutions that benefit a smaller number of at-risk properties or avoid damages at the expense of delivering more sustainable and broader long-term benefits.

- We will gather a full and publicly accessible baseline understanding of our coast, what and who is at risk and when. By developing a strong, proven evidence base, better information will be made available for decision-making at all levels (local authority, community, business, individuals), reducing uncertainty and so helping to manage short-term thinking and community concern. This will enable more informed decisions around costs versus long-term benefits of coastal adaptation and lower the risk of making wrong decisions based on a narrow range of benefits.

- We will plan and adopt long-term decommissioning plans for coast protection assets to enable naturalisation of the coast. The programme will develop the evidence around the value and benefits of a natural coast based on the real-world benefits delivered. An example is the benefit of natural, larger beaches as opposed to narrow beaches in front of hard defences. The aim is also to test how these approaches are likely to reduce cost elsewhere along the coast, based on the release of sediment and reduction of pressure in other locations (depending on the robustness of data).

- We will develop practical evaluation tools to measure improvements in resilience and adaptation. The programme will develop a stronger evidence base to understand the benefits delivered by the coastal adaptation that will be delivered across social clusters (for example, benefits to individuals, families, local communities, and wider society) alongside the commercial and economic benefits for the public and private sectors. This framework will enable policy makers and other decision makers to make better informed judgements on the rationale for opting for coastal transition versus traditional short-term engineered solutions.

How will the project support an increasing uptake and delivery of future FCERM actions?

By delivering the Resilient Coasts project we will be able to share learning locally and nationally on the different approaches available to support resilience and adaptative coastal change. the toolkit will be available for all to use and this will give the framework for national coastal approaches outlined in the government's FCERM Strategy (2020) and address many of the recommendations of the CCCRA (2021) risk review briefing for the flood and coast sector. By testing out new approaches on one of the most challenging eroding coasts in the UK across a range of coastal pilot archetypes we aim to have a breadth of learning and tools to cover most coastal adaptation requirements.

Finally, by both raising community awareness about coastal change strategically alongside the establishment of strategic funding mechanisms we aim to create a sustainable legacy from the Resilient Coasts project that will sustain coastal adaptation and resilience in our area that can be replicated elsewhere.

2.5 Key innovation learning and main benefits

2.5a Summary description of the key innovation learning and investment benefits.

The learning outcomes are detailed further in section 3.6. in summary the main learning outcomes are across 5 themes as follows:

Learning on cost- Better understanding of costs of activities and by identifying those activities that are most efficient we have estimated a 20% saving through identifying what works well.

Learning on benefits- Better understanding of benefits of activities by identifying those that are most effective we have estimated 125% increased benefits through identifying what works well.

Learning on management and governance at project level- Learning on how to better engage and collaborate with infrastructure owners demonstrates reduced costs through joint working and shared programmes and delivery of multiple objectives. This also reduces impacts and damages to communities, business and environment.

Learning on skills and tools- Skills developed in local communities on co-designed activities will be useful for adaptation to future risks and working with authorities. This leads to better understanding of how to roll-out the most effective activities for the most efficient costs and development of tools that can enable roll-out to cover adaptation pressures post-project.
Also, the development of functioning funding mechanism to enable roll-back means that both these outcomes will develop tools that can be used by others creating efficiencies and costs savings on future FDGIA and other investment.

Learning on management and governance at strategic level- Knowledge of how funding mechanisms could be developed to help encourage adaptation to other risks. Bringing together all the learning outcomes to provide a suite of outputs that can be used by others to work with communities at risk, with worked examples from the case studies to follow

2.5b What are the expected main benefits of the investment?

- Our Resilient Coasts project pilots will all benefit from a co-created community masterplan that sets out the route-map for adaptation in that place. All four pilots will have the relevant financial, planning, engagement and technical information that they need through a series of supporting tools shown in the diagram below:

Figure 1.3.1 The key outputs of the Resilient Coasts project

Strategic benefits:
We will deliver a Coastal Adaptation Toolkit that includes planning, development, asset management, monitoring, funding and finance, engagement and behavioural change tools.

The core innovative resilience elements are a co-created Community Adaptation Masterplan supported by an Innovative Adaptation Funding Mechanism, a Behavioural Change Toolkit and an Infrastructure Investment Plan.

The toolkit will also include coastal management planning and development policies and evidence-based GIS risk mapping to underpin decision-making. These are detailed further in Section C.

At each location there will be specific benefits local to that place. As we aim to co-create the plans with the pilot communities and partners we are not able to detail all the local benefits now. Examples of local benefits to our four pilot locations are summarised in appendix 2D.

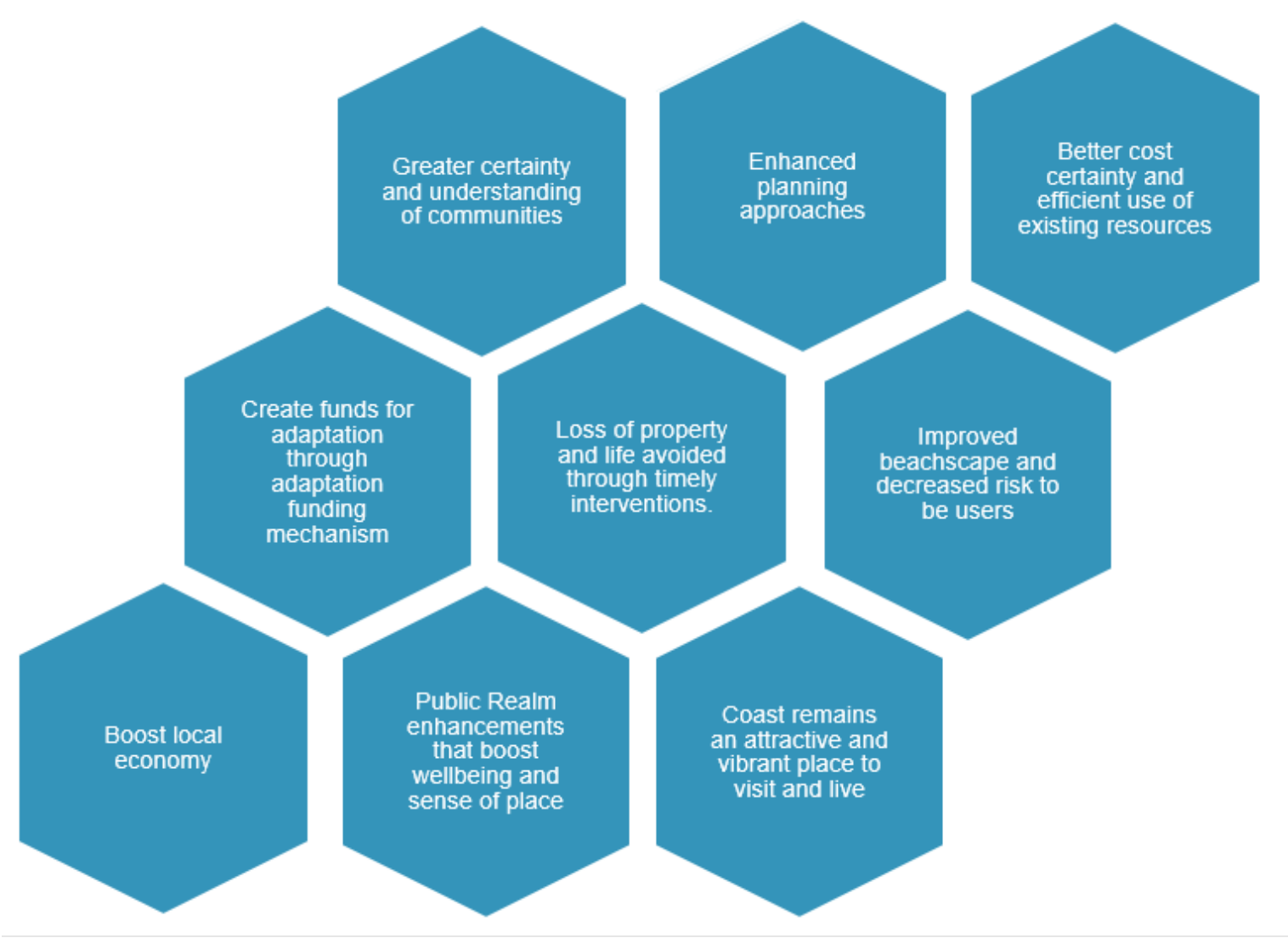
2.5c Wider benefits

- We believe that with central government investment through the FCRIP programme, we could start a mechanism to raise funds for adaptive solutions. There will be better use of RMA resources through a move from reactive measures towards planned solutions.

- Other elements where we can demonstrate added value, include the opportunity to work with national infrastructure projects and other developers. Enabling us to draw developer contributions into planned community adaptation approaches, building climate resilient homes away from risk or creating new economic opportunities for businesses.

- All our work will be shared nationally through the Local Government Association Coastal Special Interest Group, Coastal Networks, Defra and the Environment Agency so that lessons learnt can be applied around the UK coast well before the programme ends. We will be able to deploy and share adaptation tools as they are created.

Some of the headline wider benefits of the project include:



Strategic risks and learning from past projects

We have undertaken a full strategic risk assessment of our project up to 2027 across all themes and work packages using the PESTLE method. We reinforced this methodology by holding a workshop with our partners to help shape the PESTLE and assess risk. Programme risks are scored using an IOSHH recommended risk calculation method. The key risk up to 2027 from each PESTLE category is summarised on the table below.

Category	Risk Description	Potential Impact / Consequences	Mitigation
Political	Changes to Government and Priorities - Local	Engagement of new politicians could cause delays and increased costs. Other local issues could compete for priority resulting in lack of support causing delays, lack of funding and increased costs.	Use CPE Board members and Senior Leadership teams to maintain political support and focus. Maintain close relationship With National Agencies/Government Departments Co-develop LA priorities for climate change / adaptation Levelling Up to embed project in wider LA agendas.
Economic	National economic event/crisis.	Increase in project costs could reduce benefit/cost ratio. Could lead to some undeliverable elements of the project.	Maintain a flexible approach to project elements. Ensure core activities are identified and delivered and additional added value deliverables can be flexed. Regular review points to consider project deliverables and agree with Board. Attract additional funding through good communication and engagement over the project
Social	Major incident/weather events Unrealistic Expectations	Staff burnout/sickness leads to project delays and potential loss of funding. Other business activities may be affected due to staff being diverted to IRF programmes Communities expect that the FCRIP funds will be used to 'defend' them	Becoming More Proactive with Resources. FCRIP funding helps us to recruit additional resource to 'protect' programme delivery from incident response role. Developing tools / frameworks to minimise the need for reactive responses New ideas from new staff and our partners - knowledge sharing / innovation and broadening of capacity in/outside team. Through good engagement with existing pilot communities we have a Strategic Community Stakeholder group that can engage others on the projects behalf and demonstrate adaptive approaches work. We have demonstrable experience in managing challenging conversations and social media.

Category	Risk Description	Potential Impact / Consequences	Mitigation
Technical	Skills Gaps - Due to the significant projects in the area including Sizewell C, windfarms and other NSIP projects there is a huge demand on local resources and suppliers.	Lack of availability of suppliers and partners would impact the programme, costs and internal resource demands.	Technological Development and link to possible research funding New relationships and partners developed Early engagement with students and apprentices to get them involved in the project. Strategic pay and benefits discussions with LGA
Environmental	Limited Stakeholder Resources to provide advise and progress applications (including licences and consents)	Additional staff demands Delays to programme Increase to costs Stakeholders unable to review project information due to staffing/expertise limitations Perceived bias if we support stakeholders financially to participate.	Talk to stakeholders early in programme/design to reduce timelines/costs/etc Understand stakeholder challenges so we can better support them. Working with stakeholders (DEFRA) to put the right expertise in place so that tasks can be completed in a timely manner. Working with others to procure extra funding for the right people with the right skill sets.
Environmental	Designations constraints adaptation options	Proposed project activities unable to take place causing reputational damage, delays and increased costs.	We will evaluate the environmental benefits of allowing coastal change and adaptation solutions to determine how we work with designated areas and whether we can establish NEM mechanisms to attract funds and benefit both the environment and those at risk in MR/NAI areas.

Beyond 2027, based on our experience of previous Pathfinder programmes and similar initiatives, we have identified the risks and how our programme will mitigate those and ensure a positive legacy for the funding we have, enabling a more resilient coast for all. The summary of these are in Management Case (section 6).

The pilot areas have been selected as they have already begun their adaptation journey and are willing to work on resilience and adaptation measures.

Constraints and dependencies

The project has a number of dependencies and constraints. The following table summarises these at a headline level, plus makes the links between them.

Dependencies	Constraints
Political support (national and local)	Competing Government priorities.
Willing communities and stakeholders	Time taken to engage other stakeholders outside of communities.
Availability of funding	Timing and deadlines alongside synchronisation of deliverables, need for critical mass for finance mechanisms.
A strong Planning and permissions & consents framework	Local Authority local plan review process (SPD and CCMA review process).
Erosion risk data (NCERM2)	Timing of NCERM 2 is mid-programme, impacting availability of useful data.
Wider economic data	Time and resource requirements pus availability of data.
Infrastructure asset data	Commercial and security sensitivities from sharing third party data.
Natural assets data	Limited baseline information on coastal assets and agreement on evaluation methodology
Supportive policy and strategy framework	Current policies do not work or new project recommendations are not adopted.
Appropriate SMP policies	Public and political acceptance of change.
Technical design innovation	Capability of the sector and few appropriate solutions currently available.
Resource, skills and capacity of project team	Recruitment, public salaries and competing initiatives (e.g. Sizewell C).
Resource, skills and capacity of communities	Reliance on the resource of volunteer time within communities.
Potential EIA, MMO and other permissions and consents.	Aligning the consenting processes and time constraints with the project's programme.

2.7.b External project dependencies

The project is closely linked to several strategic local projects. The dependencies and constraints are summarised in the table below.

Dependencies	Constraints
Linkages to CTAP- significant opportunities to share learning and ensure wider programme of adaptation initiatives are considered and delivered.	Working to other organisations' timescales. resource needed to integrate work programmes and avoid duplication.
Delivery of EA-led Great Yarmouth Food risk strategy	Timing of Resilient coast project needs to be flexible to be synchronised with the EA project.
Linkages to Broadland Futures Initiative in GYBC pilot to embed longer term tidal flood resilience and adaptaion options	Working to other organisations' timescales and resourcing relationship management. resource needed to integrate with BFI's broader programme of work.

Stakeholder engagement

The project team have worked closely with the coastal pilot communities and several twin locations for many years due to the imminent coastal risks in these locations. The communities are willing to co-create adaptation and resilience approaches and support the proposals we have included in the OBC.

The wider partners have been directly involved in shaping the proposal through a series of project workshops including the readiness assessment, strategic risk assessment and individual work package discussions on innovation, costs, procurement and deliverables. we also benefit from several experienced professionals, academics and specialists who are offering their support to the project development and delivery and many of these will also be available to offer independent advice to the pilot and twin communities and strategic Community Stakeholder Group they will be part of.

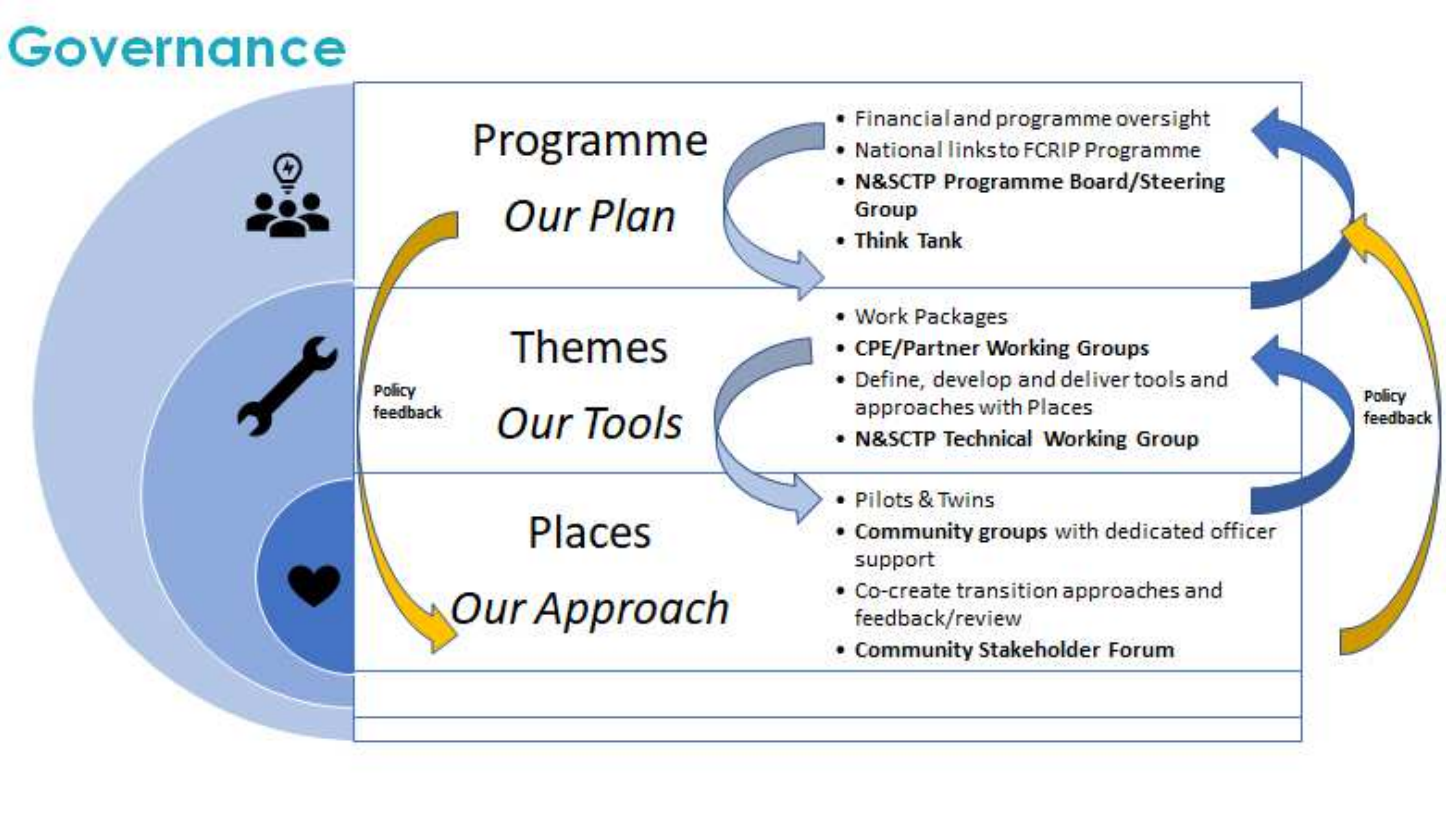
We have also engaged with wider Coastal Protection Authorities through the Coastal Group Network and Local Government Association Coastal Special Interest Group (LGACSIG)(notably the Adaptation Working Group) to ensure we are embedding wider learning opportunities into the Resilient Coasts project.

Going forward we have a governance structure that allows for regular community, stakeholder and partner involvement. The approach we plan to take will include regularly sharing monitoring outputs with the Community Stakeholder Group at agreed points in the programme. The data and their feedback will be used to make decisions on the best ways to adapt in that location. The monitoring of community engagement and the impacts of change will be evaluated using the recommended GCN model. This evaluation will be conducted at appropriate points, ensuring there is the opportunity to review, reflect and refresh throughout the programme. Insert the governance structure reference

The diagram below summarises the linkages between the pilots, strategic theme working and the FCRIP programme and wider national initiatives. We have committed to share learning and seek feedback as the project progresses through a range of stakeholder and partner fora and these are detailed further in appendix 2A

We will develop Full Business Cases for elements of the project as the Resilient Coast project progresses with full input from the relevant groups

2.8a Governance



2.8b How has stakeholder participation and engagement influenced and shaped the investment proposals?

The investment we have proposed is based on our shared coastal management experience and that of our coastal communities and partners. It is based on needs that have been identified through 'live' project working, recent erosion and flood risk events and lessons learnt from previous Pathfinder or similar programmes. We have also engaged with national partners and coastal practitioners around the UK to ensure we have a full understanding of what approaches to adaptation and resilience already exist and the coast and what we can build on in Resilient Coasts.

We have considered our pilot locations carefully and chose to select more than one 'place' for this project. This is because no one coastal place would give us the breadth of learning we need. Through discussion we now have a good range of different coastal 'archetypes'. We have aimed to have examples of defended and undefended frontages in both erosion and flood risk zones and in rural and urban locations with communities that are already engaged in adaptation discussions.

The investment proposals aim to ensure we deliver improved resilience on the ground at each coastal place that is based on our shared community and practitioner learning to date. this is then balanced alongside strategic tools that will provide a legacy for future coastal management based on our shared understanding with other coastal practitioners and national colleagues.

Since our original submission we have shaped our investment through a series of discussions which have optimised our proposal. there is more detail of this in section 3.4 The highlights are:

The development of a 'business as usual' (BAU) Baseline with Risk and Policy Analysts that allows us to inform the wider project baseline for monitoring and evaluation purposes but also establishes the cost benefit ratio of resilient Coasts at 1.7 and identifies the likely learning benefits we will realise. This informs our investment priorities going forward.

Discussion with National EA team regarding the use of the National Coastal Erosion Risk mapping approach. in 2023/24 has reduced the need for bespoke risk mapping and associated costs. we have also changed our project boundaries and pilots to reflect the additional investment that will be available through the new Coastal Transition Accelerator Programme in North Norfolk.

Anglian Water regarding the use of their Behavioural Change toolkit and associated costs have reduced as the tool required less adaptation for coastal use than previously thought

Through the community at Thorpeness we now have a better understanding of the need for and costs of rock options to support short term change that have led to increased costs for the engineering design elements of the project to support greater innovation in the engineering sector.

The LGACSIG we have evidence that natural capital and biodiversity net gain on the open coast needs developing in terms of evidence and evaluation and so we have expanded this to deliver greater national learning benefits to other CPA's and inform the EA FCERM Action Plan.

The EA Area and GYBCouncil officers' team regarding the GYBC Tidal defence scheme timings and the best ways the Resilient Coast Project can support this initiative to maximise resilience outputs and wider benefits- notably around resilient landscape architecture and public realm design.

Knowledge-sharing and decision-making:

- The coastal and resilience monitoring outputs will be regularly shared with the Community Stakeholder Group at agreed points in the programme. The data and their feedback will be used to make decisions on the best ways to adapt in that location.

- The monitoring of community engagement and the impacts of change will be evaluated using the recommended GCN model. This evaluation will be conducted at appropriate points, ensuring there is the opportunity to review, reflect and refresh throughout the programme.

- The management team has over 80 years combined coastal management experience across innovative funding and finance, planning, engagement and behavioural change and engineering and coastal monitoring. Board members and a senior team will also support the programme. Officers will also be positioned to apply the lessons and recommendations from the Lowestoft Zurich Resilience Measurement and Business Emergency Resilience Tool.

Monitoring and evaluation framework, and dissemination

2.9.a How will learning be monitored and evaluated?

Taking the economic case learning benefits we will monitor and evaluate across 4 categories; learning on costs, learning on benefits, and learning on the governance and management of the project at both local and strategic levels. the approach to monitoring for these 4 themes is summarise below. more detail on our monitoring and evaluation approaches are given in section 6.

Ref	Learning benefits category	Description	Monitoring approach	Indicator
1.1	Learning on cost	Better understanding of costs of activities and those that are most efficient	Financial monitoring of costs with analysis against the BAU costs. use of financial efficiencies tools to demonstrate savings or added value	Efficiencies are made Value is added
1.2	Learning on benefits	Better understanding of benefits of activities and those that are most effective	Community and business resilience baseline assessment at start and repeat surveys in the later programme Pilot level and strategic benefits realisation monitoring to ensure benefits are mapped. quarterly review to establish those that are effective. Use of social value portal to establish benefits quarterly	Increased resilience across our pilot communities and businesses. Social value is delivered Natural capital is valued
1.3	Learning on management and governance (project level)	Learning on how to better engage and collaborate with communities, businesses and infrastructure owners		

1.4	Learning on skills, tools (methods and mechanisms) and capacity needed to implement actions and combinations of actions	Better understanding of how to roll-out the most effective activities for the most efficient costs and development of tools that can enable roll-out to cover adaptation pressures post the project Skills developed in local communities on co-design activities that will be useful for adaptation to future risks and working with authorities	Learning log that is used by community and project team to ensure we capture key lessons as the project progresses. lessons reported and shared. Initial assessments across all 8 work packages to establish baseline and establish monitoring approaches accordingly with key review and reporting points Time recording and skills and developments reviews to assess impact of resources and capacity needed quarterly across community and practitioners Assessment of in-combination effects of tools and techniques	Lessons learnt report is shared. Work package assessments demonstrate learning improvements Time and motion reports
1.5	Learning on management and governance (wider lessons learned)	Development of functioning funding mechanism to enable roll-back Knowledge of how funding mechanisms could be developed to help encourage adaptation to other risks	Comparison of the BAU baseline for current funding availability and sources	We will have new funding sources compared to current baseline. We will have an self-financing Adaptation fund that is accessible to those who meet the criteria.

To summarise, our approach we will undertake a range of monitoring approaches to financial and project management as well as ensure we are monitoring improvements in coastal resilience for people and their place.

Evaluation

1 Agreed measures will be in place for all monitoring approaches and tangible deliverables. The resilience and adaptation approaches developed will be applicable to the wider coastal community archetypes through the programme twin locations.

2 All elements of the programme will have agreed SMART objectives. This will ensure that a measurable reduction in social, environmental and physical risks will be delivered in all pilot locations.

3 The monitoring of community engagement and the impacts of change will be evaluated using the recommended GCN model. This evaluation will be conducted at appropriate points, ensuring there is the opportunity to review, reflect and refresh throughout the programme.

2.9b How will dissemination be achieved during and post project?

- A third-party project assurance role will be embedded in the programme team to ensure all lessons and outputs are captured and dissemination documents are developed. This will allow for lessons to be shared, mitigated against and built upon throughout the project through review and feedback loops.

- Outputs and lessons will also be disseminated through the technical and steering groups.

- Recommendations on national policy and the process 'red tape challenges' will be disseminated through the steering group and Local Government Association Coastal Special Interest Group, notably the Adaptation Working Group, which also links to the National Coastal Network Group.

- The technical and coastal monitoring data produced will be disseminated through the Anglian Monitoring Programme, Environment Agency National Coastal Erosion Risk Mapping and SMP refreshes and feedback incorporated.

- Recommendations for reducing risk and improving resilience will be developed and shared with community pilots and twins through both traditional routes (meetings, newsletters, workshops, digital and social media platforms) and innovative tools (such as virtual reality tools), which in turn will be used to disseminate options more widely to other coastal locations.

- The RFCC and relevant national policy and practice groups will be kept updated.

- Outputs will be shared with wider partner networks – such as CIWEM, ICE, CEFAS and other RMA networks.

- Coastal local authority colleagues in wider service areas (such as planning, communities and economic development teams) will be engaged throughout the programme, with internal dissemination routes established through active working approaches.

3. Economic case and benefits framework

Description of the business as usual baseline

Business as Usual (BAU) is a continuation of the current reactive approach to erosion risk management. The current approach is summarised as Figure A1-1 in the economic appendix. For erosion, BAU is expected to result in costs of £8.9 million and damages of £7.4 million. The approach to estimating the value at-risk damages is set out in Section 2.6.2. An appraisal period of 100 years is used and the damages are based on four case study erosion locations. For flooding, the damages are based on a 50 year appraisal period and look at the damages from flood risk increasing from 1% Annual Exceedance Probability (AEP) to 2% in Year 50 for 5,000 properties. A further 12,000 properties also at flood risk are projected to see an increase from 0.5% to 1% by Year 50. The total flooding damages are estimated at £36 million.

3.2 - Table 1: Summary of impacts under the BAU baseline

Scenario	PVc £k	PVb £k	BCR
Business as usual baseline	£8,912,032 (addressing erosion in reactive manner) £0 (no costs incurred in addressing flood risk)	-£7,399,031 (damages from erosion) -£36,069,487 (damages from flooding)	N/a

The erosion costs are based on continuation of a reactive approach where action is only taken when there are properties at imminent risk of erosion. This reflects the constraints on local authority budgets and resources and the lack of an obvious funding route for any proactive approaches. Once there are properties at imminent risk of erosion, the local authority undertakes engagement with the community and identifies whether there is the potential to make a case for emergency interventions that could reduce erosion and so reduce the imminent threat to the properties. Where there is the potential to make case, then an economic appraisal is undertaken and the community is invited to help with fundraising to cover any shortfall in Grant-in-Aid. This is only feasible where there is sufficient time to raise the funds required and where the community has the potential means to raise the level of funds necessary.

Where there is no option for emergency intervention, due to properties needing to be demolished or because an economic case is not going to be viable (benefits will not outweigh costs), then the local authority works with the affected individuals to help them through the demolition process. This involves further costs for the local authority from additional engagement, but also requires input from building control and, where the households affected do not have access to alternative accommodation, the housing department as well. Demolition costs for individual property owners are assumed to be covered by a grant. No action is taken to improve the frontage so there are impacts on the remaining community from a loss of individuals, change in the community and no improvement in the local environment. Erosion damages occur at the time of demolition where properties are not replaced through rollback.

Rollback is possible using existing policies, but the time to plan is short (or non-existent) so rollback is a limited option since there is no allocated land on which to rollback to and no funds to help those unable to purchase land and build a replacement property. However, some people are assumed to be able to fund rollback themselves. An assumption is made based on the mid-point of the decile on index of multiple deprivation (IMD). For example, if the community lies in the 5th most deprived decile

(40%-50%) then it is assumed that 45% of the households would be able to afford to rollback. Erosion damages occur in the year of demolition but are then negated by construction of a replacement property two years after demolition (this assumption allows sufficient time for identification of a rollback site and construction of the replacement property).

For those communities where emergency intervention was possible, it is assumed that rock armour is used. Although a more expensive option, short-term solutions have been found to cause health & safety risks and plastic pollution. The damages from these solutions are considered to make them unsuitable so rock armour is the only viable option. Once the rock armour is in place, this then buys time for the community to adapt. However, with no adaptation fund and no allocated land for rollback, the amount of people that can make use of the existing rollback policies is again limited to just those who are able to fund it themselves. As with demolition, this is limited to the mid-point of the decile of IMD, meaning the opportunities from the time bought by rock armour has been lost. Once the life of the rock armour is exceeded (assumed 25 years), the community moves to demolition as a further case for protection cannot be made. Demolition costs are incurred (although these are covered by a grant for property owners) and erosion damages occur (only partially offset).

3.3 Summary description of the investment proposal

The Resilient Coasts project will move to a proactive approach to management of the coast. The project costs occur over the first six years and are estimated at £9.1 million (including risk contingency and optimism bias. Of this 75% of the costs (£6.8 million) are tailored to the erosion aspects of the projects and the remaining 25% (£2.3 million) to the flooding aspects. The costs associated with the erosion aspects are lower than those incurred under BAU due to the more proactive work undertaken over the six years to prepare communities for rollback through the eight work packages. Thus, the Resilient Coasts project offers a potential cost saving compared with a reactive BAU approach of around £2.0 million.

In terms of erosion aspects, the Coastal Transitions project will reduce damages compared with BAU by £7.4 million but will also deliver additional value potential benefits. Not all of these can be valued but those that can are estimated at £4.4 million over 100 years. There are also learning benefits which will enable the approach developed in the Resilient Coasts project to be rolled out across other coastlines looking to develop adaptive approaches to coastal erosion. The principles of the project could also be applied to adaptation to other risks, including flood risk.

Bringing the value at-risk damages avoided (£7.4 million), value potential benefits (£4.4 million) and learning benefits for the local community (£0.3 million) together gives total benefits of the erosion aspects of the Coastal Transitions project of £12.1 million. Project costs for the erosion aspects are £6.8 million[1], this gives a benefit-cost ratio of 1.8[2]. Learning benefits can also include legacy benefits whereby the tools developed can be rolled out to more communities at risk. If an additional six communities at erosion risk are involved beyond the Resilient Coasts project, this could realise a further £24.0 million in benefits (costs would also be incurred so these benefits are not included in the BCR for the project). Note, the appraisal has been carried out over 100 years to enable the benefit from future application of the project to be applied, with additional costs incurred beyond this project.

For erosion areas, this starts by improving understanding of erosion to better predict when erosion may occur (Work Package F). This improved understanding then enables the local authority to work with communities before there is an erosion issue, involving them in developing and implementing community masterplans for adaptation (Work Packages A and B). Infrastructure owners will also be involved so there is a much more coordinated approach to relocation of assets, reducing disruption to communities but also enabling partnership working and collaboration between different infrastructure owners so they can come up with lower cost and more effective outcomes (Work

Package D). The costs for the project as a whole (flooding plus erosion) are £9.1 million (including risk contingency). The damages are reduced since communities are prepared for erosion and can implement their adaptation plans to avoid the reactive type of response seen in BAU.

The creation of an adaptation fund (Work Package C) means there is money available to help those unable to fund rollback themselves and work by the local authority will ensure that rollback land has been identified and allocated. This means that properties can be rolled back before they are at imminent risk of erosion. It also allows the frontage to be improved, providing a nicer environment, greater access to the coast and/or use of the frontage for erosion-compatible uses (e.g. relocatable assets such as caravans depending on the priorities of the local community) (Work Package E).

Once adaptation plans are in place, decommissioning of defences can occur enabling a more naturalised coast to develop. The release of sediment from the more natural coasts can help reduce impacts on other coastal locations and may reduce costs of coastal management elsewhere (also part of Work Package E).

There may still be a need for works to reduce coastal erosion in some locations, and the project will investigate short-term, lower cost solutions to rock armour (Work Package G). However, even in the absence of innovative ideas for short-term solutions, there will be a move to recognition that rock armour is a temporary solution to buy time to enable adaptation plans to be developed and implemented. The rock armour will then effectively be 'loaned' to a frontage. Once a community has developed and implemented its plan, the rock armour will be recycled and used elsewhere. This will reduce use of resources and is expected to reduce carbon emissions, although recycling of the rock armour will require extra handling, but overall transport distances and the need for fresh rock material each time will be reduced.

In terms of flooding aspects, it is assumed that the Resilient Coasts project will avoid flood risk increasing over the next 50 years for half of the 5,000 properties currently at 1% risk. The remainder would see flood risk increase but the engagement activities would be to better prepare communities for flood risk to improve their resilience and adaptation. This results in value at-risk damages of £27.3 million or benefits of £8.8 million. With costs for the flooding aspects of the project at £2.3 million, this gives a benefit-cost ratio of 3.9. Additional value potential is expected to be provided by visual improvement of the frontage and increase in community and industrial resilience.

Overall, therefore the project has total benefits of £20.9 million (£12.1 million from erosion aspects and £8.8 million from flooding aspects) compared with total costs of £9.1 million giving an overall benefit-cost ratio of 2.3[3].

[1] **This assumes all the project costs are brought forward for the case study area to be incurred within the six years of the project, after which time adaptation is self-funding through the adaptation fund**

[2] **This excludes the cost saving of £2.0 million over BAU, which would increase the BCR to 2.5 (£12.1 million benefits divided by £4.9 million net costs).**

[3] **Again this ignores the cost savings over BAU for the erosion aspects. Including this would increase the BCR to 2.9 (£20.9 million benefits divided by £7.2 million net costs).**

3.4 Description of how the proposed solution was optimised

There has been significant community and stakeholder engagement to inform project development and investment. Through a range of workshops, discussions and community project experience we have considered our proposals to optimise value, scale, location, timing, environment and social equality.

Project scale was determined through:

- The development of a Business as Usual Baseline with Risk and Policy Analysts that allows us to inform the wider project baseline for monitoring and evaluation purposes but also establishes the cost benefit ratio of resilient Coasts at 1.7 and identifies the likely learning benefits we will realise. This informs our investment priorities going forward.

- Discussion with National EA team regarding the use of the National Coastal Erosion Risk mapping approach. in 2023/24 has reduced the need for bespoke risk mapping and associated costs. we have also changed our project boundaries and pilots to reflect the additional investment that will be available through the new Coastal Transition Accelerator Programme in North Norfolk.

- Discussions with Anglian Water, regarding the use of their Behavioural Change toolkit and associated costs have reduced as the tool required less adaptation for coastal use than previously thought

- Discussions with the community at Thorpeness, meaning we have a better understanding of the need for and costs of rock options to support short term change. This has led to increased costs for the engineering design elements of the project to support greater innovation in the engineering sector.

- Discussions with the LGAC SIG, meaning we have evidence that natural capital and biodiversity net gain on the open coast needs developing in terms of evidence and evaluation and so we have expanded this to deliver greater national learning benefits to other CPA's and inform the EA FCERM Action Plan.

- Discussions with the EA Area and GYBC ouncil officers team regarding the GYBC Tidal defence scheme timings and the best ways the Resilient Coast Project can support this initiative to maximise resilience outputs and wider benefits- notably around resileint landscape architecture and public realm design.

3.5 Description of: invest less and invest more

Invest less

The invest less scenario is based on a 20% reduction in costs for the Resilient Coasts Project. This is assumed to represent a reduction in the number of erosion case studies that can be undertaken, from four to three; the flooding case study would continue as planned. Work packages C, E, F and G are independent of the case studies, so cost savings are made on work packages A, B and, to some extent,

D. Thus a 33% reduction in case studies is assumed to represent a reduction of costs for the whole project of 20%.

The loss of one case study would mean there is a reduction in direct benefits (avoided value at risk damages and unrealised value potential benefits).However, it is assumed the case study would be captured following roll-out of the project findings. Given that the case studies have been selected to work with communities currently facing erosion pressures, there is a risk that emergency interventions would be required if erosion accelerates in the former case study location before the Resilient Coasts Project has delivered its tools and findings. Thus, the case study location could find itself in the difficult position of having a community willing to discuss adaptation but without the tools, funds, or time to do so. This could have reputational impacts for the local authorities and potential, wider knock-on implications for the Resilient Coasts Project in general. Additional costs may therefore be incurred to offset these potential issues.

The learning benefits would also be affected due to reduction in trialling in an additional context and with an additional community. The case study locations have been carefully selected to cover different contexts and communities, so there is a risk that future projects that are most similar to the foregone case study would need additional costs to respond to any context-specific issues or approaches needed.

Invest more

The invest more scenario is based on adding one additional case study on erosion, so this increases from four to five; the flooding case study would continue as planned. Although the number of erosion case studies would increase by 25%, the costs are assumed to increase by 20% due to economies of scale and where the additional case study location is selected to be near to an existing case study, for example, Gunton alongside Corton. This would allow a slightly different context to be captured but could also involve looking at managing a longer length of coastline in a more coordinated way, including potential for communities to learn from each other more directly, for instance, through some joint engagement events.

The value at risk and value potential benefits would increase directly in relation to another case study being included. In addition, learning benefits would enable another context to be added but also broadened to see if and how adjoining communities could work together, where there are commonalities and where there are differences. This would also provide learning benefits for rolling out the project wider beyond the six years of the FCRIP programme.

3.6 Investment costs

The investment costs are outline in the appendix 3B.

3.7 Investment benefits framework including learning and innovation

3.7a Learning benefits

An overview of the learning benefits is provided in Section 2.2. This section highlights the specific learning benefits and if and how these have been valued. The table below focuses on the benefits that will enable roll-out of the tools and mechanisms developed through the project, including how in-project learning can be brought together to deliver legacy benefits.

Table 2: Benefits Framework: Learning Benefits

Ref	Benefits Category	Description	Approach to capturing change
1.1	Learning on cost	Better understanding of costs of activities and those that are most efficient	Cost savings from identifying what works well and in which contexts. Assumed to result in potential saving in costs. Assumed 20% saving for best, 33% for optimistic and 10% for pessimistic
1.2	Learning on benefits	Better understanding of benefits of activities and those that are most effective	Increased benefits from identifying what works well and in which contexts. Assumed to result in increased benefits from better targeting of actions. Assumed 125% of benefits for best, 140% for optimistic, 110% for pessimistic
1.3	Learning on management and governance (project level)	Learning on how to better engage and collaborate with infrastructure owners	Increased benefits from reduced costs from joint working and reduced impacts on communities from asset owners working together to address issues, to point of sharing funding to deliver multiple objectives rather than just their own individual objectives
1.4	Learning on skills, tools (methods and mechanisms) and capacity needed to implement actions and combinations of actions	Better understanding of how to roll-out the most effective activities for the most efficient costs and development of tools that can enable roll-out to cover adaptation pressures post the project Skills developed in local communities on co-design activities that will be useful for adaptation to future risks and working with authorities	Development of tools that can be used by others, such as behavioural toolkit, master planning, risk mapping, decommissioning roadmap Social value bank estimate of £1,773 per person from regular attendance at voluntary or local organisation (is lower value than £3,249 for volunteering at least once per month for two months) so used as conservative estimate of skills developed through voluntary involvement
1.5	Learning on management and governance (wider lessons learned)	Development of functioning funding mechanism to enable roll-back Knowledge of how funding mechanisms could be developed to help encourage adaptation to other risks	Bringing together all the above to provide a suite of outputs that can be used by others to work with communities at risk, with worked examples from the case studies to follow

3.7b Value at risk

The overall value at risk benefits under BAU are summarised in Section 2.1 and for the Resilient Coasts Project in Section 2.2. This section provides a breakdown of the value at risk benefits (in other words, damages avoided) under the project and how these have been valued, including sources of values.

Table 3: Benefits Framework: Value at Risk Benefits

Ref	FCERM_AG AST Category	Sub-category	Description	Approach to capturing change
Value at-risk				
2.1.1	Economic	Erosion of properties	Change in timing of erosion and planned ability to rollback (so no loss of property value)	Based on average not-at-risk property value in East of England (from MCM)
2.1.2		Relocation of infrastructure and transport assets	Planned relocation of assets before there is a risk of erosion enabling more efficient approach	Based on estimated costs of relocation of assets, linked to timing when properties are rolled back
2.1.3		Additional flooding impacts	Emergency services costs and indirect effects on businesses	Based on MCM
2.2.1	Environmental	Regulating services, biodiversity, historic environment, landscape	Changes due to move to more naturally functioning coast	Captured under value potential
2.2.2		Carbon	Reduction in carbon emissions from re-use of rock armour	Captured in carbon assessment
2.2.3		WFD status	Change in status at Great Yarmouth	Captured under value potential
2.3.1	Social (individual and family)	Way of life	Change in costs of engagement to more proactive approach; funding to allow adaptation	Costs become distributional issue at individual level due to funding
2.3.2		Health and well-being	Mental health costs under BAU avoided	£9,546 per property damages avoided based on Gov.uk guidance
2.3.3		Personal property rights and fears and aspirations	Avoided social costs associated with having to move to temporary accommodation	£8,091 per household damages avoided from being able to rollback and not having to move into temporary accommodation from Social Value Bank
2.4.1	Social (Community)	Community	Additional engagement costs with community to co-design and implement adaptation plan	Captured in costs of project

2.4.2		Community culture and fears and aspiration	Avoided loss of community and income to community from reduction in population as rollback is available to all	Avoided loss of feeling of belonging for community of £3,919 per property affected based on avoiding a 0.25 reduction in score; small avoided loss from increased litter due to earlier demolition of £449 per 'tranche of erosion' and avoided loss of income from reduced maintenance of properties that were not rolled back under BAU (but are under project) at 0.5% per year of property value
2.4.3		Political systems	Avoided costs incurred by council from having to deal with community complaints and lobbying, and costs incurred to deal with building and housing issues	Estimated costs avoided of £16,150 per community (note additional engagement is undertaken as an integral part of the project; these are assumed to be captured in project costs)

3.7c Value potential

The overall value potential benefits for the Resilient Coasts project are provided in Section 2.2. This section describes the individual value potential benefits, whether they have been valued and, if so, how. Table 4 summarises the approach used to capture the value potential benefits, including the assumption and values used when estimating the monetary benefits.

Table 4: Benefits Framework: Value Potential

Ref	FCERM_AGAST Category	Sub-category	Description	Approach to capturing change
Value Potential				
3.1.1	Economic	Erosion of properties	Rollback avoids loss of properties and potential improvement in quality of properties	Based on energy efficiency improved by two bands (best at £434 per property), one band (pessimistic at £217 per property) and three bands (optimistic at £651 per property)
3.1.2		Relocation of infrastructure and transport assets	Improved resilience of assets to future erosion and flooding risk leading to less disruption for communities	Not valued
3.1.3		Land use	Coastal change resilience will be reflected in local planning policy making it easier for rollback sites to be identified and allocated	Reduced costs for rollback sites as they will not be competing with 'normal' development permission sites (may help increase likelihood that funding is available for rollback as total required per property would be less)

3.1.4		Indirect effects on businesses	SMEs will be better prepared for future changes due to flooding or erosion	Not valued
3.2.1	Environmental	Regulating services	Value of sediment released from strategic locations to support beaches, cliffs, elsewhere	Value from Bacton estimated at £10 per m^3. Volume of sediment released not known but based on 5m cliff and erosion of 1m per year along frontage of case study locations.
3.2.2		Carbon	Better enables embodied value of carbon to be maximised, e.g. reuse of materials from demolition that would not be possible under BAU due to lack of time; reuse of rock armour materials	See this paper Carbon footprint of limestone quarrying: 3.13 tCO2e per ton crushed rock product – mostly linked to diesel fuel in transportation process
3.2.3		Biodiversity	Increased biodiversity from adaptive approaches and changes in land use, as minimum from biodiversity net gain and also offsetting benefits of hold the line elsewhere	ENCA has value of £1,866/ha for coastal wetlands, but this could be captured within value for biodiversity associated with release of sediments so is not included to avoid double counting
3.2.4		WFD status	Potential to reduce modification of water bodies in Great Yarmouth through greater use of nature-based and more sensitive solutions	Not valued
3.2.5		Historic environment	Potential to capture historic value in masterplan and to capture historic evidence (note would be at additional cost beyond that included in project costs)	Not valued
3.2.6		Landscape	Potential to manage frontline in a way that enhances local landscape as a benefit of rollback	Community benefits from a nicer environment associated with naturalised coast linked to social value bank value of £319 per household for improving open space (note applied only to erosion risk properties to avoid over-estimating)
3.3.1	Social (individual and family)	Way of life	Improved resilience of individual property owners to future erosion and flooding risk delivered through development and implementation of a plan	Benefits related to empowerment of individuals from increased feeling of control from 0.1 increase in score (£15,894 x 0.1) = £1,589 per property (assumes is once-off benefit to reflect impact of change – likely to persist for some time so assumption is one-off is likely to under-estimate)
3.3.2		Health and well-being	Feeling of empowerment and potential increased benefits from increased access to recreation.	Mental health benefits assumed captured in above to avoid double counting

3.3.3		Personal property rights and fears and aspirations	Enables rollback to be self-financing, with behavioural change toolkit helping individuals to see how and why adaptation benefits them	Not valued – benefits of rollback are captured under a number of other categories and funding is an enabler for those who would not otherwise be able to afford to rollback
3.4.1	Social (Community)	Community	Communities empowered to take control of their own futures	Not valued but could be captured from number of members of community involved in co-design and co-management activities (but not known here)
3.4.2		Skills and competencies	Increased skills in community from empowerment in decision-making	As above, plus increase in skills captured in learning benefits
3.4.3		Community culture and fears and aspiration	Potential to capture cultural activities and traditions within community masterplan to maximise their value Improved resilience of community assets	Not valued
3.4.4		Recreation	Potential to enhance recreational opportunities and access through community masterplans	Increased enjoyment for visitors
3.4.5		Political systems	Collaboration between communities and authorities, with increased trust	Not valued

3.8 Comparison of costs and benefits

The BAU has overall costs, over 100 years of £8.9 million (best estimate). To give an indication of uncertainty a range is used based on an optimistic scenario where erosion is delayed for longer than projected and a pessimistic scenario where erosion occurs earlier than projected. Using these scenarios, the range of costs is £6.4 million (optimistic) to £13.2 million (pessimistic).

The costs for the Resilient Coasts project are also presented as best estimate (£9.1 million) and optimistic (£7.9 million, where risk contingency is removed from the best estimate) and pessimistic (£11.5 million, where risk contingency is doubled). The benefits of the Resilient Coasts project are £20.9 million (for erosion aspects of the project: £7.4 million from value at-risk damages avoided, £4.4 million from value potential benefits; for flooding aspects of projects: £8.8 million for value at-risk damages avoided; and £0.3 million from learning benefits for local communities).

Learning benefits from rolling out the tools and techniques to other communities at risk is estimated to deliver around £4.0 million per community[1],, with average costs per community of £1.4 million. The learning benefits from focusing on the most cost-effective and efficient activities is therefore expected to increase the benefit-cost ratio of future projects to 2.9. It is assumed that there would be at least six additional communities that could benefit from roll-out of the tools and approaches (and probably many more) such that learning benefits are estimated to be at least £24.0 million.

Clearly additional costs would also be incurred to allow the tools to be rolled out but these would be reduced compared with the Coastal Transition project since the tools and processes would be

developed, so the only costs would be associated with application. At the same time, this would reduce the BAU costs, assuming those communities followed a reactive approach as under the baseline, by £13 million (based on £2.2 million costs per community across six communities).

For sensitivity analysis on the erosion damages, the range of benefits (optimistic scenario where erosion occurs later and pessimistic scenario where erosion occurs earlier) are £10.4 million to £13.9 million. Optimistic costs assume the erosion aspects of the project is are completed without the need for the risk contingency (£6.0 million) while the pessimistic costs assume twice the risk contingency is needed (£7.7 million). Under these scenarios, the BCRs are 1.8 (optimistic) and 1.8 (pessimistic).

For the flooding benefits, the value potential benefits are not valued in the main economic appraisal since the value at-risk benefits are sufficient to justify spend on that aspect of the project. Similar value potential benefits could be applied as for erosion, linked to a move to a nicer environment and empowerment of individuals. Given the population of Great Yarmouth that is at risk, these benefits could be considerable.

3.8a - Table 5: Economic appraisal (quantitative)

Options	PVc £k	PVb £k	BCR
Proposed Solution (erosion and flooding)	£9,131,700	£20,877,700	2.3
Erosion aspects	£6,848,775[2]	£12,083,513	1.8
Flooding aspects	£2,282,925	£8,794,187	3.9
Erosion aspects including cost saving over BAU	£4,881,095	£12,083,513	2.5
Proposed solution (erosion and flooding taking account of cost saving over BAU)	£7,164,020	£20,877,700	2.9

With an overall benefit-cost ratio of 2.3 (or 2.9 when cost savings compared with BAU are taken into account) and with both aspects of the project showing a benefit-cost ratio that exceeds 1, the project is considered to be economically worthwhile. Significant additional value potential and learning benefits that have not been monetised are also expected to be delivered. Developing approaches to valuing these through the project, from measuring how the projects delivers benefits to communities will be important for enabling future funding to allow for roll-out of adaptive approaches. Roll-out of the adaptation funding mechanism nationally will be a key step in helping those at erosion and potentially flood risk to rollback out of areas at risk.

[1] **Based on an 'average' community as estimated from the four case studies to be included in the project.**

[2] **Excludes costs for infrastructure relocation since these are not included in the costs of the project as they would be incurred by infrastructure owners, but would be required to avoid erosion impacts from disruption due to loss of services. With infrastructure costs the overall costs increase to £6,896563 which gives a benefit-cost ratio of 1.8. The costs are low due to discounting and conservative assumptions on what infrastructure impacts might be.**

3.9 Sensitivity of the benefits to the level of investment

Table 6 and 7 provide a discussion on how the economic case might vary under do less and do more.

3.9a - Table 6: Do Less

Options	PVc £k
Do Less	£7,761,945
Description of the reduction in benefits	
Do less involves reducing the number of case studies from 4 to 3 (the flooding case study would still continue so it would be one of the erosion case studies that would no longer be undertaken). Cost savings are made are work packages A and B and, to some extent, on work package D. There would be a reduction in direct benefits due to value at-risk damages no longer being avoided and value potential benefits not being realised. As an average, the reduction in benefits would be around £3.0 million for the one community lost. There would be a loss of learning benefits in terms of context of application to the fourth case study, which could have knock-on effects for cost savings and benefits when the tools and processes are rolled out more widely	

3.9b -Table 7: Do More

Options	PVc £k
Do More	£10,501,455
Description of the increase in benefits	
Do more involves increasing the number of case studies for erosion from 4 to 5, with the flooding case study continuing as planned, so one additional erosion case study would be added. The ambition would be to extend one of the existing case studies into an adjacent settlement in order to assess economies of scale of working along a longer section of coast. This could lead to economies in terms of engagement activities with communities as well as for more strategic management of the coast over a longer frontage. The additional learning obtained from a more coordinated approach to management of the coast would include investigating how communities could work together, with this potentially offering more opportunities for rollback locally, although this would likely depend on the specifics of the communities in question.	

3.9c Critical success factors

Using the HM Treasury Critical Success Factors (CSFs) as a guide, the project's current CSF's are outline in table 7. These will continue to develop throughout the project as new outputs and outcomes emerge.

It is important to note that the interdependencies and sequencing of these CSFs are critical. For example, to increase the resilience of communities at risk of erosion through coastal adaptation, local policies will need to be agreed and additional funding may need to be drawn-in to the project.

Table 7 Critical Success Factor

Ref	HMT critical success	Critical Success Factor outcomes	Measurement criteria
1	**Strategic fit and business needs**	a. The project reduces the risk or impacts of coastal erosion to communities within the project's pilot places. b The project meets the spending objectives of the FCRIP by delivering on the objectives of the programme by the deadline within the allocated budget. c. The project meets the business needs and service requirements of Local Authorities aligned to their local plans and strategies by finding and testing practical solutions supporting vulnerable coastal communities that are at risk d. The project find solutions to coastal challenges relevant nationally, in-line with the Environment Agency and Defra's strategic coastal overview role of the coast and the Shoreline management Plans for our area. e The project delivers outcomes that are aligned with all relevant local, regional and national programmes and strategies. These are set out in section. 2.1.b and 2.1c.	•Resilience measurement through the Zurich Resilience measurement tool and new emerging methodologies. • Coastal processes and flood risk monitoring. • Financial performance is monitored by the project board according to the agreed metrics. • Performance monitoring by East Suffolk Council and Coastal Partnership East officers. • The project publishes all work package outputs in-line with the agreed deadlines. Adaptive SMP policies are delivered. • The project delivers its intended outcomes by the agreed deadlines.
2	**Potential value for money**	a. The projects outputs and outcomes are delivered within the financial parameters set out in this OBC. These options have been designed, selected and optimised to deliver maximum public value by selecting options that will deliver a positive benefit cost ratio to society. The range of benefits are outlined in section 3. 'Economic case and benefits framework'. b. The project finds solutions to a range of social, economic and environmental challenge that can be delivered locally and nationally. Where these are not deliverable within current national funding mechanisms, new funding options have been developed. c. The project's learning benefits have been completed and disseminated through national channels.	• The project publishes all work package outputs in-line with the agreed deadlines. • All project delivers its intended outcomes by the agreed deadlines. • The project's learning outputs are published / disseminated by the agreed channels and monitored using the criteria agreed during the programme development process.

3	**Supplier capacity and capability**	a. The project appoints the required mix of suppliers and partners with the capability and resources to deliver the required work. b. The project's suppliers deliver the required outputs within the time and cost parameters and up to the required standard.	• All required suppliers and partners are appointed. • All supplier projects are successfully delivered in-line with the contractual requirements.
4	**Potential affordability**	a. The project is funded and delivers its outputs and outcomes within its FCRIP allocation. b. The project's suppliers deliver their work within their allocated budgets.	• Financial performance is monitored by the project board according to the agreed metrics.
5	**Potential achievability**	a. The project recruits officers for all vacancies. b. The project retains the required level of resource needed to deliver all outputs and outcomes. c. The project's partners retain all required resource to deliver their relevant workplans. d. The project team and suppliers have the required level of experience and skills to deliver the project outputs and outcomes.	• All recruitment campaigns are successful. • The required level of resource is retained throughout the project programme.

4 Commercial case

4.1 Summary of procurement strategy and timescales

Introduction and procurement strategy
Full details of the management and governance structure are provided in Section 6.2 of the Management case, which outlines governance in relation to decision making and procurement outcomes.

The lead local authority for the Resilient Coasts project is East Suffolk Council in partnership with Great Yarmouth Borough Council and delivered by Coastal Partnership East officers from across the two councils. As such, procurement and contracting of goods and services will be carried out by both authorities depending on several factors. This includes respective geographical operations of the Resilient Coasts Programme as well as cost, viability and efficiency of our procurement routes based on specific programme objectives.

The nature of the EA FCRIP programme is that it is innovative and is seeking new approaches and knowledge generation to assist with informing future local activities, national policy and funding mechanisms. The nature of the Resilient Coasts project is that it will, through its initiation, development and delivery, need to be flexible in order to procure numerous goods and services across several localities, with a variety of contract values, all while utilising differing contract types. As such, (and unlike the commercial case for traditional coastal or flood protection schemes), there is no one identifiable route to market, contract type or risk allocation preference to provide all the needs of the programme. Consequently, as the programme progresses, the project team will identify the most efficient procurement route according to the principles and options below. Should any procurement routes change during the six-year delivery period, or if new opportunities are identified, these will also be considered, alongside other local government schemes.

Procurement processes will comply with all those required by local government. This also includes European Union directives and regulations (and any successive changes), Public Contract Regulations 2015, individual local authority financial and contract procedures (including fraud and corruption policies, whistleblowing policies, and employee codes of conduct). Procurement strategies and approaches for Coastal Partnership East members (East Suffolk Council, and Great Yarmouth Borough Council) are included as links in Appendix 4A.

Procurement options
There will be a number of differing procurements needs in the delivery of the programme, including the following examples;

Services	Design	Architectural	IT and related software
Technical	Legal	Financial	Data
Theory & Knowledge	Employment & HR	Tools & software	Estates & property
Fees	Licences and consents	Facilities	Consumables

If there are any benefits to jointly procuring goods and services, there is the potential to do this. For example, this could include specialist skills or services which cannot be fulfilled by internal local authority teams, such as specialist legal services. In this instance, legal expertise could be purchased to provide continuous support throughout the programme, ensuring timely advice, guidance and consistency. These opportunities will be identified by the project team and assessed as the details of the delivery and the programme are finalised.

There are also opportunities within the finance and funding space to attract additional grants and loans (for example, through private third parties and environmental bonds). This additional financing can be used to supplement funding needs that are identified through the Resilient Coasts project process, for instance, for community adaptation and transition purposes. To effectively administrate these approaches, it will be necessary to draw on existing knowledge and expertise.

Several procurement methods are available. This variety allows teams to choose appropriate routes according to need – whether that be based on skills, experiences, or efficiencies such as cost. In order to assess quotes and tender submissions, CPE has experience in identifying the most economically advantageous tender (MEAT). The combination of multiple procurement routes and experience in MEAT means that teams can effectively secure appropriate goods and services that balance optimum outcomes and cost.

The following procurement options are open for the use of the CPE team in the delivery of the resilient Coasts Project. These have been utilised successfully by the team across the three CPE local authorities (NNDC, ESC and GYBC) in recent operations and projects. Examples of where these have been achieved are provided in the table below.

4.1 a – Procurement routes available to CPE and examples of successful use.

Procurement Route	**Description**	**Example of use**
Local Government Procurement Processes (including OJEU)	Local Authorities have defined procurement routes which are scalable dependent on value and can be used for all purchase types via exemption, quotation or tender. Supported by LA Procurement Teams and electronic procurement platforms.	Day to day use throughout CPE, GYBC, ESC and NNDC to purchase all scales of goods and services.
CPE - Dynamic Purchasing System	Includes 'Lots' based around types of goods or services to be procured – providers request inclusion in scheme and procurement is via tender process. Supported by ESC Procurement Team and electronic procurement platform.	Utilised at different scales for procurement of consultants and specialists by CPE for New Engineering Contracts (NEC4) from options appraisals (Hemsby, GYBC), scheme design and environmental appraisal (Mundesley and Cromer Coastal Management Schemes, NNDC) to construction supervision (Sandscaping, NNDC).
SCAPE - Civil Engineering	Local Government Framework for civil contractors	East Suffolk Council have utilised SCAPE for the multi-million Lowestoft Flood Defence Scheme.
SCAPE - Perfect Circle	Local Government Framework for consultants	East Suffolk Council have procured services to enable innovative community engagement through virtual platforms.
EA Framework Next Generation Supplier Arrangement (NGSA)	Environment Agency Framework for Flood and Coast specialists	CPE have not to date utilised the NGSA although it remains an option.
Local Government Service Level Agreement (collaboration agreements) - e.g Pubic Sector Cooperation Agreement (PSCA).	Agreements made between parties, often local Government and/or public sector organisations for the delivery of a service.	East Suffolk Council and the Water Management Alliance have successfully delivered coastal maintenance works through a PSCA.

Partnership/bespoke Agreements	Individually agreed legal agreement between parties to work together for a joint outcome.	North Norfolk District Council and the Bacton Gas Terminal operators developed, delivered and monitor a multi-million UK first coastal management scheme under bespoke agreements.

4.2 Contractual terms and risk allocation

Key contractual terms and risk allocation
Coastal Partnership East has experience of utilising several contract types such as NEC3 and NEC4 Engineering and Construction and Professional Services Contracts, alongside local government standard contracts, and other specialist contracts where this is considered beneficial. These can include several options such as target price, activity schedule etc.

When using NEC contracts each of the CPE authorities has agreed standard contract data which can be adjusted to meet specific procurement objectives and be tailored to enable appropriate risk management. We have established developed knowledge alongside relationships with specialist advisors in order to seek specific guidance and advice to ensure risk is effectively managed and forms or contract are appropriately selected.

Risk allocation will be very dependent on the goods or services procured and it is not possible at this stage to specifically outline detailed procurement risk. Project governance includes programme-wide risk management, which includes high level procurement and cost risks that will need to be considered. For specific activities where these identified programme risks may be prominent, if activities are innovative and less known, or where there have been specific risks identified which could result in changes to cost or variable quality, separate procurement risk assessments will be completed as appropriate. Such assessments will help teams select the most suitable contract type, options, terms and conditions, as well as liability levels and clauses.

Key risks relating to procurement that have been identified include:

- General increases in energy and supply costs due to external factors (such as COVID, Brexit, war)
- Unable to contract suitably experienced contractors and consultants due to:
- national and international demand
- increased demand due to EA programme value
- increased demand due to number of FCRIP and NSIP projects
- Delays in contract start due to national demand in key services
- Definition of scope due to innovative nature of programme
- Scope and objective creep
- Lack of access to, and knowledge of specialist skills and services
- Suppliers going into liquidation
- Fluctuations in the wider national economy and inflation
- Limited availability of supplies and late deliveries due to transport delays
- Delays in or unforthcoming consent for works
- Variety of procurement routes and varying contract types, terms and conditions, places increased burden on legal teams

4.3 Innovation and commercial issues

Procurement need

As part of the procurement process and where necessary, the project team will complete procurement assessments with other relevant teams within the CPE authorities, so that the most appropriate route, contract and conditions are used according to objectives. Should this be the case, a clear process is available to follow so that decisions can be made according to consistent principles.

Indicative initial procurement needs have been identified below for the first two years of the programme. It's worth noting that we have endeavoured to build skills and capacity within the area through FCRIP funded resource that's dedicated to the Resilient Coast project. This serves to protect the project from external factors that could impact procurement listed in 4.2 and embeds skills and capacity where it's needed. We will also be utilising resource in kind from several partners including EA local and national colleagues, LGA Coastal SIG, UEA's Professor Tim O'Reirdon, wider LA service teams and community volunteers, experts and professionals.

Table 4.3a: Procurement need across Resilient Coasts work packages

Work Package	Indicative potential procurement need and likely procurement route
WP1 - Erosion Risk Mapping, Modelling and Visualisation	**Need-** Specialist technical knowledge, technical skills, software, data, data management, IPR, Research **Routes**-EA NCERM2 programme, UEA and DPS or Scape framework
WP2 - Coastal Spatial Plans	**Need-** Specialist technical knowledge, technical skills, software, data, data management, IPR, Research **Routes**-SCAPE/Perfect Circle.
WP3 - Funding and Financing Mechanism	Risk analysis, financial modelling, policy skills. Research and legal support. Economists. **Routes -** Scape- Risk and Policy Analysts. Marsh- Direct Award by ESC.
WP4 - Community Transitioning toolkits	**Needs** Communications and Engagement specialisms, Anglian Water behavioural change toolkit transition, resilience assessments, virtual and augmented reality, gaming technology, visualisations, IT and data specialisms, **Routes-** Direct Award for Groundworks, Zurich and LSE, SCAPE/Perfect Circle for Aecom. UEA
WP5 – Integrated Investment Strategy	**Needs** - Specialist technical skills and knowledge, financial, programming, legal, mapping, Social Value evaluation **Routes –** SCAPE Balfours, Perfect Circle Aecom.
WP6 - Community Masterplan	**Needs**- Land agent, Town and Country Planning, Highways, Engineering, Building, Landscape Architect, Legal, Facilitation, Communication and Engagement, expertise. **Routes** PSCA with East Solent Coastal Partners. Perfect Circle
WP7 – Policy Challenge	**Needs-** -Legal and policy expertise **Routes-** Scape/Perfect Circle, LGA Coastal SIG and EA national team
WP8 – Asset Management Plan	**Needs-** Engineering expertise, environmental and consenting expertise, legal support. **Routes Scape Balfour Beatty and EA GYBC FCERM project**
WP0 - Project Management	**Needs-**Programme Management, Project Management, External Assurance and input. **Routes-** Unlikely to need procurement - In-house resources LGA Auditors and Assurers free service. EA monitoring processes.

4.4 Efficiencies and commercial opportunities

Procurement and commercial agreements provide the opportunity to deliver efficiencies to the programme, in addition to providing wider benefits and gains. What these are, depend on the goods and services being procured and the route chosen.

Efficiencies could include:

- bundling together where there are clear benefits and similarities in the goods or services being sought
- ensuring clear, well defined and realistic scopes are developed at the start prior to procurement
- ensuring all key data is available and clear routes to data are identified
- considering recruiting, outsourcing or training staff
- group or bulk buying
- reusing materials
- capturing expertise gained
- linking with other local or national programmes e.g. erosion data, SMP explorer, R&D programmes, other FCRIP projects
- identifying and participating in local opportunities, for example, free or shared site compounds or land and other public realm initiatives such as social housing
- third party funding opportunities

Commercial opportunities could include:

- social value
- TOMS portal (social value measurement)
- CO2 reductions and net zero
- FSC certification
- recycle, reuse, repurpose
- capturing learning and knowledge shared between contractor and consultants and feeding this into final FCRIP outcomes and outputs
- procuring locally

- education and academia, including schools and colleges
- apprenticeships and internships
- masters and PHDs
- long-term merchandising of product or services through CPE consultancy

4.5 Commercial Summary

We are confident that our procurement approach demonstrates value for money. We have engaged with our key suppliers and partners and tested the market through the Scape framework as well as based costs on recent information from innovative adaptive approaches we have trialled.

Our supplier engagement has flagged potential procurement risks and mitigation options and shaped our 20% risk allowance for the Resilient Coasts project.

Due the wide range of actions and activities we have a range of qualitative and quantitative tender evaluation criteria based on government guidelines. Our planned tender timelines and timescales will vary but are linked to the programme timeline, critical path and work package deliverables summarised in the management case.

All our Resilient Coasts procurement needs and processes are compliant with our Local Authority legal, financial and procurement procedures. all our projects are subject to internal and external scrutiny and audit.

5 Financial Case

5.1 Summary of Project Cost and Whole Life Cost

Table 8 outlines the headline costs. Further detail can be found in section 5 (Financial case) and appendix 5A (detailed costs breakdown).

The costs are in-line with below but have been re-profiled as the project has been developed:

- the revised EOI submission
- the FCERM7 OBC studies application
- the project FCRIP funding allocation

Table 8: Project Cost

Cost heading	**Cash Cost**
Costs up to OBC	
Costs up to OBC	£k **569.5**
Sub-Total (A)	£k **569.5**
Full-Business Case Development Cost	
Staff costs	£k **10**
External consultant costs	£k **30**
Site investigation and survey	£k **0**
Other	£k **0**
Contingency/risk allowance	£k **0**
Sub-total (B)	£k **40**
Construction, supervision and delivery costs of resilience actions	
Staff costs	£k **1,650.060**
External consultant costs	£k **1,659.001**
Site investigation and survey	£k **10**
Construction	£k **495.272**
Supervision	£k **0**
Land purchase and compensation	£k **0**
Other (Adaptation Fund)	£k **1,500.000**
Contingency/risk allowance **(*20% risk added to all costs plus 30% OB)**	£k **2,607.851**

Sub-total (C)	£k **8012184**
Monitoring, learning, evaluation and dissemination	
Monitoring	£k **130**
Evaluation, learning and dissemination	£k **165**
Other	£k **0**
Contingency/risk allowance	£k **0**
Sub-total (D)	£k **295**
Inflation	
Inflation allowance	£k **215.040**
Sub-total (E)	£k **215.040**
Total Project Value	
Total Project Value for approval (A+B+C+D+E)	**£k** **9,131.724**

Table 9: Whole Life Cost

Cost heading	Cash Cost
Total Project Value from table above (F)	**£k** **9,131.724**
Post-project cost	
Future operation, monitoring and maintenance costs	£k **0**
Future capital replacement costs	£k **0**
Optimism bias for future costs	£k **0**
Sub-total (G)	£k 0
Total Whole-Life Cost	
Total Whole-Life Cost (F+G)	**£k** **9,131.724**

5.2 Financial risks and optimism bias

5.2a How have the risk contingencies and optimism bias been derived?

Risk:

- Risk at 20% has been applied to **all costs**. This is in-line with the revised EOI submission and was also agreed by the programme team following a series of detailed risk workshops (see risk register).
- The risk allowance is considered to be appropriate, largely due to the low risk for staff costs and adaptation fund.

- 20% risk was also agreed to be appropriate based on the level of early contractor engagement that has taken place.

Optimism bias:

- 30% optimism bias (OB) has been applied to **all costs**.
- As above, the level of OB is considered to be appropriate, largely due to the low risk for staff costs and adaptation fund, plus the level of early contractor engagement that has taken place.

5.2b How have the post-project costs and optimism bias been derived?

- The post-programme actions and related costs will be identified and calculated as part of the various work packages. Therefore, post-programme costs (and therefore risk and OB) have not been included.

5.3 Funding sources and contributions

Describe all funding sources and contributions.
Appendix 5B Contributions

(See Guidance Document Aspect 6)

5.3a (Table 10): Funding sources and contributions

Source of funding	£k	Comments
Resilience Innovation Fund	8,411.724	This is in-line with the revised EOI.
Contribution 1	720	This is and in-kind contribution of by Coastal
Contribution 2	-	-
Contribution 3	-	-
Contribution 4	-	-
Contribution 5	-	-
Total funding		

5.4 Expenditure and Funding Profile (2021-2027)

5.4a (Table 11): Expenditure Profile (2021-2027)

Costs per year (£k)	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	Total (£k)
Outline Business Case Development cost *See project FCERM7 and 3 for itemised breakdown.	569.5	-	-	-	-	-	569.5
Staff costs	-	286	345.465	350.465	350.465	317.667	1,650.060
External consultant costs	-	482,666	583,668	383,667	115,000	94,000	1,659.001
Full-Business Case Development Cost	-	-	-	-	-	40	40
Construction, supervision and delivery costs of resilience actions	-	195,000	425,000	1,130.00	345,272	-	2.095.272
Monitoring, learning, evaluation and dissemination	-	85,000	95,000	40,000	45,000	30,000	295
Risk	112.549	227.800	391.800	162.800	175.800	113.651	1,184.400
Optimism Bias	240.600	341.700	587.700	244.200	263.700	98.700	1,776.600
Inflation	33,.84	47.838	82.278	34,.88	36.918	13.818	248.724
Total	569.5	1,666	2,510.9	2,345.3	1,332.1	707.8	9,131.7

5.4b (Table 12): Funding Profile (2021-2027)

Costs per year (£k)	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	Total (£k)
Funding Allocation	569.5	1.526	2,370.9	2,195.3	1,182.2	567,836	8,411.7
Contributions	-	140	140	150	150	140	720
Total	**569,5**	**1,666**	**2,510.9**	**2,345.3**	**1,3322**	**707.8**	**9,131.7**

6.0 Management case

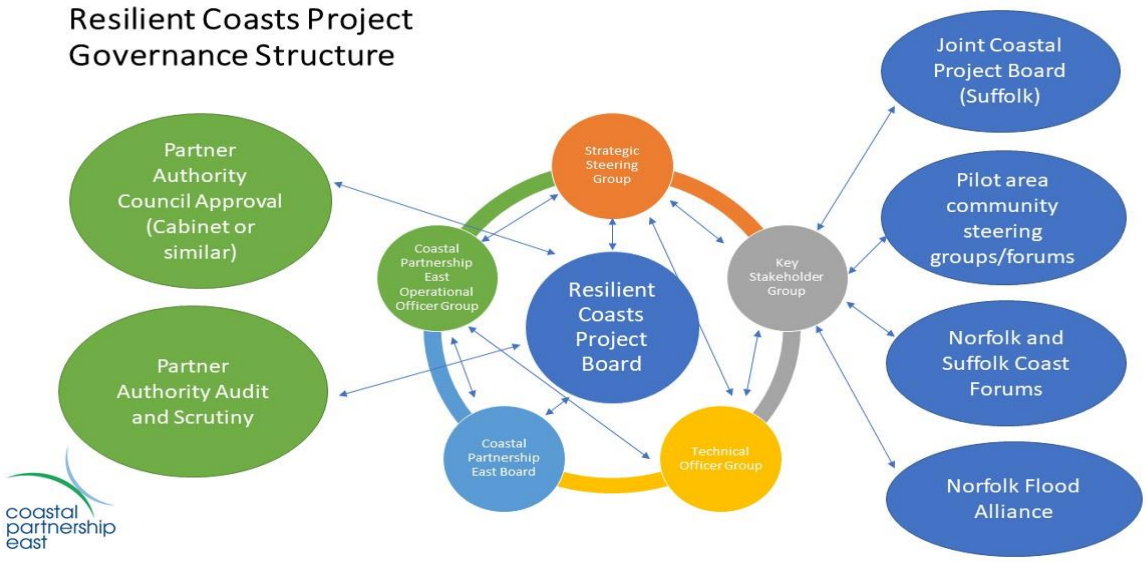
6.1 Governance and partnership arrangements

6.1 Project structure and governance

Robust governance and appropriate project management is at the forefront of the Resilient Coasts Project. The programme is supported by all partner councils and by programme partners including Anglian Water, UEA, Marsh and Groundwork Ltd.

Although the Programme Board is newly established, it draws support from the well-established governance structure of Coastal Partnership East. In addition to the Programme Board, a Strategic Steering Group and Key Stakeholder Group will be embedded into the governance structure, taking membership from the existing governance of the established pilot area (and in some cases formally constituted) community groups. The governance and assurance arrangements in place for the programme are shown in Figure 6.1.1 below.

Figure 6.1.1 Resilient Coasts Project Governance structure



The Resilient Coasts Project Board will be chaired by East Suffolk Council's Cabinet Member for Planning and Coastal Management and will include additional elected members representing the pilot area wards in both partner councils. The board will include heads of service from both East Suffolk Council and Great Yarmouth Borough Council, as well as representatives from the Environment Agency, Natural England, Anglian Water and the UEA. Both the chair and heads of service provide links to Coastal Partnership East's Board and Operational Officer Group, providing an added layer of scrutiny. Audit and scrutiny in each partner council will receive regular updates on the project to ensure full transparency and accountability.

It is anticipated that the board will have a programme of quarterly meetings set in advance. However, it is likely that within the first year the board may meet more frequently to ensure the best possible start and to provide formal guidance and direction. The board will be formally set up by the lead authority, East Suffolk Council, and is likely to be an executive group as per the constitution but not have budgetary responsibility. Key decisions, including spending will be the responsibility of East Suffolk Council's Cabinet, with support from Great Yarmouth Borough Council's Environment Committee (as per their constitution and financial management).

To ensure that the project has full scrutiny, accountability and a comprehensive joint approach to development and delivery, a Strategic Steering Group and Key Stakeholder Group will both inform and be informed by the board. These groups will share information, guidance and views from the existing groups shown in Figure 3.

The project governance structure supports the two-way symmetrical approach (systems theory) towards communications and engagement that underpins the project and its goals.

6.2 Project management

The Resilient Coasts project will be managed according to the project management processes set out by Coastal Partnership East and their partner local authorities.
These are based on the principles of PRINCE2 and are in line with established CPE and local authority systems and procedures that enable the effective management of schemes and programmes. This approach to project management has been successfully applied to the delivery of, for example, the Gorleston to Pakefield Coastal Strategy, the Lowestoft South Beach Scheme and the Lowestoft Flood Risk Management Project.

Project management roles and responsibilities are set out below. However, each Work Package will have an assigned project lead/manager and project governance linking back to the overall governance structure as outlined above.

The programme will be overseen by East Suffolk Council acting as lead authority. Great Yarmouth Borough Council will serve as the supporting authority through Coastal Partnership East (CPE) in their capacity as the coastal management service for both councils.

CPE is a shared coastal management service between North Norfolk District Council, Great Yarmouth Borough Council, and East Suffolk Council. The partnership has demonstrated that it is an effective and efficient delivery model.

East Suffolk Council is also the lead delivery and contracting body on behalf of the partners involved in the programme. Programme decisions will be made through a Programme Board as approved by East Suffolk Council Cabinet and endorsed by Great Yarmouth Borough Council's Environment Committee. Decisions will also be agreed to by programme partners. The board includes elected members, programme partners and the Environment Agency in an advisory capacity.

6.3 Project management roles and responsibilities

The Resilient Coasts project roles and responsibilities are summarised in the Table 6.3.1 below.

Function	Project role	Responsible person	Job title	Project responsibility
Governance	Chair Resilient Coasts Project Board	Cllr David Ritchie	Cabinet Member for Planning and Coastal Management East Suffolk Council	Governance oversight. Ensuring the Board feeds into and is informed by other groups identified in the governance structure. Accountable to lead authority Cabinet.
	Chair Coastal Partnership East Board	Cllr Penny Carpenter	Vice-Chair Environment Committee Great Yarmouth Borough Council	Ensuring the Board feeds into the FCRIP Board and activities are in accordance with the CPE programme.
	Specialist Technical Advisor & Senior Responsible Officer	Karen Thomas	Head of Partnership Coastal Partnership East	As part of the Resilient CoastsFCRIP Board, ensuring that information to the Board Chair and its members is reflective of the project's objectives, outcomes and indicators. Ensuring that risk is regularly reviewed, and issues are brought to the attention of the Board for action.
	Chair, Operational Officer Group Coastal Partnership East	Nick Khan Or Philip Ridley	ESC Director ESC Head of Planning and Coast	Governance oversight of CPE performance Ensuring Operational Officer Group feeds into CPE Board, shaping work programmes and delivery Member of Resilient Coasts Board
	Chair, Strategic Steering Group/Think Tank	To be appointed		Oversight of strategic steering group functions. Group membership will include statutory consultees and partners; key academic figures
	Chair, Key Stakeholder Group	To be appointed		Oversight of key stakeholder group functions. Group membership will include key contracts from community steering groups; established coastal community boards; critical community figures.
	Chair Technical Officer Group	Karen Thomas	Head of Partnership, Coastal Partnership East	Oversight of technical work packages, progress and outputs. Ensuring that project evaluation shapes product development and eventual delivery.
Assurance and delivery	Project accountant	Brian Mew	Chief Finance Officer and Section 151 Officer East Suffolk Council	Finance advice, support and assurance.
	Project communications	Sharon Bleese	Coastal Manager (South). Strategic communications lead Coastal Partnership East	Over-arching communications advice, support and governance.
	Project procurement	Mark Fisher	Procurement Manager, East Suffolk Council	Procurement advice, support and assurance.

	Project team legal	Melissa Tills	Commercial Lead Lawyer, East Suffolk Council	Legal advice, support and assurance.
	Consenting, licencing and environmental	New post – recruitment in progress		Leading consenting, licencing and environmental studies and progress.
	Funding and finance	Paul Mackie	Strategic Funding Manager, Coastal Partnership East	Funding advice and guidance, overall funding strategy lead.
Delivery	Work Package 1. Understanding and mapping risk	New posts – recruitment in progress	Senior Resilience Advisor and GIS officer.	Delivery of the erosion risk mapping data linked to the EA NCERM2 programme. linkages to existing flood risk mapping and creation of data for the spatial planning tool.
	Work Package 2. Coastal spatial mapping	New post – recruitment in progress	Senior Resilience Advisor and GIS Officer	Oversight of the data needs and management to develop the map and the delivery of the mapping tool.
	Work Package 3. Adaptation Funding and Financing	Paul Mackie	Strategic Funding Manager, Coastal Partnership East	Oversight of funding advice and support and delivery of the Adaptation funding mechanism.
	Work Package 4. Community Transitioning Toolkits (behavioural change)	Sharon Bleese	Coastal Manager Strategic communications lead Coastal Partnership East	Oversight of the development and delivery of Communications and engagement advice and guidance and the behavioural change toolkit.
	Work Package 5. Integrated Investment strategy	New post – recruitment in progress	Programme Manager/Senior Coastal Resilience Advisor	Overarching responsibility for the engagement of infrastructure providers to acquire data on location and investment plans of their assets, agreements and negotiations.
	Work Package 6. Community Adaptation Master plans	New posts – recruitment in progress	Senior Coastal Advisors (location specific) Engagement officers	Over-arching responsibility for coordinating the plans with communities and partners with support from engagement officers
	Work Package 7 Policy Change	Karen Thomas	Head of Coastal partnership	Oversight of all potential policy and legislative learning and dissemination of evidence to EA, LGA CSIG and partners
	Work Package 8 Costed management plan	Costed Asset Management plan	Tamzen Pope CPE Operations and Engineering Manager	Oversight of all technical and engineering solutions relating to the future management of coastal assets including design innovation, decommissioning and costing.

Figure 6.3.1 Summary of the Resilient Coasts project team roles and responsibilities

6.4 Project plan

The key stages of the project plan are provided in Appendix 6G. A full project programme is provided as Appendix 6C.

6.5 Skills and capacity

Coastal Partnership East is an embedded service of local authority officers based across 3 local authorities offering skills and expertise to manage the coast on behalf of NNDC, GYBC and ESC. The partnership formed in 2016 following discussions about the need to build skills and capacity in coastal management given the current and future challenges and opportunities facing our coast.

The team is comprised of 25 coastal professionals with skills in community engagement, funding and finance, engineering and asset inspection, geomorphology, environment, project management, planning, policy and strategy development and implementation. The team give service to the East Anglian Coastal Group and National Coastal Group network, are leading work programmes on behalf of the LGA COastal SIG including FCERM strategy and funding, coastal adaptation and beach safety and risk management. The team have given evidence to several recent enquiries and calls for evidence including the governments 'Future of Seaside Towns report' (2020) and the EFRA committee report on 'Coastal Flooding and Erosion and Climate Change report' (2019). CPE have contributed to shaping the EA FCERM Strategy and Defra Coastal Policy and input to EA work programmes and initiatives like NCERM2, Women in FCERM and the 'Working together to adapt to a changing climate: flood and coast' programme.

Members of the team present at national and international conferences including CIWEM and ICE and have peer reviewed papers in their specialist topics. CPE are highly regarded with their national and local peers and coastal community leaders for the work they are progressing on adaptation to coastal change.

In addition, the skills and expertise of CPE the Resilient Coasts project will be acquiring additional support from a range of industry and academic professionals from across the FCERM and broader engagement and funding and finance sectors. Notably we need to access; private sector funding, finance and insurance expertise; resilience experts with global learning; engineering innovation through contractors and the wider industry; specialists who can create architectural design visions and virtual and augmented reality tools and environmentalists and economists to support natural capital and biodiversity innovation.

We also need to build additional capacity to carry out engagement and communication activities and gather data and information from our communities and partners to support our coastal baseline and evidence base. We will be recruiting additional resource directly to support the resilient Coast project delivery and embed skills in the team as well as create capacity for the long term deliverables that arise from the project post-2027.

6.6 Programme

A detailed programme has been developed with input from our partners in Appendix 6C. the programme identifies the interlinkages between work packages and establishes when benefits may begin to realised. Risk and Policy Analysts have interpreted this programme and concluded we should start to realise benefits in year 3. The programme alo establishes what we will achieve within the timescales of the FCRIP programme and we are confident we can deliver our outcomes and deliverables by programme end in 2027. A summary of the key milestones and deliverables is set out in the project plan in Appendix 6G.

6.7 Communications, stakeholder and community engagement

The approach to communications and engagement across all work packages will adopt a two-way symmetrical approach (systems theory), allowing for the development of ideas and the co-creation of progress, outputs and outcomes. We have stated previously that it is critical that our twin and pilot area communities feel they are the architects of change within their towns and villages and not its victims.

To allow for this co-creation, each work package will have a defined project level communications and engagement plan. This will include a comprehensive situation analysis (including stakeholder analysis), key messaging, communication risks and mitigation, tools and techniques, action planning and evaluation. Project level communication plans are supported by a strategic communications plan as set out in Appendix 2A.

Communications and engagement planning and delivery will broadly follow the Environment Agency's 'Working with Others' guidelines centred around the 'Engage, Deliberate and Decide' approach but with additional evaluation points. All engagement will be planned, conducted, and delivered in accordance with the Chartered Institute of Public Relations (CIPR) Code of Conduct, specifically adhering to the guidance around ethical communication. As required by each partner council, an Equality Impact Assessment will be completed for each pilot area.

However, it is anticipated that as the outputs of Work Package 4 become available, our planned approach may evolve. The initial literature review, looking at existing toolkits will offer additional insights, as will the development and roll out of the behavioural change toolkit. Our approach will be agile and allow for these developments to influence direction with the full involvement of our pilot communities, supported by continuous evaluation to ensure that we build in suitable time and capacity to review, reflect and refresh our approach. This is already evidenced by the initial engagement undertaken with partners, Elected Members and communities in pilot areas Thorpeness, Hemsby and Southwold, and twin area Pakefield. That engagement has led to the refinement of the products being developed in Work Package 4. Early indications are that targeted focus groups would be welcome and resourced through community involvement from existing groups.

The impacts of coastal change and the development of resilient communities in terms of health and well-being are an important element of the engagement planned with both pilot and twin communities. The research recently commissioned by the Environment Agency will be a welcome and referenced addition to the anecdotal evidence already collected. The involvement of the Clinical Commissioning Group for East Suffolk and Great Yarmouth will be critical in understanding how we might best support the communities at risk as part of this project.

Engagement with our communities and with partners and others will utilise a wide range of tools and approaches. Where it is possible, face-to-face engagement will be preferable. This will be achieved through a series of Forums, workshops, collaborative task and finish groups, broader drop ins and attendance at community group and parish meetings. Digital and virtual reality engagement will also play a critical role in engaging people. Virtual reality rooms, using gaming technology has proved successful during the pandemic and we will continue to enhance and develop these tools for use through the programme. Value-based digital surveys have proved exceptionally useful tools and again we will continue to develop those tools. Scenario based exercises as developed by the Environment Agency led projects in Hemsby and Caterham, will be further used as a tool to engage people in this work.

Virtual reality and augmented reality tools will be developed to engage the younger audience. These will be co-created with colleges in Lowestoft and Great Yarmouth, creating student Coastal

Ambassadors to help engage those in senior and primary schools. The legacy of this being a generation of student Coastal Ambassador roles embedded into schools like that of the Student Representatives model used in universities.

We understand that comprehensive and quality driven engagement is resource heavy. With this in mind we will be using a combination of new engagement posts, outside support from Groundwork, an organisation skilled in communication and engagement with communities, and the Community Voices approach which was pioneered by Eastern IFCA.

The in-house engagement specialists overseeing and supporting the project's communication and engagement are all either working towards or hold a CIPR qualification. The programme's strategic communications lead is a Chartered PR Practitioner, and the supporting lead is an Accredited PR Practitioner.

6.7a Outputs of the readiness assessment and Theory of Change

The readiness assessment completed for this project in Appendix 6H which provided some useful clarification of actions, particularly around partnerships, governance and engagement. Two workshops were held, resulting in objectives which have supported the work needed to draw together information for this outline business case. In addition, the findings provided a good basis to move forward to the Theory of Change workshops. It is those workshops and the subsequent action planning which have provided the greatest benefit to the development of our FCRM 7 and the outline business case.

Critical to supporting our planning and drawing together high-level actions from the readiness assessment outputs, is a summary of the Theory of Change outputs and cross referencing those with the findings from the assessment and workshop one and two outputs as set out above. (Figure 6.7.1)

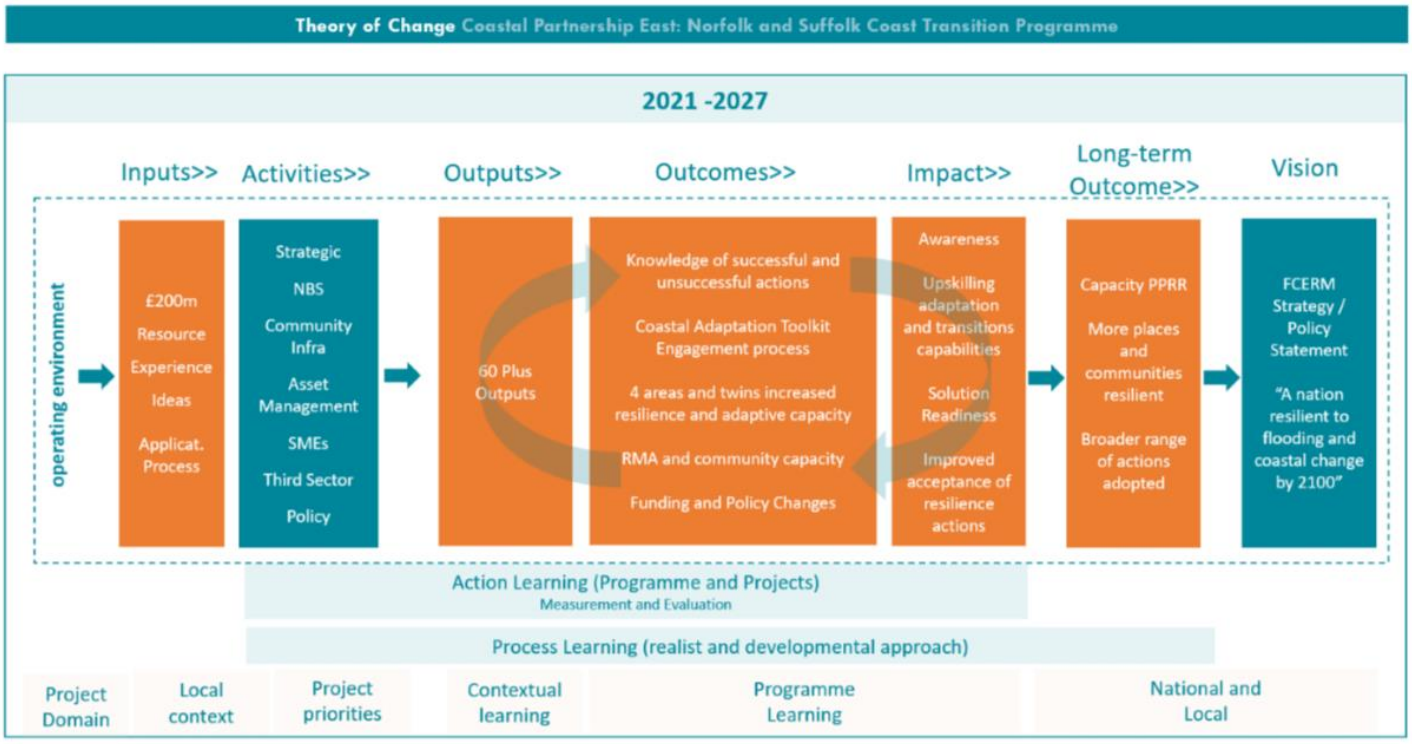


Figure 6.7.1 Summary of the Theory of Change workshops.

The objectives identified through the readiness assessment process and Theory of Change workshops were as follows:

- to establish, communicate and embed an agreed governance structure
- to develop a narrative for each pilot location which will enable a clear understanding of the aims and objectives of the programme
- to refocus and reshape the behavioural change toolkit to reflect community need. The original focus, pre workshops and readiness assessment was to develop a toolkit for practitioners. Findings and further community engagement revealed that its true value lay in providing a toolkit for communities to engage those who are disengaged by way of simple behavioural changes
- to complete a detailed stakeholder mapping exercise and BOWTIE communications risk assessment exercise which will form the basis of the strategic communications plan situation analysis.

Those objectives have now been met and either informed the strategic communications plan or, in the case of governance arrangements, this management case directly.

6.8 Risk management

Risk will be identified and managed using a risk register. Day to day management of risk will be undertaken by the project team while strategic risk management will be undertaken by the Resilient Coasts Board. The board will receive risk reports from the project team through the senior responsible officer and will be required to review and input into identification and management of risk. The key risks identified are summarised in below in Figure 6.8.1. A risk assessment is included in Appendix 3C. This risk assessment will be regularly reviewed as the project progresses.

Category	Risk Description	Potential Impact / Consequences	Mitigation
Political	Changes to Government and Priorities - Local	Engagement of new politicians could cause delays and increased costs. Other local issues could compete for priority resulting in lack of support causing delays, lack of funding and increased costs.	Use CPE Board members and Senior Leadership teams to maintain political support and focus. Maintain close relationship With National Agencies/Government Departments Co-develop LA priorities for climate change / adaptation Levelling Up to embed project in wider LA agendas.
Economic	National economic event/crisis.	Increase in project costs could reduce benefit/cost ratio. Could lead to some undeliverable elements of the project.	Maintain a flexible approach to project elements. Ensure core activities are identified and delivered and additional added value deliverables can be flexed. Regular review points to consider project deliverables and agree with Board. Attract additional funding through good communication and engagement over the project
Social	Major incident/weather events Unrealistic Expectations	Staff burnout/sickness leads to project delays and potential loss of funding. Other business activities may be affected due to staff being diverted to IRF programmes Communities expect that the FCRIP funds will be used to 'defend' them	Becoming More Proactive with Resources. FCRIP funding helps us to recruit additional resource to 'protect' programme delivery from incident response role. Developing tools / frameworks to minimise the need for reactive responses New ideas from new staff and our partners - knowledge sharing / innovation and broadening of capacity in/outside team. Through good engagement with existing pilot communities we have a Strategic Community Stakeholder group that can engage others on the projects behalf and demonstrate adaptive approaches work. We have demonstrable experience in managing challenging conversations and social media.

Category	Risk Description	Potential Impact / Consequences	Mitigation
Technical	Skills Gaps - Due to the significant projects in the area including Sizewell C, windfarms and other NSIP projects there is a huge demand on local resources and suppliers.	Lack of availability of suppliers and partners would impact the programme, costs and internal resource demands.	Technological Development and link to possible research funding New relationships and partners developed Early engagement with students and apprentices to get them involved in the project. Strategic pay and benefits discussions with LGA
Environmental	Limited Stakeholder Resources to provide advise and progress applications (including licences and consents)	Additional staff demands Delays to programme Increase to costs Stakeholders unable to review project information due to staffing/expertise limitations Perceived bias if we support stakeholders financially to participate.	Talk to stakeholders early in programme/design to reduce timelines/costs/etc Understand stakeholder challenges so we can better support them. Working with stakeholders (DEFRA) to put the right expertise in place so that tasks can be completed in a timely manner. Working with others to procure extra funding for the right people with the right skill sets.
Environmental	Designations constraints adaptation options	Proposed project activities unable to take place causing reputational damage, delays and increased costs.	We will evaluate the environmental benefits of allowing coastal change and adaptation solutions to determine how we work with designated areas and whether we can establish NEM mechanisms to attract funds and benefit both the environment and those at risk in MR/NAI areas.

Figure 6.8.1 Table summarising key risks during the Resilient Coasts project 2022-2027

Category	Risk Description	Potential Impact/Consequences	Mitigation
Political	Loss of political support	Loss of support due to competing political needs or interest in the topic area	Strong national linkages through the LGA Coastal SIG to lobby political members and embed coast in national political thinking FCERM Strategy and Action Plan, LGA SIG and CGN workplans all have coastal adaptation and resilience actions to deliver SMP refresh supported politically locally through buy-in and embedded in Local plans
Economic	Time-limited funding or cash-limited funding streams	Previous and current funding regimes have been limited in scope or only available over a short-term period and therefore unable to support adaptation longer term	Investment in future innovative funding and finance solutions to ensure a legacy beyond the FCRIP funds we have been allocated. Development of new adaptation funding tools to ensure we shift reliance away from FDGIA and deliver wider benefits and greater resilience.
Social	Lack of strategic engagement Lack of community support for change	Inability to resource strategic messaging about coastal change and risk. Limited to the communities and individuals where reactive erosion situations are occurring. Limited opportunity to raise broader awareness and accelerate coastal adaptation in a planned way. Communities facing immediate erosion risk unable to engage over the concepts of adaptation as no real options to support them	To embed a greater awareness of erosion and coastal risk we will engage at community scale to ensure legacy at each of the pilot locations and the delivery of long term masterplan We will communicate at a strategic level to ensure our coastal communities, businesses and partners have a basic level of awareness and understanding upon which we can build further conversations and roll out our adaptation framework going forward.

			Working with communities who have had time to process risk issue and engage over potential options- willing to embrace resilience and adaptation approach.
Technical	No design innovation	Technical solutions have not kept pace with the speed of change on our eroding coast. Funding for innovative approaches limited or unavailable. Consents and licences are challenging for new ideas	Our project will encourage design innovation in new short term defence solutions and consider more flexible options that can be used in temporary community-led approaches over 5-10 year periods to buy time to adapt. .
Legal	Lack of coastal policy framework	Inability to attract funding and resource and deliver adaption on the ground	New FCERM strategy and Defra policy providing the framework. FCRIP funds will support innovative delivery to inform, shape and influence policy and strategy going forward- via the programme team, LGA Coastal SIG and CGN creates a long-term policy legacy to support national adaptation and resilience at the coast.
Environmental	Lack of environmental options for eroding frontages	Currently no biodiversity net gain mechanisms agreed for eroding frontages. Little or no natural capital evaluation and therefore limited beneficiaries mapping to attract funds for natural coastal management on open coast. No parity with NFM framework. No formal mechanisms to readily support SMP NAI or MR policies	Our project will value the natural capital and map potential benefits and beneficiaries to support funding discussions – potentially funding decommissioning of assets and allowing environmental enhancements.

Figure 6.8.1 Table summarising key risks during the Resilient Coasts project beyond 2027

6.9 Managing change within the project

The Resilient Coasts Board will be ultimately responsible for managing change within the project. There will be several key decision points as each work package progresses, which will provide the opportunity to review and adjust the work package components to account for new or revised information, such as more accurate cost information, consenting requirements and availability of additional funding streams.

Change management, where linked to a specific contract, will be as per the chosen procurement frameworks. This is likely to be, but not limited to: NEC 4, Scape, Public Sector Co-operation Agreements and Coastal Partnership East's Dynamic Purchasing System, and as set out in the Contract management section below. Change management regarding FCERM GiA, will be completed as required through the Environment Agency FCERM guidance and in collaboration with the Environment Agency's FCRIP supporting team.

Changes to the project will be reported to East Suffolk Council's Cabinet (for design on key changes) and Great Yarmouth Borough Council's Environment Committee (for information) to ensure greater transparency and scrutiny.

Managing change caused by the project

This project differs from a standard outline business case in that it does not focus on the progression of a scheme where the potential for change is critically identified by the contractor or consultant. The very nature of the FCRIP programme is to create and manage a change. This project at its core, seeks to manage change on the coast, moving from the current reactive position to a proactive managed approached. However, whilst that change of approach on the coast is the predicated outcome of the project, it is acknowledged that the development of project actions has implications for the project itself. These are likely to be but not limited to:

Area of Change	Mitigation/action
Social- resistance to change in coastal communities	Visualisation of risks to help people understand the need. Willing communities already signed up so we will get learning. Existing fora to share good practice and build resilient communities
Technical	New design options

However, that change may be resisted or be unpalatable to the twin and pilot areas affected. It is therefore essential to be adequately prepared for these challenges. The comprehensive risk assessment provided as an appendix to the management case captures reputation risk and the risk that pilot communities have expectations over and above what this programme is able to deliver.

As with managing change within the project, managing change caused by the project will ultimately be the responsibility of the FCRIP Board. Where the change specifically identified above forms part of a formal contract, then mitigating actions to manage that change will be addressed appropriately in the contract framework.

6.10 Contract management

As lead authority, East Suffolk Council will be the employer for the purposes of all contracts through the chosen procurement frameworks. This is likely to be, but not limited to; NEC 4, Scape, Public Sector Co-operation Agreements and Coastal Partnership East's Dynamic Purchasing System.

East Suffolk Council will appoint a senior responsible officer (as mentioned in 3.1.2 project roles and responsibilities) to be the project representative who will report to the Resilient Coasts Board and will continue to be responsible for the delivery of the project. As stated in section 3.3.1, it will be necessary to agree the tolerances of change with the FCRIP Board.

6.11 Assurance

The development of the project, including all of the preceding feasibility and project outline work, has undergone scrutiny from a number of sources at key decision points.
This included:

- elected Members of both East Suffolk Council and Great Yarmouth Borough Council
- senior officers at both East Suffolk Council and Great Yarmouth Borough Council
- Coastal Partnership East Board
- Coastal Partnership East Operating Officer Group
- key partners and stakeholders
- Pilot area community groups
- Specialist contractors and consultants
- Key academic institutions (University of East Anglia)

Each party provides direct project assurance through membership and input into the Resilient Coasts Board, Strategic Steering Group and Key Stakeholder Group. Additional assurance is provided, for key decisions, by East Suffolk Council's Cabinet and Great Yarmouth Borough Council's Environment Committee. Additional scrutiny is provided by Audit and Scrutiny Committees at County, District, and Borough level. Project Evaluation Review (PER) is undertaken and integrated into the Project Management Consultants and Main Works Contract tender and contracts for consultants and contractors as part of the appropriate work packages. Following completion of the project a final review will be undertaken in year 6 to evaluate how well the project was managed and delivered compared with expectations. This will include identification of 'quick wins' that may benefit others and will also capture lessons learnt to assist with informing future projects.

6.12 Innovation and learning: monitoring, evaluation and dissemination

6.12a Post project evaluation

With the breadth and variety of work packages included in the Resilient Coasts Project it would be challenging to identify one method of post project evaluation. All will be measured on impact, but that impact may be, to a lesser or greater extent, more apparent and a longer programme of post project evaluation may be beneficial. For example, behavioural change, master planning and community resilience may take longer to complete than the FCRIP programme allows for and, communities without continued support, may not complete the journey. Therefore, the legacy of this project and its evaluation beyond FCRIP timelines needs careful consideration. A further programme of evaluation will be developed with each work package as the project develops and needs become clearer.

Social value

Under the Social Value Act 2012, local authorities are required to demonstrate the value delivered in the locality of a project spend as a result of public money spent – referred to as social value. The Resilient Coasts Project will use the national TOMs framework, which stands for **Themes, Outcomes and Measures.** This aims to provide a minimum reporting standard to help buyers measure and justify the pursuit of social value outcomes in their contracts. It provides a robust, transparent and defensible solution for assessing and awarding tenders.

Evaluating communications and engagement

Based upon the Government Communication Network, the Barcelona Principles and the CIPR evaluation measures playbook, Coastal Partnership East has developed its own evaluation tree mechanism to measure outputs from communications and engagement with coastal communities. In addition, our digital and social media channels, including virtual engagement tools, have comprehensive analytics which enable us to assess whether we are reaching the right demographic and to review, reflect and refresh any approaches.

The Community Voices approach pioneered by the Inshore Fisheries and Conservation Authorities in East Anglia will be used to establish a baseline for community involvement, engagement and attitude. This approach has a series of metrics which calculates, using feedback from our pilot and twin areas, the attitude and appetite of a community to engage in coastal adaptation/transition and areas of resistance, concern and change. A repeat of the measurement will be carried out in year 5 to provide a measurement of movement/change. Added to this will be physical feedback from our pilot and twin areas; partners and supporting partners that will shape how we progress as we co-create our work packages.

Measuring and evaluating place-based resilience

To enable us to effectively measure improvements in resilience an initial baseline will be undertaken using the Zurich Flood Alliance approach and methodology. This is led and supported by the London School of Economics and although widely used internationally, was first piloted in the UK in Lowestoft. The table below shows the objectives over the course of the project, the outputs and how this influences each stage of the establishment and improvement of place-based resilience levels.

Year(s)	Objective	Output
Years 1 & 2	Establish initial resilience level baseline: Workshops – community, businesses, partner and responder Surveys as above Collection and examining of flood risk/erosion risk data from existing sources.	Baseline resilience established. Action plans in place
Years 3 & 4	Action plan recommendations embedded into pilot area plans across all work packages.	Pilot area work package plans reflect resilience actions. Evaluation points in work package plans include progress against actions. Master plans demonstrably include resilience actions.
Year 5	Re-evaluation of resilience baseline. Workshops – community, businesses, partner and responder Surveys as above	Current resilience level established. Further actions and recommendations identified. Action plans updated
Year 6	Embed further actions and recommendations into Master Plan progress in pilot areas. Map across learning and outputs to twin project areas.	Clear directional actions have shaped the pilot area Masterplans and an improvement in level of resilience can be demonstrated based upon a firm initial baseline. Clear directional actions will shape twin area Master Plans and a baselining of resilience, where this doesn't exist, will be established to ensure future progression to a position of evidence-based improved resilience.

Figure 6.12.1 Summary of Resilient Coasts project objectives by year.

6.13 Contingency plans

The innovative nature of this project and its basis in co-creation between communities and partners, financial budgets will be actively managed. This will enable teams to flex financial resources and utilise them where they will provide the most benefit the programme and learning outputs.

A 30% OB has been applied to project costs in addition to a 20% risk allowance.