LINCOLNSHIRE COAST 2100+ PARTNERSHIP

Lincolnshire Coast 2100+

Coastal Investment Plan

Summary Report

6th February 2026

Official

Two years of Partnership work towards resilience and growth

The Lincolnshire Coast 2100+ Partnership is committed to building a strong case for long-term flood resilience and inclusive growth for Lincolnshire's future coastal communities.

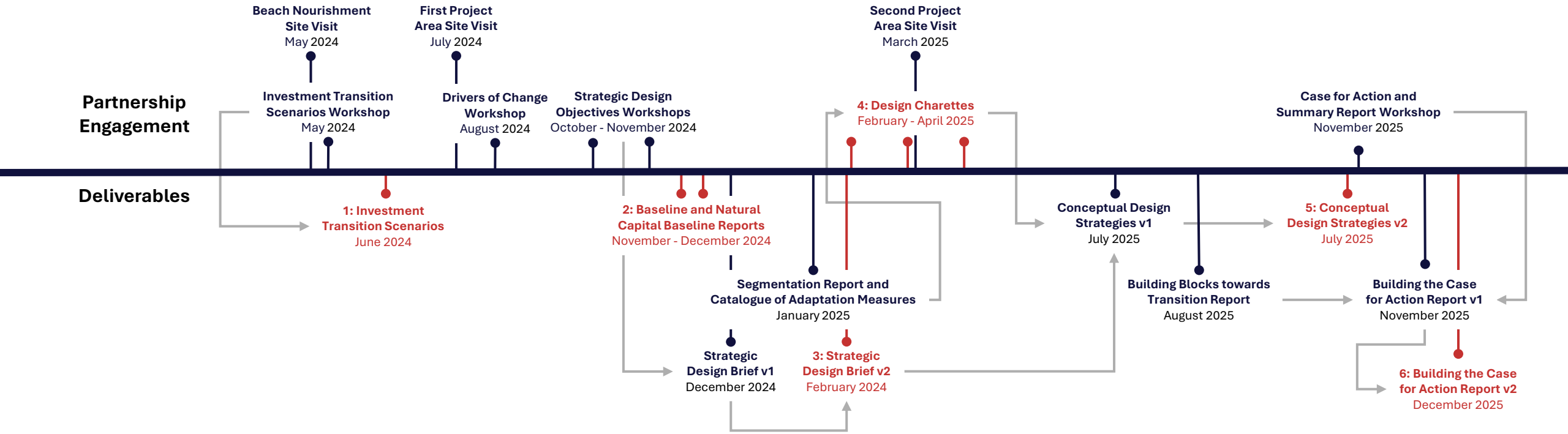
For the last two years, Lincolnshire County Council, East Lindsey District Council, the Environment Agency, and Lindsey Marsh Drainage Board have been working in partnership to build a credible case for **investment in long-term flood resilience and inclusive growth** on Lincolnshire's coastline. Together, the Partnership is working towards resilient, transformational and inclusive growth for Lincolnshire's future coastal communities, our economy and the natural environment.

This *Summary Report* captures the journey the Partnership has undertaken so far to build the case for meaningful action and lasting flood resilience. It summarises the insights that have been gathered through research and design across eight Partnership engagement sessions and captured in a series of outputs.

Five of these outputs and three design workshops – known as charettes – are especially pertinent and their findings form the basis of this report. They are highlighted and numbered in red below and referenced throughout the document, both in the right-hand margins and the in the text, using superscripts.

The report aims **to allow readers who have not been close to the project to quickly digest the most relevant findings so far**; and to understand the urgent need for transformational change on the Lincolnshire Coast.

Taken together, the outputs developed so far represents a significant body of evidence and demonstrate shared ambition across the Partnership. Building on this foundation, the next steps will focus the development of an *Action Plan* to guide the Partnership towards delivering a NISTA Gateway 0 *Readiness Assessment*.



Coastal communities living at flood risk

Low-lying coastal communities surrounded by nature, sustaining an agriculture and tourism economy but with pockets of deprivation

This part of coastal Lincolnshire is characterised by its historic seaside resorts, its low-lying agricultural land and its dramatic natural landscapes. It is situated within the boundaries of East Lindsey District Council[2].

Along the **38 km coastline**, five main settlements form an almost continuous urban corridor: from Mablethorpe in the north, through Sutton-on-Sea, Chapel St Leonards, Ingoldmells, to Skegness in the south. Here, tourism is the cornerstone of the local economy, attracting millions of visitors and generating hundreds of millions of pounds for local businesses every year[2].

Away from the coastline, food production remains the most locally important employment sector for towns and villages like Alford, Mumby and Huttoft, with a higher proportion of agricultural jobs than the national average. Arable farming predominates, with crops such as cereals, vegetables and horticultural produce benefiting from the fertile soils, although most of the land is considered of "good to moderate" quality. What's more, many of the fields have been reclaimed from marshlands, and lie **between two and four metres below high-water levels**. Without coastal flood defences and a network of internal drains, many fields would regularly flood[2].

The area's natural assets, such as those at Saltfleet by-Theddlethorpe and Gibraltar Point, include saltmarshes, dunes and mudflats. Gibraltar Point's unique parallel ridge dunes, play a pivotal role in strengthening the coastline's resilience to storm surges and flooding – they stretch for about 5 km along the coast and rise up to 8 m high. Meanwhile, marshlands capture, store and slow the flow of water, protecting nearby agricultural lands and communities. These habitats also support local wildlife and migratory birds and serve as carbon sinks[2].

But the area is also socio-economically challenged, ranking among the most income-deprived local authorities in England. Limited economic diversity leaves communities more vulnerable to fluctuations in visitor numbers and external economic and environmental shocks. As a result, pockets of persistent deprivation endure in Skegness, Mablethorpe and Sutton-on-Sea, where **a high percentage of households are deprived** in two or more dimensions. Part-time jobs account for 40.9% of employment. Other barriers to growth include poor transport links and digital connectivity, and groundwater overextraction[2].

For this reason, one objective in East Lindsey's current Local Plan, that looks ahead to 2031, is for the area to become a growing and diversified economy that supports the creation of all types of employment[3]. But to achieve this, **the area must first tackle the increasing risk of flooding**.

LINCOLNSHIRE COAST 2100+ PARTNERSHIP

An artificially maintained landscape

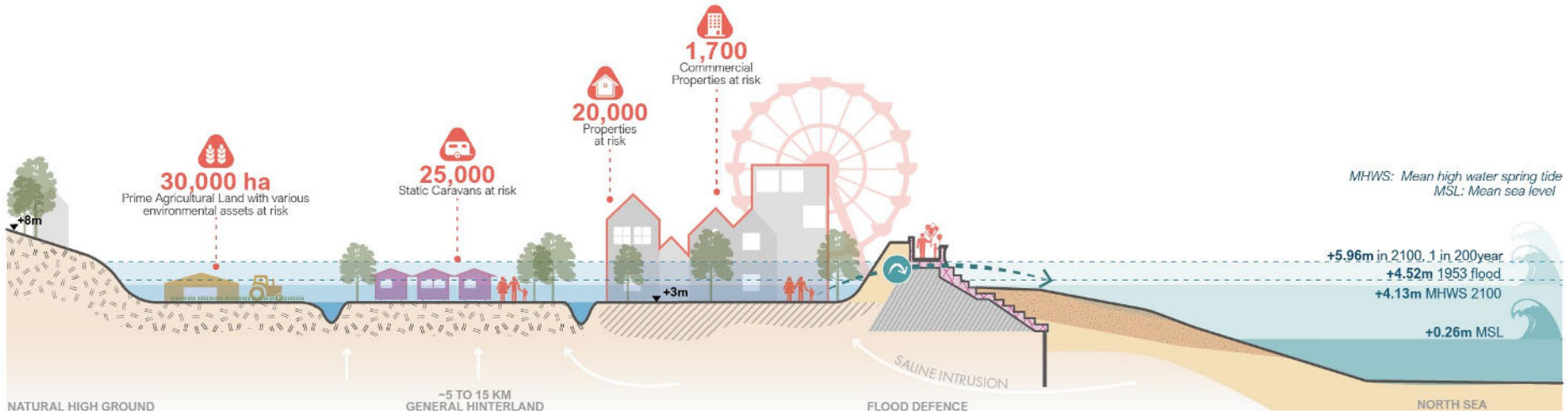
Living on land reclaimed from the sea, our communities, economy and environment are at continuous risk of flooding with a major breach endangering thousands and causing damages exceeding £5 billion.

Much of Lincolnshire's coastline is actually man-made and has changed significantly over time – built over centuries on land claimed from the sea by farmers and salt producers[2]. Burgh le Marsh – literally 'Town in the Marsh' — was once a small rise surrounded by marshland but now sits firmly within the rural hinterland. Skegness, whose name incorporates the Old Norse 'ness', meaning headland, reflects its original position on a coastal outcrop, which was destroyed by a major storm surge in the 16th century[2]. The settlement was rebuilt further inland, where the bustling seaside town now stands. A constant reminder that the sea can always reclaim the land.

Though often taken for granted, draining the land has left a complex legacy of **over 25 km of man-made seawalls**, **thousands of kilometres of straightened watercourses and artificial drainage channels**, sluice gates, weirs and pumping stations that local communities, their businesses, and whole economic sectors rely on to keep the land habitable, farmable and free of both fresh and seawater[2]. All these assets are now critical to the region's safety, yet even with these systems in place, the risk of flooding is real and ever-present.

The events of 1953 serve as a stark warning: a storm surge that year **claimed 42 lives in Lincolnshire**, inundated thousands of homes and acres of farmlands, and destroyed many miles of coastal defences[2]. This highlights the vulnerability of the region to extreme events[6].

If a significant breach occurred under current conditions, **over 60,000 residents would be at risk**, along with thousands of homes, caravan parks, and critical infrastructure like roads, rail links, and utilities[2]. Flood depths could reach up to 2.5 m in some areas, with water velocities of around 5 m per second, making evacuation and emergency response extremely challenging. The economic impact would be devastating, with **direct damages to property, infrastructure, and farmland estimated at £5.5 bn**, excluding indirect costs such as business disruption, loss of tourism income, and long-term social and environmental consequences[6]. Such an event would not only destroy physical assets but also undermine the viability of entire communities, forcing relocation and causing severe economic and social dislocation[6].



85% of defence across 25km can not be relied upon by 2040

Ageing seawalls will need replacing by 2040 – without this the current beach nourishment approach of adding sand in front of the defences becomes less effective.

After the breach of 1953, many of the seawalls and drainage assets were hastily rebuilt. Of course, at that time, there was no national flood recovery framework or modern engineering supply chain. Pumping stations worked continuously to remove floodwater while **local authorities and drainage boards mobilised farmers, contractors and communities to repair breaches using whatever materials were available**, including clay from nearby fields, timber, rubble and even repurposed wartime structures.

For decades, those seawalls have effectively defended Lincolnshire's coastal communities, their livelihoods and the natural environment. But of course, given the circumstances under which the assets were built, those assets are fundamentally vulnerable. Whilst many have subsequently been refurbished, **over 80% of the current coastal defences were constructed before 1970**, and some communities still rely on post-1953 emergency rebuilds.

Due to their age and condition, annual beach nourishment was introduced in 1994 to better protect them from the full force of the North Sea. Since then, up to 450,000 m^3 of sand is placed along the frontage each year – at a cost of approximately **£11 - £15 million annually**[2]. While this approach has extended the life of the defences, it is not a permanent solution[2]. But a recent assessment of the assets' condition warns that, despite the continued nourishment, Lincolnshire's coastal communities cannot rely on existing defences beyond 2040 – **85% of the hard defences have a residual life of less than 15 years**[1]. As they continue to deteriorate, the risk of failure and catastrophic flooding grows year-on-year. This is made worse by the fact that sea levels are projected to rise by up to 1.2 m by 2100 and storm surges are becoming more frequent and severe[3].

It is clear that the current beach nourishment approach, introduced in the 1990s does not address these fundamental challenges and cannot be relied on in the long-term. While beach nourishment has extended the lives of the seawalls, they have continued to degrade beneath the sand buffer. This fact, coupled with rising sea levels, means that continuing with **business-as-usual is simply unjustifiable**. Without a radically different approach, Lincolnshire's coastal communities will increasingly be exposed to the dangers of a major flood incident.

Whilst the beach nourishment programme is currently funded by central government, funding is never guaranteed, especially for disadvantaged and sparsely populated areas like coastal Lincolnshire. Without a new strategy in place, funding can be redirected towards areas with a defined and viable long-term strategy [6]. There is a real urgency to define what happens next.

Replacing these seawalls to protect our coastal communities in their existing location will require major investment. The region will have **to compete for funds against other long-term major flood risk management projects across England**, such as those on the Thames, the Humber and in the Fens.

Community response, Mablethorpe, 1953

Defence repairs, Chapel St Leonards, 1970s

Asset damage, Ingoldmells, 2010s

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Fortification is one possible future

Replacing the sea walls would require billions for new defences, embankments and drainage upgrades, demand repeated investment and offer limited added value.

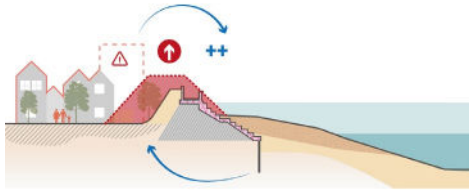
Due to the existing defences' composition and condition, rather than bolstering them, entirely new assets would need to be built with a much larger footprint to account for rising sea levels[2].

While these new defences could introduce vibrant new public realms and help unlock economic opportunity for growth through effective place making and design, their size and scale would also dramatically change the make-up of the landscape, seascape and current seaside resorts. Entire stretches of coastline would be transformed, with some properties and utilities inevitably requiring demolition to accommodate new defences[6]. This approach would allow most communities to remain where they are and avoid extensive relocation to higher ground.

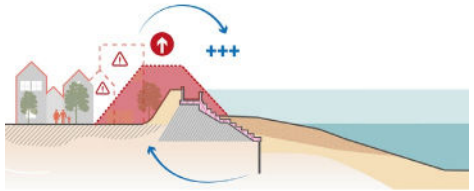
Beach nourishment, which is currently used to protect aging defences would likely stop, meaning the familiar sandy beach frontages would disappear. Even with new coastal defences, communities behind them would **remain vulnerable to the residual risk** of tidal breaches, overtopping and saline intrusion in the long-term[6]. This would also likely limit the type of development that would be acceptable across the area, affect insurance availability for both residential and commercial properties. The salinisation of groundwater would pose a significant challenge to agriculture and freshwater resources[6].

What's more, fortifying the entire coastal frontage would be a larger undertaking than most of the world's recent major coastal protection schemes, such as those outlined in the graph on the right. Fortification is estimated to cost between **£3.7 billion and £7.2 billion**, excluding pre-construction costs[6]. The decades-long programme of work would require **25 km of new primary defences** to be built, alongside 13 km of secondary raised defences and 24 km of river embankment raising, supported by continued **inland drainage upgrades across 680 km^2** of hinterland.

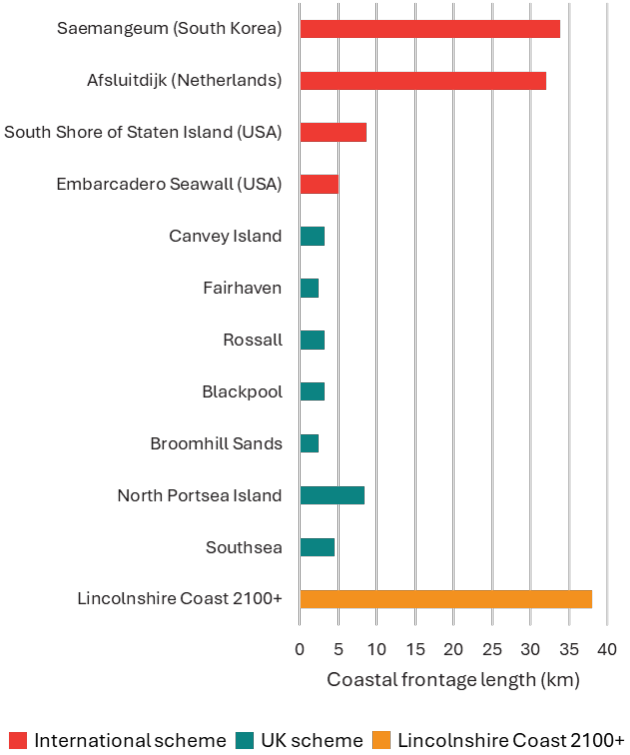
Additionally, the scale of further future investment is likely to eclipse the investment needed today, with these defences and inland drainage measures needing to be raised, relocated or replaced again to address rising sea levels and asset deterioration[6]. This **cycle would then repeat every few generations**, until an alternative approach to flood risk management is adopted[6].



Existing concrete defences cannot be relied upon from 2040, new defences would be needed



Due to sea level rise, any defences built around 2040 will likely need raising or replacing after 100 years



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Marrying long-term flood resilience with inclusive growth

A partnership-led, value-driven and place-based investment strategy integrates flood resilience with economic, social, and environmental value, while remaining financially achievable.

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An alternative approach is possible: A more transformational approach would seek to develop a fundamentally different long-term flood resilient solution for Lincolnshire's future communities by embracing a compelling, locally tailored place-based approach. A future approach that **demonstrates potential for economic growth, long-term resilience and a positive benefit-cost-ratio**.

A value-driven business case could unlock new funding streams, attract private investment, and stimulate government and local community support. Any viable response will need to integrate flood risk management with other policy agendas like housing, transport, and community regeneration, create economic value, and maximise social and environmental benefits[5].

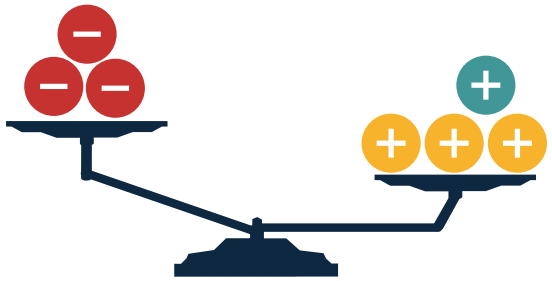
What the Partnership are pioneering is a **unique and innovative approach to coastal resilience** that goes beyond flood risk management. Long-term transformational change can only be delivered through enduring and meaningful collaboration between local and national actors. Transformation on this scale has not been attempted before in England.

To identify these possible futures, the Partnership developed a set of strategic objectives designed to deliver value-generating opportunities on the coast[3].

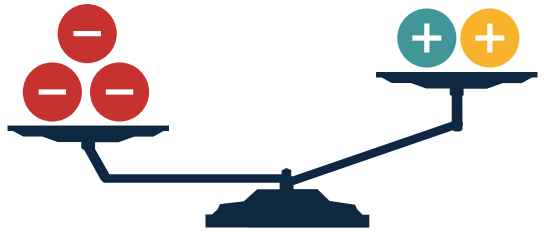
Guided by the objectives, the Partnership has developed a set of possible futures that explore a range of high-level, flexible and place-based approaches to flood resilience and value creation on the Coast[4,5].

These futures move away from fortification and a reliance on hard assets and instead propose innovative strategies that blend grey and nature-based solutions to deliver long-term resilience, economic value, and social and environmental benefits[5,6].

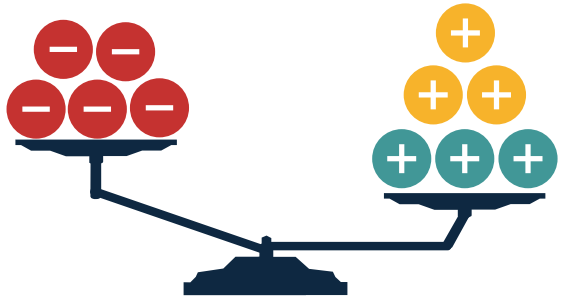
Whilst they **do not represent fixed proposals or preferred options**, they advance the thinking towards a fully developed value-driven and place-based business case for the Lincolnshire Coast that can set a new standard in coastal resilience in England[6]. This is a unique **opportunity to pioneer a transformational approach to flood risk management** and encourage inclusive growth on Lincolnshire's coast.



A *traditional approach* where avoided damages and co-benefits outweigh investment costs



The *current approach* where avoided damages and co-benefits do not outweigh investment costs



A *transformative approach* that enhances local resilience, where the benefits outweigh the costs.

Avoided costs Co-benefits Investment cost

1 Investment Transition Scenarios

2 Baseline Reports

3 Strategic Design Brief

4 Design Charettes

5 Conceptual Design Strategies

6 Building the Case for Action

Other value-driven possible futures

Illustrative place-based design strategies show how adaptive landscapes could deliver economic diversification, biodiversity gains, and lasting flood resilience for our coastal communities.

Through a series of workshops, the Partnership has co-developed two other possible futures[4]. These illustrative strategies are designed **to stimulate discussion around innovative, and place-based responses** to the region's challenges and opportunities. They do not represent fixed proposals or preferred options, nor do they undermine or replace the current arrangements for flood and coastal risk management in Lincolnshire at this time[5].

One illustrative strategy focuses on transforming Skegness into a resilient coastal capital while creating a multifunctional landscape across the Lincolnshire coast. It combines engineered flood defences, such as new levees and seawalls, with nature-based solutions like wetlands and green corridors.

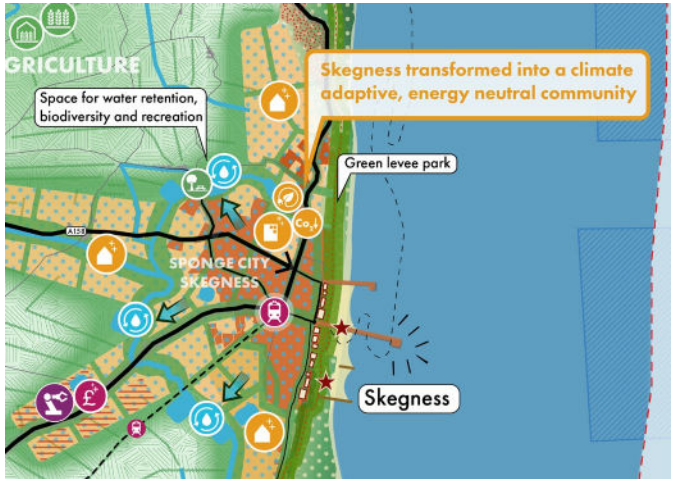
The southern area becomes **a hub for tourism and urban regeneration**, supported by a circular food economy and innovative agri-tech practices. The abundant freshwater resource is now captured by creating reservoirs to supply local communities and provide freshwater to the Humber industrial cluster to the north, enhancing the Coast's economic productivity.[5]

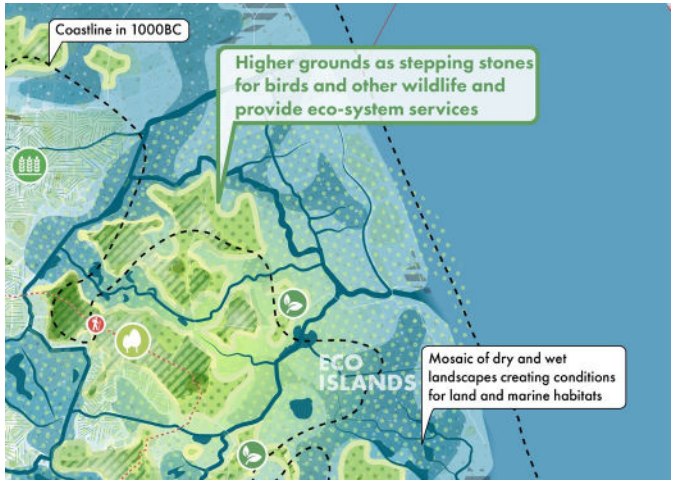
In the north, a "Landscape Engine" integrates renewable energy generation, water resource management, and regenerative agriculture, **creating jobs and driving economic diversification**. The approach also introduces sponge city principles, converting underused spaces into water parks and green corridors to enhance climate resilience[5].

This illustrative strategy aims to deliver flood defences while **unlocking long-term value** through tourism, energy, and food production, supported by improved connectivity and skills development. It represents a hybrid model balancing infrastructure with ecological restoration[5].

Another illustrative strategy proposes a managed realignment of the Lincolnshire coastline to create the UK's largest intertidal ecosystem, covering 176 km^2 of saltmarsh, mudflats, and lagoons. It involves **relocating coastal communities to higher ground ensuring their safety** and expanding new inland towns such as Manby, Alford, and Burgh le Marsh. A green rail corridor now connects the land locked Fens agricultural production to the ports in the Humber creating a logistics corridor enhancing these towns' economic growth[5]. This nature-led strategy enhances biodiversity, carbon sequestration, and ecosystem services, including community health benefits, positioning the area as a potential UNESCO Biosphere Reserve.

Traditional agriculture transitions to saline and regenerative practices, including aquaculture and biomass production, creating **new markets and employment opportunities**. The strategy also integrates marine restoration, such as seagrass planting and oyster cultivation, to enhance water quality and climate resilience. New economic opportunities emerge across **eco-tourism, nature-based industries, and research**, supported by innovative funding mechanisms like Green Bonds and Natural Capital Accounting. This illustrative strategy eventually delivers adaptive, low-maintenance flood resilience for future generations[5].





No decision by 2027 is a decision

Without decisive urgent action, our communities will be exposed to catastrophic flooding and associated economic decline.

The region stands at a crucial crossroads. There is an urgent need for a pivotal decision to be made on Lincolnshire's coastal communities' future, and **two distinct pathways are emerging**[6].

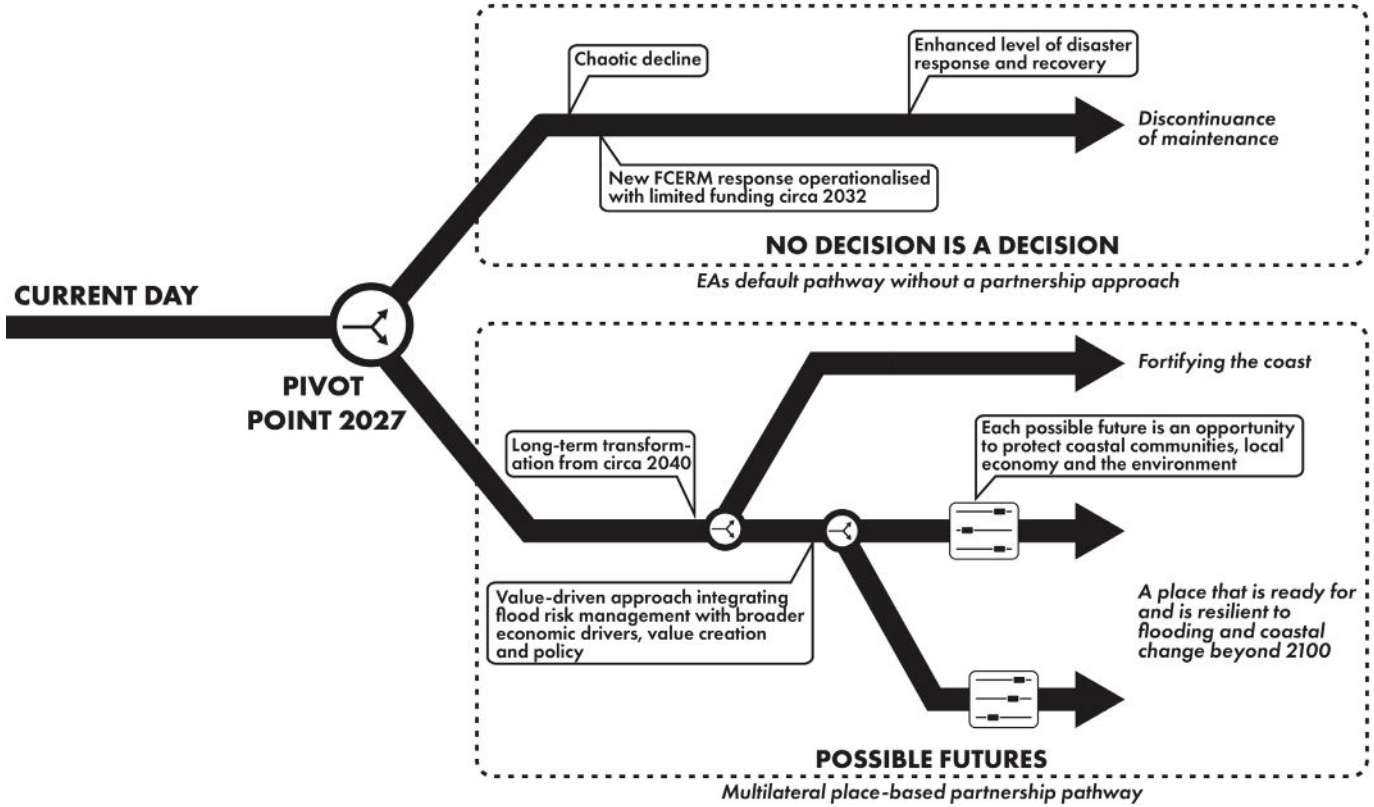
The first involves a multilateral partnership, uniting local and national actors to **deliver a coordinated and place-based investment strategy** that recognises and addresses the coast's unique challenges and opportunities[5]. This collaborative model offers the best chance of delivering transformational change before the existing defences reach the end of their life – **creating a place that is ready for and resilient to flooding and coastal change beyond 2100**[3].

By contrast, the default path – which the coast currently finds itself on – is constrained by policy and affordability limits. On this path, the Environment Agency would need to move forward without the support of a wider partnership and **prioritise only the most critical interventions**. This path also risks **losing funding for the existing beach management approach** and would not sustain the current level of flood resilience, leaving much of the Coast more exposed and vulnerable. Ultimately, this path leads to economic stagnation, environmental degradation, and eventually the abandonment of communities[1]. This is not the preferred trajectory for the Environment Agency, but the most likely outcome in the current policy landscape, if a multilateral, place-based investment strategy cannot be developed and agreed in time.

Decisive and urgent action is required by 2027 to enable a safer future for our communities or there will not be enough time to develop, approve and implement an alternative before the current assets reach the end of their life.

A **repeat of the devastation wrought in 1953 is never entirely preventable**, but for it to occur due to inaction is inexcusable. If no decisive action is taken by 2027, the likelihood of it happening again rises significantly – **making "no decision" a decision** in itself[6].

Failure to act will expose already vulnerable communities, local businesses and precious natural habitats to a greater risk of flooding and its devastating consequences. This underscores the **urgent need for an effective, transformational and multilateral approach**[6].



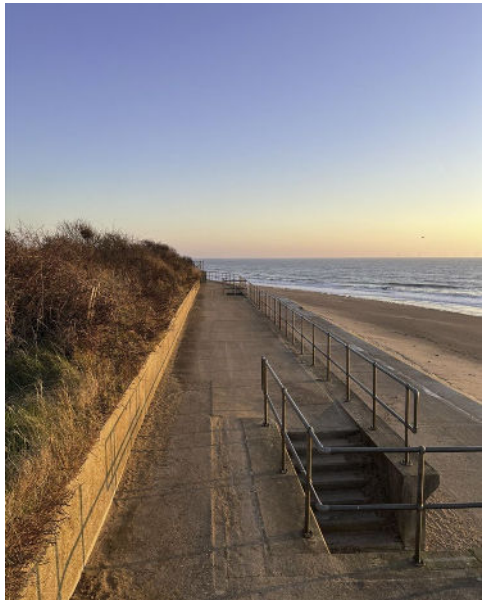
Progress has been swift...

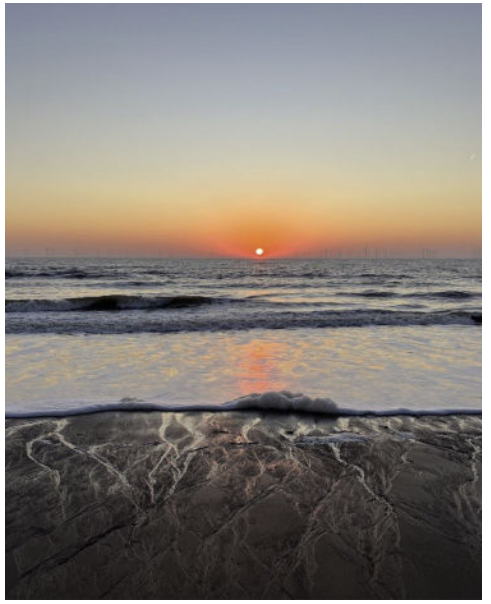
The Partnership has made progress in building a credible case for change in long-term flood resilience for Lincolnshire's future coastal communities.

Over the last two years, significant progress has been made in building a shared foundation and a credible case for investment in long-term flood resilience. This report summarises the Lincolnshire Coast 2100+ Partnership's journey so far. In this time, we have established that:

- Lincolnshire's coastal communities are living at constant flood risk;
- The coastline is an artificially maintained landscape;
- 85% of the defence across 25km of coastline can not be relied upon by 2040;
- Fortifying the coast represents one possible future requiring billions in new defences;
- There is the need to marry flood resilience with value creation to be able to attract the necessary funding;
- Therefore, the Partnership have developed other value-driven possible futures;
- Crucially, no decision by 2027 is a decision that could expose communities to catastrophic flooding.

There are of course still many unanswered questions and difficult challenges that need to be overcome, and we have begun to identify these, as shown on the following page. It will be through effective collaboration and partnership that these challenges are addressed and while inaction is inexcusable, there remains the opportunity to pioneer a unique and innovative approach to coastal resilience in England.





… but more questions remain

To achieve this, the Partnership must still overcome many challenges.

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This will not be an easy journey and will require decades-long collaboration between a myriad of organisations along with sponsorship from National Government. To achieve this, strong governance with clear and empowered decision makers from both the private and public sector will be required.

1. Two years of Partnership work towards resilience and growth

The Lincolnshire Coast 2100+ Partnership is committed to building a strong case for long-term flood resilience and inclusive growth for Lincolnshire's future coastal communities.

The challenges faced by coastal communities can only be addressed through community engagement. Only accessible and collaborative solution building with residents, local businesses, the authorities, and other delivery partners will ensure that decisions are rooted in local realities.

2. Coastal communities living at flood risk

Low-lying coastal communities surrounded by nature, sustaining an agriculture and tourism economy but with pockets of deprivation

Any government funding requires a compelling business case with a positive benefit to cost ratio. However, often rural and socio-economically deprived areas like the Lincolnshire coast can struggle to build a compelling funding case to secure investment.

3. An artificially maintained landscape

Living on land reclaimed from the sea, our communities, economy and environment are at continuous risk of flooding with a major breach endangering thousands and causing damages exceeding £5 billion.

Attaining funding for nationally significant infrastructure projects is increasingly difficult as limited public resources must be spread across multiple sectors. Economic pressures, inflation, and the rising costs of building climate-resilient infrastructure intensify competition for investment, forcing national prioritisation of assets with the most critical needs.

4. 85% of defence across 25km can not be relied upon by 2040

Ageing seawalls will need replacing by 2040 – without this the current beach nourishment approach of adding sand in front of the defences becomes less effective.

5. Fortification is one possible future

Replacing the sea walls would require billions for new defences, embankments and drainage upgrades, demand repeated investment and offer limited added value.

The scale of investment required to maintain the Lincolnshire coastline at its current alignment is unprecedented in the UK's flood risk sector. It is even larger than most global examples of continuous coastal defences. Therefore, there is limited experience of planning, design and construction of coastal defences at this scale and limited resources and materials to enable it.

6. Marrying long-term flood resilience with inclusive growth

A partnership-led, value-driven and place-based approach integrates flood resilience with economic, social, and environmental goals, while remaining financially achievable.

The possible futures alluded to in this report look to build a stronger case for multilateral investment – for these to be financially achievable, very careful and detailed planning and staging will be required.

7. Other value-driven possible futures

Illustrative place-based design strategies show how adaptive landscapes could deliver economic diversification, biodiversity gains, and lasting flood resilience for our coastal communities.

Flood risk management is not only an engineering challenge, but a social one. Decisions will affect where people live, how they work, and the character of the places they call home. Any solution must address deprivation and rural isolation and contribute to an inclusive, equal and diverse district.

8. No decision by 2027 is a decision

Without decisive urgent action, our communities will be exposed to catastrophic flooding and associated economic decline.

Developing and implementing any new approach requires years of design, consultation, planning and a phased delivery. Any delays will compress these stages into an unmanageable timeframe, increasing costs, reducing options and compromising existing funding.