The Magnificent Severn

A Vision for 2040

With the largest tidal range in Europe, a vast array of wildlife, rich cultural heritage and a wild and beautiful landscape, the Severn Estuary is one of the UK’s great natural wonders and a globally important site for nature. However, centuries of human development pressure have degraded the estuary and left much room for recovery. Today, this highly protected and unique place is at a critical juncture as a result of both this development pressure and climate change. It is up to us, collectively, to decide whether this magnificent estuary will be sustained, restored and supported – to benefit nature and people.

As an alliance of organisations representing wildlife and landscape interests, we have developed a Vision for a much better Severn for the natural environment, one that protects and enhances the biodiversity, landscapes and ecosystem as a whole – one that will benefit us all. It will be a more resilient estuary richer in nature, where we respect the wildlife and natural resources of the estuary and its limits and thresholds for sustainable use. Bold leadership is needed to take this Vision forward and many different stakeholders will need to engage with, champion, and deliver the steps needed to turn this Vision into reality.

In this report, we set out:

- an ambitious Vision for nature in the estuary;
- a new toolkit – a Map Journal – for supporting decision making affecting the estuary; and;
- seven steps towards delivering this Vision.
OUR VISION...
Is for a Severn Estuary that:

• is restored as a healthy functioning ecosystem, valued for its internationally important wildlife, habitats and landscapes;

• provides more benefits for people, local communities, places, and economies, including greater resilience to climate change; and

• becomes a natural powerhouse, where development is planned and managed in a way that sustains and enhances the estuary’s resources.

SEVERN POTENTIAL

The Vision does not seek to return the Severn Estuary to some prehistoric, pristine environment – but rather to unlock its potential as an even greater natural and economic asset than at present. We hope that it will help drive innovation in economic and social development that works with nature, including tourism, coastal development and appropriate low carbon energy generation technologies.

Wise decision making will be key to delivering our Vision. To support this, we have provided a Map Journal that brings together for the first time mapped environmental information on: coastal change and flood risk, nature conservation and landscape designations, habitats, biodiversity and ecosystem services (i.e. benefits that people derive from the estuary). It highlights areas of low lying land that have the potential to be restored to intertidal habitat, to increase resilience to climate change and help restore historic losses to benefit wildlife, local communities and the economy.

Of course, the health of the estuary depends not only on the activities within it, but also on land use and management in adjacent catchments that feed into it, such as the Wye and Parrett rivers, and the species that move between them. This Vision supplements the existing efforts being made to improve the management of these catchments.

Our coastal and estuarine landscapes are places of inspiration, wonder and joy. But they are also much more. The natural capital that they contain underpins health, business and other opportunities for local people. Recognising these benefits and restoring the estuary to provide yet more is a legacy that we should all aspire to.

1Intertidal habitats include all those regularly flooded by the tides between land and sea, e.g. from mudflats, to coastal saltmarsh in the upper intertidal zone. Such restoration would need to be through a process that would include mitigation for any loss of associated coastal freshwater habitat, which may need to move further inland.


3Natural Capital is the stocks of natural assets including geology, soil, air, water and all living things.
OUR SEVEN STEP VISION
TO DELIVERING A MAGNIFICENT ESTUARY

The Severn, one of the UK’s natural wonders, deserves much better. A magnificent future, where the collective impact of all those who use, care about, and value the estuary is positive for nature and people. An environment where leadership is strong but inclusive and where the urgent need to close the gap between vision and reality is used to inspire new and better approaches. We offer these ‘seven steps’ to help catalyse a dialogue with all those who can help make the changes necessary to restore this magnificent estuary.

1. AVOID FURTHER LOSS OF NATURE
The most practical and (cost) effective way of sustaining existing nature and landscapes is to prevent habitat destruction and degradation. Beyond this where damage is genuinely unavoidable, no net loss should occur within the estuary’s bounds of its wildlife, habitats, significant landscapes or the benefits they deliver.

2. RESTORE NATURE
The restoration of the estuary is fundamental to ensuring that it can act as a healthy, fully functioning natural system that both supports nature and continues to provide a wide range of benefits to people. We need a bold new approach to restoration at this scale, and our ambition is to see 6,000 ha of intertidal and associated habitat created by 2040, with half of this by 2025.

3. USE COASTAL HABITATS TO REDUCE CLIMATE CHANGE IMPACTS
Intertidal habitats can provide efficient and cost effective solutions to help protect people and property from coastal erosion, storms and flooding. The estuary’s role in building more resilience to climate change should be championed as a good investment for a safer and more productive future.

4. USE THE ESTUARY TO HELP REDUCE CARBON EMISSIONS
Intertidal and associated habitats are large reservoirs of so-called ‘blue carbon’. Conserving them will retain this carbon and lock up additional carbon. New initiatives are needed that blend conserving and restoring habitats as complementary and additive strategies for reducing greenhouse gas emissions, with appropriate financing.

5. GROW KNOWLEDGE TO ENABLE BETTER DECISION MAKING
There remain many gaps in our understanding of the estuary and how it functions. A wide range of stakeholders can provide support for building our collective knowledge of the estuary. Our Map Journal (severnvision.org) focuses on the estuary’s biodiversity, natural assets and services, but there are knowledge gaps waiting to be filled in these and other areas, and these are key to better decision making.

6. DEVELOP - IN HARMONY WITH NATURE - TIDAL RENEWABLE ENERGY
A renewable energy revolution is at the heart of fighting dangerous climate change which is itself arguably the biggest threat to nature. Tidal energy from the Severn has a seductive place in this, but it should not itself become another driver of biodiversity loss and wider environmental damage. Tidal energy should be developed in harmony with nature and not reduce the stock of ‘natural capital’.

7. ESTABLISH STRONGER GOVERNANCE FOR A SUSTAINABLE SEVERN
The estuary system is a great source of natural, economic and cultural wealth for the west of Britain and an integrated management approach that includes all interests is needed. Existing approaches need to be urgently examined and adapted to ensure stronger, inclusive ‘whole estuary’ governance that is fit for delivering a restored and sustainable estuary.

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1. Approximately 1,000 ha will be needed to compensate for land lost to sea level rise. It is important also to mitigate for associated freshwater habitats lost to sea level rise.
2. While fine sand or gravel is aimed predominantly at intertidal habitat creation or restoration it also encompasses associated freshwater habitat which may need to move further inland.
3. Blue carbon is the carbon captured by oceans and coastal systems, for example carbon captured by plants and microorganisms and stored in sediments and atmospheres.
THE SEVERN VISION

A NATURAL PHENOMENON ‘ON A GRAND SCALE’

The Severn is already a unique and ‘great estuary’ and one of the natural wonders of the UK – attracting tens of thousands of wildfowl from as far away as Siberia and Africa; with other species undertaking similarly epic migrations, such as young European eels migrating in their millions from the Sargasso Sea thousands of miles across the Atlantic. World-famous wildlife champion and a founder of both WWF and the Wildfowl & Wetlands Trust (WWT), Sir Peter Scott, recognised the Severn’s international standing as a feeding ground, stopover and roosting site for a spectacular number of waterfowl, and dubbed the estuary ‘The Serengeti of the UK’. Consequently, he established WWT’s Slimbridge headquarters on the estuary in 1946.

The estuary’s natural history is on a grand-scale - its extent, open landscape, the huge numbers and unique combinations of creatures and habitats it supports, the dynamic force and range of its tidal flow which creates and exposes vast areas of intertidal mud, sand flats and saltmarsh.

A key feature for creating the conditions to support its wildlife is its huge tidal range (the difference between high and low tide), which at some 15 metres (nearly 50 feet) at its peak at Avonmouth is the greatest in Europe. It’s that tidal range which exposes such a great extent of intertidal mud and sand flat – the storehouses supporting the estuary’s biodiversity.

The scale, tidal range and configuration of the estuary combine to create another natural phenomenon, the Severn Bore. During spring tides, the estuary’s funnel shape and the incoming tide combine to create a wave that reaches upstream for more than 30 miles. Catching the Bore offers the ultimate rush for surfers seeking a sustained wave barrelling along at up to 15 miles per hour. It also provides a free ride for myriad migrating eels from the Sargasso Sea, restocking our rivers and streams with the endangered European eel.

The strength of the Severn’s tidal waters carries over 10 million tonnes of suspended silt and sediment up and down the length of the estuary which settles on, shapes and replenishes the mud and sand flats. This highly turbulent environment supports unusual plant and animal communities, characteristic of the extreme physical conditions. These include the honeycomb worm which builds remarkable subtidal reefs here.

THE WILDLIFE & WONDER OF THE SEVERN

THE SEVERN ESTUARY IS SURROUNDED BY FANTASTIC LANDSCAPES.

From the Exmoor National Park to the Glamorgan Heritage Coast to the Quantock Hills Area of Outstanding Natural Beauty. The estuary landscape varies from painted willows and small orchards with unique varieties of Perry pear, to the agricultural coastal plain with its complex pattern of ditches (rhynes in Somerset, reens in the Gwent Levels), to parts of the estuary and the coastal plain that feel quite remote.

AT LOW TIDE, OVER 22,000 HA* OF INTERTIDAL MUD AND SAND FLAT ARE EXPOSED.

In total the estuary contains nearly 190,000 ha of coastal, intertidal and subtidal habitat that is recognised internationally as being under threat, and accounts for nearly one-third of all the UK’s Nature 2000 estuary habitat sites in the UK.

It also represents the largest aggregation of saltmarsh habitat in the south and southwest of the UK, covering about 1,400 ha.

THE HIGH TIDAL RANGE (HIGHEST IN EUROPE AND SECOND IN THE WORLD).

The extensive subtidal honeycomb worm reefs and suspended sediment loads (10 million tonnes on spring tides) make this a unique estuary.

The Severn Bore occurs at spring tide when the incoming tide breaks against the outgoing river current, forming a wave that travels up the estuary. The Bore forms upstream of Sharpness and travels upstream at about 16 kilometres per hour, forming a wave up to two metres in height.

THE SEVERN ESTUARY IS THE LARGEST COASTAL PLAIN ESTUARY IN THE UK.

The Severn provides an outlet for five Welsh and English rivers and streams: the Severn itself (the UK’s longest river at 354 km rises high in the Cambrian Mountains), the Wye, Usk, Parrett and Avon of flow through the estuary into the Bristol Channel.

HOLDING OVER TO FISH SPECIES.

Among the highest recorded for any UK estuary, it is used by 7 migratory species including three of the five known UK breeding populations of eel, as well as lamprey and river lamprey – all of which are internationally important. The Severn is a valuable fish nursery, sustaining commercial fish stocks and supporting a significant proportion of salmon making their way into English and Welsh rivers.

TRADITIONAL FISHING METHODS ARE STILL USED.

The use of Lave nets is unique to the Severn and the cultural significance has been widely recognised including by the Severn Estuary Partnership.

Elver fishing in England and Wales is concentrated on the Severn Estuary, chiefly on beaches of the Rivers Severn, Wye and Parrett.

THE ESTUARY IS ONE OF THE MOST EXTENSIVELY DESIGNATED AREAS IN THE UK.

Designations include Sites of Special Scientific Interest, Ramsar sites (wetlands of international importance), Special Protection Areas and Special Areas of Conservation and others. Not surprisingly, the estuary and its environs are dotted with nature reserves. These include National Nature Reserves (NNRs), RSPB Reserves, WWT Reserves, and over 220 Wildlife Trust sites spread around both shores.


The estuary’s origins lie in the ending of the last great ice Age over 10,000 years ago as the glaciers retreated, releasing melt water and causing rising sea levels. With previously much lower sea levels, Flat Holm and Steep Holm, now islands in the middle of the estuary, were rocky outcrops within a broad, shallow river valley. As sea levels gradually rose, peat deposits formed, saltmarshes developed and the region’s characteristic wetlands (remnants of which we know as the Somerset and Gwent Levels) formed with their diverse mixes of wet woodland, peat bog, marsh and open standing water. Prehistoric and Romano-British people used the estuary and its edges for seasonal activities including fishing and salt production. Since Roman times, people on the Gwent Levels have been reclaiming land from the estuary and draining it for summer livestock farming. Over the past 8,000 years the estuary, its shorelines and hinterland have been influenced and altered by the combined effects of ancient sea level rise and more recently, and increasingly, by human activity. Drainage of the Gwent, Somerset Levels and Gloucestershire floodplain began during the Roman period, continued through the Middle Ages, and intensified during the 18th and 19th centuries, as technological advances allowed more land to be brought into agricultural production. Flood banks, windmill mounds, ditches (rhynes in Somerset, reens in the Gwent Levels) and grips transformed the landscape as settlers drained the land interrupting the natural coastal processes of erosion, deposition, and flooding from the rivers and the sea.

Shipping and trade have had a major influence in shaping the coastline. The major towns and cities around the estuary grew out of ports and harbours, bringing prosperity and employment to the region. During the 19th and 20th centuries, in-river and coastal wharves were replaced with impounded docks more suited to deal with the expanding trade, larger vessels and the high tidal range. Gloucester’s docks are the furthest inland in the UK thanks to the Gloucester and Sharpness Canal. Avonmouth is now the 3rd fastest growing port in the UK, accounting for 44% of all shipping trade in the Bristol Channel and capable of handling vessels in excess of 130,000 tonnes14, while in August 2015, the Port of Newport announced that work had started on a £2.7m project to redevelop part of the port to increase cargo volumes15.

Agriculture, fishing, heavy industry, shipping and the trade and transport associated with those have dramatically altered and constrained the natural shape, processes and functions of the estuary – not least by supporting over 3 million people within the cities and towns surrounding the estuary. Major energy infrastructure to power those cities and their industries has been and continues to be constructed on the edge of the estuary.

Power generation exploiting the tremendous force of the Severn’s tides has long been proposed. Since the 1920s, a range of barrages across the Severn have been considered, and rejected, largely on economic grounds. The most recent proposal in 2010, for a Cardiff to Weston Barrage, would have resulted in the loss of about 20,000 ha of intertidal habitat – 95% of it within the most sensitive wildlife areas16.

Currently, other technologies including tidal lagoons are being proposed to harness the Severn’s natural energy supply with further ideas under investigation. The future shape and condition of the estuary will undoubtedly be influenced by how well new and innovative technologies for generating tidal energy deliver on economic, social and environmental grounds.

Piecemeal, non-strategic development and exploitation of the estuary and its resources hasn’t yet overwhelmed the Severn’s regenerative force and spirit. The estuary is still a dynamic, complex and ever changing environment. Twice a day during the spring tides, those ten million tonnes of sediment are swept up and down its length replenishing the mudflats, sand banks and saltmarshes that teem with a smorgasbord of snails, worms and other tiny creatures, providing the rich food source for many species, including fish and up to 100,000 waterfowl and wading birds during winter months.

13Some content in this section is adapted from various pages on the Severn Estuary Partnership website.


The rich wildlife and natural resources of and around the estuary and in its earlier form as a river valley has attracted humans for thousands of years; the fossilised footprints that stirred the imagination of environmentalist and author, George Monbiot, belonged to a party of hunter-gatherers following the tracks of aurochs, deer and cranes. When our forebears made those footprints on the Gwent Levels at Goldcliff, Magor and Uskmouth, the estuary ecosystem as it was then could be said to be near pristine, shaping its own destiny, but it has not been so for thousands of years. As well as being internationally renowned for its wildlife, the Severn Estuary is acknowledged as being one of the richest and most valued archaeological landscapes in Europe; a treasure trove of irreplaceable knowledge as to the origins and geomorphology of the estuary, its ecosystem and our part in adapting and altering it. It is the intertidal mud and specifically intertidal peat habitats that are of importance to the preservation and accessibility of the numerous archaeological finds around the estuary.

Change in Wetland Habitat Extent Over Time17

<table>
<thead>
<tr>
<th>Historic Extent</th>
<th>Bronze Age</th>
<th>End of Roman Period</th>
<th>Current Saltmarsh</th>
<th>Future Potential</th>
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<tbody>
<tr>
<td>100%</td>
<td>47%</td>
<td>27%</td>
<td>0.6%</td>
<td>5%</td>
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</tbody>
</table>

*Due to gaps in data sets for other areas, the change in wetland habitat extent (%) over time is based on data for Somerset only. From preliminary analysis of available data, the rate of change is assumed to have been similar across other areas of the estuary.

**AN ARCHAEOLOGICAL TREASURE TROVE**

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CLIMATE, ENERGY AND THE ESTUARY

Climate change is one of the biggest threats faced by both the natural world and human society. We all know how urgently we need to find and implement ways of reducing carbon emissions, e.g. through reducing energy demand, developing low carbon energy technologies and promoting ways of sequestering or ‘locking up’ atmospheric carbon. We also need to find ways of minimising the impacts of releasing the ‘locked in’ carbon – that were caused by the emissions of previous decades and have already been stored (e.g. in peat soils and saltmarsh habitats).

Estuaries face significant challenges from climate change which will cause sea levels to rise, bad weather events like storm surges to occur more often, and flood risk to increase. However, estuaries like the Severn also present significant opportunities to mitigate climate change impacts. Innovative energy schemes to use the estuary’s tidal power could make a meaningful contribution to reducing carbon emissions. However, in this search it is important that any one form of tidal energy generation does not crowd out innovation and opportunity for others. There is unlikely to be a ‘one size fits all’ solution, and any schemes need to be of the right type, scale, and in the right locations to avoid causing irreparable damage to the habitats and landscapes that provide so many other social and environmental benefits. These include the potential for intertidal mudflats and saltmarsh to act as significant natural ‘carbon sinks’, locking up large amounts of carbon, along with their ability to act as powerful buffers against storm surges, and reduce flood risk.

The seemingly inexorable rise in sea levels caused by human induced climate change, and these areas of intertidal mud and saltmarsh can play a key role in reducing the impacts of climate change. Estuaries like the Severn also present significant opportunities to mitigate climate change impacts. Innovative energy schemes to use the estuary’s tidal power could make a meaningful contribution to reducing carbon emissions. However, in this search it is important that any one form of tidal energy generation does not crowd out innovation and opportunity for others. There is unlikely to be a ‘one size fits all’ solution, and any schemes need to be of the right type, scale, and in the right locations to avoid causing irreparable damage to the habitats and landscapes that provide so many other social and environmental benefits. These include the potential for intertidal mudflats and saltmarsh to act as significant natural ‘carbon sinks’, locking up large amounts of carbon, along with their ability to act as powerful buffers against storm surges, and reduce flood risk.

The impressive capacity of intertidal areas to contribute to both mitigating and adapting to the effects of climate change need to be part of the equation during the search for appropriate low carbon schemes for generating energy from the Severn Estuary. Similarly, tidal energy generation schemes need to go hand-in-hand with local commitments and measures to increase energy efficiency and reduce demand to ensure that environmental gains from exploiting the estuary’s renewable energy resource are not short-lived and the existing natural carbon sinks aren’t damaged in the process.

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Nature can be a strong ally in reducing the impacts of climate change, and these areas of intertidal mud and saltmarsh can play a key role in reducing the impacts of climate change. Estuaries like the Severn also present significant opportunities to mitigate climate change impacts. Innovative energy schemes to use the estuary’s tidal power could make a meaningful contribution to reducing carbon emissions. However, in this search it is important that any one form of tidal energy generation does not crowd out innovation and opportunity for others. There is unlikely to be a ‘one size fits all’ solution, and any schemes need to be of the right type, scale, and in the right locations to avoid causing irreparable damage to the habitats and landscapes that provide so many other social and environmental benefits. These include the potential for intertidal mudflats and saltmarsh to act as significant natural ‘carbon sinks’, locking up large amounts of carbon, along with their ability to act as powerful buffers against storm surges, and reduce flood risk.

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WILL CLIMATE CHANGE TURN THE TIDE FOR THE ESTUARY?
USING EVIDENCE TO MAKE SMARTER DECISIONS FOR
THE SEVERN

MAPPING THE ESTUARY

We have collated and mapped all of the readily available information on the estuary’s natural assets, alongside the capacity within the estuary for restoring some of the intertidal areas that have been lost over the centuries. This information (the Map Journal) is available as a database and a series of maps illustrating what we currently know of the distribution of each asset, and we provide this as a starting point to help better plan future activities within the estuary. We hope that the Map Journal will help everyone with an interest in the estuary to engage with decisions about its future and to understand its complex workings and interconnections. The intended audience includes everyone from local and national decision makers to the 3 million plus people who live and work in proximity to the estuary.

The illustration on the next page is an ‘infographic’, based on maps in the database, highlighting the huge value of the estuary for wildlife, landscape, and other services that can benefit society.

Sea level rise projections have changed over time and vary with the scenario used. In what could be a ‘worst case scenario’, up to 7% (1,600 ha) of the 23,000 ha of intertidal area in the estuary could be lost to sea level rise by 2050-2055, resulting in the loss of up to 40% of its total saltmarsh habitat22. Regardless of the scenario used, waterbird numbers would be impacted, the estuary’s ecological status and designations would be undermined, as would its capacity for absorbing climate change-fuelling carbon dioxide and providing resilience in the form of natural sea defences.

About 12,000 ha of low-lying land is potentially vulnerable to tidal inundation under climate change projections. This information is based on a 2006 map22; and excludes major roads, railways and urban areas as these would not have potential for habitat creation. Much of this land could be used to create or restore intertidal and associated habitat, and a proportion (around 1,000 ha) will need to be restored simply to maintain the current extent of intertidal habitat, by replacing that projected to be lost to the rising tide.

However, we need to do much more than to simply stand still. We appreciate that there will be tensions and local constraints associated with habitat creation and restoration, including the very obvious interests of landowners or managers. Consequently our target for restoring these parts of the estuary’s riches does not include the whole 12,000 ha area with restoration potential.

Our Vision is nonetheless ambitious, and is to staunch previous and projected future losses and enhance the estuary’s resilience – by creating or restoring intertidal and associated areas by 6,000 ha23 within the next 25 years (by 2040).

23 Our 6000 ha ambition covers the projected loss due to sea level rise of c1300 ha plus an increase to the overall intertidal and associated areas, including any mitigation for loss of associated freshwater areas, by 6000 ha. Consequently while the 6000 ha target is aimed predominantly at intertidal/saltmarsh habitat creation or restoration it also encompasses this associated freshwater habitat that may be created or restored anywhere where it is protected (i.e. either on low-lying areas protected by existing coastal defences or on higher ground).
Over 110 fish species have been recorded in the estuary, among the highest of any estuary in the UK. It is also a valuable fish nursery and is used by 7 migratory species, some of which travel over 4,000 miles to reach it.

UK’s Largest coastal plain estuary
Including nearly 190,000ha of coastal, intertidal and sub-tidal habitat that is recognised internationally as being under threat.

Nature Protected in designated areas
Reflecting its importance, the estuary is one of the most extensively designated areas for nature conservation in the UK.

Largest tidal range in Europe
The huge tidal range (one of the largest in the world) and configuration of the estuary combine to produce a wave that travels upstream for more than 30 miles, at speeds of up to 15mph.

100,000 Birds winter feeding ground
The Severn Estuary is an overwintering feeding ground for up to 100,000 waterfowl and waders.

Blue Carbon locked up in habitats
Vast quantities of carbon are stored by the Severn, particularly in coastal habitats such as saltmarsh. Coastal wetlands can sequester carbon faster and store more carbon per unit area than tropical forests.

Iconic surrounding landscapes
The Severn Estuary is surrounded by spectacular protected landscapes, from the Exmoor National Park to the Glamorgan Heritage Coast and the Quantock Hills Area of Outstanding Natural Beauty.
BLUE CARBON

The long-term carbon storage rate in saltmarsh sediments, for example, has been estimated at 2.1 tonnes/ha/year. The Severn offers significant opportunities to mitigate for and adapt to the effects of climate change. Areas of intertidal mud and saltmarsh can also in many instances provide more effective, lower cost strategic defences against sea level rise than traditional hard defences.

BIRDS

Wintering wildfowl migrate from as far away as Siberia and Africa to this internationally recognised feeding ground, stop-over and roosting site. The mudflats and the organisms they support are a highly productive storehouse.

ICONIC LANDSCAPES

National Parks, Areas of Outstanding Natural Beauty, and Heritage Coasts help safeguard some of the most outstanding places, but the sheer variety of the landscape is a wonder in itself - from pollarded willows and small orchards with unique varieties of Perry pear, to the agricultural coastal plain with its complex pattern of ditches, and parts of the estuary that feel quite remote.

HABITATS

The amount of subtidal and intertidal habitat recognised internationally as under threat is bigger than the entire area of Greater London. The Severn also accounts for nearly a third of all the UK’s Natura 2000 estuary habitat and includes approximately 1,400ha of saltmarsh habitat - the largest aggregation of saltmarsh habitat in the south and south west.

FISH

The nursery habitats sustain commercial fish stocks and the estuary is internationally important for highly threatened migratory species - in addition to salmon, eels and three species of lamprey, three of the five known breeding populations of shad are found here.

PROTECTING NATURE

Designations range from internationally recognised sites including Special Protection Areas, Special Areas of Conservation, and Ramsar sites to national and local designations including Sites of Special Scientific Interest, National Nature Reserves and Local Nature Reserves.

TIDAL RANGE

The vast tidal range is an important part of the estuary’s significance - to both people and wildlife. Many local businesses benefit from the tourism the Severn Bore creates. And catching the bore not only offers the ultimate rush for the surfers it also offers a free ride to migrating elvers from the Sargasso Sea, restocking the estuary’s rivers and wetlands.
Creating and Restoring Coastal Habitat

An example of how this can be done within the Severn Estuary is WWT Steart Marshes, on the Steart peninsula near Bridgwater, Somerset. People living on the Steart peninsula were threatened by storm surges and rising sea levels and they worked with WWT and the Environment Agency to come up with a solution that directly protects their homes and businesses, as well as part of the National Grid. To alleviate the threats and to create WWT Steart Marshes new embankments were built a kilometre or more inland and in September 2014, the old embankments were breached, allowing the tide to cover 300 ha of low-lying land for the first time in centuries. The newly created saltmarsh and intertidal area now plays a key part in the Severn Estuary’s flood management, which protects 100,000 homes and businesses worth £5 billion on both sides of the estuary, in places like Cardiff, Newport, Berkeley, Avonmouth, Portishead, Clevedon and Burnham.

Once seawalls are breached, saltmarsh will form as the ebb and flow of the tides cuts channels and deposits silt and the seeds of salt tolerant plants. The new saltmarsh will act as a vast buffer for the new embankments, sapping energy from the tides and helping to protect nearby villages.

Of course, restoring the estuary will provide much more than resilience of coastal communities to climate change; it will provide a wealth of wildlife habitat, enhance the wonderful wild landscapes of the estuary, and also provide a range of other social and economic benefits.

As was the case on the Steart peninsula, many of the areas identified on the map as being vulnerable to sea level rise and thus with potential for intertidal and associated habitat creation or restoration are under multiple private management or ownership. While any habitat alteration will of course depend upon the capacity, desires and ambitions of individual landowners, we hope that many people will find this restorative Vision as exciting as we do.


WWT Steart Marshes

The Steart Coastal Management Project has resulted in considerable changes to land use, with some areas taken out of cultivation and re-wetted to create a range of intertidal and freshwater habitats to benefit wildlife and reduce flood risk. A study has estimated the economic value of some of the benefits that 232 ha of the coastal wetland habitats at WWT Steart Marshes could provide, over and above those of the original land use. Excluding the flood risk benefits, which were not calculated for this study, a conservative estimate of net benefit was £491,000 to £914,000 a year from climate regulation, recreation and tourism, education, habitat provision and food provision. Although these benefits will obviously vary somewhat among sites, scaling this up to the 6,000 ha Vision coastal habitat creation/restoration target gives a broadly indicative £10 million to £20 million net annual benefit for these services alone.

Some of the benefits of intertidal habitats

- Saltmarsh acts as a significant carbon sink. The long-term carbon storage rate in saltmarsh sediments has been estimated at 2.1 tonnes/ha/year.
- Four managed realignment sites in the Blackwater Estuary, Essex, totalling about 220 ha in area, are sequestering and storing 15 tonnes of phosphorus per year and 690 tonnes of CO₂ equivalent per year.
- The 400 ha Alkborough Flats managed realignment scheme in the Humber Estuary cost approximately £10 million to build and provided £12 million of storm protection benefits to land and property. Other ecosystems services benefits linked to the scheme were estimated at about £1 million per annum.
- The RSPB Frampton Marsh reserve promotes tourism, and provides income and employment to local communities, in the Lincolnshire Wash area. A five year investment programme (approximately £1.6 million), which included land acquisition, habitat restoration and the development of visitor facilities, has resulted in the reserve supporting 16 full-time equivalent jobs, with the total spend by visitors to the reserve around £320,000 in 2008. Habitat spend attributable directly to the reserve was around £30,000, and local spend attributable directly to the reserve was around £290,000.
FROM VISION TO REALITY
THE URGENT CHALLENGE

We hope this Vision resonates with the many that look to a brighter future for this huge west of Britain diversity of interests. The challenge is for all interests to come together and work collectively to ensure that the estuary is restored to deliver more for nature and people. Our ‘Seven Steps’ frame this challenge. Please join in and help catalyse a sustained estuary-system wide leadership for change.

THE SEVEN STEPS TO A MAGNIFICENT ESTUARY

1. AVOID FURTHER LOSS OF NATURE
2. RESTORE NATURE
3. USE COASTAL HABITATS TO REDUCE CLIMATE CHANGE IMPACTS
4. USE THE ESTUARY TO HELP REDUCE CARBON EMISSIONS
5. GROW KNOWLEDGE TO ENABLE BETTER DECISION MAKING
6. DEVELOP - IN HARMONY WITH NATURE - TIDAL RENEWABLE ENERGY
7. ESTABLISH STRONGER GOVERNANCE FOR A SUSTAINABLE SEVERN

The Severn Vision is a partnership project between: