

A sustainable coastal defence re-creating wildlife habitats alongside economic farming methods, Abbott's Hall Farm - UK

1. Policy Objective & Theme

- ADAPTATION TO RISK: Managing impacts of climate change and safeguarding resilience of coasts/coastal systems
- ADAPTATION TO RISK: Preventing and managing natural hazards and technological (human-made) hazards
- SUSTAINABLE ECONOMIC GROWTH: Balancing economic, social, cultural development whilst enhancing environment

2. Key Approaches

- Integration
- Participation
- Technical

3. Experiences that can be exchanged

The implementation of a managed realignment scheme creating new wetland habitat whilst providing protection against flooding.

4. Overview of the case

The development of saltmarsh, in an area opened up to tidal inundation by the breaching of 3km of hard sea defences to realign the shoreline. It has created nationally important habitat provided a more sustainable approach to flood defence.

5. Context and Objectives

a) Context

Abbotts Hall Farm Estate is situated along the 6 km long tributary of the Blackwater Estuary in Essex. This estuary is one of the largest in East Anglia. The 287 ha. site used to be protected by a 3.5km stretch of sea wall requiring constant, costly maintenance. It was built 300-400 years ago. The land behind the wall was largely high-grade agricultural land and the economic justification for continuing to maintain such a wall was negligible. A cost-benefit analysis identified that the preferred option was not to maintain this defence.

Choosing where to locate the realignment was difficult, Abbotts Hall was chosen because height above sea level was the critical element and funds were available to implement the scheme. Saltmarsh will not develop if the land to be inundated is at the wrong level. If it is too low, mudflats develop, while if it is too high the inundation does not take place and erosion can occur. Although mudflats provide a natural form of sea defence and a valuable habitat for invertebrates and birds, it can be perceived as an eyesore and risks losing public acceptance. Land that does not flood defeats the point of the exercise.

b) Objectives

The aim was to create a more sustainable coastal defence. By absorbing wave and tidal current energies saltmarsh can provide a natural flood defence. Moreover, managed realignment of the coastline can moderate tidal surges by creating space

for the tidal surge to move into allowing them to move sideways, thus alleviating pressure on flood defences elsewhere in the system. It is anticipated that the saltmarsh created at Abbotts Hall and the rising ground behind the saltmarsh zone will, together, provide a 'soft and flexible' defence better able to respond to future sea level rise than the existing fixed, hard structures. The development of saltmarsh, in the area opened up to tidal inundation by the breaching of some 3km of hard sea defences to realign the shoreline, will create nationally important habitat and provide a significant contribution to the national Biodiversity Action Plan (BAP) targets for saltmarsh creation.

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Management

Essex Wildlife Trust purchased the Abbotts Hall estate with additional funding from World Wildlife Fund-UK and the English Heritage Lottery Fund. Other partners involved in the project included Natural England and the Environment Agency (the Agency). The Agency's role comprises management of the newly created habitats. Other public, voluntary and private parties which contributed were the University of East Anglia, Harwich Haven Authority, the Association of British Ports and Queen Mary University of London.

b) ICZM tools

Detailed surveys took place in 2000. Water flow through the breaches, its scouring effects, sediment movements and how best to distribute the tidal flow on the landward side of the seawall were all modelled. As a result 5 breaches were proposed in the sea wall, 4 approx 10m. wide, 1 at 100m. Behind three of the breaches both main and feeder creeks 1-2m wide and 1m deep were created to distribute the inflowing water, whilst at both ends of the site counter walls were made to protect neighbouring land. A sill at 1.6m ODN was also left at the bottom of one breach in order to retain some water on its landward side at low tide.

The sea wall was breached in four out of 5 strategic locations in 2002. More than 80 hectares of the area that is flooded is expected to regenerate as a range of natural tidal habitats including SAC saltmarsh and SPA freshwater wetlands. Before the old sea wall could be breached several constructions were needed. Spur walls were built to protect the neighbouring properties. New creek systems were needed to promote the formation of new saltmarsh. The breaches in the sea wall had to be excavated to allow the tidal flooding of former arable land. A freshwater protection bund was constructed for an existing pond providing habitat for the great crested newt (a protected species) and the construction of a new freshwater lake to compensate for the loss of the ponds that were likely to become saline or brackish. Finally, three viewing hides for visitors were made. The sea is now back to where it was before the original seawalls were built. Accessibility is good with a good selection of public footpaths leading to the estuary and to the bird hides.

7. Cost and resources

Land costs came to £2.7 million; the managed realignment costs came to £645,000

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

The work at Abbotts Hall has shown to be a cost effective, sustainable solution to coastal defence and also succeeded in producing major benefits towards national biodiversity targets. 49 ha of mudflat and saltmarsh and 35 ha of coastal grassland is being created.

9. Success and Fail factors

Stakeholder engagement: It was vital to identify all the stakeholders correctly and to communicate with them as early as possible. Much of the consultation took place through personal meetings. In short, consult widely and early; be sensitive to differing viewpoints & be totally honest

Location: The choice of where to locate the realignment was vital for success.

Finance: There are two aspects: raising the funds for the initial work and then deriving an income from the project. Both are critical to the creation of a sustainable coastline. Significant investment is required to acquire the land and plan, design, and execute the realignment. The main economic benefits are the reduced costs of flood defence. Alternative means of generating income are e.g. sheep grazing, alternative crops such as samphire and asparagus, sport fishing, development of a marina. These options can boost local economies through increased recreational use and create jobs. Income was also received from the Countryside Stewardship Scheme 2001-11.

Planning: Application should be submitted as early as possible to ensure a quick(er) decision.

Publicity: It is vital to manage the publicity of the project carefully and creatively by developing a communications strategy involving all the partners at the outset

Design: The design was viewed from as many perspectives as possible to ensure a balanced overall outcome.

Construction: The site must be developed in such a way that it prevents serious disruption to the species occupying the area. The concerns of project stakeholders must be considered.

Visitor Information: Good interpretation boards and literature should be in place at an early stage,

Maintenance & Monitoring: Realignment is a process that continues into the future, and thus presents responsibilities for all involved. The monitoring process provides an early warning of trends or changes; the maintenance process responds to this information.

10. Unforeseen outcomes

Effects on landscape, nature and culture values during the execution were negligible. The breach has benefitted fisheries by creating fish nurseries. It is also acting as a carbon sink and is a haven for wildlife with bird usage higher than previously recorded. Lapses in design continue to present problems long after it is too late to adjust them e.g. spoil left as earth banks alongside the creeks to provide escape routes for reptiles look unnatural.

11. Prepared by

Alan Pickaver, Coast & Marine Union (EUCC), NL

12. Verified by

Sarah Allison, Essex Wildlife Trust, UK

13. Sources

- ComCoast flood risk management schemes 2007 Rijkswaterstaat, Netherlands
- ComCoast Projects Abbotts Hall Farm and Horsey Island (UK) 2007 Rijkswaterstaat, Netherlands
- Fact Sheet 5 Coastal Squeeze 2004 Abbotts Hall Farm
- Fact Sheet 9 Lessons Learned from Realignment 2005 Abbotts Hall Farm
- Fact Sheet No.6 Threats to coastal habitats 2004 Abbotts Hall Farm
- Sustainable Flood Defences- Managed re-alignment at Abbotts Hall, Essex Environmental Statement Final Report. 2001. Environment Agency



Abbotts Hall Coastal squeeze (257.7 KB) 

-  Abbotts Hall Threats to habitats (315.78 KB) 
-  Abbotts hall lessons learned (281.96 KB) 
-  Abbottshall_Horsey - ComCoast (789.74 KB) 
-  Comcoast - Flood_risk_managment_schemes (9.04 MB) 