



Dunwich coastal defence demonstration project

Project Summary SC050071/S

Innovative, low-cost and environmentally sensitive coast protection methods are required in locations where other traditional methods of defence are not justified for economic or environmental reasons. A team of partners, including the Environment Agency, has carried out a five-year programme to monitor the performance and effectiveness of a project to trial a new, low-cost technique to stabilise the beach in front of the cliffs protecting Dunwich village on the Suffolk coast.

Dunwich today comprises of the ruins of a church and a friary of national heritage importance. As the area between Dunwich and Walberswick is a Site of Special Scientific Interest (SSSI), we needed to find a coastal management option to suit and work with these important habitats and natural coastal processes.

The aim of the demonstration project was to evaluate the effectiveness of retaining beaches using geomembrane structures filled with locally won beach shingle and sand material. The scheme consisted of eight humps running down the beach in a pattern similar to that used conventional timber groynes. The humps were created by placing geotextile bags filled with shingle and sand in trenches. The bags were wrapped and covered in a geotextile to anchor them to the beach and to contain the beach material. Geomembranes were used to provide flexibility in the structures, allowing them to adjust to variations in the beach without exposing any vertical edges. The aim was for the humps to protrude above normal beach level by about half a metre.

Following the completion of the works in March 2007, monitoring was undertaken for five years to investigate the hydraulic performance and the condition of the various elements. The monitoring regime consisted of a series of beach cross-sections, aerial photographs and visual inspections.

The project showed that the use of geomembranes and local beach material can provide a low-cost option for constructing structures intended to stabilise eroding beaches. The monitoring data indicate that the structures may have been in place during a period of relative calm when the beach has been accreting naturally. There was no detectable evidence that the

structures were having a major impact of the condition of the SSSI or interrupting shoreline processes.

As the humps have not yet experienced long periods of pressure from the weather and sea conditions, the project team recommended that they remain in place to allow continued monitoring and a judgement on the longer term impacts and effectiveness. The team also noted the need for careful selection of the plant used to construct schemes of this type and the need for further work on how best to handle and position the geotextile without jeopardising the design shape of the 'geo-humps'.

The results of this demonstration project have provided the Environment Agency, local authorities and coastal defence practitioners with valuable and real life information about the application of a new, innovative and low-cost technique for beach stabilisation. If the approach trialled here should prove effective in the long term, it may have potential for replication elsewhere in the UK.

This summary relates to information from the following project, reported in detail in the following output:

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Title: Dunwich coastal defence demonstration project: assessing the effectiveness of geomembrane structures filled with locally won beach shingle or sand material to reduce cliff erosion

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Project manager: Stefan Laeger, Evidence Directorate

Research Collaborators:

Crown Estate
Dunwich Parish Meeting
Dunwich Town Trust
Natural England
Environment Agency Anglian Region
Steven Hawes Associates
Suffolk Coastal District Council
Suffolk Coast & Heaths AONB
The Adnams Charity

Research Contractor: Terry Oakes Associates Ltd,
71 Kirkley Park Road, Lowestoft, Suffolk NR33 0LQ
Tel: 01502 581822

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Email: fcerm.evidence@environment-agency.gov.uk.

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E: enquiries@environment-agency.gov.uk.

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