Below are some examples of past coastal defence schemes built on the Isle of Wight.

St Helens Duver Seawall

The Isle of Wight Council undertook significant repairs to the seawall at St Helens Duver, Bembridge Harbour, in spring 2012.

The £1.1 million pound project included works to modify the sea wall and replace the promenade deck. The wall had deteriorated over time and required significant improvements. In January 2012, a contract was awarded to local firm Imphouse to carry out repairs. The works involved encasing the seawall in reinforced concrete and replacing the promenade deck over most of the 650 metre frontage. The works were carried out during the Spring to avoid the main peak summer season and winter environmental constraints relating to the feeding activities of over-wintering birds.

Photos show the completed seawall encasement scheme and also a section of masonry wall refurbishment around a historic feature. Photos taken in 2012.

Seaview Coastal Defence Scheme
A £4.7 million coast protection scheme for the Seaview Duver frontage between Oakhill Road and Springvale was completed in April 2004. Constructed over a period of one year by Van Oord ACZ the project was commissioned by the Isle of Wight Council and designed by its consulting engineers, Royal Haskoning. The scheme was grant-aided by the Department for Environment, Food and Rural Affairs (Defra).

The scheme provides the required standard of protection against coastal erosion and sea flooding for at least the next fifty years taking full account of the predicted impacts of climate change. The scheme comprises a 550m length of stone-faced reinforced concrete seawall protected on the seaward side by a rock armourstone revetment.


The Completed Seaview Duver Scheme

Additional facilities include an upgraded slipway and pedestrian walkways on the seaward and landward sides of the wall together with seating. In order to maximise the benefit of the appearance of the final scheme the Council appointed John Maine RA, a sculptor and artist, to contribute to the aesthetic qualities of the design.

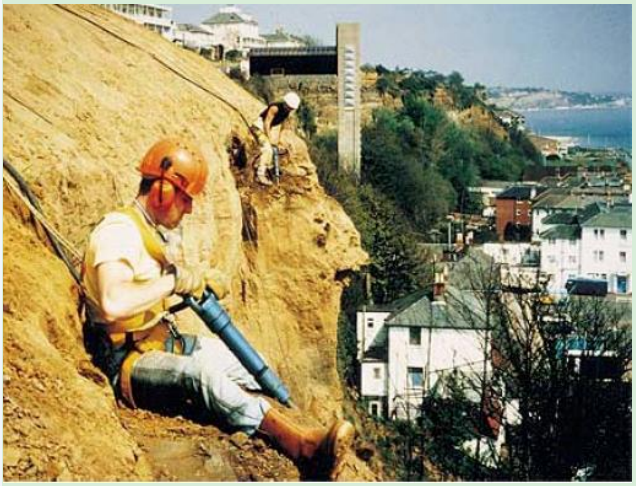
The foreshore and intertidal area along this part of the Seaview coast is designated as a Special Protection Area under the European Birds Directive. In order to mitigate any impacts arising from the civil engineering works on this European site the Council acquired, for a peppercorn rent for the next fifty years, 20 acres of marshland and reedbeds on the landward side of the former toll road from the Ball family. With the assistance of English Nature, the Environment Agency, local residents and environmental specialist consultants ECOSA a nature reserve was developed which includes public access and the provision of a hide for bird watching. The area was improved in order to maximise the environmental quality, particularly for wading birds, ducks and geese. The nature reserve was named after Alan Hersey, who was for many years a Parish, Borough and County Councillor who had a great interest in the history and environment of the village of Seaview.

A formal opening of the coast protection scheme by HRH The Duke of Edinburgh took place in August 2004. The scheme was awarded a special prize by the Isle of Wight Society for the quality of the conservation and landscaping work. In addition the scheme was awarded the New Civil Engineer/Association of Consulting Engineers 'Outstanding achievement award' in 2005.

Shanklin/Sandown Cliff Management

Sandown Bay is backed by 3.5km length of weak sandstone cliffs between Shanklin and Sandown on the south-east coast of the Isle of Wight. These cliffs lie within a tourist area and have a history of cliff falls. Cliff top recession, although relatively slow, has placed some cliff top paths at risk as well as structures in areas of public access and amenity. Furthermore the debris from rockfalls, cliff face erosion and from the talus slope at the cliff base has presented a potential risk to the seafront amenities adjacent to the cliff base. The cliffs are formed of Lower Greensand, and are near vertical and up to 40 metres high.

Stabilisation measures undertaken have consisted of realignment of the cliff top, scaling, rock anchoring and rock bolting, buttressing, timber catch-fencing, drainage and structural support. Approximately £1.5m was spent on cliff stabilisation in the years leading up to 2000 and further works have occurred since. Further information on the cliffs is available in CCCI Project Geotechnical Study Area 7, Sandown Bay Cliffs, IOW, IW Council and EU LIFE project, 2000.



Past cliff stabilisation works in Shanklin.

Monk's Bay, Bonchurch

The area of Monk's Bay has long been subjected to aggressive marine erosion causing the coastal slope to become inherently unstable. Following the wet winter and severe storms of 1990/91 a scheme was developed to defend the area. It involved using a rock armoured revetment against the existing seawalls on the Western frontage together with an offshore breakwater and beach nourishment scheme protecting the Eastern half. The material used was Norwegian granite. 25,000 tonnes were imported along with 40,000 cubic metres of sand and shingle. This scheme cost in the region of £1.4 million.

Wheeler's Bay, Ventnor

Wheelers Bay forms part of the toe of the Ventnor Undercliff Landslide Complex. A study by the former Department of Environment (1988-91) highlighted the maintenance and improvement of coastal defences as a key strategic task in reducing the impact of landsliding on the local community. Ground movements within the slope behind Wheeler's Bay showed there was significant risk to the existing seawall and property and infrastructure upslope. The solution consisted of moving the coastal defences seaward and reconstruction of the slope to a shallower profile. The protection comprised a 15,500 tonne revetment with an outer layer of 6-10 tonnes of rocks. 23,000 tonnes of locally obtained Chalk was used as fill material to provide a stable slope behind the revetment. The upper slope was strengthened with soil nails and grass matting. The total cost of the scheme was £1.6 million.

Soil nailing the upper slope

Constructing the new coastal defences seaward of the existing wall in order to provide support for the slope behind.

Wheelers Bay to Bonchurch seawall

The Bonchurch to Wheeler's Bay coast protection scheme was opened in 1987. Designed for South Wight Borough Council by Lewis and Duvivier, the stepped seawall scheme prevents coastal erosion risk for part of Bonchurch as well as assisting in reducing ground instability.

Western Cliffs, Ventnor

Storm Damage in 1990 resulted in aggressive marine erosion of the Western Cliffs in Ventnor which are made up of loosely consolidated Chalk debris deposited at the end of the last Ice Age. If the erosion had continued unchecked there was significant risk that it would activate the ancient landslide complex behind it. It was decided to protect the base of the cliffs from erosion by providing a rock revetment of Somerset limestone which was brought in by barge. This scheme cost £1.2 million and was completed in 1992.

Castle Cove, Steephill, near Ventnor
Storm damage in the winter of 1990 resulted in the destruction of a wooden crib-work structure at the base of the slope at Castle Cove. The wet weather also prompted the slope to fail and it was decided that a scheme would be implemented to protect the area from any further erosion. The slope itself was drained and a section of topsoil removed for storage to be returned on completion of the scheme, as the area was regarded as of high nature conservation interest. A rock revetment was then built allowing vehicular and pedestrian access to Steephill Cove for the first time. The scheme was completed in 1995 when the topsoil was restored. Recolonisation was relatively slow but the site already showed considerable entomorphological and botanical interest. The scheme was grant-aided by the Ministry of Agriculture, Fisheries and Food (now Defra).

Steephill Cove
Steephill Cove is a small bay situated approximately 2km to the west of Ventnor and is backed by residential development. The Victorian defences were partially upgraded when the Council was undertaking adjacent works on the Ventnor Western Cliffs in 1992/93. At that time it was recognised that further work may be required to the wall in the centre of the bay in years to come. A modest project (£315,000) was approved by the Department for Environment, Food and Rural Affairs (Defra), with work being completed in summer 2006.

Castlehaven Coast Protection Scheme
Following the exceptionally wet winter of 1994 and the resulting landsliding along many parts of the Isle of Wight coast the Council started to develop a major coast protection and slope stability improvement scheme for the Castlehaven frontage at Reeth Bay to the east of St Catherine's Point, Niton Undercliff. A £6.2 million coast protection and slope improvement scheme was completed in 2004. The scheme was commissioned by the Isle of Wight Council and was constructed by Van Oord Construction ACZ with support from drainage sub-contractors TJ Brent and specialist drainage engineers Groupe RESS from France.

The scheme comprised the construction of a 550m long rock revetment on the foreshore at Reeth Bay to prevent erosion of the sea cliff. An extensive system of drainage pipes and syphon drains was provided in roadways in the hinterland in order to reduce ground water levels to the summer mean. For the first time in the

United Kingdom a system of syphon drains was used in order to lower ground water levels. Tested at over 100 sites elsewhere in Europe this system has proved successful in reducing ground instability by de-watering landslides of this kind.

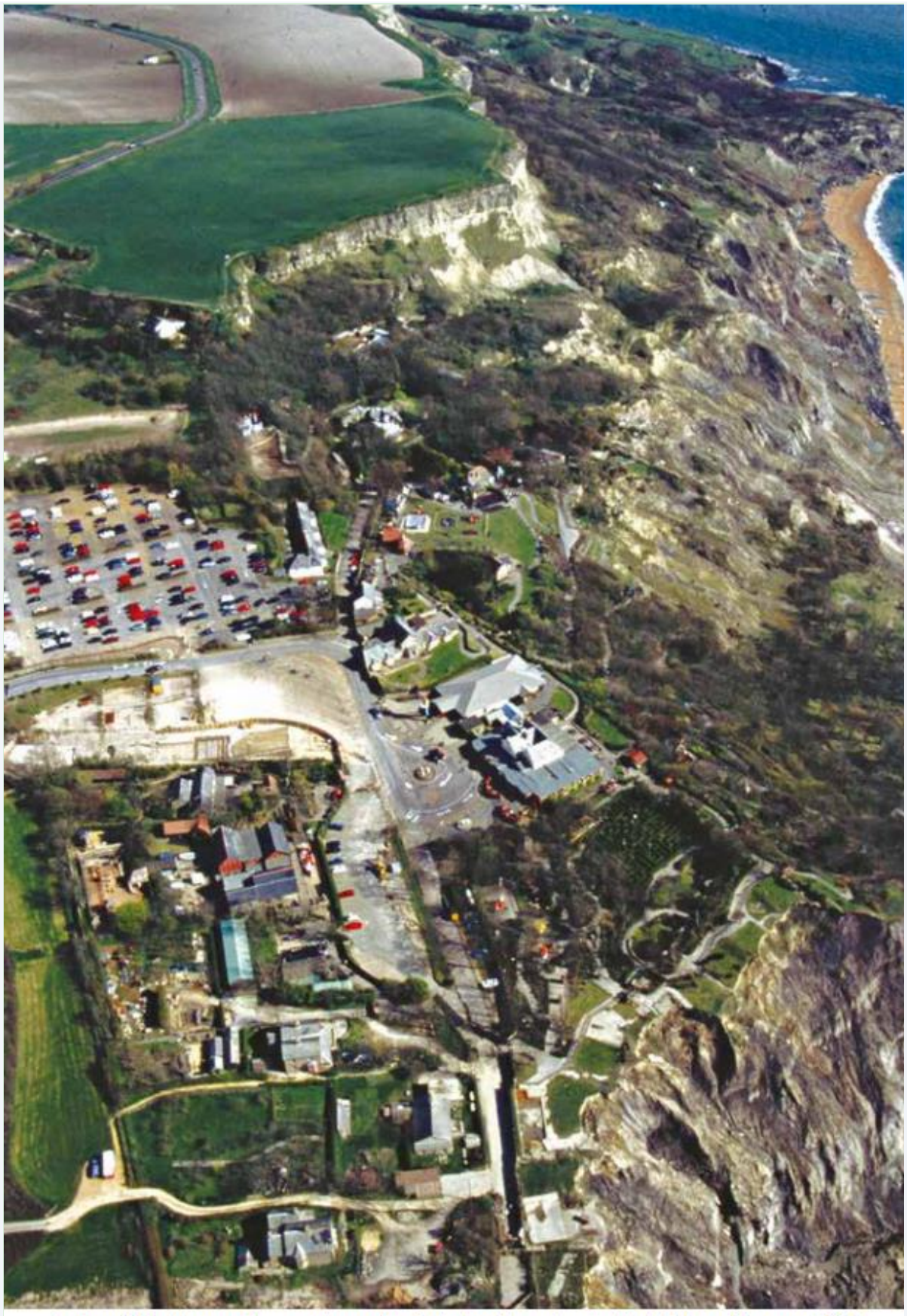
The coastal cliffs along this part of the Undercliff are of particular importance as a habitat for species of insects including rare bees and wasps. In order to mitigate any impacts arising from the civil engineering scheme the Council acquired 20 acres of rough pasture land along the cliff edge in the vicinity of Puckaster Farm as environmental mitigation for the scheme and a management plan for the area was prepared by the Council's environmental consultants.

The project was grant-aided by the Department for Environment, Food and Rural Affairs (Defra).

Blackgang

In January 1994 the impact of coastal erosion and high rainfall resulted in further extensive landslide activity on the 170m high cliffs at Blackgang area. These movements undermined several houses at the top of the cliff. The initial emergency response was to ensure public safety and security of the area which was co-ordinated by the Council. Further to this the Council commissioned a geomorphological investigation to identify the extent, causes and potential for further landsliding or slope movements. The study also identified a range of options for managing the problems at Blackgang, which included the installation of an early warning system and retreat of development.

The land behind the cliff top is includes a local theme park. Due to the large scale of natural processes and the absence of a financially and environmentally acceptable slope stabilisation and coast protection scheme, the policy of managed retreat of clifftop development and landuse is the only viable option.



A view of Blackgang village and coastline following the extensive landsliding of January 1994