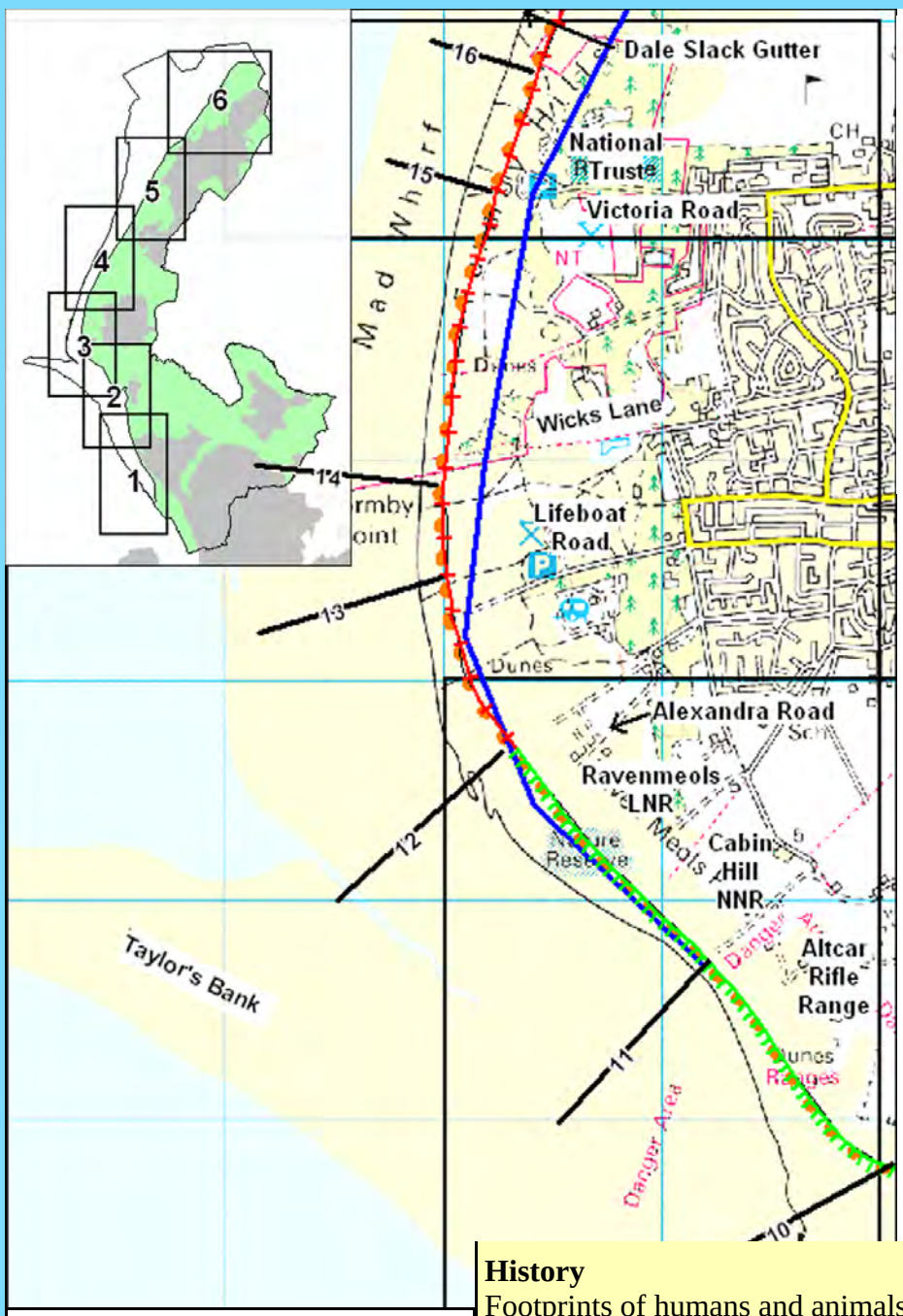
Sefton Coastal Process Monitoring Report 2000-2004

Area 3 - Formby Summary



- Informal Rubble
- Rock Armour
- Sand dunes
- Accreting Sand dunes
- Eroding Sand dunes
- Saltmarsh
- Saltmarsh/embryo dune
- Sea Wall
- Training Wall
- Profile Line
- Prediction of coastline location (2050)

Length of coastline
6km Total
6km sand dunes

Monitoring carried out
Profile lines
Beach topographic survey
False colour infra-red aerial photography
Colour aerial photography
Coastal defence inspections
GPS survey of sand dunes
Tidal contour definitions

Designations
SSSI, cSAC, SPA, Ramsar, NNR

Co-ordinates
Top right 329000 409000
Bottom Left 325000 403000

Introduction
This report summarises the coastal process monitoring and coastal defence work carried out by Sefton Council 2000-2004 and provides relevant background and historic information for Area 3 - Formby.

Coastal Defence Policy
From the River Alt Pumping Station north to Formby Point the policy is to allow the coastline to evolve naturally. From Formby Point to Dale Slack Gutter the policy is Natural Defence Management. Natural defence management is maintaining the integrity of soft defences, sand dunes and saltmarsh, as a coastal defence.

History
Footprints of humans and animals, considered to date from 3,500 to 4,000 years ago, have been found on the shore at Formby embedded in layers of mud from a historic shelving estuarine shoreline.

The present sand dune system dates from between 1400 AD and 1600 AD, previous dune systems having been destroyed during periods of coastal instability.

In 1579 the mouth of the Alt was approximately 1km further north than at present. Since then the Alt mouth has moved steadily south, driven by sand-drift from Formby Point.

Sand-drift continually impeded the drainage of the River Alt and in the years following 1797 gorse faggots were laid down on the shore to trap the drifting sand. A range of sand dunes grew over the artificial bank enclosing the land on which the Altcar Rifle Range was developed.

After 1900, erosion began to set in near Victoria Road. However, the erosion was progressive over a widening front and continued throughout the 20th century. At present the shoreline is eroding between Lifeboat Road and the Freshfield / Ainsdale boundary. The geographic limits of erosion at any time vary according to the ever-changing influence of wind, waves and tides. Accretion occurs along the Rifle Range dune front and from Ainsdale north into the Ribble Estuary.

Site Description

This area sees some dramatic changes due to Formby Point being the meeting zone between the Mersey and Ribble Estuaries.

Sand dunes run the length of this section, and continue northwards to Weld Road, Southport, displaying characteristics of both accreting and eroding dunes. The eroding sand dunes from Wicks Lane north to Ainsdale present a steep cliff-like appearance immediately after a storm. In contrast the accreting dune system south of Alexandra Road is characterised by low hummocky formations at the dune edge with an abundant growth of dune-binding grasses.

Where erosion is occurring the foreshore is characterised by outcrops of silt inter-bedded with sand; this is underlying material forming the 'foundations' of the beach. It is within this silt that neolithic footprints have been discovered.

The trained shipping navigation channel of the River Mersey swings seawards south of Formby Point. A large sand spit known as Taylor's Bank has now formed a tongue which extends 7 km seawards from Formby Point.

The ridge (crest) and runnel (trough) formation for which the Sefton Coast is notable is well developed at Formby. The runnels drain southwards towards Taylor's Bank and northwards towards Southport

The foreshore is protected by several nature conservation designations; a candidate Special Area of Conservation (cSAC), Site of Special Scientific Interest (SSSI), RAMSAR site and Special Protection Area (SPA).

Summary of Coastal Processes

- Sediment is transported from offshore to Taylor's Bank and from Formby Point towards the Ribble and the Mersey.
- The onshore movement of sediment partly compensates for material lost by erosion. Not all the material arriving from offshore is sand, mud and silt are also being moved.
- Dredging and training in the River Mersey encouraged the growth of Taylor's Bank, which shelters the coastline south of Formby Point but deflects waves onto the Freshfield coastline.
- Formby Point is quite close to a natural balance and so it accretes during favourable conditions and erodes when high-energy waves break on the backshore.
- Sediment sizes are typically fine to medium sands with a slight fining occurring offshore with sediments generally coarser on the ridges and finer in the runnels.
- The ridge and runnel features run parallel to the shoreline across the whole of this area and can be clearly seen in aerial photographs and beach profiles.
- The dune toe line is generally retreating across this area, with long term trends, since 1980, of between 0.5m and 4.0 metres per annum.
- Significant losses to the dunes occurred following storm events in March 2001 and February 2002.

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Summary of Coastal Processes cont...

- The amount of sand on the beach has remained fairly constant since 2001. There have, however, been some cyclical losses and gains between the years.
- Current predictions are based on an extrapolation of recent (1800 onwards) coastal evolution

Summary of Coastal Defence Works

- Several areas were planted with marram grass to stabilise the dunes.
- Active sand trapping techniques were used to prevent the growth of frontal blowouts.
- The construction/relocation of two boardwalks across the frontal dunes to the beach has help decrease visitor pressure on the fragile frontal dunes.

Other Projects of Interest

- Crosby to Formby Point Strategy – the council is currently developing a strategy for this length of coastline that will identify requirements for future coastal defence works and the appropriate timescale for their implementation. This will form the basis of grant applications to fund future works in this area.
- Wind farm – In August 2001 a proposal to construct a wind farm in Liverpool Bay was submitted by Seascape Energy. This proposal was followed up in 2002 with an extensive consultation programme. An Environmental Statement was prepared following various studies concerning the impacts on wildlife, sediment flows, shipping etc. In September 2002 a bid for consent to build Burbo Offshore was submitted.

Future Coastal Developments

A proposal for a sand dune study is being developed that will seek to refine our predictions of future coastline evolution taking into account the latest predictions and understanding of climate change. It will also look at the implications of the change on coastal habitats and develop a system for checking the 'health' of the sand dunes for coastal defence.

Further Information

The full coastal process monitoring report and all the reports in this series as well as other relevant information and a list of references can be found at:

www.sefton.gov.uk
www.seftoncoast.org.uk

These reports will be updated every three years and any interim reporting will be made available online. If information over and above this is required contact Graham Lymbery on 0151 934 2960 or email graham.lymbery@technical.sefton.gov.uk

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