

WESTLETON'S PEBBLES

Where the sea once washed.

A long time ago the North Sea deposited the millions of pebbles which underlie Westleton. Obviously sea and land levels and geography have greatly changed.

So when was the sea here? The gravel underlies Ice Age clays in places, and also contains occasional fossil sea-shells and whale bones, which suggest it was about 1¾ to 2 million years ago.



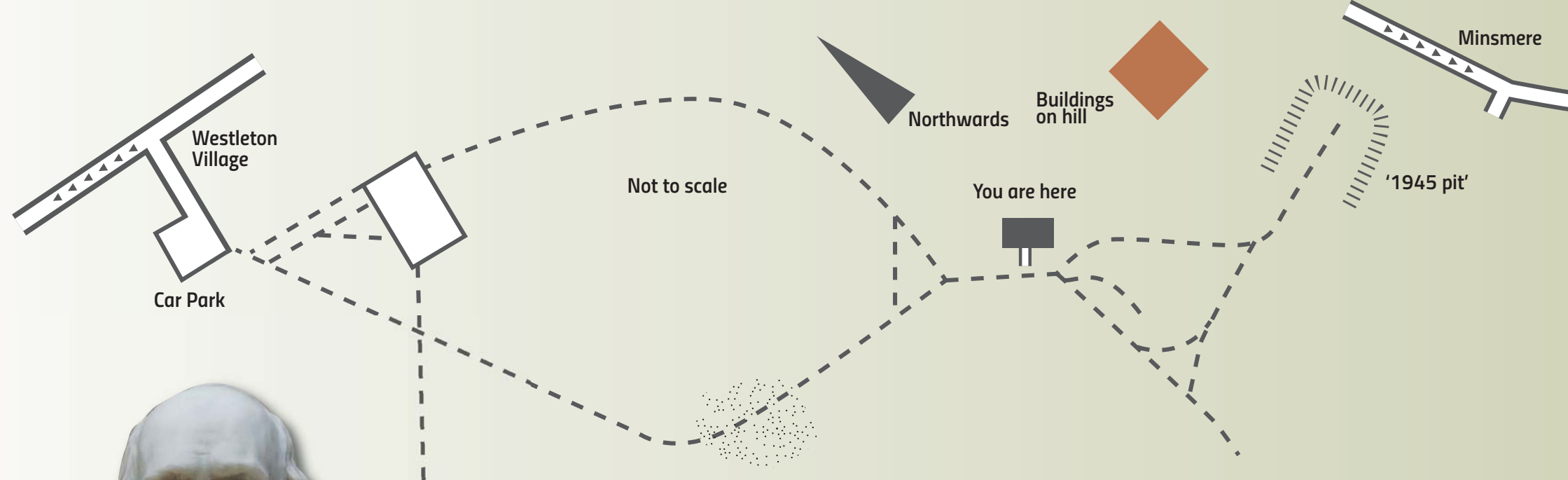
Talus Slopes

1945 pit. Talus forms from loose material falling from the face of in-situ gravel. These features plus the floor of the pit give ample opportunity to study the pebbles and cobbles. Most are well-rounded and most are of flint.

Water has eroded small gullies in the talus slopes and human footfall makes minor hollow-ways.

Map of the Common

There is a large area to see pebbles, talus slopes and in-situ sand and gravel in the '1945' pit. This area is a designated County Geodiversity Site. Other areas have been partly filled in with unwanted sand, etc. from commercial workings.



Looking at the Pebbles

Colour – externally often grey, having been bleached by weathering. Internally (seen in broken pebble) often brown-stained by iron minerals in groundwater.

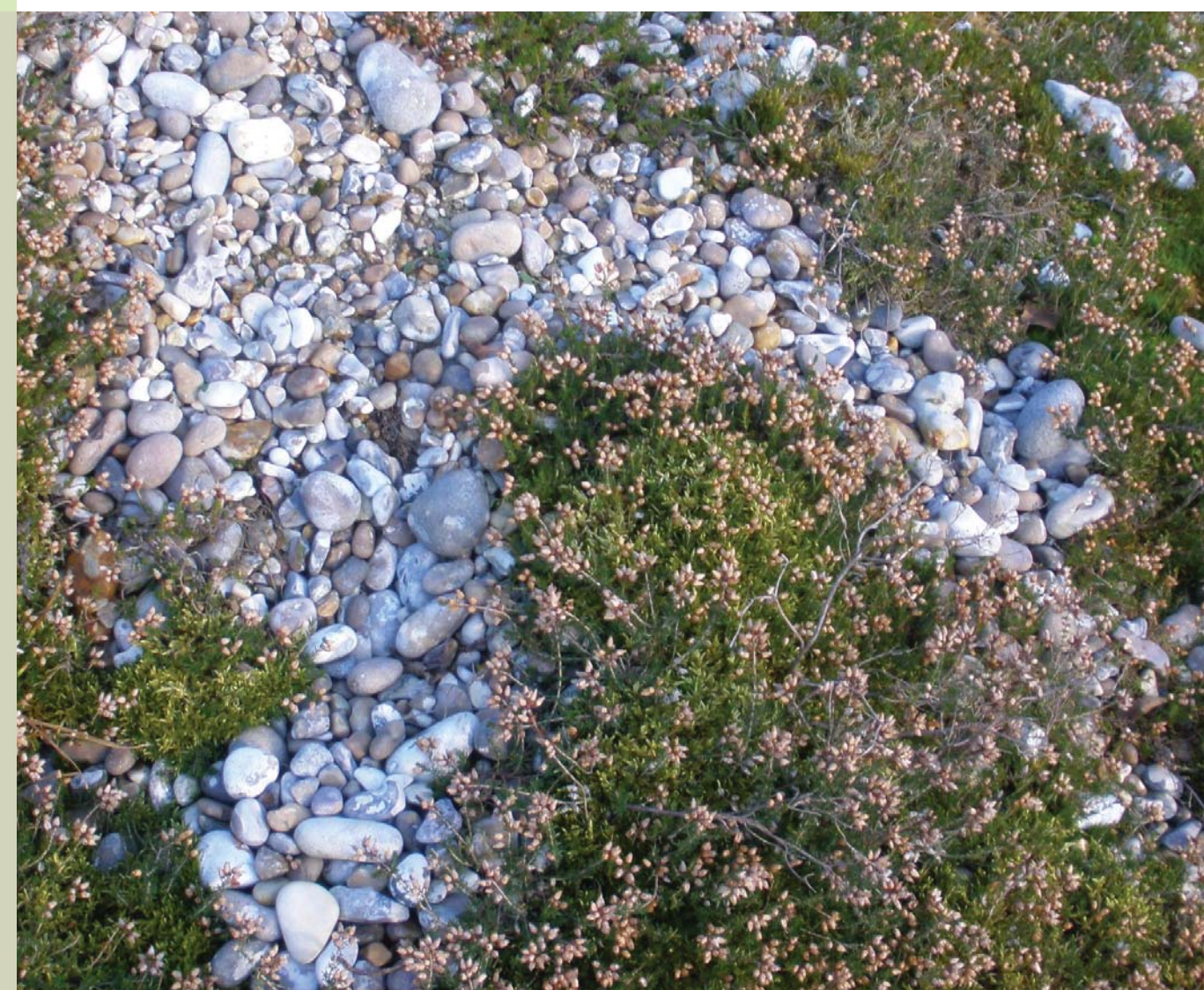


Looking at the Pebbles

Size – pebbles, also cobbles.

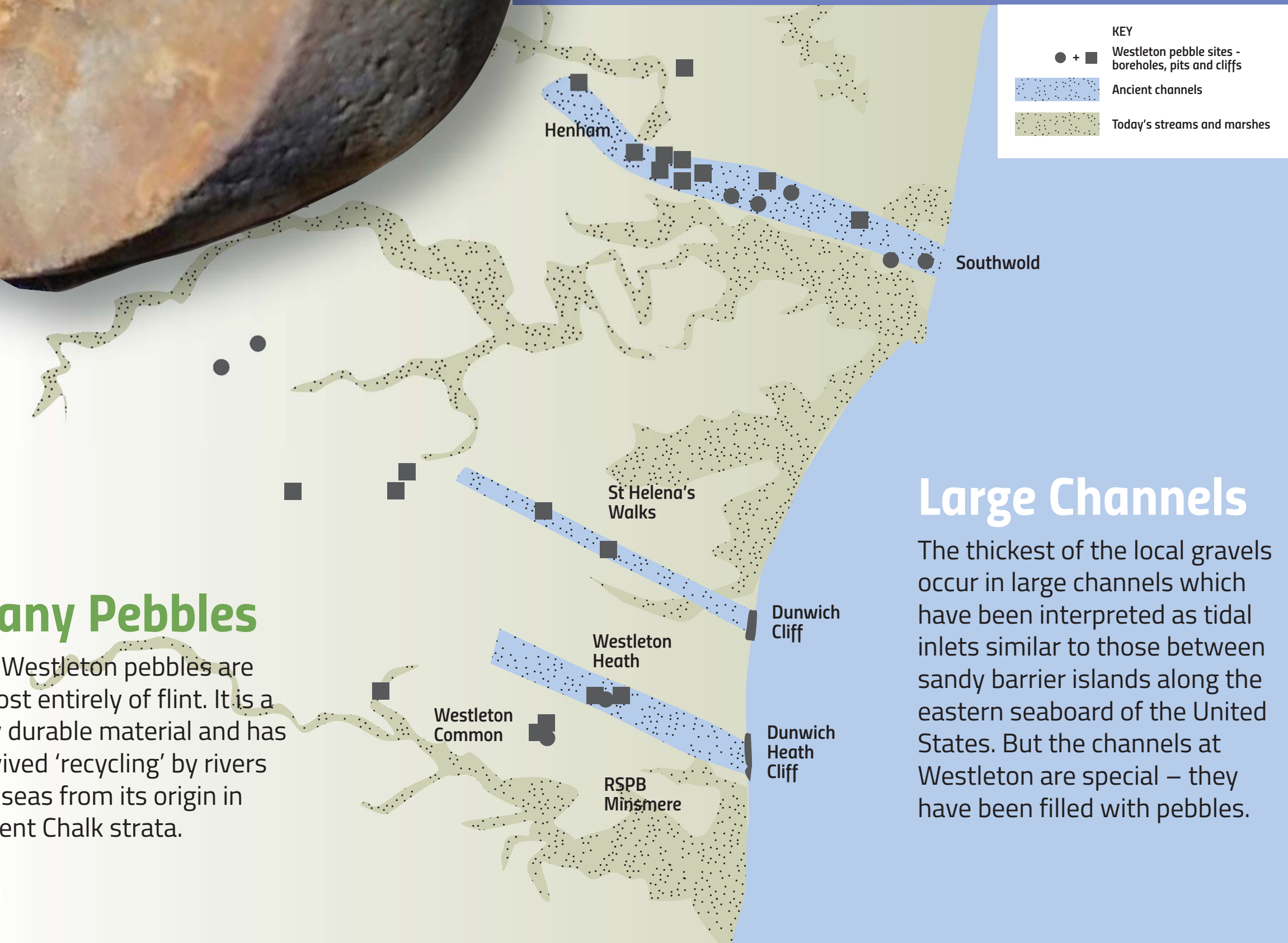
Shape – well-rounded. They have been tumbled into one another in the sea, breaking off irregularities.

Surface features. Chattermarks - lots of small curved fracture markings where bashed against each other.



Many Pebbles

The Westleton pebbles are almost entirely of flint. It is a very durable material and has survived 'recycling' by rivers and seas from its origin in ancient Chalk strata.



Large Channels

The thickest of the local gravels occur in large channels which have been interpreted as tidal inlets similar to those between sandy barrier islands along the eastern seaboard of the United States. But the channels at Westleton are special – they have been filled with pebbles.



Sand and Gravel Exposure

This is in the '1945' pit in the south-east of the Common, where the thicker gravel layers were commercially exploited.

The layers of sand and of gravel were sorted and deposited under different water current speeds. The pebbles in the thicker gravel beds touch and support one another.

This sand and gravel is highly permeable to rain water and weathers to acidic soils that support the local heathland.



Joseph Prestwich

In 1871 Joseph Prestwich (very soon to be Professor of Geology at Oxford University) brought the village of Westleton to the world of geology.

He wrote, in the Quarterly Journal of the Geological Society of London, volume 27, '..... there rises, just above the village of Westleton..... low hills largely excavated at that spot for... well-rounded flint-pebbles imbedded in white sand. These beds.....I propose to designate the Westleton Sands and Shingle.'

Photo: this bust of Joseph Prestwich is in Oxford University Museum of Natural History.



Richard Hey

'The Westleton Beds Reconsidered' by Richard W Hey of the University of Cambridge appeared in the Proceedings of the Geologists' Association, volume 78, 1967. He defined their extent and also 'suggested that they were laid down to a large extent as beach-plain deposits, similar to those at Dungeness'.

Photo: Cambridge University Quaternary Group.



Howard Mottram

Local geologist Howard Mottram, seen here clearing a section of similar gravel on Westleton Heath, has investigated the ancient geography of these gravels, including their distinctive channel-like forms. One of his articles appears in GeoSuffolk's book 'A Celebration of Suffolk Geology', 2012.

The British Geological Survey's 'Saxmundham' map (sheet 191) covers this area.



Dunwich Heath Cliff

Large channels of Westleton pebbles are well-seen in the cliffs between Dunwich and Minsmere.



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