The boulder clay / glacial till cliffs at Barmston. Weak and unconsolidated, the coastline erodes rapidly and retreats at 2-3 m a year. Some is caused by marine erosion and some by very effective sub-aerial action; mudflows, slumping and sliding, on the upper cliff.
The spade indicates the location and size of a wave cut platform that is not well developed due to the weak nature of the clay.

A close up view of the Boulder Clay, showing a grey matrix of fine clay and an array of boulders.
The boulders were eroded and transported by the ice sheet during the last ice age and are angular, unsorted and unstratified as they have not been influence by meltwater.
The boulders or erratics show a wide variety of rock types determined by the path taken by the ice and the rocks it travelled over. The orientation of the long axes of the boulders may indicated the direction of ice movement.

A view of the base of the boulder clay cliff showing a zone of fresh erosion and the cutting of a wave cut notch.
On the left is some vegetation which is probably from the cliff top as part of the effects of sub-aerial processes as an unstable slump block has fallen due to gravity and rainfall saturating the clay and increasing its weight.

Here, above the boulder clay, are a layer of sands and gravels and above that sands. This indicates that as the ice retreated this area became part of the proglacial zone just in front of the ice, dominated by meltwater that washed material away from the ice and the morainic debris to form fiuvio-glacial deposits that are fundamentally different to the true glacial deposits seen in the boulder clay at the bottom of the image.

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This image shows the variety of deposits found on the Holderness coast. These fluvioglacial gravels show a degree of action by meltwater. The gravels are roughly sorted, rounded to some extent by attrition in meltwater streams and show a small degree of stratification due to seasonal changes in water flow.
This is typical of meltwater action at the ice contact zone where meltwater has had a limited impact on the deposits

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These fluvio-glacial deposits are fine sands and clays and have a distinctive stratified structure. The thicker, lighter coloured sandy layers indicate the summer period when more meltwater transports larger amounts of coarser sandy material. In winter when the lakes may be frozen the fine suspended clay will settle to give the thin dark layer.

As the ice retreated further at the end of the ice age this area entered the zone of true fluvioglacial activity.
The meltwater acted exclusively on the debris giving more time for attrition to work.
Here you can see the deposits are smaller, well rounded and well stratified.
Seasonal variations in the volume of water flow and/or local re-advances and retreats of the ice account for the variation seen here.

In the true fluvio-glacial zone a number of environments would occur, such as streams, deltas and lakes.
These fluvioglacial deposits are finer than the ones seen earlier indicating that they have been transported far from the terminus of the ice sheet.
These appear similar to varve clays deposited in proglacial lakes having a marked banded nature.