Coastal Erosion Explorers Pack

COASTWISE

NORTH NORFOLK DISTRICT COUNCIL

Activity and facts to discover more about coastal erosion on the North Norfolk Coast.

Always:

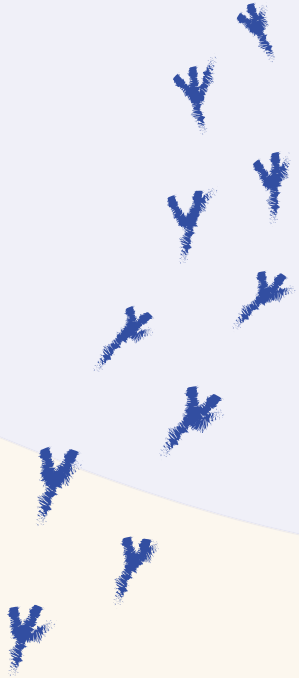
- Consider your safety and that of others before engaging in any activities inspired by these cards.
- Check the tide times and the weather forecast before visiting the coast.
- Keep a safe distance from the cliff base and cliff edge.
- Don’t play or climb on the cliffs.

Can you move like a wave:

- on a calm sea?
- on a rough sea?

Can you see any footprints in the sand?

Follow them as far as you can go.

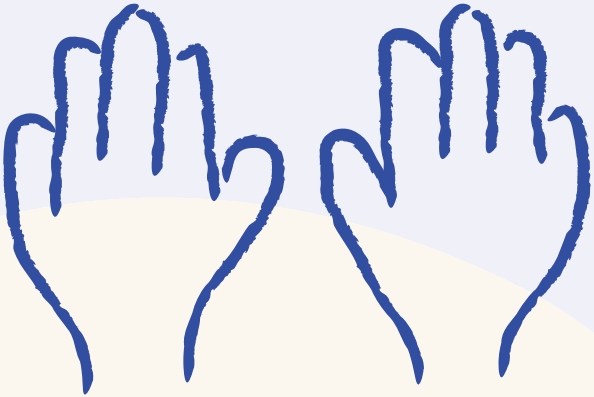


Rainbow catcher

Look around. Can you find all the colours of the rainbow?

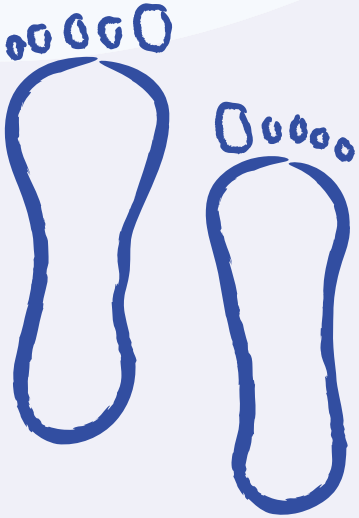
Place your hands on the ground.

Can you feel the vibrations of the world around you?



Close your eyes.

Can you feel the energy of the waves crashing against the shore?



Did you know...

Thousands of years ago, massive glaciers carried loose material from the North and deposited them here to form the cliffs in north Norfolk.

Get creative!

Create your favourite coastal creature from beach materials.

Did you know...

In North Norfolk the cliffs are made of lots of different sediments:

- Chalk that you can draw with
- Silt and clay that you can smear and roll into a sausage
- Sand that you can build things with when it is damp
- Gravel - fine stones that you can create patterns with
- Shingle - stones you can pile up

Be a coastal investigator

Beaches are made from materials of eroded cliffs e.g. sands, shingles, silts and clays.

What sort of material makes up this beach? Is it muddy, stony, full of shells, sandy or a mix of everything?

Touch and see if you can make different shapes, structures or forms with what is beneath your feet.

Did you know...

Cliffs can be made of three different types of rocks:

- Sedimentary like chalk, limestone or boulder clay
- Metamorphic like slate or marble
- Igneous like granite

In North Norfolk we only have sedimentary cliffs. These are soft and erode most easily.

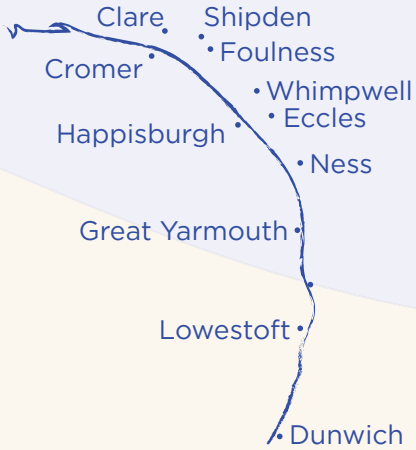
Look at the cliffs

Can you see the different layers in the cliff? Which ones are the most easily eroded by wind and water?

How can you tell?

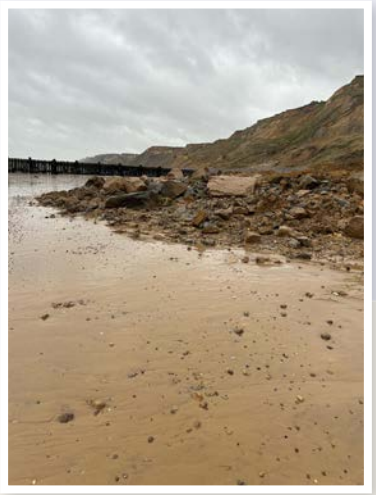
Did you know...

Coastal erosion is a natural process. It has always happened and it always will. Old maps show many villages that used to exist along this coast that have been lost to the sea like Shipden, off Cromer.



Be a coastal time traveller

Look around for evidence of coastal erosion. Describe the features you think have changed the most recently and that might change the most in the future?

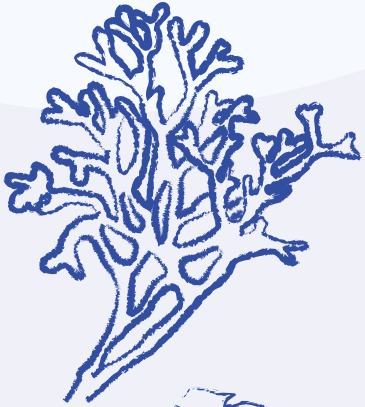


Poke out your tongue

Can you taste the salty sea air?

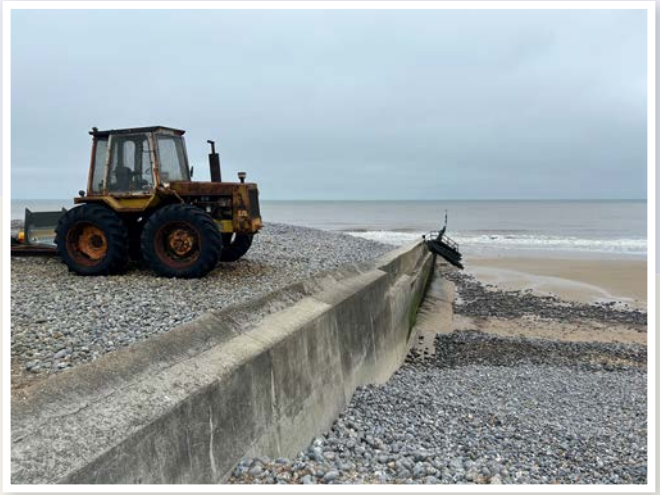
Be a coastal ecologist

Can you find three different types of seaweeds on the beach?



Did you know...

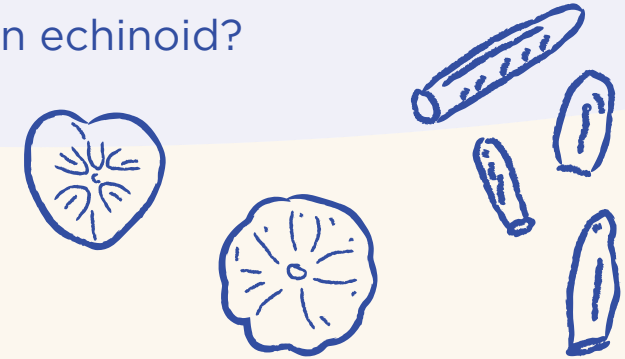
Humans have altered some of the patterns of erosion with sea defences - these trap or hold sand to maintain a beach, but it can mean that futher along the coast there isn't enough sand.



Be a coastal palaeontologist

Erosion of cliffs and beaches can reveal fossils of extinct creatures and evidence of early human activity in North Norfolk.

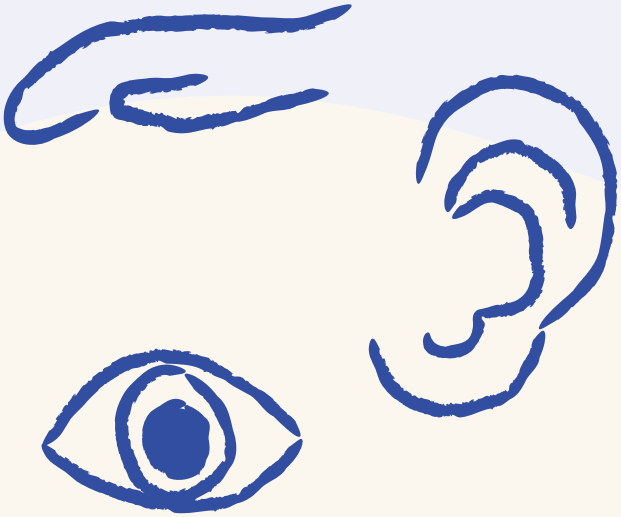
Can you find a fossil of something that lived here thousands of years ago? like a belemnite or an echinoid?



Did you know...

Coasts are dynamic – which means that they are ever changing.

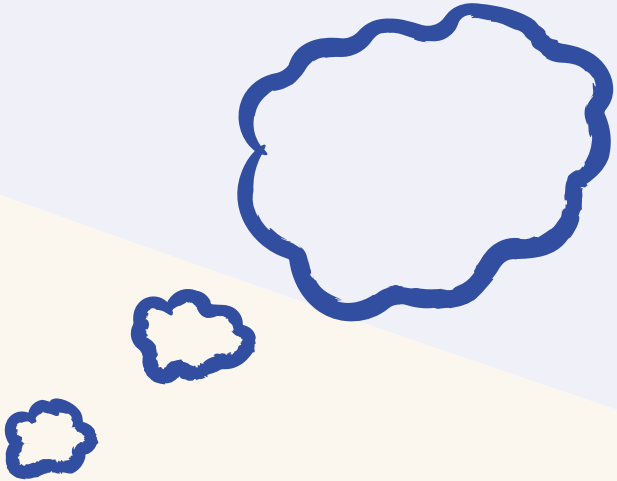
Can you see, feel or hear change happening?



Planning for the future

Humans have always had to adapt to their changing environment.

How do you think people living at the coast can adapt to coastal erosion?



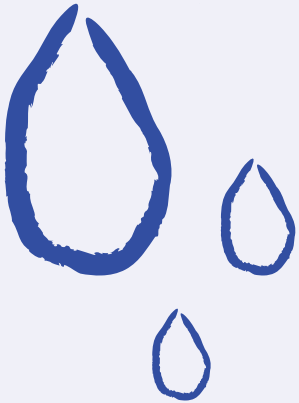
Did you know...

Coastal erosion isn't just caused by the sea.

Water from rainfall, underground springs or rivers can also cause erosion of the cliffs but causing them to slip or collapse.

Tell a story

Describe the journey of a raindrop as it travels through the cliff from the top to the bottom onto the beach and into the sea, and its voyage on the waves.



Plant spotter

If you can see plants growing on a cliff this means that the cliff has stable for a while. Bare cliffs tell us that erosion has happened recently.

Move like a sea creature

Walk sideways like a crab for one minute.

Did you know...

Climate change is speeding up the rate of coastal erosion. Sea level rise means higher tides. These cause more erosion at the cliff toe (base of the cliff).

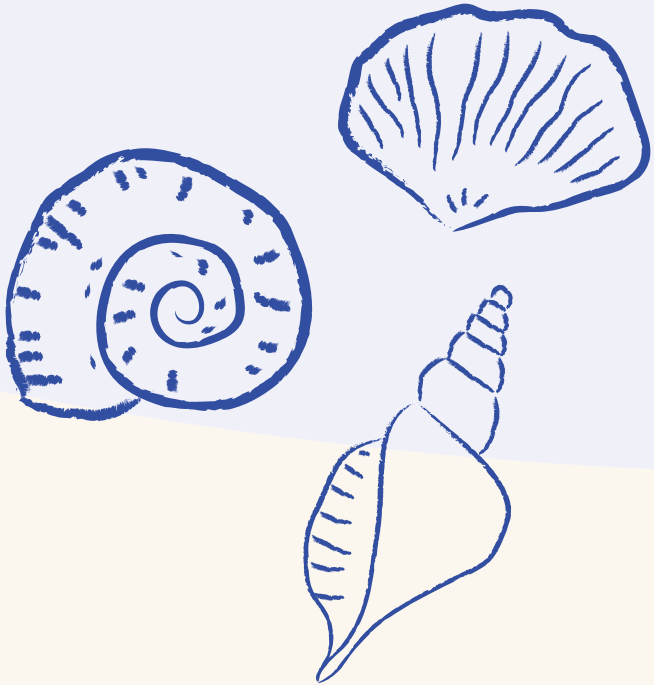
Collect six different textures on a beach walk

- Something shiny
- Something prickly
- Something spongy
- Something rough
- Something slimy
- Something soft

What other textures can you find on the shore?

Be a coastal naturalist

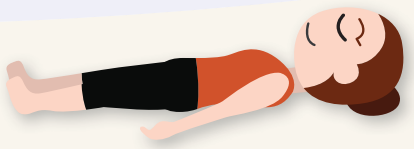
How many different types of stones or shells can you find on the beach?



Try some beach yoga

Can you do a starfish or fish pose?

Starfish pose

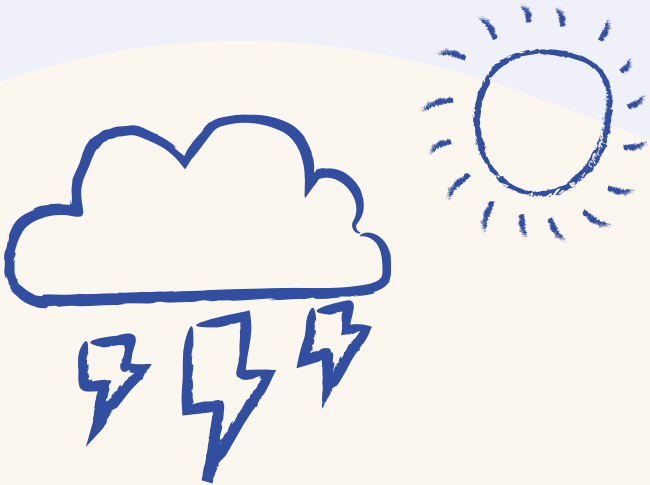


Fish pose

Did you know...

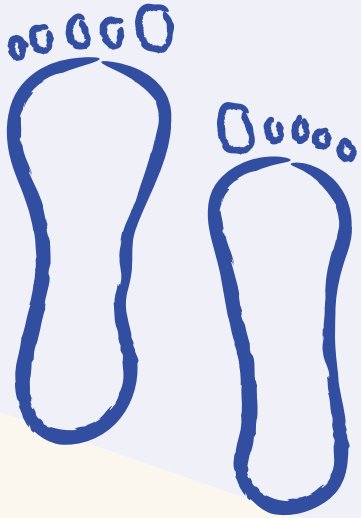
Climate change can mean increased storminess and more rainfall during winter which causes cliffs to collapse.

In summer, hotter drier weather can cause cracking in cliffs as they dry out.



Walk barefoot along the shore.

How do the sand, stones and sea make you feet feel?



Did you know...

When cliffs erode they provide sand for beaches. Beaches are the best form of sea defence. A big beach can absorb wave energy before it gets to erode the cliffs.

In North Norfolk the sea moves the sand around - the beaches can change a lot from day to day due to the power of the sea.

Look up!

Can you draw around the reflection of a cloud in the wet sand using your finger?

Did you know...

There are different types of sea defences

- Wooden groynes that stick out to sea to trap sand and pebbles to maintain a beach
- Concrete walls that protect the base of the cliffs from being washed away (eroded by the sea)
- Rock armour that dissipates the energy of the waves acting as a barrier, so that they cause less erosion to the cliffs

Play coastal erosion bingo

Be the first to spot...

A bare cliff slope - with no plants	Water seeping out of a cliff
A cliff slip - either material at the base of the cliff on the beach or half way down the cliff (a slump)	
Chalk or clay	A coastal defence structure

Did you know...

In some locations sea defences are not suitable because:

- they have an impact on the environment
- it is not possible to build effective defences in some places
- they can be too expensive

Be a coastal engineer

Can you see any sea defence structures on the beach?

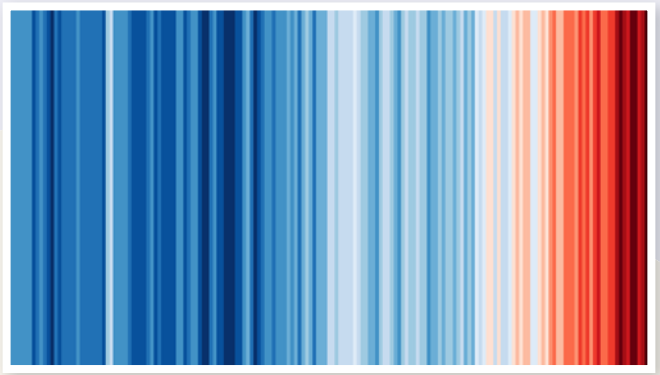
What are they made of?

What are they designed to do?

Be a climate change scientist

Imagine what this place will look like when sea level rises by 1 metre.

What do you think the changes might be?



Relax

Breathe in time with the waves as they break on the beach and retreat back into the sea.

Watch the journey of the water as it stops being a wave and seeps into the sand.

In North Norfolk the Coastwise project is working together with coastal communities to support them to prepare for and adapt to coastal erosion.

Find out more about Coastwise by scanning the QR code or by visiting **www.north-norfolk.gov.uk/coastwise**

COASTWISE

NORTH NORFOLK DISTRICT COUNCIL

Department for Environment Food & Rural Affairs

Environment Agency

Coastal transition accelerator programme

Part of the £200m Flood and coastal innovation programmes