OCR (9-1) Geography A specification

GCSE Geography revision Pack

Unit 1: Living in the UK today

These work booklets are designed to assist you with your revision. The case study sheets contain the minimum amount of information you need – they should supplement your own notes.

If there are any other resources or activities that you would like, please ask. Remember you can also email anyone in the geography department your questions outside of lessons.

In addition to your exercise books and these booklets, the revision guide from the exam board will be available from the school shop from February.

If you complete any of the and would like them marked, please just come and see us.

Good Luck!

The Geography Department

Personal Learning Checklist

Use the following list and colour green, amber, red based on how confident you feel about each area. You should then use this to target your revision to the areas that you feel least confident in.

Topic	RAG rate
Landscapes of the UK	
Where are the upland, lowland and glaciated landscapes located in the UK?	
Describe the characteristics of these landscapes including geology, climate and human activity	
Processes of weathering – mechanical, chemical and biological	
Processes of mass movement (coasts and rivers)– sliding, slumping	
Processes of erosion (coasts and rivers) – abrasion, hydraulic action, attrition and solution	
Processes of transport (rivers) – traction, saltation, suspension and solution	
Formation of river landforms: waterfalls, gorges, V shaped valley, levee and floodplain, meander and oxbow lake)	
Case study: River landscape – Ouse (year 11) or Tees (year 10) • The processes and how these are influenced by geology and climate • Landforms and features found on the river • Human activity (including flood management) impacts the landscapes and processes.	
Formation of coastal landforms: headland and bays, caves, arches, stacks, beaches and spits.	
Case study: Coastal landscape – North Norfolk coast • The processes and how these are influenced by geology and climate • Landforms and features found on the coastline • Human activity (including management) impacts the landscape and processes	
People of the UK	
The UK is connected to many other countries and places through trade	
Diversity of the UK • Employment • Life expectancy • Broadband • Education • Ethnicity	
Causes of uneven growth in the UK • Geographical location	

• Economic change • Infrastructure • Government policy	
Case study of economic growth and decline: Salford Quays • Why did it grow and when? • Why did it decline? • How has Salford been regenerated? Has this been successful? Specific facts, dates and information needed to answer an extended question	
Demographic transition model and how the UKs population has changed	
Causes and effects of an ageing population	
Immigration and the social and economic effects on the UK	
Causes and consequences of urban trends in the UK • Reurbanisation • Counterurbanisation • Suburbanisation	
Case study of one major city in the UK: Leeds • Its position and importance locally, nationally and globally • Migration and how it has impacted the city and its character • The ways of life in the city • Challenges it faces – inequality, waste, housing • Sustainable strategies to overcome these challenges – South Bank development. Specific facts, dates and information needed to answer an extended question	
Environmental challenges of the UK	
How air masses, the North Atlantic drift and continentality influence the weather in the UK	
How air masses cause extreme weather conditions in the UK, including extremes of wind, temperature and precipitation	
Case study of one UK flood event: • Causes of the flood event • Effects on people and the environment Management of the flood event at a variety of scales	
Human use and modification of environments and ecosystems • Mechanization of farming and commercial fishing • Wind farms and fracking Reservoirs and water transfer schemes	
Energy sources used in the UK and the contribution each type makes to the UK supply.	
Energy supply changes and why	
Sustainable use and management of energy at different scales	
Development of renewable energy in the UK and impacts on people and the environment	

Extent nonrenewable energy should be used in the UK's future supply	
Economic, political and environmental factors affecting UK energy supply in the future	

Landscapes of the UK

Where are the upland, lowland and glaciated landscapes located in the UK?

Lowland areas are green on the map

Upland areas are brown.

Glaciated areas include places such as:

- Snowdonia
- Scottish highlands
- Lake District.

Dartmoor and Exmoor, though upland areas, were not affected by glacier

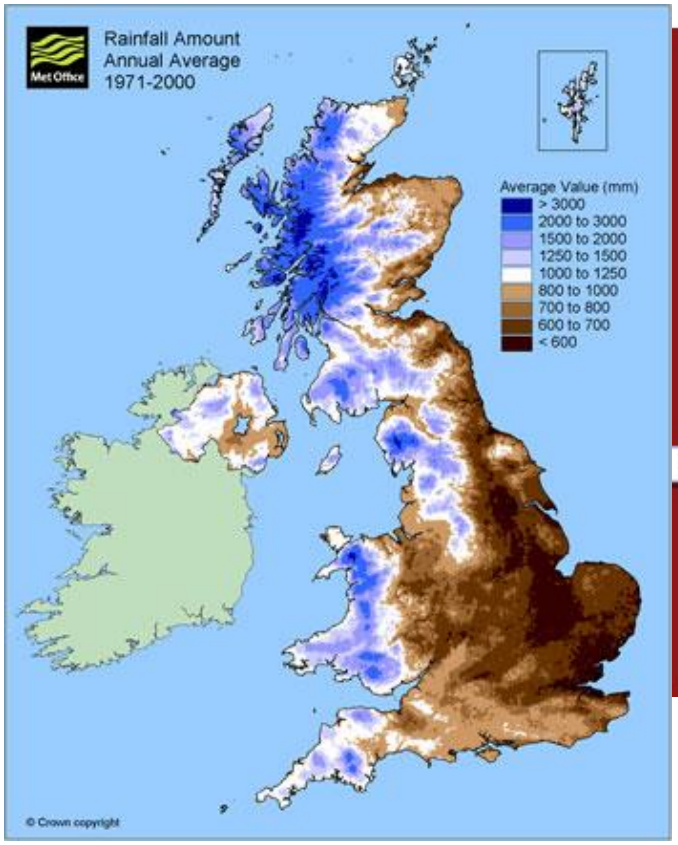
You need to know the definitions to these keywords:

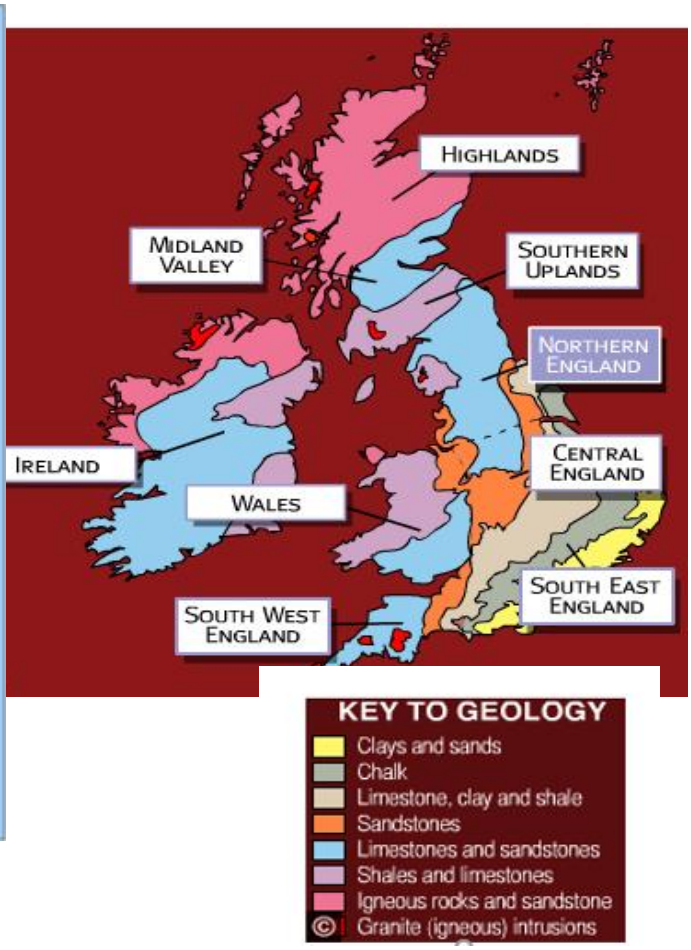
Altitude	The height of the land measured above sea level.
Lowland	Areas that are closer to sea leave and lie below 200m.
Relief	The height and shape of the land.
Glaciated area	An area that was sculpted by ice and glaciers during the previous Ice Age or where there is evidence of material that has been deposited by glaciers.
Upland	Areas of land that are generally above 200m in altitude.
Mountain	An area of land that rises considerably above the surrounding land, with 600m sometimes used as the height that separates mountains from hills.

What are the characteristics of the climate and geology of upland and lowland areas?

Landscape characteristics are all the visible features of an area of land. A landscape can be natural, man-made, or a combination of the two. The typical or noticeable features of something e.g. a place or landscape.

	Upland *(an area of high or hilly land)*	**Lowland** *(flat land that is at, or not much higher than, sea level)*
Characteristics of the geology	The geology of upland areas is mainly old, hard igneous and metamorphic rocks as they are not easily eroded so they form mountainous upland areas.	The geology in lowland areas is mostly made up of younger sedimentary rocks
Characteristics of the climate	The climate tends to be cooler and wetter in upland regions.	The climate in lowland areas is generally warmer and drier than upland areas.





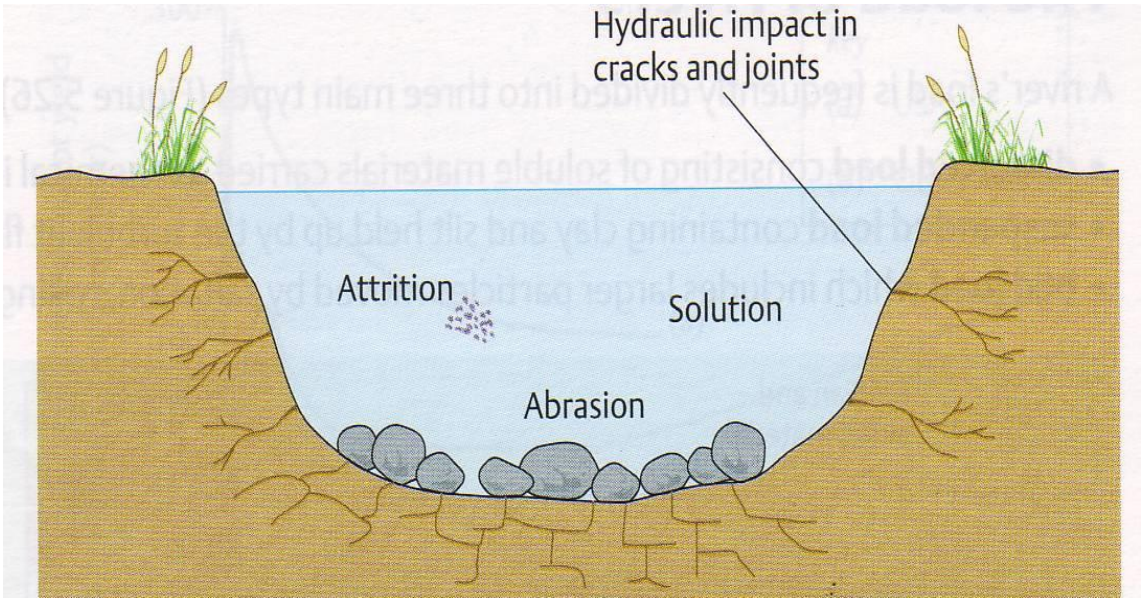
Rivers processes, landforms and case study.

Erosion	The wearing away of rock, stones and soil by as moving force e.g. rivers, waves, wind or glaciers which take the material away.
Transportation	The process by which material is carried along the coast by waves or along a river.
Weathering	The breakdown of material in the place they were found by mechanical (physical, chemical and biological processes.
Deposition	The laying down (dropping) or materials that have been transported by the river or waves.
Mass movement	Material which moves downhill due to the pull of gravity.

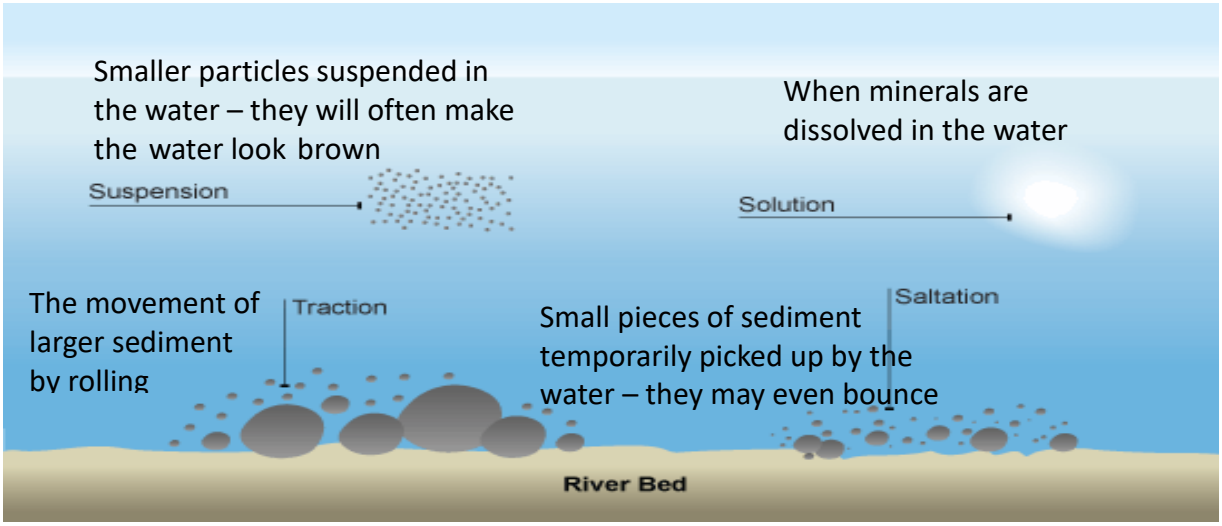
You need to know the different types of geomorphic processes

Erosion: There are four types of erosion that occur along a river course.

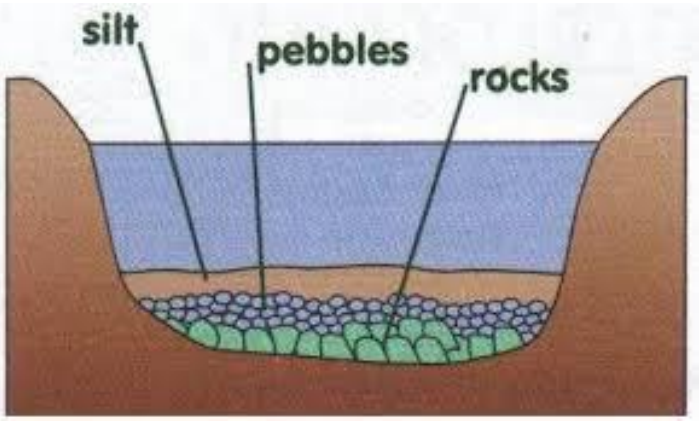
- ***Hydraulic action*** – the sheer force of water hitting the banks of the river.
- ***Solution*** – some rocks forming the banks and bed of a river are dissolved by acids in the water.
- ***Abrasion*** – fine material rubs against the river bank. The bank is worn away, by a sort of sandpapering action.
- ***Attrition*** – where material collides with other material, and breaks up into smaller and smaller pieces.



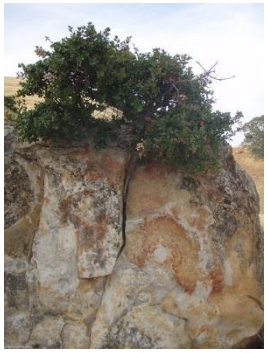
Transportation: the movement of sediment along a river bed by a river or along a coast by waves.



Deposition: the laying down of sediment and materials that have been transported. They can create new landforms such as beaches. Heaviest materials are laid down first.



Weathering: There are three types of weathering which is the breakdown of material in the place they were found by mechanical (physical, chemical and biological processes.



Biological weathering

- This is the action of plants and animals.
- Seeds blow into cracks, where they grow into small plants.
- As the roots develop they force the cracks to widen.
- Over time the rock falls apart.

Chemical Weathering

- Rainwater contains small amounts of acid.
- When it comes into contact with rock, acid attacks it and the rock dissolves.
- This causes the rock to crumble away over time.

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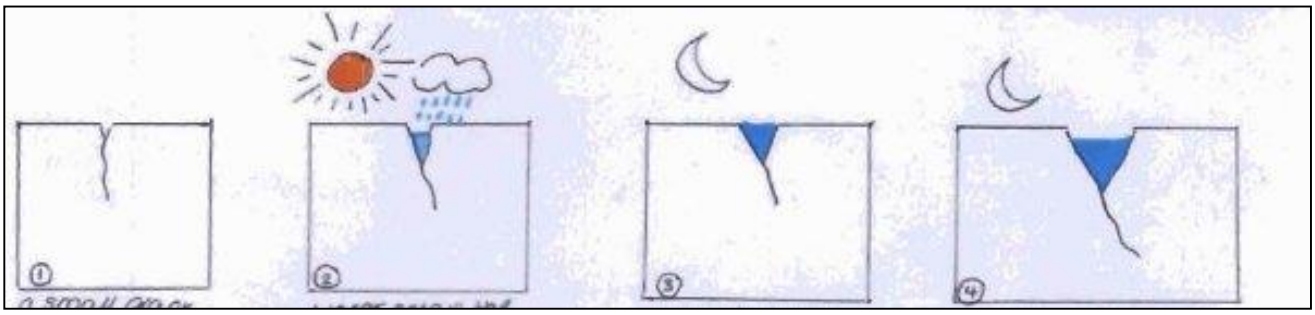
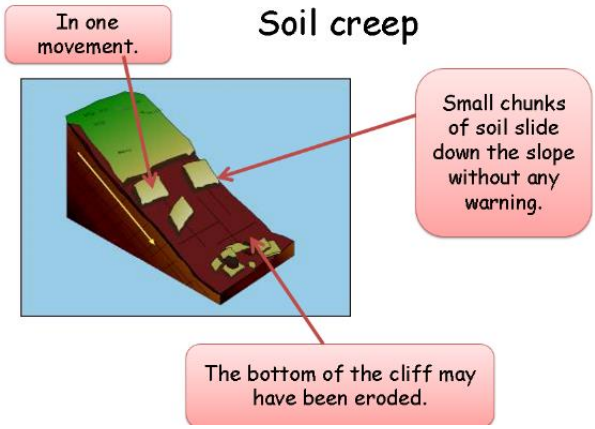
Freeze-thaw weathering (mechanical weathering)

- Water fills cracks in the rock.
- When the water freezes it expands, causing the crack to expand.
- The water then melts and the process startsagain.

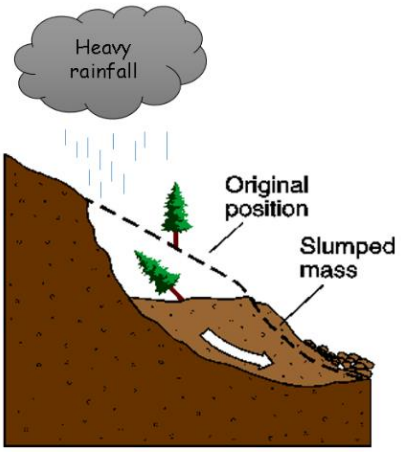


Mass Movement: Material which moves downhill due to the pull of gravity.

Soil creep - Individual particles of soil slowly move down the slope under gravity and collect at the bottom of the valley. The river then transports this material.

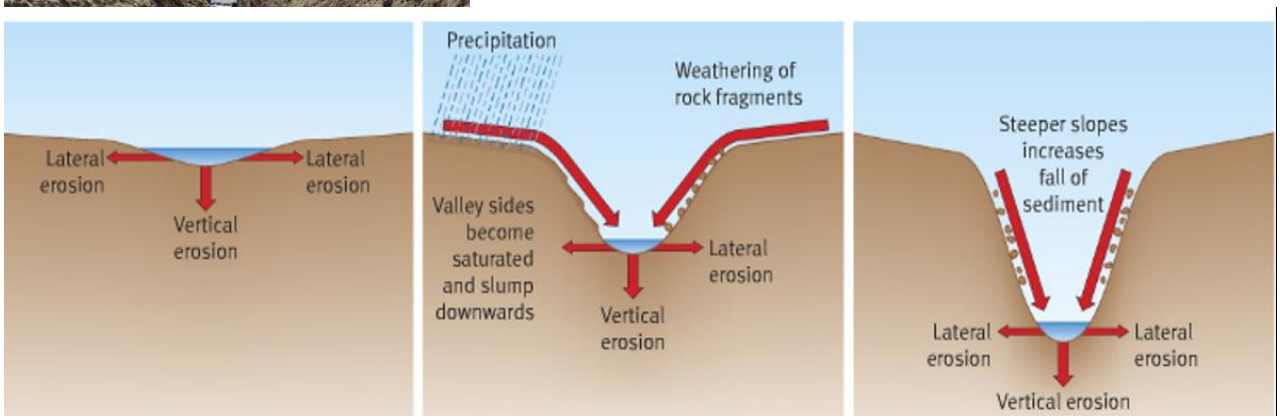


Slumping – happens when the bottom of a valley side is eroded by the river. Material on the valley side slides downwards in a rotational manner, often triggered by precipitation.



Landforms

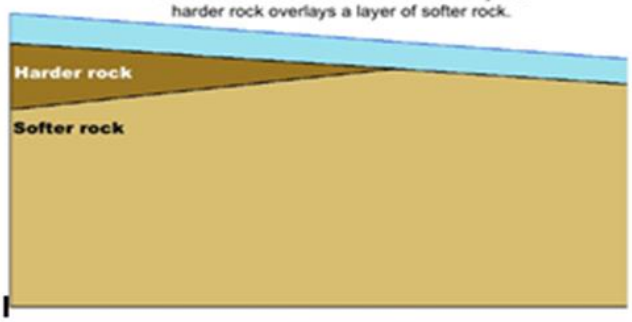
V-shaped valley: found the upper course at high altitude.



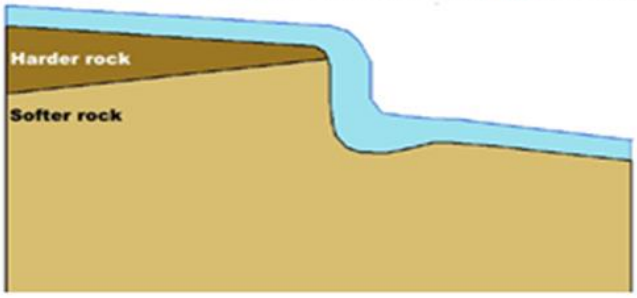
<u>Waterfall and Gorge</u>: A river landform formed in the upper course.

Waterfalls are often formed where a layer of resistant (harder) rock such as Whinstone sits above a layer of non-resistant (softer) rock such as sandstone.
As the river passes over the softer rock, it is able to erode at a faster rate, forming a step in the river bed.
The force of hydraulic action creates a plunge pool at the bottom of the river bed and makes the notch bigger over time
As the notch grows, eventually there isn't enough support under the resistant rock and so it collapses into the plunge pool.
This adds rocks and boulders to the plunge pool, and so the process of corrosion works with hydraulic action to further erode the plunge pool and notch.
The processes of erosion continue, further eroding the notch and the plunge pool. Eventually the resistant rock will collapse again, meaning that the waterfall will retreat upstream overtime.

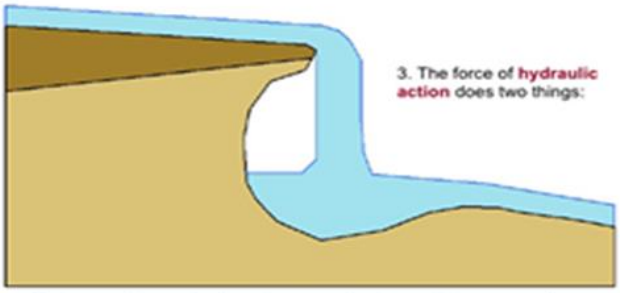
1. Waterfalls are often formed where a layer of harder rock overlays a layer of softer rock.



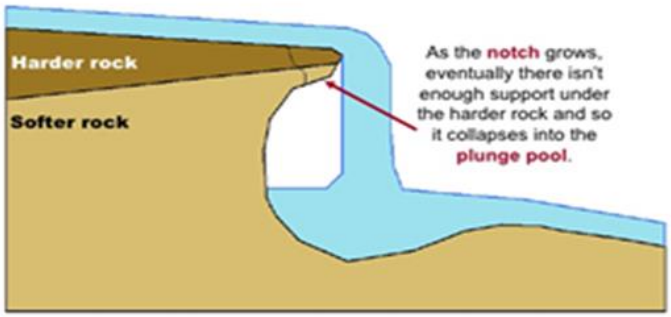
2. As the river passes over the softer rock, it is able to erode it at a faster rate, forming a **step** in the river bed.



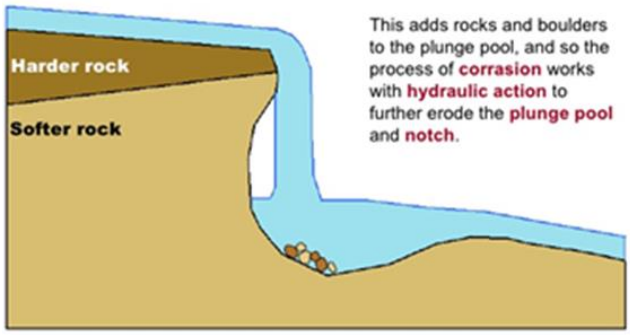
3. The force of **hydraulic action** does two things:



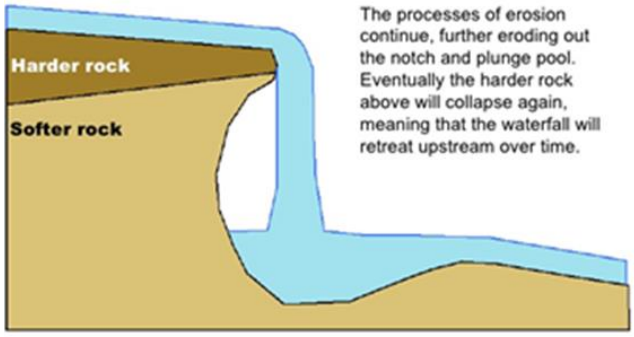
Further erosion makes the **plunge pool** and **notch** bigger over time.



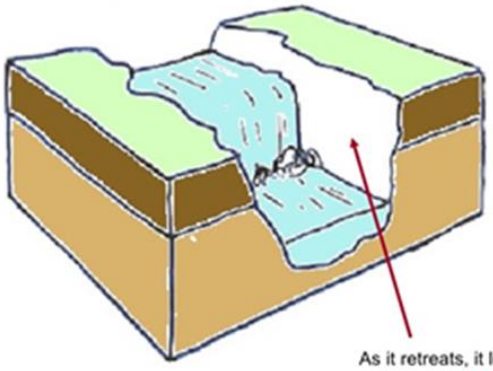
As the **notch** grows, eventually there isn't enough support under the harder rock and so it collapses into the **plunge pool**.



This adds rocks and boulders to the plunge pool, and so the process of **corrasion** works with **hydraulic action** to further erode the **plunge pool** and **notch**.

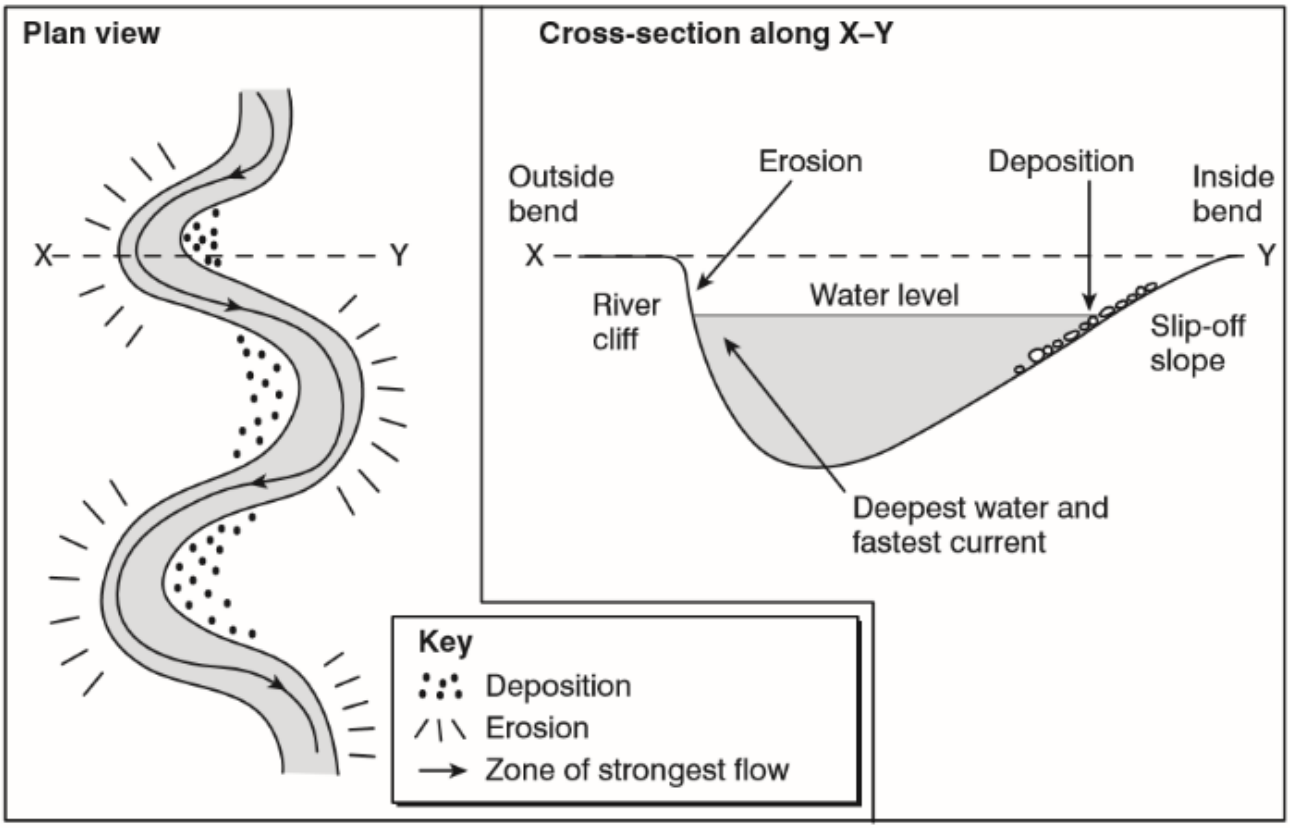


The processes of erosion continue, further eroding out the notch and plunge pool. Eventually the harder rock above will collapse again, meaning that the waterfall will retreat upstream over time.



As it retreats, it leaves behind a steep sided **gorge**.

Meander: A bend in the river course, usually found in the middle to lower course of the river. The two diagrams show the processes that occur on the inside and outside of the bend.



Ox-bow lake: A sequence of diagrams showing the formation of an ox-bow lake in four stages.

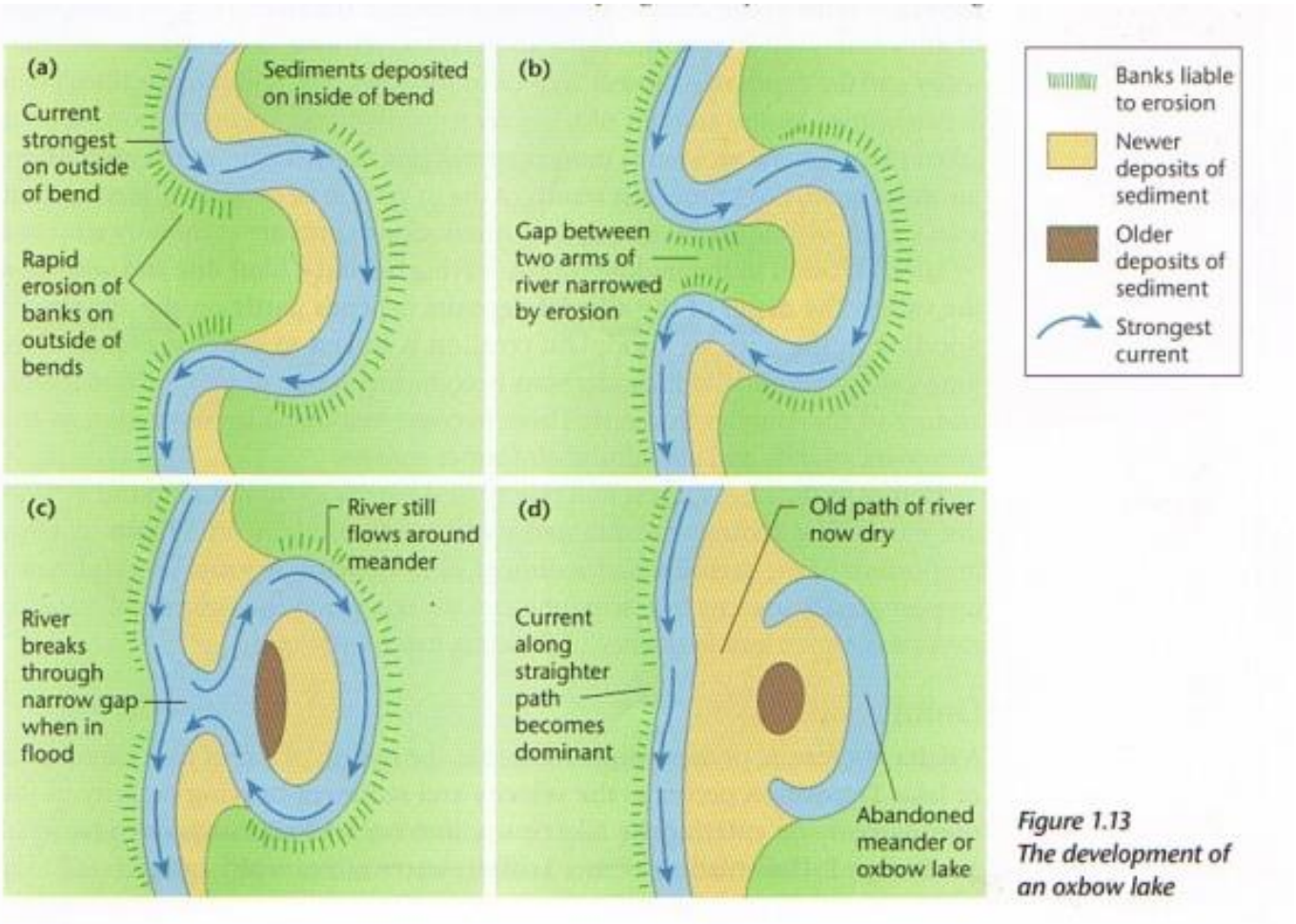
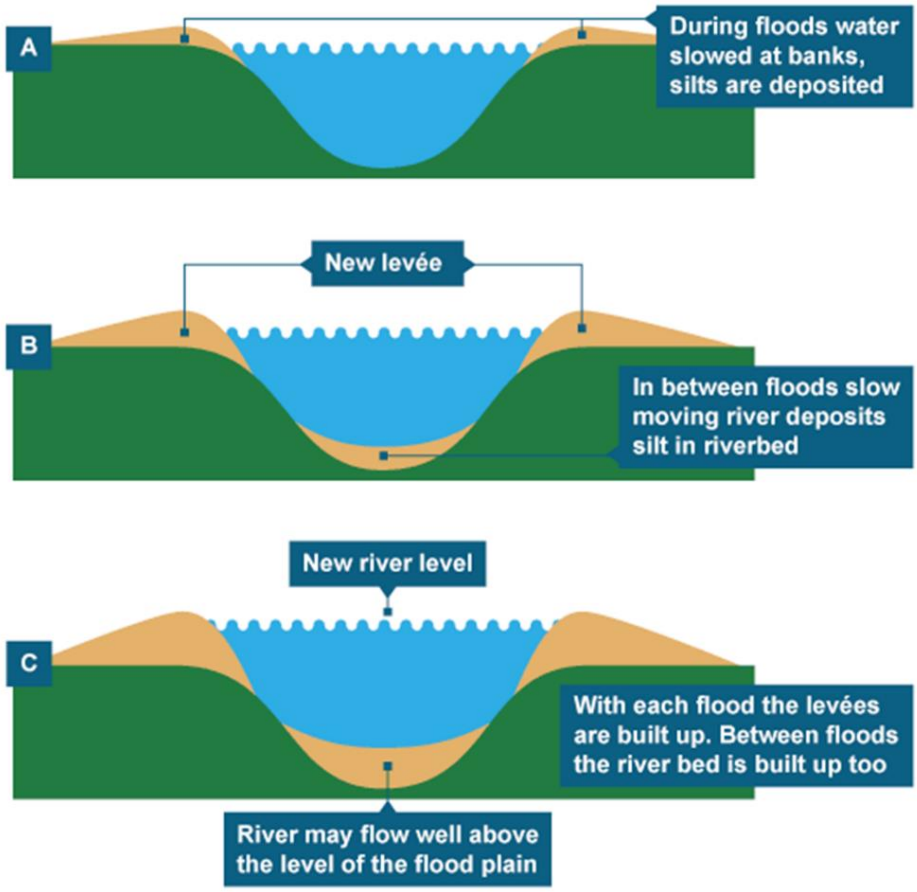
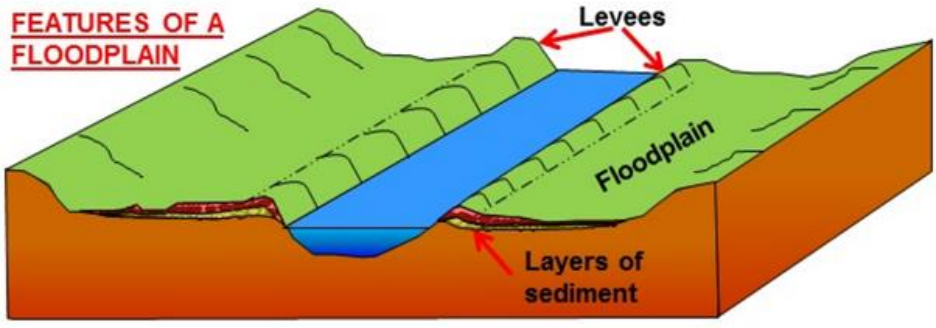


Figure 1.13 The development of an oxbow lake

The river flows fastest around the outside bend of a meander which leads to erosion and the formation of a river cliff
Deposition occurs on the inside bend of the meander forming a slip off slope
Continued erosion and deposition causes the neck of the meander to narrow
Eventually the neck of the meander is so narrow that during a flood the river cuts through the neck
After the flood has subsided the river continues its straight course, the old bend is abandoned by the river
Deposition causes the old neck of the meander to become silted up
An ox-bow lake is formed.

Formation of levees and floodplains:





Year 10: Case study of a river landscape → River Tees

Characteristics of the river and its landscape.

The source lies high up in the Pennines close to Cross Fell (893 metres above sea level). The river flows east (through towns such as Yarm and Darlington) to its mouth in the North Sea at Middlesborough. Along its way, there are many tributaries. They join the river at a confluence and so the river gets wider and deeper downstream. Changes in the river downstream are also a result of changes in the processes at work – erosion, transport and deposition.

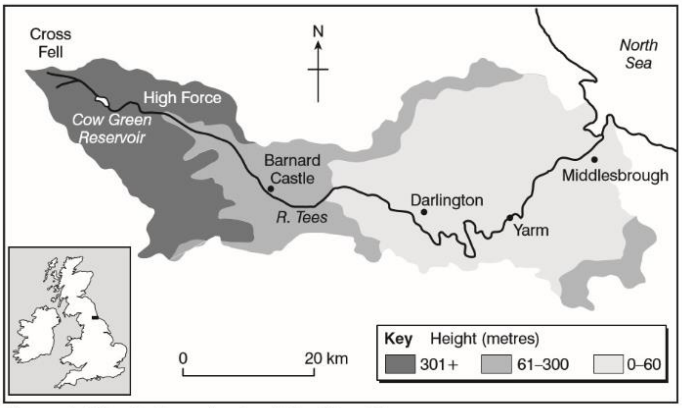


Figure 1: The drainage basin of the River Tees

Upper course
In the upper course the river flows over hard, impermeable rocks. The valley has steep sides forming a V-shape. The river channel is shallow and rocky and the river is turbulent and clear.

In the upper course, there is the famous High Force waterfall and gorge as well as rapids and potholes. Erosion downwards is the main work of the river in the upper course.

The waterfall and gorge at High Force
High Force is the tallest waterfall in England at 21 metres high. Formed due to hard rock – Whinsill eroding slowly and the soft rock (sandstone) eroding quicker.

Potholes and rapids at Low Force
Low Force → Here small pebbles have become trapped in hollows in the rock. The river's flow has caused the pebbles to swirl around in the hollow making it deeper and deeper. The pebbles grind and scrape at the bedrock, eroding the hollow by corrasion.
At Low Force there are also rapids formed by smaller outcrops of Whinsill. The less resistant limestone has been eroded away leaving the rapids.

Middle course
The middle course of the River Tees as the River Tees flows downstream the gradient becomes less steep. The river begins to erode sideways (lateral erosion) rather than downwards and the river begins to deposit sand and gravel. The lateral erosion means the river gets wider, the river valley gets wider and meanders begin to form.

Meanders and Levees
Close to Yarm, the River Tees has formed very large meanders. Some of these meanders have led to the formation of ox-bow lakes) and flooding has caused levees to form. Levees can also be found in the middle to lower course around Darlington.

The mouth of the River Tees

The mouth of the River Tees is an estuary. An estuary is a river valley in a lowland area that has been flooded. The River Tees has a very wide estuary with mudflats and sandbanks.

The estuary has been a magnet for industry with iron and steel, engineering and chemical works all along its length. However, parts of the estuary are very important sites for wildlife, such as seals, and migratory birds. Some areas are Sites of Special Scientific Interest (SSSIs), and are carefully managed for the unique ecosystems they support, eg Seal Sands.

River management

The drainage basin of the River Tees has been managed for over a century. The management has had several aims:

- to reduce flooding
- to improve water supply
- to improve water quality
- to improve navigation
- to provide more opportunities for recreation.

A variety of strategies have been used, including the building of reservoirs such as Cow Green and Grassholme. In the 19th century, 'cut-offs' were built near Stockton to straighten the river for navigation, and recent flood protection schemes have been built at Yarm. Today there is a huge water sports complex at the

You need to use your books for more depth on this.

How does human activity affect the geomorphic processes and the landscape?

Positives:

- SSSI's on the Tees including Upper Teesdale. This ensures that upland areas are conserved – protecting unique peat land ecosystems.
- 1 Area of Natural Beauty on the Tees close to the source in the North Pennines. This also affects how the area is used as it has to be protected.
- Tourism brings money into these two areas which can then go back into protecting the area.
- River management at Yarm has ensured that there is less chance of flooding.
- Creation of the Tees Barrier has ensured that there is protection of tidal flooding and it has also created a tourist attraction with the water sports centre.

Negatives

- Reservoirs such as Cow green, can reduce deposition of material downstream, as instead it is accumulated in the reservoir. This can change the nutrient composition of the water downstream affecting farmland and the river ecosystem.
- Increased settlements in the lower course has put pressure on the river as a resource and has also increased pollutants.
- Industry such as the chemical and oil plant in the mouth of the Tees can create pollution
- Eutrophication due to fertilizers is also a problem in the middle and lower course of the river.

Year 11: Case study of a river landscape → River Ouse

Location – Located in the north of England, this drainage basin covers most of the Yorkshire Dales and the Vale of York, the river eventually enters the north sea via the Humber estuary. The source is up in the Yorkshire Dales.

Geology of the area: there are seams of Permian Limestone that allow water through its structure quickly. There is also a substantial amount of clay that is impermeable. This water cannot infiltrate the soil and hence gets into the river quicker – reducing lag time. The vegetation at high altitudes in the upper basin is heathers and moor land that has low interception rates. There are areas of scattered coniferous trees with better interception year round, while deciduous trees offer good interception until they lose their leaves. Much of the lower basin is farmland offering little interception.

Landforms found on the Ouse

- Aysgarth Falls are a series of three waterfalls on the River Ure (a tributary of the Ouse). They are very famous and a honeypot site in the summer.
- Meander in Clifton Ings – north of York

What human activity is there on the Ouse?

- Tourism – around the source in the Dales, Wenslydale near the Aysgarth Falls
- Farming – pastoral farming in the upper section of the river. Arable (crop) farming is found on the lower course of the river around York.
- Rowing in the city of York, canoeing around the Aysgarth Falls.
- River management:
    - Foss Barrier
    - Afforestation
    - Flood warning systems
    - Clifton Ings – can hold 2.3 million cubic metres of water.
    - Embankments in the city of York

How does human activity affect the landscape and geomorphological processes?

Positives:

- There are also 4 SSSI on the river which also affects how the rivers can be managed. This ensures that upland aras are conserved – protecting unique peat land ecosystems.
- Clifton Ings wash lands (to the north of York) are flooded instead of the city. River controlled to flood this area over the city.
- Foss barrier – built to divert water into the River Foss when the Ouse level becomes too high. Changes the natural flow of the water.

Negatives

- Upland areas around Richmond and Catterick have been afforested. This reduces the rate of runoff.
- Farming → controls on chemicals used could affect the water further downstream. Farming also has a high consumption of water.

- The river also needs to be protected to ensure that tourism continues thrive around the river.
- Overgrazing in the uplands has also reduced vegetation cover increasing the run off rate.

Coastal processes, landforms and case study

Processes

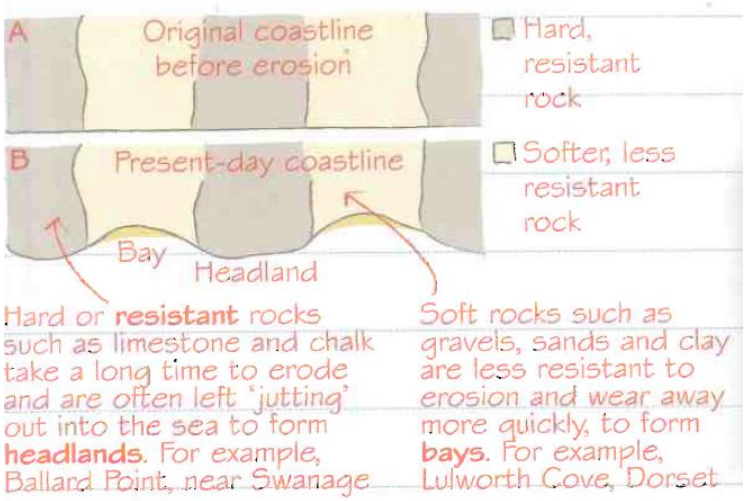
Weathering	The breakdown of material in the place they were found by mechanical (physical, chemical and biological processes.
Mass movement	Material which moves downhill due to the pull of gravity. Example: slumping or soil creep.
Erosion	The wearing away of rock, stones and soil by as moving force e.g. rivers, waves, wind or glaciers which take the material away
Transportation	The process by which material is carried along the coast by waves or along a river.
Deposition	The laying down (dropping) or materials that have been transported by the river or waves.

You need to know the specific types of erosion that occur and use these as often as you can when explaining how landforms are created.

Abrasion	When sediment is thrown against a surface by water and rubs the material to smooth the landform
Attrition	Where pebbles hit each other or landforms making rocks break and get smaller and rounder.
Hydraulic action	Where water forces its way into cracks, which creates weaknesses in rocks, splitting them apart.
Corrosion	Where rocks are dissolved in water.

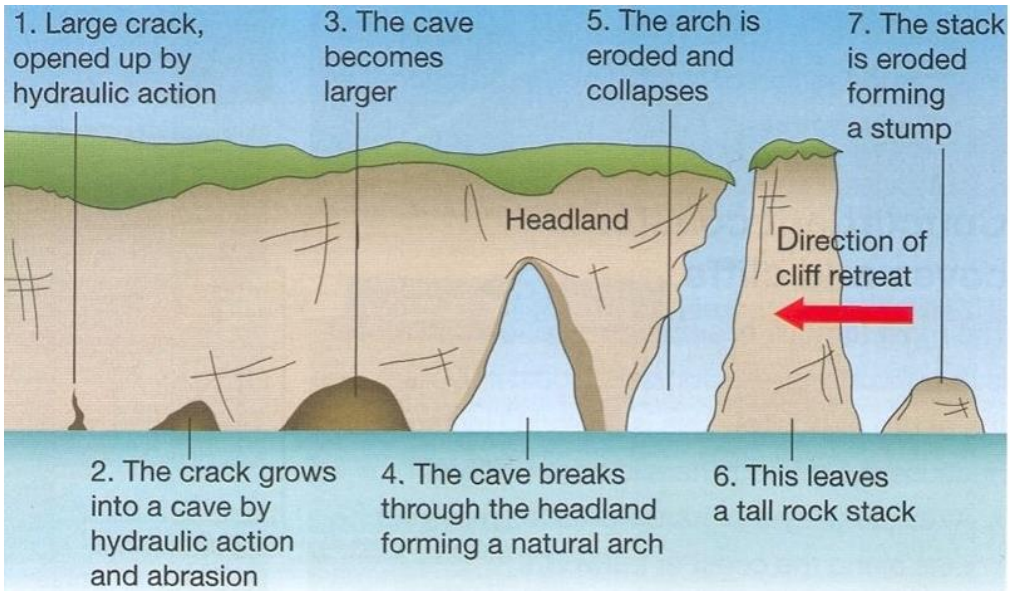
Erosional landforms

Headlands and bays:



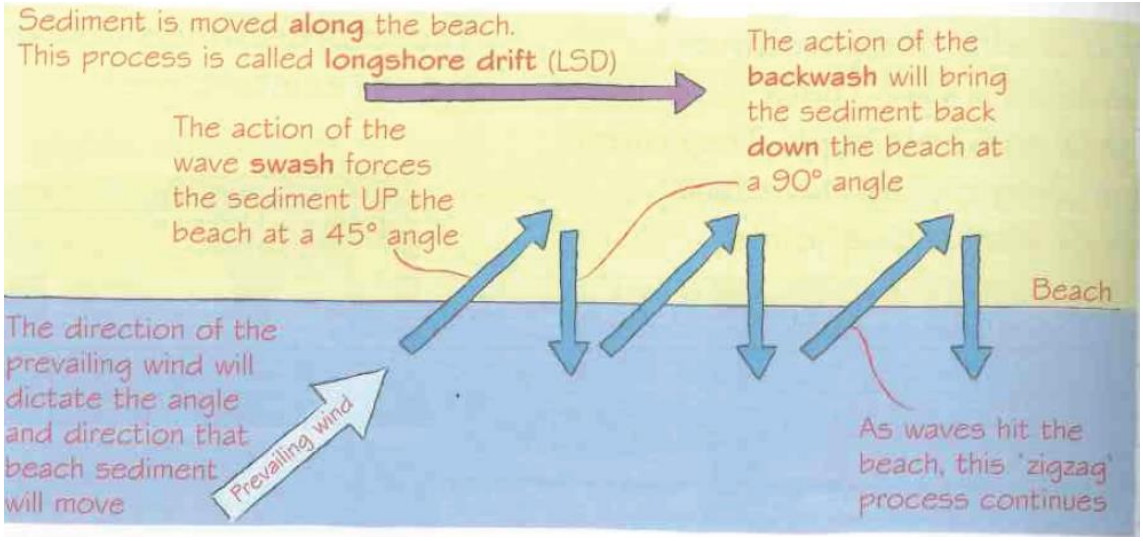
These landforms form where there is a mixture of soft rock and hard rock. The waves attack the soft rock through processes such as hydraulic action and abrasion.

Caves, arches, stacks and stumps.

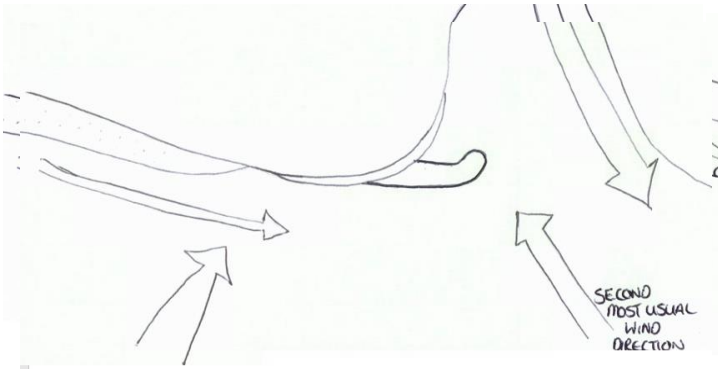


Depositional landforms

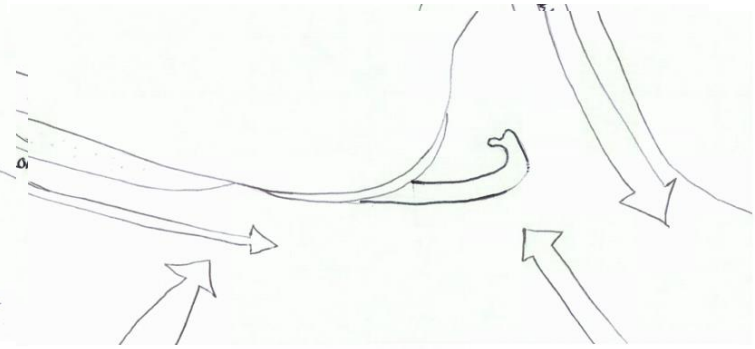
The action of the waves can transport material from one place to another. The direction of waves and wind can form distinctive depositional landforms. A key process that creates these landforms is longshore drift.



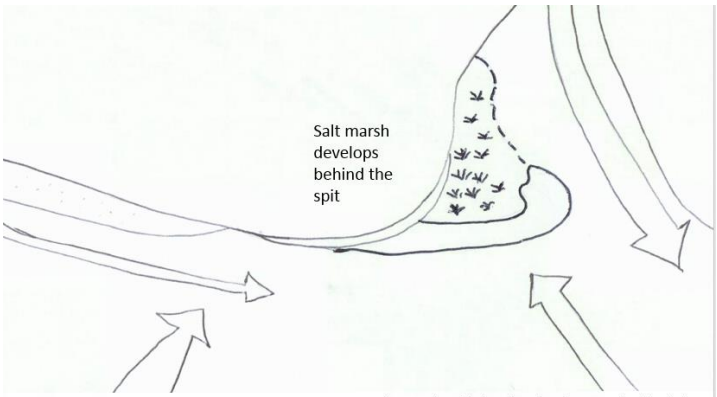
Spits, tombolo's and bars.



If the wind blows from another direction, it will blow the sand at the end of the spit, causing it to curve and will become hooked over time.



The spit cannot go all the way across the river mouth – due to the river flow

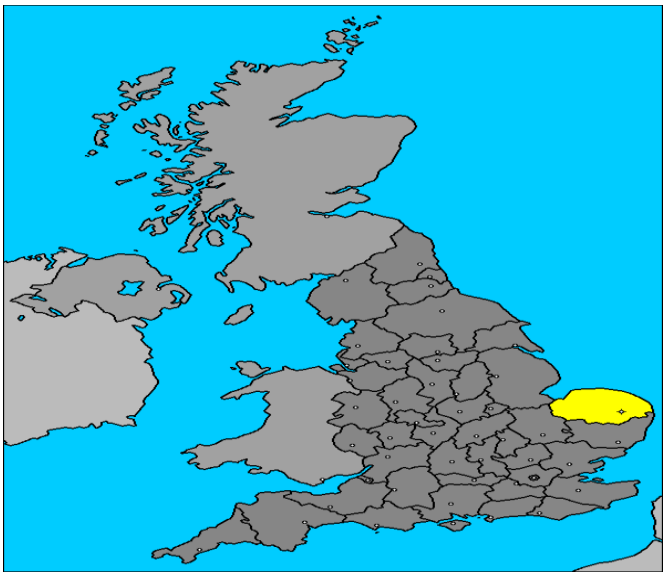


Salt marsh will develop in the area behind the spit.

A bar forms in the same way as a spit, but instead of stopping and curving, it connects to headlands together. It leaves a lagoon behind it.

A tombolo also forms in the same way as a spit, but instead of stopping and curving, it connects a mainland with an island.

Case study: North Norfolk coast (NNC)



The North Norfolk Coast (NNC) is in East Anglia and is north of London. The stretch of coastline runs 70 miles east from Wells next the Sea to Cromer. The majority of the coastline is less than 7m above sea level.

The geology of the area is mostly boulder clay. During the Anglian ice age (approx. 450 000 years ago) the whole of East Anglia was covered with ice. As this ice retreated, the glacier deposited drift or till (sediment). The till deposits are mostly a soft boulder clay.

To look at, they are a mass of brown clay cliffs with chalk/flint bedrock at the bottom. Boulder clay is not resistant at all to erosion. The bedrock is chalk but this is also a poorly resistant rock.

The landforms found along the stretch are:

- Spits, dune and salt marshes e.g. Blakeney point spit is in part formed due to material transported from erosion at Sheringham and West Runton.
- There are lots of low lying cliffs formed due to slumping.

As the area is prone to erosion, there are lots of coastal management schemes to prevent the erosion.

Hard management strategies → man made, often expensive.			
Type of defence	How it works	Advantages	Disadvantages
Sea Wall	Vertical structures that reflect energy of waves back out to sea.	Protect the base of cliffs, land and buildings from high-energy waves; can be built very tall	Limits access to the beach; reflects but does not dissipate (reduce / absorb) wave energy.
Revetment	Sloping features that break up waves but let sediment and water pass through.	Cheaper than a sea wall but does a similar job.	Can be destroyed by big storms; unsuitable where wave energy is high
Gabions	Metal cages filled with small rocks. Works by absorbing the energy of the sea.	Cheaper than other strategies.	Not as long lasting. Can be unattractive.
Rock armour	Big rocks put on the back of the beach. Used to absorb the energy of the sea.	Looks natural.	Beach access; expensive to purchase/transport.
Groynes	Designed to prevent longshore drift and build up the beach. They are built at right angles to the sea – often wooden beams.	Creates a wide beach – nature's sea defence!	Terminal groyne syndrome → there is increased erosion after the last groyne.

Soft management strategies → less expensive usually do less damage to the area.			
Beach replenishment	This replaces beach or cliff material that has been removed by erosion or longshore drift.	Inexpensive – creates a natural defence. Great plan in a tourist area.	Requires constant maintenance.

Managed retreat	Certain areas are deemed less valuable and so are left to be eroded e.g. farmland.	Allows money to be spent on areas more valuable to be protected e.g. towns.	Some people will be unhappy with the areas that are not chosen to be protected. e.g. Happisburgh

Impacts of coastal erosion on Happisburgh:

- It is built on soft boulder clay
- Erodes 50cm a year – more when there are storms in the winter
- In 1995, coastal defences were no longer maintained as a part of a plan of managed retreat. Larger tourist areas along the coastline, such as Sheringham, were prioritised.
- Since then:
    - 25 properties lost
    - Lifeboat launching station has been washed away
    - Beach road now terminates in the sea
    - Houses that were worth £800 000 now worth £1
    - Loss of community as people move away
    - Loss of jobs – tea shop and pub are now closed.
    - Insurance premiums increase
    - Loss of farmland

How does human activity affect the geomorphic processes and the landscape?

Positives:

- Sea walls and groynes help to decrease wave energy and can help to reduce the transportation of sediment which creates a wider beach.
- Sheringham has sea walls, groynes and rock armour to protect it from coastal erosion. This allows the town to continue as a major tourist attraction.
- Cley next to sea has a 'living landscape' project, which protects the shingle ridge that forms the base of Blakeney point and provides a home for wildlife.
- At Holkham, the estate has planted pine trees to stabilise the sand dunes, which create a rare habitat for breeds such as the Nutterjack toad.
- At Stiffkey, the National Trust have ensured that the salt marsh and the rare plants and birds that live here are protected. Salt marshes are important, as they are a natural sea defence. They are very low lying but build up as sea level rises.
- Seals at Blakeney point (a spit) attract tourists to the area which boosts local income and employment

Negatives

- A breach in Cley next to Sea's ridge could starve Blakeney point of shingle and threaten its future existence.
- The government and local councils have chosen not to protect some smaller villages on the coast (like Happisburgh) to ensure that more important towns can be protected
- Happisburgh, just down the coast from Sheringham, suffers from increased coastal erosion and a lack of deposition due to material being held at Sheringham and Cromer.

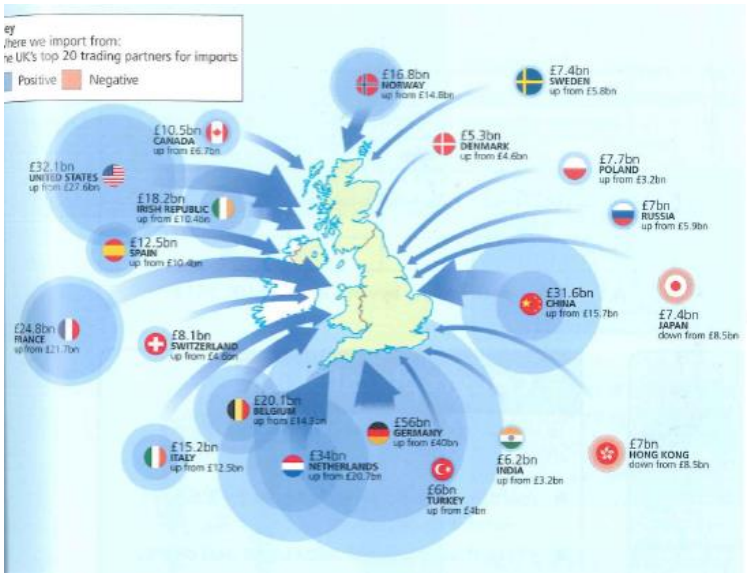
People of the UK

Key Words:

Trade	Relates to a group of people who have a common national or cultural tradition
Imports	The purchase of goods from another country
Exports	The selling of goods to another country
Life Expectancy	The average number of years a person might be expected to live
Ethnicity	Relates to a group of people who have a common national or cultural tradition

Trade

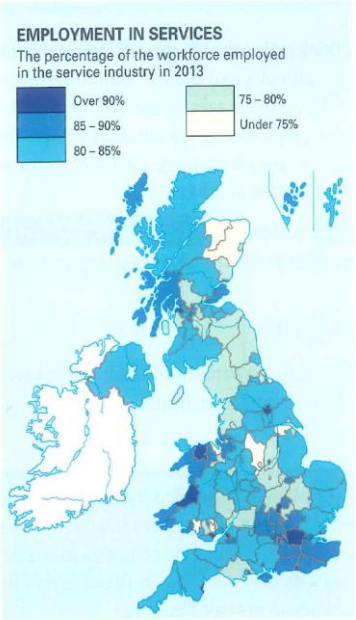
- The UK gets the majority of its imports by value from Germany, Netherlands, United States, and China.
- The top products the UK imports are Petroleum and products, road vehicles, various other manufactured products, and electrical machinery and appliances.
- UK has a trade deficit, meaning the UK imports more items than it exports. Countries want a balance between the amount of importing and exporting that they do.
- The UK primarily exports to the United States, Germany and Netherlands, and its main exports are machines, engineers and pumps, oil, vehicles and gems, precious metals and coins.



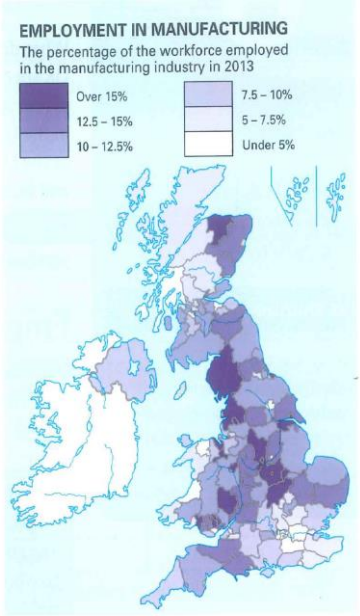
Diversity in the UK

Employment

- has changed over the past 25 years for women →
- there has been an increase in those whom are part-time and self-employed
- people are working more flexible hours.
- The UK has de-industrialized, jobs in manufacturing are being replaced by employment in the services, or tertiary sector.



▲ **Figure 2** Employment in services, 2013



▲ **Figure 3** Employment in manufacturing, 2013

Patterns:

- Secondary sector (manufacturing)

→ North 15% population still employed in manufacturing

→South has less than 5% still employed in manufacturing.

- Tertiary (services)

→South – 80%+ population work in this sector

→ In the North of the UK, 75% work in this sector.

Life expectancy

Region	Average life expectancy
South East England	82.4
East of England	82.2
South West England	82.0
Greater London	81.4
East Midlands	81.2
West Midlands	80.9
Yorkshire and the Humber	80.6
Wales	80.3
North East England	80.1
North West England	80.0
Northern Ireland	79.6
Scotland	79.1

▲ **Figure 7** Life expectancy by region (male and female combined) in years, 2015

- Average now 81 years old in the UK.
- As healthcare, diets and standards of living have improved in the UK, the life expectancy has risen consistently.

Patterns:

- It is highest in the South East (82.4 years)
- lowest in Scotland (79.1 years).
- Men in the North of the UK live several years few than men living in the City of London,

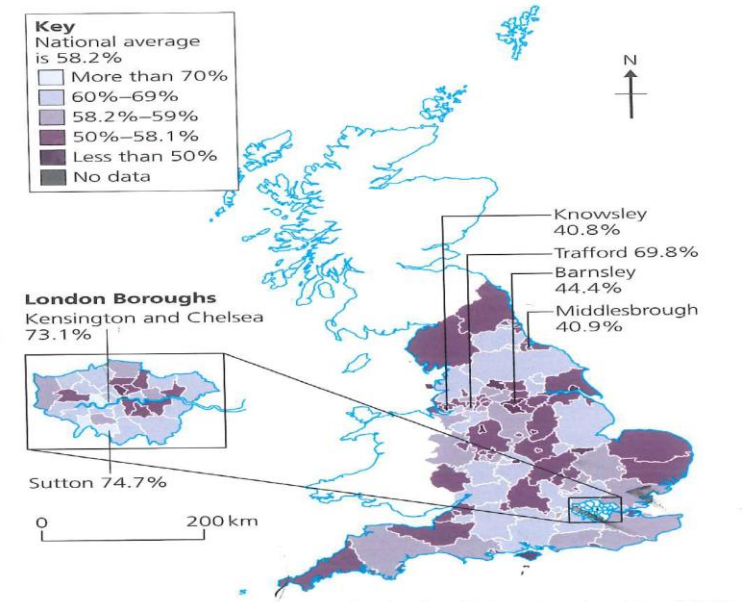
- these disparities reflect variations in incomes and quality of life across the UK.
- There is a link between smoking and poor diet and the likeliness to die prematurely or live with a disability.

Average income

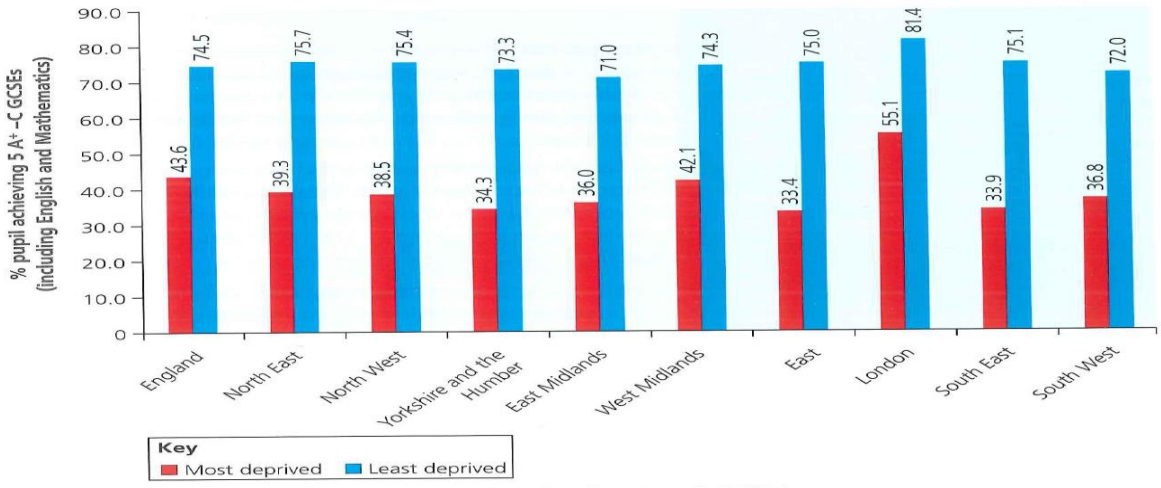
- Footballs can earn six-figure salaries (Wayne Rooney, £300,000 per year), whereas
- families, especially in East London and the northern UK struggle to get buy on £13,000 per year – a large part of which must go to rent, pensions and taxes.
- The regions in England with the highest disposable income include London and the South East.

GCSE results

- London's 2015 results show 72% achieving an A* to C grade
- Yorkshire and Humber region just had 65% of students achieving that result.
- The highest London results were found in the richest boroughs
- Lowest results were found in northern towns such as Knowsley and Middlesbrough.
- Poverty and educational achievement are clearly linked.



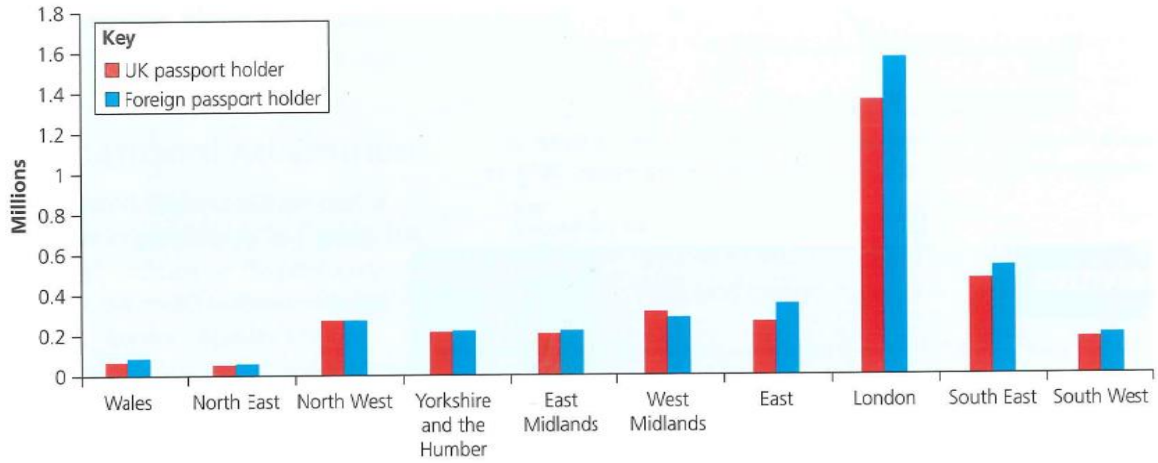
▲ **Figure 8** School performance in England's local authorities, 2011



▲ **Figure 9** Percentage of students achieving more than five A* to C GCSE (or equivalent) grades including English and mathematics by deprivation, 2013–14

Ethnicity

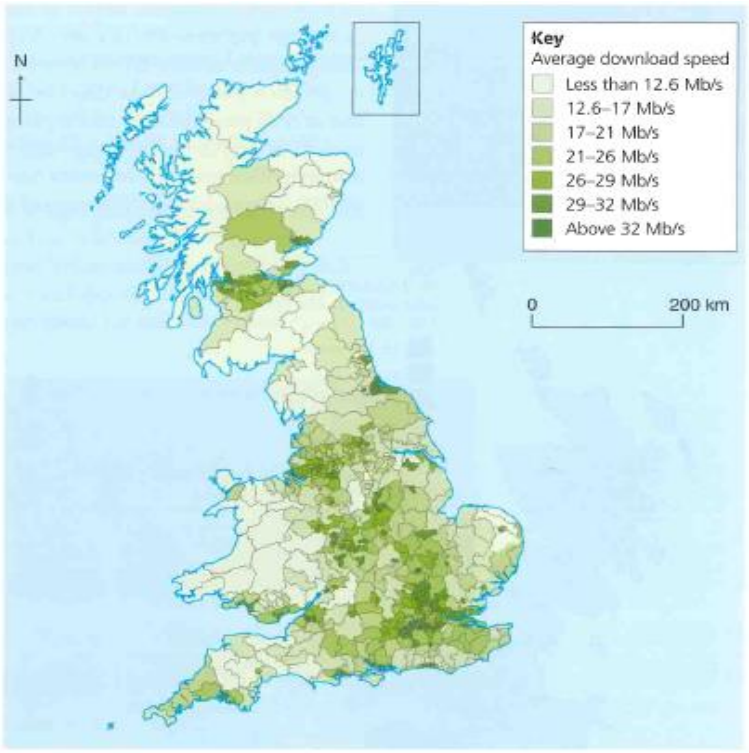
- Large influx of people from countries in the European Unions.
- There are also large ethnic groups of immigrants associated with foreign nationalities such as Bangladeshi or Pakistani.
- Tend to be concentrated in major cities – particularly London.
- Neighbourhoods, towns and cities with diversity benefit from the wealth of colour, cultures and traditions.
- Some ethnic groups do tend to form distinct clusters in cities, especially Pakistanis, Bangladeshi and some black Africans, however, residential areas around the UK are increasingly becoming ethnically mixed.
- Some ethnic groups may find themselves living in relatively deprived areas in the inner city as they may earn a low income and have limited job security.



▲ **Figure 10** Foreign-born residents, 2011 Census

Access to broadband

- Almost 100% of households have access to internet.
- Superfast broadband (30Mbps+) and higher download speeds, is available more in the population centres
- Remote areas have low availability (which includes Wales, Scotland and South West England).



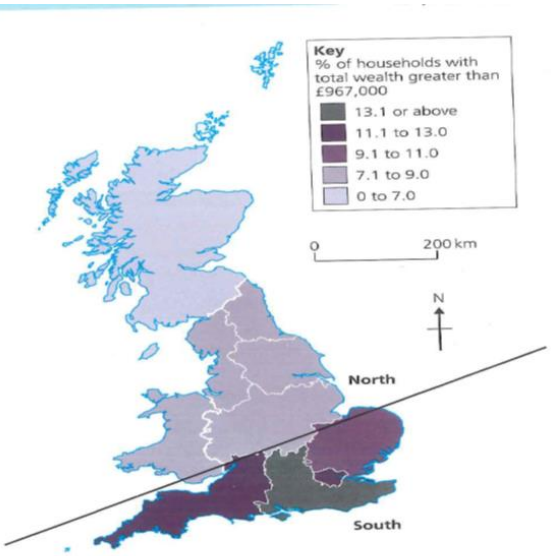
▲ **Figure 13** Broadband availability in Britain, 2014

Development in the UK

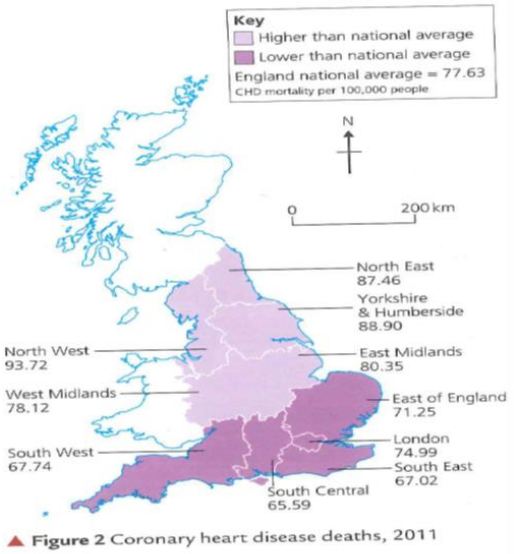
- Development in the UK is not even; there is a so-called 'north-south divide' in Britain.
- Also, within the South, the South East region is much wealthier than the others – over 13% of household in this region have a total wealth of close to £1 million a year.
- The north-south divide also clearly shows that poverty and standards of living are important factors affecting people's health.
    - Far fewer people in the South East and South Central regions (67.02 and 65.59 people per 100,000 respectively) of England die from coronary heart disease than in the North East or North West (87.46 and 93.72 people per 100,000).

While London is quite wealthy overall:

- there are 7500 people who sleep on the streets each night.
- Tower Hamlets is one of the most deprived boroughs in England and has the highest rate of child poverty in the country.
- Westminster, which is a wealthy borough, has areas where there is long-term unemployment, crime and housing issues.



▲ **Figure 1** North–south divide



▲ **Figure 2** Coronary heart disease deaths, 2011

So what are the causes of uneven development?

Geographical Location

- London is the centre of economic activity and wealth creation in the UK
    - largely due to London being the UK's capital, and once being the administrative centre of the powerful British Empire
    - has long been one of the world's major trading centres
    - hub for business, finance and media
    - many national and international companies have their headquarters here
- As London has grown, wealth has extended to the South East
    - Tremendous economic growth in commuter belts, e.g. cities like Cambridge

- UK has benefited from being a part of the EU, most of its trade (imports and exports) have been with member states
- Access of London and South East to the continent
    - Eurostar rail services through Channel Tunnel
    - Several ferry routes
    - Many air connections from London's airports

- By contrast, the North and West of UK are more distant from European mainland.
- Some northern cities have a wealthy base, and may have good transport links with cities such as Manchester and Glasgow, but many other areas are remote and inaccessible, and the rural areas are often much poorer than the South East's rural areas.
- The government has plan for a high speed rail link to northern cities in hopes to improve their links with London.

You should be able to link Geographic Location to what's happening in Economic Change, Infrastructure, and Government

Economic Change

- Before 1900, most people in the UK worked in farming, mining, or related activities – the **primary sector**.
- During the Industrial Revolution (1800s)
    - many people moved to the towns and cities for work in the manufacturing sector.
    - Much of the UK's growth was centred on the northern coalfields
    - Heavy industries and engineering in the cities – great deal of wealth generated
- Since de-industrialization in the 1970s
    - Many industries in the North have closed and people have lost their jobs e.g. Teesside Steelworks in Redcar, loss of 1700 jobs, which had a huge impact on the community and economy of the region
- In the late 20th and early twenty-first centuries there was a big shift to jobs in the **service (tertiary) sector** involving jobs in healthcare, offices, financial services and retailing.
- Most recently, the **quaternary sector** has developed with jobs in research, information technology and the media.
    - Most of these jobs are based in London and the South East
    - London is a world centre for financial services, media, research, and the creative industries
    - London has benefitted hugely from **globalization** and the interconnectivity with the rest of the world

Infrastructure

Infrastructure involves transport, services and communications. London and the South East have benefitted from recent developments in the UK's infrastructure:

- Channel Tunnel (1994)

- Expansion of airports, such as Stansted, and the construction of the new terminals, e.g. Terminal 5 at London Heathrow (2008)
- High Speed 1 Eurotrains operating from London St. Pancras (2007)
- There are several planned developments in transport such as the Crossrail, and the construction of a new airport runway, probably at Heathrow

➢ Crossrail
  - Europe's largest construction project
  - £15 billion in cost
  - Will link London's key employment, leisure and entertainment districts
  - Will carry about 200 million passengers a year
  - Add an estimated £42 billion to the economy of the UK
  - Will support **regeneration** projects and cut journey times across the capital

Government Policy

Many national and international companies have chosen to be in London rather than elsewhere. Private sector jobs and the service sector have tended to focus on growth in London and the South East. Government investment in infrastructure projects has also focused on, and thus promoted the economic growth of the South – Crossrail, regeneration of London's docklands (from the 1980s onwards), construction of the Olympic Site for 2012, etc.

The Northern Powerhouse

- Government announced plans in 2015 that they would create a Northern Powerhouse of modern manufacturing industries specialising in science and technology across the major cities of the North
  - Aim to redress the north-south economic imbalance
  - Attract investment into norther cities and towns
- Several transport improvements will support this initiative
  - Electrification of Trans-Pennine Express Railway between Manchester and York by 2020, reducing journey times
  - Electrification of Midland Mainline between London and Sheffield by 2023
  - HS2 (High Speed 2) connecting London with Birmingham and then Sheffield, Leeds and Manchester (may then be extended to Newcastle and into Scotland)
    - Controversial due to route passing through several areas of highly valued countryside and close to many people's homes

Case study: Salford Quays

You need to be able describe the response to economic decline with reference to a named case study (Salford Quays) and evaluate the level of success of that response. Your answer should tie in your understanding of trends in employment in the North, and specifically, the city; your understanding of the negative multiplier effect; and decline due to deindustrialization. You will need to give specific examples of what the government and city has done to stem economic decline and regenerate the area. Remember in such a question that you are giving your opinion on whether these efforts were successful, with evidence and explanation. Aim to be able to give four detailed examples as evidence.

Location

- Salford Quays is a heavily industrialized dockland to the west of the city of Manchester, in Northern England.
- It is an inner-city urban environment, and home to some 200,000 people.
- It is located at the head of the Manchester Ship Canal.

Early growth

- Industiral revolution → Manchester was centre of cotton and manufacturing industry.
- The Manchester Ship Canal was built in 1894 to allow large ships to journey into the heart of the city from the River Mersey and the Irish Sea.
- A massive complex of inland docks was constructed during the 1890s to accommodate the thriving trade, employing thousands of people, and establishing a large community with homes, factories and shops.

Decline

During the 1960s and 1970s the larger container ships were unable to use the Manchester Ship Canal and rapid decline set in.

- Over 3000s people lost their jobs
- Docks closed in 1982
- Area was derelict and heavily contaminated
- Surrounding housing areas fell into disrepair
- Significant social problems
- High rates of unemployment and crime

Recent Growth

In the mid-1980s funding from the UK's urban programme created some physical improvements to Salford Quays, but did not create many jobs of local people, and still left large areas derelict. In 1985 the Salford Quays Development Plan brought several projects, and massive investment, that transformed the area into a thriving working and living environment.

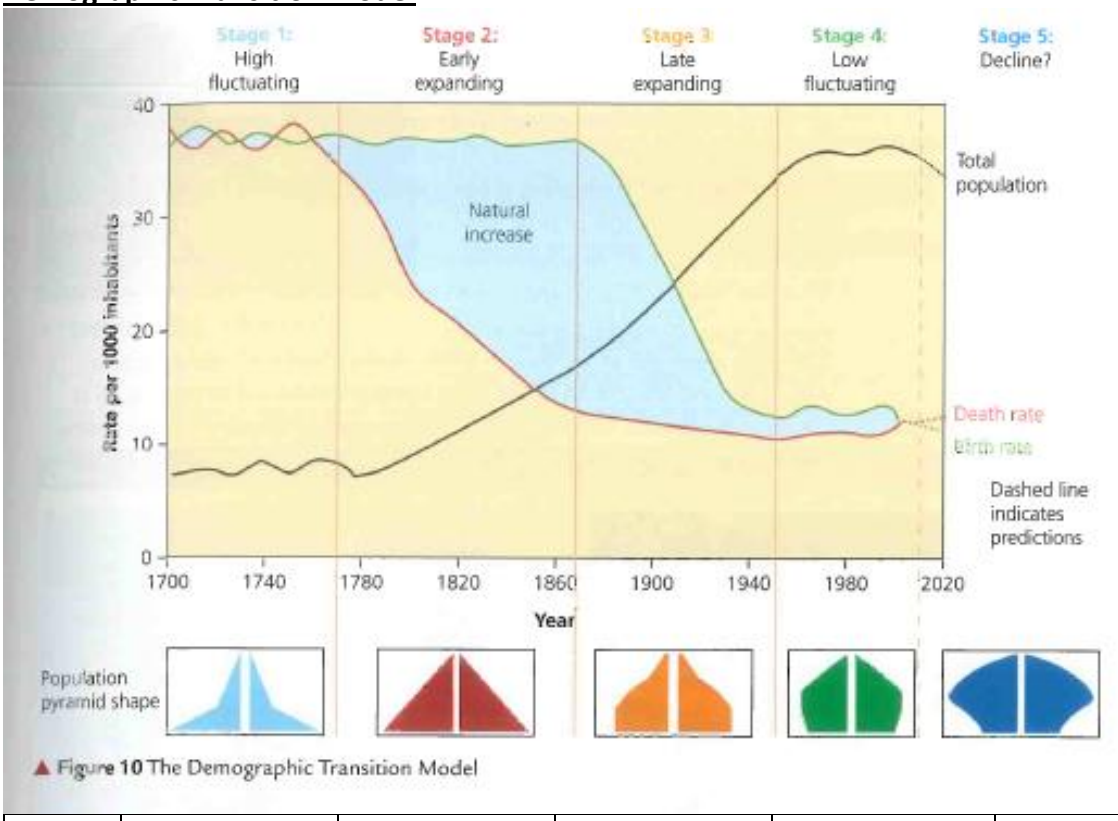
- New homes, education, health facilities, new business and shops, city parks, cleansed waterways and green spaces
- MediaCityUK
    - In 2007 the BCC moved five of its departments to this new development on Pier 9
    - The BBC is expected to attract other media, broadcasting, and film-making companies
    - Cost £550 million, created 10,000 jobs, and added an estimated £1 billion to the regional economy by 2013
- The Lowry Building
    - Completed in 2000, cost £64 million, distinctive architecture
    - 1800-seat theatre, several galleries (exhibits some local artwork), bars and cafes
    - Plaza for festivals and events, surrounding basins reclaimed to create attractive environment
- Other developments include
    - Some high-rise buildings to make use of limited pier space
    - £90-million retail and leisure facility called the Lowry Outlet
    - Imperial War Museum North
    - In 1999, new line of the city's light rapid transit (LRT)/tram system, Metrolink, linking Salford Quays with the centre o Manchester and beyond
    - Salford City Council aims to establish Salford as a 'modern global city' by 2025, with Salford Quays at the heart of its regeneration plans

UK changes to population

Census	a survey that measures the population of a country. Usually carried out every 10 years.
Birth rate	The number of live births per 1000 of the population per year.
Death rate	The number of deaths per 1000 of the population per year.
Life expectancy	The average number of years a person is might be expected to live.
Natural increase	The difference between the birth rate and the death rate (if the birth rate exceeds the death rate there will be a natural increase).
Migration	The movement of people from one place to another.
Immigration	People moving **from** one country to settle in another.
Emigration	People who **leave** one country to settle in another.

UK Population Structure

Demographic Transition Model



▲ Figure 10 The Demographic Transition Model

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
What?	Birth rate and death rate are both high. (population stable)	DR drops. BR still high. (population increases)	BR declines. DR falling but begins to stabilize. (Population increases)	BR and DR are low. (population is stable)	DR increasing- higher than BR.
Why?	Disease and poor living standards. Lots of children are born to guarantee that a few will survive.	DR drops as healthcare improves.	Infant mortality falls (less babies are dying) as healthcare improves. Women are being educated and choose to have less children.	Excellent healthcare, high standards of living. Women follow their careers and have children later in life. Contraception. People are living longer.	Ageing population. Children are expensive to look after so families are smaller.
When in the UK?	**1700-1760**	**1760-1870**	**1870-1950**	**1950-Present**	**(projected)**

Ageing Population

Definition: High/ increasing amount of older people in middle and old age.

Factfile:

- 2011- 9.2 million people/16% of the UK's population were aged over 65.

- Only 10% were still economically active.
- 'baby boomers'- children born after the second World War 2 will be turning 65 in the next 10-20 years. Therefore, the UK is gradually becoming an ageing population.

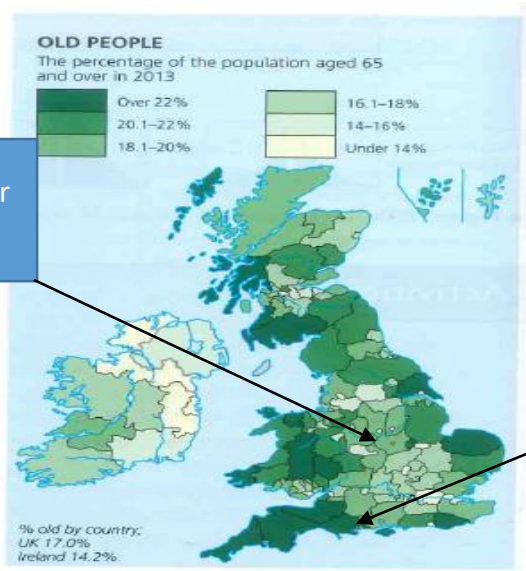


Figure 12 Distribution of pensioners in the UK and Ireland, 2010

High concentrations (Over 22%) in the Wales

High concentrations of elderly in rural areas. **WHY?** Desirable locations for retirement and lack of opportunities for young people.

High concentrations (Over 22%) in the South West- Cornwall, Devon, Dorset.

This ageing population causes both **positives** and **negatives** i.e. greater medical needs, increasing pressure on the NHS. The government needs to respond to these challenges. Study the following table about the UK's ageing population (causes, effects and responses).

TIP: You need to be able to explain these effects and evaluate the responses of the government.

Causes	Effects	Responses
• The main reason is that a large number of people born after the Second World War and through into the 1960s ('baby boomers') are now moving into old age • Improved healthcare and new treatments prolong life, especially from diseases such as cancer and heart conditions • Reductions in smoking, which caused a huge early death toll in the past • Greater awareness of the benefits of a good diet • People living more active lives and benefiting from regular exercise • Many older people are reasonably well off financially so can afford a reasonable standard of life.	• Healthcare costs are very high and will increase as the elderly require support services and expensive treatments • Shortages of places in care homes, many of which are expensive • Many older people are looked after by their middle-aged children, often affecting their lives and their ability to remain in full-time employment • Older people are valued employees as they have high standards and are reliable • Older people act as volunteers in hospitals, advice centres, food banks, etc. • Many older people are keen to travel and to join clubs, societies, sports centres, etc. This helps to boost the economy and provide jobs.	• Government-issued pensioner bonds in 2015 to encourage older people to save money for the future • Pensioners receive support in the form of care, reduced transport costs and heating allowances (winter fuel payments), which is expensive for the government. This may be withdrawn from wealthy pensioners in the future. • Retirement age, which used to be 65, is being phased out to encourage people to continue working • State pension age is gradually being increased to 67 • The government could encourage people to take out private health insurance to cut NHS costs • Pronatalist policies to encourage an increase in birth rate to balance the population structure. This could include cheaper childcare, improved maternity and paternity leave and higher child benefit payments • Allowing more immigration would also address the need for a larger young workforce and higher birth rate, but this is controversial.

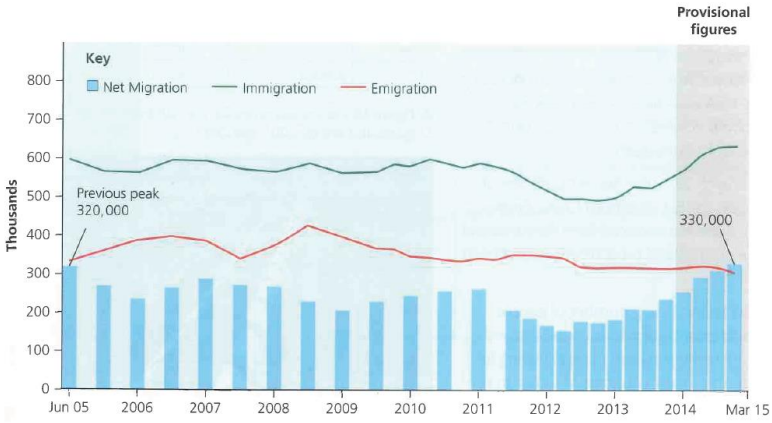
▲ **Figure 14** The UK's ageing population – causes, effects and responses

Immigration in the UK

The UK has a diverse cultural heritage due to migration.

- 20th Century- migrants from the Caribbean and India.
- 21st Century- migrants from Europe, Asia and war torn countries such as Iraq.

Recent Trends in the UK



▲ **Figure 16** Long-term international migration to the UK, 2005–15

This figure shows the recent trends in immigration (people coming into the UK) and emigration (out). In 2015- the net migration (the difference between immigration and emigration) reach 330,000, this is 3 times the government target. Therefore, there are more people coming into the UK than are leaving.

Why?

Most of these were seeking work, others to study or wished to join family.

Where from and why?

- India and Pakistan- to join other family members who have already migrated.
- Poland- in search of better wages and improved opportunities.
- EU countries- due to free movement within the EU. (most recently Romania and Bulgaria due to recently joining the EU)
- Africa, Asia, the USA and the Caribbean- former colonial countries and members of the Commonwealth.
- Afghanistan and Syria- escaping war (seeking asylum/safety)

Impacts of immigration in the UK

	Advantages	**Disadvantages**
Social	• Introduction of different cultures, food, music and fashion. • Immigrants bring skills that may be in short supply in the UK. • Immigrants are often keen to engage with local communities.	• May be some tensions with local people or other ethnic groups. • Maybe some bad feeling about housing shortages leading to social unrest. • Some people feel that the UK is already overcrowded and that too many immigrants will lead to urban pollution and congestion.
Economic	• Workers pay taxes to the government- the majority of immigrants work- more money is paid in taxes than received in benefits. • Immigrants often take low paid jobs in farming, factories of support services such as cleaning. Semi-skilled workers have filled gaps in decorating and plumbing as well as working as nurses. • Some immigrants are well educated and highly trained. • Those immigrants who study in the UK pay a considerable amount to colleges and universities.	• Extra costs for healthcare, education ad social services. • House prices and rents may increase as demand exceeds supply. • Money may be sent home by immigrants so does not get spent in the UK. • Some people think that immigrants are 'taking our jobs' and increasing unemployment- there is, however, no real evidence that immigration is linked to unemployment.

Urban trends in the UK

Trend	Causes	Consequences
Suburbanisation → spread of cities outwards and the development of new residential areas	• Housing shortages in city • Land is cheaper outside of the city • Improvements in travel infrastructure has made it easy to commute into the city.	• Houses are built on the green belt e.g., Newcastle Great park housing development creating 3000 homes. • Places large demands on resources particularly water. • Poor air quality die to the large number of vehicles on the roads.

Couter – urbanisation → movement of people from urban areas to live in rural areas.	• Move to find better QoL e.g. better for young children • Cost of living is less that in the city • Perception of crime in the city • Increasing connectivity and high-speed broadband in rural areas.	• Dormitory villages created – villages are quiet in day as residents work away. • Less of a community feel in villages as residents are not there all the time. • Local people can be priced out of market as city workers move in to the area.
Re-urbanisation → redevelopment of inner city areas.	• Governement investment to reverse the problems of inner city decline • Attracts new businesses and industry • Increased infrastructure created	• Attracts people from outside the area to move in. • Lack of affordable housing can lead to expensive apartments ending up empty and locals are priced out of the area. • Traffic congestion can also increase.

Major city case study: Leeds

- Leeds is a major city in West Yorkshire, North of London.
- It is the second largest metropolitan district in England behind Birmingham and covers over 200square miles in total
- Well developed transport infrastructure M1 London and M62. By rail, it takes 2 hours to London. There is also an international airport.
- The city has a population of 800 000 people a rise of around 10 000 in last decade. Lots of consumers and employees
- Globally, Leeds has attracted interest through global connections between clothing firms and outsourced factories. There are good export links with many firms operating within the city.

How did Leeds develop?

- Wool industry initially and then manufacturing in the industrial revolution.

What is the pattern of national and international migration?

- Leeds has grown in recent years,
- 17% population is from black and ethnic minorities
- Non British population is higher than the rest of the region. These residents tend to settle in the Gipton and Harehills wards of the city. A Carribean carnival is held every year in Harehills.
- Large Irish community too – linked with the industrial revolution.
- Post WW2 and then again in 2004, large influx of Polish and Lithuanian people moving into inner city Leeds. Estimates put 9000 long term migrants moved into the city in 2013.

How has immigration affected the character of the city?

- Diverse
- Range of international cuisines offered in the city, reflecting the different cultures.
- Students also add diversity to area – particularly around Headingley. 30000 students are based in the city.
- Due to large youth population, high demand for services.
- Diversity too amongst wealth and ethnic groups. Some ethnicities struggle to gain high paying jobs.

What challenges does Leeds face and is it a divided city?

- Affordable housing
- Unemployment – particularly among young people
- Social inequality including deprivation and poverty
- Quality of water in the city rivers
- Air quality due to pollution and number of cars on the road.
- North/South divide in the city. North is more wealthy than south.
- Wealthy parts of Leeds include Mosely Wood, Headingly and Cookridge.
- Gipton and Harehills are most deprived.
- In Holbeck, 15% of residents were on jobseekers allowance whereas in Weatwood, the figures was just 0.2%
- Headingly has been affected by a process called studentification – where the area has benefited from the economic prosperity of the student population causing house price rises and it has become a more desirable area to live in. however, it is seasonal as students leave for a large amount of time in the summer.

What developments have there been in recent years?

- Investment in areas around the Leeds –Liverpool canal in the Royal Armouries (muesuem) quarter. New housing and regenerated warehouses have popped up.
- Large retail villages have also been developed outside of the city e.g. Trinity and Eastgate which suck business away from local independent shops in favour of large chains.
- City is becoming more unequal
- Gated communities have also become more common with the wealthy living in estates behind gates.

What lies in the future for Leeds?

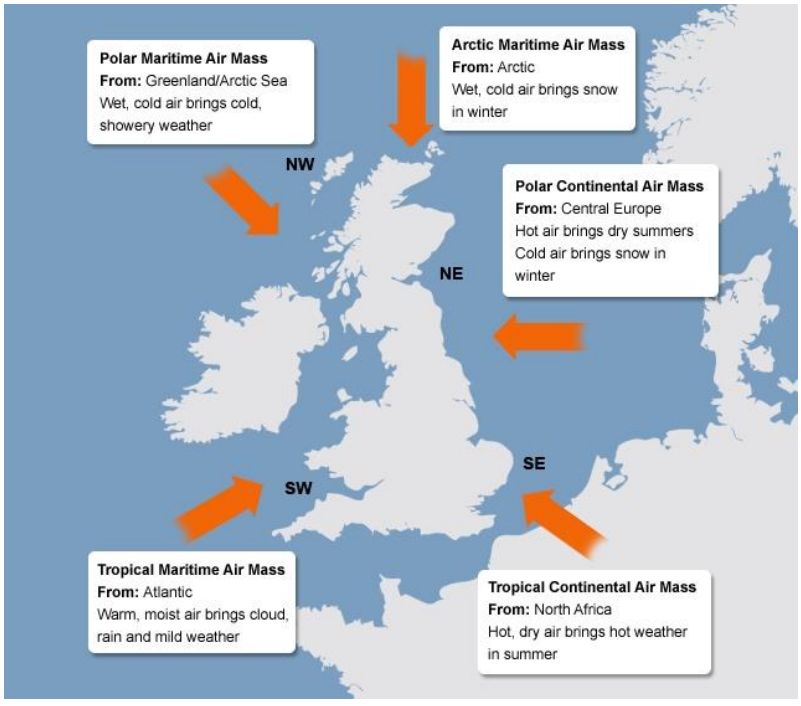
- HS2
    - 2014 → government announced plans to build high speed railway which connected London to the 'North'
    - Will connect Leeds by 2032
    - Plan to increase investment as part of 'northern powerhouse scheme' (see government policy section further up in pack).
- South Bank development
    - Incorporates previous developments at Royal Armouries
    - Educational improvemetns linked to Leeds city college which will transform the former Alf Cooke Printworks into a vocational campus
    - Hub for new creative and digital industries
    - A new 3.5 hectare park and open space along the waterfront.
    - Creation of Holbeck Urban Village – sustainable homes close to waterfront.
    - Over 300 000 m2 of land for development will be made available

- New pedestrian and cycle bridges will connect open spaces and public transport to improve connectivity.
- Water taxi's and shuttle buses will connect the area to the city and reduce carbon emissions.

TIP: you need to be able to assess HOW WELL you think this plan is sustainable.

Environmental challenges of the UK

Extreme weather in the UK



Four things affect weather in the UK.

←Air masses

Prevailing wind → SW: the direction where most of the wind comes from. It brings warm, moist air to the UK.

North Atlantic drift → A warm current (from the Caribbean). It keeps UK waters warm, especially in winter.
It brings warm water to the west of the UK, and towards Norway.

Continentality → Land heats up more quickly and cools down more quickly than water. UK places closer to the continent (SE) have more extremes in temperature than those closer to the sea (NW).

How do air masses cause extreme weather?

Tropical maritime: Flooding 2014

- Wettest January since records began
- Constant depressions coming from Atlantic Ocean.
- 350mm rain fell in January and February – 100mm more than average.

Tropical continental: Heatwave 2003

- Very warm weather across western Europe
- 20,000 people died across the continent
- Wildfires broke out and reservoirs ran dry
- A UK record temperature was recorded of 38.5
- Food prices rose as farm animals died and crops failed.

Arctic maritime: Heavy Snow, 2009 – 10

- Night time temperatures regularly fell beow -10 in Scotland
- Widespread snow fell acorss UK with up to 10 – 20cm across parts of England.
- Transport was badly affected.
- Ice bought down electricity wires and 25 000 homes were without power
- Several people died.

Case study: UK flood event caused by extreme weather → Year 11 - York floods

When? December 2015.
Cause?

- ✓ Tropical maritime storm hit the UK – came in from a WSW direction. Two big TM storms in a 14 day period.
- ✓ Storm Desmond hit just 10 days before – 77mph gusts in Yorkshire and Cumbria and over 160mm rainfall in 48 hours. This meant that ground was saturated and the capacity of rivers was full.
- ✓ Storm Eva then hit which generated a longer period of heavy rain (no stats provided by met office) and winds of 72mph

Impacts?

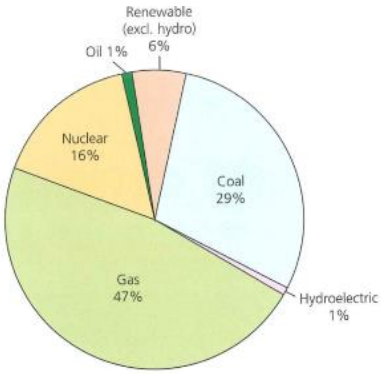
- ✓ 600 homes flooded just before Christmas.
- ✓ Average claim for damage was £13 000
- ✓ Businesses were affected → a lot of stock was badly damaged.
- ✓ There was also less footfall in critical Christmas period which meant that many businesses lost a lot of money.
- ✓ Tourists were put off visiting the city.

How are environments and ecosystems used and modified by humans?

Use	**What?**	**Impacts**
Providing food		
Mechanisation of farming	Moved from small-scale human powered farming to large scale farming and the use of tractors, combine harvesters as well as fertilisers.	▪ Destruction of hedgerows (disrupting habitats) as farms have grown. ▪ Field are not given time to recover so soils are less nutrient rich ▪ Increased use of chemicals and pesticides which can lead to eutrophication.

Commercial fishing	Rapid development of fishing in North sea as more people demand fish.	▪ Some species are overfished e.g. cod → average fish catch has been declining for 10 years. ▪ Fishermen now have 'minimum size' rule where they have to return small fish ▪ Causes 'accidental death' of other species such as dolphins.
Providing energy		
Wind farms	Can be found on shore or off shore. They are cheap compared to other sources of energy and wind power has recently developed as a major source of power in the UK.	▪ Onshore found in areas of open countryside on high ground. Some people can find them unsightly. ▪ Wind turbines can create a lot of noise. ▪ They have to be manufactured and then transported to the site, thus producing GHG during this processes. ▪ Offshore less environmental impact but can affect the migration patterns of birds
Fracking	Use of water to extract gas from shale. It was banned in the UK until 2015 but this has been lifted.	▪ Concerns about the groundwater supply becoming toxic as the fracking fluid remains in the ground and could contaminate water and soil with bromide, methane and diesel. ▪ In 2012, over 1 trillion litres of toxic waste water from fracking had to be treated around the world. ▪ Concerns could cause earthquakes.
Providing water Issue in UK as most rain is in the west and north whilst the greatest demand in the south and east.		
Reservoirs	Large areas if water, often created by building a dam to alter flow of a river. Expensive to construct.	▪ Flooding of landscapes can lead to loss of settlements and farms. ▪ Sediment can accumulate against dams in reservoirs. Can results in a chemical imbalance in the water. ▪ Disrupts the natural processes at work in the river valley.
Water transfer schemes	Movement of water from an area with an excess to an area with a deficit through pipes, rivers or canals. E.g. from River Ely Ouse to River Stour in Essex	▪ Could affect local ecology as chemistry of water can be different. ▪ Can lead to nutrient imbalances which affects aquatic plants and animals. ▪ Rely heavily on costly hard engineering. ▪ Introduction of water to a new area can also spread non-native invasive species which can threaten the new ecosystem.

What are the energy sources in the UK?



UK has good energy mix with several different sources used. Natural gas is currently the biggest provided of UK's energy with 50% from this fuel. Renewable energy still only marginally contributes.

Energy supply/demand changes since 1950

- Natural gas contributes 50% of energy. This is up from less than 5% from 1975 → 1991
- Coal used to be the biggest source of energy but has declined from 80% in 1961→ <30% in 2009.

Coal

1961 – accounted for 80% of the UK's energy supply. Now just 30%.

1980s – sudden dip due to miners' strike over mine closures and job losses.

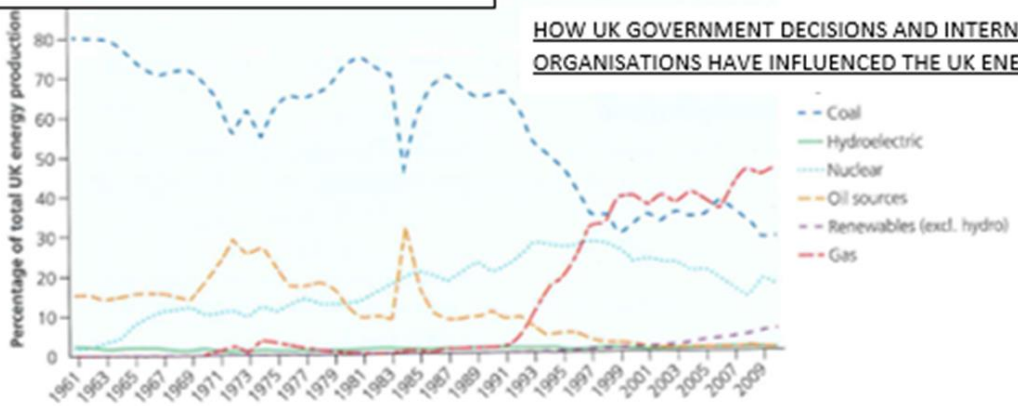
Too expensive to mine and cheaper sources are more readily available.

Oil

1974 – OPEC (organisation of the petroleum exporting countries) quadrupled price of oil.

UK government increased investment in North Sea oil and gas to make the UK self-sufficient.

HOW UK GOVERNMENT DECISIONS AND INTERNATIONAL ORGANISATIONS HAVE INFLUENCED THE UK ENERGY MIX.



Gas

1990, EU 'gas burn' directive repealed. This meant there was no longer a restriction on the use of gas.

This allowed the UK gas industry to increase dramatically.

Nuclear

International organisations e.g. EU and UN have responded to climate change through placing limits on CO2 emissions.

This accounts for the UKs investment in Nuclear e.g. the new Hinkley point plant in Somerset.

Sustainable energy solutions

Ensuring the long term availability of energy sources for future generations.

National strategies:

- Achieve a target of 15% of UK energy to come from the renewable sources by 2020

- ❖ Provide financial support for renewable electricity and heat by supporting these projects.
- ❖ Reduce the UKs carbon emissions by reducing dependence on fossil fuels
- ❖ Reduce the need for foreign imports of fossil fuels
- ❖ Create 500 000 jobs in the renewable sector by 2020
- ❖ #promote the use of offshore wind farms and research the potential of wave energy
- ❖ Encourage households and communities to generate their own electricity through the introduction of renewable head incentives (allowing people to get solar panels on their houses for less money) and 'feed in tariffs' (where homeowners can sell the electricity they haven't used from their solar panels back to the grid).
- ❖ Make the planning process easier and quicker for local renewable energy schemes.

Local solutions.
There are many local sustainable energy projects involving individuals and small communities.

Anaerobic digestion, Silloth Cumbria

- 2011 anaerobic digestion system installed at Dryholme farm near Silloth (a really rural area)
- Digester uses farm slurry and silage to generate enough power for 4000 homes. It breaks down the slurry and silage to create a methane rich biogas.
- Cost was £4million. Money came from government grants, loans and private investments.
- Waste product from digester can then be used as a fertiliser that farmers can then use on the land.

Hoathly Hill district heating, West Sussex

- Small community of 27 homes. Since 2007, the community has benefited from installation of district heating system.
- System uses central low maintenance woodchip boiler to generate hot water for each house.
- Each house is fitter with a meter so residents can monitor and regulate the amount of heat used.
- Cost was £400 000.
- Reduced carbon emissions
- Increased community cohesion .

Impacts on people and the environment of renewable energy

Most objections for wind farms are based on residents unhappy with construction or spoiling a view.

Kirkby Moor wind farm, Cumbria.

- 2015 → plan to replace 12 existing 42m turbines with 6 115m tall ones.
- Local councillors feared this would affect tourism in the area.
- This could impact the economy as tourism is the biggest industry in the area.

Navitus Bay offshore wind farm

- 2015 → ministers rejected £3.5m plan to construct 190 wind turbines 215m tall in the English channel, off the Dorset Jurassic coast.
- This is a UNESCO World Heritage site and the turbines could have jeapordised this.
- Tourism would also have been affected.

Government subsides has meant that solar farms are more profitable than farming.

Hacheston solar park.

- 2014 → government rejected proposal for a solar farm that would cover an area bigger than 75 football pitches with 100 000 solar panels.
- Was rejected dur to the negative impact on the landscape and it would be a waste of valuable arable farmland.
- Would have powered 25 000 homes had it gone ahead.

UK energy future

Going forward, there is an argument that the UK should continue to use fossil fuels as long as the UK can produce it. This is due to the investment that renewable energy needs in order to grow.

- → 3 main non renewable sources that they UK will focus on: gas, fracking and nuclear.

Gas:

- → Natural gas is far less polluting than coal and oil.
- → Reasonably secure as the UK has gas reserves in the north sea.

Fracking:

- → Large quantities of oil and gas trapped underground in shale rock.
- → Involves pumping water, sand and chemicals into the shale under high ressure. It fractures the rock and enables the oil and gas to escape and be extracted.

Nuclear:

- → Currently accounts 16% of UK energy supply.
- → Extremely expensive to build and must be built on the coast as they require lots of water in order to cool the reactors.

➔ They are efficient and relatively sustainable to power.

Hinkley point, Somerset

- £18bn project. Will be able to power 5 million homes and will create 25 000 jobs.
- China is funding 1/3 of the project.
- High costs of project will mean however that the cost to consumers will increase.

Factors affecting the UKs energy future

The high cost of building new nuclear and gas-fired power stations, as well as the decommissioning of old power stations.	High cost of constructing renewable energy alternatives, such as wind farms, tidal barrages and HEP.
New power stations may result in more expensive electricity which could affect business and consumers.	North Sea supplies are starting to decline. It will become increasingly expensive to extract oil and gas from there.
For individual and local communities small scale renewable projects have to be cost effective. Most require grants or loans.	
Fracking could become a political issue with political parties adopting different stances .	Imports of natural gas, ensuring energy security by having a wide import base involving agreements with stable nations.
To what extent should foreign companies own, operate or invest in UK energy? For example, Chinese investment in new UK nuclear power stations.	Will the Government continue to support and encourage the renewable sector with grants and subsidies? The solar industry may suffer as its grant has been cut
Many people are concerned about nuclear power – the radioactive waste, leaks and terrorism are all concerns	Environmental concerns may prevent expansion of the renewable sector by preventing the construction of wind and solar farms.
. Fracking may have environmental impacts, particularly involving pollution of underwater aquifers (stores of fresh water).	The UK is committed to reducing carbon emissions, so will need to ensure low carbon fuels are used to provide energy in the future.

Economic	
Political	
Environmental	