

# GCSE AQA Geography Paper 1: Living with the Physical Environment.

## UK PHYSICAL LANDSCAPES AND COASTAL LANDSCAPES IN THE UK

**How to use:** Test yourself by covering the answers found in the right hand column and then quizzing yourself. It is also great to use in pairs or teams to test each other. For an additional challenge, cover the questions in the left hand column and try to work out what the question is.

**C** = Core (Grades 1-4)    **CH** = Challenge (Grades 5-7)    **CH+** = Challenge + (Grades 8-9)

<b><u>1. UK LANDSCAPES</u></b>		
<b>C</b>	What is relief?	the highest and lowest elevation points in an area
	What do upland and lowland areas mean?	an area of land lying above sea level/ an area where the land is at, near, or below the level of the sea and where there are not usually mountains or large hills.
<b>CH</b>	3 examples of upland areas in the UK	Southern Uplands, Pennines, Cambrian Mountain
	3 examples of lowland areas in the UK	North and South Downs, the Cotswolds, the Chilterns
	3 rivers in the UK	River Thames, River Severn, River Clyde
<b><u>COASTS</u></b>		
<b><u>2. WAVES</u></b>		
<b>C</b>	What 3 factors affect the size of the wave?	(1) Fetch (2) Strength of wind (3) Time
	What is the fetch?	the distance over which the wind has blown
	What is the swash?	When the wave breaks up the beach
	What is the backwash?	When the wave rolls back into the sea
<b>CH</b>	List 3 characteristics of destructive waves	(1) Erode the beach (2) Backwash is greater than swash (3) Steep, high waves
	List 3 characteristics of constructive waves	(1) Shallow waves (2) Swash is greater than backwash (3) Build up beach
<b>CH+</b>	What is the crest and trough of the wave?	Crest= top Trough=bottom
	What slows waves down? What does this lead to?	Frictional drag= wave breaks
<b><u>3. WEATHERING AND MASS MOVEMENT</u></b>		
<b>C</b>	What is weathering?	Weathering is the breakdown of rocks caused by different elements of the natural world
	What is mechanical weathering?	Weathering processes that cause physical disintegration or break up of exposed rock without any change in the chemical composition of the rock
	What is chemical weathering?	The decomposition (or rotting) of rock caused by a chemical change within that rock
	What is mass movement?	The downward movement of material under the force of gravity
	Types of mass movement: What are rockfalls?	Fragments of rock break away from the cliff face often due to freeze-thaw weathering
	Types of mass movement: What are landslides?	Blocks of rock slide downhill
<b>CH</b>	2 examples of mechanical weathering?	(1) Freeze Thaw (2) Exfoliation
	Examples of mechanical weathering: What is freeze thaw weathering?	Happens anywhere the temperature fluctuates around freezing point. Repeated expansion and contraction causes rock fragments to break

		away as scree.
CH	What is biological weathering?	Trees put down roots through joints or cracks in the rock in order to find moisture. Includes the effect of animals and plants on the landscape.
	What is scree?	Loose rock fragments as a result of weathering
	Types of mass movement: What are mudslides?	Saturated soil after heavy rain and weak rock flows down a slope. Increases with little vegetation
CH+	Mechanical weathering: What is salt weathering?	<ol style="list-style-type: none"> <li>(1) Salt in sea water evaporates and leaves crystals</li> <li>(2) In cracks these salt crystals expand</li> <li>(3) Putting pressure on the rock and causing it to break off</li> </ol>
	Which rock is prone to chemical weathering?	limestone
	Types of mass movement: What are slumps?	involves a whole segment of the cliff moving down-slope along a saturated shear-plane. They can occur after periods of heavy rain, when the water saturates overlying rock, making it heavy and liable to slide. Undercutting of a steep slope by river or sea erosion weakens the rock above, also making a slump likely.

#### **4. EROSIONAL PROCESSES AND LANDFORMS**

C	Erosional processes: What is hydraulic action?	Air may become trapped in joints and cracks on a cliff face. When a wave breaks, the trapped air is compressed which weakens the cliff and causes erosion.
	Erosional processes: What is abrasion?	Bits of rock and sand in waves grind down cliff surfaces like sandpaper.
	Erosional processes: What is attrition?	Waves smash rocks and pebbles on the shore into each other, and they break and become smoother.
	Erosional processes: what is solution?	Acids contained in sea water will dissolve some types of rock such as chalk or limestone.
	What is the main way coasts transport sediment?	Longshore drift
	What is a landform?	A feature of the landscape that has been formed by processes of erosion, transportation, deposition
	What is a headland?	A narrow piece of land that juts out to sea
	What is a bay?	A crescent shaped indentation in the coastline found between two headlands
CH	What factors influence coastal landforms?	<ol style="list-style-type: none"> <li>(1) Resistance of rock</li> <li>(2) Structure of rock- the way rocks are folded or tilted</li> </ol>
	What are the characteristics of a headland?	<ol style="list-style-type: none"> <li>(1) Near vertical cliff face</li> <li>(2) Hard rock</li> <li>(3) Caves forming in its sides</li> <li>(4) Stacks and stumps</li> </ol>
	What are the characteristics of a bay?	<ol style="list-style-type: none"> <li>(1) Soft rock</li> <li>(2) Low energy constructive waves</li> <li>(3) Two headlands mark the edges of the bay</li> </ol>
	How are headlands and bays formed?	<ol style="list-style-type: none"> <li>(1) Discordant coastline- rocks are aligned at right angles to the coast</li> <li>(2) Differential erosion- hard rock becomes eroded slower than soft rock to leave a headland and a bay</li> </ol>
	What is a wave-cut platform?	An area of bedrock visible at the base of some cliffs
	What are the characteristics of caves?	<ol style="list-style-type: none"> <li>(1) Several metres high at the entrance and taper back a long way</li> <li>(2) A blow hole may form in the roof</li> </ol>
	What are the characteristics of a sea arch?	<ol style="list-style-type: none"> <li>(1) Unsupported top of the arch</li> <li>(2) Wave cut notches at the base</li> </ol>
	What are the characteristics of sea stacks?	<ol style="list-style-type: none"> <li>(1) Detached blocks or pillars of rock</li> <li>(2) Pinnacle shaped</li> <li>(3) Wave cut notches at the base</li> </ol>

CH+	What are faults?	Cracks in rocks and can form lines of weaknesses
	What are the characteristics of cliffs?	(1) wave cut notch at the base (2) fallen rock at the base
	What are the characteristics of wave cut platforms?	(1) Slopes down to the sea at an angle of 3-4 degrees (2) Smooth due to abrasion (3) Deep cracks in some places (4) Barnacles (5) Rock pools
	How is a wave-cut platform formed?	(1) Freeze-thaw weathering weakens the top of the cliff. (2) The sea attacks the base of the cliff forming a wave-cut notch. (3) The notch increases in size causing the cliff to collapse. (4) The backwash carries the rubble towards the sea forming a wave-cut platform. (5) The process repeats and the cliff continues to retreat.
	How does a sea stack form?	1) Hydraulic action widens cracks in the cliff face over time. 2) Abrasion causes the cave to grow to form a notch 3) Further abrasion widens the notch to form a cave. 4) Caves from both sides of the headland break through to form an arch. 5) Weather above/erosion below –arch collapses leaving stack. 6) Further weathering and erosion leaves a stump.

## **5. DEPOSITIONAL PROCESSES AND LANDFORMS**

C	What is deposition?	When waves drop and leave behind the load they were transporting. Deposited load= sediment
	What is longshore drift?	(1) Material is transported along the shore in a zig-zag fashion (2) The swash transports material up the beach at an angle and backwash material down the beach at a right angle (3) The angle of the swash is determined by the prevailing wind
	What are beaches?	Areas of sand, pebbles and shingle that are formed by deposition produced by wave processes and longshore drift
	What are sand dunes?	Large heaps of sand that form on the dry backshore of a sandy beach
	What are spits?	A long, narrow finger of sand or shingle jutting out to sea
CH	When will deposition happen?	(1) Sheltered bays (2) Protection by spits
	What are the characteristics of sandy beaches?	(1) Shallow and flat (2) Constructive waves (3) Sheltered waves (4) Gentle
	What are the characteristics of pebble beaches?	(1) Steep (2) Destructive waves (3) High energy environments
	What is a beach profile?	shows the gradient from the back of the beach to the sea
	How do sand dunes form?	(1) Large, flat beach (2) Onshore wind (3) Obstacle e.g. driftwood
	What are the characteristics of sand dunes?	(1) Steep slip slope (30-34°) on leeward side (2) Crests (up to 15m) (3) Gentle slope on windward side

CH	What are the characteristics of spits?	<ul style="list-style-type: none"> <li>(1) 4km long</li> <li>(2) Large pebbles</li> <li>(3) Hooked end</li> <li>(4) Salt marshes</li> </ul>
	How is a spit formed?	
	What is a bar?	A ridge of sand or shingle that stretches from one side of a bay to the other with a lagoon behind it
	How is a bar formed?	By longshore drift
CH+	What is a berm?	a terrace on a beach that has formed in the backshore
	How do dunes change inland?	<ul style="list-style-type: none"> <li>(1) Embryo dunes- form around deposited obstacles</li> <li>(2) Fore and yellow dunes- marram grass helps to stabilise the dunes</li> <li>(3) Grey dunes- more vegetation</li> <li>(4) Dune slacks- depressions in the sand where ponds may form</li> <li>(5) Mature dune</li> </ul>
	What are the 2 conditions that lead to a formation of a spit	Change in coastline shape or at the mouth of an estuary
	What are the characteristics of bars?	<ul style="list-style-type: none"> <li>(1) Bay bar</li> <li>(2) Submerged bar</li> <li>(3) Offshore barrier island</li> </ul>

## 6. CASE STUDY: SWANAGE

C	An example of a section of coastline in the UK to identify its major landforms and deposition	Dorset, SW of UK
	Erosional landforms: What is the name of the bay?	Studland Bay
	Depositional landforms: Example of a sandy beach?	Sandbanks
	Depositional landforms: Example of sand dunes?	Studland Bay
	Depositional landforms: Example of a pebble beach?	West Bay
CH	Erosional landforms: What is the name of the arch?	Durdle Door
	Erosional landforms: What is the name of the headland? What is the rock type?	Durlston Head, Portland limestone
	Erosional landforms: What is the name of the cliffs? What are the characteristics?	Burton Bradstock, Sandstone, 45m high
	Erosional landforms: What is the name of the stack?	Old Harry, originally fell in 1896, chalk and flint
CH+	Erosional landforms: What is the name of the wave cut platform?	Kimmeridge Rock type: Dolomite and Shale
	Erosional landforms: What is the name of the arch?	Durdle Door
	Depositional landforms: Example of a spit?	Sandbanks
	What is the name of the cove? What is the rock type? How is it formed?	Lulworth cove Concordant coastline-layers, of differing rock types are folded into ridges that run parallel to the coast Waves break through the Line of weakness in the Portland limestone (hard rock) and erode the Wealden clays and greensands (soft rock)

## 7. COASTAL ENGINEERING

C	What is the difference between soft and hard engineering?	Soft engineering options are often less expensive than hard engineering options. They are usually more long-term and sustainable, with less impact on the environment. Hard engineering options tend to be expensive, short-term options. They may also have a high impact on the landscape or environment and be unsustainable
C	What are the costs and benefits of a sea wall?	Benefits Protects the base of cliffs, land and buildings against erosion. Can prevent coastal flooding in some areas. Costs Expensive to build. Curved sea walls reflect the energy of the waves back to the sea. This means that the waves remain powerful. Over time the wall may begin to erode. The cost of maintenance is high.
C	What are the costs and benefits of rock armour?	Benefits Absorb the energy of waves. Allows the build up of a beach. Costs Can be expensive to obtain and transport the boulders.
CH	What are the costs and benefits of gabions?	Benefits Use of smaller rocks gives greater flexibility in design Less easy to erode Can use local beach material to reduce visual impacts Costs Unnatural appearance Unpleasant if mesh breaks - risk of injury Shorter lifespan than other techniques Ongoing maintenance costs
CH	What are the costs and benefits of groynes?	Benefits Prevents the movement of beach material along the coast by longshore drift. Allows the build up of a beach. Beaches are a natural defence against erosion and an attraction for tourists. Costs Can be seen as unattractive. Costly to build and maintain
C	What are the costs and benefits of beach nourishment?	Benefits Low environmental impact, if local material is used, it maintains the natural appearance and recreational value of the beach. Locally used, can be as economically attractive as construction cost can be minimal. Costs Potentially short lifespan Ongoing maintenance cost Physical and ecological impacts of acquiring the sand fill
CH	What is beach reprofiling?	Re-shaping the cross-sectional profile of a beach to ensure it offers maximum protective gradient and width against destructive wave action.

CH+	What are the costs and benefits of dune regeneration?	Benefits helps to protect these systems which protect our coastline and absorb storm and wave energy Costs Time consuming Expensive Still vulnerable to collapse
CH+	What is managed retreat? What are the costs and benefits?	Allowing the sea to flood or erode an area of low value land Benefits encourages the development of beaches (a natural defence) and salt marshes (important for the environment) and cost is low. Costs people will need to be compensated for loss of buildings (social and economic) and farmland will be lost (environmental and economic).
CH +	Example of managed retreat: What is coastal realignment?	Creating an engineered new position of a coastline

## 8. CASE STUDY: COASTAL MANAGEMENT LYME REGIS DORSET.

C	An example of a coastal management scheme in the UK	Lyme Regis, Dorset
C	Where is Lyme Regis located and what is it like?	<ul style="list-style-type: none"> <li>- South Coast of England.</li> <li>- Lies within the World Heritage Site known as the Jurassic Coast</li> <li>- Popular tourist destination.</li> </ul>
C	Why are the issues?	<ul style="list-style-type: none"> <li>- Town is built on unstable cliffs</li> <li>- Coastline is eroding very rapidly due to powerful waves from the south west</li> <li>- Many properties have been destroyed or damaged</li> <li>- Sea walls have been breached many times</li> </ul>
CH	Who is in charge of managing the coastline?	<ul style="list-style-type: none"> <li>- Lyme Regis Environmental Improvement Scheme was set up in the early 1990's</li> <li>It aims to: <ul style="list-style-type: none"> <li>- Provide long term coastal protection</li> <li>- Reduce conflict between different stakeholders such as fisherman and environmentalists</li> </ul> </li> </ul>
CH	How has the coastline been managed?	<ul style="list-style-type: none"> <li>- New sea wall and promenade constructed to the east of the mouth of the River Lim (1995)</li> <li>- Extension of rock armour at The Cobb and the eastern end of the sea front. Absorbs wave energy and helps retain the new beach. (2005-2007)</li> <li>- Creation of wide sand and shingle beach to absorb wave energy. Single dredged from the English Channel and sand imported from France. (2005-2007)</li> <li>- Extensive nailing piling and drainage to provide cliff stabilisation. (2013-2015)</li> </ul>
CH+	What are the positive outcomes?	<ul style="list-style-type: none"> <li>- New beaches have raised visitor numbers</li> <li>- Sea front businesses are thriving</li> <li>- New defences have survived recent stormy winters</li> <li>- Harbour is now better protected benefiting owners and fisherman.</li> </ul>

CH+	What are the negative outcomes?	<ul style="list-style-type: none"><li>- Increased visitor numbers have led to problems such as traffic congestion and litter</li><li>- New defences have spoilt the natural landscape</li><li>- The new sea wall may interfere with coastal processes and affect neighbouring stretches of coastline</li><li>- Stabilising cliffs prevents landslips which may reveal important fossils.</li></ul>
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**Other skills you need for this unit:**

- Map skills-scale, compass, 4 and 6 figured grid references, identify pictures of landforms, identify landforms on maps,
- Extended writing skills-Command words: assess, explain, justify, evaluate, to what extent...?
- Drawing sketches from photos
- Using and describing information in photos
- Using OS and Atlas maps
- Describing landforms and processes

**Useful revision materials-**

- Seneca learning-you should already have access to this, if not speak to your teacher.
- BBC Bitesize,
- you tube clips.

**Remember our exam board is AQA!**

Products-revision books and workbooks available in bookstores such as Waterstones and WHSmith they are also available online