**Section C: Physical landscapes in the UK**

**Coasts processes and landforms**

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| **1a.** The size of a wave is determined by: | **1b. Two types of wave**: | | | | **2a. Weathering** is the breaking down of rock in situ. 3 types:  . | |
| **2b. Mass movement** is the downward movement of material under gravity. 4 types: | | | **3. Erosion** is the shaping and moulding of landforms as a result of the work of running water, sliding ice, breaking waves and wind-borne grit and dust. 5 types of coastal erosion: | | | |
| **7. Durlston Head,** near Swanage, Dorset - headland.  **Swanage Bay,** Dorset – Bay.  **Durdle Door,** Dorset – arch.  **Kimmeridge Bay,** Dorset – wave-cut platform.  **Old Harry Rocks,** Dorset – stacks & stumps.  **Hurst Castle Spit,** Hampshire – spit.  **Slapton Sands**, Devon – bar | | |
| **4a.** Four types of **coastal transportation**: | | | | **4b. Longshore drift** | | **4c. Coastal deposition** occurs in low energy environments such as bays and near estuaries. |
| **5a. Geology** – **hard rock** such as granite, limestone and chalk are more resistant to erosion and so headlands, cracks, caves, arches, stacks and stumps can form. **Soft rock** like clays, sands and glacial till are not resistant and so erode rapidly into low lying bays. | | **5c. Erosion landforms**. Form in areas with hard rock.  **H&B**  **C**  **Wcp**  In a headland there often **c, a** & **s**  **C**  **A**  **S**.  **Stump**. | | | | |
| **5b. Refraction** is | |
| **6. Depositional landforms**. Form in low energy environments.  **B**  **Sandy b**  **Pebble b**  A **berm** is  **D**  **Ed, Fd, Yd, Gd, Ds**  **S**  **B**  **Ob**  Known as a **submerged bar** if below sea level for most of the time or a **barrier island/barrier beach** if part of it is always above sea level. | | | | | | |

**Coastal management**

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| **1a.** Coasts need to be managed to maintain a balance between the forces of nature & the demands of people.   * People working & living on the coast need to be protected from erosion & flooding. * Projected sea level rise makes the issue of coastal management even more important. * Planners need to consider costs and benefits when deciding on a coastal management strategy. | | | | |
| **1b.** There are four different management options for a stretch of coastline: | | **1c.** The most common **hard engineering** structures are:  Nowadays hard engineering options are less popular as they are expensive, can cause knock on effects elsewhere & look unnatural. | | |
| **3a.** Nowadays **soft engineering** schemes tend to be the preferred option as they are **cheaper, work with nature** & are more **sustainable** than hard engineering schemes. However they do require ongoing **maintenance**.  Soft engineering **includes** | | | | **3b. Beach nourishment** (soft engineering) is a broad term for the replacement of lost sediment. A nourished beach means fewer waves reach the back of a beach. As more wave energy is absorbed and dissipated by the beach the rate of erosion is reduced. This is used at Swanage in Dorset.  There are three types of beach nourishment; **beach recharge, beach recycling and beach re-profiling.** |
| **3d. Sand dunes** are effective natural buffers to the sea but are easily damaged.  **Dr**  **Df** | | | **3c.** Three types of **beach nourishment**:  **Beach recharge:**  Sediment is taken from the bay and pumped onto the beach.  Pevensey (East Sussex) happens every year.  Sandbanks (Poole) every ten years.  **Beach recycling**:  Bulldozers move sand/sediment from a down-drift area and return it up drift.  **Beach re-profiling**:  Bulldozers move sediment dragged by backwash towards the water back up the beach. This artificial reshaping uses existing beach material to make the beach a more effective buffer. | |
| **4a. Managed retreat** is –  This often involves **managed realignment;**  **Managed realignment** is creating a new engineered position of coastline often further inland. Engineering options include bund lines.  Managed retreat has social, economic and environmental benefits and consequences.  Our example is **Medmerry in West Sussex.** | **4b. Coastal realignment in Medmerry, West Sussex**  Why the scheme was needed:  Medmerry is the largest managed coastal realignment scheme in Europe. The Environment Agency considered the region around Medmerry to be at risk from flooding due to climate change. The only coastal protection was provided by a shingle beach. This was re-profiled every year at a cost of £200,000. This was unsustainable. If breached the following structures were in danger:  - 348 properties. - Water treatment plant. - Main road. - Holiday homes and rental cottages  The strategy:  Clay embankment was built around the zone to be flooded; up to 2km inland. This would protect properties and structures from the new intertidal area. The clay embankment was protected by a drainage ditch on the landward side and rock armour on the seaward edge. | | | |
| **4c. Do nothing approach** (no intervention).  The do nothing approach has been taken in Happisburgh, Norfolk. The sea defences, revetments and groynes were built in the 1930’s. They have not been repaired as the cost of new defences exceeds the value of the land.  There is no particular environmental or social (cultural) reason to protect this stretch of coastline.  The locals have responded by raising funds to buy rock armour. This has largely been unsuccessful. | | | | |
| **4d. Lyme Regis**,  Hard engineering  Soft engineering | | | | |