# YEAR 9 GEOGRAPHY – CYCLE 3 – RIVER LANDSCAPES

| BOX 1: UK PHYSICAL LANDSCAPES | |
|---|---|
| fluvial landscape | **extensive** area of **land** → has been **shaped** by a flowing **river** |
| fluvial landform | a **specific feature** found in river landscapes e.g. a **waterfall** landform |
| UK upland areas | **more than 200m** above sea level → mostly **north/west** UK e.g. **Pennines** |
| UK lowland areas | **less than 200m** above sea level → mostly **south/east** UK e.g. **The Fens** |
| UK river systems | many river systems in the UK e.g. the **River Severn** → **longest river in UK** |

| BOX 2: FLUVIAL PROCESSES | |
|---|---|
| erosion | to **erode** → the **wearing away** and **removal** of **sediment** (e.g. rocks) |
| transportation | to **transport** → eroded **sediment** is **moved** to a **new location** by water |
| deposition | to **deposit** → eroded **sediment** is **dropped** when the **water loses energy** |

| BOX 3: TYPES OF EROSION | |
|---|---|
| 1. hydraulic action | moving **water forces air** into **cracks** in **rocks** → **pressure weakens rocks** |
| 2. abrasion | **rocks** carried by river **wear down** the **river bed** and **banks** |
| 3. attrition | **rocks** carried by river **smash together** → get **smaller smoother rounder** |
| 4. solution | **soluble** particles of **sediment** are **dissolved** into the **river** |
| 5. vertical erosion | **downward erosion** of **bed** (bottom of river) |
| 6. lateral erosion | **sideways erosion** of **banks** (sides of river) |

| BOX 4: TYPES OF TRANSPORTATION | |
|---|---|
| 1. traction | the **rolling** of **boulders** and **large pebbles along** the river **bed** |
| 2. saltation | particles of **sediment bouncing along** the river **bed** |
| 3. suspension | **small** pieces of **sediment floating** in the **moving** river **water** |
| 4. solution | **soluble** particles of **sediment** are **moved** whilst **dissolved** in flowing **river** |

| BOX 5: WHY DO RIVERS DEPOSIT SEDIMENT? | |
|---|---|
| river loses energy | 1) at **inside bend** of a **meander** 2) in **shallow water** 3) at **mouth** of **river** |

| BOX 6: RIVER KEYWORDS | |
|---|---|
| source | **where** a river **begins/starts** → **upland** areas (**upper course**) |
| mouth | **where** a river **ends/flows into sea** → **lowland** areas (**lower course**) |
| channel | the **area** in the **river** where the **water flows** e.g. the river bed and banks |
| valley | the **V shaped** area of **land around** a **river** |

| BOX 7: HOW DOES THE PROFILE OF A RIVER CHANGE FROM SOURCE TO MOUTH? | | |
|---|---|---|
| | **cross profile** | **long profile** |
| upper course/source | channel **narrow/shallow**→ valley **steep V** shaped | **steepest** gradient |
| middle course | channel **wider/deeper**→ valley **flatter** shape | **medium** gradient |
| lower course/mouth | channel **widest/deepest**→ valley **wide/flat** shape | **flattest** gradient |

| BOX 8: FLUVIAL LANDFORMS FORMED BY EROSION → UPPER COURSE | |
|---|---|
| 1. interlocking spurs | river **erodes softer rock** → leaves '**zip'** shaped **pattern** of **harder rocks** |
| 2. waterfalls | **hard** rock **on top** of **soft** rock → **soft** rock **erodes** → **hard** rock **overhangs** |
| 3. gorges | overhanging **rock** at waterfall **collapses** → waterfall **retreats** → **gorge** |

| BOX 9: FLUVIAL LANDFORMS FORMED BY EROSION + DEPOSITION | |
|---|---|
| 1. meanders | **faster flow** on **outside bank** = **lateral erosion** → **slower flow** on **inside bank** = **deposition**→ creates **bend shape** in river called a **meander** |
| 2. oxbow lakes | **flood breaks** through **meander neck** → creates new **channel** and **lake** |

| BOX 10: FLUVIAL LANDFORMS FORMED BY DEPOSITION → LOWER COURSE | |
|---|---|
| 1. levées | **flood** → **heaviest** sediment **deposited** river **edge** → creates **higher banks** |
| 2. flood plains | **lateral erosion** of **meanders** makes **lower course** of **valley wider/flatter** |
| 3. estuaries | **mouth** of some rivers **flooded** by **rising sea levels** after **last ice age** ended |

| BOX 11: HOW DO PHYSICAL FACTORS AFFECT FLOOD RISK? | |
|---|---|
| flood risk | **predicted frequency** of **floods** in an **area** → how **likely** an **area** is to **flood** |
| 1. precipitation | **prolonged, intense rainfall** can **saturate soil** → increases **surface run-off** |
| 2. geology - rock type | water **cannot infiltrate impermeable** rock →increases **surface run-off** |
| 3. relief | water **cannot infiltrate** into **steep slopes** → increases **surface run-off** |

| BOX 12: HOW DO HUMAN FACTORS AFFECT FLOOD RISK? | |
|---|---|
| 1. land use | **impermeable** surfaces (e.g. **tarmac)** and **deforestation** increase flood **risk** |

| BOX 13: HYDROGRAPHS | |
|---|---|
| hydrograph | shows **link** between **discharge** and **precipitation** over period of **time** |
| discharge | **volume** of **water** flowing past a point on a **river** (e.g. per **second**) |
| lag time | **length of time** between **peak** (highest) **precipitation** and **peak discharge** |

| BOX 14: MANAGEMENT STRATEGY 1 → HARD ENGINEERING → ARTIFICIAL | | |
|---|---|---|
| | **benefits** ☺ → positives | **costs** ☹ → negatives |
| dams and reservoirs | used to **store water** | **people** displaced by construction |
| river straightening | water **flows away** more **quickly** | flood **risk increases downstream** |
| embankments | **higher banks hold more water** | can be **unattractive** |
| flood relief channels | **river** has **extra capacity** for **water** | **expensive** |

| BOX 15: MANAGEMENT STRATEGY 2 → SOFT ENGINEERING → NATURAL | | |
|---|---|---|
| | **benefits** ☺ → positives | **costs** ☹ → negatives |
| flood warnings | **warning** people → can **evacuate** | **does not stop** the **flooding** |
| flood plain zoning | **important buildings not near river** | **less land** for **housing** |
| planting trees | trees **infiltrate** and **absorb water** | **less land** available **for farming** |
| river restoration | **reduces flooding downstream** | **floods** still **likely near restoration** |

| BOX 16: CASE STUDY → FLOOD MANAGEMENT SCHEME IN THE UK → LEEDS | |
|---|---|
| scheme/strategy | **Leeds Flood Alleviation Scheme** → **glass embankments**, **deflatable weirs** |
| required because | **reduce flooding** from **River Aire**→ e.g. large **flood** in **Leeds** 26th Dec **2015** |
| social issues | **paths near** river **may still flood** and **moves water** to **homes downstream** |
| economic issues | **expensive** → predicted to cost **£160 million** to finish the **entire project** |
| environmental issues | some **habitats disturbed** during the **construction** of the scheme |

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