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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