West Kirby Grammar School

Curriculum Map – Year 12 Physical Geography (2025-26)

Topic name	Term	Skills developed	Prior learning	Next link in curriculum
Tectonics & Hazards: EQ1 Why are some locations more at risk from tectonic hazards? 1.1 a, b &c. The global distribution of tectonic hazards can be explained by plate boundary and other tectonic processes Understanding the larger geographical /geological features of the Earth.	**Autumn 1**	• Use of tectonic plate maps • Use of models and thinking in 3D • Analysis of hazard distribution patterns on world and regional scale maps. • Use of simple sketches that summarise complex information • Completion of a multi layered sketch map.	Y7 tectonics (from 2021.09) Y8 Kenyan rift system Y10 Tectonic hazards (from 2022.09)	Overview of A1 tectonic Processes sessions in Y13
1.2 a & b. There are theoretical frameworks that attempt to explain plate movements.		• Use of block diagrams to identify key features of different plate boundary settings. • Establishing scientific theory – continental drift into Plate tectonic theory.	Y7 tectonics (from 2021.09) Y10 Tectonic hazards (from 2022.09) London Optional Trip	Revision London Nat History Optional Trip
1.3 &1.2c Physical processes explain the causes of tectonic hazards and impact on: • the type of **volcanic** eruptions. • **earthquake** magnitude and focal depth (Benioff zone). • Whether earthquakes lead to **tsunamis**		• Understanding igneous rock types by reference to actual lavas and ejected material samples in class. • Also reference to igneous table to show how colour crystal size and composition allows process to be matched with rock type. • Primary v secondary effects • Analysis of tsunami time-travel maps to aid prediction	Y7 tectonics (from 2021.09) Y10 Tectonic hazards (from 2022.09) Optional Iceland fieldwork – Lava centre London Optional Trip	Revision London Nat History Optional Trip
Tectonics & Hazards: EQ2: Why do some tectonic hazards develop into disasters? 1.4 Disaster occurrence can be explained by the relationship between hazards, vulnerability, resilience, and disaster.	**Autumn 2**	• Using models such as the 'Pressure and release's (PAR) and hazard risk equation to compare hazards • Comparing hazards affecting differing economies.	Use of models in globalisation unit Y12 Y10 Tectonic hazards (from 2022.09) Econ development Y11. Optional Iceland fieldwork	Revision Some aspects are in Health and Human Rights (Unit 8A) in Y13. London Nat History Optional Trip
1.5 Tectonic hazard profiles are important to an understanding of contrasting hazard impacts, vulnerability and resilience.		• Use of correlation techniques to analyse links between magnitude of events, deaths and damage	Y10 Tectonic hazards (from 2022.09)	revision

1.6 Development and governance are important in understanding disaster impact and vulnerability and resilience.		• Statistical analysis of contrasting events of similar magnitude to compare deaths and damage.	Y10 tectonics especially Quakes in Haiti (LIC) and Chile (NEE)	revision
Tectonics & Hazards: EQ3. 3: How successful is the management of tectonic hazards and disasters? 1.7 Understanding the complex trends and patterns for tectonic disasters helps explain differential impacts.		• Interrogation of large data sets to assess data reliability and to identify and interpret complex trends	-	revision
1.8 Theoretical frameworks can be used to understand the predication, impact and management of tectonic hazards	**Spring 1.**	• Applying models such as the hazard management cycle and the Park Model to real life situations	Use of models in globalisation unit Y12 Optional Iceland fieldwork	Glacial landscape management Y12
1.9 Tectonic hazard impacts can be managed by a variety of mitigation and adaptation strategies, which vary in their effectiveness.		• Use of Geographic Information Systems (GIS) to identify hazard risk zones and degree of risk related to physical and human geographical features.	Previous work using GIS e.g.Y7 damaged environment Y10 use of GIS in coasts.	Revision will try and develop further with visitor on GIS in GeogSoc.
Option 2A: Coastal Landscapes and Change. EQ1: Why are coastal landscapes different and what processes cause these differences? 2B.1 The coast, and wider littoral zone, has distinctive features and landscapes.	**Spring 1.**	• **Spring 1**	• Interpret maps, aerial photographs and GIS to identify backshore, nearshore and offshore zones and compare coastal types. • Use annotated diagrams and cross-sections to show how geology, sediment supply, waves and tides create contrasting coastal landscapes. • Classify coasts using longer-term criteria including geology and sea-level history.	Y7 coasts and weathering/erosion. Y10/Y11 physical landscapes and map/GIS skills.
2B.2 Geological structure influences the development of coastal landscapes at a variety of scales.		• Analyse geological maps and photographs to distinguish concordant and discordant coasts. • Draw/interpret diagrams of Dalmatian and Haff coastlines and headlands/bays.	Prior work on rock type, structure, weathering and erosion.	Links to tectonic/geological processes and landscape evolution.

		• • Relate bedding planes, joints, faults and folding to cliff profiles, erosion rates and micro-features such as caves.	OS map and field-sketch skills.	
2B.3 Rates of coastal recession and stability depend on lithology and other factors.		• Compare erosion rates using secondary data; calculate mean/percentage change where appropriate. • Apply rock properties (permeability, resistance, unconsolidated material) to explain cliff profiles and recession. • • Use photographs/field evidence to assess vegetation succession and its role in stabilising dunes and salt marshes.	Y7 coastal erosion and deposition. Y12 statistical and data-presentation skills.	Useful foundation for later work on coastal risk and management.
<u>EQ2: How do characteristic coastal landforms contribute to coastal landscapes?</u> 2B.4 Marine erosion creates distinctive coastal landforms and contributes to coastal landscapes.	**Spring 2**	• Interpret wave diagrams and data to distinguish constructive/destructive waves and changing beach profiles. • Annotate erosion processes: hydraulic action, corrosion, abrasion and attrition. • • Sequence landform development: wave-cut notch/platform, cliffs, caves-arches-stacks-stumps.	Y7 coastal processes and landforms. - Y12 systems concepts and process-response relationships.	Links to hazards where erosion threatens people, property and infrastructure.
2B.5 Sediment transport and deposition create distinctive landforms and contribute to coastal landscapes.		• Calculate/interpret longshore drift direction from wave approach and sediment evidence. • Use maps/GIS to identify beaches, spits, recurved/double spits, offshore bars, barrier beaches/bars, tombolos and cuspate forelands. • Construct sediment-cell systems diagrams showing sources, transfers and sinks, including dynamic equilibrium.	Y7 deposition and longshore drift. Fieldwork skills: sediment size/shape and beach profiles.	Strong synoptic link to systems, equilibrium and sediment budgets.
2B.6 Subaerial processes of mass movement and weathering influence coastal landforms and contribute to coastal landscapes.		• Classify weathering as mechanical, chemical and biological and connect it to sediment production. • Interpret slope profiles and evidence of rockfall, rotational slumping and landslides. • • Use geology, rainfall and cliff-form evidence to explain spatial variation in mass movement.	Prior weathering and mass-movement work from earlier physical geography.	Links to water cycle processes, especially rainfall, infiltration and saturation.

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<u>EQ3: How do coastal erosion and sea level change alter the physical characteristics of coastlines and increase risks?</u> 2B.7 Sea level change influences coasts on different timescales.	**Spring 2**	• Interpret sea-level graphs and timelines; distinguish eustatic and isostatic change. • Use maps/photographs to recognise emergent coastlines (raised beaches, fossil cliffs) and submergent coastlines (rias, fjords, Dalmatian coasts). • Evaluate contemporary sea-level change as a coastal risk.	Y8/Y9 climate change; Y12 glacial/interglacial climate concepts where taught. Graph interpretation skills.	Synoptic link to climate change, cryosphere and the global water cycle.
2B.8 Rapid coastal retreat causes threats to people at the coast.		• Analyse time-series maps, aerial images and GIS to calculate shoreline retreat rates. • Compare physical and human causes of rapid recession, including dredging and coastal management. • • Use systems thinking to explain how weather and mass movement interact to alter recession rates.	Prior learning on erosion, geology, mass movement and coastal management.	Case study link: Nile Delta or Guinea coastline. Supports player/decision-making analysis.
2B.9 Coastal flooding is a significant and increasing risk for some coastlines.		• Map and assess flood risk using elevation, exposure, vegetation and settlement data. • Interpret storm-surge and tropical-cyclone evidence and compare short- and long-term controls on risk. • • Evaluate how climate change may alter frequency/magnitude of storms, sea level and future uncertainty.	Y7/Y8 weather hazards and flooding. Y13 climate change and water-cycle work where applicable.	Case study link: Bangladesh or Maldives. Strong hazards, vulnerability and resilience synoptic links.
<u>EQ4: How can coastlines be managed to meet the needs of all players?</u> 2B.10 Increasing risks of coastal recession and flooding have serious consequences for affected communities.	**Summer**	• Categorise and compare economic, social and environmental impacts using case-study evidence. • Use cost/benefit evidence and stakeholder mapping to assess uneven consequences. • • Compare impacts in developed and developing coastal communities.	Prior hazards work and coastal fieldwork. Skills in evaluating social, economic and environmental impacts.	Links to place, inequality, climate migration/environmental refugees and sustainability.
2B.11 There are different approaches to managing the risks associated with coastal recession and flooding.		• Compare hard engineering (groynes, sea walls, rip-rap, revetments, offshore breakwaters) with soft engineering (beach nourishment, cliff re-grading/drainage, dune stabilisation). • Build decision matrices using cost, effectiveness, sustainability and environmental impact.	Y7 coastal management. Y12 fieldwork/decision-making and evaluation skills.	Synoptic links to sustainability, adaptation and mitigation; actions by one player may create unforeseen consequences.

		• • Evaluate mitigation and adaptation for future coastal threats and possible conflicts.		
2B.12 Coastlines are increasingly managed by holistic integrated coastal zone management (ICZM).		• Apply the littoral-cell concept to management at a wider spatial scale. • Compare Shoreline Management Plan options: No Active Intervention, Strategic Realignment, Hold The Line and Advance The Line. • • Conduct stakeholder analysis and evaluate engineering feasibility, environmental sensitivity, land value, political/social reasons, cost-benefit analysis and EIA evidence.	Builds on 2B.5 sediment cells and 2B.11 management approaches. Prior stakeholder and decision-making skills.	Supports NEA/fieldwork evaluation. Links to sustainability and conflicts between homeowners, authorities, environmental groups and other players.