Mark Scheme (Results)

November 2021

Pearson Edexcel A Level
In Geography (9GE0)
Paper 1

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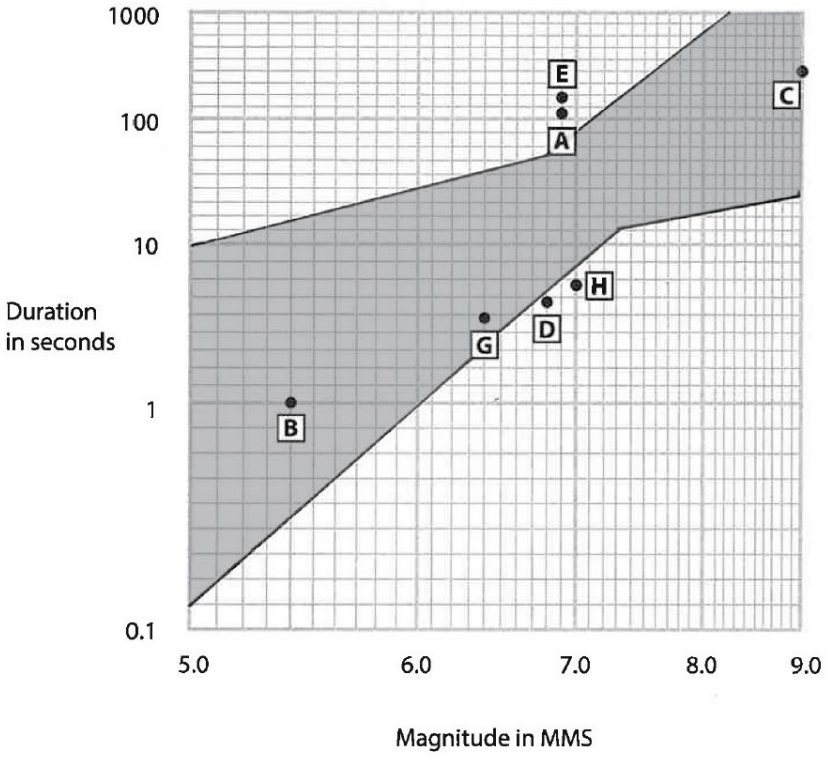
General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e., if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question number		Mark
1 (a)	**AO3 (4 marks)**	
(i)	Award 1 mark for the correct reading of 500 seconds	**(1)**
(ii)	Award 1 mark for correct plotting of the magnitude Award 1 mark for the correct plotting of the duration The point must be on the line for 7.3 The point must be **above** the line for 20 but **not** on the 30	**(2)**
(iii)	Award 1 mark for a straight line drawn: 1. Within the grey area shown 2. With a reasonably even and balanced distribution of points on either side of that line  	**(1)**

Question number	
1(b)	**AO1 (3 marks)/AO2 (9 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. Responses that demonstrate **only** AO1 without any AO2 should be awarded marks as follows: - Level 1 AO1 performance: 1 mark - Level 2 AO1 performance: 2 marks - Level 3 AO1 performance: 3 marks. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • The magnitude and intensity of tectonic hazards is measured using different scales (Mercalli, Moment Magnitude Scale (MMS)). • Hazard profiles (magnitude, speed of onset and areal extent, duration, frequency, spatial predictability) are important in understanding the severity of social and economic impacts in developed, emerging and developing countries. • Inequality of access to education, housing, healthcare and income opportunities can influence vulnerability and resilience. • Governance and geographical factors (population density, isolation/accessibility, degree of urbanisation) influence vulnerability and a community's resilience. • Contrasting hazard events in developed, emerging and developing countries to show the interaction of physical factors and the significance of context in influencing the scale of disaster. **AO2** • The magnitude of the earthquake event is often seen as the key factor in determining the scale of the impact as even rich countries struggle to cope with mega events such as the 2011 Japanese tsunami. • Conversely smaller magnitude events such as those experienced in the UK have lower social and economic impacts. • Yet other factors also determine the impacts that an earthquake event can bring. • A key factor is the frequency of the events as the more frequent the event the more likely there is to be well planned disaster management reducing the impacts as evidenced by the management of the secondary hazard of a tsunami in Samoa 2008. • Yet the areal extent can also determine the scale of impacts as earthquakes which are caused by faults with a shallow angle affect a greater area and so cause greater impacts such as in the Afghanistan 2015 earthquake.

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	• Spatial predictability can also be a vital factor as areas with blind faults (such as Kobe 1995) can lead to increased risks due to a lack of understanding of the magnitude of the risk. Areas far from other earthquake belts such as Christchurch (2011) can also have higher than expected impacts due to a lack of spatial predictability. • Other factors such as strong governance can, however, lead to very effective management of immediate disaster recovery, e.g., Sichuan earthquake in China 2008, as well as the development of longer-term education and community preparation such as the education programmes in California. • However, management needs effective governance and is expensive and countries with a low level of development cannot afford the levels of investment required to reduce the risks of earthquake events such as in Haiti 2011. • Geographical factors are also a key factor in determining impacts as urban areas with high population densities can have large impacts with relatively small magnitude earthquakes such as in Bam, Iran 2003. **Accept other assessments of the relative importance of the magnitude of an earthquake in determining the social and economic impacts of the hazardous event.**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–4**	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1) • Applies knowledge and understanding of geographical information/ideas, making limited logical connections/relationships. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce an interpretation with limited relevance and/or support. (AO2) • Applies knowledge and understanding of geographical information/ideas to make unsupported or generic judgements about the significance of few factors, leading to an argument is unbalanced or lacks coherence. (AO2)
Level 2	**5-8**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Applies knowledge and understanding of geographical information/ideas logically, making some relevant connections/relationships. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce a partial but coherent interpretation that is mostly relevant and supported by evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to make judgements about the significance of some factors, to produce an argument that may be unbalanced or partially coherent. (AO2)
Level 3	**9-12**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Applies knowledge and understanding of geographical information/ideas logically, making relevant connections/relationships. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce a full and coherent interpretation that is relevant and supported by evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to make supported judgements about the significance of factors throughout the response, leading to a balanced and coherent argument. (AO2)

Question number	
2(a)	**AO1 – (3 marks)/AO2 – (3 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • The reasons for the variations in the rates of accumulation and ablation, and the impact these variations have on the mass balance over different timescales. • Global warming is having a major impact on glacial mass balances • Global warming risks disruption of the hydrological cycle (meltwater, river discharge, sediment yield, water quality) **AO2** • The resource shows substantial changes to the South Cascade glacier. • This is the result of ablation exceeding accumulation and the most likely component of ablation is meltwater. Expect candidates to explain increases in meltwater particularly in the summer months. • Yet there are likely to be other changes to river regimes of these three glaciers as glacial runoff decreases, and flow becomes more dependent on unpredictable precipitation events and snow melt. • In addition, sediment yield increases as a result of the increased melting as in summer months there is an increase in water pressure resulting in hydraulically isolated sub sole areas releasing sediment from basal storage. • There will also be impacts on water quality apart that caused by variations in the sediment yield. As the South Cascade glacier is in North America there is likely to be industrial pollutants such as black carbon as well as mercury, pesticides, and other persistent organic pollutants. These are likely to have significant impacts on water quality and impact upon freshwater and marine ecosystems. • Accept how changes in the mass balance of the South Cascade glacier might lead to other changes to meltwater quantity and quality

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–2**	• Demonstrates isolated or generic elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1) • Applies knowledge and understanding to geographical information inconsistently. Connections/relationships between stimulus material and the question may be irrelevant. (AO2)
Level 2	**3–4**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Applies knowledge and understanding to geographical information to find some relevant connections/relationships between stimulus material and the question. (AO2)
Level 3	**5–6**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Applies knowledge and understanding to geographical information logically to find fully relevant connections/relationships between stimulus material and the question. (AO2)

Question number	
2(b)	**AO1 (3 marks)/AO2 (3 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • The formation of ice contact depositional features (medial, lateral, recessional and terminal moraines and drumlins). • The processes of water movement within the glacial system (supraglacial, englacial and sub-glacial flows). • Glacial and fluvioglacial deposits have different characteristics (stratification, sorting, imbrication and grading). **AO2** • The resource shows the sediment characteristics of a terminal moraine (A) and that of an outwash plain (B). • The terminal moraine material (A) appears to have a far greater range of sediment size such as the very large boulder as well as what appears to be rock flour. • In contrast the fluvioglacial deposit (B) appears to have a more uniform size. • The morainic material appears to be far more angular than the more rounded fluvioglacial deposit. • These differences are the result of the different processes acting upon the sediment. Morainic material is the result of both glacial erosion creating the rock flour as well as sub-aerial processes creating larger more angular material. • In contrast fluvioglacial deposits are the result of the action of meltwater often under high hydrostatic pressure making the deposits rounded and smaller. • There is also likely to be sorting and stratification of the fluvioglacial deposits as a result of the variations in meltwater over the year. **Accept other explanations of the differences in the characteristics of the deposits at A and B**

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	0	No rewardable material.
Level 1	**1–2**	• Demonstrates isolated or generic elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1) • Applies knowledge and understanding to geographical information inconsistently. Connections/relationships between stimulus material and the question may be irrelevant. (AO2)
Level 2	**3–4**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Applies knowledge and understanding to geographical information to find some relevant connections/relationships between stimulus material and the question. (AO2)
Level 3	**5–6**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Applies knowledge and understanding to geographical information logically to find fully relevant connections/relationships between stimulus material and the question. (AO2)

Question number	
2 (c)	**AO1 – (8 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • Ice temperature is crucial in determining whether a glacier is classified as a polar (cold based) or temperate glacier (warm based) but accept those that discuss poly thermal glaciers. • Polar and temperate glaciers have different rates of movement. • These are the result of different processes such as basal slip, regelation creep and internal deformation. • Temperate (warm based) glaciers due to a combination of air and ground temperatures often have meltwater at the base of the glacier leading to basal sliding and sometime surging increasing the rate of glacier movement. • Temperate glaciers (warm based) also often move through regelation creep as obstacles to the ice flow (especially small ones under a metre) create added pressure on the ice as it begins to move over them. This increases ice temperature and once pressure melting point is reached melting occurs which allows the ice to move over the obstacle. This also increases the rate of glacier movement in temperate (warm based) glaciers. • Polar glaciers (cold based) are colder and do not reach pressure melting point at their base. Glacier movement is therefore reliant on internal deformation when individual ice crystals change shape in response to pressure (overlying ice) and position of crystals in relation to each other. The rate of glacier movement is therefore lower in Polar (cold based) glaciers. • Ice temperature is not the only factor affecting the rate of glacier movement. Changes in gradient can be important in understanding the rate of glacial movement. This is as a result of compressional and extensional flow - where it steepens, the rate of glacier movement increases and extensional flow occurs, where gradient reduces, the rate of glacier movement falls, and ice catches up with ice in front causing compressional flow. **Accept other explanations of the importance of ice temperature in understanding the rate of glacial movement.**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–2**	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1) • Understanding addresses a narrow range of geographical ideas, which lack detail. (AO1)
Level 2	**3–5**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Understanding addresses a range of geographical ideas, which are not fully detailed and/or developed. (AO1)
Level 3	**6–8**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Understanding addresses a broad range of geographical ideas, which are detailed and fully developed. (AO1)

Question number	
2(d)	**AO1 (5 marks)/AO2 (15 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. Responses that demonstrate **only** AO1 without any AO2 should be awarded marks as follows: • Level 1 AO1 performance: 1 mark • Level 2 AO1 performance: 2 marks • Level 3 AO1 performance: 3 marks. • Level 4 AO1 performance: 4–5 marks. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • Glaciated landscapes are important economically (farming, mining, hydroelectric power, tourism, forestry). • Relict and active glaciated landscapes have environmental and cultural value such as polar scientific research and wilderness recreation. • Glaciated and periglacial landscapes have a unique biodiversity (tundra). • Glaciated and periglacial landscapes play an important role in the maintenance of natural systems (water and carbon cycles) **AO2** • Glaciated and peri-glaciated landscapes play an important role in the maintenance of natural systems such as the water and carbon cycles. Periglacial areas with permafrost cover some 25% of the exposed land cover in the Northern Hemisphere and contains 1672Gtc of carbon which is not usually considered in carbon cycle models. This therefore stores vast amounts of carbon and so helps to regulate the global carbon cycle. • These areas are also integrated into the global climate system. The high albedo of Arctic sea ice, snow cover and glacier ice reflect 85–90% of incoming solar energy back into space. This has a significant cooling effect on the planet. • Another key environmental value is that ice contained in glaciated and periglacial areas in the Arctic helps to maintain the thermohaline circulation. If melting occurs in these areas the physical pump of the thermohaline circulation could be 'switched off' causing global carbon concentrations to rise. • Glaciated and periglacial landscapes have a unique biodiversity particularly in tundra areas. There are many endemic species such as mosses adapted to survive in such areas as well as fauna such as polar bear and arctic foxes. • In addition, peri-glacial areas such as those found in the Arctic have global environmental importance due to avian migration taking advantage of the food available in the short summer season caused by the long day length.

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	• Crucially these areas have a global economic value as it is estimated that simply the loss of Arctic snow, ice and permafrost is estimated to have cost the world between US$61 billion and US$371 billion in lost climate cooling services. • Yet these areas have immense local importance. Areas such as the Arctic National Wildlife Refuge there are 37 species of land mammals, eight marine mammals, 42 fish species and more than 200 migratory bird species also creating opportunities for recreation. Around 1.9 million people visit Alaska each year to experience its unique wildlife and spectacular scenery. • Glaciated and periglacial landscapes also have an immense local value as a focus for polar scientific research. In Antarctica satellite data has been used to monitor sea ice coverage and thickness. In 2011, scientists installed fibre optic cables within the Antarctic ice sheet in order to measure ice sheet temperatures in and below the ice sheet. • Local glaciated landscapes are also important for primary, secondary and tertiary industries. • The fertile sands and clays allow agriculture to develop such as in the Mendoza Province wine growing areas in Argentina. The steeper slopes unsuitable for agriculture can be used to develop forestry such as in the Southern Alps in New Zealand. • Glaciated landscapes also offer the opportunity to develop hydro-electric power such as the reservoir at Saas Mattmark which has an earth filled dam made from morainic material. The upland areas allow the development of quarries providing building stone such as the green slate from Honiton. • The glacial deposits found in the valley floors can be used for building materials and combined with quarrying cement works have been built in glaciated upland areas utilizing the electric power from nearby HEP dams such as the Exshaw cement works in Canada. • The flat valley floor of glacial troughs such as Saas Grund in Switzerland allows transport routes to be developed. • The ribbon lakes in the glacial troughs have proved to be a tourist attraction such as in the Lake District. There is often skiing in the slopes and glaciers in upland glaciated landscapes such as in the French Alps. • Furthermore, the landscapes provide the basis for tourism as well as for indigenous peoples. • For some players such as residents and conservationists the local value therefore may exceed the global value. • Overall although there is an immense local economic and environmental value of glaciated and peri-glaciated landscapes for some players the global importance of the regulation of the carbon and water cycles mean that on balance these areas do have a greater global as opposed to local value. **Accept other evaluations that glaciated and periglaciated landscapes have greater global as opposed to local value.**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–5**	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1)

Level	Mark	Descriptor
		• Applies knowledge and understanding of geographical ideas, making limited and rarely logical connections/relationships. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce an interpretation with limited coherence and support from evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce an unsupported or generic conclusion, drawn from an argument that is unbalanced or lacks coherence. (AO2)
Level 2	**6–10**	• Demonstrates geographical knowledge and understanding, which is occasionally relevant and may include some inaccuracies. (AO1) • Applies knowledge and understanding of geographical information/ideas with limited but logical connections/relationships. (AO2) • Applies knowledge and understanding of geographical ideas in order to produce a partial interpretation that is supported by some evidence but has limited coherence. (AO2) • Applies knowledge and understanding of geographical information/ideas to come to a conclusion, partially supported by an unbalanced argument with limited coherence. (AO2)
Level 3	**11–15**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and accurate. (AO1) • Applies knowledge and understanding of geographical information/ideas to find some logical and relevant connections/relationships. (AO2) • Applies knowledge and understanding of geographical ideas in order to produce a partial but coherent interpretation that is supported by some evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to come to a conclusion, largely supported by an argument that may be unbalanced or partially coherent. (AO2)
Level 4	**16–20**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Applies knowledge and understanding of geographical information/ideas to find fully logical and relevant connections/relationships. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce a full and coherent interpretation that is supported by evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to come to a rational, substantiated conclusion, fully supported by a balanced argument that is drawn together coherently. (AO2)

Question number	
3(a)	**AO1 (3 marks/AO2 (3 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • Longer-term sea level changes result from eustatic factors such as ice formation/melting as well as thermal changes • Longer-term sea level changes result also result from isostatic (post glacial adjustment, subsidence, accretion) and tectonics. • Sea level change has produced emergent coastlines with raised beaches fossil cliffs. • Sea level change has produced submergent coastlines with rias, fjords and Dalmatian coastlines. **AO2** • The diagram shows a sea level change over the last 140,000 years. Between 140,000 and 120,000 BP sea levels rose from -140m to 0m. • Candidates are likely to link this to coastlines of submergence such as rias, fjords and Dalmatian coastlines. • The diagram shows that sea levels fell from 120,000 BP to 30,000 BP to -80m and then sharply to -140m by 20,000 BP. • Candidates are likely to link this to coastlines of emergence and possibly link this to typical landforms such as fossil wave cut notch, a fossil cliff and a raised beach. • Sea level then rises sharply to present levels. • Reward candidates who suggest that previous coastlines of emergence have subsequently been masked by contemporary coastlines of submergence. • Allow candidates to explain different types of coastline as well as different positions of the coastline. **Accept other explanations of how changes in sea level have contributed to different coastlines.**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–2**	• Demonstrates isolated or generic elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1) • Applies knowledge and understanding to geographical information inconsistently. Connections/relationships between stimulus material and the question may be irrelevant. (AO2)
Level 2	**3–4**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Applies knowledge and understanding to geographical information to find some relevant connections/relationships between stimulus material and the question. (AO2)
Level 3	**5–6**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Applies knowledge and understanding to geographical information logically to find fully relevant connections/relationships between stimulus material and the question. (AO2)

Question number	
3(b)	**AO1 (3 marks)/AO2 (3 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • Different wave types (constructive/destructive) influence beach morphology and beach sediment profiles. • These vary at a variety of temporal scales from short term (daily) through to longer periods. • Transportation and deposition processes produce distinctive coastal landforms such as beaches. **AO2** • The photographs show the same beach in summer and winter. There is evidence of a steeper beach profile in the winter (8 degrees) and evidence of a storm berm. In contrast the beach is flatter in summer (4 degrees). There is also a more even distribution of pebbles in summer (0.1 to 2mm) than in the winter (1 to 22mm). • The storm berm in winter is created by large destructive waves progressing further up the beach than normal, carrying larger sediment which is then deposited. As these are larger sediments, there is higher rate of infiltration and the backwash is reduced. This therefore leaves the larger sediment as ridge or berm. This is evidenced by the storm berm being further inland than the last strand line marked by seaweed. • The literature is often contradictory on the impact of wave type on beach profile. The photographs and text suggest A level textbook explanations that in winter there are likely to be more powerful destructive waves leading to a steeper beach profile whilst in summer there are more calm conditions leading to constructive waves and a gentler beach profile. This is also indicated by the calm looking waves in the summer beach photograph compared to the more powerful looking waves in the winter photograph. • Please also accept some university texts such as Pethick which presents evidence that as constructive waves have a long wavelength and a short-wave height the swash of the wave tends be more powerful than the backwash. This has the effect of pushing sediment up the beach and so leaving a steeper beach profile. Candidates might therefore question the summer/winter profiles. • The winter beach has a greater variation in pebble size as larger pebbles have been deposited in the storm berm, whilst other smaller pebbles have been removed by destructive waves and so reveal the subbase of finer particles (the sand evidenced in the photo). • In contrast the summer beach shows a more even distribution of particles. • Accept that reality does not always follow expected patterns.

	• Accept human intervention such as beach renourishment. **Accept other explanations for the differences in the characteristics of a beach as well as shorter and longer time periods**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–2**	• Demonstrates isolated or generic elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1) • Applies knowledge and understanding to geographical information inconsistently. Connections/relationships between stimulus material and the question may be irrelevant. (AO2)
Level 2	**3–4**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Applies knowledge and understanding to geographical information to find some relevant connections/relationships between stimulus material and the question. (AO2)
Level 3	**5–6**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Applies knowledge and understanding to geographical information logically to find fully relevant connections/relationships between stimulus material and the question. (AO2)

Question number	
3(c)	**AO1 (8 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • Coastal plain landscapes include both sandy as well as estuarine coasts. • Vegetation is important in stabilising sandy coastlines through dune successional development on sandy coastlines and salt marsh successional development in estuarine areas. • Passmore succession starts with embryo dunes. Conditions are at their most hostile and only species such as sea twitch and lyme grass can tolerate the low levels of organic matter (0.8%), the alkaline pH (8.5), the small soil depth (0.5cm) as well as the high wind speeds and the constant inundation of salt water. In addition, pioneer species can also tolerate moving sand and the intense heating of the sand in summer. This invasion of vegetation into the area is therefore crucial in stabilising the area for without the vegetation the sand can be removed by wind and waves. • The roots of this vegetation however bind the sand together and allows the development of fore-dunes and yellow dunes. These are beyond the highest tides and marram grass eventually outcompetes the sea twitch. This further stabilises the sandy coastline by the establishment of a more developed root system as well as protection from wind erosion through the sheltering action of the vegetation. • In estuarine areas salt tolerant plants known as halophytes stabilise the estuarine area. • Mudflats are colonised by green algae and eel grass. Both these pioneer species can tolerate being submerged for 11 out of the 12 hours of the tidal cycle. This starts to stabiles the estuarine coast as the roots reduce the removal of sediment through the tidal ebb and the long leaves of the eel grass reduce the velocity of the tidal ebb allowing settlement to occur. • Salicornia and spartinia then continue to stabilse this coastline through the action of a more developed root system stabilising the deposited sediment as well as the stems of the plants trapping sediment being washed every tidal period. • Candidates are also likely to explain the role of mangroves in stabilising coastal landscapes in tropical coasts.

	• Candidates are also likely to explain the role of vegetation in the creation of spits/bars. • Human actions can also be important in stablising coastal plain landscapes through planting of marram grass and protecting vulnerable areas by roping vulnerable areas off such as East Head in West Sussex. **Accept other explanations of the importance of vegetation in stabilising coastal plain landscapes.**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–2**	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1) • Understanding addresses a narrow range of geographical ideas, which lack detail. (AO1)
Level 2	**3–5**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Understanding addresses a range of geographical ideas, which are not fully detailed and/or developed. (AO1)
Level 3	**6–8**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Understanding addresses a broad range of geographical ideas, which are detailed and fully developed. (AO1)

Question number	
3(d)	**AO1 (5 marks)/AO2 (15 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. Responses that demonstrate **only** AO1 without any AO2 should be awarded marks as follows: • Level 1 AO1 performance: 1 mark • Level 2 AO1 performance: 2 marks • Level 3 AO1 performance: 3 marks. • Level 4 AO1 performance: 4–5 marks. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • Hard engineering approaches (groynes, sea walls, rip rap, revetments, offshore breakwaters) are economically costly and directly alter physical processes and systems. • Soft engineering approaches (beach nourishment, cliff re-grading and drainage, dune stabilisation) attempt to work with physical systems and processes to protect coasts and manage changes in sea level. • Coastal management increasingly uses the concept of littoral cells to manage extended areas of coastline. Throughout the world, countries are developing schemes that are sustainable and use holistic Integrated Coastal Zone Management strategies. • Policy decisions (No Active Intervention, Strategic Realignment, Hold The Line and Advance The Line) are based on complex judgements (engineering feasibility, geogolgy, environmental sensitivity, land value, political and social reasons). • Cost Benefit Analysis (CBA) and Environmental Impact Assessment (EIA) are used as part of the decision- making process. **AO2** • Economic judgements often play a vital part in deciding which coastal management policies are adopted. This is often through cost benefit analysis which examines whether it would be economically beneficial for the scheme to go ahead. • Generally, the higher the value of the land the more likely the policy will be Advance the Line or Hold the Line and the lower the value of the land the more likely it is to be Strategic Realignment or No Active Intervention. • Thus, areas with a high land value such as the City of London are protected by the Thames Barrier, whilst areas with a lower value such as stretches of the North Norfolk coast are left unprotected. • Economic judgements will also affect the decision to implement a policy of strategic realignment with the areas undergoing inundation often having a low value whilst those in adjacent areas which have a

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	higher land value often being the beneficiary of such a policy as was the case at Medmerry beach in Selsey where the low value agricultural land was allowed to flood whilst the more expensive land occupied by Bunn's Leisure park and the nearby villages such as Earnley being protected by an inland embankment. • Even within areas that have a Hold the Line policy economic judgement can determine the policy decision within the area with sea walls and esplanades protecting the most valuable areas of the shoreline frontage and groynes protecting lower value land areas. • Yet other factors are also important such as the engineering feasibility. This is where a policy decision is made as a result of the feasibility of implementing a particular policy. Areas such as the Undercliff on the Isle of Wight have a No Active Intervention policy due to engineering feasibility as it is impossible to stop the landslides occurring in this area due to the geological history of it being a post glacial landslide complex. • Moreover, in other areas the policy decision adopted is often influenced by environmental sensitivity. This is often through an Environmental Impact Analysis where the impacts both positive and negative of the proposed scheme on the environment are assessed. • This is often where there could be an engineering solution, but this is not used as a result of the environmental sensitivity of the area. East Head at the mouth of Chichester Harbour is owned by the National Trust and is a Site of Special Scientific Interest (SSSI). As a result, instead of using hard defences such as rock groynes a sustainable approach of planting marram grass on the narrow neck of land called the Hinge was adopted. • In other cases, the overriding consideration is a political factor. This is when an approach is adopted that reflects political considerations such as the need to ensure that there is continued accessibility between two different areas along the coast or where there is an overriding national need for defences such as the hard defences employed in front of the nationally important Easington gas terminal. **Accept other evaluations of why policy decisions on how to manage the coast are largely controlled by economic judgements.**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–5**	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1) • Applies knowledge and understanding of geographical ideas, making limited and rarely logical connections/relationships. (AO2)

Level	Mark	Descriptor
		• Applies knowledge and understanding of geographical information/ideas to produce an interpretation with limited coherence and support from evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce an unsupported or generic conclusion, drawn from an argument that is unbalanced or lacks coherence. (AO2)
Level 2	**6–10**	• Demonstrates geographical knowledge and understanding, which is occasionally relevant and may include some inaccuracies. (AO1) • Applies knowledge and understanding of geographical information/ideas with limited but logical connections/relationships. (AO2) • Applies knowledge and understanding of geographical ideas in order to produce a partial interpretation that is supported by some evidence but has limited coherence. (AO2) • Applies knowledge and understanding of geographical information/ideas to conclude, partially supported by an unbalanced argument with limited coherence. (AO2)
Level 3	**11–15**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and accurate. (AO1) • Applies knowledge and understanding of geographical information/ideas to find some logical and relevant connections/relationships. (AO2) • Applies knowledge and understanding of geographical ideas in order to produce a partial but coherent interpretation that is supported by some evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to come to a conclusion, largely supported by an argument that may be unbalanced or partially coherent. (AO2)
Level 4	**16–20**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Applies knowledge and understanding of geographical information/ideas to find fully logical and relevant connections/relationships. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce a full and coherent interpretation that is supported by evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to come to a rational, substantiated conclusion, fully supported by a balanced argument that is drawn together coherently. (AO2)

Question number		Mark
4(a)	**AO1 – 2 marks/AO2 – 1 mark** Award **1 AO2 mark** for analysing the resource to identify the increase in the use of tar sands and a further **2 AO1 marks** expansion up to a maximum of 3 marks to explain the impact of the changes on the local environment. For example: • The increase in unconventional oil from 4200000 to 600000 an increase of 180000 barrels of oil a day (**1).** This will increase the amount of carbon in the atmosphere **(1)** accelerating global warming **(1).** • The increase in unconventional oil 4200000 to 600000 an increase of 180000 barrels of oil a day (**1).** This increase will increase the removal of forests **(1)** and so reduce habitats **(1)**. • The increase in unconventional oil from 4200000 to 600000 an increase of 180000 barrels of oil a day **(1)**. This will lead to higher levels of water use **(1)** leading to the pollution of local water sources **(1)**. **Accept other explanations for possible consequences of the increase in unconventional oil production such as earthquakes and resource exhaustion.**	**(3)**

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4(b)	**AO1 (6 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: • The long-term geological cycle is where through a variety of processes carbon takes between 100-200 million years to move between rocks, soil, ocean, and atmosphere. On average, 0.01 to 0.1 Gt of carbon move through the slow carbon cycle every year. • The specification lists two key processes - Volcanic outgassing and chemical weathering • Volcanic outgassing - Carbon is emitted into both the atmosphere and the ocean through a process known as out-gassing. This is where CO_2 that is contained in mantle fluids is vented from the terrestrial stores of carbon. • In subduction zones, subducted carbon sources such as kerogen, coal, petroleum, oil shales, carbonaceous shales, carbonates, etc. are oxidated into CO_2 and vented back into the oceans or the atmosphere. • CO_2 can also enter the atmosphere at continental rift zones. At divergent plate margins rising magma is enriched in CO_2 from deep mantle sources of carbon. • CO2 is also vented at hotspots and currently non-erupting volcanoes such as Yellowstone where CO_2 passively diffuses into the atmosphere. • Chemical weathering of rocks **-** Atmospheric carbon combines with precipitation to form a weak carbonic acid which reacts with rocks to form carbonates which are carried by rivers to the oceans as well as sub-aerial processes at the coastline also contributing carbonates to the oceans. These marine organisms in the oceans sequester carbon in shell building which eventually form sedimentary carbonate rocks. • There are also longer-term processes involved in the long-term geological cycle such as the creation of biological sedimentary rocks through the process of lithification. • There is also the process of direct precipitation of calcium carbonate from marine or fresh water. Rocks formed this way are chemical sedimentary rocks. **Accept other explanations of the geological processes that influence the levels of carbon in the atmosphere.**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–2**	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate. (AO1) • Understanding addresses a narrow range of geographical ideas. (AO1) • Understanding of geographical ideas lacks detail. (AO1)
Level 2	**3–4**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Understanding addresses a range of geographical ideas. (AO1) • Understanding of geographical ideas is not fully detailed and/or developed. (AO1)
Level 3	**5–6**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Understanding addresses a broad range of geographical ideas. (AO1) • Understanding of the geographical ideas is detailed and fully developed. (AO1)

Question number	
4(c)	**AO1 (8 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: • Marine resources **–** Many developing countries such as Bangladesh, Ghana and Indonesia are dependent on marine resources to provide least 50% of total protein intake. Ocean acidification will therefore pose a substantial threat to these people as ecosystems collapse in the sea and coral reefs bleach. • Yet it is not only people in developing countries which are often reliant on marine resources for protein. Japan also is reliant on marine resources to supply over 50% of its protein intake. • Tourism - Coral reefs generate $36 billion in global tourism value per year and are essential in raising revenue for over 70 countries which have million-dollar reefs that generate approximately $1 million per square kilometre. These reefs are generating jobs, and critical foreign exchange earnings for many small island developing states that have few alternative sources of employment and income. This is through in-water activities – such as diving and glass-bottomed boat trips – and reef-adjacent values such as calm, clear waters, stunning views, beautiful beaches and seafood. The Maldives are reliant on tourism as tourism provides 22.7% of GDP and attracts over 1.6 million visitors. • Yet other developed countries also substantially benefit from tourism from coral reefs that are at threat from changes to the carbon cycle. The Great Barrier reef in Australia is visited by over two million people each year contributing over $5.4 billion a year to the Australian economy, and employs approximately 69,000 people • Coastal protection - Coral reefs, seagrass and mangrove swamps have a vital role to play in coastal protection. By one estimate, coastal protection accounts for $9.0 billion. In the Caribbean, the annual net benefits provided by coral reefs through shoreline protection services were estimated to be $700,000 to $2.2 billion and it is thought that this protected 250 acres at risk of erosion in Jamaica's Montego Bay Marine Park**.** Ocean acidification and temperature rise will lead to the loss of these ecosystems and so the loss of the coastal protection offered. • Credit idea of ecosystem services (particularly supporting and regulating ideas from the Millennium Ecosystem Assessment) such as plankton sequestering carbon and purifying water, helping risks of global warming for people. • Credit idea of changes to salinity levels caused by future melting ice may cause tipping points and so future threats to people's wellbeing. **Accept other explanations of why changes in ocean health may threaten people's well-being.**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–2**	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1) • Understanding addresses a narrow range of geographical ideas, which lack detail. (AO1)
Level 2	**3–5**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Understanding addresses a range of geographical ideas, which are not fully detailed and/or developed. (AO1)
Level 3	**6–8**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Understanding addresses a broad range of geographical ideas, which are detailed and fully developed. (AO1)

Question number	
4(d)	**AO1 (3 marks)/AO2 (9 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. Responses that demonstrate **only** AO1 without any AO2 should be awarded marks as follows: • Level 1 AO1 performance: 1 mark • Level 2 AO1 performance: 2 marks • Level 3 AO1 performance: 3 marks. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • The concentration of atmospheric carbon (carbon dioxide and methane) strongly influences the natural greenhouse effect, which in turn determines the distribution of temperature and precipitation. • The process of fossil fuel combustion has altered the balance of carbon pathways and stores with implications for climate, ecosystems and the hydrological cycle. • Increased temperatures affect evaporation rates and the quantity of water vapour in the atmosphere with implications for precipitation patterns, river regimes and water stores (size of snow and glacier mass, reservoirs, lakes, amount of permafrost, soil moisture levels) • Climate change also affects rates of runoff and stream flow. • Climate change, resulting from the enhanced greenhouse effect, may increase the frequency of drought due to shifting climate belts. **AO2** • Perhaps the most important impact is likely to be the increase in evaporation caused by the increase in the temperature of the troposphere. This will then lead directly to an increase in the amount of water vapour circulating throughout the lower atmosphere. • The key consequence of this increase in water vapour is to increase the frequency of intense precipitation events leading to changes in river regimes as well as rates of surface runoff and so stream/river flows such as in Equatorial Africa. • Large increases in temperatures in the Arctic will also increase the amount of water vapour being held in such high latitude areas and so increase the precipitation levels in these regions. • Yet other areas will see a reduction in precipitation levels and with the increases in evaporation and evapotranspiration will see a reduction in stores such as soil moisture and ground water leading to more droughts in areas such as Spain. • In some areas this will, however, be off set by increases in the rate of ablation of the stores of the cryosphere, particularly the increase in snow and ice melt which lead to temporary greater river flows. • These increases in snow runoff are, however, likely to temporary as the warmer atmosphere will mean less precipitation falls as snow and more as rain and so the cryosphere stores will reduce. The warmer

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	temperatures will also increase the rate of sublimation further reducing the cryosphere stores. • Yet this might then reduce the amount of water in the area leading to lower levels of water vapour and subsequent drop in precipitation as seen on the west coast of South America. • There are also indirect impacts as seen in Brazil where increases in temperature will lead to the loss of forest cover. This in turn will lead to a reduction in evapotranspiration and so a reduction in precipitation. This is therefore a positive feedback loop as the loss of precipitation further increases the loss of forest and so on. • Climate warming will therefore impact on nearly all the flows of the hydrological cycle due to the nature of the linked processes. Yet it's greatest impact will be on the amount of evaporation and precipitation as this will then determine the relative size of flows (as well as stores) of other components of the hydrological cycle. **Accept other assessments of the impacts of climate change on the flows (processes) in the hydrological cycle.**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–4**	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate. (AO1) • Applies knowledge and understanding to geographical information/ideas, making limited logical connections/relationships. (AO2) • Applies knowledge and understanding to geographical information/ideas to produce an interpretation that is not relevant and/or supported by evidence. (AO2) • Applies knowledge and understanding to geographical information/ideas to produce an unbalanced argument that lacks coherence and makes judgements that are generic and/or unsupported by evidence. (AO2)
Level 2	**5–8**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Applies knowledge and understanding to geographical information/ideas logically, making some relevant connections/relationships. (AO2) • Applies knowledge and understanding to geographical information/ideas to produce a partial but coherent interpretation that is mostly relevant and supported by evidence. (AO2) • Applies knowledge and understanding to geographical information/ideas to produce an unbalanced, partially supported argument that is drawn together with some coherence in order to make judgements. (AO2)
Level 3	**9–12**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Applies knowledge and understanding to geographical information/ideas logically, making relevant connections/relationships. (AO2) • Applies knowledge and understanding to geographical information/ideas to produce a full and coherent interpretation that is relevant and supported by evidence. (AO2) • Applies knowledge and understanding to geographical information/ideas to produce a balanced, fully supported argument that is drawn together coherently in order to make rational judgements. (AO2)

Question number	
4(e)	**AO1 (5 marks)/AO2 (15 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. Responses that demonstrate only AO1 without any AO2 should be awarded marks as follows: • Level 1 AO1 performance: 1 mark • Level 2 AO1 performance: 2 marks • Level 3 AO1 performance: 3 marks. • Level 4 AO1 performance: 4–5 marks. Indicative content guidance The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • The potential for conflicts to occur between users within a country, and internationally over local and trans-boundary water sources • Integrated drainage basin management for large rivers (Nile or Colorado) • Water sharing treaties and frameworks (United Nations Economic Commission for Europe (UNECE), Water Convention, Helsinki, and the Water Framework Directive and Hydropower, Berlin). **AO2** • Transboundary conflicts can be within a country such as the conflicts between the upper and lower basin users in the Colorado as well as between countries such as those on the Mekong between China and Vietnam. • A key reason why despite there being water sharing treaties and frameworks these have had little success in reducing the conflicts arising from trans-boundary water sources is that there are no international rules for solving disputes. Whilst upstream countries claim territorial sovereignty (it is our water and we will use it how we like), downstream countries claim territorial integrity (we should receive the same amount and quality as we always have had in the past). • This was the case for the Mekong River commission where the downstream users such as Cambodia and Thailand have signed the MRC and reduced conflicts particularly over Lake Tonle Sap. Burma and China have yet to sign the treaty and as they control the upstream river water and so the of the Lower Basin users are dependent on the goodwill of the upstream countries. Yet China and Burma have already constructed 4 dams on the river and so the MRC has not successfully reduced conflicts. • Another key reason why water sharing treaties and frameworks have had little success in reducing the conflicts arising from trans-boundary water sources is that there is often asymmetrical power relationship

	between the users. The International Boundary and Water Commission (IBWC) managed, through the 1944 United States-Mexico Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, to guarantee the annual flows of water to Mexico. Although this led to the building of a desalinisation plant that treated the water from the Wellton-Mohawk river before returning it to the Colorado River it has not resolved the issues of a lack of water but has made the water less saline. There is still, however, the ongoing issue of ground water extraction. The Aquifer on the Mexican side of the border is very low as US famers over extract the resource. Despite negotiations since 1973 the issue remains unresolved. • Water treaties can also only be successful where there is little geopolitical tension. Where water crosses from one country to another where relations are poor there the conflict over the use of the water becomes part of the wider geopolitical tensions and as a result the conflicts are less likely to be resolved. • Water treaties can also only be successful when authoritarian government makes decisions such as the South North Water transfer in China, where there is no room for conflict as Government overrules objections • Yet despite the lack of success of some water treaties and frameworks other frameworks have had more success. A key reason why some have succeeded is that they are based on the Helsinki Rules which suggested that water sharing between regions should consider natural factors, social and economic needs and downstream impacts amongst other factors. As a result, there have been a variety of treaties such as the Indus Water Treaty (1960) and the Ganges Treaty (1996). • Furthermore, other treaties have had success when they have been part of a wider political union such as the EU Water Framework Directive. This encouraged the development of River Basin Plan. The plan is a detailed account of how the objectives set for the river basin (ecological status, quantitative status, chemical status and protected area objectives) are to be reached within the timescale required. Crucially it insisted that all interested parties are fully involved in this discussion. • Other international institutions have developed the EUWFD such as the United Nations Economic Commission for Europe Framework (UNECE). Signatories to this framework pledged to protect and ensure the quality, quantity and sustainable use of transboundary water resources by facilitating cooperation. A good example of how this can reduce water conflicts is the Drin Basin. • Another framework that has been developed concentrates specifically on those river basins that have dams and reservoirs. This is the Hydropower framework that was developed from a conference held in Berlin to improve technical approaches for good practice in hydropower use. • Accept agreements within a country, e.g., reservoirs in Lake District, Thirlmere and Haweswater which supply Manchester

	Accept other evaluations of whether most trans-boundary water conflicts are impossible to solve.

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–5**	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1) • Applies knowledge and understanding of geographical ideas, making limited and rarely logical connections/relationships. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce an interpretation with limited coherence and support from evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce an unsupported or generic conclusion, drawn from an argument that is unbalanced or lacks coherence. (AO2)
Level 2	**6–10**	• Demonstrates geographical knowledge and understanding, which is occasionally relevant and may include some inaccuracies. (AO1) • Applies knowledge and understanding of geographical information/ideas with limited but logical connections/relationships. (AO2) • Applies knowledge and understanding of geographical ideas in order to produce a partial interpretation that is supported by some evidence but has limited coherence. (AO2) • Applies knowledge and understanding of geographical information/ideas to conclude, partially supported by an unbalanced argument with limited coherence. (AO2)
Level 3	**11–15**	• Demonstrates geographical knowledge and understanding, which is mostly relevant and accurate. (AO1) • Applies knowledge and understanding of geographical information/ideas to find some logical and relevant connections/relationships. (AO2) • Applies knowledge and understanding of geographical ideas in order to produce a partial but coherent interpretation that is supported by some evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to come to a conclusion, largely supported by an argument that may be unbalanced or partially coherent. (AO2)
Level 4	**16–20**	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Applies knowledge and understanding of geographical information/ideas to find fully logical and relevant connections/relationships. (AO2) • Applies knowledge and understanding of geographical information/ideas to produce a full and coherent interpretation that is supported by evidence. (AO2) • Applies knowledge and understanding of geographical information/ideas to come to a rational, substantiated conclusion, fully supported by a balanced argument that is drawn together coherently. (AO2)

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