Mark Scheme (Results)

Summer 2022

Pearson Edexcel A Level
In Geography (9GE0) Paper 01

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly 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	Indicative content	Mark
1 (a)	**AO3 (4 marks)**	
(i)	1 mark for mean of 7.4 (mean is 7.37 so to one decimal place 7.4)	**(1)**
(ii)	1 mark for the median 103	**(1)**
(iii)	1 mark for the working of 1115 – 23 1 mark for the interquartile range of 1092	**(2)**

Question number	Indicative content
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** • Prediction and forecasting accuracy depend on the type and location of the tectonic hazard • Strategies to modify vulnerability and resilience include hi- tech monitoring, education, community preparedness and adaptation. • Strategies to modify loss include emergency, short and longer term aid and insurance and the actions of affected communities themselves. • Strategies to modify the event include land-use zoning, hazard – resistant design and engineering defences. • Forecasting (when, where and likely magnitude) and predictions (where) can be used by governments to start disaster planning where high frequency or high magnitude events would cause problems for local areas. **AO2** • Some predictions are easy to make spatially, but difficult temporally (e.g. earthquakes typically occur on plate boundaries, but timing is unknown, making predictions challenging). • Similarly tsunami events can be generated by earthquake tremors and which then allow communities to be warned. The tsunami that hit the western Pacific in 2009 caused relatively low impacts due to the warnings received from the Pacific Tsunami Warning centre. • Yet the Tohoku earthquake off Japan in 2011 generated a tsunami that although was predicted still overwhelmed the defences leading to large impacts suggesting that the magnitude of the event can affect the usefulness of the prediction. • Some EQ scientists have worked out where to find stress points along plate boundaries where EQ have recently happened, e.g. the North Anatolian Fault line, which relieve tension. However, scientists currently lack an accurate pre-cursor which limits the effectiveness of this research. Furthermore there are issues about

	the broadcast of the information as well as what to do with the warning. • Communities may therefore reduce the vulnerability to earthquake hazards by increasing their resilience as well as modifying the loss and the magnitude of the event. • Expect candidates to examine how due to the difficulties of prediction and forecasting communities in developed countries invest in aseismic buildings as well as education and training of emergency services to reduce the vulnerability of communities to earthquake hazards. • Some candidates may examine how in developing countries communities may be more vulnerable even if prediction and forecasting was accurate due to the remoteness and inaccessibility of some communities. • Reward those candidates who assess how other ways in which communities reduce their vulnerability to earthquake hazards which may be more successful than prediction and forecasting. **Accept other distinctions between forecasting and predictions.** **Accept any other appropriate assessments.**

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	Indicative content
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** • Glacial erosion creates distinctive landforms and contributes to glaciated landscapes • Glacial erosional processes such as abrasion, quarrying, plucking, crushing and basal melting • The processes leading to the formation of landforms associated with cirque and valley glaciers such as cirques/corries, arêtes, pyramidal peaks glacial troughs, truncated spurs **AO2** • A pyramidal peak can be seen in the foreground and there is clear evidence of cirque/corrie in the photograph as well as well defined aretes. • Cirques/corries are created by glacial erosional process such as quarrying/plucking at the steep back wall and abrasion in the over deepened bowl. • An arête is created where two cirques/corries are experiencing headward erosion. • Three cirques/corries eroding backward will create a pyramidal peak evidenced in the foreground of the photograph although accept nunatak formation. • A glacial trough can be seen in the background. This is created as the glacier follows the pre-glaciated water course. Through a combination of erosional processes (abrasion, quarrying, plucking, crushing and basal melting) the glacier creates over deepens the existing valley and erodes the interlocking spurs to create truncated spurs as seen in the photograph. • As well as historic glacial processes there is also evidence of contemporary sub-aerial processes with frost shattering clearly evident on the sides of the cirque/corrie and probably biological weathering. **Accept other explanations of the contribution of glacial processes to the development of these landforms.**

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	Indicative content
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** • Upland glaciated landscapes are affected by glacial depositional processes • The formation of ice contact depositional features - medial, lateral, recessional and terminal moraines • The formation of fluvio-glacial landforms; ice contact features (kames, eskers and kame terraces) and proglacial features (sandurs, pro-glacial lakes, meltwater channels, and kettleholes). **AO2** • The photograph shows the snout (terminus) of an active glacier. Adjacent to the glacier there appears to be a lateral moraine and possibly a terminal and or a recessional moraine. In the foreground there is clear evidence of ground moraine with variable distribution of sediment. To the right of the photograph there may be hummocky ground. Accept that candidates may view some of these depositional features as push moraines. • A terminal moraine is a ridge of material that marks the maximum limit of a glacier advance. They form at the glacier terminus (snout). • Recessional moraines are found behind a terminal moraine and can indicate both a temporary glacier advance or stationary periods during a period of glacier retreat. • Lateral moraines form along the glacier side and consist of debris that falls or slumps from the valley sides or directly from the glacier surface. • These moraines form due to gravity when material being carried by the glacier falls or slides from the ice either at the snout or the side. • They also form due to temperature change leading to the melt-out of rock debris stored in the ice. • They form where there is a regular supply of debris to the snout. • Ground moraine is found between different moraine ridges. These form at the base of the glacier due to the deformation and deposition of the glacial baseload. • Hummocky ground is formed when the snout has high levels of debris and through melt-out material is let down to the ground. • Push moraines are formed by active glaciers when morainic material is bulldozed by the advancing ice into a series of ridges. **Accept that fluvioglacial processes may also be responsible for the landforms shown.** **Accept other explanations of how glacial deposition contributes to the development of this landscape.**

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	Indicative content
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** • Glacial landscapes account for 2.1 % of all of the water on earth and 68.7% of all the freshwater on earth. They therefore help maintain the water cycle by being the largest store of freshwater on earth. • Key glacial and periglacial landscapes such as the Himalaya mountain range and Tibetan Plateau which has a total area of 35,110 km2 of glacier and ice cover maintains the water cycle through the release of seasonal meltwater which supplies millions of people with their fresh water. Rivers which are fed by this region include the Yangtze, Mekong, Ganges and Hwang Ho. • As well as maintaining river flow, glacial landscapes in the Andes maintain groundwater levels which in turn through ground water flow maintains river flow in the dry season. • Glacial and periglacial landscapes at the high latitudes (both in the Arctic and Antarctic) help balance the global radiation balance and so impact on the maintenance of the water cycle due to the effect that this has on the position of Rossby waves and jet streams. • By ensuring that a temperature difference exists between the cold Arctic and the warmer tropical air it helps to ensure that the Rossby Waves have a high zonal index circulation and a low amplitude reducing the risk of extreme weather. • Periglacial landscapes as well as being a key store of water also maintain the water cycle through exaggerating hydrologic events such as summer surface melting and also increases runoff. • In particular, the upward growth of permafrost impedes infiltration and percolation which also promotes surface runoff. • Channel flow is also maintained in periglacial areas as flowing summer meltwater melts ground ice by the combined effects of heat conduction and convection. • There are also indirect impacts on the water cycle through impacts on the carbon cycle **Accept other explanations of importance of glacial and periglacial landscapes in the maintenance of the water cycle.**

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	Indicative content
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** • Global warming is having a major impact on glacial mass balances, which in turn risks disruption of the hydrological cycle (meltwater, river discharge, sediment yield, water quality). • Human activities (leisure and tourism, reservoir construction, urbanisation) are threats to glaciated landscapes. • Human activity can also degrade the landscape and fragile ecology of glaciated landscapes (soil erosion, trampling, landslides, deforestation). • Glaciated landscapes face varying degrees of threat from natural hazards (avalanches and glacial outburst floods). **AO2** • Climate change is thought to be the greatest threat to active glacial landscapes with recent studies showing that most glaciers are currently retreating with only maritime glaciers in Scandinavia showing glacial advances. • There has been a cumulative mass balance loss from 1980 to 2018 of −21.7m. Furthermore the pace of glacier loss has accelerated from -228 millimeters per year in the 1980s to -921 millimeters per year for 2010-2018. At this rate some glaciers are set to disappear by 2100. This therefore represents the greatest threat to their existence. • Furthermore, increased temperatures will result in greater amounts of meltwater at the base leading to increased rates of glacier movement and the likelihood of glacier surges leading to large blocks of ice surging to lower and so warmer altitudes further accelerating the loss of the glacier. • This retreat will also threaten landscapes due to the changes in the hydrological cycle that this will bring as well as the increased chance of glacial outburst floods.

Question number	Indicative content
	• There are also likely to be other changes to river regimes of rivers 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. Industrial pollutants such as black carbon as well as mercury, pesticides, and other persistent organic pollutants could have significant impacts on water quality and impact upon freshwater and marine ecosystems. • The cold runoff from glaciers also affects downstream water temperatures. Many aquatic species in mountainous environments require cold water temperatures to survive. Some aquatic insects are especially sensitive to stream temperature and such changes in stream habitat may also adversely impact native trout and species such as salmon. • Relict landscapes may also be affected by global warming as much as active landscapes. Studies have shown that the rising temperature will affect the tree lines and the development of grasses and shrubs at increased altitudes. Furthermore, it is likely that global warming will increase the risk of forest fires in relict areas as well as changing the often unique biodiversity in lakes in upland areas. • Yet, it is likely that there are other anthropogenic threats that are of greater concern for relict landscapes than global warming. • Deforestation on exposed slopes has been found to cause increased damage to the landscapes such as in the Canadian Rockies whilst over cultivation and overgrazing is also thought to cause damage to the landscapes in Andean areas. • Furthermore urbanization, mineral exploitation and reservoir construction also pose threats to relict glaciated landscapes with pollution and toxic waste being threats from hastily built urban areas and the damage to the landscape of relict glaciated areas through mineral exploitation and reservoir construction often taking decades to recover. • Tourism is also a key threat to many relict landscapes with footpath erosion and trampling a key threat in areas such as the Lake District National Park. • Overall whilst global warming threatens the very existence of active glaciated landscapes, other anthropogenic threats are of greater concern than global warming for relict landscapes. **Accept other evaluations of the view that global warming is the greatest threat to both active and relict glaciated landscapes.**

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 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	Indicative Content
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** • Transportation and deposition processes produce distinctive coastal landforms (beaches, recurved and double spits, offshore bars, barrier beaches and bars, tombolos and cuspate forelands), which can be stabilised by plant succession. • Sediment transportation is influenced by the angle of wave attack, tides and currents and the process of longshore drift. • Vegetation is important in stabilising sandy coastlines through dune successional development on sandy coastlines and salt marsh successional development in estuarine areas. **AO2** • The photograph shows a spit with a salt marsh behind. Accept that there may be sand dunes present on the spit. • The spit has been created through sediment from sediment sources within the sediment cell transported by the process of longshore drift. • Expect details of marine processes of transportation such as traction, saltation and suspension. • Spits form due to the presence of a surplus of sediment combined with the process of longshore drift, the dominance of constructive waves and an appropriate coastal configuration – presence of an estuary or a change in direction of the coast. • There are other processes at work particularly the role of vegetation in stabilizing the spit. • In addition as well as sediment transport by the sea there is also sediment transport by the river bringing sediment down which is deposited in the low energy environment formed behind the spit • There would also be the process of flocculation causing the sediment to settle in this area. Vegetation succession in the form of halosere succession is also important in contributing to the development of the landscape shown. • Credit the explanation of other landforms visible in the photograph such as sandy beaches in the foreground, bays and headlands in the top right of the photograph as well as cliffs as visible in the top left of the photograph. **Accept other explanations of the contribution of marine processes in the development of these landforms.**

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	Indicative content
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** • Subaerial processes of mass movement and weathering influence coastal landforms and contribute to coastal landscapes. • Weathering (mechanical, chemical, biological) and mass movement (blockfall, rotational slumping, landslides) is important on some coasts with weak and/or complex geology. • Mass movement creates distinctive landforms (rotational scars, talus scree slopes, terraced cliff profiles). **AO2** • The photograph shows a cliff with a well developed stepped or terraced cliff profile with a complex geology with what appears to be two horizontally bedded rock types lying on top of each other. • There is evidence of both geologies on the beach. • The 'tread' of the step appears to be well vegetated and so may show evidence of recent stability. • The face of the lower half of the cliff appears to show evidence of rivulets flowing to the beach. • In the foreground there is further evidence of a variety of geologies as well as variations in sediment sizes with the possibility of the development of a talus scree slope. • Rotational slumping may have been responsible for the formation of the terraced cliff profile. Expect details of heavy rain leading to increased porewater pressure exceeding shear strength and so creating an arc of failure and the creation of rotational scars. • The large boulders on the beach are likely to be the result of blockfall. Expect details of weathering such as freeze thaw weathering exploiting the joints/bedding planes of the lighter coloured rock. • There is evidence of biological weathering due to the abundant plant growth which may also lead to blockfall. • The rivulets on the face of the lower cliff may indicate an impermeable rock which is leading to increased surface runoff and in some cases may lead to mudflows reaching the beach with the possible creation of alluvial fans at the cliff/beach interface. **Accept other explanations how subaerial processes contribute to the development of this landscape.**

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	Indicative content
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** • Emergent coastlines are formed with falling sea level relative to land due to isostatic change creating features such as raised beaches and fossil cliffs such as those found at Ullapool in Scotland. • A beach and cliff well above the contemporary sea level were created when the sea level was much higher. As the sea level has dropped, it has left a fossil cliff and sediment as a raised beach as well as a contemporary cliff and beach which reflects the current sea level. • Reward those candidates that explore the nature of the pre-existing coastline and the impact that this had on the creation of the fossil features. • Coastline of submergence are formed with rising sea levels creating features such as rias and fjords. As sea level appears to rise in places such as SW England, Rias such as the river Dart are created when rising sea level drowns a previous river valley**.** In cross section the ria is relatively shallow with the deepest part in the centre. The exposed valley sides are gently sloping. There is a smooth long profile and in plan view tend to be winding as they reflect the course of the drowned river. • Fjords are created when the very deep coastal glacial U shaped valleys called glacial troughs are flooded by rising sea levels. Fjords have steep valley sides and uniformly deep water (1000m) with a U shaped cross section reflecting the glaciated valley. There is often a shallow section at the mouth of the Fjord known as the threshold. In plan view they are much straighter due to the erosive power of the glacier. • Reward those candidates who explore the concept of the role of sea level change and contrast the river valleys of rias with the glaciated trough of fjords. • Sea level change has also created Dalmatian coasts. This is where there is a longitudinal coast where mountains run parallel or concordant to the coast. The name is taken from the coast of Dalmatia, Yugoslavia, along the Adriatic Sea, where the submergence of the coastline produces long, narrow inlets with a chain of islands parallel to the coast. As sea levels rose they flooded the elongated islands are the crests of former ranges and the narrow sounds were the former longitudinal valleys. • Reward those candidates who note the need for a concordant coast for the creation of a Dalmatian coastline. • Accept other landforms not listed in the specification such as marine terraces such as those found at Chah Bahar, Iran or on Fuerteventura.

	• **Some may detail the causes of sea level change which is acceptable** **Accept other explanations of the role of sea level change in the formation of both emergent and submergent coastlines.**

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	Indicative content
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** • Climate change may increase coastal flood risk (frequency and magnitude of storms, sea level rise) but the pace and magnitude of this threat is uncertain. • Storm surge events can lead to severe coastal flooding with dramatic short-term impacts (depressions, tropical cyclones). • Local factors increase flood risk on some low-lying and estuarine coasts (height, degree of subsidence, vegetation removal) • Rapid coastal recession is caused by physical factors (geological and marine) but can be influenced by human actions (dredging or coastal management) • Rates of recession are not constant and are influenced by different factors both short- and longer term (wind direction/fetch, tides, seasons, weather systems and occurrence of storms **AO2** • Global warming will increase threats to coastlines as well as coastal communities through increasing the risk of coastal flooding as well as increasing the risk of coastal recession. • A key key cause of increasing threats to coastal comminties from global warming is eustatic changes where global warming is causing sea temperatures to rise and so the sea expands causing sea levels to rise and so increasing flood risk in areas such as the Pacific Islands. • Furthermore, global warming will put more energy into the atmosphere and so the conditions for a tropical storms to start (26.5°C) will occur more often and so there will be more tropical storms increasing threats to coastal communities. • Higher sea surface temperatures will also cause the tropical storms to have lower pressure and so have higher wind speeds and so increase the flood risk of areas affected by such storms.

Question number	Indicative content
	• More energy in the atmosphere will mean that depressional storms that hit the UK will have lower pressure and so stronger wind speeds. Global warming will also increase the frequency of such storms and as well as the power of the waves and so increase the risk of both flooding and recession to coastal communities. • Increased extremes of precipitation will increase subaerial processes and so increase the rate of coastal recession and so increase the threats to coastal communities. • Global warming is, however, not the only threat to coastal communities. Other threats to coastlines and their communities can also be caused by other factors and processes such as isostatic downwarping. This is caused by the rebound of glaciated land relative to the sea. In areas of the south of England flood risk is increasing as a result of the south of England sinking into the sea so increasing the risk to coastal communities in the south whilst Scotland rebounds upwards. • Furthermore, downwarping can occur due to the accretion (build up) of sediment brought down by rivers that create the deltas such as in Bangladesh thereby increasing the risk of flooding to coastal communities. • Human actions can also increase threats to coastlines and coastal communities. In areas such as the Maldives, the threats to coastal communities have developed due to the removal of mangrove swamps. These are vital natural barriers against flooding as they trap sediment and so raise the level of the beach front. Without the protection of mangrove swamps there is little to stop rising sea levels caused by eustatic change and so removal of vegetation increases flood risk. • A lack of resources also can increase the threats to coastal communities. Countries such as Bangladesh are relatively poor and cannot afford defences such as sea walls and flood barriers that other richer countries can afford. • Rapid coastal retreat such as that experienced on the Holderness coast due to geological factors are a key threat to coastlines and coastal communities. • Overall, although there are distinct threats to coastlines and coastal communities from both rapid coastal retreat and coastal flooding, global warming will increase the frequency, severity and extent of these threats and so on balance can be considered the greatest threat for many coastlines and coastal communities. **Accept other evaluations of the view that global warming is the greatest threat to coastlines and their communities.**

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 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	Indicative content	Mark
4(a)	**AO1 – 2 marks/AO2 – 1 marks** Award **1 AO2 mark** for analysing the resource to identify the differences in the growth of electricity generated from solar power and a further **2 AO1 marks** expansion up to a maximum of 3 marks to explain the reason for this difference. For example: • China has seen a **bigger / faster / larger** growth rate of electricity generated from solar power (from 49,000 to 204,000 mw) **(1).** This may be due to government action prioritizing the development of renewables **(1)** to meet international obligations such as the Paris Treaty and/or COP 26 **(1).** • China has seen a **bigger / faster / larger** growth rate electricity generated from solar power (from 49,000 to 204,000 mw) **(1).** This may be due to the cost of solar power falling rapidly **(1)** in comparison to other renewables such as offshore wind turbines **(1).** • The EU has seen a **smaller / slower** growth rate electricity generated from solar power from (98000 to 131000 mw) **(1).**This may be due to EU countries prioritizing other renewable resources **(1)** such as wind power which may be more reliable **(1).** **Accept other explanations for the differences in the growth of electricity generated from solar power.**	**(3)**

Question number	Indicative content
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 oceans regulate the composition of the atmosphere due to it's ability to be a vital **flux** as the oceans absorb carbon dioxide into the surface ocean store (900 GtC) through the process of diffusion (90GtC per year). Crucially, as the oceans can absorb more carbon than it emits (a net gain of 0.6 Gtc yr-1), this means that it is considered a carbon sink and so highlights the importance of the oceans in regulating the composition of the atmosphere. • Crucially, there are three key processes that occur in oceans that allows them to be a carbon sink with the atmosphere – a physical, solubility and biological cycle. • **Physical pump /Thermohaline circulation** • The most important is the physical pump. The physical cycle is caused when carbon dioxide is absorbed by the ocean surface through the process of diffusion. This can be then dissolved into the surface ocean and then is taken from the surface ocean to the intermediate and deep oceans through downwelling currents (96 GtC per year). It is also distributed around the planet through the thermohaline circulation. This is the process whereby warm water from the tropics is transported towards the poles. As the colder the water the greater the absorption of CO2 this means that as warm water is transported towards the poles it cools absorbing more CO2. As it does so the salinity also increases and as a results it sinks (down welling) taking CO2 from the surface ocean to the deep ocean. This therefore removes carbon from the upper ocean and removes to the deep ocean. This allows more diffusion to occur regulating the carbon store in the atmosphere. • Yet there is also the upwelling of carbon from intermediate and deep oceans to the surface oceans (105.6 GtC yr-1) through upwelling currents and turbulence created by surface winds allowing carbon previously stored in the intermediate and deep ocean store to return to the surface oceans and then back to the atmosphere highlighting that the role of oceans in regulating the carbon cycle in the atmosphere is a two way relationship with carbon being moved both downwards and upwards through the oceans. • **Biological cycle /Sequestration of carbon through photosynthesis**

	• The next important is the biological pump. The biological cycle allows carbon dioxide to be sequestered in the ocean through photosynthesis by phytoplankton and other marine biota which converts the carbon dioxide into organic matter (10GtC per year). This then acts as a biological pump transporting carbon from the surface oceans to the intermediate and deep oceans (10 GtC per year). This occurs when as these biological organisms die, their dead cells, shells and other parts sink into the mid and deep water. In addition, decay of these organism also releases carbon dioxide into this intermediate and deep water. Thus the oceans role in regulating the composition of the atmosphere is that it moves carbon from the surface oceans where it may vent back into the atmosphere and instead store it the mid and deep ocean store as well as the dissolved carbon store and so regulate the carbon cycle. • **Solubility cycle/Carbonate pump** • The solubility cycle also is a key process in the oceans. The solubility cycle is caused when the carbon dioxide absorbed by the oceans from the atmosphere forms carbonic acid which in turn reacts with hydrogen ions to form bicarbonates and then further reactions forms carbonates which are stored in the upper ocean. Some organisms use these carbonates to make shells or skeletons. When these organisms die some material sinks right to the bottom of the ocean and forms the sea bed sediment store (1750 GtC) where over time through chemical and physical processes the carbon is transformed to rocks such as limestone. This is a particularly important process in regulating the composition of the atmosphere as it locks up carbon in the long term carbon cycle and not allows it to return to the ocean surface and so possible venting into the atmosphere as the physical pump does. **Accept other explanations of how oceans regulate the composition of the atmosphere with reference to either or both the water and carbon cycle.**

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	Indicative content
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: • Humans contribute to the risk of drought through overabstraction of both surface and ground water stores. In the Sahel region water hungry crops such as ground nuts were grown and cattle herd sizes increased as more wells were dug. As a result of the increase in the number of wells the ground water levels started to fall. This fall in ground water levels was then accelerated by the drop in rainfall associated with the failure of the ITCZ. This meant that there were too many cattle and not enough ground water to meet this demand and so the area suffered from drought both in the 1970's and in 2005. • In addition the risk of drought can be caused by rapid population growth. Sahelian countries such as Niger were experiencing a population explosion with fertility rates of 7 per women and a growth rate of over 3% per year. This also contributed to the risk of drought. • Deforestation can add to the risk of drought as removing trees can break the cycle of precipitation/interception and subsequent evapotranspiration leading to lower precipitation levels and so drought. • The development of dams and reservoirs can cause drought downstream such as the Ataturk Dam in Turkey and the impacts on downstream countries such as Syria and Iraq as well as the series of dams in the Colorado drainage basin leading to drought in Mexico. • Yet human activity is often seen as only exacerbating lower than usual levels of precipitation leading to drought. The risk of drought can also be therefore be thought of being caused by meteorological processes such as the ENSO cycle in Australia leading to events such as the Big Dry as well as hydrological processes such as the low levels of winter precipitation levels leading to the drought orders in the UK in the Spring of 2012. • Accept climate change as a cause of the increase in the risk of drought. **Accept other explanations of the contribution of human activity to the risk of drought**

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	Indicative content
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** • Energy security is a key goal for countries with most relying on fossil fuels. • Energy players ***(P: role of TNCs, The Organisation of the Petroleum Exporting Countries (OPEC), consumers, governments)*** have different roles in securing pathways and energy supplies. • Energy pathways (pipelines, transmission lines, shipping routes, road and rail) are a key aspect of security but can be prone to disruption especially as conventional fossil fuel sources deplete. **AO2** • Energy security can be considered as a country's capacity to meet current and future energy demand, to meet his demand with a high degree of reliably and to be able to continue to meet this demand in the face of global shocks to the system. It can also be considered to be the ability of the country and or the population to be able to afford the energy they require to meet their needs. • The success of countries achieving energy security can be considered on the availability of energy resources, particularly fossil fuels, the diversity of the energy sources used and the intensity of use of oil and gas and the security of supplies. • Countries such as Saudi Arabia can be considered as successful in achieving energy security due to the availability of supplies as they have vast reserves 266,578,000,000 barrels of oil and has over 200 times of proven resource compared to its annual consumption. Compared to other countries such as Germany which is reliant on importing over half of its energy, Saudi Arabia can be considered as more successful in achieving energy security as total control over the security of supplies. Yet with increasing international pressure put on countries such as Saudi Arabia which are reliant on fossil fuel use it has pledged to source 50% of its energy by 2030. As with all countries reliant on renewable energy this may reduce the energy security of the country.

Question number	Indicative content
	• The UK can be considered as successful in achieving energy security as they have a diversity of supply (energy mix). The UK relies on fossil fuels such as gas and oil but also has substantial amounts of energy created through nuclear power (8.4%) as well as renewable resources (5%) as well as waste and biomass (10%). Indeed for electricity production renewables account for 43% of energy production. Furthermore the UK has reduced its energy consumption by 23% since 1990. Yet as the recent fuel crisis shows the UK is still reliant on gas and oil and as world prices rise there can be energy insecurity for poorer households as energy prices rise. Furthermore, the UK has an energy dependency rate of 35% and with the domestic supplies of fossil fuels reducing, unless the UK continues to increase the development of renewable resources it may be considered as less successful in obtaining energy security. • The USA can be considered to have successfully achieved energy security as they have reduced their energy intensity by 50% since 1983. Energy intensity is calculated by dividing total energy consumption by real gross domestic product (GDP). This therefore has allowed the USA to reduce its energy consumption from 2019 to 2020 by 7%. However, the USA still imported 13% of its energy needs. As fracking currently accounts for 67% of natural gas consumption and 50% of oil consumption this energy security may only be short term as these resources are finite and also relatively expensive compared to other conventional sources of gas and oil. • Other countries such as Norway can also be considered successful in achieving energy security due to their security of supplies as they produce 45% of their energy from renewables, primarily from hydroelectric power and the remainder from domestic supplies of oil and gas. As all of the sources of energy are from domestic sources Norway can therefore consider that it has successfully achieved energy security. However, Norway's energy consumption has risen by 27% since 1990 and it use of renewables has dropped from 53%. If present trends continue Norway may not be so successful in achieving energy security. • Crucially, the concept of success must be at the forefront of the assessment – particularly the criteria that success should be based on. **Many will refer to the present price rises of energy the impact of the Ukraine conflict. These are valid points but must be made in the context of achieving energy security** **Accept any other appropriate assessments.**

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) • information/ideas logically, making some relevant connections/relationships. Applies knowledge and understanding to geographical (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	Indicative content
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** • Human actions that can exacerbate flood risk by changing land use within the river catchment • Human actions that can exacerbate flood risk by mismanagement of rivers using hard engineering systems. • Humans disrupt the drainage basin cycle by accelerating processes adding to flood risk • Meteorological causes of flooding, including intense storms leading to flash flooding, • Flood risk is also caused by unusually heavy or prolonged rainfall, extreme monsoonal rainfall and snowmelt. **AO2** • The change from greenfield sites to urban areas is often considered the greatest cause of how land use changes can increase flood risk as urbanisation of greenfield sites reduces interception, infiltration and soil moisture storage and so increases surface runoff reducing lag time and so increases flood risk. • The flood risk from land use changes associated with urbanisation is also greatest in floodplain areas where the changes to the land use coincide with areas of greatest risk. On a micro scale conversion of front gardens into driveways reduces infiltration and increases flood risk. In London 25 km2 or nearly 5% of the area is now car parks increasing the flood risk to neighbouring areas. • In addition the changes from primary rain forest to secondary forest such as palm can reduce interception and increase surface runoff increasing flood risk by 20% in areas in Malaysia. • The changes in land use brought about by logging and subsequent grazing of land has been found to increases the flood risk by over 50% in areas in India as not only there is less interception but also trampling by cattle also decreases the infiltration rates and can increase surface runoff leading to increased flood risk.

	• The practice of 'Gripping' (the channelization of streams) in converting moorlands for use in arable farming has increased flood risk in catchments such as the river Hodder. Water flows as through flow to the grip (a drainage channel). This then rapidly flows down hill into the river faster than through flow and so increases the peak discharge. • Removal of hedgerows reduces barriers to surface runoff from fields and so increases flood risk such as in the increased flood risk of the River Lavant. • Impeding channel flow in urban areas such as the building of low bridges (such as in Boscastle) or the building of wing dykes such as on the river Mississippi which slows down channel flow and increases the possible flood wave increases the flood risk. • Yet climate change is also thought to be a key factor in increasing flood risk. Higher temperatures are likely to lead to more rapid snow melt leading to flood events for those communities effected by snow melt from the Himalayas. • Climate change may also cause more rapid snow melt in continental interior areas such as the northern states of the USA. As the Red River Valley flows northwards into Lake Winnipeg increased snowmelt due to warmer spring temperatures increases river flow which could lead to more flood events such as those experienced in 1997. • Climate change may also increase the number of summer storms such as that which devasted Boscastle as well as increasing the number of autumn depressional events which caused flooding in Cockermouth. • Increasing ENSO events are also thought to be a reason for the increasing flood risk in both Australia as well as the East Pacific coasts of North and South America. • Population increase in vulnerable areas is also a key factor in increasing the flood risk. **Accept other evaluations of whether land use changes are the main cause of the increasing risk of river flooding.**

Indicative content		
Level	Mark	Descriptor
	0	No rewardable matrial
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 information/ideas, making limited and rarely 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 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 information/ideas 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 information/ideas 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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