

F761

Mark Scheme

January 2010

# F761 Managing Physical Environments

Question		Expected Answers	Mks	Rationale
<b>Section A</b>				
<b>1</b>	<b>(a)</b>	<b>Study Fig. 1, an O.S. map extract showing a stretch of the River Mersey, Liverpool.</b>		
	<b>(i)</b>	<b>Identify the <u>four</u> different <u>types</u> of human activity taking place at locations <u>A</u> to <u>D</u> on Fig. 1.</b>	<b>4</b>	Point mark. 1 mark for each correct answer. Must give more than statement of map symbol meaning. eg no mark for “ferry” or “aquarium” All four answers must be different Accept other reasonable alternatives
	<b>(ii)</b>	<b>For any <u>two</u> of these activities, suggest why each one is taking place at that location.</b>	<b>6</b>	No double penalty if types not specified in (i) <b>Specific reasons are likely to vary for the different activities</b> 1 mark for a valid reason: + 2/3 for quality of development L2 explanation must have specific reference to that location based on evidence from the map e.g. Aquarium – accessibility for visitors by A road and foot passenger ferry.
	<b>(b)</b>	<b>State and explain <u>two</u> reasons why some river basins are vulnerable to flooding.</b>	<b>6</b>	1 mark for a valid reason: + 2/3 for quality of development Physical characteristics of vulnerable areas valid if linked to input  e.g. urban surfaces such as tarmac are impermeable and promote rapid surface run-off into channels leading to water exceeding bankful capacity. e.g. urban surfaces such as tarmac cause surface run-off and flooding.

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	(c)	<p><b>With reference to one or more located examples, explain how rock type and structure influence the development of landforms of river erosion.</b></p>	<p><b>Indicative content:</b> Resistance to erosion processes is the key. This may be influenced by strength of particle bonding, chemical composition, and presence of faults/joints. Good answers will link to specific erosion processes. Weathering contribution may also be valid. Example(s) of appropriate landforms(s) should be used.</p> <p><b>Level 3:</b> Uses well chosen example(s) to explain the influence of a number of rock/structure characteristics. Links explicitly explained and possibly related to specific erosion processes. Answer is well structured with almost faultless grammar and spelling. Geographical terminology is used accurately. <b>(8-9 marks)</b></p> <p><b>Level 2:</b> Clearly identified example(s) used to explain some valid influences of rock type/structure. Links stated and probably made to generic references to erosion. Answers may have poor structure with some inaccurate spelling and inaccurate use of geographical terminology. <b>(5-7 marks)</b></p> <p><b>Level 1:</b> Limited/no use of example(s). Descriptive observations of rock type/structure characteristics. No links established. Communication is basic with little structure and inaccurate spelling. If no located example(s) then top of Level 1 max. <b>(0-4 marks)</b></p>	9	<p>Located example may be the name of a specific landform e.g. High Force waterfall or named river</p> <p>Comments on processes such as weathering and mass movement are relevant if clearly linked to geology and the resultant erosional landforms such as waterfalls or V shaped valleys</p> <p>Rock type <u>and</u> structure; at least two landforms required.</p> <p>Rock type <u>and</u> structure and one landform, or rock type <u>or</u> structure and two landforms</p> <p>General explanations of landforms without any real detail of geology = L1 max. May well refer to hard/soft rock only.</p> <p>No reference to rock/type or structure = 0</p>
		<b>Total</b>		<b>25</b>	

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Question		Expected Answers	Mks	Rationale
2	(a)	Study Fig. 2, an O.S. map extract showing a stretch of the Dorset coastline near Poole.		
	(i)	Identify the <u>four</u> different <u>types</u> of human activity taking place at locations <u>A</u> to <u>D</u> on Fig. 2.	4	Point mark. 1 mark for each correct answer. Must give more than statement of map symbol meaning. e.g. no mark for "ferry", "nature reserve" All four answers must be different Accept other reasonable alternatives
	(ii)	For any <u>two</u> of these activities, suggest why each one is taking place at that location.	6	No double penalty if types not specified in (i) <b>Specific reasons are likely to vary for the different activities</b> 1 mark for a valid reason: + 2/3 for quality of development L2 explanation must have specific reference to that location based on evidence from the map e.g. Coastal path – designated route to walk along with views over Studland Bay and sand dunes behind, so attractive scenery.
	(b)	State and explain <u>two</u> reasons why some coastal areas need to be protected from the effects of natural processes.	6	1 mark for a valid reason: + 2/3 for quality of development  e.g. cliff top hotels in tourist resorts are of high value due to the jobs they provide and the revenue they bring to the local economy and so the cliffs are worth protecting from erosion to prevent the loss of the hotel.

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	(c)	<p><b>With reference to one or more located examples, explain how rock type and structure influence the development of landforms of coastal erosion.</b></p>	<p><b>Indicative content:</b> Resistance to erosion processes is the key. This may be influenced by strength of particle bonding, chemical composition, and presence of faults/joints. Good answers will link to specific erosion processes. Weathering contribution may also be valid. Example(s) of appropriate landforms(s) should be used.</p> <p><b>Level 3:</b> Uses well chosen example(s) to explain the influence of a number of rock/structure characteristics. Links explicitly explained and possibly related to specific processes. Answer is well structured with almost faultless grammar and spelling. Geographical terminology is used accurately. <b>(8-9 marks)</b></p> <p><b>Level 2:</b> Clearly identified example(s) used to explain some valid influences of rock type/structure. Links stated and probably made to generic references to erosion. Answers may have poor structure with some inaccurate spelling and inaccurate use of geographical terminology. <b>(5-7 marks)</b></p> <p><b>Level 1:</b> Limited/no use of example(s). Descriptive observations of rock type/structure characteristics. No links established. Communication is basic with little structure and inaccurate spelling. If no located example(s) then top of Level 1 Max. <b>(0-4 marks)</b></p>	9	<p>Located example may be the name of a specific landform e.g. Durdle Door or named stretch of coast e.g. Holderness. Comments on processes such as weathering, mass movement and refraction are relevant if clearly linked to geology and the resultant erosional landforms such as cliffs, arches and stacks</p> <p>Rock type <u>and</u> structure; at least two landforms required.</p> <p>Rock type <u>and</u> structure and one landform, or rock type <u>or</u> structure and two landforms</p> <p>General explanations of landforms without any real detail of geology = L1 max. May well refer to hard/soft rock only. No reference to rock/type or structure = 0</p>
<b>Total</b>				<b>25</b>	

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Question		Expected Answers	Mks	Rationale
3	(a)	<b>Study Fig. 3, a photograph of a cold environment in Lapland, Finland.</b>		
	(i)	<b>Describe the main characteristics of the vegetation shown in Fig. 3.</b>	<b>4</b>	Point mark or credit further descriptive detail but must have at least two different characteristics for max.
	(ii)	<b>Suggest how climate has influenced <u>two</u> of these characteristics.</b>	<b>6</b>	Comments about soil maybe relevant if part of a link between climate and vegetation.  1 mark for a valid reason: + 2/3 for quality of development  e.g. Evergreen so that photosynthesis can commence at the start of the very short growing season so that time and energy are not used in growing leaves/needles first.  e.g. Evergreen as the growing season is so short.
	(b)	<b>Outline <u>two</u> ways in which cold environments provide challenges for economic development.</b>	<b>6</b>	1 mark for a valid way: + 2/3 for quality of outline.  e.g. Extreme low temperatures making working outside difficult and workers may only be allowed to work for a few hours at a time.

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	(c)	<p><b>With reference to one or more located examples, explain how careful management in cold environments can help to ensure sustainability.</b></p>	<p><b>Indicative content:</b> Two underlying principles - balancing socio-economic and environmental needs, attempting to meet the needs of the present generations without compromising the needs of future generations. Management strategies used should be linked to sustainability.</p> <p><b>Level 3:</b> Uses well-chosen example(s) to explain at least one of the underlying principles. Links explicitly explained. Answer is well structured with almost faultless grammar and spelling. Geographical terminology is used accurately. <b>(8-9 marks)</b></p> <p><b>Level 2:</b> Clearly identified example(s) used to illustrate at least one underlying principle. Answers may have poor structure with some inaccurate spelling and inaccurate use of geographical terminology. <b>(5-7 marks)</b></p> <p><b>Level 1:</b> Limited/no use of example(s). Descriptive statement(s) of management strategies. No links established. Communication is basic with little structure and inaccurate spelling. If no located example then top of Level 1 max. <b>(0-4 marks)</b></p>	9	<p>Located example(s) of cold environment(s) or place(s) within cold environment(s).</p> <p>e.g. raising oil pipelines above the ground in Alaska allows oil to be extracted, migration routes of caribou to be maintained and Inuits to hunt them for meat and fur.</p> <p>Link to sustainability must be explicit.</p> <p>Link to sustainability may be implied with reference to economy/people, and environment.</p> <p>Details of management strategies (probably environmental protection), but no link to sustainability. OR Some vague idea of sustainability, but no link to management</p>
<b>Total</b>				<b>25</b>	

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Question		Expected Answers		Mks	Rationale
4	(a)	<b>Study Fig. 4, a photograph of a hot arid environment in Arizona, U.S.A.</b>			
		(i)	<p><b>Describe the main characteristics of the vegetation shown in Fig. 4.</b></p> <p><b>Indicative content:</b> Low height, tall cacti, low density, limited diversity, xerophytic, succulent, phreatophytic, large/ribbed stems, short life cycle. May apply own knowledge in terms of detail such as long tap roots, widespread roots, spines, waxy cuticle.</p>	4	Point mark or credit further descriptive detail but must have at least two different characteristics for max. No credit for naming species.
		(ii)	<p><b>Suggest how climate has influenced <u>two</u> of these characteristics.</b></p> <p><b>Indicative content:</b> Lack of rainfall, unreliability of rainfall, high temperatures, high evapotranspiration rates and wind are all relevant. Reference to predators and soil relevant if linked to climate. These should be linked to the characteristics identified in (i). <b>Level 2:</b> Accurate explanations of how two vegetation characteristics have been influenced by a range of climatic features. Explicit links made. Good use of technical language. <b>(5-6 marks)</b> <b>Level 1:</b> Some awareness of climatic characteristics with some use of technical language and tentative or stated links to at least one vegetation characteristics(s). One done well may reach the top of this level. <b>(0-4 marks)</b></p>	6	1 mark for a valid reason: + 2/3 for quality of development.  e.g. low and unreliable rainfall so plants store water in the stems when it does rain, expanding to increase capacity. Water can then be slowly used during dry or drought periods. e.g. they store water as there is little rainfall.
	(b)	<p><b>Outline <u>two</u> ways in which hot arid/semi-arid environments provide challenges for economic development.</b></p> <p><b>Indicative content:</b> Ways include environmental constraints e.g. high temps, low precipitation, saline soils, high costs, remoteness, conflicts with indigenous populations, fragile ecosystems, unstable ground, low productivity, relief barriers, high winds. <b>Level 2:</b> Identifies two ways and outlines their influence. Explicit links to challenges present. <b>(5-6 marks)</b> <b>Level 1:</b> Identifies valid way(s). Outline may not be provided. One outlined well may reach the top of this level. <b>(0-4 marks)</b></p>		6	1 mark for a valid way: + 2/3 for quality of outline  e.g. low rainfall means that soils are dry and there is little opportunity for crops to uptake water and nutrients.

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	(c)	<p><b>With reference to one or more located examples, explain how careful management in hot arid/semi-arid environments can help to ensure sustainability.</b></p>	<p><b>Indicative content:</b> Two underlying principles - balancing socio-economic and environmental needs, attempting to meet the needs of present generations without compromising the needs of future generations. Management strategies used should be linked to sustainability.</p> <p><b>Level 3:</b> Uses well-chosen example(s) to explain at least one of the underlying principles. Links explicitly explained. Answer is well structured with almost faultless grammar and spelling. Geographical terminology is used accurately. <b>(8-9 marks)</b></p> <p><b>Level 2:</b> Clearly identified example(s) used to illustrate at least one underlying principle. Answers may have poor structure with some inaccurate spelling and inaccurate use of geographical terminology. <b>(5-7 marks)</b></p> <p><b>Level 1:</b> Limited/no use of example(s). Descriptive statement(s) of management strategies. No links established. Communication is basic with little structure and inaccurate spelling. If no located example then top of Level 1 max. <b>(0-4 marks)</b></p>	9	<p>Located example(s) of arid environment(s) or place(s) within arid environment(s).</p> <p>e.g. using PVC drainage pipes in Khushab reduces waterlogging of soil, increases yield of crops; farmers can sell their surplus for profit, homes no longer subsidise.</p> <p>Link to sustainability must be explicit.</p> <p>Link to sustainability may be implied with reference to economy/people, and environment.</p> <p>Details of management strategies (probably environmental protection), but no link to sustainability. OR Some vague idea of sustainability, but no link to management</p>
<b>Total</b>				<b>25</b>	



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Question	Expected Answers	Mks	Rationale
<b>Section B</b>			
5	<p><b>With reference to one or more river basins, describe and explain the different impacts of flooding.</b></p>	25	<p>Accept named river or specific event.</p> <p>Reference to causal factors and management must be linked clearly to impacts.</p> <p>Development of the explanation might include reasons for the severity of the impacts such as population distribution, level of economic development and precipitation intensity.</p>
<p><b>Indicative content:</b> Impacts include social (disruption to life/evacuation/homelessness, disease, political unrest), economic (damage to buildings, loss of trade for businesses, disruption to transport, insurance costs) and environmental (channel modification, erosion of topsoil, loss of habitats). Scale of the impacts will also differ. May also be positive impacts e.g. sediment deposition leading to fertile soils on floodplains.</p> <p><b>AO1 Knowledge and understanding</b></p> <p><b>Level 3:</b> Detailed knowledge and understanding of at least two different types of flooding impact. Cause and effect are clearly and accurately explained and there is effective use of detailed exemplification. <b>(11-13 marks)</b></p> <p><b>Level 2:</b> Some knowledge and understanding of at least two types of flooding impact or more detailed knowledge and understanding of one. Cause and effect are linked but not fully explained. There is some use of exemplification. <b>(7-10 marks)</b></p> <p><b>Level 1:</b> Limited knowledge and understanding of at least one type of flooding impact. Cause and effect links are lacking and the answer is largely descriptive. There is limited exemplification. If no located example then top of Level 1 max. <b>(0-6 marks)</b></p>			

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	<p><b>AO2 Analysis and application</b></p> <p><b>Level 3:</b> Clear analysis and application of knowledge about the different impacts of flooding. <b>(5 marks)</b></p> <p><b>Level 2:</b> Some analysis and application of knowledge about the impacts of flooding. <b>(3-4 marks)</b></p> <p><b>Level 1:</b> Limited analysis and application of knowledge about the impacts of flooding. <b>(0-2 marks)</b></p> <p><b>AO3 Skills and communication</b></p> <p><b>Level 3:</b> The answer is well organised, with accurate spelling, punctuation and grammar. Geographical terminology is used appropriately. Clear conclusion(s) are drawn. <b>(6-7 marks)</b></p> <p><b>Level 2:</b> The answer has some organisation, with generally accurate spelling, punctuation and grammar. Some use of appropriate geographical terminology. Conclusion(s) are attempted. <b>(4-5 marks)</b></p> <p><b>Level 1:</b> The answer has little or no organisation, with inaccuracies in spelling, punctuation and grammar. Limited use of appropriate geographical terminology. No conclusion(s) are attempted. <b>(0-3 marks)</b></p>		<p>Differences in impact addressed explicitly</p> <p>Differences in impact addressed implicitly</p> <p>Differences in impact not addressed</p> <p>Concluding statements within the body of the text should be credited at this level.</p>
	<b>Total</b>	<b>25</b>	

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Question	Expected Answers	Mks	Rationale
6	<p><b>With reference to one or more coastal areas, describe and explain the different ways that they can be protected from the effects of natural processes.</b></p>	25	<p>Development of the explanation might be explicit references to how the methods work. Clear links to specific process mechanisms are likely. Decision-making processes involved are also important.</p> <p>Likely to be generic references to processes rather than specific mechanisms.</p>
	<p><b>Indicative content:</b> Ways include hard engineering (groynes, revetments, sea walls, breakwaters), soft engineering (beach nourishment/replenishment, slope re-grading, vegetation planting, ecomatting/geotextile) and managed retreat/realignment. Natural processes may include weathering and mass movement and even deposition as well as the more obvious erosion.</p> <p><b>AO1 Knowledge and understanding</b></p> <p><b>Level 3:</b> Detailed knowledge and understanding of at least two ways. Cause and effect are well understood and there is effective use of detailed exemplification. <b>(11-13 marks)</b></p> <p><b>Level 2:</b> Some knowledge and understanding of at least two ways or more detailed coverage of one. Cause and effect are understood and there is use of exemplification. <b>(7-10 marks)</b></p> <p><b>Level 1:</b> Limited knowledge and understanding of at least one way. Cause and effect are not well understood and there is limited exemplification. If no located example then top of Level 1 max. <b>(0-6 marks)</b></p>		

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	<p><b>AO2 Analysis and application</b></p> <p><b>Level 3:</b> Clear analysis and application of knowledge about the ways that coastal areas can be protected from the effects of natural processes. <b>(5 marks)</b></p> <p><b>Level 2:</b> Some analysis and application of knowledge about the ways that coastal areas can be protected from the effects of natural processes. <b>(3-4 marks)</b></p> <p><b>Level 1:</b> Limited analysis and application of knowledge about the ways that coastal areas can be protected from the effects of natural processes. <b>(0-2 marks)</b></p> <p><b>AO3 Skills and communication</b></p> <p><b>Level 3:</b> The answer is well organised, with accurate spelling, punctuation and grammar. Geographical terminology is used appropriately. Clear conclusion(s) are drawn. <b>(6-7 marks)</b></p> <p><b>Level 2:</b> The answer has some organisation, with generally accurate spelling, punctuation and grammar. Some use of appropriate geographical terminology. Conclusion(s) are attempted. <b>(4-5 marks)</b></p> <p><b>Level 1:</b> The answer has little or no organisation, with inaccuracies in spelling, punctuation and grammar. Limited use of appropriate geographical terminology. No conclusion(s) are attempted. <b>(0-3 marks)</b></p>		<p>Different ways addressed explicitly</p> <p>Different ways addressed implicitly</p> <p>Different ways not addressed</p> <p>Concluding statements within the body of the text should be credited at this level.</p>
	<b>Total</b>	<b>25</b>	

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7	<p><b>With reference to located examples of distinctive landforms, examine the impact of climate and weathering on the physical landscape of cold environments.</b></p>	25	<p>Erosion may be relevant if linked to climate e.g. glacier advance when accumulation &gt; ablation in “winter”.</p> <p>Effects of both climate and weathering on at least two landforms. Landforms likely to be named or located precisely.</p> <p>Effects of both climate and weathering on one landform or effects of one in detail on at least two landforms.</p> <p>Likely to be descriptive of landform(s) with low level, generic explanation.</p>
	<p><b>Indicative content:</b> Climate is a major control on geomorphological processes, including those associated with the movement of ice. Weathering processes include freeze-thaw. The physical landscape contains distinctive landforms including cirques, arêtes, U-shaped valleys, waterfalls, lakes, moraines and outwash plains. Periglacial landforms also acceptable e.g. pingos, patterned ground.</p> <p><b>AO1 Knowledge and understanding</b></p> <p><b>Level 3:</b> Detailed knowledge and understanding of the impact of both climate and weathering on the landscape. Cause and effect are well understood and there is effective use of detailed exemplification of process-landform linkages. <b>(11-13 marks)</b></p> <p><b>Level 2:</b> Some knowledge and understanding of the impact of both climate and weathering, or more detailed coverage of one. Cause and effect are understood and there is use of exemplification to illustrate the process-landforms linkages. <b>(7-10 marks)</b></p> <p><b>Level 1:</b> Limited knowledge and understanding of climate and/or weathering. Cause and effect are not well understood and there is limited exemplification of process-landform relationships. If no located example then top of Level 1 max. <b>(0-6 marks)</b></p>		

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	<p><b>AO2 Analysis and application</b></p> <p><b>Level 3:</b> Clear analysis and application of knowledge about the impact of climate and weathering on the physical landscape of cold environments. <b>(5 marks)</b></p> <p><b>Level 2:</b> Some analysis and application of knowledge about the impact of climate and weathering on the physical landscape of cold environments. <b>(3-4 marks)</b></p> <p><b>Level 1:</b> Limited analysis and application of knowledge about the impact of climate and weathering on the physical landscape of cold environments. <b>(0-2 marks)</b></p> <p><b>AO3 Skills and communication</b></p> <p><b>Level 3:</b> The answer is well organised, with accurate spelling, punctuation and grammar. Geographical terminology is used appropriately. Clear conclusion(s) are drawn. <b>(6-7 marks)</b></p> <p><b>Level 2:</b> The answer has some organisation, with generally accurate spelling, punctuation and grammar. Some use of appropriate geographical terminology. Conclusion(s) are attempted. <b>(4-5 marks)</b></p> <p><b>Level 1:</b> The answer has little or no organisation, with inaccuracies in spelling, punctuation and grammar. Limited use of appropriate geographical terminology. No conclusion(s) are attempted. <b>(0-3 marks)</b></p>		<p>Concluding statements within the body of the text should be credited at this level.</p>
	<b>Total</b>	<b>25</b>	

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Question	Expected Answers	Mks	Rationale
8	<p><b>With reference to located examples of distinctive landforms, examine the impact of climate and weathering on the physical landscape of hot arid/semi-arid environments.</b></p> <p><b>Indicative content:</b> Climate is a major control on geomorphological processes, including those associated with both wind and water. Weathering processes include insolation/thermal expansion and salt crystallisation. The physical landscape contains distinctive landforms including sand dunes, canyons, sculptured rocks, wadis and salt pans.</p> <p><b>AO1 Knowledge and understanding</b></p> <p><b>Level 3:</b> Detailed knowledge and understanding of the impact of both climate and weathering on the landscape. Cause and effect are well understood and there is effective use of detailed exemplification of process-landform linkages. <b>(11-13 marks)</b></p> <p><b>Level 2:</b> Some knowledge and understanding of the impact of both climate and weathering, or more detailed coverage of one. Cause and effect are understood and there is use of exemplification to illustrate the process-landforms linkages. <b>(7-10 marks)</b></p> <p><b>Level 1:</b> Limited knowledge and understanding of climate and/or weathering. Cause and effect are not well understood and there is limited exemplification of process-landform relationships. If no located example then top of Level 1 max. <b>(0-6 marks)</b></p>	25	<p>Erosion may be relevant if linked to climate e.g. aeolian abrasion in strong winds.</p> <p>Effects of both climate and weathering on at least two landforms. Landforms likely to be named or located precisely.</p> <p>Effects of both climate and weathering on one landform or effects of one in detail on at least two landforms.</p> <p>Likely to be descriptive of landform(s) with low level, generic explanation.</p>

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	<p><b>AO2 Analysis and application</b></p> <p><b>Level 3:</b> Clear analysis and application of knowledge about the impact of climate and weathering on the physical landscape of hot arid/ semi-arid environments. <b>(5 marks)</b></p> <p><b>Level 2:</b> Some analysis and application of knowledge about the impact of climate and weathering on the physical landscape of hot arid/ semi-arid environments. <b>(3-4 marks)</b></p> <p><b>Level 1:</b> Limited analysis and application of knowledge about the impact of climate and weathering on the physical landscape of hot arid/ semi-arid environments. <b>(0-2 marks)</b></p> <p><b>AO3 Skills and communication</b></p> <p><b>Level 3:</b> The answer is well organised, with accurate spelling, punctuation and grammar. Geographical terminology is used appropriately. Clear conclusion(s) are drawn. <b>(6-7 marks)</b></p> <p><b>Level 2:</b> The answer has some organisation, with generally accurate spelling, punctuation and grammar. Some use of appropriate geographical terminology. Conclusion(s) are attempted. <b>(4-5 marks)</b></p> <p><b>Level 1:</b> The answer has little or no organisation, with inaccuracies in spelling, punctuation and grammar. Limited use of appropriate geographical terminology. No conclusion(s) are attempted. <b>(0-3 marks)</b></p> <p><b>Total</b></p>	25	<p>Concluding statements within the body of the text should be credited at this level.</p>
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