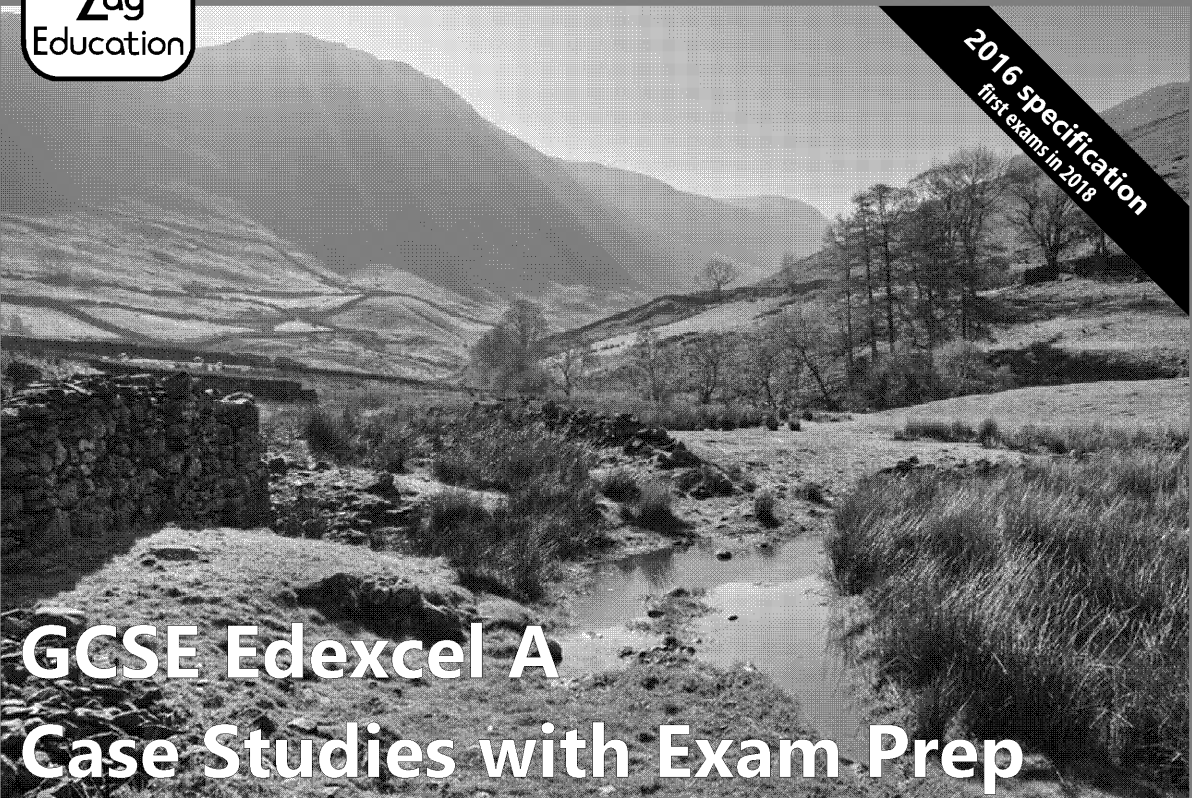




GCSE Edexcel A

Case Studies with Exam Prep

Changing Landscapes of the UK: Glacial

The Lake District

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Contents

Thank You for Choosing ZigZag Education.....	ii
Teacher Feedback Opportunity	iii
Terms and Conditions of Use.....	iv
Teacher’s Introduction	1
The Lake District	2
Part 1: Case Study	2
Content	2
Fact Table.....	11
ICT Interactive Page	12
Springboards	13
Springboard Suggested Answers	18
Part 2: Exam Preparation	20
Summary	20
Quick-fire Questions	22
Extension Questions.....	26
Exam-style Question	29

Teacher's Introduction

This resource has been developed to provide case studies and exam preparation material to support the GCSE Edexcel A specification (1GA0) **Topic 1: The Changing Landscapes of the UK**.

This detailed case study is on **The Lake District** representing a **glacial landscape** within in the UK.

The case study includes a main content section which can be used as part of a lesson plan or distributed to students for self-guided research; a selection of ICT interactive links to further students' research around each topic and a set of Springboard Images and discussion questions (also available as a PPT file accessible by digital download) which makes a fantastic starter activity.

*A webpage containing all the links listed in this resource is conveniently provided on ZigZag Education's website at **zzed.uk/8820***

You may find this helpful for accessing the websites rather than typing in each URL.

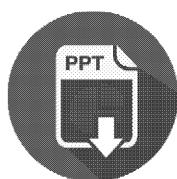


The exam preparation section which follows the case study contains a summary table, bringing together all of the key facts and figures relating to the case study; rapid-fire revision questions (with answers) to help recall and retention of the main points; and an exam-style question and mark scheme, written in the style of the Edexcel A sample material, so that students can practice answering questions relating to case studies and applying relevant knowledge in their answers.

The resource may be used as a source of reference for the required case studies for individual study, or for group work leading to discussion or debate. Subheadings in the information sections are designed to enable tabulated comparisons of social, economic and environmental impacts.

Other detailed case studies are available for this topic area (two coastal landscapes, two river landscapes, and another glacial landscape):

- The Jurassic Coast (Coastal)
- The Seven Sisters (Coastal)
- The River Thames (River)
- The River Spey (River)
- Snowdonia (Glacial)



A PowerPoint presentation containing the Springboard Images starter activity to accompany this resource is available as a free digital download. Just register for free updates using the link below to download all available content for your school or purchasing site.

November 2018

Free Updates!

Register your email address to receive any future free updates* made to this resource or other Geography resources your school has purchased, and details of any promotions for your subject.

* resulting from minor specification changes, suggestions from teachers and peer reviews, or occasional errors reported by customers

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Content

Introduction:

The Lake District is an upland region in north-west England covering an area of 1,468 square kilometres. It is famous for its beautiful landscape of mountains and lakes.

There are around 214 mountains and hills that cover the region. One of the highest mountains in England reaching 978 metres above sea level. The region has a high number of lakes in the area, including Windermere and Wast Water which are the longest and deepest lakes respectively.

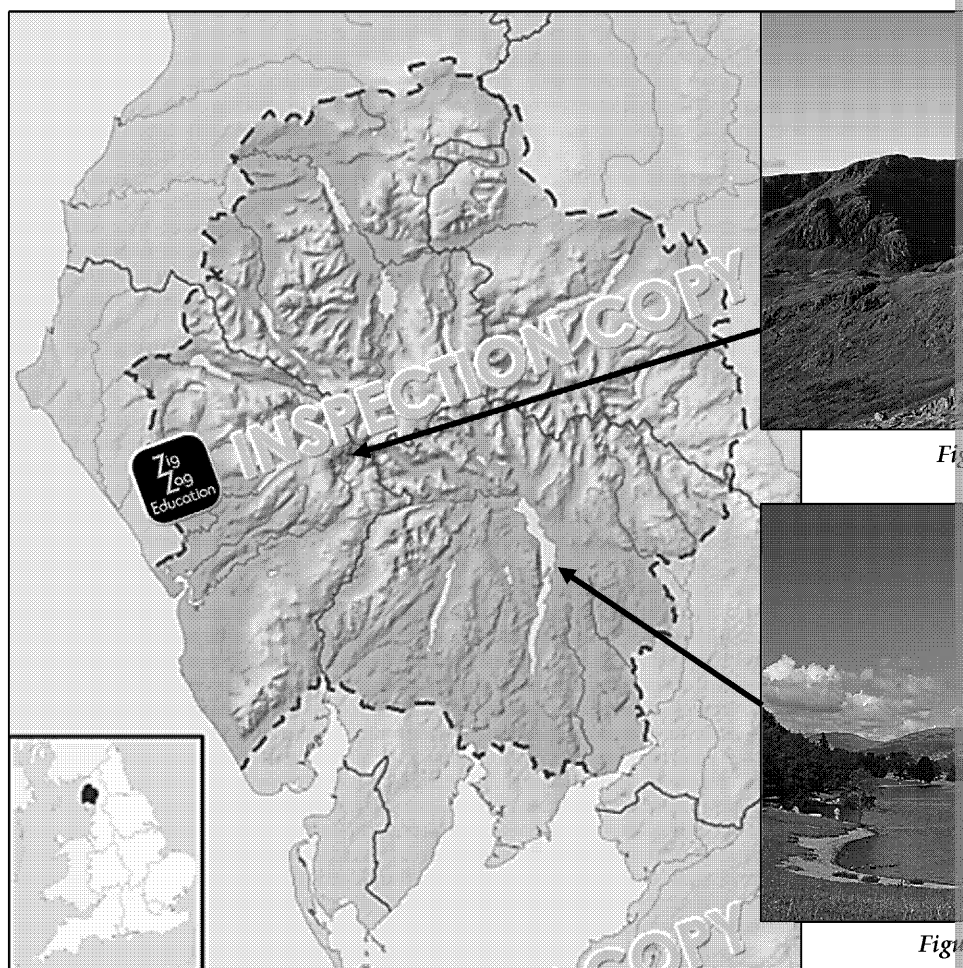


Figure 20: Map of the Lake District

It has long been a place of great interest for visitors, not only for its landscape but for its culture and history too. Many famous writers and artists have lived there, including Beatrix Potter! It became a National Park in 1951 in order to preserve the beautiful landscape and culture within the region. Around 42,000 people permanently live and work in the area and an extra 15.8 million

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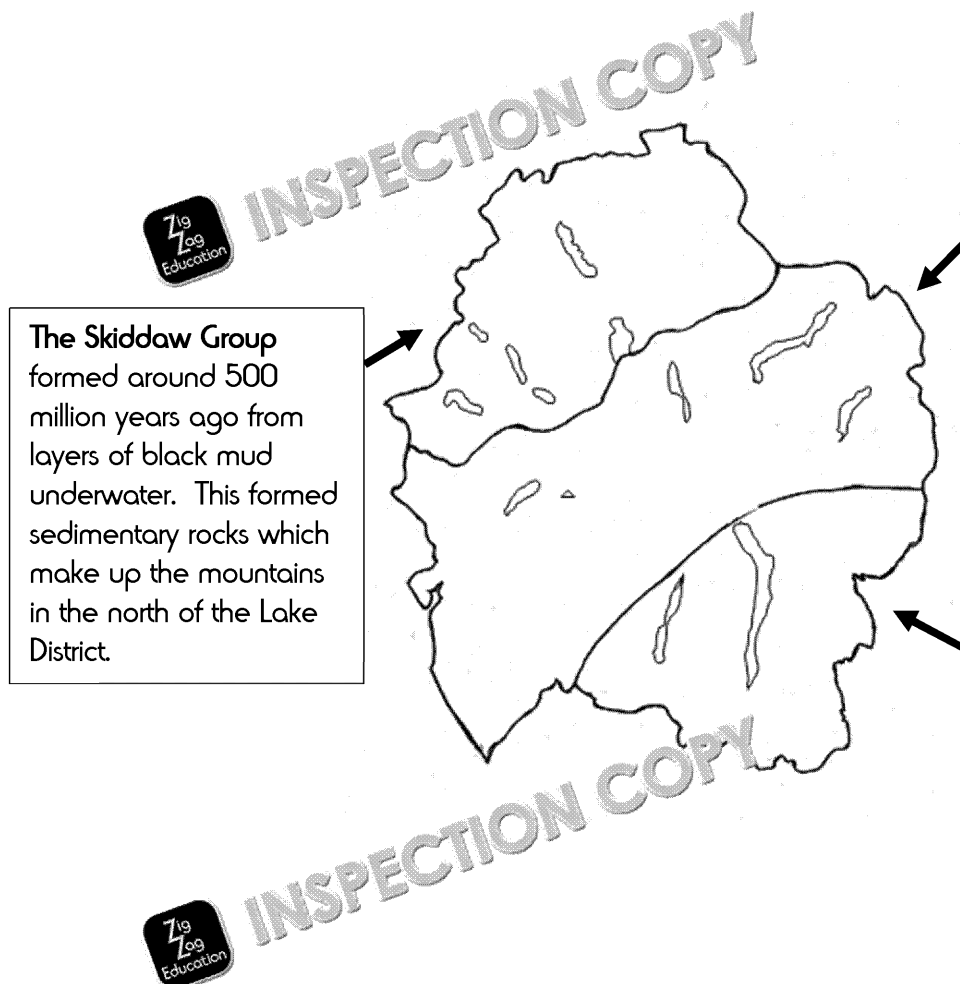
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visit the area each year, making it the most visited National Park in the UK.

The Geology of the Lake District:

The geology of the Lake District is distinctive due to its variation. The rock bands known as the Skiddaw Group, the Borrowdale Volcanic Group and the Cumbrian Trough. These bands get older as you move from the north-west to the south-east.



The Skiddaw Group formed around 500 million years ago from layers of black mud underwater. This formed sedimentary rocks which make up the mountains in the north of the Lake District.

The Formation of the Lake District:

The Lake District has been shaped over millions of years to create the landscape we see today. The formation began over 400 million years ago when the world's continents were arranged differently. The rock that is now located in the Lake District was situated far to the south.

The Lake District's varied geology and upland landscape was formed through tectonic plate movement. A momentous plate uplift movement called the Caledonian Orogeny pushed up the Lake District mountains around 400 million years ago. However, at this time, the landscape looked more like the Himalayas than the Lake District.

Over time this landscape drifted into the northern hemisphere where while being shaped by ice ages which reduced the size of the mountains.

The ice ages first began around 2 million years ago and had significant effects on the shape of the Lake District. Glaciers cut through the landscape creating various distinctive landforms. The last glaciers retreated around 10,000 years ago leaving behind the glacial landscape of the Lake District that is known and loved today.

'The landscape being changed by erosion, weather and you think the another'

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Glacial Landforms in the Lake District:

The glaciers left significant traces on the landscape of the Lake District and glacial landforms.

Erosional Landforms Found at the Source:

The sources of glaciers are found high on the mountainside where snow and ice formed the beginning of a glacier. Over time, the eroding power of the ice creates glacial landforms on the mountainsides.

Corries are vast armchair-shaped hollows found high on the mountainside. In the UK, they are often found on the north-east side of the mountain where it is cooler and more sheltered. During an ice age, ice and snow would have accumulated and compacted in a small hollow creating the source of the glacier. Over time, the weight of the ice along with plucking and abrasion would have deepened the hollow. Freeze-thaw weathering would also have helped to erode the headwall, deepening the hollow further. After the glacier melts, the corrie and are known as tarns.

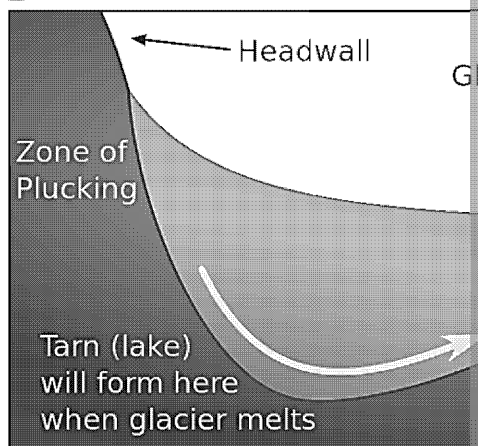


Figure 21: The formation of a corrie

The Lake District has plenty of examples of corries. On the east side of the mountain, Red Tarn is an excellent example of a corrie. The deepest part of the hollow is now filled with water, forming Red Tarn.



Figure 22: Glacial landforms in the Lake District

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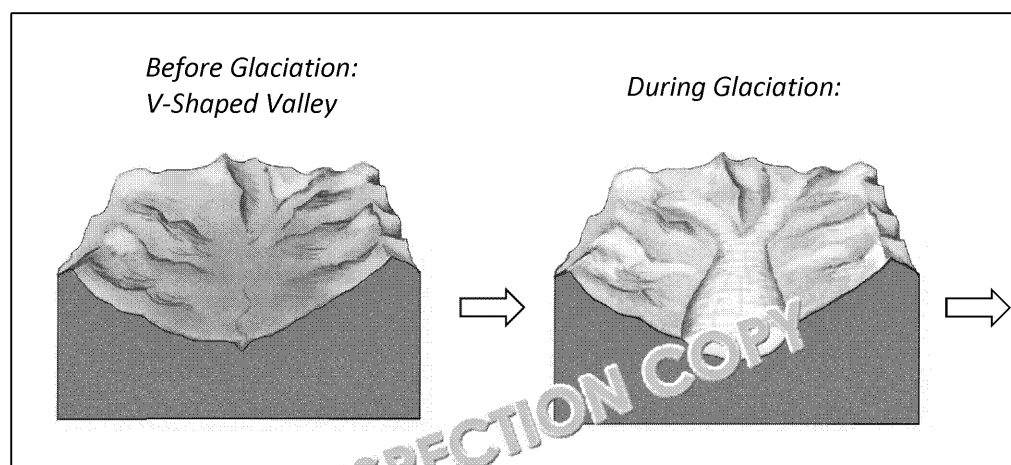
Where two corries form next to each other or back to back they form steep to the number of corries in the Lake District there are also plenty of arêtes. Striding Edge, which is probably the most famous arête in the Lake District summit of Helvellyn and is known for its steepness and difficulty to climb.

Pyramidal peaks can form where three or more corries form around a mountain peak. Unfortunately there are no good examples of pyramidal peaks in the Lake District.

Erosional Landforms in the River Valley.

Once a glacier moves down a mountain it flows into the river valley creating a wide U-shaped valley floor.

U-shaped valleys are formed as the glacier flows through the old V-shaped valley. The ice erodes the sides and bottom of the valley through plucking and abrasion, widening the valley floor, creating a U-shaped valley.



The Lake District has many examples of U-shaped valleys and within these features of glaciation such as:

- *Truncated spurs:* These are the remains of the interlocking spurs from the original V-shaped valley.
- *Hanging valley:* This is part of the old valley that was not affected by the smaller glaciers that eroded the valley at a slower rate. This left the old valley sides. This is known as the hanging valley. As tributaries flow over the steep edge of the hanging valley they can form striking waterfalls.
- *Ribbon lakes:* After the glaciers retreat, areas of the valley that were deep water, forming long lakes. There are many examples of ribbon lakes in the Lake District, including Windermere and Wast Water.

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Below is a picture of Buttermere Valley, situated in the north of the Lake District, as an example of a u-shaped valley. The ribbon lakes in the picture are called Buttermere and Bassenthwaite Water.

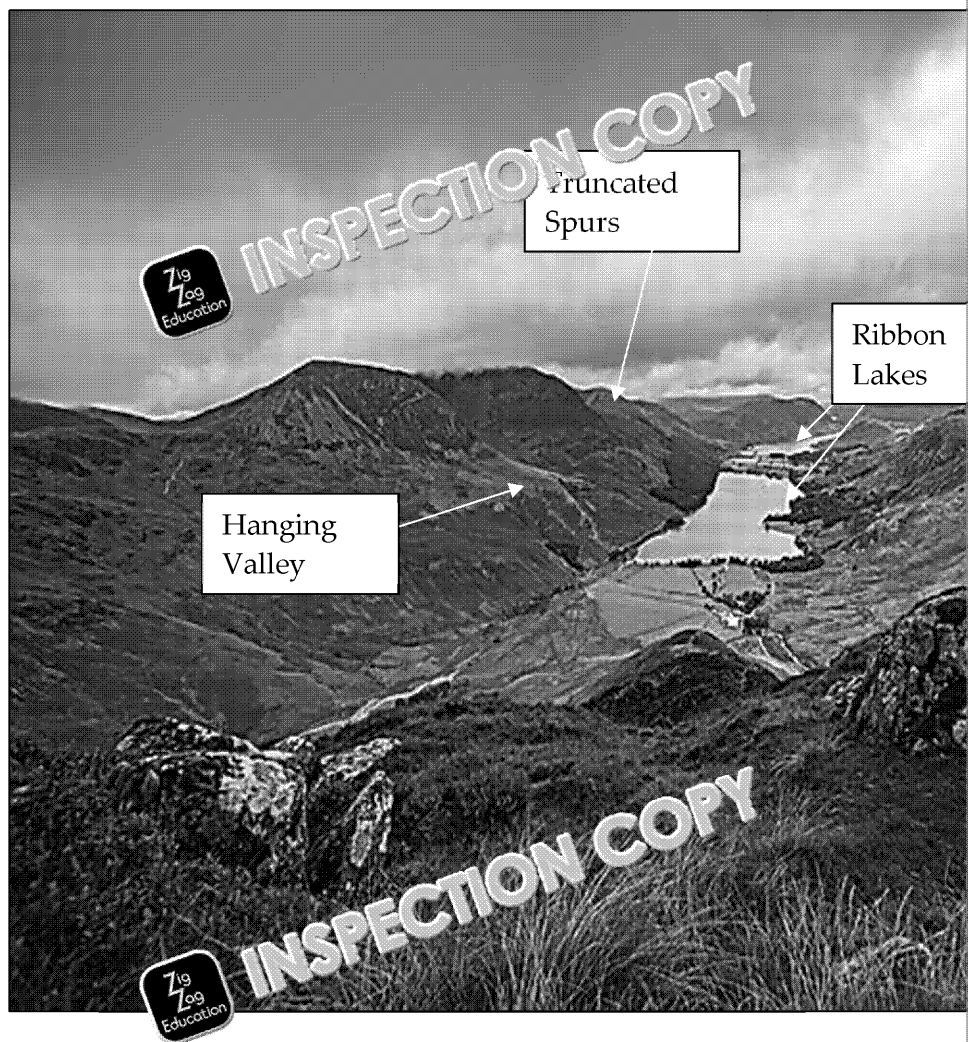


Figure 23: Glacial landforms in a river valley in Buttermere

Depositional Landforms:

Glaciers can create and transport large amounts of sediment and these can form various landforms.

Moraines are the build-up of rock debris that has been deposited by the glacier. They can be classified into different types depending on how and where they have been deposited. For example, *ground moraine* is a term used to describe the debris found underneath the glacier. Many of the towns in the Lake District have been built on ground moraine.

This photograph is an example of *terminal moraine* found in the Borrowdale Valley in the Lake District. This moraine would have built up on the snout of the glacier and have been deposited here as the glacier retreated.



Figure 24: Terminal moraine

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Figure 25: Drumlins in the Lake District

Erratics are large rocks and boulders that are of completely different origin to the local rocks in the area. These rocks often get to the new location by being transported by glaciers and then deposited in completely new surroundings. Analysing erratics can help experts identify where they originated and therefore the path of the glacier.

The Lake District has many examples of glacial erratics. This image shows one in the Ennerdale.

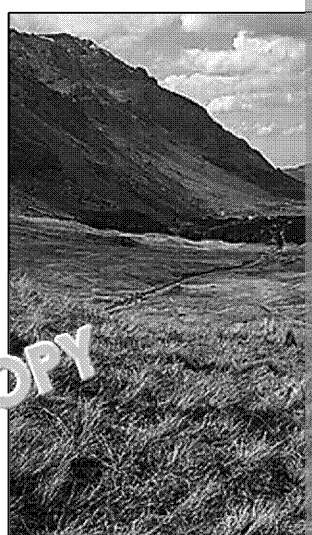


Figure 26: Erratics in the Lake District

The Mystery of the Bowder Stone...



The Bowder Stone is situated in the Lake District. It is the height of an average person and a precariously balanced boulder has been there for centuries but how it got there is still a mystery.

Some people think it is a glacial erratic potentially transported away as far as Scotland. Others think this could be the same boulder that fell from the valley. Their theories are based on the fact it is 200 m from the valley up coming to the top of the mountain.

What's your theory?

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Human Activities in the Lake District:

There is no doubt that human activities have shaped the landscape of the Lake District. Humans have lived in the area for thousands of years and used the land for activities such as farming and quarrying. Since the end of the eighteenth century the area has become a popular holiday destination, attracting people from all over the country.

Today, the land has continued to be shaped and used by humans in various ways.

How human activities have shaped the Lake District:

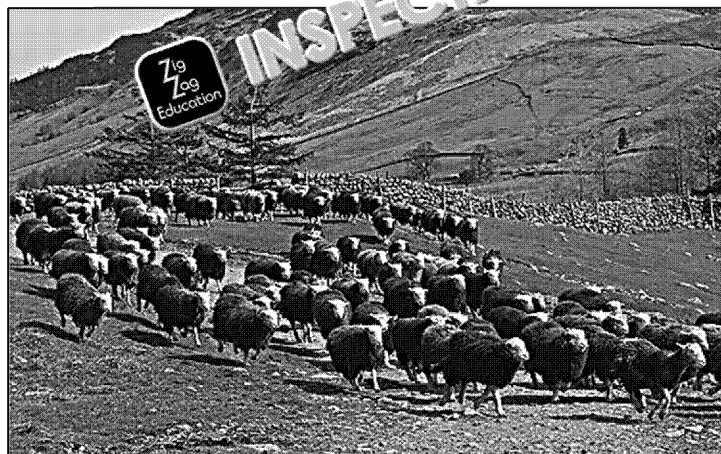


Figure 27: Sheep farming in the Lake District

Over the last century, sheep farming has led to overgrazing and ruined the natural habitats and landscape of the Lake District. As sheep farming has changed the landscape it is partly the sheep and the drystone walls that are seen as integral to the Lake District landscape.

Forestry:

Forests make up 12% of the land in the Lake District and forestry has been a part of the region's economy for centuries. As forests are cut down and sold for timber which can have an impact on the natural habitats in the region. Despite this, forests in the Lake District are sustainably managed to cause minimal harm to the environment while maintaining a thriving forestry industry.

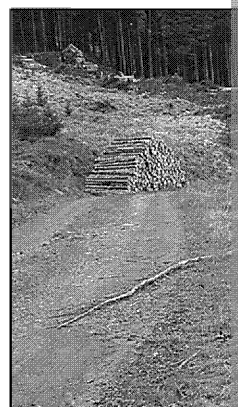


Figure 28: Forestry in the Lake District



Figure 29: Honister quarry

Quarrying:

Quarrying has also been a part of the Lake District. The value of the stone and sell make the quarrying industry important. Honister Slate Quarry is open in the Lake District. The quarrying has caused significant damage to the natural landscape of the Lake District. On the other hand, many people see the quarrying as a part of the history that are integral to the Lake District. Honister Quarry is now a popular tourist attraction.

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Tourism in the Lake District:

Tourism is now the main industry in the Lake District, employing around 10,000 people. The Lake District receives on average 15.8 million tourists every year who spend around £1.2 billion. The Lake District was very popular around the end of the eighteenth century when poets and artists wrote about the area. A train line was built in 1846 that increased the accessibility to the park. From then on the tourism industry has only grown, influencing the area's economy.

Why do tourists come to the Lake District?

- To enjoy the picturesque landscape
- For the peaceful and quiet countryside
- To go walking in the mountains or take cruises on the lakes
- For its cultural history and to see homes occupied by famous people such as Beatrix Potter.
- For water sports and other adventure sports.

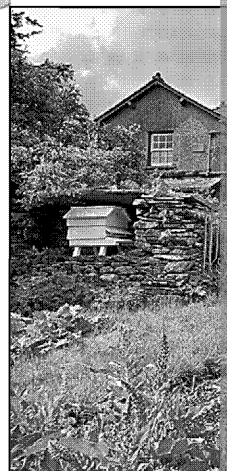


Figure 30: Beatrix Potter's home, a popular tourist attraction.

What are the impacts of tourism in the Lake District?

Tourism provides many benefits to the Lake District but along with these benefits there are also downsides too.

	Positive Impacts of Tourism	Negative Impacts of Tourism
Social 	• Provides more income for local residents • Helps to preserve the culture and heritage of the Lake District	• 15% of holiday homes are second homes, meaning prices may be high and stay limited • As tourism has increased in the Lake District, so has the number of second homes. There is a loss of traditional farming communities.
Economic 	• Provides a significant income for the region • Provides more jobs for local people • Helps farms to continue by allowing them to diversify to B&Bs and holiday accommodation for extra income	• The jobs are seasonal and this means the off season is a problem for locals. • Tourism can lead to a loss of traditional farming communities.
Environmental 	• Increased environmental awareness in the area • Encourages people to learn about the landscape and how to preserve it	• There are concerns about the environment being eroded by walking on the moorland. • 89% of visitors are from the north, which means traffic congestion, particularly in the Bowness area. • Increased parking problems.

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How are these impacts managed?

Tourism is a vital industry to the Lake District so the negative impacts need to be managed to ensure the positive impacts can continue. There are numerous ways this has been managed in the Lake District:

1. **Affordable Housing**

The Lake District National Park Authority has worked together with local councils to help combat the rising house prices that are affecting local people in the area. At the moment they are aiming to build around 60 new affordable houses each year. They have also implemented restrictions so only locals can buy certain houses.

2. **Drive Less See More**

This is a campaign supported by a variety of organisations and businesses across the Lake District with an aim to reduce the impact of traffic pollution and congestion. These groups have helped to improve the public transport available across the region as well as create itineraries for car free days, that include anything from hiring bikes to using river ferries and buses. They also promote the hiring of a zero-emission electric vehicle called the Twizy.

3. **Fix the Fells**

This project helps to repair and maintain the footpaths across the Lake District that have been damaged by the number of tourists walking on them. They use a variety of techniques such as stone pitching or even covering the footpath with sheep's wool to soak up the excess water that can also lead to erosion.

4. **Friend the Lake District**

This organisation helps to clean up the litter of the Lake District by organising large litter picks with volunteers.

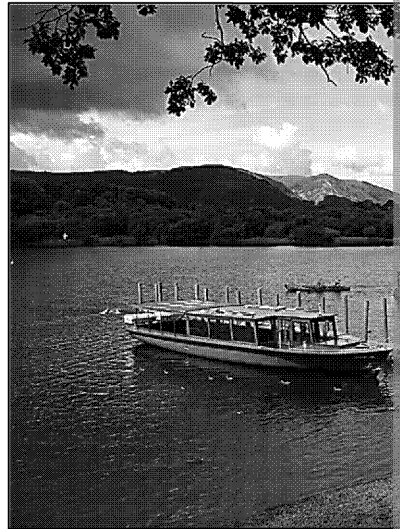


Figure 31: Example of public ferry across the lake

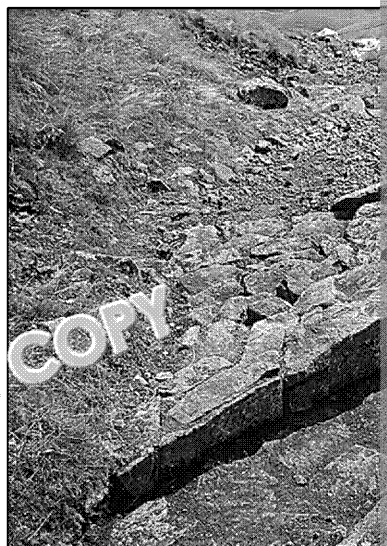


Figure 32: Example of footpath repair in the Lake District

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Fact Table

Location:	North-west
County:	Cumbria
Area:	2,362 km ²
Number of peaks:	Around 214
Height of Scafell Pike:	978 metres
Longest lake:	Windermere
Deepest lake:	Wast Water
Population size:	Around 42,000
Number of visitors each year:	15.8 million
Rock groups:	Skiddaw Group Borrowdale Windermere
Retreat of last ice age:	10,000 years
Erosional landforms at the source:	Corries – R. Ullswater Arêtes – Stridale
Erosional landforms on the river valley:	U-shaped valleys Truncated spurs Hanging valleys Ribbon lakes
Depositional landforms:	Moraine Drumlins Erratics
Number of farmers:	2,500
Human activities that are changing the Lake District:	Farming Forestry Quarrying
Tourism revenue:	£1.2 billion
Number employed by tourism:	15,000
Percentage of holiday homes:	15%
Amount of footpath:	2,159 km
Percentage of visitors who travel by car:	89%
Tourism management:	Creating a Drive Less Repairing c Litter picki

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ICT Interactive Page

Rather than type out these web

Videos:

Fix the Fells

 <https://www.youtube.com/watch?v=IsnQ6pCd4>

Drive Less See More

 https://www.youtube.com/watch?v=xa1_ZymlWNY

Tourism Management – Public Transport

 <http://www.bbc.co.uk/news/uk-19567373>

Litter in the Lake District

 <http://www.bbc.co.uk/news/uk-34372664>

News:

Tourism in the Lake District

 http://www.thewestmorlandgazette.co.uk/news/15148585.Lake_District_rival_destinations/

Second homes in the Lake District

 <https://www.theguardian.com/uk-news/2014/jul/09/lake-district-homes>

Twizy – Zero-Emission Car

 <https://www.theguardian.com/travel/2016/may/28/twizy-electric-car-lake-district>

Do sheep ruin the landscape?

 <https://www.theguardian.com/commentisfree/2015/jul/21/farmers-sheep-environmentalists>

Google Trekker – Virtually climb Scafell Pike. Maps:

 <https://www.google.co.uk/maps/place/Scafell+Pike/@54.4542062,-3.2112797,17.5z/data=!4m5!3m4!1s0x487cc63cd1537a41:0xe1eb6d7a17d03.211602?hl=en>

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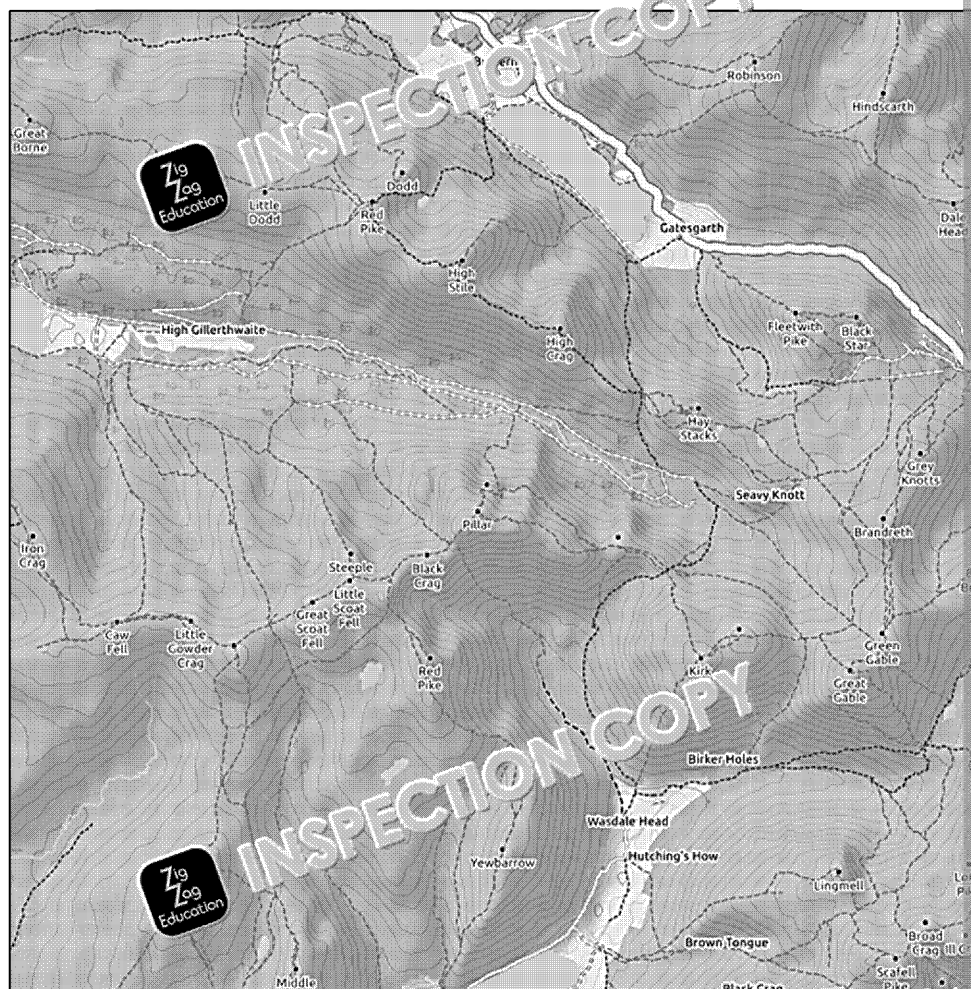


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Springboard 1

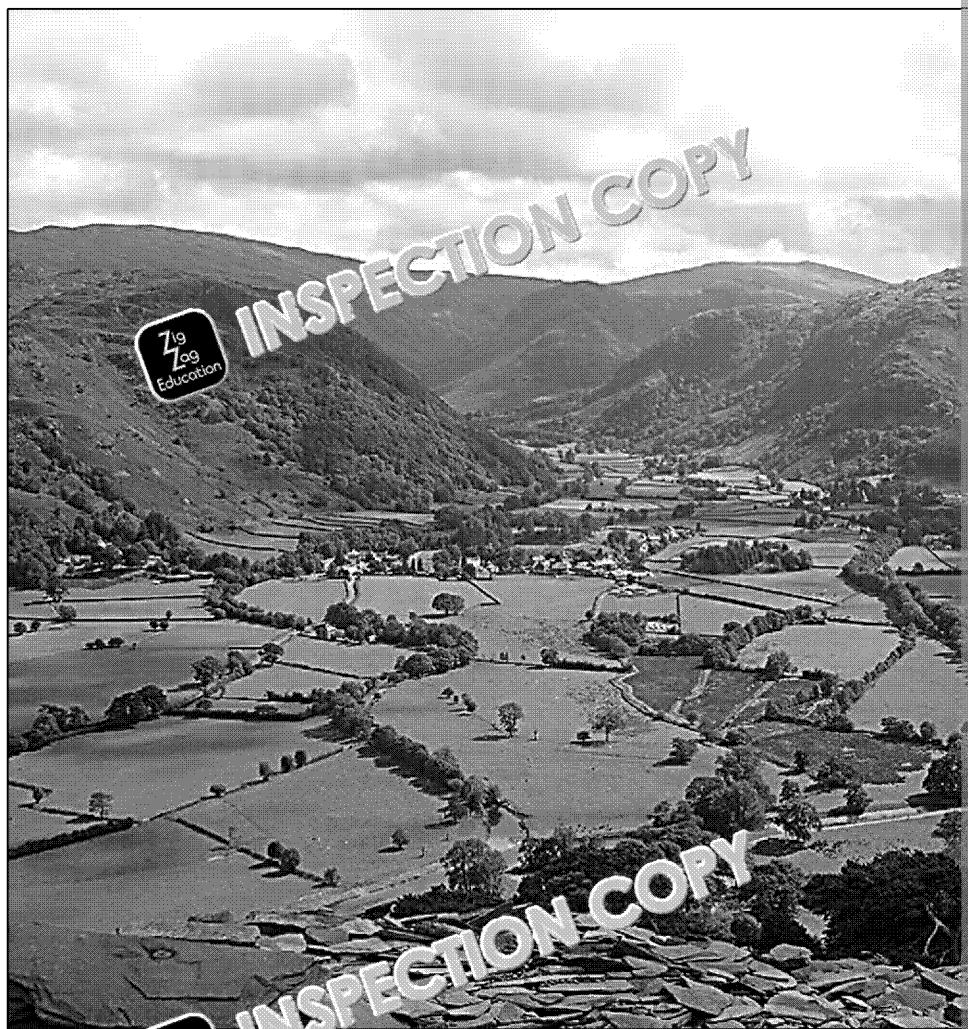


1. What can maps tell us about a landscape?
2. Name some glacial features you can identify on this map.
3. What do you think this map suggests about the path of the glaciers in the Lake District?



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1. How was this u-shaped valley formed?
2. What glacial landform that is commonly found in u-shaped valleys is this?
3. Suggest how this valley may have looked during an ice age.

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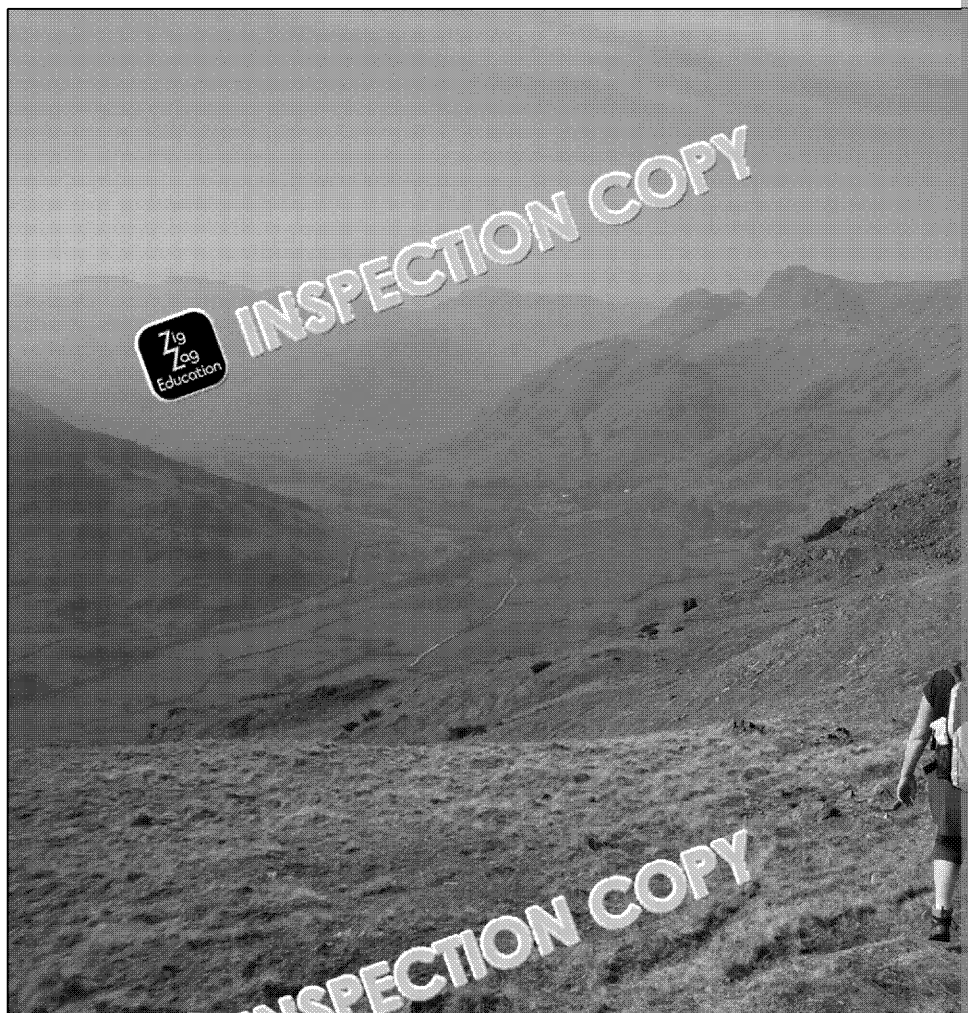
1. How has farming affected the landscape of the Lake District?
2. Discuss whether farming is a positive or negative aspect of the Lake District landscape.
3. Suggest other ways human activities have changed the landscape in the Lake District.

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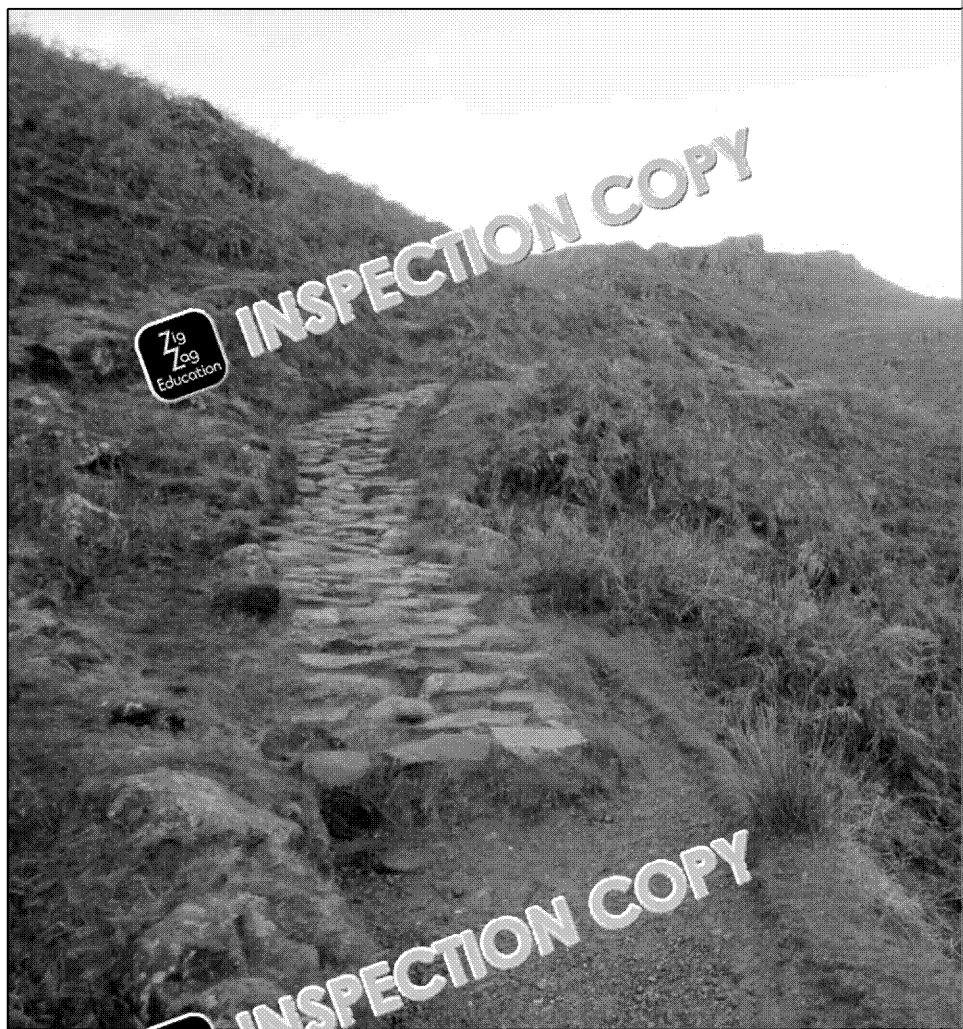
1. Suggest the Lake District is a popular destination for tourists.
2. What benefits do tourists bring to the Lake District?
3. What negative impacts can tourism bring to the Lake District?

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1. This image shows a footpath in the Lake District that has been repaired. Suggest how this helps with the impact of footpath erosion.
2. Why is managing tourism necessary in the Lake District?
3. In what ways is tourism managed in the Lake District?

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Springboard Suggested Answers

Springboard 1

1	• Gradients • Place names • Settlements • Distances between • Features of the landscape, i.e. glacial features • Descriptive features of a landscape
2	• Corries • Corrie lakes or tarns • Arêtes • U-shaped valleys • Ribbon lakes • Truncated spurs • Hanging valleys
3	• It looks like they may have been moving outwards from the centre of the Lake District • The corries that can be identified on the map suggest where the glacial valleys suggest the direction of flow.

Springboard 2

1	The u-shaped valley was formed by the glacier carving its way through a v-shaped valley. This made the valley floor wider and flatter and the valley sides steeper.
2	Ribbon lake
3	• The glacier would have filled the valley up to the point of any hanging valleys. • The area covered in ice and snow. • Valley may have been narrower depending on how much the glacier had melted. • Moraine may have also been visible on the glacier.

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Springboard 3

1	- Created fields by building drystone walls - Sheep and cattle graze in the uplands and this can cause overgrazing - Big part of the traditional culture of the Lake District so has influenced
2	Positive: - Provides an income for local people - Has been taking place for thousands of years on this land so is integrated - Drystone walls and local sheep partly what attract tourists to the Lake District - Any other valid point(s) Negative: - There are too many sheep and the sheep are destroying the landscape - Lead to overgrazing in the uplands which can increase amount of erosion - Any other valid point(s)
3	- Quarrying - Forestry - Tourism

Springboard 4

1	- Beautiful scenery - An escape to the countryside - Good for walkers and hikers - Historic and cultural sites such as Beatrix Potter's house - Adventure and water sports
2	- Increased income for the region - More money and jobs for local people - The chance for farmers to increase their earnings through diversification - Preservation of the culture and heritage of the Lake District - Increased environmental awareness and awareness about landscapes
3	- Increased number of second and holiday homes has driven up price of housing making it difficult for them to stay in the area - Concerns that the traditional farming culture is being lost to tourism - Jobs that tourism provides are only seasonal - Tourism can increase the cost of living for locals - Walkers cause footpath erosion and increased amounts of litter - More tourism also means more traffic congestion and pollution.

Springboard 5

1	- It makes the path clear and easier to walk on ensuring that tourists still enjoy the area - Adding large rocks helps the surface to be less easily so the path stays in good condition
2	Tourism is overall very good for the Lake District and to keep the benefits of tourism, it must be managed so everyone can enjoy the landscape in its preserved state.
3	- More affordable housing being built and restrictions on who can buy in the area - Go See Less Drive Less See More is making public transport more attractive by promoting its use with itineraries for car-free days. The campaign is also encouraging the use of zero-emission electric cars. - A project called Fix the Fells helps to repair and maintain footpaths across the Lake District using various techniques such as stone pitching and using sheep's wool to cover erosion. - Organisation of volunteer days to help pick up all the litter on the fells

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Summary



The Lake District

Introduction:

- The Lake District is an upland region in Cumbria, north-west England.
- It covers an area of 2,362 km² and is famous for its stunning scenery of lakes and mountains.
- It is home to England's highest mountain, longest lake and deepest lake.
- It became a National Park in 1951 with an aim to preserve the natural beauty and the culture within it.
- Around 42,000 people live in the park today and another 15.8 million visit each year, making it the most visited National Park in the UK.
- It has an interesting range of geology that can be divided into three parts, the oldest in the north-west and the youngest in the south-east.
- The landscape was shaped over 400 million years ago through volcanic activity.
- This was further shaped by a series of ice ages, the last one retreating around 10,000 years ago, leaving behind many glacial landforms.

Glacial Landforms in the Lake District:

- The Lake District has many examples of both erosion and deposition.
- Where the source of the glacier would have been are the various glacial landforms called cirques and arêtes.
- A good example of a cirque in the Lake District is Red Tarn and right above it is an arête called the Great Gable.
- The Lake District has many examples of u-shaped valleys where the glacier has retreated through the valleys.
- One such example is Buttermere Valley which also has good examples of glacial spurs and ribbon lakes.
- Many of the lakes in the Lake District are actually ribbon lakes such as Windermere.
- There is also evidence of where the glaciers have deposited sediment and created depositional landforms.
- Many of the villages of the Lake District have been built on ground moraine, an example of terminal moraine in Borrowdale Valley. Drumlins and erratics are also found in the Lake District.

Human Activities in the Lake District:

- The landscape of the Lake District has been shaped by human activity.
- Farming was once the main occupation and its practice has had significant impacts on the landscape from the number of sheep grazing the uplands to the number of lakes created.
- Despite the impact of farming on the landscape, it is partly this that has made it an attractive place to visit.
- Forestry and quarrying have also been important industries in the Lake District. They have impacted on the landscape but they are also now seen as integral to the landscape.

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Tourism in the Lake District:

- Tourism is now the main industry in the Lake District, employing 15,000 people and attracting 15 million tourists a year.
- The tourists spend around £1.2 billion showing just how vital it is for the area.
- There are many benefits to tourism such as providing jobs and money for the local economy, as well as helping to preserve the Lake District and increasing the public's awareness of the area.
- However, with these impacts come some negative ones too. For example, the number of holiday homes being bought, the jobs are seasonal, footpaths are being eroded, and there's more traffic congestion.
- These negative impacts are being managed in various ways such as by encouraging the use of public transport or electric vehicles, and picking up litter on the mountain.

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Quick-fire Questions

1	Where is the Lake District located?	
2	What is the highest peak in the Lake District?	
3	How many mountains and hills are there in the Lake District?	
4	How tall is Scafell Pike?	
5	When did the Lake District become a National Park?	
6	How many people live in the Lake District?	
7	How many people visit the Lake District every year?	
8	Name the oldest band of rock in the Lake District.	
9	When did the Caledonian Orogeny take place?	
10	When did the last ice age retreat?	
11	Name an erosional landform made by a glacier near its source.	
12	Give an example of an arête found in the Lake District.	
13	Name two erosional landforms found in a u-shaped valley.	
14	Give an example of a u-shaped valley found in the Lake District.	
15	What type of glacial deposition landform can be found in the Lake District?	

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16	Name one human activity that has affected the landscape of the Lake District	
17	How much money does tourism bring to the Lake District?	
18	Name one reason why tourists visit the Lake District.	
19	How many people work in the tourism industry in the Lake District?	
20	What percentage of houses are second homes in the Lake District?	
21	How many kilometres of footpath is there in the Lake District?	
22	What percentage of people travel to the Lake District by car?	
23	Name one advantage of tourism in the Lake District.	
24	Name one disadvantage of tourism in the Lake District.	
25	Name one tourism management strategy in the Lake District.	

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Quick-fire Answers

1	Where is the Lake District located?	North-west England
2	What is the area of the Lake District?	2,362 km ²
3	How many mountains and hills are there in the Lake District?	214
4	How tall is Scafell Pike?	978 metres above sea level
5	When did the Lake District become a National Park?	1951
6	How many people live in the Lake District?	Around 42,000
7	How many people visit the Lake District every year?	15.8 million
8	Name the oldest band of rock in the Lake District.	The Skiddaw Group
9	When did the Caledonian orogeny take place?	Around 400 million years ago
10	When did the last ice age retreat?	10,000 years ago
11	Name an erosional landform made by a glacier near its source.	Corrie Arête
12	Give an example of an arête found in the Lake District	Striding Edge (Any other valid answer)
13	Name two erosional landforms found in a u-shaped valley.	Hanging valley Truncated spurs Ribbon lake
14	Give an example of a u-shaped valley found in the Lake District.	Buttermere Valley (Allow any other valid answer)
15	What types of glacial deposition landforms can be found in the Lake District?	Ground moraine Terminal moraine Drumlins Erratics

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16	Name one human activity that has affected the landscape of the Lake District	• Farming • Forestry
17	How much money does tourism bring to the Lake District?	£1.2 billion
18	Name one reason why tourists visit the Lake District.	• Beautiful scenery • An escape to the country • Good for walkers and hikers
19	How many people work in the tourism industry in the Lake District?	15,000 people
20	What percentage of houses are second homes in the Lake District?	50%
21	How many kilometres of footpath is there in the Lake District?	2,159 km
22	What percentage of people travel to the Lake District by car?	89%
23	Name one advantage of tourism in the Lake District.	• Provides more jobs and income • Helps farms earn more money • Helps to preserve the countryside • Increases environmental awareness • Any other valid points
24	Name one disadvantage of tourism in the Lake District.	• Increase in house prices • Concerns that the traditional character is being lost • Jobs it provides are only seasonal • It can increase the cost of living • Causes footpath erosion • Increase in litter • Increase in traffic congestion • Any other valid points
25	Name one tourism management strategy in the Lake District.	• More affordable housing schemes for some houses, i.e. only for local people • Campaign called Drive to the Lake District, making it more accessible as well as promoting the area • A project called Fix the Lake District, by using sheep's wool to create a new landscape • Organisation of volunteer groups

- Quarrying

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Extension Questions

1. Describe the landscape of the Lake District.
2. Explain how the landscape of the Lake District formed.
3. Explain how Red Tarn and Striding Edge formed.
4. Explain how a glacier erodes a river valley and produces the landforms.
5. Describe how drumlins form.
6. Suggest how human activities have affected the landscape of the Lake District.
7. *'The Lake District needs tourism to survive.'*
To what extent do you agree with this statement?
8. Examine whether the social, economic or environmental disadvantages impact on the Lake District.
9. Suggest why the Lake District's tourism management plans are sustainable.
10. Suggest further ways the impacts of tourism could be managed in the Lake District.

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Extension Answers

1.
 - The Lake District is an upland landscape.
 - It is characterised by hills, mountains, lakes and forests.
 - It has been significantly shaped by glaciers.
2.
 - The landscape began its formation over 400 million years ago on the other side of the world.
 - During this time the landscape was sculpted by volcanic activity and tectonic movement. A major tectonic uplift called the Caledonian Orogeny, which caused mountain ranges (like the Himalayas).
 - Over time the landscape has been eroded by climate, rain and ice ages across the hemisphere. The ice ages in particular have carved the landscape in a way that created many of the glacial landforms.
3.
 - Red Tarn is a corrie lake that would have formed post glaciation.
 - The corrie would have formed in the hollow of the mountainside where snow put pressure on the rock underneath. The hollow deepened through the action of wind and freeze-thaw weathering. When the glacier retreated the deepest part of the hollow was left and is now known as Red Tarn.
 - Striding Edge is an arête which is a steep ridge. This formed because the two corries of Red Tarn and together they created a ridge between them known as Striding Edge.
4.
 - Glaciers move down mountainsides into river valleys through the force of gravity.
 - The power of the ice erodes the sides and floor of the valley, turning it from a V-shape to a U-shape.
 - It erodes the interlocking spurs of the river valley creating truncated spurs.
 - The old valley can be seen in the form of the valley sides where the main glacier has retreated.
 - Ribbon lakes can also form where the glacier has deepened areas of the valley floor, leaving a narrow lake in the Lake District.
5. Drumlins are depositional landforms of glaciers. They are formed from the debris left behind by a glacier (ground moraine) from the processes of plucking and abrasion. The glacial drift is pushed into streamlined egg-shaped hills.
6.
 - Human activities have shaped the landscape of the Lake District for thousands of years.
 - Farming has shaped the landscape through the clearing of vegetation in the valleys and the use of sheep in upland areas. Farmers also built the iconic drystone walls that are a feature of the Lake District.
 - Forestry has shaped the landscape through the control and management of the forest and the creation of natural habitats. However, they are sustainably managed to ensure there is a balance between the environment and the industry can still thrive.
 - Quarrying has also had an impact on the landscape with centuries of slate quarrying leaving significant scarring in the mountainsides and valleys but many now have been restored to the landscape.
 - Tourism is now a major industry in the Lake District and is having an impact on the environment. It can create traffic congestion and pollution and cause footpath erosion.

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7. Students must discuss whether the tourism industry is vital to the Lake District by evidence.

Indicative content:

- Tourism is now the biggest industry in the Lake District.
- On one hand, it allows other industries to survive. For example farms can increase incomes by diversifying into tourist accommodation.
- It also provides a considerable income for the region and more jobs for locals.
- On the other hand it means the cost of houses and living have increased making it difficult for them to stay in the region.
- The other main industries in the Lake District survived without tourism are in the rural area, i.e. farming, forestry and quarrying.
- It is a lot to manage the impacts.

8. Students must discuss the social, economic and environmental disadvantages category they think has the most impact the Lake District.

Indicative content:

Social

- 15% of homes in the Lake District are now holiday homes which increase it difficult for them to stay in the area.
- There are worries over whether the traditional Lake District farming culture is being lost.

Economic

- The jobs tourism does provide are only seasonal.
- Tourism can make the cost of living increase for locals as prices increase.

Environmental

- Visitors can increase the rate of footpath erosion which harms the landscape.
- 89% of visitors travel by car causing congestion and pollution.
- There is an increase in litter.

9. Sustainable development:

- Providing affordable housing and keeping the prices lower for locals helps the Lake District so its history and culture aren't lost.
- Promoting public transport so there is less pollution is better for the environment and the use of zero-emission vehicles.
- Managing the footpaths and the litter also helps to maintain the landscape for tourists and future generations.
- Any other valid point(s)

10. Further tourist management ideas:

- Limit the number of people coming to the Lake District or limit the number of people on popular mountains at one time.
- Increase the amount of public transport available and make it cheaper and more frequent.
- Produce fliers to help tourists understand and appreciate the environment.
- Make accommodation cheaper if you do not bring a car.
- Any other valid idea(s)

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Exam-style Question

Examine how glaciers shaped the landscape shown in Figure 1



Figure 1: Map showing a section of Snowdonia National Park

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Level Marking

Level	Mark	Description
1	1–3	- The student evidences limited understanding between places, environments and processes. - A limited ability to evaluate is evidenced through knowledge and understanding. The argument is weak. There is little evidence to support the conclusion.
2	4–6	- The student evidences good understanding of the relationship between places, environments and processes. - A reasonable ability to evaluate is evidenced through knowledge and understanding. The argument is only partially logical. There is some evidence to support the conclusion.
3	7–8	- The student evidences a firm understanding of the relationship between places, environments and processes. - A strong ability to evaluate is evidenced through knowledge and understanding. The argument is logical and well explored. There is consistent evidence to support the conclusion.

Indicative Content

- Students should offer an assessment of the extent to which glaciers have shaped the landscape in Snowdonia, as shown in Figure 1.
- Knowledge of glacial landforms and how to identify them on a map must be demonstrated.
- Students must also offer other factors that may have shaped the landscape, e.g. climate, erosion and human activity.
- They may use specific examples of glacial landforms in Snowdonia.
- Students should clearly demonstrate an assessment of the map in exploring the extent to which glaciers have shaped the landscape compared to the other factors mentioned. Lower-level students who do not offer an argument.

Suggested Content

- It is clear from the map that Snowdonia has been shaped by glaciers. This is shown by the presence of features that can be seen on the map, such as corries, arêtes and U-shaped valleys.
- There are a number of each of these different landforms indicating the extent to which glaciers have shaped the landscape.
- There are some lakes and rivers on the map which also indicate that the erosion of rivers will have shaped the landscape.
- The climate will also have had some influence over the shape of the landscape.
- There is also evidence of human activity on the map, such as roads and small settlements. These, as well as the impact of humans living in the environment, could also influence the shape of the landscape.

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