

FIGURE 1

HOW?

I will travel to Grasmere in the car which is a journey that will take me along 4 major roads: the M60, the M61, the M6, and the A591, all of which are marked on the map in Figure 1.

Interesting Geographical Features



WINTER HILL

Situated between Chorley and Blackburn, Winter Hill is an iconic landmark on the M61 thanks to its large transmitting station used for broadcasting and telecommunications. In recent years, droughts and spells of hot weather have resulted in many fires in the surrounding moorland, killing wildlife and damaging the health of people living nearby. In 2018, it burned for 41 days; the worst English fire in living memory.

In a unique piece of activist graffiti thought to have been undertaken by Extinction Rebellion, a footbridge on the M61 has been emblazoned with the slogan 'Burn Fuel Don't Care, We All Breathe The Same Air'. Since 2019, millions of people have travelled beneath the writing and it is now becoming a symbol of climate consciousness within the Greater Manchester area, prompting people to reflect on how human activities are impacting the physical environment.



MORECAMBE BAY

Morecambe Bay is a special conservation area at the confluence of 4 distinct estuaries. It is the largest area of mudflats in the UK and is home to a wide variety of wildlife including endangered sea birds and marine organisms. These natural features have resulted in a tourism boom in the town of Morecambe which now boasts museums, cafes, hotels, and many shops which are enjoyed by tourists and locals alike, prompting a positive multiplier effect to take hold within the area.

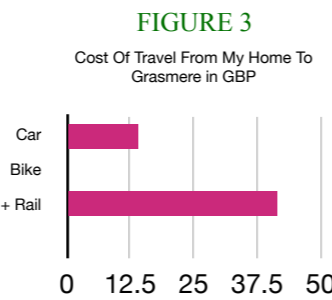
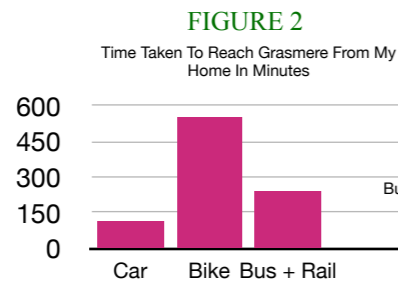


LAKE WINDERMERE

Windermere is the largest lake in England and is enjoyed by over 1 million annual visitors. It formed at the end of the last ice age around 13,000 years ago when two large glaciers melted into a basin. It is over 18km long and has a maximum depth of 67m which makes it ideal for the boat trips which my family have often taken across it!

WHY TRAVEL BY CAR?

Travelling by car is the most convenient way to reach the Lake District from my home. If I were to travel by public transport, it would take over twice as long and cost almost three times as much to get there. Furthermore, there is no rail station further north than Windermere in the Lake District meaning both trains and buses would need to be used.



IMPACT OF CLIMATE CHANGE

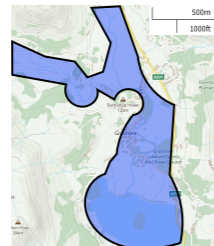
Both the human and physical geography of Grasmere, and indeed of the Lake District as a whole, is changing as a result of climate change, causing preservation of the landscape to be ever more important.



The map to the left indicates the lakes affected by BLUE-GREEN ALGAE which is a bacterial photosynthetic organism found in fresh water which can cause sickness in humans and other animals such as dogs. As the climate changes, areas such as the Lake District are receiving more sunlight which causes this algae to migrate towards the surface of lakes and multiply. Facilitated by the disposal of agricultural and sewage waste into Cumbrian Lakes, this algae is spreading much faster, and is becoming significantly more of a health risk, than it ever has before. People are now advised to avoid swimming or boating in lakes affected and to prevent pets swimming in them too.

EXTRME WEATHER

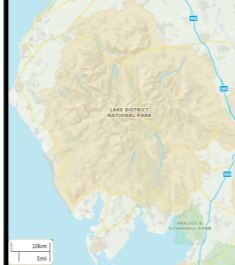
The Lake District is already experiencing more extreme weather events due to a changing climate. Floods are increasing in both strength and frequency, putting hundreds more homes in flood risk zones than ever before. This problem is accelerated by high levels of development in and around the Lakes as holidaymakers seek to purchase second homes. Furthermore, heatwaves like those experienced in the summer of 2022 are resulting in water levels of the lakes decreasing which threatens the survival of wildlife such as the Arctic Chew which has lived in Windermere since the last ice age but now faces extinction. This is also causing lake surface temperatures to increase which promotes the growth of invasive species of algae and aquatic plants. Humans living in the area are also increasingly finding it difficult to manage and prepare for these extreme weather events.



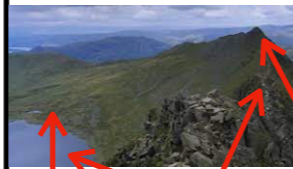
This map shows the FLOOD RISK in Grasmere from the River Rothay as of 2019. A significantly higher number of houses are now at risk than there were in 2000, and some properties are at risk from other rivers.



Grasmere is surrounded by PEAT BOGS which act as carbon sinks. They help regulate water flow yet are in danger of being destroyed which would promote further climate change.



LAKE DISTRICT NATIONAL PARK
The Lake District is one of 15 national parks in the UK and is a largely mountainous area covering 2,292 SQKM in north-west England. It was designated a national park in 1951 and its outer boundaries were established based upon knowledge of both political boundaries and topographic features.

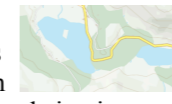


Corrie Tarn Arete Pyramidal Peak

Glaciation in the Lake District about 20,000 years ago, as well as the folding and uplifting of rocks in the past, has resulted in U-shaped valleys with distinctive glacial features such as those marked on the photo of Helvellyn.



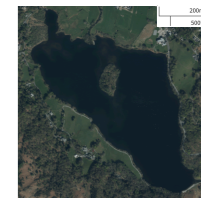
The main fells in the Lake District are known as Wainwrights after Alfred Wainwright who documented his journey up these peaks in a series of books. There are 214 in total with all but one over 1,000 feet high. Many try to climb up each one; I have done 34 so far!



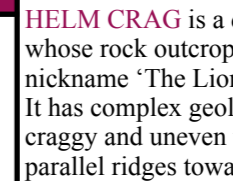
There are 14 lakes due to a combination of much of the geology being impermeable volcanic rocks as well as high annual precipitation.



GRASMERE
Grasmere is an important place to me because my family used to visit relatives in the Lake District very often and we used to stay in a hotel, and later a house, in the village. To me, it personifies a quintessential Lakeland village with drystone walls, slate houses, and stunning mountainous views. I find the geology of the landscape fascinating but what I think is most interesting is examining how humans have influenced the landscape over recent years.

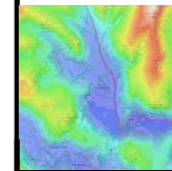


GRASMERE LAKE, fed by the River Rothay, is only 1 mile long and has a large island in the middle.



HELM CRAG is a distinctive fell whose rock outcrops have given it the nickname 'The Lion and The Lamb'. It has complex geology resulting in a craggy and uneven terrain with several parallel ridges towards the summit. It is bordered by several fells so receives lots of water in the form of surface run-off and is home to eels, pike, and lots of ducks!

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The topographic map shows the flat valley floor in which the town of Grasmere sits. This is thought to have been caused by a large glacier moving down from Dunmail Raise (just north of Helm Crag), flattening the area through abrasion and plucking.

WHERE, HOW, WHY?

GRASMERE | LAKE DISTRICT

GRASMERE PHYSICAL LANDSCAPE FEATURES

Grasmere has experienced high levels of glaciation in the past which have created stunning landscapes that clearly bear the signs of erosion and deposition.

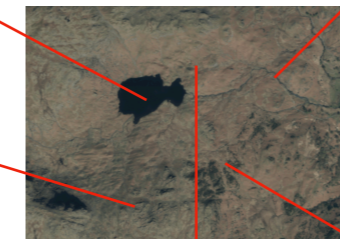
EASEDALE TARN is a large tarn that lies beneath Tarn Crag roughly 2km north-west of Grasmere. It is situated in a corrie that was carved out by glaciation and is estimated to be up to 21m deep!

AN ARETE which runs around most of the rim of the corrie. This helps funnel surface run-off into the tarn during periods of high precipitation

WOODLAND containing deciduous trees native to northern England including Oak. There is an effort to replant many mountainsides in the lakes.

DRYSTONE WALLS are being used to mark out field divisions clearly - and to prevent trespassers!

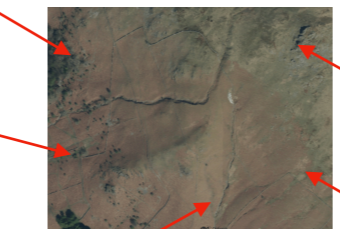
LARGE V-SHAPED VALLEY runs between the peaks of Arthur's Seat and Butter Crag due to erosion by several small rivers.



CORRIE sides steepened over time by abrasion and plucking

SOUR MILK GILL is a stream that runs from Easedale Tarn and becomes a tributary of the River Rothay which then feeds into lake Grasmere. Near the source, there is a waterfall above a plunge pool which sits within a long gorge: the product of centuries of erosion. It has carved out a deep V-shaped valley through which it flows.

SCREE caused by deposition during times of glaciation as well as freeze-thaw weathering.



SUMMIT of the fell is marked by a pile of rocks known as a Cairn which is used to mark the route clearly for passers by.

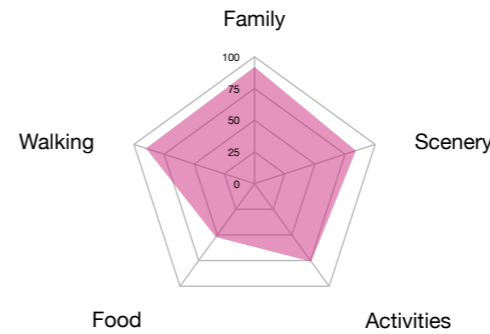
ERRATICS litter the fell side, moved by rivers and glaciers from the rocky outcrops towards the summit. These are rocks that have been transported and then deposited.

WHY IS GRASMERE GEOGRAPHICALLY INTERESTING?

Grasmere is located in the centre of the Lake District meaning it is positioned uniquely at a confluence of different geological areas. The Skiddaw Group, the Borrowdale Volcanic group, and the Windermere group all meet around the valley of Grasmere creating a distinctive geological landscape littered with glacial landforms. It is thought that around 400 million years ago, the Lake District looked somewhat similar to the Himalayas today. However erosion and glaciation have worn down the peaks to their present form. I think that from Grasmere you have a clear perspective of how landscapes are able to change over time. The age of the scenery has allowed for rivers to carve V-shaped valleys, caves to form, and erratics to have moved. The geography is so incredible that it can be hard to believe I only live a 2 hours drive away!

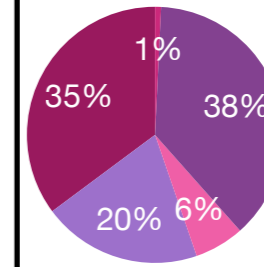


WHY IS GRASMERE IMPORTANT TO ME?



The above chart details why Grasmere is a meaningful place for me to visit. Having family in the area means that I would be able to see them, having not seen some since before the pandemic. I love the scenery of Grasmere as the imposing mountains instil a sense of calm and relaxation. Although not the largest factor, I still feel there are lots of fun activities such as kayaking and visiting museums which draw me to Grasmere. The walks are incredible and who could forget to pick up a pack of Grasmere gingerbread!

THE HUMAN GEOGRAPHY



This pie chart shows the different employment sectors prevalent in the Lake District: 1% are unemployed; 38% work in tourism; 6% work in farming; 20% are self-employed; and 35% work in other industries including engineering and manufacturing. It is clear that tourism is the largest income stream for the Lake District and is thought to generate upwards of £2.9 bn annually.

DRYSTONE WALLS are a characteristic feature of the Lake District, commonly built to mark field boundaries. Their construction is an ancient technique involving balancing rocks without using any binding substances to form decorative walls. Often, slate is used, but limestone and granite are also common in the Lakes.



GRASMERE GINGERBREAD is famed across the world for its distinctive and delicious flavour. Originally created in 1854 by Sarah Nelson, it is now a must try for any visitor to the village of Grasmere. In fact, long queues can be seen outside the small shop almost every day - this uniquely spiced delicacy is not to be missed! I think that Grasmere gingerbread is a great example of how tourists from all over the world are drawn to the Lake District for its human landscape as well as its awe-inspiring physical one.

The **NATIONAL TRUST** owns land around the Lake District including Alan Bank at Grasmere which is a former home to the poet William Wordsworth. The conservation and environmental maintenance and protection efforts of the National Trust help to retain the natural beauty of the landscape. It is encouraging to see how the physical and human elements of the Lake District interact to enable them both to thrive. In recent years, the National Trust has taken on many projects in Grasmere including the rebuilding of footpaths, the rewinding of fields and mountainsides, and teaching tourists to take care of the land.