

### LARGER PYROCLASTIC ERUPTIONS

Larger explosive eruptions produce pumice and ash (pyro clasts). The ash and pumice can be laid down in two main ways, as pyroclastic fall and pyroclastic flow, both of which are found on Ascension. Pumice is a very light volcanic rock filled with holes, from the rapidly expanding gas that drove the eruption (like the frothy, creamy top from a shaken up cola bottle). Explosive eruptions produce buoyant clouds of hot gas, pumice and ash that rise up into the atmosphere.



Tephra fall is produced when the pumice and ash rain out from the cloud onto the ground, and are deposited as layers of rocks such as those seen on the lower NASA road just after Devils Riding School. The rocks here were deposited from many eruptions, each producing individual layers of slightly different thicknesses and colours.

Pyroclastic flows are produced when the eruption clouds violently collapse back down to earth. The flows are part of an avalanche of hot rocks and gas which travels rapidly across the land and sea. These flows leave behind layers of pumice and ash which often have a significant amount of ash as well as pumice in a single layer. Examples of pyroclastic flow deposits can be found on the Green Mountain road and above Hannay's Beach.

### CODE OF Conduct

- Please take care whilst exploring to keep yourself safe and protect our island's biodiversity
- Many of our species are protected by the Wildlife Protection Ordinance - it is an offence to deliberately harm or remove them
- Leave gates and property as you find them
- Do not create fire hazards
- Place all litter in the bins provided or take it home
- Only park vehicles in designated areas
- Apply high-factor sunscreen and take plenty of water
- Remember to let someone know where you are going and when you expect to be back

#### **Image Credits**

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# GEOLOGY of ascension island







## GEOLOGY OF ASCENSION ISLAND

Ascension is a volcanic island, but although there are lots of vents on the island, it is only a single volcano. Over geological time it has built up above the sea through a variety of spectacular eruptions coming from different vents (the gap in the ground through which the red hot magma passes from the interior of the Earth during an eruption). In fact the area above the water level is only 1% of the volcanic landmass. A variety of processes have produced the spectacular range in volcanic formations found on the island today, which are easily visible in many places around the island.

Volcanic activity can be both 'explosive' and 'effusive'. While explosive eruptions fragment the magma into multiple pieces, effusive eruptions involve magma reaching the surface and flowing away from the vent. However there are different types of magma and these can erupt in different ways. This results in a wide variety of volcanic landscapes including scoria cones, lava flows, lava domes and pumice deposits. The weathered cone of Sister's Peak. The beautiful colour patterns you see here are the result of oxidation and weathering. This is very common even in young volcanic rocks, because they were erupted and sat at the Earth's surface at very hot temperatures for some time.

Typical basaltic lava flow. Basaltic lava flows can have features like glaciers with furrows and levees where the lava has piled up as it has tried to push its way along. Lava flows like these move much faster than glaciers, but you would be able to outrun a basaltic lava flow in your car.



### SCORIA CONES

The majority of the red or black hills dotted around Ascension are known as scoria cones. Each scoria cone is an individual vent where magma has reached the Earth's surface. These are built up during relatively small-scale explosive eruptions where red-hot rocks are thrown from the vent into the air, cool and then land. The magma here is usually basaltic. Over days to months, the cones build up into the hills you see dotted over Ascension's flanks (and Fort Hayes has even been built into one!). Typical examples of scoria cones are Cross Hill, Sister's Peak and Broken Tooth- all accessible on letterbox walks

### LAVA FLOWS

The crumped, clinkered lava flows you can see around English Bay and the Wideawake Fairs are examples of effusive activity, and actually make up the majority of the island of Ascension. The rumpled appearance happens as the lava quickly cools on the top surface and breaks up as it continues to move. Young lava flows are visible on the island. around Letterbox Peninsula and Sister's Peak, which are the product of some of the youngest eruptions on the island. These are also made mainly of basalt.

White Hill, towards the east of the Island, is a good example of a lava dome complex. It can be much harder to make out individual flows as they pile up against one another over time. The pale colour that this lava has eroded is more characteristic of magma that flows much less easily and has much more silica than basalt. On Ascension this is usually a type known as trachyte or rhyolite.





### LAVA DOMES

With different types of magma effusive eruptions produce lava domes. Lava domes form as magma rises from the crust and forms a plug around the vent. As the lava which forms the lava domes flows much less easily, the lava builds up around the vent, producing these steep-sided domes. These features can form from one or multiple eruptions and can be hundreds of metres high. Examples of lava domes on Ascension are White Horse, Weather Post and Bear's Back.

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### OBSIDIAN

Obsidian is black volcanic glass which appears very shiny, unlike the dull black lava flows you can see elsewhere on the island. Obsidian generally forms from the type of magma that flows less easily. The magma rises very slowly from within the crust and cools rapidly once erupted. The cooling of this type of magma produces the glassy black appearance, and obsidian is so sharp that it has been used by ancient civilisations for spearheads and arrows. Obsidian can be found along the Wolves Bluff letterbox walk, or on the Obsidian trail.