

## SITE

**Name:** Killerton

**Parish:** Silverton

**Local Authority:** East Devon

**National Grid Ref:** SS 973 007

**OS Sheets:** 1:50K, 192, 1:10K, SS90 SE

**Locality Description:** This site lies to the north of Exeter, just off the M5 Motorway, from where it is well signposted

**Nature and Status of Site:** Small disused quarries and natural exposures, within a National Trust owned parkland. It is a [Site of Special Scientific Interest](#) (SSSI).

**Summary of Geological / Geomorphological Interest:** This site covers much of Killerton Park and its quarries, which show Permian volcanic rocks including lamprophyres. These are considered to originate from lava flows rather than the usual dyke-like bodies seen elsewhere.

**Safety Considerations:** Care should be taken when in the quarries, as most are overgrown and walking can be tricky. Keep well clear of quarry face in Chapel quarry.

**Educational Age Groups:** Secondary, College/6<sup>th</sup> Form, University.

**Parking and Access:** The site is well signposted from the M5 and is reached via the B3181. Follow signs for car park. Park is open year-round. Contact the [National Trust](#) for admission charges (Tel: 01392 881345). Prior booking is recommended for educational groups. Whilst all exposures are accessible, they may be difficult to find as many are overgrown or fenced. Specific permission is required from the National Trust to visit the Chapel quarry. The site is also located along National Cycle Network 52 (Pinhoe to Killerton House) and can therefore be accessed by bicycle. In addition, there are regular bus services from Exeter to Silverton Turn, which is approximately a 15 minute walk from Killerton House. For timetable details, visit [www.traveline.org.uk](http://www.traveline.org.uk).

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## References

Durrance, E M. and Laming, D J C (1982) (eds) *The Geology of Devon* (University of Exeter)

Edwards, R.A. and Scrivener, R.C. 1999. The geology of the country around Exeter. *Memoir of the British Geological Survey*, Sheet 325 (England and Wales).

Floyd, P. A, et al. (1993). Igneous Rocks of South-West England. GCR Series No.5, Joint Nature Conservation Committee, Peterborough, and Chapman and Hall, 256pp.

Knill D. C. (1969). The Permian Igneous Rocks of Devon. *Bulletin of the Geological Survey of Great Britain*, No. 229, 115-38.

Thorpe R. S., Cosgrove M. E. & Van Calstern P. W. C. (1986). Rare-earth Element, Sr- and Nd-isotope Evidence for Petrogenesis of Permian Basaltic and K-rich Volcanic Rocks from Southwest England. *Mineralogical Magazine*, 50, 481-90.

Tidmarsh, W.G. (1932). The Permian lavas of Devon. *Quart. Jl. Geol. Soc. Lond.* 88, 712-775.

**Detailed Geology:** This site is the best locality to show compositional variation within the lamprophyres of the post-Variscan volcanics. The distribution of the lamprophyric lavas in Killerton Park shows the close association of three main types:

1. Biotite-apatite minette
2. Augite-biotite minette
3. Highly potassic minette (or syenitic lamprophyre)

They are all assumed to be lavas fed by small fissures, but good evidence as to their mode of emplacement is lacking. An age established from one of the lavas has yielded a whole rock K-Ar age of 291 Million years BP. One of the best exposures lies in a quarry 100m east of the Clump hillock and the surrounding area. This exposure, 20m of a massive, fine-grained, blue-grey minette is generally considered to be a lava flow but does not show any internal flow features or flow boundaries. It is heavily jointed with a dominant subvertical set. At some of the exposures, the lava has been buried beneath red Permian sandstone, which would have been deposited in an equatorial desert environment at that time. The varying chemical contrasts suggest that these rocks may have been derived from molten magma generated along a subduction zone, which was thought to have been in existence during the Hercynian Orogeny. The Killerton chapel is built from volcanic rocks taken from the adjacent quarry. These rocks are used throughout the area as building material for houses.

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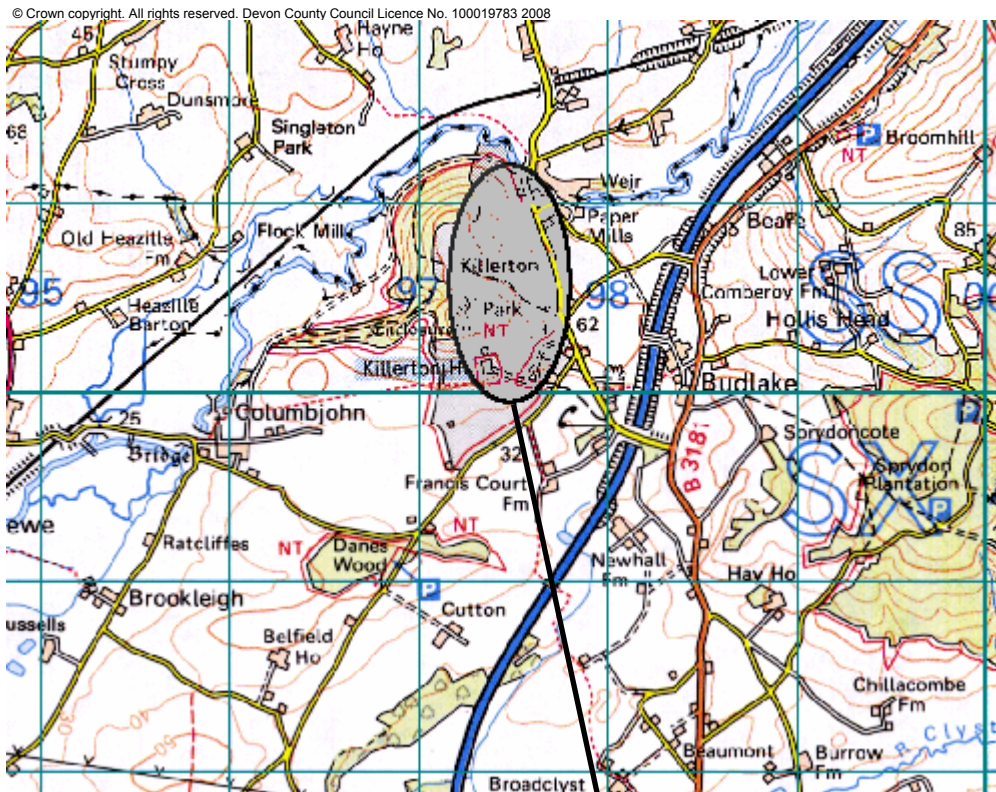
### Suggested Questions

1. What features can be seen to identify this exposure as – i. an igneous rock, and ii. a lava flow, rather than an intrusive body?
2. Why is Killerton a hill? What is the importance of the geology of the area in relation to the general topography?

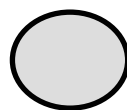
# LOCATION PLAN

## KILLERTON, SSSI SILVERTON, EAST DEVON

National Grid Ref: SS 973 007



Scale 1: 40,000



Site Locality

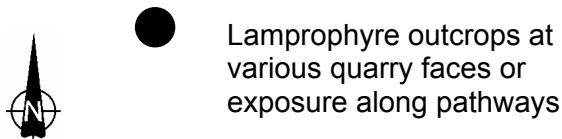
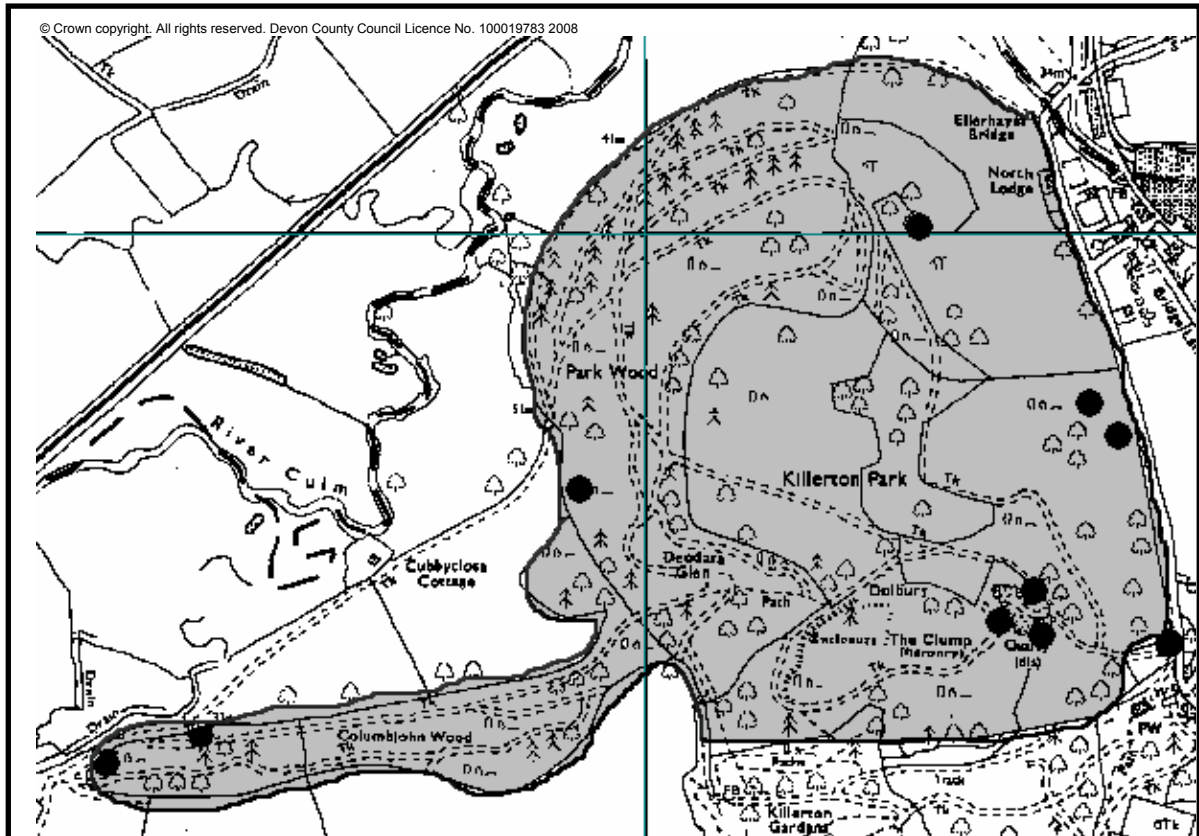
Site based on National Trust Killerton Park to north of Broadclyst

### Parking and Access

- Site owned and managed by National Trust. Use National Trust car parks for Killerton House. (Follow tourist signs)
- Access via the Stable Block which leads directly to paths and wooded tracks.

**SITE PLAN**  
**KILLERTON**  
**SILVERTON, EAST DEVON**

**National Grid Ref: SS 973 007**



Lamprophyre outcrops at various quarry faces or exposure along pathways



Scale 1: 10,000

Approx. SSSI Boundary

**Main Points of Interest:**

- Excellent example of Permian basalt-like rocks known as lamprophyres.
- The lamprophyres here are considered to be lava flows rather than the usual dyke-like bodies seen elsewhere.
- The volcanic rocks are harder than the surrounding sandstones, resulting in a hill.

# KILLERTON



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General views of Chapel Quarry, Killerton, showing exposures of lamprophyric igneous rocks

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Blocks of lamprophyric igneous rocks on the floor of Chapel Quarry, Killerton.

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Killerton Chapel: built from lamprophyric Permian igneous rocks from the adjacent quarry.