ELC_9: Kippielaw Scarp

Site information

Location and summary description:

Kippielaw Scarp is situated 1.5 km south-west of the village of East Linton and approximately 800 metres to the north of Traprain Law. The outcrop at Kippielaw Farm is a basaltic lava flow of “Dunsapie” type basalt as described by MacGregor (1928). The Dunsapie basalt type is a macroporphyritic basalt composed of plagioclase, olivine and clinopyroxene phenocrysts, and forms part of the Garleton Hills Volcanic Formation.

National Grid reference:

Mid-point: [NT 58373 75519]

Site type: Natural section; Natural exposure; Artificial quarry works

Site ownership: Traprain Farm

Current use: Agricultural land

Field surveyors: Rachael Ellen and Eileen Callaghan

Current geological designations: none

Date visited: 10th June 2014

Other designations: Traprain Grasslands Local Biodiversity Site

Site map

(Figure 14) Kippielaw Scarp Location Map. The site boundary has been drawn to include key exposures, and access to the site as well as suitable viewing distance of the natural surfaces (geologically significant area).

Site description

Background

The Kippielaw Scarp is situated just to the south-east of Kippielaw Farm. The scarp is composed of the ‘Dunsapie’ type basalt, which is exposed as both a natural section and within an old quarry. The basalt belongs to the Garleton Hills Volcanic Formation. Kippielaw Scarp has good views of the quarried north face of Traprain Law (ELC_9_P1).

Volcanic rocks

The basalt outcrop is approximately 6 metres high, exposed within an old quarry (ELC_9_P2). The old quarry face reveals the massive central facies of a lava flow of Dunsapie type, a plagioclase- olivine-clinopyroxene-macrophyric basalt. This basalt contains medium-grained (1–4 mm) phenocrysts of lath shaped, creamy plagioclase feldspar, euhedral phenocrysts of augite and browny-red pseudomorphs after olivine, set in a dark gray groundmass (ELC_9_P3). Joints with random orientations cross the quarry face.

Access and additional information

Access and parking is gained by asking permission of the residents of Kippielaw Farmhouse and adjoining dwellings. The outcrop is easily accessible except in the summer months where the area is very overgrown with vegetation and there is no clear path. In front of the quarry lies uneven ground (loose rock material and metal covered by grass) and extensive gorse bushes block access to a lot of good faces. This outcrop is mentioned as an excursion within the Lothian Geology guide.

Stratigraphy and rock types

Age: Carboniferous

Formation: Garleton Hills Volcanic Formation

Rock type: Plagioclase-olivine-clinopyroxene basalt (Dunsapie Basalt)

Assessment of site: access and safety

Road access and parking Access is by the minor road from Traprain Farm heading west to Kippielaw Farmhouse. There is a parking bay opposite Kippielaw Farm which is now comprised of the farmhouse and two other dwellings, and the parking bay belongs to one of the dwellings within the Kippielaw Farm. Access to the site is through the courtyard and a gate belonging to Kippielaw Farm – the actual field that the site is located belongs to Traprain Farm. There is a path which leads to the outcrop but this is very overgrown in the summer.

Safety of access Access to the site is straightforward but the underlying terrain is uneven as the site has become overgrown.

Safety of exposure Care should be taken and an assessment made of the face before approaching. The face appears quite stable.

Access Access via farm track and agricultural land

Current condition Fresh faces of basalt are accessible through heavily vegetated and gorse bush entrance.

Current conflicting activities None

Restricting conditions Overgrown vegetation

Nature of exposure Outcrop forms part of an escarpment and old quarry.

Assessment of site: culture, heritage & economic value

Historic, archaeological & literary associations No known association

Aesthetic landscape Good view of the north facing side of Traprain Law and quarry

History of earth sciences No known association

Economic geology Unknown what the old quarry was used for.

Assessment of site: geoscientific merit

	Rarity	Quality	Literature/collections	Primary interest
Lithostratigraphy				
Sedimentology				

Igneous/mineral/metamorphic geology	Local	Poor	X
Structural geology			
Palaeontology			
Geomorphology			

Site geoscientific value

The site comprises an exposure of ‘Dunsapie’ type basalt, a plagioclase-olivine-clinopyroxene- macroporphyritic basalt, allowing a study of the petrology and mineralogy, and an interpretation of the lavas erupting during the Carboniferous in the local area.

Kippielaw provides a poor example of a Carboniferous basalt lava flow with local significance.

Assessment of site: current site value

Community The site is not well known or visited often apart from the local farmer or residents.

Education The site represents clean faces of which to examine the mineralogy of the ‘Dunsapie’ type basalt. This site may be a good locality for educational fieldwork related to the volcanism related to the Carboniferous in Scotland, but similar basalts are exposed at North Berwick Shore.

Assessment of site: fragility and potential use of the site

Fragility Natural overgrowth and erosion and weathering of feature.

Potential use School education, higher/further education

Geodiversity summary

The site exposes clean faces of ‘Dunsapie’ type basalt, a plagioclase-olivine-clinopyroxene basalt belonging to the Garleton Hills Volcanic Formation. Despite its clean face, access is gained by traversing over heavily vegetated and uneven ground, and the face is partially obscured by gorse vegetation. The site has good views across to Traprain Law.

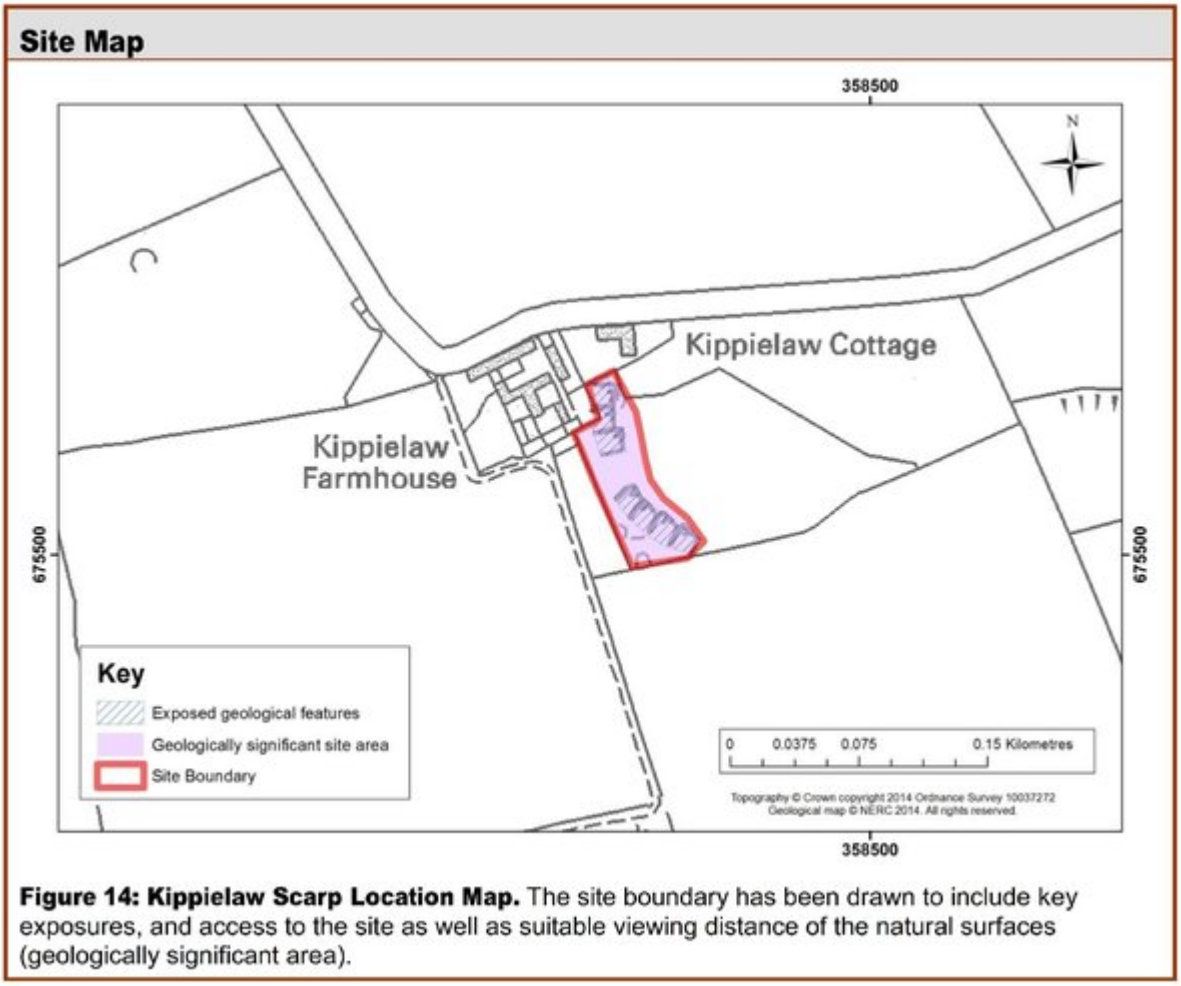
Site photos

(ELC_9_P1) View of the quarried north-east face of the phonolite laccolith, Traprain Law, a SSSI. Photo is looking south west, taken from Kippielaw Scarp. © BGS, NERC.

(ELC_9_P2) Old quarry within ‘Dunsapie’ type basalt, exposed in the Kippielaw Scarp. Randomly orientated joints cross the face, and likely formed during uplift and/or erosion of the basalt flow. Photo looking north-east. © BGS, NERC.

(ELC_9_P3) Detail of the macroporphyritic basalt, bearing phenocrysts of pseudomorphs after olivine, pyroxene, and feldspar. The rock shown is also partially vesicular – the small, spherical hollows are the remnants of what would have been gas bubbles that became trapped in the basalt as it cooled. © BGS, NERC.

References



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(ELC_9_P1) View of the quarried north-east face of the phonolite laccolith, Traprain Law, a SSSI. Photo is looking south west, taken from Kippielaw Scarp. © BGS, NERC.

(ELC_9_P2) Old quarry within 'Dunsapie' type basalt, exposed in the Kippielaw Scarp. Randomly orientated joints cross the face, and likely formed during uplift and/or erosion of the basalt flow. Photo looking north-east. © BGS, NERC.

(ELC_9_P3) Detail of the macroporphyritic basalt, bearing phenocrysts of pseudomorphs after olivine, pyroxene, and feldspar. The rock shown is also partially vesicular – the small, spherical hollows are the remnants of what would have been gas bubbles that became trapped in the basalt as it cooled. © BGS, NERC.