
EDC 2: Castle Hill Quarry, Twechar

Grid reference: [NS 70890 76083]

Site type: Artificial quarry works

Site ownership: Not known

Current use: Recreational land

Field surveyor: Sarah Arkley & Luis Albornoz-Parra

Current geological designations: None

Date visited: 5th March 2009

Site map

(Figure 2) Castle Hill Quarry Location Map

Summary description

Disused quartz-dolerite quarry, formerly used for roadstone. Recorded as an 'old quarry' in Robertson, 1937.

This Quartz-microgabbro intrusion is part of the Midland Valley Sill Complex intruding into the upper part of the Limestone Coal Formation sedimentary rocks (below the Meiklehill Main Coal).

Approximately 10m high faces can be seen through the sill. The massive, coarse-grained nature of the rock would suggest the quarry was positioned in the middle part of the sill, the height of the faces give some indication to the great thickness of the intrusion. Some jointing exists, with good examples of spheroidal weathering displayed.

The site is of particular importance due to its historical connections. The quarry is located adjacent to the remains of the Antonine Wall, built by the Romans and there was an Iron-Age hill fort on top of Castle Hill (now partly removed by the quarry).

Interpretation boards already exist on the 'Bar Hill Roman Fort', 'Bar Hill Roman Baths' and 'Castle Hill', produced by Historic Scotland, where the foundations remain. Unfortunately, there is no mention of the underlying geology on the boards, although it was probably the high ground formed by the resistant nature of the sill which attracted the Roman engineers to this superb strategic location overlooking the Kelvin valley and to build a defensive wall here - in a similar way that Hadrian built his wall on the Whin

Sill farther south. Any new leaflets/literature on the wall should include some information on the underlying geology.

Excellent views from the trig point immediately north of quarry, E and W along the Kelvin valley and northwards to the Kilsyth Hills. Probably the reason for positioning a Roman Fort here. This could be another potential site for an interpretation board to explain the geological landscape. Differential resistance to erosion of the different rock types is clearly reflected in the nature of the topography. Almost all the features of prominent relief are due to the presence of intrusive or extrusive igneous rocks.

From a Quaternary perspective, the microgabbro outcrops forming the high ground of Bar Hill and Croy Hill (to the east) show the typical asymmetrical shape of a 'crag and tail'. Moulded by the passage of ice, both of these hills display steep slopes to the WSW (the crag) and gentle slopes to the ESE (the tail), indicating ice flow in an easterly direction.

EDC 2: Stratigraphy and rock types

Age: Upper Carboniferous Formation: Midland Valley Sill-Complex

Rock type: Quartz-microgabbro

Assessment of site value

Access and safety

Aspect/Description

Road access and parking Parking in Twechar village, walk eastwards 1–1.5km up a well signposted farm track, then over rough ground to the quarry at Castle Hill

Safety of access Wooded around quarry faces and area to the south, some steepish ground at the base of the quarry faces, accessible with care.

Safety of exposure Little potential for any blocks to become dislodged due to widely-spaced jointing, but full assessment would need to be made.

Permission to visit No permission to visit was sought, located adjacent to archaeological remains open to the public.

Current condition Quarry faces are quite mossy, obscuring details of the microgabbro, also some impressive biological weathering in places with tree roots growing within joints. Old iron fencing along the eastern end could be removed.

Current conflicting activities None

Restricting conditions None known

Nature of exposure Sub-vertical quarry faces

Culture, heritage & economic

Historic, archaeological & literary associations Located on the Antonine Wall: adjacent to Bar Hill Roman Fort, Rating: 9.

Aesthetic landscape Intrusion forms high ground which allows good views to N and E across the Kelvin Valley towards the Kilsyth Hills. Rating: 5.

History of earth sciences None known Rating: 0.

Economic geology Former road metal quarry Rating: 2.

EDC 2: Geoscientific merit

EDC 2: Castle Hill Quarry, Twechar. Geoscientific merit.

Total Geoscientific merit score 22.

Current site value

Community Antonine Wall and associated archaeology attracts many visitors to pass by, though very few probably look at the quarry faces on the 'backside' of the hill. Rating: 10.

Education The quarry exposes typical features associated with the middle part of a thick sill, good spheroidal weathering and examples of biological weathering. Rating: 4.

Fragility and potential use of the site

Fragility Geohazard

Potential use School, on-site interpretation, multidisciplinary

Geodiversity value

The main value of this site is the historical associations. The quartz-microgabbro sill has formed high ground which has been used by the Romans to build a major defensive wall, 63km long, across Scotland. There are also great views from the top along the Kelvin valley and towards the Kilsyth Hills where the relationship between the landscape and the underlying geology can be explored. Rating: 5.

Photographs

(Photo 6) Information board by Historic Scotland describing the archaeological remains at Bar Hill Roman Fort on the Antonine Wall. View looking SE.

(Photo 7) Although the source of the stone used to build the Roman fort is unknown, it is likely to have been quarried locally. View looking W.

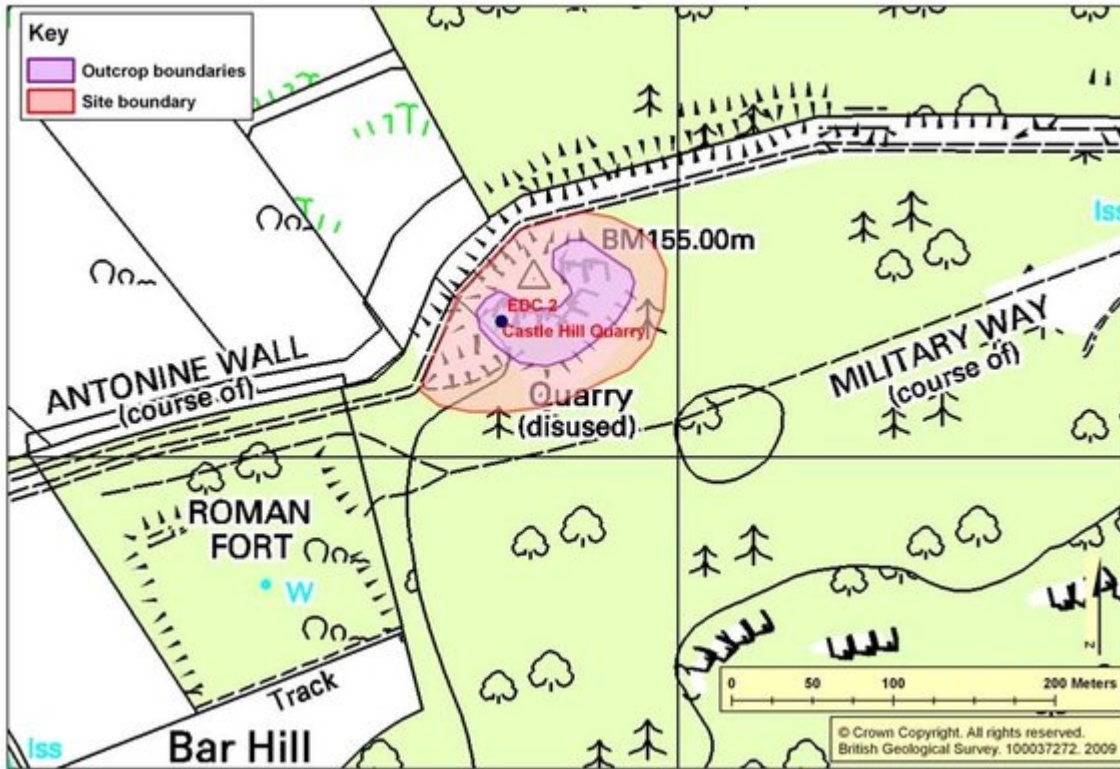
(Photo 8) Quarry face on the southern side of Castle Hill. Note the massive nature of the quartz- microgabbro intrusion. Looking N.

(Photo 9) Good examples of spheroidal or 'onion-skin' weathering can be seen in the quartz- microgabbro.

(Photo 10) Widely spaced jointing in the quartz- microgabbro suggests that the quarry is located within the middle part of the intrusion which cooled slowly. Quarry face is approx 5m high. Looking NE.

(Photo 11) The resistance of igneous material to erosion means that it often forms high ground; Castle Hill is a typical example. The extensive views from the top of Castle Hill across the Kelvin valley are likely to be a primary reason for the Antonine Wall and the Iron-Age fort being positioned here.

[Bibliography](#)



(Figure 2) Castle Hill Quarry location map.

GeoScientific Merit	Rarity	Quality	Literature/ Collections	1st
Litho Stratigraphy	0	0	0	<input type="checkbox"/>
Sedimentology	0	0	0	<input type="checkbox"/>
Igneous/Mineral/ Metamorphic Geology	4	5	2	<input checked="" type="checkbox"/>
Structural Geology	2	2	0	<input type="checkbox"/>
Palaeontology	0	0	0	<input type="checkbox"/>
Geomorphology	3	4	0	<input type="checkbox"/>

EDC 2: Castle Hill Quarry, Twechar. Geoscientific merit.



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(Photo 7) Although the source of the stone used to build the Roman fort is unknown, it is likely to have been quarried locally. View looking W.



(Photo 8) Quarry face on the southern side of Castle Hill. Note the massive nature of the quartz- microgabbro intrusion. Looking N.



(Photo 9) Good examples of spheroidal or 'onion-skin' weathering can be seen in the quartz-microgabbro.



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