EDC 1: Twechar Quarry, Twechar

Grid reference: [NS 70100 75649]

Site type: Artficial quarry works

Site ownership: Not known

Current use: Disused

Field surveyor: Sarah Arkley & Luis Albornoz-Parra

Current geological designations: None

Date visited: 5th March 2009

Site map

(Figure 1) Twechar Quarry Location Map

Summary description

Disused quartz-microgabbro 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 intruded here into the lower part of the Upper Limestone Formation sedimentary rocks (between the Lyoncross Limestone and Index Limestone). The radiometric age of the sill complex is thought to be between 290–295 Ma (de Souza, 1979) and to reach a maximum thickness of 90 m around Cumbernauld (Forsyth et al., 1996)

Approximately 15 m high faces remain. At the north end of the quarry the top of the sill is exposed ■ rds of the way up the face; the conformable nature of the contact between the fine-grained chilled margin of the sill is and the bedded baked sandstone above can be clearly identified. Close inspection of the contact and overlying sediments is possible at the side of the quarry but the ground is quite steep, clearance of vegetation and a few simple steps would greatly improve access to this key section.

Other features visible at the site include quartz and calcite veining within the top part of the sill, coarser and more 'patchy' looking microgabbro within the main body of the sill. Columnar jointing, perpendicular to the cooling surface, is fairly well developed and slickenslides can be observed on some fault planes indicating the direction of movement.

Generally microgabbro from near the top or base of a sill is finer grained and more brittle than material from the middle of thick sills. This material was often worked into setts.

EDC 1: Stratigraphy and rock types

Age: Upper Carboniferous Formation: Midland Valley Sill-Complex

Rock type: Quartz-microgabbro

Age: Upper Carboniferous Formation: Upper Limestone Formation

Rock type: Sedimentary Rock Cycles of the Clackmannan Group Type

Assessment of site value

Access and safety

Aspect/Description

Road access and parking Site is 50 m from a road, car parking at the local tavern adjacent to the site. Safety of access Rough uneven ground on floor of quarry, boggy in places.

Safety of exposure Some quarry faces are high and potentially loose material should be removed.

Permission to visit Permission given by the tavern owner.

Current condition Good; moss and ivy growing in places on the quarry faces but generally they are well exposed. A few young trees within the quarry itself may in time obscure views. Minor amounts of household/garden rubbish in places.

Current conflicting activities None

Restricting conditions None known

Nature of exposure Vertical quarry faces

Culture, heritage & economic

Historic, archaeological & literary associations None known. Rating: 0

Aesthetic landscape Old quarry at the edge of the village of Twechar, revealing the underlying geology. Rating:2

History of earth sciences None known. Rating: 0

Economic geology Former road-metal quarry. Rating: 3

EDC 1: Geoscientific merit

EDC 1: Twechar Quarry, Twechar. Geoscientific merit.

Total Geoscientific merit score 41

Current site value

Community Pub adjacent to the quarry is visited on a regular basis. Rating: 10

Education A rare locality where the features typical of the top part of a sill and the contact with the deposits it has intruded can be observed. Rating: 6

Fragility and potential use of the site

Fragility Geohazard, Natural Overgrowth, Development. Pub has recently closed and land is potentially subject to redevelopment.

Potential use: School, on-site interpretation

Geodiversity value

Although there are numerous disused quarries in East Dunbartonshire within the Midland Valley quartz-dolerite sills and dykes, Twechar quarry is one of the few to expose the top or base of an intrusion. The nature of the contact between the igneous intrusion and the baked sedimentary rocks it intruded can be examined in the quarry and typical field characteristics observed. Rating: 6.

Photographs

(Photo 1) View looking NE from the tavern car park into the disused quartz-microgabbro quarry at Twechar.

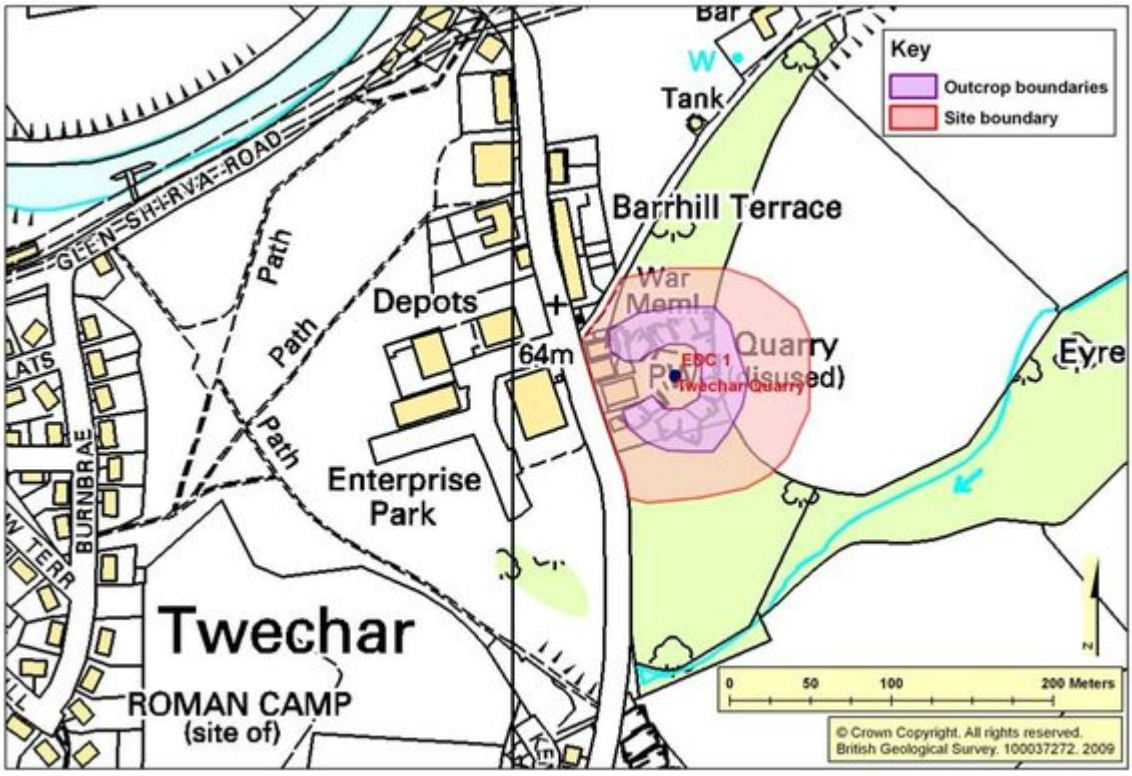
(Photo 2) Looking NNW at a part of the quarry face which displays the top of the igneous intrusion. The lower ■ of the face shows sub vertical jointing formed within the intrusion as the molten rock cooled, the upper ■ shows gently the dipping strata of the overlying sedimentary sequence. As the contact between the two rock types is parallel to the layering in the sedimentary strata, the intrusion is termed a 'sill'.

(Photo 3) A network of quartz and calcite veins within the quartz-microgabbro. Looking N.

(Photo 4) Sub horizontal slickensides developed along a fault plane within the quartz-microgabbro. Looking NE.

(Photo 5) Well developed vertical columnar jointing has formed perpendicular to the top and base of the sill. Snow is resting on the top of some crudely polygonal columns. Looking E.

Bibliography



(Figure 1) Twechar Quarry location map.

GeoScientific Merit	Rarity	Quality	Literature/ Collections	1st
Litho Stratigraphy	4	3	2	☐
Sedimentology	2	2	2	☐
Igneous/Mineral/ Metamorphic Geology	6	6	2	☑
Structural Geology	3	4	2	☐
Palaeontology	0	0	0	☐
Geomorphology	1	2	0	☐

EDC 1: Twechar Quarry, Twechar. Geoscientific merit.

(Photo 1) View looking NE from the tavern car park into the disused quartz-microgabbro quarry at Twechar.

(Photo 2) Looking NNW at a part of the quarry face which displays the top of the igneous intrusion. The lower ? of the face shows sub vertical jointing formed within the intrusion as the molten rock cooled, the upper ? shows gently the dipping strata of the overlying sedimentary sequence. As the contact between the two rock types is parallel to the layering in the sedimentary strata, the intrusion is termed a 'sill'.

(Photo 3) A network of quartz and calcite veins within the quartz-microgabbro. Looking N.

(Photo 4) Sub horizontal slickensides developed along a fault plane within the quartz-microgabbro. Looking NE.

(Photo 5) Well developed vertical columnar jointing has formed perpendicular to the top and base of the sill. Snow is resting on the top of some crudely polygonal columns. Looking E.