EDC 18: Crow Road, Lennoxtown

Grid reference: [NS 62309 79297]

Site type: Natural exposures / Natural landforms

Site ownership: Not known

Current use: Open country

Field surveyor: Sarah Arkley & Luis Albornoz-Parra

Current geological designations: None

Date visited: 10th March 2009

Site map

(Figure 18) Crow Road Location Map

Summary description

Two main features are visible at this site; these are the large landslips lying on the southern slopes of the Campsie Fells and outcrops of the famous Lennoxtown essexite.

The outcrops of essexite have been interpreted as two small volcanic plug-like intrusions. The northern plug intrudes through the Clyde Plateau Volcanic Formation and the southern plug straddles a fault which has Clyde Plateau Volcanic Formation on the NW side and sedimentary rocks belonging to the Lower Limestone Formation on the SE side. Geophysical evidence indicates that the margins of both of the igneous bodies are steep (Forsyth, 1996). Biotite crystals from the Lennoxtown essexite have been dated radiometrically at 270Ma (de Souza, 1979) suggesting an early or mid-Permian age.

Half a dozen small hillside outcrops (a few m wide) of the rare Essexite (nepheline monzogabbro) can be examined. The exposures are well-jointed with sub-vertical joints between 3 and 8 cm apart, trending approximately E–W. Weathered, the rock has a pale grey colour with large black phenocrysts of augite, which stand proud of the surface. The sizes of the phenocrysts are generally between 3–8 mm in diameter but were seen up to 16 mm. The shape of the phenocrysts is usually subhedral to square/rectangular euhedral, and the groundmass is medium-grained, with a crystal size of approximately 1mm.

The unique nature and point source of the essexite intrusion, has enabled geologists to use the rock as a 'tracer' for ice flow direction. Erratic boulders of essexite found across Central Scotland can be sourced back to this single locality and a transport direction derived.

The sub-horizontal lava flows exposed across the steep southern slopes of the Campsie Fells display excellent trap featuring of the Clyde Plateau Volcanic Formation.

Along the steep south-facing slopes of the Campsie Fells a chain of landslips exists NE and NW of this location.

Good view towards the SE across Lennoxtown.

EDC 18: Stratigraphy and rock types

Age: Quaternary Formation: Not applicable

Rock type: Landslide deposit: boulders, cobbles and pebbles

Age: Carboniferous to Early Permian Formation: Lennoxtown Boss, Western Midland Valley Westphalian To Early Permian Sills

Rock type: Nepheline-monzogabbro

Assessment of site value

Access and safety

Aspect/Description

Road access and parking Space for two cars on roadside, no gate to get over barbed wire fence. Safety of access Open hillside, boots recommended to walk over rough ground.

Safety of exposure No evidence of any recent movement. Permission to visit No permission sought

Current condition Good

Current conflicting activities None

Restricting conditions None

Nature of exposure Small hillside exposures of essexite and large vegetated landslip.

Culture, heritage & economic

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

Aesthetic landscape Edge of the Campsie Fells, great views southwards especially towards Lennoxtown Rating: 4.

History of earth sciences None known. Rating: 0.

Economic geology None recorded. Rating: 0.

EDC 18: Geoscientific merit

EDC 18: Crow Road, Lennoxtown. Geoscientific merit.

Total Geoscientific merit score 40

Current site value

Community 10

Education. Rating: 6.

Fragility and potential use of the site

Fragility Geohazard, Erosion

Potential use Higher/Further Education, School, On-site Interpretation, Geotrail, Multidisciplinary

Geodiversity value

An excellent site displaying a variety of geological and geomorphological features. The main value of this site is the rare outcrops of essexite, and how, due to their distinctive appearance, they have been used to determine ice-flow patterns of a much younger geological event. Rating: 7.

Photographs

(Photo 94) Looking W across to one of the largest landslips near Sloughmuclock. On retreat of the glaciers, steep unstable slopes were left along the southern slopes of the Campsie Fells. In places these have collapsed to form major landslides.

(Photo 95) Looking NE at a major landslip on the southern slopes of the Campsie Fells. The cliff-like backwall of the landslide is within the lava flows of Carboniferous age that make up the Clyde Plateau Volcanic Formation. Mounds of fragmented fallen rock lower down the slope can clearly be seen. The Crow Road can be seen along the bottom of the photograph.

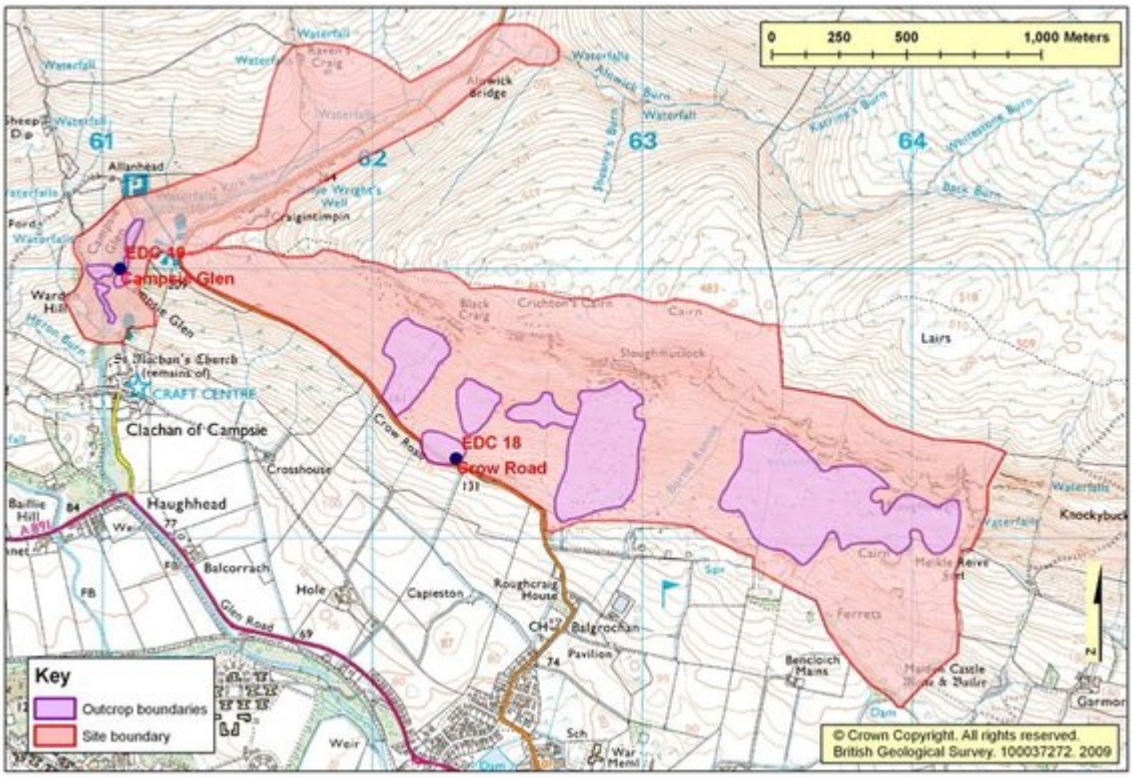
(Photo 96) Close-up of large angular blocks of basaltic lava scattered across the hillside resulting from the catastrophic landslide. The slopes are now largely vegetated, suggesting there has been no recent movement. Looking NNE towards the backwall scar higher up the hillside.

(Photo 97) Small outcrop of 'Lennoxtown essexite' on the southern slopes of the Campsie Fells. The distinctive appearance and rare occurrence of this rock type makes this an important geological locality in the UK. The geographical extent of the essexite, suggests that the intrusion represents a volcanic plug. Looking N towards the backwall of the landslide.

(Photo 98) Close-up of the surface of a weathered outcrop of Essexite, showing a 'porphyritic' texture with large (up to 16mm) black augite crystals standing out from a fine-grained, pale-coloured groundmass which is dominantly composed of plagioclase feldspar.

(Photo 99) Essexite has proven to be a valuable aid to identifying the direction of ice movement during the last ice age. As ice advanced over the outcrop, pieces of essexite were frozen to the base of the glacier and carried for some distance before being then dropped 'downstream' of their origin. Due to the distinctiveness and rarity of essexite, boulders found across the landscape can be linked back to this site, and the direction of ice movement determined. Fragments of this rock have been found as far as 20km to the east, confirming that the main movement of ice from the Loch Lomond area was towards the east, and that there must have been a major glacier travelling eastwards from Blanefield, through Lennoxtown towards Kilsyth and Falkirk, scouring the valley into the shape we see today. Looking S.

Bibliography



(Figure 18) Crow Road location map.

GeoScientific Merit	Rarity	Quality	Literature/ Collections	1st
Litho Stratigraphy	4	4	2	☐
Sedimentology	0	0	0	☐
Igneous/Mineral/ Metamorphic Geology	6	6	6	☑
Structural Geology	0	0	0	☐
Palaeontology	0	0	0	☐
Geomorphology	5	5	2	☐

EDC 18: Crow Road, Lennoxtown. Geoscientific merit.

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