

## DONEGAL - COUNTY GEOLOGICAL SITE REPORT

<b>NAME OF SITE</b>	<b>Kilrean Appinite</b>
Other names used for site	
<b>IGH THEME(S)</b>	<b>IGH11 Igneous Intrusions, IGH6 Mineralogy</b>
<b>TOWNLAND(S)</b>	<b>Kilrean Upper</b>
<b>NEAREST TOWN</b>	<b>Glenties</b>
<b>SIX INCH MAP NUMBER</b>	<b>74</b>
<b>ITM CO-ORDINATES</b>	<b>579814E, 891981N</b>
<b>1:50,000 O.S. SHEET NUMBER: 10</b>	<b>GSI BEDROCK 1:100,000 SHEET NOS. 3,4</b>
<b>GIS Code DL019</b>	

### **Outline Site Description**

The site is on elevated ground south of the Ardara-Glenties road and consists mainly of scattered outcrops amongst blanket bog and grassland.

### **Geological System/Age and Primary Rock Type**

The Kilrean intrusion is part of a Caledonian Appinite suite within the metamorphic aureole around the Ardara Granite pluton. It consists mainly of appinite, with subordinate ultramafic lithologies of hornblendite (dated at 410 Ma) and cortlandtite. It was intruded into the Dalradian Upper Falcarragh Pelite Formation.

### **Main Geological or Geomorphological Interest**

This is a well-exposed example of a relatively small appinite intrusion with associated ultramafic lithologies, including hornblendite and cortlandtite (hornblende-bearing peridotite). The inner core of ultramafic lithologies is located in the eastern half of the intrusion. The diverse rocks of the Appinite suite were intruded immediately before the earliest Donegal granite plutons and are best seen around the Ardara pluton. They were derived from magma originating in the upper mantle. The complex intrusion at Kilrean is of particular interest because it shows the zoned relationship between the cortlandtite, hornblendite and appinite. The cortlandtite may not have crystallised *in situ* with the other lithologies but could have been torn from the conduit wall and carried as a xenolith from the upper mantle by the ascending appinite magma.

The cortlandtite contains crystals of chrysotile, up to 12cm in length, which formed during hydrous alteration of the appinite body. Chrysotile is a fibrous mineral, included within the asbestos group of minerals.

### **Site Importance: County Geological Site, recommended for Geological NHA**

This large, well-mapped and documented appinite intrusion is a very interesting example of the Appinite suite. It does not show the full range of lithologies seen in other appinites but the presence of the core of cortlandtite is unusual and it may represent a large upper mantle xenolith. The site is also of significance because of the development of unusually long chrysotile crystals.

### **Management/promotion issues**

The appinite intrusion underlies an area of about 170 ha that is mostly dedicated to farming, principally for grazing animals, and is under multiple ownership. Access should therefore be negotiated with the individual landowner where appropriate. Good outcrops showing lithological variation are found in the eastern half of the intrusion, straddling the main Glenties–Donegal Town road (R262). These outcrops form the basis of the site extent defined for this audit. This site is likely to be of interest mainly to students and the specialist scientist rather than the wider public, so further promotion is not recommended.



Main exposure of central core of cortlandite, west of R262 (view toward northeast).



Graveyard exposure of cortlandite, east of R262 (view toward northwest).



Main exposure of cortlandite, west of R262 (close-up).



