LOUTH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	**Cooley Castle Quarry**
Other names used for site	
IGH THEME	**IGH11 Igneous Intrusions**
TOWNLAND(S)	**Castletowncooley**
NEAREST TOWN/VILLAGE	**Carlingford**
SIX INCH MAP NUMBER	**8**
ITM CO-ORDINATES	**717138E 807886N**
1:50,000 O.S. SHEET NUMBER	**36 GSI BEDROCK 1:100,000 SHEET NO. 8/9**

Outline Site Description
The site is an abandoned, partly overgrown but unfenced hill-side quarry on the southwestern flank of the Barnavave ridge, accessible via an unpaved roadway.

Geological System/Age and Primary Rock Type
The rocks are part of the Palaeogene Carlingford Igneous Complex, mainly dolerite that is net-veined by granite. Intrusion of the granite has caused alteration and even assimilation of the dolerite.

Main Geological or Geomorphological Interest
Cooley Castle Quarry contains very good exposures of dolerite intruded by granite, similar to but cleaner than the exposures in Barnavave Quarry. The best exposure is the most recently worked face near the entrance at the eastern end of the quarry. The dolerite is veined by granite, or granophyre, similar in composition to that found elsewhere in the complex. Veins range from millimetres to more than 1m in thickness. Granite-dolerite contacts are typically smooth but the upper contacts of flat-lying sheets, in particular, can be highly irregular, with tongues and veinlets of granite extending into the dolerite. Brecciation of dolerite is also displayed at this site. The brecciated dolerite has been intruded by granite and some dolerite fragments display rounded edges suggestive of assimilation. Reaction between the granite and dolerite has given rise to rocks with compositions intermediate between the two. At the contact with granite, dolerite typically has a thin fine-grained recrystallized dark margin interpreted as a consequence of hornfelsing under influence of intruding granite.

The dolerite-granite relationship at Cooley Castle Quarry was the subject of a detailed study by De and Poole which included chemical analysis of different rock types. They concluded that the granite intruded the dolerite along contraction fractures that developed as the dolerite cooled. Volatiles associated with the granite feldspathized and amphibolitized the dolerite and also gave rise to narrow hornfelsed contact zones.

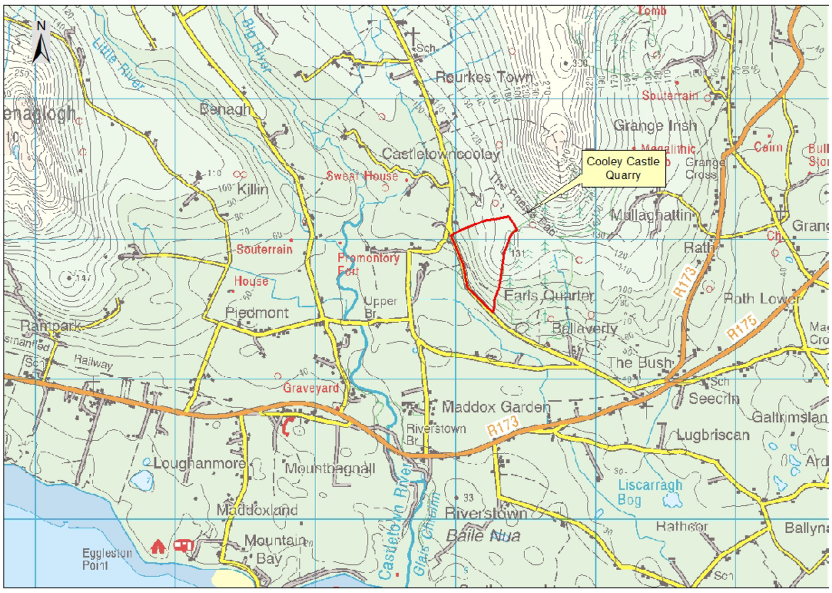
Site Importance – County Geological Site
This is a particularly good site for studying the relationships between dolerite and granite in the Carlingford Igneous Complex, particularly brecciation and veining. Detailed contact relationships are visible in relatively fresh exposures and mineralogical and lithological variations within and between the different rocks can be readily seen. It is thus worthy on its own of CGS status and might be considered as a component part of a wider, Carlingford NHA designation.

Management/promotion issues
The site is an abandoned quarry on private land, largely overgrown by gorse, heather, etc., and grazed by sheep. The most recent quarrying activity, possibly following planning permission granted in the early 1970s, focused on the southern end of the quarry. Efforts should be made to protect the well-exposed southeastern faces.

General view of quarry faces at southern end of Cooley Castle Quarry (view to east).

Vertical granite vein (left, G) in dolerite (D) acting as feeder for thicker, near-horizontal vein above. Near-vertical spurs extend from horizontal vein into enclosing dolerite (right).

Brecciated dolerite fragments within granite vein (left). Dark, fine-grained hornlefsed zone at margin of dolerite intruded by granite (right). Granite has undulating contact surface.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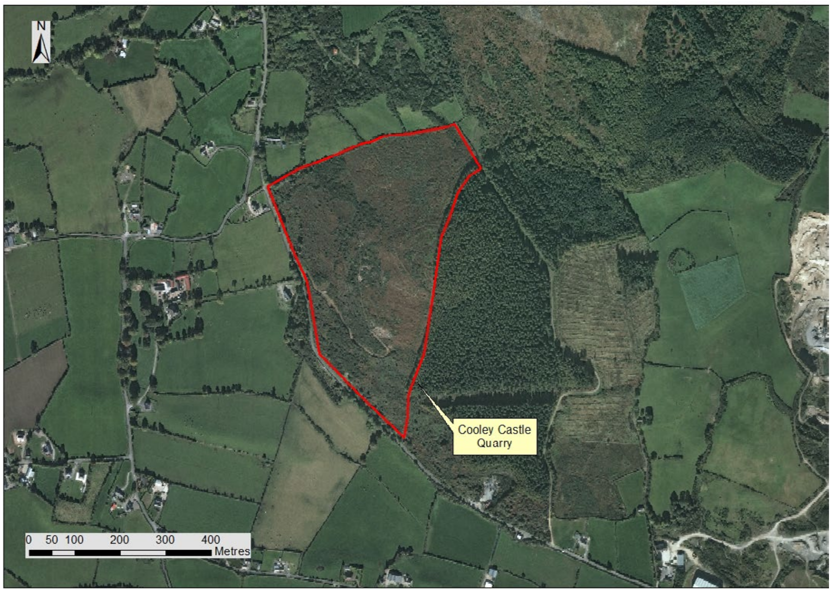
Cooley Castle Quarry
Rourkes Town
Benagh
Castletowncooley
Killin
Sweat House
Souterrain
Promontory Fort
House
Piedmont
Rampark
Railway
Graveyard
Upper Br.
Maddox Garden
Riverstown Br.
R173
R175
Loughanmore
Mounthagnall
Maddoxland
Mountain Bay
Eggleston Point
Riverstown
Baile Nua
Castletown River
Liscarragh Bog
Rathcor
Lugbriscan
Seecrin
The Bush
Ballaverty
Earls Quarter
Rath Lower
Rath
Mullaghattin
Grange Irish
Grange Cross
Cairn
Little River
Big River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Cooley Castle Quarry
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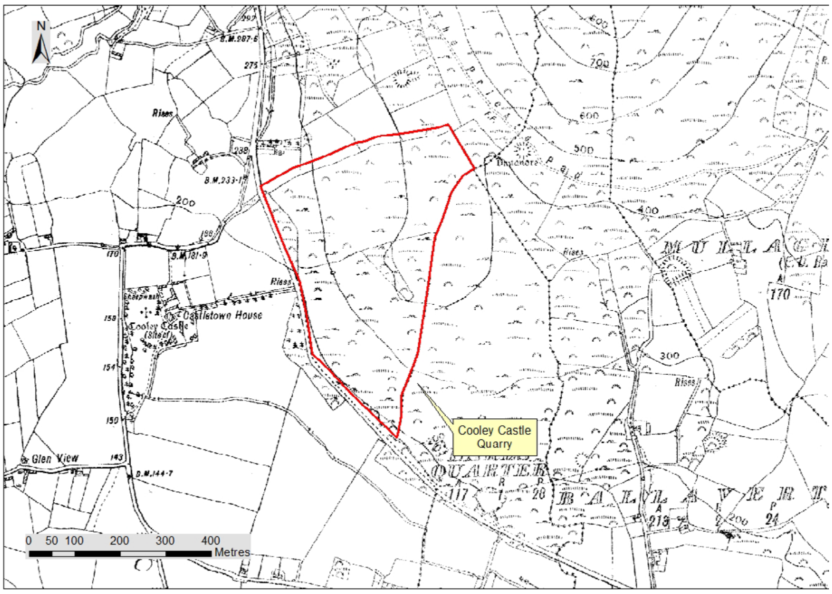
Metres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Cooley Castle Quarry
Castletowne House
Glen View
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