

MAYO - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Dooege – Atlantic Drive
Other names used for site	Claggan Bay
IGH THEME	IGH5 Precambrian, IGH6 Mineralogy
TOWNLAND(S)	Claggan, Dooege
NEAREST TOWN/VILLAGE	Achill Sound
SIX INCH MAP NUMBER	54a, 65
ITM CO-ORDINATES	468900E 795600N (Claggan Beach)
1:50,000 O.S. SHEET NO. 30	GSI BEDROCK 1:100,000 SHEET NO. 6
GIS Code MO046	

Outline Site Description

A section of shoreline rock exposures and coastal cliffs at southwestern end of Achill Island, extending from Dooege to Achill Beg.

Geological System/Age and Primary Rock Type

The site comprises blueschist-facies (metamorphic) rocks of the Dalradian Supergroup (late Neoproterozoic age; c. 750–600 million years ago). Radiometric and laserprobe dating of micas in blueschist-facies rocks provides a mean age of deformation c. 460 million years ago (Caledonian deformation). The extensive coastal site comprises metavolcanics, quartzite, schist, mylonite, and melange rocks.

Main Geological or Geomorphological Interest

The occurrence of the blue-coloured sodium-bearing amphibole mineral *glaucophan*e in epidosite pods within metavolcanics (metamorphosed volcanic rocks) at the site is indicative of a subduction zone in these regularly-bedded and folded Dalradian rocks. The blueschist-facies assemblages developed in Dalradian metavolcanics that were deposited near the edge of the Laurentian continent (that later underwent subduction). The blueschist-facies rocks imply a high pressure – low temperature metamorphic event in this Dalradian sequence, evidence for which was generally destroyed by either erosion or later metamorphism. The blueschist-facies assemblages in south Achill Island developed at pressure-temperature (*P-T*) conditions of 10.5 ± 1.5 kbar and 460 ± 45 °C, contemporaneously with the Barrovian metamorphic assemblages of the Dalradian rocks (located farther north) that were originally situated closer to the Laurentian foreland. The metavolcanics at the site are juxtaposed against quartzite mylonites (fine-grained metamorphic rocks) at a well-developed shear zone.

Site Importance – County Geological Site; recommended for Geological NHA

This extensive coastal site is of international importance. The blueschist-facies are the only recorded evidence of blueschist-facies metamorphism in a regularly-bedded sequence in Ireland and Britain, and the only occurrence of blueschist-facies metamorphism in the Dalradian Supergroup. Blueschists have been documented from a similar tectonic setting in correlative rocks in the Appalachian orogeny in Newfoundland, Quebec and New England. The site requires geological NHA designation.

Management/promotion issues

This site is a remote coastal section along a high-energy Atlantic coastline. Access is relatively easy, although consideration must always be given to changing weather, waves and tides. Any significant impact on the site may come from natural coastal erosion. Other possible threats to the integrity of the site would be the recommencement of quarrying at the site. Quartzite cliffs forming the headland to the north of the beach were quarried for paving stone in the past. Additionally, the metaled track leading down to the parking-site is about to collapse as the glacial till cliffs on which it is built are cut back due to coastal erosion.



Beach and cliffs at Claggan Bay, looking north from parking space at end of metallised track. Outcrop of blueschist-facies rocks visible between glacial-drift cliff face (yellow, right) and former quartzite quarry (white, left).



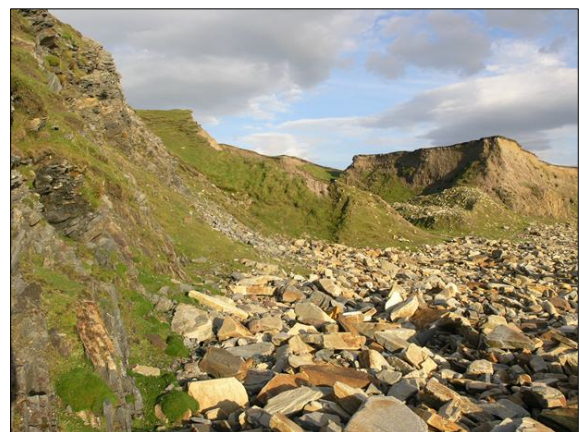
Regularly bedded blueschist-facies rocks at Claggan Beach.



Blue coloured (glaucofane mineral) loose boulder at Claggan Beach.



Near-horizontal, regularly bedded blueschist-facies rocks at Claggan Beach.



Rubble and beach boulders at foot of bedrock cliffs, and glacial-drift cliff, looking inland and southeast.

