

GALWAY - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Bunnacunneen
Other names used for site	<i>Bun an Choinín, Binn Úi Chuinneáin</i>
IGH THEME	IGH4 Cambrian-Silurian
TOWNLAND(S)	An Gabhlán (Gowlaun), An Chorr Riabhach (Currarevagh, Na Grigíneacha (Griggins)
NEAREST TOWN/VILLAGE	Leenaun
SIX INCH MAP NUMBER	25
ITM CO-ORDINATES	494080E 758970N (cliff outcrop above road)
1:50,000 O.S. SHEET NO. 38	GSi BEDROCK 1:100,000 SHEET NOS. 10, 11

Outline Site Description

Mountainous terrain west of Lough Nafooeey overlooking the Maam-Finny L1301 road.

Geological System/Age and Primary Rock Type

Ordovician (Darriwilian) Mweelrea Formation conglomerate, sandstone and ignimbrites. The lowest ignimbrite layer has yielded an absolute age date of 464 ± 4 Ma.

Main Geological or Geomorphological Interest

Coarse conglomerates (Bunnacunneen Conglomerate Member) exposed across the north slopes of Bunnacunneen and alongside the L1301 road contain boulders (up to 90 cm in diameter), pebbles of quartzite, quartz porphyry and jasper. Palaeocurrent directions recorded here indicate sediment transport in a northwest direction. Interbedded with the conglomerates are several distinct ignimbrites, some up to 12 metres thick. In contrast to the boulder-rich conglomerates, the grey-pink coloured ignimbrites are recognisable from their welded pumice and glassy texture, quartz phenocrysts and gas vesicles (characteristic of explosive volcanic debris). The entire formation is c. 2 km thick, and records the development of alluvial facies northwestward across a shallow marine environment, and forms the top of the Ordovician succession in the southern limb of the South Mayo Trough. Formed during the Grampian orogeny, the South Mayo Trough preserves a detailed record of the terranes that provided the source sediments that fed the sedimentary basin. Zircon analysis studies have provided evidence to the origin of the Mweelrea Formation sediments (source-rock provenance), and attest to a complex assemblage of terranes played out at a volcanic arc-continent collision zone along the margin of the Laurentian continent during Ordovician times. East-derived sandstones contain c. 487 Ma zircons derived from the Cambrian to early Ordovician Lough Nafooeey arc rocks and the Clew Bay Complex. South-derived sandstones (c. 467–474 Ma zircons) in Bunnacunneen conglomerates correspond to the Connemara metagabbro and orthogneisses, and also include Archaean and Proterozoic zircons consistent with a Dalradian source – all suggesting the Connemara terrane lay south of the South Mayo Trough from at least 464 Ma. Granite clasts in the Bunnacunneen conglomerate are similar to the Connemara orthogneiss suite (c. 471 Ma).

Site Importance – County Geological Site; recommended for Geological NHA

This is a very important County Geological Site for understanding the assemblage of terranes, and the development of the Connemara and south Mayo geological landscapes. Whilst the Mweelrea Formation extends from Leenaun to the north side of Lough Nafooeey in Co. Galway, this is the best location to observe the ignimbrite tuff bands and the boulder-rich conglomerates.

Management/promotion issues

This is an excellent teaching and research site. Roadside exposures allow for easy observation and potential promotion in research and public literature. Ignimbrites are situated some 100 m uphill.



Conglomerate outcrops along roadside (L1301 Maam to Finny), looking east to Lough Nafooe. Conglomerate cliff visible in upper right (uphill to the south of the road).



Ignimbrite outcrop ~300 m south of road, near stream.



Boulder-sized clasts in conglomerate outcrops alongside the road at Lough Nafooe waterfall.



Conglomerate-ignimbrite contact and stream, 300 m south of road (ITM 494035 758970).



Conglomerate cliff viewed looking east to Lough Nafooe.

