

NORTH DONEGAL - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Ballymastocker
Other names used for site	
IGH THEME	IGH 10 Devonian
TOWNLAND(S)	Magherawardan
NEAREST TOWN/VILLAGE	Portsalon
SIX INCH MAP NUMBER	18
NATIONAL GRID REFERENCE	625131E 937910N
1:50,000 O.S. SHEET NUMBER 2	GSI 1:100,000 Bedrock Sheet No. 1
GIS Code ND055	

Outline Site Description

The site comprises several large outcrops on Ballymastocker Strand, immediately opposite the car park at the southern end of the beach.

Geological System/Age and Primary Rock Type

The rocks of interest are part of the Devonian (358–419 Ma) Ballymastocker Formation which comprises Old Red Sandstone (ORS) facies conglomerates and sandstones. South along the beach, after a large gap in exposure where the faulted contact between the two formations is located, Precambrian Dalradian quartzites of the Slieve Tooley Formation form the bedrock.

Main Geological or Geomorphological Interest

The Devonian period is only glimpsed in two small areas in Donegal, one of which is at Ballymastocker where exposures occur on the beach at Ballymastocker Bay and further inland at Knockalla (there are red-bed facies exposed at Edergole in south Donegal, but these are Lower Carboniferous in age). The Devonian rocks here form an *outlier* (younger rocks entirely surrounded by older rocks) with Dalradian rocks lying to north, south and west.

The Ballymastocker Formation here comprises a c. 250 thick sequence in which basal conglomerates pass upwards into sandstones and then an uppermost boulder conglomerate. The rocks were deposited as sands and coarse gravels in a desert intermontane basin. The unconformable contact between the ORS and the Dalradian is poorly exposed inland, where the basal conglomerate and overlying sandstones can be observed. On the beach at Ballymastocker Bay, however, only the boulder conglomerate is exposed. This has the red / purple colour characteristic of the ORS. Very large boulders, some almost a metre in diameter / length, are a striking feature of this rock. The conglomerate has a crude bedding, accentuated by the long axes of some boulders lying parallel to the bedding plane. Boulders consist of quartzite and other Dalradian lithologies but clasts of Donegal granite have not been found, suggesting the conglomerate pre-dates unroofing of the granite. South along the beach Dalradian Slieve Tooley Formation quartzites are thinly bedded and display well-developed channel structures.

Site Importance – County Geological Site; may be recommended for Geological NHA

This is an excellent exposure of the Devonian ORS facies which has a very restricted occurrence in Donegal. The boulder conglomerate is a striking lithology in its own right. The Slieve Tooley Formation quartzites found to the south are lithologically similar to many of the boulders in the conglomerate and provide a useful context for understanding the origin of the conglomerate and its place in the geological history of Donegal.

Management/promotion issues

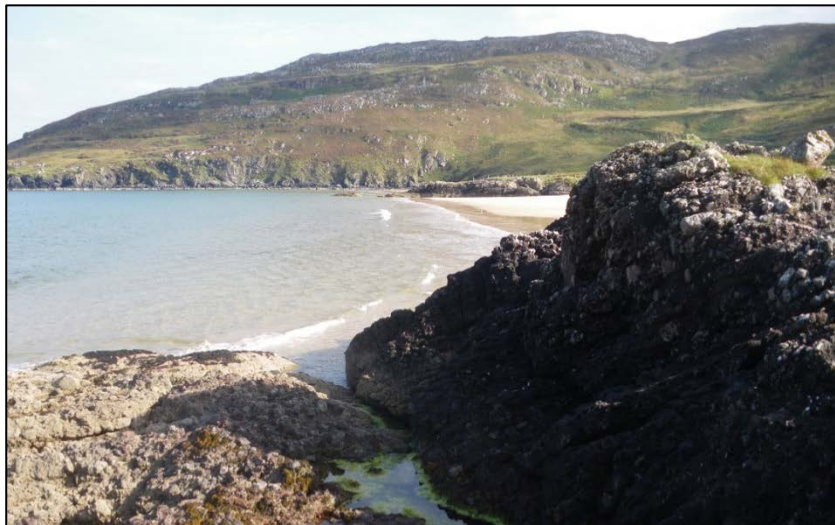
The site is on a public beach, in the intertidal zone. There are signboards at the car park where there is an opportunity to include information about the geology of the site.



Bedding within boulder conglomerate. Note alignment of flattened boulders parallel to bedding. Beds dip to south.



Large boulders within boulder conglomerate (40cm-long hammer for scale).



View from outcrop of boulder conglomerate towards exposures of Slieve Tooye Quartzite Formation at southeastern end of bay.

