MAYO - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	**Annagh Head, Mullet Peninsula**
Other names used for site	
IGH THEME	**IGH5 Precambrian**
TOWNLAND(S)	**Annagh**
NEAREST TOWN/VILLAGE	**Belmullet**
SIX INCH MAP NUMBER	**9**
ITM CO-ORDINATES	**462580E 834600N**
1:50,000 O.S. SHEET NO. 22	**GSI BEDROCK 1:100,000 SHEET NO. 6**
GIS Code MO004	

Outline Site Description
Coastal cliffs and rocky coastline at the western end of the Annagh promontory on the Mullet peninsula.

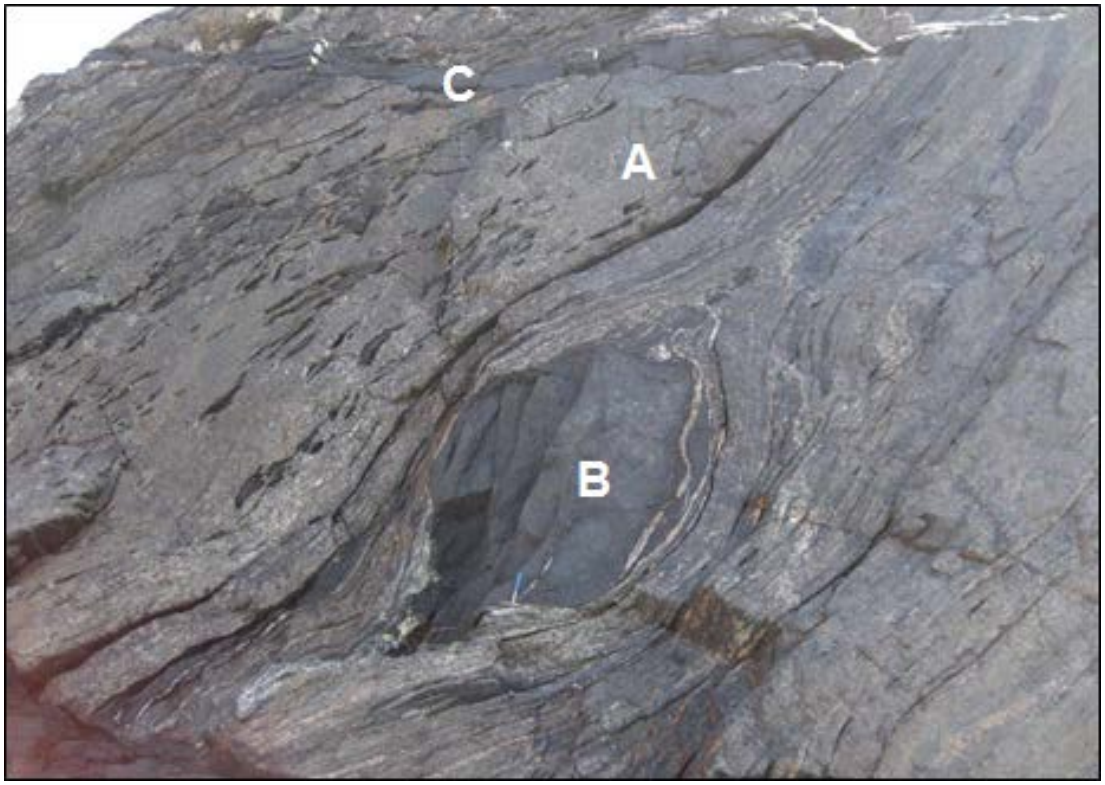
Geological System/Age and Primary Rock Type
Bedrock comprises orthogneiss (originally igneous, later metamorphosed), amphibolite, pegmatite, and metadolerite. U-Pb zircon dating of the gneiss has yielded an age of 1,753 million years.

Main Geological or Geomorphological Interest
The Mullet Gneisse at Annagh Head are one of three subdivisions of the Annagh Gneiss Complex that occur on the Mullet peninsula and on the mainland to the east at Doolough. The quartz and feldspar bearing gneisses are well exposed along this coastal section, but exposure is poor inland. The best exposures occur at a seaward facing cliff at Annagh Head, exhibiting very clear field relations between migmatised Mullet gneisses (enclosing earlier boudins of amphibolite), whose foliation is cut by granite pegmatites, which are in turn cut by a weakly deformed metadolerite dyke. The main metamorphic fabric is understood to be Grenville in age (1,177 – 960 Ma), while the protoliths of the Mullet Gneisses (comprising monzodiorites, granodiorites and granites) formed at 1,753 Ma. This age has been determined by U-Pb (Uranium-Lead) zircon dating of the Annagh Head gneisses. The metadolerite has been suggested to be equivalent to the Mam sill in Donegal and to represent extension-related mafic magmatism related to the break-up of the Rodinian continent, and the subsequent formation of the Iapetus Ocean. Cross-cutting relationships in the gneisses on the Mullet peninsula make it possible to work out a geological history.

The chronology of the Annagh Gneiss Complex is well established and can be divided into the c. 1.75 Ga Mullet gneiss, c. 1.28 Ga Cross Point gneiss and c. 1.18 Ga Doolough gneiss.

Site Importance – County Geological Site; recommended for Geological NHA
The site is of international importance as it represents the oldest rocks on mainland Ireland. The gneisses of the Mullet peninsula have been correlated with rocks of the Lewisian inliers in NW Scotland. The cliff face has featured in numerous important books and academic papers. The site requires certain designation as a geological NHA.

Management/promotion issues
This site is a remote coastal headland along a high energy Atlantic coastline. Access is over extensive rocky exposures. However, as with high energy coastal sites, consideration must always be given to changing weather, waves, and tides. No immediate threat to the site is evident, except if access is ever restricted. It is thus not deemed to be under threat of development. Any impact on the site may come from natural coastal erosion.



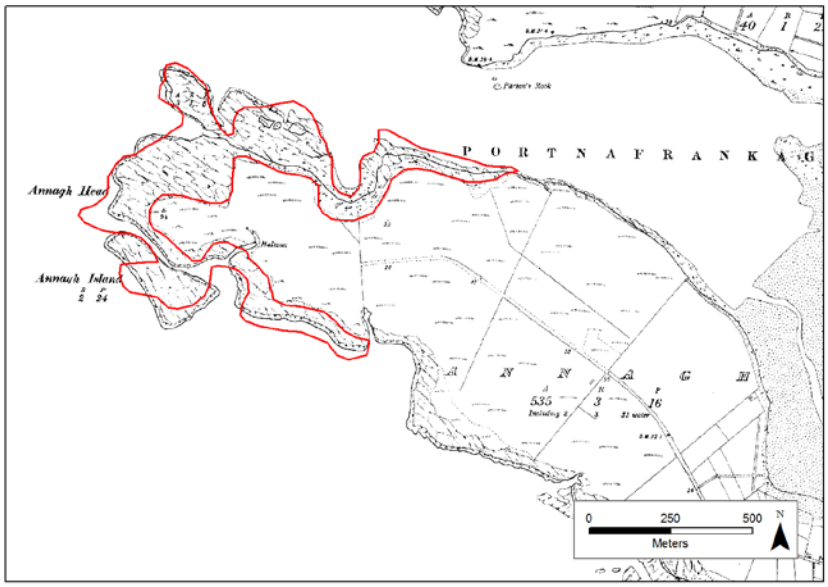
Cliff face at Annagh Head. The main foliation in the gneiss (A) wraps around *boudins* of amphibolite (B). A metadolerite dyke (C) cuts the gneiss. (See hammer for scale)


Banding in the pink and grey gneiss at Annagh Head.


Annagh Head, looking north towards Eagle Island (and lighthouse).


Foliated gneisses at Annagh Head.


One metre thick pegmatite (right of hammer) cutting the foliated gneiss.



Hennessy et al. 2014 (revised 2019). Geological Survey Ireland.