

Section 2

Site Reports

MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Gibstown Castle
Other names used for site	
IGH THEME:	IGH 1 (Karst)
TOWNLAND(S)	Milestown, Gibstown
NEAREST TOWN	Navan
SIX INCH MAP NUMBER	17, 18
NATIONAL GRID REFERENCE	283100 273100 = N 831 731
1:50,000 O.S. SHEET NUMBER	42 1/2 inch Sheet No. 13

Outline Site Description

Natural rock outcrop and spring.

Geological System/Age and Primary Rock Type

Lower Carboniferous (Courceyan) limestone of the Ballysteen Formation.

Main Geological or Geomorphological Interest

Situated 5km north of Navan, south of Gibstown Castle are exposed outcrops of limestone, which display solution features associated with karst weathering. This area was once used as part of a garden walk for the inhabitants of the castle. A number of tunnels have been carved out of the stone as well as a narrow passage winding through the limestone. Within this area is a natural spring, which may be feature associated with the karstification of the surrounding limestone.

Site Importance

There are very few naturally exposed karst features seen within the limestone of Meath and therefore this site is recommended as a County Geological Site.

Management/promotion issues

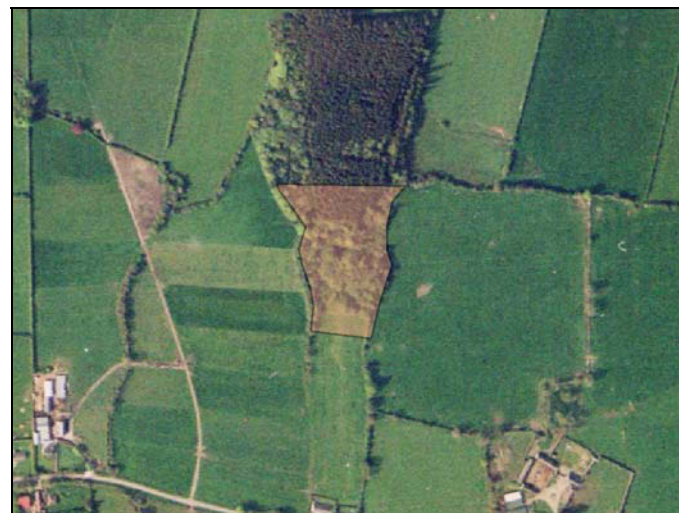
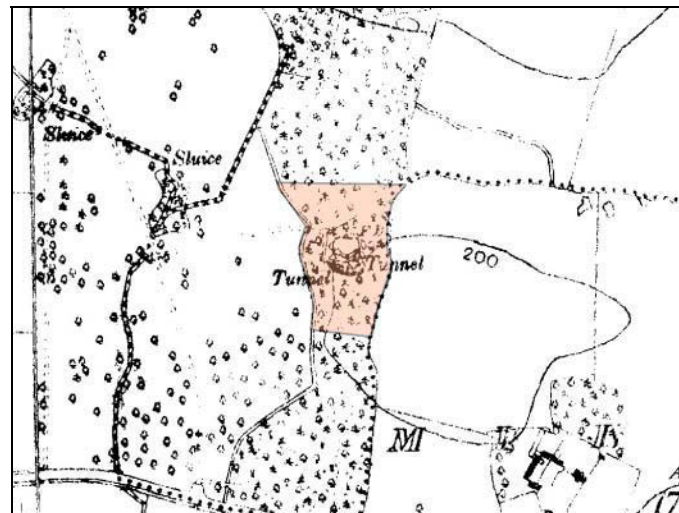
This site can only be accessed by crossing agricultural land, mainly used for cattle grazing. This site itself appears to be used by cattle, possibly using the spring as a drinking source. Public access is therefore not suitable and the site is not recommended for public promotion.



Left: Manmade tunnel cut into the limestone at Gibstown Castle.

Right: Exposed limestone just outside of the main wooded area that makes up most of this site.

Gibstown Castle



MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	St. Keeran's Well		
Other names used for site			
IGH THEME:	IGH 1 (Karst)		
TOWNLAND(S)	Castlekeeran		
NEAREST TOWN	Carnaross		
SIX INCH MAP NUMBER	16		
NATIONAL GRID REFERENCE	268760 277070 = N 6876 7707		
1:50,000 O.S. SHEET NUMBER	42	1/2 inch Sheet No.	13

Outline Site Description

Natural rock outcrop and springs.

Geological System/Age and Primary Rock Type

Carboniferous limestone, with surface karst weathering features.

Main Geological or Geomorphological Interest

This small collection of outcrops, situated 1.5km south of Carnacross, displays smooth, undulating channels cut into the limestone. These are karst weathering features known as karren, and were produced by solution of the limestone. This is a chemical process by which dilute acid within water (naturally occurring in rainwater) dissolves the calcium carbonate within the limestone, leaving the features we see today. A small natural spring is found within the same limestone outcrop, where groundwater appears at the surface.

Site Importance

There are very few naturally exposed karst features seen within the limestones of Meath and therefore this site is recommended as a County Geological Site.

Management/promotion issues

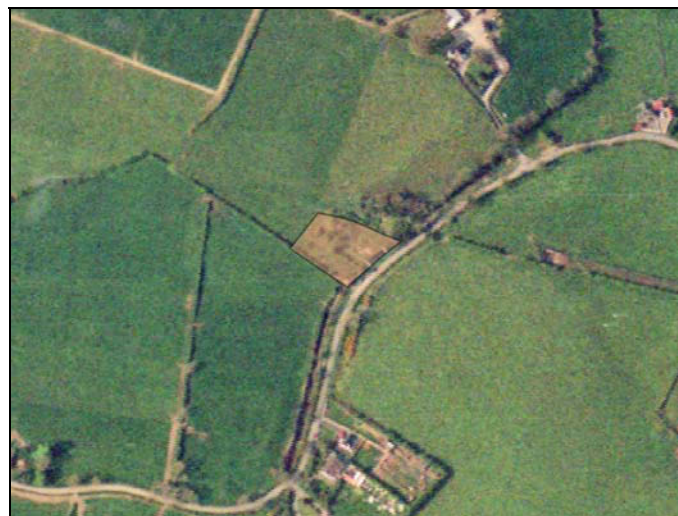
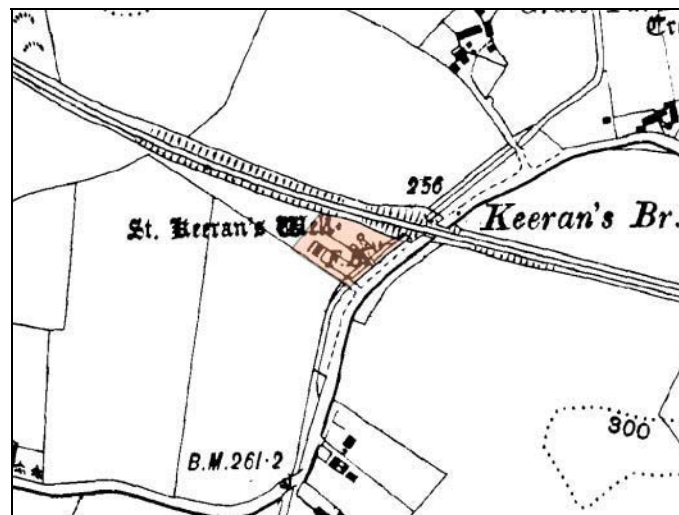
Access to this small site is just off a quiet third class road. This is a public area and a religious site, also commonly used by passers by as a picnic spot. The area is well maintained but its ownership is unknown and it is unclear who manages this site.



Left: Limestone outcrops displaying karst weathering features. A shrine to the Virgin Mary is observed in the background.

Right: Natural spring occurring within the limestone at St. Keeran's Well.

St. Keeran's Well



MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Bellewstown		
Other names used for site			
IGH THEME:	IGH 2 (Precambrian to Devonian Palaeontology)		
TOWNLAND(S)	Bellewstown		
NEAREST TOWN	Duleek		
SIX INCH MAP NUMBER	27		
NATIONAL GRID REFERENCE	307870 267130 = O07870 67130		
1:50,000 O.S. SHEET NUMBER	43	1/2 inch Sheet No.	13

Outline Site Description

Working quarry and natural exposures in agricultural fields with rock close to surface beneath soil.

Geological System/Age and Primary Rock Type

Ordovician volcanic and sedimentary rocks.

Main Geological or Geomorphological Interest

This site exhibits a few exposures but has significant rocks below the soil surface of the Bellewstown site. This geological terrane represents volcanic and sedimentary rocks that existed as a volcanic island in the middle of an ancient ocean called Iapetus during the Ordovician Period about 460 million years ago. Brachiopod fossils within the sedimentary rocks are similar to other island faunas – part of a so called ‘Celtic’ brachiopod province. There is also a younger, thin limestone deposit which may represent a very long time period, perhaps ten million years. Even younger shales include fossils showing plate tectonics had moved the island closer to adjacent continents. The biogeographical and stratigraphical information of these fossiliferous rocks is important in understanding how Ireland has moved throughout geological time.

Site Importance

The ongoing quarry extension provides a new opportunity for significant improvement in knowledge of the detailed geology and stratigraphy of the Bellewstown Inlier. The additional exposures may yield a clearer picture of the relationships of different geological formations, enabling a more accurate interpretation of events during Ireland’s geological past. This will be recommended as an NHA.

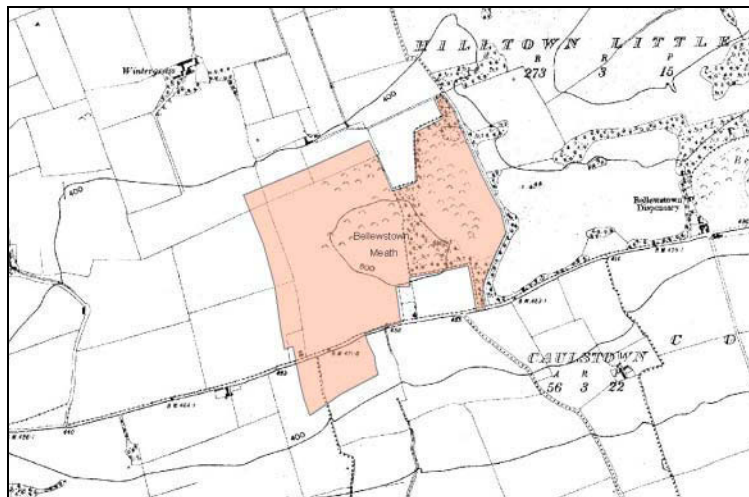
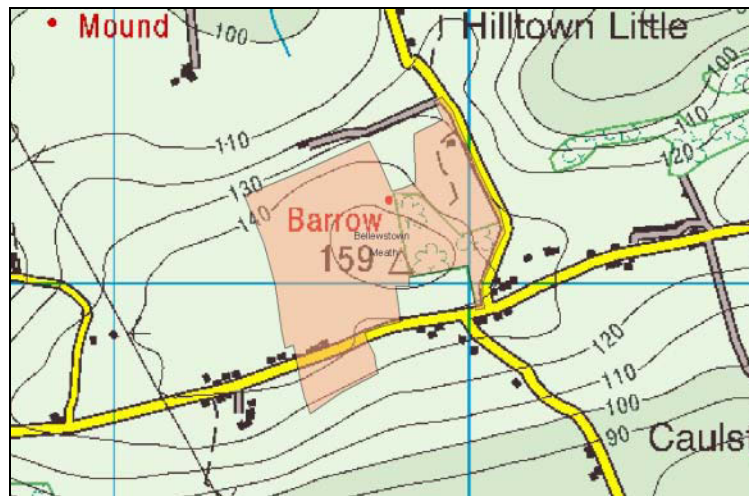
Management/promotion issues

The site is a Kilsaran Concrete working quarry, with part of it extending into some privately owned adjacent farmland. A formal proposal for access by a geological research team for fossil collecting and research has been given positive response by Kilsaran Concrete, and is anticipated to provide a model of best practice for industry operators of extraction sites of geological heritage importance. The model may also include the future provision of interpretation panels and viewing areas to further promote geological heritage to the public, particularly within the context of active quarrying.



Left: Exposures of Hilltown Formation yielding ‘Celtic’ brachiopod fauna, with planned future excavations (late 2008).
Right: Looking northwards across quarry exposures of the Bellewstown Inlier volcanic sequence (late 2008).

Bellewstown



MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Grangegeeth		
Other names used for site			
IGH THEME:	IGH 2 (Precambrian to Devonian Palaeontology)		
TOWNLAND(S)	Grangegeeth		
NEAREST TOWN	Slane		
SIX INCH MAP NUMBER	14		
NATIONAL GRID REFERENCE	295420 279350 = N 9542 7935		
1:50,000 O.S. SHEET NUMBER	43	1/2 inch Sheet No.	13

Outline Site Description

An overgrown depression which may have been quarried or may be a natural head of stream gully and waterfall.

Geological System/Age and Primary Rock Type

Ordovician fossiliferous sandstones.

Main Geological or Geomorphological Interest

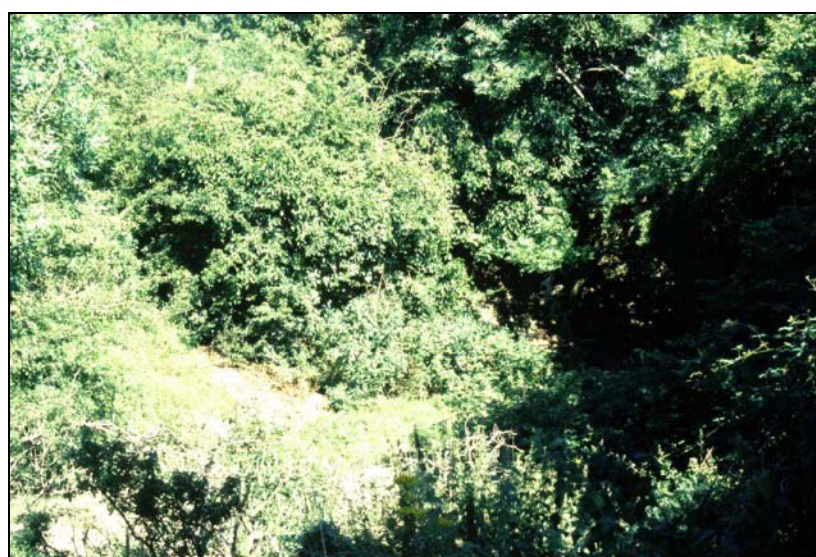
Small rock exposures in a stream gully, that may once have been quarried, have a rich assemblage of marine fossil brachiopods (shellfish) and trilobites (arthropods) and other invertebrates. These are of Ordovician age, and are a key piece of evidence in understanding the geological development of the rocks in the Grangegeeth area. The Grangegeeth inlier (older rocks entirely surrounded by younger rocks) is thought to be the remnants of a volcanic island formed in the Iapetus Ocean, which once separated the two halves of Ireland. The biogeographical affinities of the faunas at Grangegeeth match those of the Scoto-Appalachian (i.e. American) side of the ocean. They contrast significantly with faunas of the adjacent Bellewstown inlier, which have Anglo-Welsh provincial affinities.

Site Importance

The fossils found here are important and the site has therefore been proposed as an NHA, as well for County Geological Site status in this report.

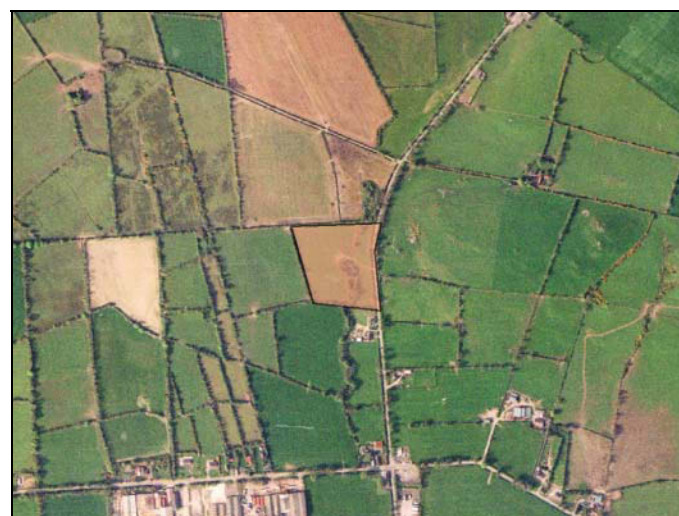
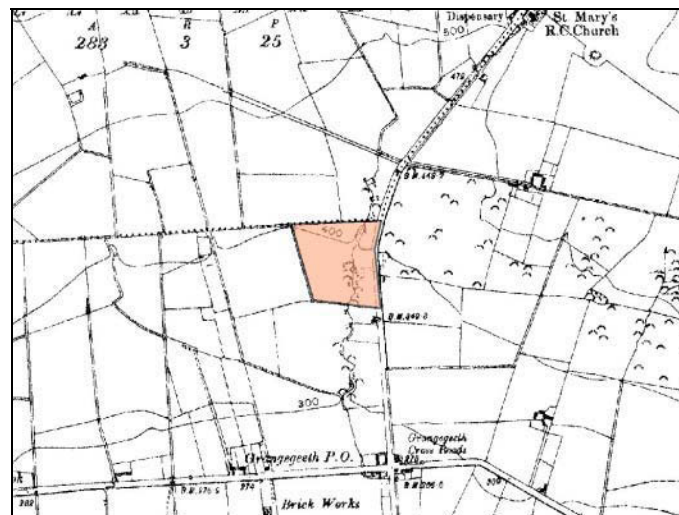
Management/promotion issues

This site is privately owned and is in agricultural usage. Any proposed changes to the site, including vegetation clearance or removal, should involve a palaeontologist (through the GSI).



A view from the west into the upper part of the old quarry. Brachiopod fossil moulds occur on bedding surfaces in the centre.

Grangegeeth



MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Barley Hill Quarry
Other names used for site	Ardagh Quarry
IGH THEME:	IGH 3, 8, 9 (Carboniferous to Pliocene Palaeontology, Lower Carboniferous, Upper Carboniferous)
TOWNLAND(S)	Ardagh
NEAREST TOWN	Kingscourt
SIX INCH MAP NUMBER	3
NATIONAL GRID REFERENCE	283500 295500 = N 835 955
1:50,000 O.S. SHEET NUMBER	35 1/2 inch Sheet No. 13

Outline Site Description

A working quarry.

Geological System/Age and Primary Rock Type

Lower to Upper Carboniferous limestone, locally fossiliferous.

Main Geological or Geomorphological Interest

This relatively large Roadstone quarry, situated just east of Kingscourt, shows good exposures of locally fossiliferous limestone (used for aggregates). The quarry contains a reef limestone mud-mound, which is home to a variety of fossil species, including examples of brachiopods, bivalves, gastropods, corals and algae, and others. Many of the faces within this quarry, some up to 50m high, are highly weathered, with only a few fresh faces exposed. Fossils are best viewed within these fresh faces.

Site Importance

The rare assemblages of some of the fossils within this quarry, including species of coral and algae are grounds for designation of this site as a NHA.

Management/promotion issues

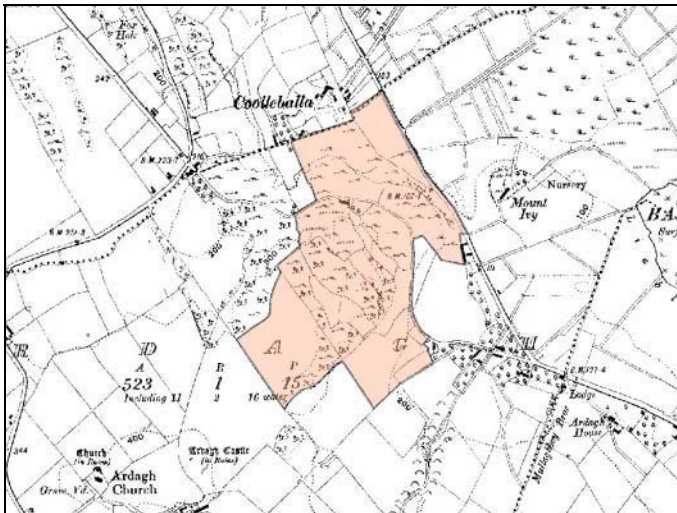
As a working quarry this is a potentially hazardous environment and would not be suitable for general promotion without appropriate access arrangements being made with Roadstone.



Left: Brachiopod fossil found within Barley Hill Quarry (many of the species observed were found within debris that had fallen away from the quarry faces.

Right: Quarrying for aggregate in operation at Barley Hill Quarry

Barley Hill Quarry



MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Cregg
Other names used for site	
IGH THEME:	IGH 3 (Carboniferous to Pliocene Palaeontology)
TOWNLAND(S)	Cregg
NEAREST TOWN	Nobber
SIX INCH MAP NUMBER	6
NATIONAL GRID REFERENCE	283000 289300 = N830 893
1:50,000 O.S. SHEET NUMBER	35 1/2 inch Sheet No. 13

Outline Site Description

Natural rock outcrops.

Geological System/Age and Primary Rock Type

Lower Carboniferous (Viséan) fossiliferous limestone of the Milverton Group.

Main Geological or Geomorphological Interest

This large mound of heavily fossilised limestone, found at Cregg, represents a time in geological history when the Irish landmass was submerged in relatively shallow, tropical waters. The animals that lived in this marine environment thrived and their numbers and diversity can be seen within rocks that were formed during this period.

Site Importance

This site has yielded a unique and scientifically important collection of Lower Carboniferous marine fossils ranging from microscopic algae to larger marine invertebrate animals like cephalopods. It is therefore recommended that this site should become a County Geological Site.

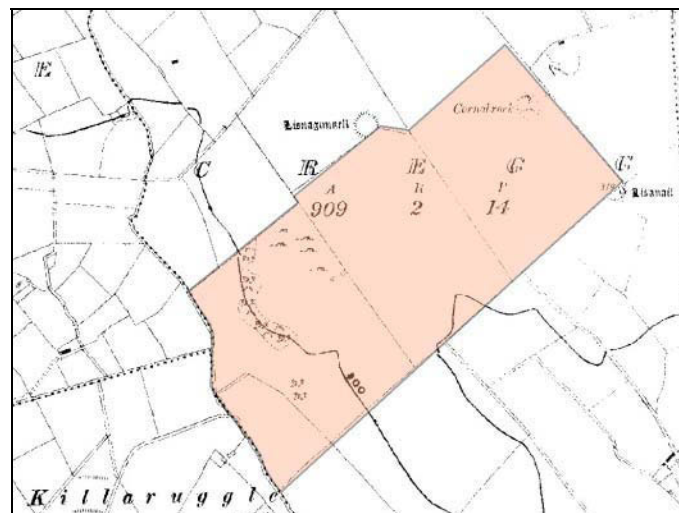
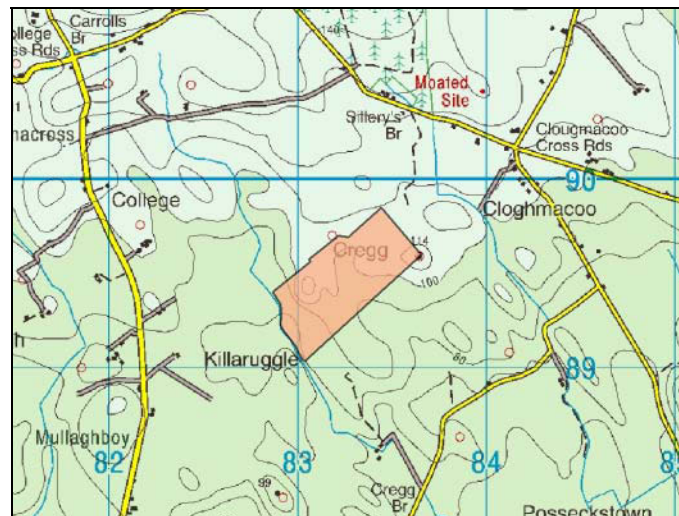
Management/promotion issues

The site at Cregg is used for cattle grazing and a number of young bulls were observed. Public access is therefore not suitable and this site is not recommended for public promotion even though the fossils here are easily observed. It is possible that this area may be utilised for academic research in the future, subject to landowners permission.



Top Left: General appearance of the weathered limestone outcrops at Cregg.
Top Right: Cephalopod fossil.
Bottom: Gastropod fossil.

Cregg



MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Poulmore Scarp
Other names used for site	South of Barley Hill House
IGH THEME:	IGH 3, 8 (Carboniferous to Pliocene Palaeontology, Lower Carboniferous)
TOWNLAND(S)	
NEAREST TOWN	Kingscourt
SIX INCH MAP NUMBER	2, 3
NATIONAL GRID REFERENCE	282450 295850 = N 8245 9585
1:50,000 O.S. SHEET NUMBER	35 1/2 inch Sheet No. 13

Outline Site Description

Swallow hole and cliff section, which may also be a disused quarry.

Geological System/Age and Primary Rock Type

Carboniferous limestone and sandstones.

Main Geological or Geomorphological Interest

Poulmore Scarp is an 11m section at the top of the Deer Park Formation in a swallow-hole just south of Barley Hill House. It exposes the Viséan-Namurian junction – that is what geologists classify as the boundary between Lower and Upper Carboniferous rocks. The section shows massive micaceous sandstones which overlie thickly bedded recrystallized limestones. The limestones have yielded abundant fossil corals (known as *Caninia cornucopiae*) and crinoid ossicles. Somerville and Somerville (1999) have indicated that the scarp has yielded an exceptionally high number of microfossils (of a type known as conodonts), as well as a unique occurrence of a fossil green algae.

Site Importance

The occurrence of prolific conodonts and other fauna across the boundary of Lower and Upper Carboniferous rocks means that this site is proposed for NHA status (under the IGH3 Carboniferous to Pliocene Palaeontology theme). It should also be listed as a County Geological Site in Meath.

Management/promotion issues

This site is on privately owned farmland and is under no obvious threat. The swallow hole should not be filled in or modified without geological advice, through the GSI. It is not suitable for general promotion with the public.



MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Laytown to Gormanston		
Other names used for site	Ben Head Moraine and Outwash Spread		
IGH THEME:	IGH 7 (Quaternary)		
TOWNLAND(S)	Numerous, including Gormanston, Julianstown		
NEAREST TOWN	Balbriggan		
SIX INCH MAP NUMBER	28		
NATIONAL GRID REFERENCE	316500 269300 = O165 693		
1:50,000 O.S. SHEET NUMBER	43	1/2 inch Sheet No.	13

Outline Site Description

Coastal plain, including sea cliffs.

Geological System/Age and Primary Rock Type

Quaternary sediments composed mainly of sand and gravel.

Main Geological or Geomorphological Interest

The Laytown to Gormanstown sandur is a flat to gently undulating glacial outwash plain, comprising glaciofluvial and glaciolacustrine sands and gravels deposited by outwash/meltwater flowing from the leading edge of a glacier. Approximately 5 kilometres east-west by 7 kilometres north-south, a sandur is commonly wider than it is long, as seen here. Sandpits to the south as well as numerous exposed cliff faces along the beach show good cross-sectional views of the internal structures within this sandur and a lower sequence of two separate facies of Irish Sea Tills.

Site Importance

Glacial outwash plains are normally “hummocky”, meaning the terrain is bumpy. This example of an outwash plain is very flat, which makes it quite unusual and is therefore recommended as a County Geological Site.

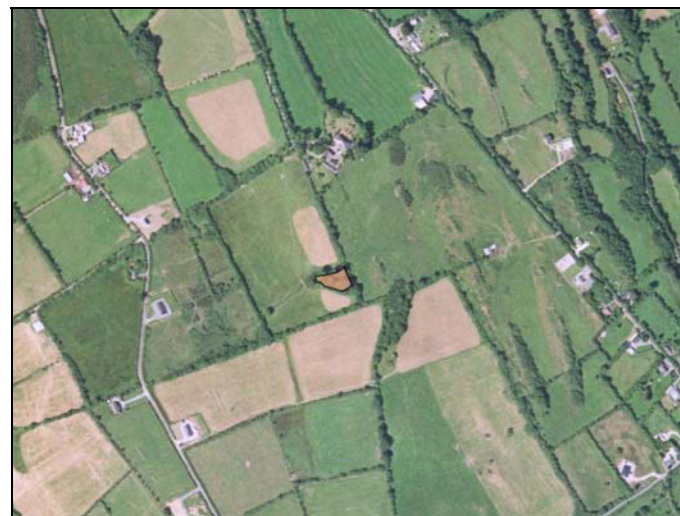
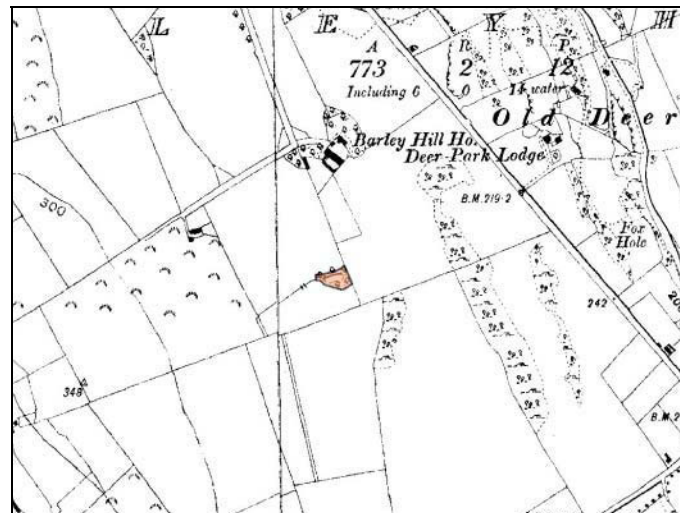
Management/promotion issues

Nearly all of the features between Laytown and Gormanston can be viewed from public roads or from the beach. The northern part of this locality is owned by the Department of Defence and is used as a military aerodrome and rifle range as it is very flat. Much of the rest of the site is agricultural with the exception of an old sand and gravel pit to the south, which is used as an off road motor track. Due to the nature of the landuse (especially military use) general promotion is not suitable without appropriate arrangements being made with the Camp Commandant and various landowners. Quarrying is a major threat to this feature and should not be permitted on the main gravel body.



Left: Abnormally flat terrain – the expansive outwash plain of sandur gravels at Gormanston.
Right: Coastal cliff sections allowing us to see the internal structure and composition of a sandur at Benhead.

Poulmore Scarp



Laytown to Gormanston





