

# ASSI

# CARNEAL

## A SPECIAL PLACE...



*'Carneal ASSI'*

SITES OF BIOLOGICAL AND EARTH SCIENCE IMPORTANCE HAVE BEEN SURVEYED BY NORTHERN IRELAND ENVIRONMENT AGENCY TO ASSESS THEIR SCIENTIFIC INTEREST. THE BEST SITES ARE NOW BEING DECLARED AS AREAS OF SPECIAL SCIENTIFIC INTEREST (ASSIs). IN DOING SO WE AIM TO SAFEGUARD THESE IMPORTANT SITES FOR THE BENEFIT OF PRESENT AND FUTURE GENERATIONS.

The Carneal area is a special place because of its earth science interest. The area provides access to an unusual rock series related to a volcanic intrusion within the areas chalk rocks.

Some 60 million years ago, when much of north-east Ireland was experiencing extensive eruptions of basalt lavas, a vertical plug of dolerite was injected into the chalk and overlying basalt.

Volcanic plugs were the main feeder tubes to surface volcanoes now blocked with solidified magma. The passage of molten rock, at temperatures around 1100-1200°C, heats the wall rocks to very high temperatures and changes them by the process of thermal metamorphism. The volcanic neck at Carneal passes through Ulster White Limestone and, when in the molten state, the ascending lava reacted chemically and physically with the limestone to create an uncommon series of minerals called calc-silicates that can now be seen here.

The chalk has been metamorphosed by heat to form marble. The margins of the

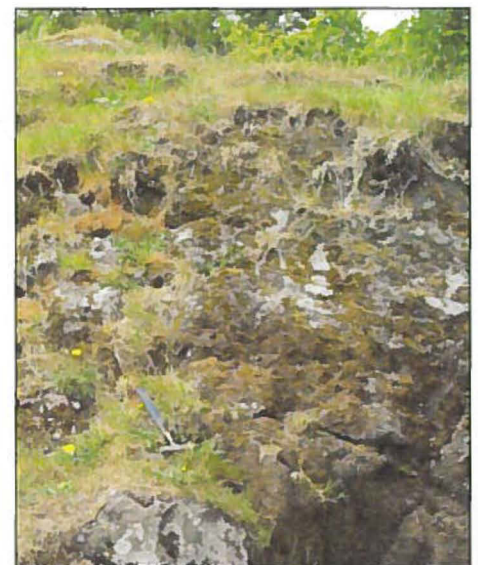
chalk were altered through exchange of minerals between the chalk and molten dolerite while the dolerite was altered through mixing with the chalk.

Carneal is one of a small number of important mineralogical sites where evidence of these processes can be found. These sites have shown how, on a small-scale, unusual minerals can be generated by mixing and interaction between different rock types.

Correct management is essential for special places like Carneal. For example sections of the former quarry and natural outcrop should be kept clear of vegetation to allow the rocks and minerals to be accessed. Continued sensitive management will ensure the survival of the site's important geology. Northern Ireland Environment Agency is keen to work closely with landowners to maintain and enhance Carneal ASSI.



*'Altered chalk'*



*'Altered dolerite'*

**DEPARTMENT OF THE ENVIRONMENT****DECLARATION OF AREA OF SPECIAL SCIENTIFIC INTEREST AT  
CARNEAL, COUNTYANTRIM. ARTICLE 28 OF THE ENVIRONMENT  
(NORTHERN IRELAND) ORDER 2002.**

The Department of the Environment (the Department), having consulted the Council for Nature Conservation and the Countryside and being satisfied that the area described and delineated on the attached map (the area) is of special scientific interest by reason of its geological features and accordingly needs to be specially protected, hereby declares the area to be an area of special scientific interest to be known as the 'Carneal Area of Special Scientific Interest.'

Carneal is of importance because of its geology. Specifically the site contains rocks demonstrating the interaction between several rock types. An unusual range of minerals were formed by the intrusion of a Palaeogene age dolerite plug into the local Ulster White Limestone. There are only some 25 known sites worldwide where geochemical interactions of the type seen at Carneal occur.

The central geological feature at this site is known as the Carneal Plug. The dolerite plug intrudes the Lower Basalt Formation but has also dragged up a block of the older Cretaceous limestone from depth. The margins of the limestone were altered to calc-silicate rock containing spurrite and other minerals, while the adjoining dolerite was altered by the assimilation of limestone resulting in formation of coarse black pyroxenite and mixed pyroxene-larnite rocks.

A range of unusual minerals have been recorded from Carneal including calcite, larnite, spurrite, bredigite, melilite, spinel, titanite, wollastonite and the brown gel-like alteration product plombierite. Tobermorite is also reported from the locality.

Carneal is one of a small number of important mineralogical sites featuring calc-silicate mineral assemblages, which were first described in the 1930s, most notably from nearby Scawt Hill. Such sites are of importance as they demonstrate how, at least on a small-scale, geologically distinct end products can be generated by assimilation of and interaction between different rock types.



## SCHEDULE

**The following operations and activities appear to the Department to be likely to damage the geological interest of the area:**

1. Any activity or operation which involves the damage or disturbance by any means of the surface and subsurface of the land including reclamation and extraction of minerals, including rock, sand and gravel other than for normal agricultural purposes.
2. The storage or dumping, spreading or discharge of any material other than for normal agricultural purposes.
3. Changes in tree or woodland management, including afforestation, planting, clearing, selective felling and coppicing.
4. Construction, removal or disturbance of any permanent or temporary structure including building, engineering or other operations.
5. Alteration of natural or man-made features, the clearance of boulders or stones and grading of rock faces.
6. The following activities undertaken in a manner likely to damage the interest of the area:
  - i) educational activities;
  - ii) research activities.
7. Sampling of rocks, minerals, fossils or any other material forming a part of the site, undertaken in a manner likely to damage the scientific interest.
8. Use of vehicles or craft likely to damage the interest of the area.

### FOOTNOTES

(a) Please note that consent by the Department to any of the operations or activities listed in the Schedule does not constitute planning permission. Where required, planning permission must be applied for in the usual manner to the Department under Part IV of the Planning (Northern Ireland) Order 1991. Operations or activities covered by planning permission are not normally covered in the list of Notifiable Operations.

(b) Also note that many of the operations and activities listed in the Schedule are capable of being carried out either on a large scale or in a very small way. While it is impossible to define exactly what is "large" and what is "small", the Department would intend to approach each case in a common sense and practical way. It is very unlikely that small scale operations would give rise for concern and if this was the case the Department would normally give consent, particularly if there is a long history of the operation being undertaken in that precise location.

## **CARNEAL ASSI**

### **Views About Management**

#### **The Environment (Northern Ireland) Order 2002 Article 28(2)**

#### **A statement of Northern Ireland Environment Agency's views about the management of Carneal Area of Special Scientific Interest ("the ASSI")**

This statement represents the views of Northern Ireland Environment Agency about the management of the ASSI for nature conservation. This statement sets out, in principle, our views on how the area's special conservation interest can be conserved and enhanced. Northern Ireland Environment Agency has a duty to notify the owners and occupiers of the ASSI of its views about the management of the land.

Not all of the management principles will be equally appropriate to all parts of the ASSI and there may be other management activities, additional to our current views, which can be beneficial to the conservation and enhancement of the features of interest. It is also very important to recognise that management may need to change with time.

The management views set out below do not constitute consent for any operation or activity. The written consent of Northern Ireland Environment Agency is still required before carrying out any operation or activity likely to damage the features of special interest (see the Schedule for a list of these operations and activities). Northern Ireland Environment Agency welcomes consultation with owners, occupiers and users of the ASSI to ensure that the management of this area maintains and enhances the features of interest, and to ensure that all necessary prior consents are obtained.

### **MANAGEMENT PRINCIPLES**

The earth science interest at Carneal occurs as rock exposures in the faces of the quarry. Northern Ireland Environment Agency would encourage the maintenance of the ASSI and its earth science interest.

#### **The geological series**

Provided no damaging activities, as set out in the Schedule, are undertaken without consent, the needs of owners, occupiers and the Department can be met. Earth science features such as those at Carneal may require occasional management intervention in order to maintain access to, and exposure of, the geology. This could include selective removal of vegetation or any major build up of loose rock.

Specific objectives include:

Maintain the geological series in an undamaged state.

Maintain access to the geological series.

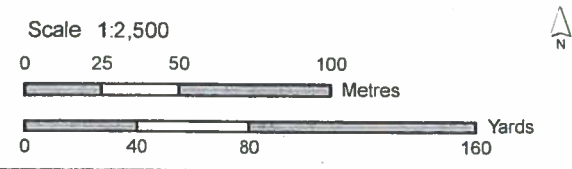
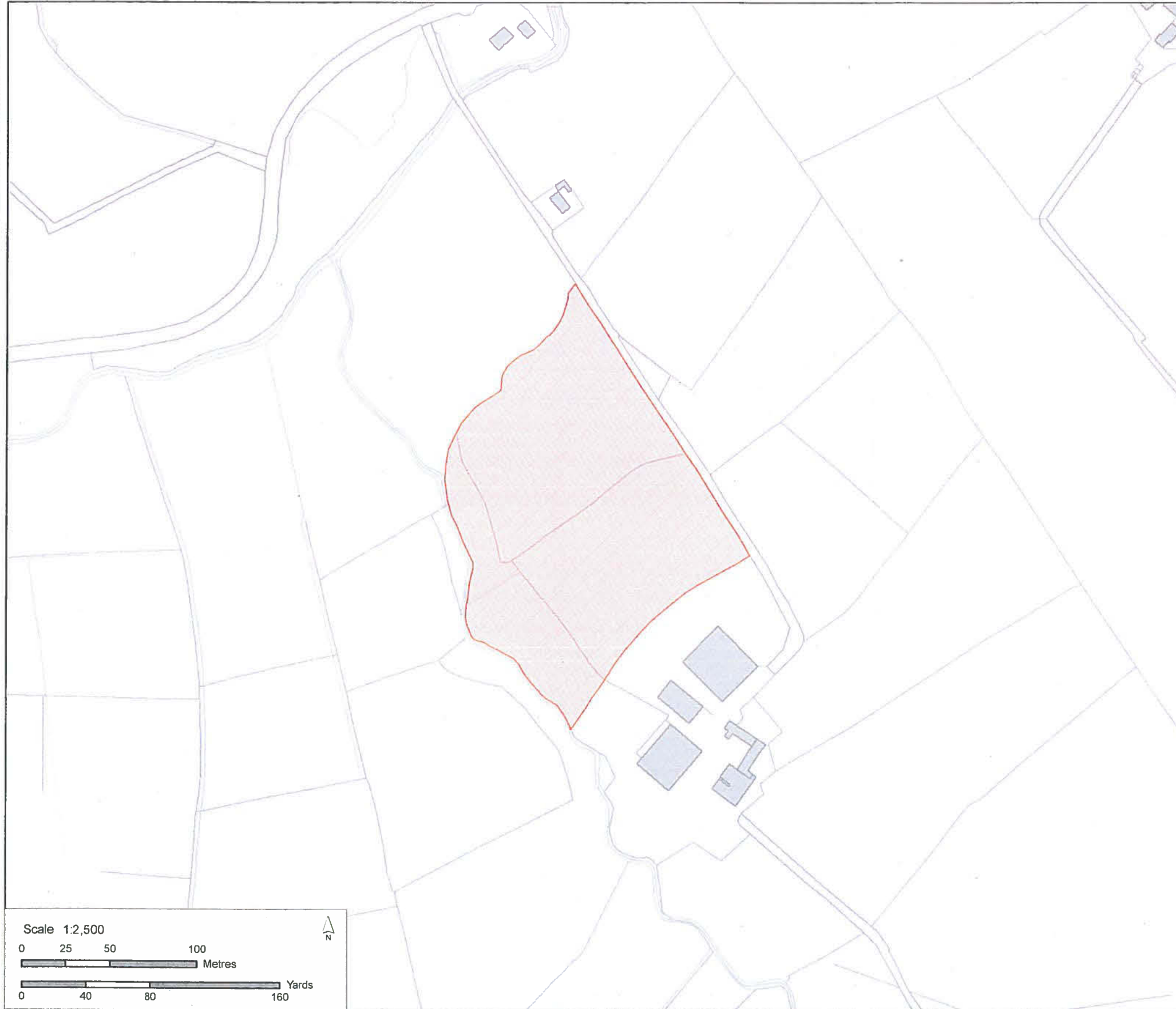
The Official Seal of the  
Department of the Environment  
hereunto affixed is authenticated  
by

*G. R. Seymour.*  
G R SEYMOUR

Senior Officer of the  
Department of the Environment

Dated the 25<sup>th</sup> of January 2012

# CARNEAL ASSI



## CARNEAL AREA OF SPECIAL SCIENTIFIC INTEREST

Map referred to in the Declaration dated: 25<sup>th</sup> January 2012

SITE BOUNDARY: The Area of Special Scientific Interest (ASSI) includes all the lands highlighted within the solid coloured lines.

AREA OF SITE: 2.35 hectares

OS MAPS 1:50,000: Sheet Nos. 9  
1:10,000: Sheet No. 83

IRISH GRID REFERENCE: J390959

COUNCIL AREA: LARNE BOROUGH COUNCIL

COUNTY: ANTRIM

*G.R. Seymour*  
G R SEYMOUR  
SENIOR OFFICER OF THE  
DEPARTMENT OF THE ENVIRONMENT

