

CASHEL ROCK

A SPECIAL PLACE...



Cashel Rock ASSI

Cashel Rock is a special place because of its earth science interest. The area provides excellent access to rock exposures that show a range of important geological features.

The rocks here date from the Ordovician period and are some 450 million years old. They contain clues about the events that were happening at this time.

Two main igneous rock types are present, rhyolite and tonalite, which originated as molten magma beneath the Earth's surface. Since then, these rocks have been changed during



Tonalite exposures

the closing of an ancient ocean. The changes formed structures in the rocks that help to show that the ocean was closing to the north west. Most of Cashel Rock exposes tonalite, usually a grey-green colour, but which can have a different appearance in different parts of the site. Rhyolite is found near the summit of Cashel Rock itself and it is a pale brown colour so is easy to spot from the tonalite. Rhyolite is associated with volcanoes. Rhyolite is also exposed in the



Rhyolite

south west part of the ASSI, where it contains minerals not found elsewhere in the site.

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.



Minerals in the rhyolite

The minerals got into the rock via seawater producing a 'stockwork' structure, which has a net like pattern in some places. The rhyolite at this location also shows evidence of having been crushed.

Correct management is essential for special places like Cashel Rock. For example, excessive growth of vegetation may over time obscure the geological features. Continued sensitive management will ensure the survival of the area's geology. Northern Ireland Environment Agency is keen to work closely with landowners to maintain and enhance Cashel Rock ASSI.



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DEPARTMENT OF THE ENVIRONMENT

**DECLARATION OF AREA OF SPECIAL SCIENTIFIC INTEREST AT
CASHEL ROCK, COUNTY TYRONE. 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 'Cashel Rock Area of Special Scientific Interest'.

Cashel Rock has been declared an ASSI because of its important geology. This occurs as outcrops of tonalite and rhyolite, two types of igneous rock. The site also contains volcanogenic stock work mineralisation. The rocks are of Ordovician age, some 450 million years old and are part of the Tyrone Volcanic Group. The Tyrone Volcanic Group is comprised of rocks that record a phase during the closing of the Iapetus Ocean and the available evidence suggests they formed in an island arc setting.

The main rock type exposed at Cashel Rock is the Laght Hill Tonalite. It is a coarse grained, grey-green rock, showing a high degree of variability across the site, due to different grades of deformation. The main minerals present are quartz, plagioclase feldspar (weathered to mica) and green hornblende crystals. In the least deformed outcrops the tonalite exhibits a normal igneous texture, but the most deformed areas show the constituent minerals have been stretched and broken down. A schistose fabric, giving a 'wavy' appearance, is developed in the most deformed rock. This fabric strikes north east-south west across the site.

The second rock type exposed at the site is a pale pink-buff coloured, fine grained felsite of rhyolite-rhyodacite composition, found close to the summit of Cashel Rock. The rhyolite shows flow banding oriented to the north east-south west. Some deformation is also observed in this rock, with localised fragmented areas forming a silica cemented breccia. This rhyolite is part of a series of outcrops (~7km long) extending between Slievemenagh, northeast of Cashel Hill and Brackagh to the southwest. These rhyolites are very similar to many of the acid igneous clasts which form a major component of the coarse volcanic breccias in the Tyrone Volcanic Group.

Contact between the tonalite and the felsite is only exposed in a small area on the south western edge of the main crag. The rhyolite can be seen cutting across the tonalite and some partially consumed xenoliths of tonalite are found in the rhyolite. This shows the rhyolite intruded the tonalite and so post dates it i.e. it is the younger rock.

Cashel Rock also includes a locality that exhibits volcanogenic stock work mineralization. The minerals are found in outcrop of silica-veined rhyolite and silicified, brecciated rhyolite. The mineral assemblage comprises sulphides,

principally pyrite, chalcopyrite, covellite, galena and iron-rich sphalerite.

The igneous rocks and volcanogenic minerals found at Cashel formed in an island arc setting during the Ordovician as the Iapetus Ocean was closing. This arc formed as ancient ocean crust was being subducted in a north westerly direction under the ancient continent of Laurentia. The available evidence suggests the tonalite and rhyolite of Cashel Rock formed from the fractional crystallization of an igneous body of basic composition. The wider outcrop pattern of the Laght Hill-Cashel Rock-Slievemenagh Tonalite body indicates a lopolith type intrusion comprising three sill-like (horizontal) intrusions linked at depth to a common feeder. The fact that contact relationships indicate rhyolite intrudes and incorporates xenoliths of tonalite is an indication that tonalite emplacement was more or less contemporaneous with formation of the Tyrone Volcanic Group. The results of an isotopic analysis into the sulphide minerals show that the sulphur was produced by the reduction of sulphates in the Ordovician sea water.

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, other than for normal agricultural practices.
2. Extraction of minerals, including rock, sand, gravel and peat
3. The storage or dumping, spreading or discharge of any material other than for normal agricultural practices.
4. Burning.
5. Changes in tree or woodland management, including afforestation or planting.
6. Construction, removal or disturbance of any permanent or temporary structure including building, engineering or other operations.
7. Alteration of natural or man-made features, the clearance of boulders or stones and grading of rock faces.
8. The following activities undertaken in a manner likely to damage the interest of the area:
 - i) educational activities;
 - ii) research activities;
 - iii) recreational activities.
9. 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.
10. 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.

CASHEL ROCK

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 Cashel Rock 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 Cashel Rock occurs as natural outcrop of rock exposures and loose block material. 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 Cashel Rock may require occasional management intervention in order to maintain access to, and exposure of, the geology. This could include selective removal of vegetation.

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

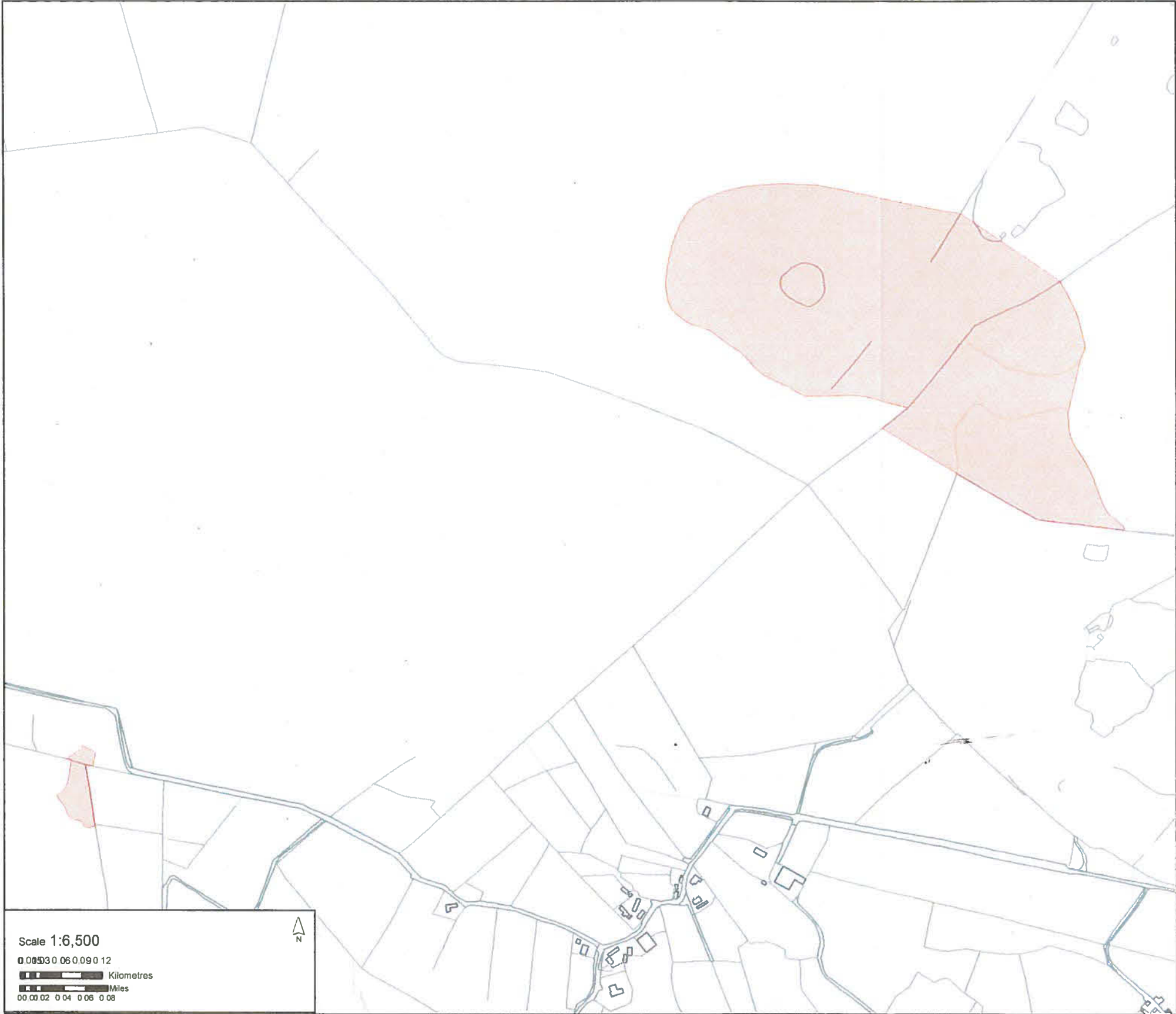
G.R. Seymour.

G R SEYMOUR

Senior Officer of the
Department of the Environment

Dated the 1st of FEBRUARY 2010

CASHEL ROCK ASSI



CASHEL ROCK AREA OF SPECIAL SCIENTIFIC INTEREST

Map referred to in the Declaration dated: **1st FEBRUARY 2010**

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

AREA OF SITE: 19.07 hectares

OS MAPS 1:50,000: Sheet No. 13
1:10,000: Sheet Nos. 106, 122

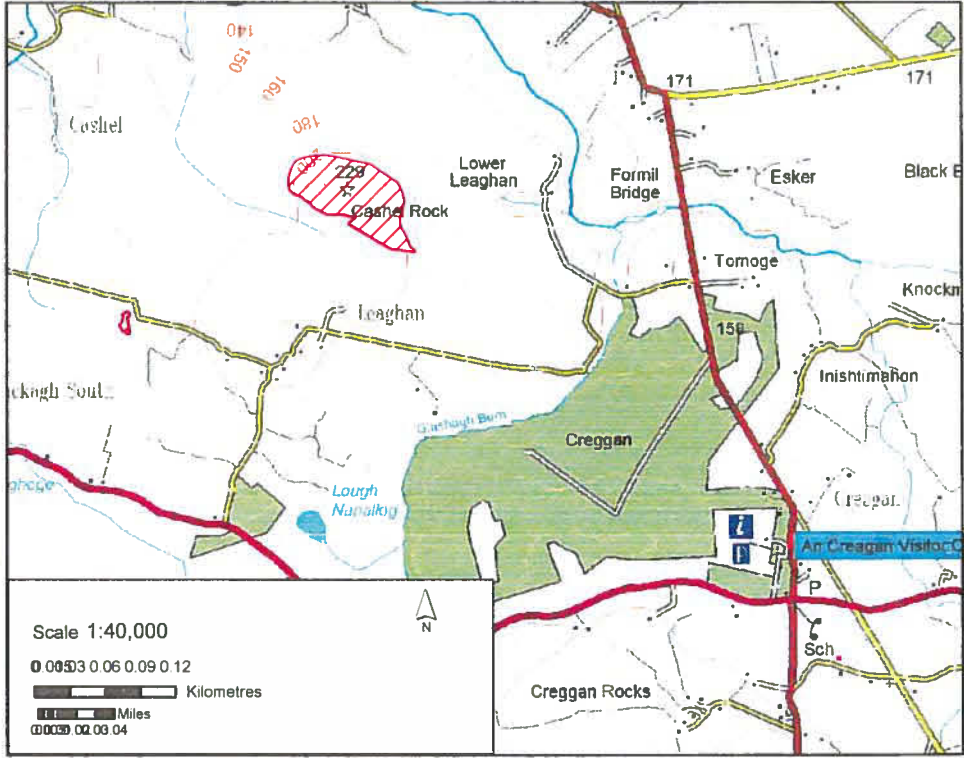
IRISH GRID REFERENCES: H601 807, H589 801

COUNCIL AREA: OMAGH DISTRICT COUNCIL

COUNTY: TYRONE

G. R. Seymour

G R SEYMOUR
SENIOR OFFICER OF THE
DEPARTMENT OF THE ENVIRONMENT



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