



DEPARTMENT OF THE ENVIRONMENT

DECLARATION OF AREA OF SPECIAL SCIENTIFIC INTEREST AT BALLYPALADY, COUNTY ANTRIM. 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 delineated and described on the attached map (the area) is of special scientific interest by reason of the 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 'Ballypalady Area of Special Scientific Interest'.

Ballypalady is the best known, best documented and botanically the richest of the Tertiary Interbasaltic fossil plant localities in Ireland. As all the other sites that historically yielded fossil material were associated with underground mine workings, Ballypalady is also the site most suitable for future studies.

The time interval between eruption of the Tertiary Lower Basalts and Upper Basalts is referred to as the Interbasaltic Member. These events date from the Palaeocene epoch, some 60 million years ago. During this period, weathering of the Lower Basalts predominated, including transportation of plant material. The Ballypalady Plant Bed was deposited by flood-borne sediments, which were derived from the weathering and erosion of the adjacent Lower Basalts. Repeated minor flood events buried a rich variety of plant debris that subsequently decayed to leave well-preserved moulds within the iron-rich clastics.

The plant bed has a silty to rather gritty texture, the sand-sized clasts being of a creamy, brick-red or grey colour. Bedding plane spacing in this material is typically between 5 and 20 mm. The plant material occurs largely as impressions, with traces of carbonaceous material present in the finer sediment. Cavities left by the decay of woody plant fragments can be common in the coarser units.

The flora at Ballypalady is abundant and moderately diverse, including conifers, angiosperms (flowering plants) and pteridophytes (ferns), with both fruiting structures and vegetative material present for some. Several new taxa were described from the site including *Pinus plutonis*, *Pinus bailyi*, *Tsuga heerii* and *Taxus swanstoni*. The angiosperms are much more poorly documented than the gymnosperms, although it is evident from the range of leaf morphologies and venations present that several distinct species are included. The site has also yielded contemporary pollen, and includes pollen from species of Alder *Alnus spp.* Yew Taxodiaceae and also types similar to

modern *Pinus*, *Picea* or *Podocarpus* together with pollen of *Sciadopitys*-type and of the '*atumescens*'-group.

The railway cutting exposures are of basalt but include a low mine entrance which shows an ironstone passing up into a coarsely laminated unit immediately beneath the overlying Upper Basalt. There is also a clear exposure of a coarsely and irregularly laminated rock containing dark lenses of shale-like material interbedded with many pale slivers of rhyolitic and glassy material. The whole unit has the appearance of an ignimbrite and dips gently eastwards towards the mine.

Palynological and macrofloral evidence for the age of the Ballypalady plant bed is consistent with the Palaeocene age of basalt emplacement as deduced from radiometric dating. The floristic assemblage has been assigned to the Arcto-Tertiary flora of warm-temperate conditions.

The Ballypalady Plant Beds, together with a number of other less diverse sites are of considerable importance, both from a palaeobotanical view and for gaining an understanding of regional palaeoenvironments during this time interval. Such plant beds can also be important in correlation of Tertiary stratigraphies between Northern Ireland and elsewhere.

SCHEDULE

The following operations and activities appear to the Department to be likely to damage the geological features 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, gravel and peat.
2. The storage or dumping, spreading or discharge of any material.
3. Construction, removal or disturbance of any permanent or temporary structure including building, engineering or other operations.
4. Alteration of natural or man-made features, the clearance of boulders or stones and grading of rock faces.
5. Operations or activities which would affect rivers or streams, e.g.
 - i) change in the methods or frequency of routine maintenance;
 - ii) modification to the structure of any watercourse.
6. The following activities undertaken in a manner likely to damage the interest of the area:
 - i) educational activities;
 - ii) research activities

- iii) recreational 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 geological features 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.
- (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.