

MONAGHAN DISTRICT

Background information

Mine District: Monaghan

Mine Names: Clontibret, Coolartragh
Hope, Lemgare, Tassan

Elements of interest:
Pb, Sb



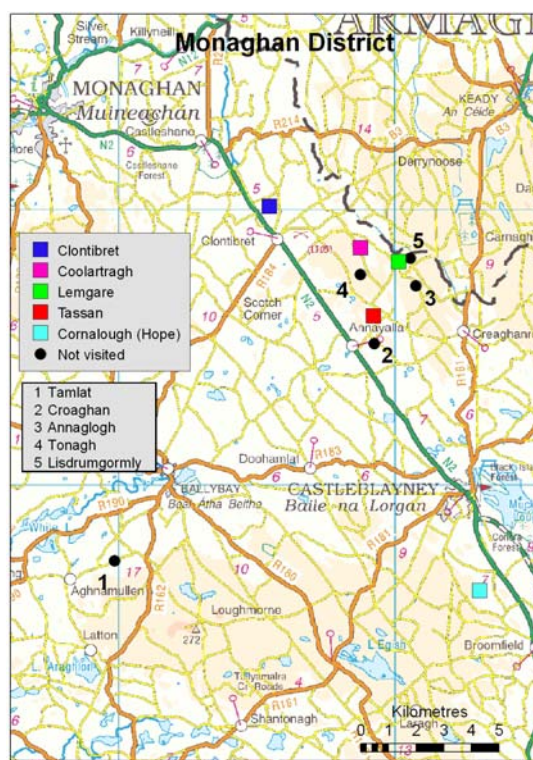
County:
Monaghan

Townland:
Various

Grid Reference:
E279000, N326000

Introduction

The Monaghan District comprises a number of small metallic mineral deposits located in the Monaghan – Castleblayney area of Co. Monaghan (map, right). Most are lead deposits though one, near Clontibret, is unique in Ireland in having produced mainly antimony. Most were short-lived operations, exploited mainly in the 19th century, while others amounted to little more than prospects abandoned after limited exploration. Morris (1984) produced the first comprehensive review of the mines of the district, including site descriptions. The latter have been used as a basis for selecting sites for work under the HMS-IRC project. Only those sites with potentially significant remaining mine waste or mine structures were considered, namely Clontibret, Coolartragh, Hope Mine, Lemgare and Tassan (map, right). Of these, only three, Clontibret, Hope Mine and Tassan, were the subjects of further geochemical study for inclusion within the HMS-IRC Site Scoring system. The site at Coolartragh has largely disappeared in recent years after expansion of a working quarry. The Lemgare site includes the traces of adits and the heavily overgrown ruins of some buildings but no mine waste of significance.



The Monaghan District is within the drumlin belt that stretches west through counties Cavan and Leitrim. The undulating landscape comprises low rounded hills interspersed with poorly drained low-lying areas generally occupied by bogs, marshes or small lakes. Most sites are within a few kilometres of the N2, the main Dublin – Monaghan road. There are numerous small villages and new developments

of one-off housing in the area as well as older single dwellings and farm houses scattered among the hills.

Geology and Mineralization

The metallic mineral deposits of the Monaghan District lie within the Longford-Down Inlier, an area of metamorphosed Lower Palaeozoic strata that underlies much of northeast Ireland and extends into the Southern Uplands of Scotland (Morris 1984). The Ordovician and Silurian rocks of the Inlier (Fig. 1) consist mainly of greywackes (impure sandstones and siltstones) with lesser amounts of shale, chert and volcanic rocks. Caledonian and later deformation has given rise to extensive faulting. The Caledonian orogeny also saw the emplacement of both mafic and felsic igneous intrusions. Lower Carboniferous clastic sediments unconformably overlie the Lower Palaeozoic rocks. Later Tertiary igneous intrusions include abundant dolerite dykes and sills (Fig. 1) as well as the larger igneous complexes of the Mourne Mountains and Slieve Gullion in county Down and Carlingford in county Louth.

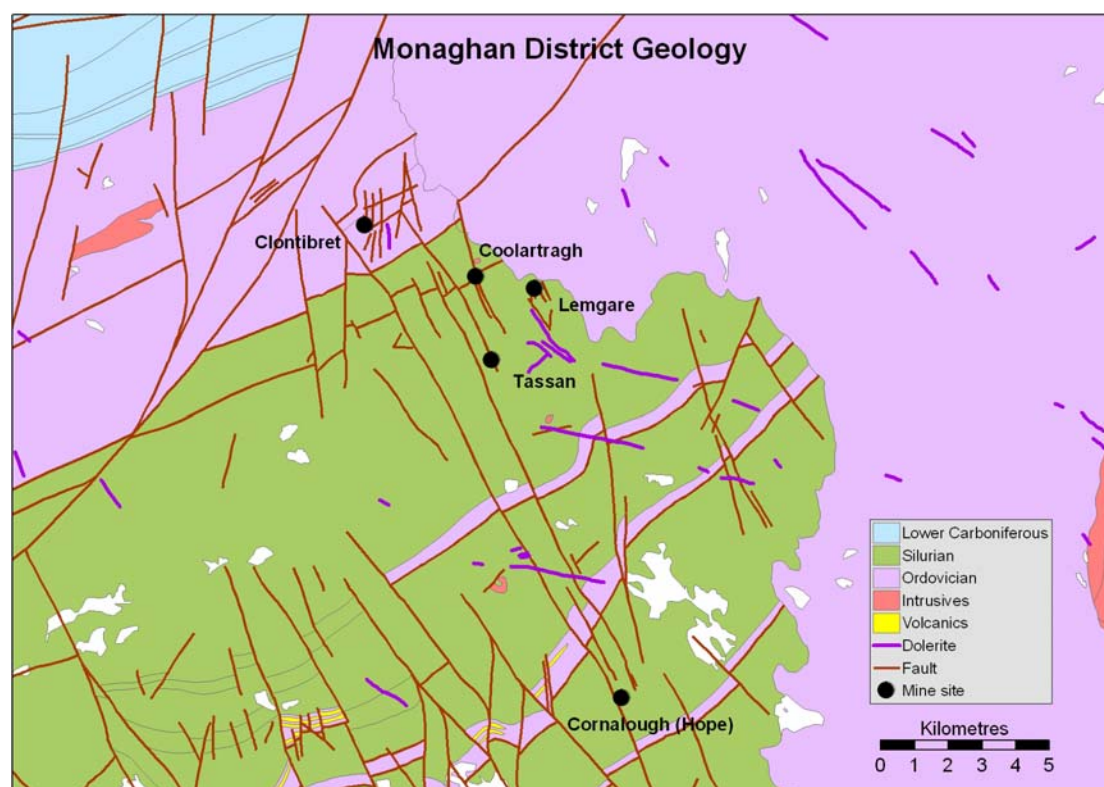


Fig. 1 Simplified geology of the Monaghan District

The deposits in the Monaghan District are epigenetic vein deposits, typically containing lead and zinc but also including antimony-arsenic-gold deposits (Morris 1984). Galena (PbS) is the dominant sulphide in lead vein deposits, accompanied by sphalerite (ZnS), barite ($BaSO_4$) and chalcopyrite ($CuFeS_2$). The host vein is generally composed of ferroan carbonate. The antimony-gold deposits consist of veins with isolated pods of stibnite (Sb_2S_3) in altered andesitic greywacke that contains disseminated pyrite (FeS_2) and gold-bearing arsenopyrite ($FeAsS_2$) (Morris 1984). Most veins dip steeply and trend northnorthwest. They are part of a fracture system that is concordant with the late-stage regional faulting (Fig. 1).

Mining History and Production

The mining history and production for each site is reviewed in the individual site reports. The earliest lead mining took place in the district in the 18th century and was often associated with the extraction of potter's clay, implying the use of lead in pottery glazes (Morris 1984). Antimony was apparently discovered at Clontibret in 1774 and exploited by the Earl of Middleton and, subsequently, by the Mining Company of Ireland in 1826. The 1850s and 1860s saw a significant expansion of lead mining but production was generally short-lived (Morris 1984). By the end of the century there were no operating mines in the district.

In common with other abandoned mines in the country, some of the Monaghan mines underwent reappraisal during both World Wars but none were returned to production. The Mining Corporation of Ireland reopened Clontibret in 1956 and established the occurrence of gold in the mineralization (Morris 1984) but it does not appear to have mined any ore. Recent exploration has focused on the potential of the area as a host for a high-tonnage, low-grade gold deposit. The base metal deposits in the district have been largely ignored.

HMS-IRC Site Score

The Monaghan mines are considered to comprise a mining district, based on their shared origin and host-rock geology. However, the three sites examined in detail - Clontibret, Hope Mine and Tassan – are not located close to each other and do not have any shared potential impact on specific receptors. Thus for the purposes of the HMS-IRC project they can be treated as individual mine sites. Therefore, the HMS-IRC Site Scores for each of them are described in the individual site reports.

Nevertheless, it is interesting to compare the HMS-IRC Site Scores of the three sites since they are part of a mining district. The total score for the district is 69, with Tassan contributing 44 (62.3%), Clontibret 12 (17.4%) and Hope Mine 13 (20.3%). Tassan is by far the most significant of the three sites but its solid waste contributes almost the same score (17) as that of Hope Mine. In both cases, Pb is the main contributor to the solid waste score but it is not present in high concentrations and the waste heaps are not large. Tassan has a much higher total score than Hope Mine because of contamination of stream sediments downstream of the mine. At Clontibret, contaminated stream sediments account entirely for the site score, in the absence of any solid waste or mine water discharges. Overall, solid waste accounts for 45% of the total score for the Monaghan District, stream sediments 55%.

The relative importance of stream sediments in the score for the Monaghan District is unusual in the context of the HMS-IRC Site Scores for the country as a whole. It is more a reflection of the lack of large volumes of solid waste on the mine sites rather than major contamination of stream sediments in the district. When the scores are considered in terms of pathways and receptors, the high total score for stream sediments makes the Direct Contact (livestock) pathway the most important single contributor (54.7%) to the total score (Fig. 2). Only the groundwater pathway (41.1%) makes a comparable contribution. The relative unimportance of the surface water pathway reflects the fact that where solid waste is present on sites it is not close to surface watercourses. A river runs through the middle of the Clontibret site

but no solid waste was identified there. The presence of even a small solid waste heap with a few thousand mg/kg Pb at Clontibret would significantly increase the surface water pathway contribution.

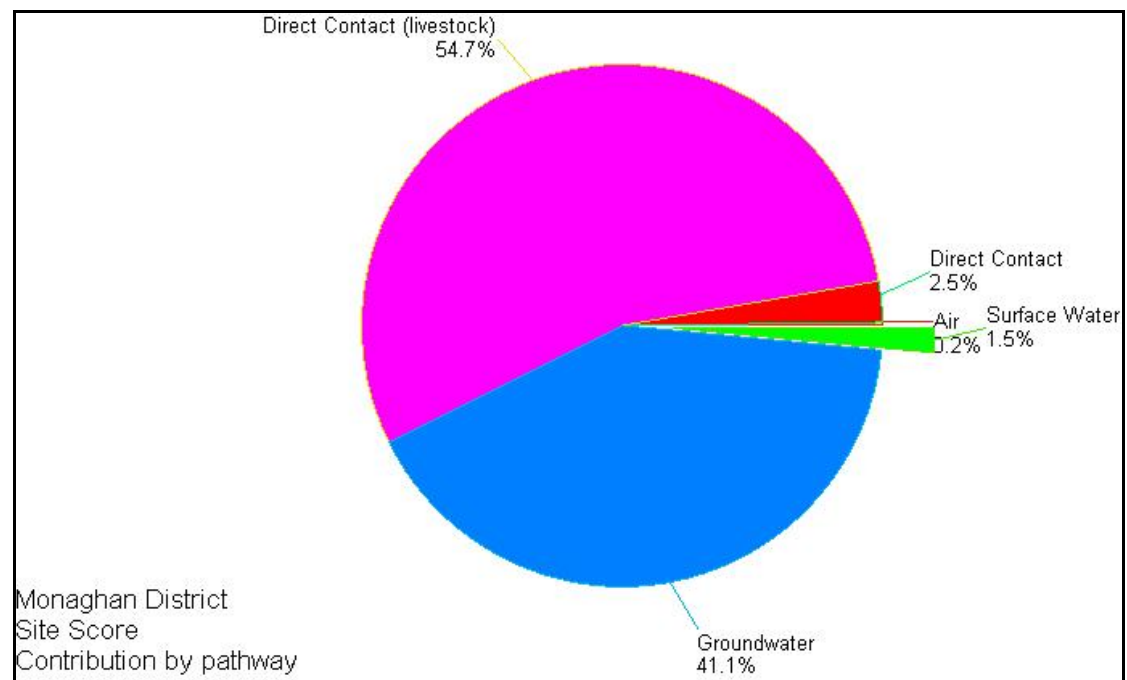


Fig. 2 HMS-IRC Site Score, Monaghan District: contribution by pathway