

## Industry News

During the second half of 2006, the base metal mining sector continued to benefit from historically high zinc prices. On 30th October 2006, the price of zinc reached an all-time high of \$4,202 per tonne, the highest since the metal was first listed in 1915. The price represented an increase of 170% since this time last year. Ireland continued to account for a significant amount of Western European mine production of zinc and lead. In 2006, Ireland produced 40% of Western Europe's zinc (41% in 2005) and 27% of its lead (as in 2005).

There has been a significant increase in the number of Prospecting Licences applied for, with the emphasis on zinc exploration.

### Development

- **Navan (Boliden)**

The underground mine of **Boliden Tara Mines** at **Navan**, Co Meath, is the largest zinc mine in Europe, and the fifth largest in the world. Production during 2006 amounted to 2.7Mt grading 7.63% Zn and 1.39% Pb. This produced 350,667t of zinc concentrate (54.8% Zn) and 40,347t of lead concentrate (58.5% Pb). Total production (1977-2006) amounted to 65.5Mt grading 8.36% Zn and 2.00% Pb. At the end of 2005 (the last year for which figures are available), Tara's JORC Classified Ore Reserves for the entire orebody amounted to 15.9Mt at 8.5% Zn and 1.8% Pb, with an additional 17.1Mt of Mineral Resources grading 7.4% Zn and 2.1% Pb.

A State Mining Permission was granted to the company to allow extraction of a limited amount of ore from the SWEX-B, while processing of the application of a State Mining Lease for the orebody continued.

- **Lisheen (Anglo American)**

During 2006 **Anglo American** produced 1.53Mt of ore grading 12.30% Zn and 2.10% Pb from their underground mine at **Lisheen**, Co. Tipperary. This ore produced 319,494t of zinc concentrate (53.42% Zn) and 37,292t of lead concentrate (62.06% Pb). Total production (1999-2006) is 9.57Mt grading 11.79% Zn and 2.20% Pb. Reserves at end December 2006 were 11.32Mt grading 11.97% Zn and 1.85% Pb, with additional Resources of 2.25Mt at 13.63% Zn and 2.27% Pb.

- **Galmoy (Lundin Mining)**

Production during 2006 by **Galmoy Mines Ltd.** (a subsidiary of **Lundin Mining**) from their underground zinc-lead mine at Galmoy, Co. Kilkenny yielded 0.62Mt (tonnage milled) grading 11.8% Zn and 3.2% Pb. This resulted in 116,000t of zinc concentrate (51.76% Zn, 59 ppm Ag) and 21,000t of lead concentrate (63.5% Pb, 196 ppm Ag). Total production since start of mining to end 2006 was 5.67Mt at 11.4% Zn and 2.3% Pb. Reserves at the end of December 2005 (no later figures) were 3.55Mt at 14.7% Zn, 4.1% Pb and 26g/t Ag, with additional Resources (Measured and Indicated) of 1.61Mt at 10.9% Zn, 2.2% Pb and 43g/t Ag. In April 2006 the company had announced the discovery of significant new mineralization. Drilling had outlined a high grade extension of the K Orebody, (the K Southwest Zone), which contained a measured resource of 187,000t grading 15.7% Zn, 3.8% Pb and 39g/t Ag. Further drilling in 2006 extended the zone an additional 100 metres to the south. Also in the vicinity of the mine, a new zone, the CW Southeast Zone, has been outlined by seven vertical drillholes, in an area of 100m x 50m, although it is not yet clear what effect, if any, this new zone will have on the mine's reserves and resources.

# Exploration

## A. Company Activities

**Boliden Tara Mines** continued its regional exploration in Co Limerick, comprising geophysics (including down-hole EM), geochemistry and drilling in both the Adare and Kilmallock blocks. Drilling is continuing, where two rigs are in operation. In Co Wexford, the exploration effort has involved a major geological review of the Ordovician volcanic belt, aided by VMS specialists from Sweden, followed by ground EM. Diamond drilling in this area is planned. Following a decision by Boliden to expand regional exploration in both Sweden and Ireland, the company made a major application for 65 additional Prospecting Licences in June 2006.

In October, **Conroy Diamonds and Gold** announced that they were undertaking a detailed review of the Tullybuck-Lisglassan area of Co. Monaghan. The initial stage of the review consisted of a detailed re-examination of the entire drill core from the area, including core drilled by previous operators. This work has enabled the company to identify a number of additional mineralised intersections, and some 400m of this has been assayed for the first time. Following receipt of the results, the company "...has been able to increase the dimensions of some of the previously identified mineralised zones."

**Lundin Mining Exploration Limited**, in addition to their minesite exploration, has been carrying out exploration drilling at Rapla, approx. 6km northeast of the Galmoy Mine, and 500 metres southwest of the known Rapla prospect. The first of six holes to be drilled intersected semi-massive to massive sulphide mineralization over 3.62m (545m depth), grading 9.79% Zn and 1.99% Pb. This included 1.92m grading 15.71% Zn and 3.64% Pb. In Keel, Co Longford, Lundin are completing compilation and reinterpretation of historic exploration data, and a programme of surface geophysical surveying (IP and Gravity) is underway. Lundin expect that this work will identify new targets for drilling.

**Minco PLC** (23.6%) and joint venture partner **Falconbridge** (76.4%), now a subsidiary of **Xstrata PLC**, continued their drilling programme on the Pallas Green project in east Co Limerick, where five rigs were employed last year. In October 2006, Minco announced additional results from the Caherconlish area, where the company is "...evaluating three distinct but related zones of zinc and lead mineralisation. All of the prospects remain open in a number of directions and we believe that two of them may be spatially associated with the same northwest-trending fault. Each of the prospects demonstrates significant high grade zinc to be present in association with lesser values of lead and silver, together with extensive, massive to semi-massive pyrite mineralisation. The development of very extensive areas of alteration features such as the pyrite mineralisation and the black matrix breccias, which are also closely associated with the Lisheen and Galmoy orebodies in the Rathdowney Trend, confirm that the Pallas Green Trend remains prospective for the discovery of more than one deposit."



*County Map of Ireland showing locations mentioned in the text. Adare (AD), Caherconlish (CC), Castlegarde (CG), Galmoy (GY), Keel (KL), Kilmallock (KM), Lisheen (LI), Mullingar (MG), Navan (NA), Pallas Green (PG), Rapla (RP), Silvermines (SM), Tobermalug (TM), Tullybuck-Lisglassan (TL)*

## **The Pallas Green Prospect, Co Limerick**

The Pallas Green project comprises nine prospecting licences located in northeast Co. Limerick and south Co. Tipperary. Drilling by joint venture partners Minco (23.6%) and Falconbridge (76.4%) (now a subsidiary of Xstrata) is currently testing a portion of the Pallas Green Alteration Trend, a zone of structural and hydrothermal complexity, which extends for over 20 kilometres. The Alteration Trend is considered analogous to the Rathdowney Trend with which both the Lisheen and Galmoy zinc deposits are associated. The presence of pervasive alteration, with associated massive and disseminated pyrite together with sphalerite (zinc) and galena (lead) mineralization, has been demonstrated along the entire length of the Pallas Green Alteration Trend. Significant zinc mineralization has been discovered at the eastern end of the Trend at Castlegarde, and near the western end, adjacent to Caherconlish. The intervening section remains relatively unexplored except for a few widely spaced drill holes.

Drilling has outlined a northeast-oriented area, 5km long by up to 1.5km wide, containing widespread pyrite (massive to semi-massive to disseminated) with associated zinc-lead values. This includes the Caherconlish and Tobermalug prospect areas where two discrete zones of high-grade zinc and lead mineralization were discovered during 2005. It is believed that this area is bounded to the south by a major east-northeast trending fault, the Ballyneety Fault, offset by a series of northwest trending fault structures. This structural setting is also considered by the companies to be analogous to that associated with many of the major Irish zinc deposits including Lisheen, Galmoy and Navan.

Taken largely from Minco PLC announcement of 16<sup>th</sup> February 2006

Recent drilling included the following intersections: at **Caherconlish South**, 1.5km east of the town of Caherconlish, hole 2529-13 contained, 2.7m grading 9.34% Zn and 0.45% Pb, at 362m depth. Hole 2529-14, 100m away, intersected 2.5m at 14.96% Zn and 1.45% Pb, at a depth of 363m. Five other holes (previously reported), all contained significant zinc mineralization, all are 100m apart, and the whole occupy an area of mineralization 250m by 150m. Mineralization is open to the northwest and southeast.

At **Srahane West**, 3.7km NW of Caherconlish South, a zone of high grade mineralization is defined by four holes, 100m apart, in an area 200m by 150m, which remains open in a number of directions. Best intersections were 0.65m at 14.88% Zn, 2.86% Pb at 238m depth, 2.2m at 4.08% Zn, 0.07% Pb at 210m, 1.35m at 8.24% Zn, 0.03% Pb, also at 210m, and 1.2m at 7.65% Zn and 1.58% Pb at 242m. There is also extensive massive to semi-massive pyrite mineralization peripheral to the zinc mineralization.

The mineralization at **Tobermalug** is located 1.5km NE of Caherconlish, and comprises an area of zinc-lead mineralization, approx. 300m by 150m, outlined by four holes, 100m apart. Best intersections are 8.3m at 3.71% Zn , 0.42% Pb (at 356m), and 2.35m at 3.6% Zn, 0.09% Pb (at 375m). Mineralization remains open to the S, SE and W.

Minco stated in October 2006 that the ground between the three Caherconlish prospects has been explored by a small number of widely-spaced drillholes, 500m to 1km apart. All have intersected extensive alteration and sulphide mineralization.

## **B. Prospecting Licence Information**

At the end of December 2006, a total of twenty-six companies held 298 Prospecting Licences, primarily for base metals. A number of licence applications are still under review. During the six-month period from the beginning of July to the end of December there were forty new licences issued. Seven licences in locations in Counties Kildare, Meath, Offaly, Westmeath and Tipperary, were issued to **Teck Cominco Ireland Limited**. All licences were for base metals, barytes, silver, gold and PGMs, although the main target is zinc. Fourteen licences in Co Offaly, eleven in Galway, three in Laois, one each in Counties Kildare Tipperary and Roscommon, and one licence in Counties Galway and Roscommon were issued to **Boliden Tara Mines Limited**, all for base metals, barytes, silver and gold. **Gary R Brown** was issued with a second prospecting licence for base metals and silver in west Co Galway. The licenced area included the Murvey molybdenum prospect.

## **C. Exploration Support**

Over the past five years, the Exploration and Mining Division (EMD) has initiated a number of complementary exploration support programmes, which are now maintained on an ongoing basis. The common approach is to provide, free of charge and in digital format, all non-confidential data that is available through the Division, and to provide added value where the opportunity arises.

### **Data Availability Programmes**

A substantial amount of company exploration data was made available through these programmes in 2006, both online ([ww.minex.ie](http://ww.minex.ie)) and on CD/DVD-ROM. Online data is now available for over 40% of the area covered by prospecting licences.

#### **Data from Current Licences**

All data over six years old from current prospecting licences are released under this programme. Nine CD/DVDs containing hundreds of exploration company reports dating back to the early 1960s, have been released since 2002. The most recent DVD was released in March 2005 and relates to ten Prospecting Licence Areas located in the southern part of the Rathdowney Trend in which the Galmoy and Lisheen zinc-lead mines are located. In addition, companies who availed of the 2002-2004 exploration expenditure concessions and were seeking joint venture partners have also had their data released. As a result, information on over 150 areas has been released

#### **Data for Surrendered Licences**

Exploration data from surrendered licences are released four times a year, when the relevant quarterly Prospecting Licence Competition for newly available ground takes place. In the past year, data for 31 licence areas has been made publicly available.

#### **Airborne Geophysics Data Release**

Low level high resolution geophysical surveys have been flown over 59 areas by various companies under the EMD 'open skies' policy since 1995. Some 35% of the country, largely prospective Lower Carboniferous ground, has been covered. All data is lodged with EMD. Once the four-year confidentiality period has expired, these data are made progressively available to the public. The first survey was released in June 2001, and to date over 78% of the coverage has been made available **free** on CD. Each geophysics release includes digital databases, grids and maps.

## **Online availability of Company Data**

This programme is driven by a commitment to provide both industry and the general public with as much free information as possible regarding company activities, ground assessment for exploration, and newly available areas for competitive application. Thousands of company reports relating to more than 700 PL Areas have now been uploaded onto the [www.minex.ie](http://www.minex.ie) website. This figure represents more than 40% of the ground covered by PL Areas. All exploration data released prior to 2000 can be viewed, free of charge, at the offices of the Geological Survey of Ireland, in Dublin.

## **Digital Prospecting Licence Data**

Digital versions of the Prospecting Licence map are produced in February and November each year. These are provided free on request. All licence data are provided on CD in shapefile format, for use with the ESRI suite of GIS products. A free map viewer 'ArcExplorer' is bundled with the licence data. This enables clients without access to GIS desktop applications to display the licence data, and determine ground status. The area boundaries can also be downloaded off the [www.minex.ie](http://www.minex.ie) website.

## **Target Areas Programme**

This programme is intended to stimulate interest in specific areas of the country by providing focused information and added value to the ongoing data release programmes where appropriate.

## **Airborne Magnetic Interpretation**

Exploration and Mining Division (EMD) and PGW Europe Ltd. have collaborated to re-process and interpret recently released high-resolution airborne magnetic data. The collaboration has focused to date on three contiguous blocks located in the highly prospective Central Basin Area of Ireland. For each map, the following three 1:100,000 scale maps are now available, free of charge and in digital format:

- Provisional Geophysical Interpretation 1: Regional Basement Terranes
- Provisional Geophysical Interpretation 2: Structure and Lithology
- Pole-reduced Total Field Magnetics

EMD wishes to stress that all interpretation maps are preliminary and at this stage should be considered as works in progress. The maps have been made publicly available in response to a number of requests from exploration clients who wish to view the provisionally interpreted data. The finalized suite of maps, together with associated reports for each block, will be available from EMD on completion of the project. To obtain more information on how you can acquire the free airborne magnetic interpretation maps, please contact EMD (Tel: +353 1 678 2677).

## **Data on Gold In Ireland**

To increase the awareness of the gold potential of the country, a digital release of all known gold localities in a GIS format was re-issued in 2005. The free CD is a joint EMD-Geological Survey of Ireland product. The localities are described and also spatially located on a simplified geological map. The CD also includes a review of the potential for gold mineralization and a full bibliography. The gold spatial data are also accessible through the [www.minex.ie](http://www.minex.ie) website.

## Silvermines Target Area

To coincide with a number of Silvermines licences being made available in the November 2006 Competition, EMD released a compilation of Silvermines exploration data on CD-ROM. In common with previous 'Target Area' releases (Ballinalack Zn-Pb and Cregganbaun Au), this CD-ROM contains pertinent GIS data (e.g. geology, drillholes, PL Area boundaries, mining features, environmental constraint areas) plus a collection of relevant exploration reports and technical papers. Lead, silver, copper and zinc had been intermittently worked from vein deposits in the Silvermines district since the 9<sup>th</sup> century, prior to the 1963 discovery of two distinct, but genetically related Zn-Pb orebodies. These orebodies were worked until 1982 by Mogul of Ireland Ltd., producing a total of 10.78Mt of ore grading 7.36% Zn and 2.7% Pb. The Silvermines district is additionally host to a large stratiform barite deposit at Ballynoe, from which 5.13Mt of ore grading 90% BaSO<sub>4</sub> was continuously mined between 1963 and 1993.

## The MAPS Initiative

The MAPS (Minerals Administration Programme Support) Initiative ([www.minex.ie](http://www.minex.ie)) is a major e-Government project undertaken by the Department to encourage and facilitate exploration and mining in Ireland. The MAPS system currently delivers:

- An online facility that allows clients to assess the status of licences
- FREE online access for ground assessment purposes to all publicly available information held by EMD, including GIS data, exploration company reports and other archival material
- An up-to-date industry focused website providing clients with mineral potential information, regulatory data, industry news, the latest company and Ministerial press releases, reviews, EMD publications, etc.
- Improved efficiency of service to customers, through e-Enabled user-friendly systems.

Customers can also use "GEMS" (EMD's web-based GIS mapping tool), to visualize and query a variety of GIS layers pertinent to mineral exploration, including base maps, permit areas, geology, environmental constraint areas, forestry coverage, mineral deposits, historic and current mines, gold occurrences, airborne geophysics survey areas and boreholes. The GEMS map viewer also provides users with access to a significant repository of other documents that are of additional benefit in assessing exploration ground (e.g. company reports, borehole logs, mineral deposit summaries, environmental synopses of constraint areas). Although somewhat delayed, the remaining elements of MAPS, namely the full e-Business facilities for permitting and the back-office workflow system designed to deliver increase efficiency to customers, will be rolled out shortly.

## PDAC Convention, Toronto, March 2007

The 75th Annual Convention and Trade Show of the Prospectors and Developers Association of Canada (PDAC) will be held in Toronto from 4<sup>th</sup> to 7<sup>th</sup> March 2007. The Exploration and Mining Division will be taking its usual stand at the Trade Show (Booth 903), and will be exhibiting with the Geological Survey of Ireland and with colleagues from Northern Ireland (Department of Enterprise, Trade and Investment, and the Geological Survey of Northern Ireland), in a combined **Ireland** exhibit. The PDAC meeting is the biggest of its kind in the world, and in March 2006 the attendance figures reached an all-time high of 14,500.