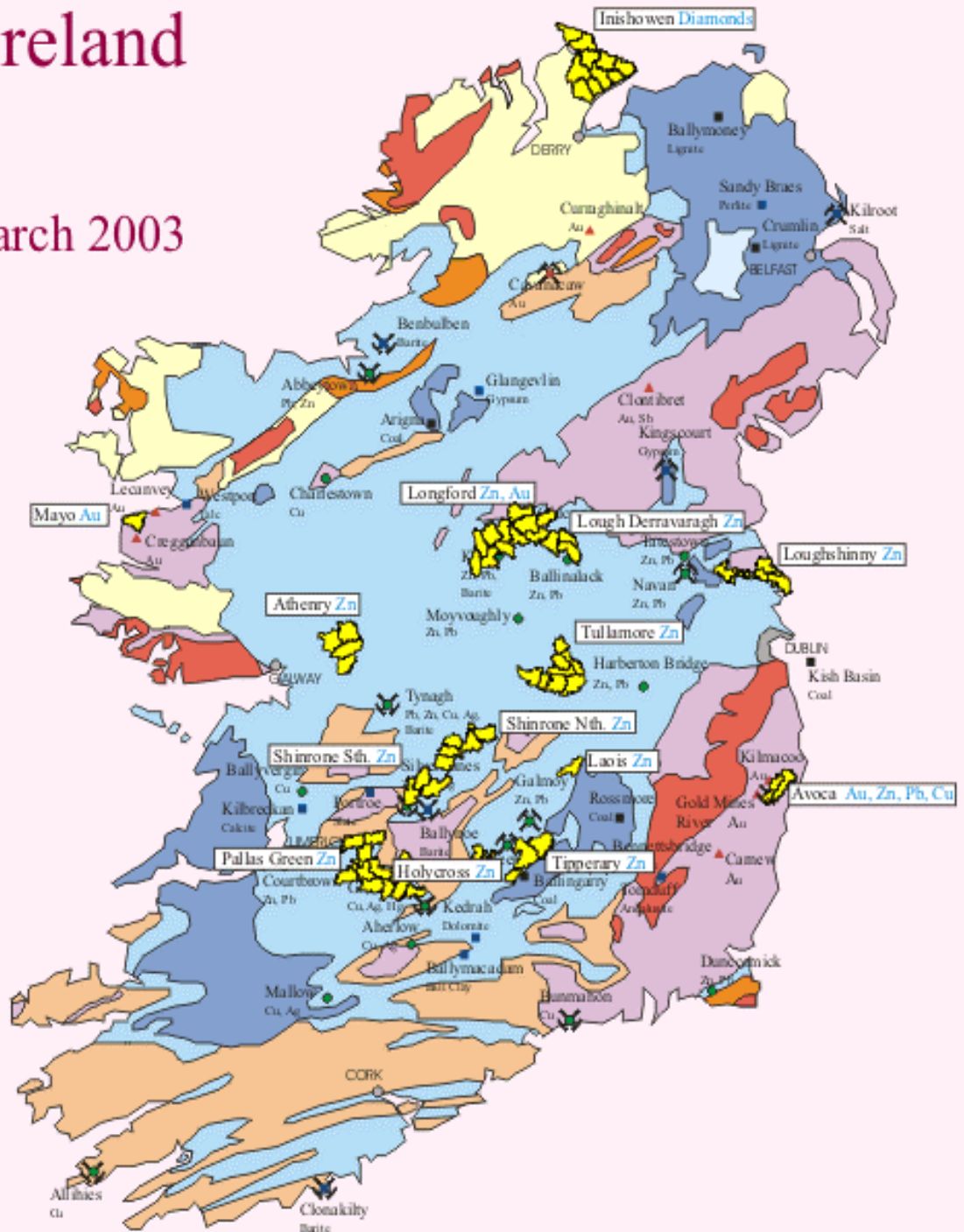


Joint Venture Opportunities in Ireland

EXPLORATION AND MINING DIVISION
IRELAND

March 2003



 Department of Communications, Marine and Natural Resources

MINERAL EXPLORATION IN IRELAND

Joint Venture Opportunities

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MINERAL EXPLORATION IN IRELAND

Joint Venture Opportunities, March 2003

The following joint venture opportunities are currently available in Ireland. The descriptions of the properties have been provided by the companies that hold the Prospecting Licence(s), and have been subjected only to minimal editorial changes. Interested parties should firstly contact the company offering the opportunity. The Department of Communications, Marine and Natural Resources makes no judgement on the descriptions of the properties, and it is the absolute responsibility of any interested party to satisfy themselves as to the veracity of the description(s). Also it is the responsibility of any interested party to establish the status of the property in terms of the validity of the relevant licence(s) and as to whether the property is in good standing in respect of required exploration programmes and expenditure. Further information and assistance is available from the Exploration and Mining Division of the Department. In particular, interested parties should read the brochure "Exploration and Mining Facilities" which is available free of charge from the Division.

Aurum Exploration Ltd

Aurum Exploration Ltd was incorporated in May 2002, by the Irish-based technical staff of Navan Mining Ltd following the cessation of that company's exploration activities and its withdrawal from Ireland. Aurum currently operates as a mineral exploration service and mineral exploration company.

Aurum acquired proprietary rights to all Navan's Irish assets including extensive drillhole, geochemical and geophysical databases. In addition, Aurum continue to manage Navan's remaining interests in their joint venture with Tara Mines Ltd in Ireland, and is contracted to operate the licences currently held under this joint venture agreement (47% Navan, 53% Tara), for which results to date have been encouraging.

Base Metals

Aurum holds a 90% interest in seven base-metal prospecting licences in the southwest Midlands of Ireland with Navan Resources Ltd (passive 10%), and have maintained a level of exploration activity during 2002-2003. The **Lough Derravaragh** Block comprises three licences totalling 100km² adjacent to the Waulsortian-hosted Ballinalack Zn-Pb deposit (5.7Mt @ 6.8% Zn, 1.1% Pb, 27g/t Ag). A number of targets identified on the block are ready for drill testing, while several other structural and geochemical targets require further investigation. The Lough Derravaragh Block presents dual

prospective horizons, with both the Waulsortian Limestone (host to the Lisheen, Galmoy, Silvermines and Tynagh orebodies) and Pale Beds (host to the Navan orebody) well developed, at drilling depths of approximately 200m and 500m respectively.

The Atherry Block comprises four licences totalling 193km² in County Galway, straddling a major NE-SW trending basement feature. Coincident surface geochemical anomalism has been defined at the intersection of the basement structure with inferred east-west faulting in the prospective overlying carbonate sequence. Exploration of this block is at an early stage, with structural and geochemical targets identified so far requiring further investigation.

Precious Metals

Precious metal exploration activities by Aurum are currently focused on a prospecting licence in County Mayo (PL 2396) where geochemical sampling has recently been completed. The company is also exploring the possibility of gold in carbonates. This potential has been confirmed by recent reconnaissance rock samples collected over an extensive area, which have returned significantly anomalous gold assays. The potential of the area is currently being fully evaluated and a ground acquisition programme has commenced.

Those interested in a possible joint venture on any of the company's properties should contact Aurum Exploration for further information.

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Cambridge Mineral Resources

Inishowen (Diamonds, gem minerals)

Cambridge Mineral Resources PLC ('Cambridge') is exploring for diamond and gemstone deposits within a block of ten Prospecting Licences (PLs) covering 382km² on the Inishowen Peninsula in the northwest of Ireland. The ten PLs are 2964, 3007, 3008, 3056, 3062, 3063, 3094, 3496, 3820 and 3856. Stream sediment sampling has yielded a number of diamond indicator minerals and abundant rubies and sapphires. Based on deep seismic reflection studies, Archean lithospheric mantle is interpreted to lie over 40km beneath the Inishowen region.

Exploration by Cambridge has included high-resolution aeromagnetic surveying of the entire licence block, ground magnetic surveys, prospecting and mapping, 300m of NQ drilling in 5 separate holes, and 260m of trenching. Bulk stream sediment samples were processed in the on-site laboratory by Wilfley Table, and dispatched for analysis in Canada.

Based on diamond indicator evidence, the target diamond host rock for Inishowen is lamproite. Furthermore, a potential minette or lamprophyre (camptonite) pipe, two camptonite dykes and an altered minette dyke have

been discovered by Cambridge at investigated sites. These lithologies include lithologies similar to ruby- and sapphire-bearing rocks in gemstone mining areas in New South Wales, Thailand and Cambodia.

Cambridge seeks a joint venture partner to fund further sample processing, target evaluation and drill testing. Targets awaiting follow-up work include areas from which DI chromite, G9 and G11 garnets, DI CP5 and DI CP6 clinopyroxene and lamproitic chromite have been recovered. All available data is well organized and readily available for review.

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Glencar Mining

Laois Project (Zn)

The 100% Glencar Mining plc owned Laois Project incorporated 3 contiguous Prospecting Licence areas – PL 3662 and PL 2512 in Co. Laois, and PL 2513 in Co. Kildare. During 2001, PL 2513 was surrendered, as Glencar's exploration focus had moved westwards, following the delineation of a target area west of the town of Stradbally, with a strong geochemical and geophysical signature.

A shallow drilling programme of seventeen 50 metre deep boreholes, completed in 1999, delineated a zone of extensive dolomitization with pervasive zinc mineralization. The extent of the dolomitization was regarded as particularly significant, and two additional diamond drillholes were subsequently drilled on the target. Drillhole 00-2512-01 was an inclined hole drilled to 100m depth across the geochemically anomalous zone, to help define a geophysically-inferred fault that is believed to be an important control on the dolomitization in the zone. In 2002, Drillhole 00-2512-02 was drilled to a depth of 1,290 metres, and was targeted at evaluating the extent of the dolomitization at depth. This drillhole encountered significant extensive dolomitization and brecciation, similar to that exhibited at the other major mineral deposits within the Rathdowney Trend, particularly as intersected between 841m and 972m.

Fluid inclusion analysis carried out on core samples from this zone illustrates that fluids comparable in origin to the mineralizing fluids at the Lisheen and Galmoy orebodies were responsible for the formation of this dolomitization, and places the hole within the recognised and identified Rathdowney Trend mineralization regime. The upper lithologies encountered in the drillhole, down to a depth of 1,000 metres, were consistent with those in the Lisheen/Galmoy area. However, the main mineralized stratigraphic horizon in the Rathdowney Trend regime, the Waulsortian Reef limestone,

expected to occur at approximately 1,000 metres depth, is absent in the borehole, and the hole was terminated in the sub-Reef Ballysteen Formation at 1,290m. The hole has been capped to allow future re-entry.

The drilling on the property to date suggests that a considerable exploration programme is warranted, one which would incorporate a significant amount of deep drilling. Glencar is therefore now seeking a joint-venture partner to advance the project. An information pack on the property is available from the company in electronic format.

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Hereward Ventures

Tullamore (Zn)

Hereward Ventures plc is exploring for zinc within eight prospecting licences that form a contiguous block, the Tullamore Licence Block, 80km west of Dublin. The block lies close to the Kinnitty and Crinkill prospects and, in the northwest, contains a major regional structure, the Knockshigowna Fault. The presence of Chadian (Lower Carboniferous) volcanic rocks demonstrates that structures present penetrated to deep crustal levels and were active in the Chadian. The Knockshigowna Fault and associated faults are interpreted to have been controls for mineralizing processes. Waulsortian lithologies, one of the main hosts for Zn-Pb mineralization in Ireland, are interpreted to be present within all of the licences, either in outcrop or at depth.

Work undertaken by Hereward Ventures includes high-resolution airborne magnetic surveying, data compilation and geological interpretation. Hereward's aeromagnetic data was reprocessed by independent geophysicists. Upward continuation processing was undertaken, using a technique modified from CSIRO-developed wavelet processing. This state-of-the-art procedure has delineated a number of discrete target structures for drill testing.

Hereward Ventures seeks a joint venture partner to fund the drill testing of target areas. Existing data is well organized and readily available for review. This review can quickly prioritize structural targets and result in a short lead-in time to drilling.

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Minco

Pallas Green (Zn)

A joint venture between Minco (25%) and Noranda (75%) holds a block of thirteen contiguous licences located along the Limerick regional basement trend, in counties Limerick, Tipperary and Clare, between Limerick city and Tipperary town. The licence numbers are 635, 636, 2529, 2530, 2850, 3268, 3342, 3344, 3431, 3550, 3647, 3807 and 3908. With the exception of the easternmost quadrant, the block was not aggressively explored until the discovery of high-grade sulphide mineralisation in mid-2000. Block-wide exploration coverage includes soil geochemistry and airborne magnetics, with extensive airborne EM and gradient array IP, covering specific regions.

The licence block is centred on the Pallas Green Trend, a zone of dolomitic alteration that is the surface expression of the regional basement trend. The target is Waulsortian Reef-hosted, fault / breccia controlled "Silvermines-Lisheen Type" Zn/Pb deposits. Exploration work to date has discovered a 25km long trend with nine significant occurrences of either alteration/sulphide mineralisation or high-grade massive sulphide mineralisation located at or close to the important basal Waulsortian Reef zone.

Four main styles of occurrence have been discovered:

1. Low grade disseminated base metal sulphides associated with faulting and silicification of the sub-Waulsortian ABL, discovered at Coonagh Castle;
2. Extensive brecciation and dolomitic alteration of the basal Waulsortian, with associated massive pyrite and low-grade, disseminated, base metal sulphide mineralisation. Examples have been found at Grange West and Killuragh, where the alteration is 12 – 25m thick.
3. Low-grade disseminated and stringer-style base metal sulphide mineralisation hosted by basal Waulsortian breccias. The breccias are strongly analogous to the Black Matrix Breccia alteration that forms a halo around the Lisheen and Galmoy deposits. This style is the most widespread, and is found at Longford West, Carrig Beg, Gortavalla and Srahane East.
4. The most important style of occurrence is the basal Waulsortian-hosted, high-grade, massive sulphides that have been found at Castlegarde and Caherconlish. At Castlegarde, two lenses of mineralisation were discovered. The northern lens is approximately 200m long and 50-70m wide. The massive sulphides are between 1.2 and 10.25m thick, including a low-grade massive pyrite cap. Results from this zone include 3.26m grading 21.2% Zn/4.05% Pb/9.82g/t Ag and 2.9m grading 18.21% Zn/2.16% Pb/3.57g/t Ag, from drillholes MN-3268-4 and MN-3268-15 respectively. The southern lens lies 500m to the south and is relatively poorly defined. The best intersection was 1.5m grading 10.4% Zn/0.79% Pb/8.76g/t Ag in drillhole MN-3268-23. The Caherconlish occurrence was discovered in late 2002 and only six widely-spaced holes have been drilled on this target. Four of these have intersected intense alteration (strongly analogous with Silvermines), massive pyrite and base metal sulphide

mineralisation, with a best intersection of 1.34m grading 6.47% Zn and 0.41% Pb in drillhole MN-636-10.

Shinrone (Zn)

Minco has two blocks of licences available for joint venture located along the Navan-Silvermines basement trend in Counties Tipperary and Offaly, between Nenagh and Birr. Shinrone North consists of seven contiguous licences viz. 626, 627, 649A, 2016, 2670, 3115 and 3727. Shinrone South comprises four contiguous licences, 3156, 3425, 3668 and 3678. The licences have been covered by the normal suite of exploration techniques, including soil geochemistry and airborne EM and magnetics.

These licence blocks are centred on the Knockshigowna Fault system, the surface expression of the basement trend, and are considered to have potential for mineralization of “Lisheen type”. The overall structure has been considered the mirror image of the Lisheen-Galmoy area. Exploration to date has focused on the footwall of the Knockshigowna Fault system and has discovered extensive alteration and sulphide mineralization.

Extensive dolomite breccia-associated sulphides, dominantly pyrite, have been located within the basal Waulsortian section, especially in the vicinity of Shinrone village. Zinc-lead-pyrite mineralization of “Tynagh-type”, spatially associated with iron formation within the basal Waulsortian succession, has been outlined at Crinkhill, close to Birr.

Holycross (Zn)

Two contiguous licences, 3318 and 3569, lying immediately southwest of Thurles, County Tipperary, and 10-20km southwest of Lisheen, are available for joint venture. These licences can be considered lying along the southwestern extension of the Rathdowney basement trend. Exploration to date has discovered widespread dolomitization of the Waulsortian, with brecciation and minor base metal sulphides, which would support this interpretation.

Maps and more detailed information on these properties, and Minco PLC, are available at <<http://www.minco.ie>>. In first instance, please contact John Teeling on 353-1-833-2833 (Dublin) or Terence McKillen on 00-1-416-362-8243 (Toronto).

Mineral Estates (Ireland) Ltd

Loughshinny (Zn)

Mineral Estates (Ireland) Limited is exploring four contiguous licences in north County Dublin and east County Meath. The licence group covers the southern and eastern part of the (Lower) Palaeozoic Balbriggan Block and the northern margin of the (Carboniferous) Dublin Basin.

The licence group straddles a major growth fault that forms the northern boundary of the Dublin Basin proper. North of the growth fault, a

dominantly shelf facies litho-stratigraphic sequence is developed. South of the fault, a more basal facies is present.

Exploration completed has included: compilation of previous exploration data; rock chip geochemical sampling; base of overburden and stream geochemical sampling; VLF EM 16 surveys; a detailed airborne magnetic survey; very extensive diamond drilling, and biostratigraphic dating and petrographic studies.

Diamond drilling of the main prospect, north of the major growth fault, has shown the presence of replacement-style base metal mineralization within the Courceyan McGuinness Formation, in a geological sequence which is considered to be similar to that at Navan. The best intersections are 4.3 metres at 2.09% Zn + Pb at 170m depth (including 0.35 metres at 10.55% Zn + Pb) and, in a separate hole, 2.5m at 1.86% Zn + Pb at 28m depth. It is considered that this prospect has the potential to host a significant base metal deposit and a very considerable area remains to be drill-tested.

Extensive stratigraphic drilling in conjunction with the detailed magnetic surveys, completed in the past year, has demonstrated the presence of at least two other target zones, which appear to be of sufficient size-potential to host a Navan sized orebody. Preliminary diamond drilling of these has shown that the Navan-equivalent sequence, if preserved, is likely to be at a depth of around 800 metres. Holes have been drilled and cased to a depth in excess of 600 metres in each prospect.

Within the Lower Palaeozoic sequence, exploration has also shown potential for Kuroko-type mineralization in Ordovician volcanics. Minor zinc and copper mineralization, considered to represent stringer-zone mineralization, together with a 4.5m interval of massive barite (at 150m depth) has been intersected.

Mineral Estates (Ireland) Limited is seeking an incoming joint venture partner to fund further testing of the Loughshinny Prospect, and to extend the existing holes, to test the other prospects for Navan-style mineralization at depth

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Strongbow Resources Inc.

Avoca (Au, Zn, Pb, Cu)

Strongbow Resources Inc. (SR:TSX.V) holds a 100% interest in two Prospecting Licenses, PLs 3849 and 3850, covering 73 km² over the historic Avoca Mine and adjoining volcanogenic massive sulphide (VMS) workings and prospects in County Wicklow, southeast Ireland. The property straddles

the Avoca River, about 60 km south of Dublin and 12 km northwest of the coastal port town of Arklow.

Geological Setting and Deposit type

The Avoca District is underlain by Middle to Upper Ordovician volcanic and sedimentary rocks of the Duncannon Group – similar in age and lithology to the productive Bathurst and Buchans VMS districts of Eastern Canada. The property is covered by widespread overburden, and detailed geological information comes from underground workings, surface pits and clustered drill holes near known mineralization. On this basis, the Duncannon Group appears to comprise a classic Kuroko-type succession of dacite-rhyolite ash tuffs, lapilli tuffs and rhyolite breccia sills and domes, overlain by graphitic shales and siltstones, and capped by post-mineralization mafic lavas. Most previous geological interpretations conclude that the Avoca mine area volcanic-sedimentary package lies in the core of a regional syncline that is isoclinally folded about axes which plunge 15 to 35° SW with axial planes overturned to the northwest and dipping 60° SE.

The Avoca Mine area consists of a series of massive sulphide lenses, within a sulphide horizon 25 to 60m thick. The sulphide horizon consists of a thick lower section of “stringer ore”, which is traceable for the entire 6km strike length, and an upper section of massive sulphide ore, which is normally from 2 to 15m thick and distributed in lenses up to 1km long and 500m wide.

Avoca sulphide occurrences are zoned on the ore-body scale, such that the lower “stringer” horizon is pyrite-rich, and contains copper, lead and zinc in sub-equal proportions (Cu+Zn+Pb=~1%). The overlying massive sulphide lenses are copper-rich at their bases and lead/zinc/silver/gold-rich at their tops. (At Kilmacoo, precious metal values are as high as 10.75g/t Au and 201.9g/t Ag over 12m; at West Avoca, precious metals were not analysed by mine operators). Previous operators exploited the copper ores and did not mine the lead/zinc ores, except where they contained significant copper.

Historical

From 1720 until 1998, the property was explored, developed and mined for copper only, even though significant intersections of Zn-Pb-Ag (4 to 9m of 10-15% Zn, 5-7% Pb, 64-284g/t Ag) were encountered during exploration and development of the copper orebodies. From 1720 until 1966, the full geological implications of the VMS model were not known, and from 1966 to 1981, the money-losing mining operation failed to invest in a modern exploration program. In the late 1980s, in the Kilmacoo area, Riofinex plc, a subsidiary of the RTZ Corporation plc, drilled a total of 21 diamond drill holes in an area of about 400m by 400m. Hole KG 8 included 10.75 g/t Au and 201.9 g/t Ag over 12m.

Conclusions

1. Beyond the known underground workings, surface pits and clusters of drill holes in known mineralization, extensive overburden obscures a belt of Ordovician volcanic rocks that clearly show the potential to duplicate mineralizing processes that have operated in productive VMS belts elsewhere in the world.

2. Drill intersections at Kilmacoo demonstrate the potential for grades in the 15-20% combined Zn+Pb range, with high Au and Ag credits.
3. No exploration has occurred below 300m depth, even in areas of known sulphide mineralization. At Kilmacoo, the mineralized horizon extends over a 2 km strike – mostly drilled to less than 100m depth. At Rockstown, 2km north of Kilmacoo, a 3km strike length of Avoca mine sequence remains untested, in spite of previous geochemical and geophysical encouragement.
4. Strongbow is actively searching for a joint venture partner for Avoca and for the Kilmacoo gold prospect. Interested parties are directed to:

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Tara Mines Limited

Tipperary (Zn)

Tara's Tipperary Project is a grassroots exploration play that lies close to Ireland's most recently discovered base-metal mine, Lisheen. Tara Mines Limited currently hold a block of three contiguous prospecting licences, covering 136 sq km in counties Tipperary and Kilkenny, within 5km of the Lisheen (18.9 Mt grading 12.75% Zn, 2.2% Pb) and Galmoy (10+Mt grading 11.4% Zn, 1.1% Pb) mines. The Lower Carboniferous Waulsortian Limestone, which hosts the economic mineralization in the Rathdowney Trend, occurs at prospective depths throughout most of the licence holding. A regional gravity survey has identified a basement lineament in the area lying parallel to the Rathdowney Trend, thought to reflect a major structure that may have focused hydrothermal fluids rising from the basement.

Tara has completed regional geochemical and geophysical surveys along with several diamond drilling programmes. The relatively modest scale of the faulting within the host rocks makes key structural targets difficult to recognise. However, airborne magnetic/electromagnetic surveys, successful in defining the geological structure and mineralized zones in the Rathdowney Trend, hold the key to the identification of the major fault systems and locating potential new ore zones

Longford (Zn, Au)

The Longford Project represents one of the most prospective blocks of ground in the northern part of the Central Irish Orefield. The area is underlain by the Navan Group Pale Beds (host to Tara's world-class Navan orebody) lying at depths of <300 metres and therefore readily explorable. The potential

of the ground is highlighted by the Keel prospect (1.8Mt grading 5.83% Zn, 1.16% Pb) and widespread low-grade mineralization, such as drilled by Tara at Lisnana gh. The Waulsortian Limestone provides a secondary stratigraphic target, particularly southeast of the Keel Fault, where it hosts sedex-style Zn-Ba mineralisation at Garrycam. Several major faults bound the Lower Palaeozoic inliers within the area, and a major basement lineament, the Orlock Bridge Fault, separates the Lower Palaeozoic terranes of the inliers.

Tara Mines Limited currently control a block of eleven prospecting licences in Longford, covering an area of 360sq km. Exploration is focused on zinc-lead mineralization within the Navan Group Pale Beds and (secondarily) within Waulsortian Limestone, particularly in the hangingwall of the Keel Fault system. The area includes two Lower Palaeozoic cored inliers, the faulted margins of which are known to be highly prospective, with Zn-Pb mines at Tynagh and Silvermines occurring in this geological setting. Mineralization has already been identified at several locations along the Keel Fault system, which represents a highly prospective target, as does a parallel fault system that bounds the Longford inlier. Mineralization has also been located in the Pale Beds away from these major faults, highlighting the overall prospectivity of the area. Additionally, low-grade gold mineralization has been encountered within the Lower Palaeozoic rocks of the Longford-Down massif at the northern margin of the ground.

For further, more detailed, information on these projects please contact:

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