

LETTER

Background information:

Mine District: West Cork

Mine Name: Letter

Alternative Names:

Elements of interest:

Ba, Cu

Project Prefix:

County:
Cork

Townland:
Letter

Grid Reference:
E94723, N35338



Geology and Mineralization

The Cu-Ba mines of West Cork are hosted by the Old Red Sandstone succession of the Munster Basin. The sediments of the Munster Basin were deposited in a half graben and subsequently uplifted and folded into east-northeast-trending anticlines that now comprise the rugged peninsulas of the southwest corner of the island. Two mineralized veins cut the Castlehaven Formation in the townland of Letter, northeast of Mount Gabriel. Both strike east-west, apparently slightly discordant to the host rock bedding. The northern vein contained copper mineralization, the other barite. The latter vein was 0.6m wide, according to the Geological Survey of Ireland's (GSI) 19th-century six-inch map. This map indicates the presence of "carbonate of copper" in the northern lode. An anonymous account in GSI's Mine Records database suggests the northern vein was 0.6m wide and 14m deep, the southern vein 0.6-1.2m wide and 25m deep.

Production and Mining History

Letter was privately owned for most of its production history and there is little information about it. The northern vein was originally worked by Colonel Hall in the early part of the 19th century (Cowman and Reilly 1988). In 1852 "Mr. Sadlier and party" produced over 7 tons of Cu and also discovered barite, presumably in the southern vein. They managed to sell some barite, despite iron staining, as well as a further 20 tons of low-grade copper (4.5%) in 1856 (Cowman and Reilly 1988). Sadlier probably abandoned the mine soon after. The Mount Gabriel Mineral Company subsequently took over Letter in conjunction with other mines in the area, namely Dereenalomane, and cleared Colonel Hall's shaft. However, this company produced only limited tonnage of low-grade ore and stopped production in 1866. The barite deposit was again worked from 1889 to 1893 when 800 tons was produced (Cole 1922).

Site Description and Environmental Setting

There are few mining remains on either the Cu or Ba mine sites. A large water tank was recently installed at the latter site and it is not clear how much the site owes to this phase of construction or the previous phase on mining. None of the marked shafts were located and were presumably filled in. The Cu mine site contains the remnants of a dressing floor around the site of the demolished chimney. A cutting leads south from it and may have been an adit (photo, right). A depression in the



ground marks the site of a shaft, presumably Colonel Hall's original working. The dressing floor contains a small volume of coarse-grained processing waste interspersed with some finer material that has been winnowed out and deposited by rain water. Solid waste volume is estimated to be 286 m³, with a surface area of 572 m². Two large mill stones are presumably remainders of the crushing machinery on the site. The Cu mine is on a private farm. The land is for the most part hilly, with at most thin soil cover, covered in heather and grass. Cleared areas on flatter ground are used for cattle grazing.

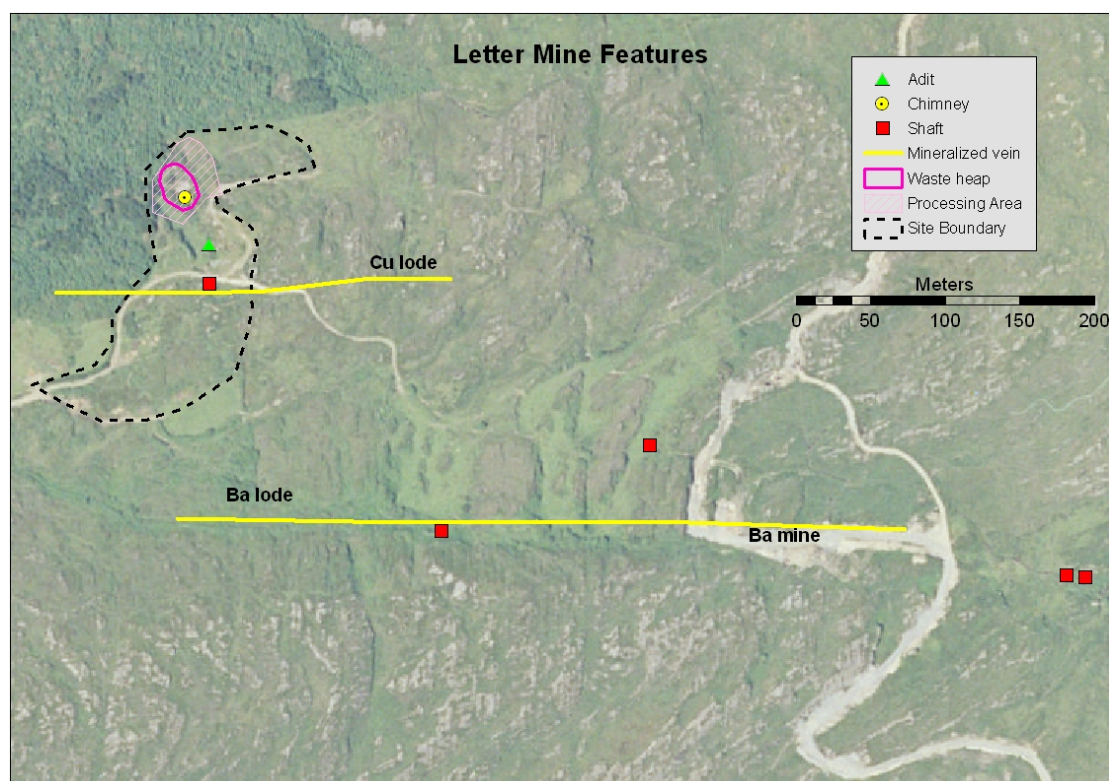


Fig 1 Letter: mine features

Geochemical assessment

1. Surface water

No surface water samples were taken.

2. Groundwater

No groundwater samples were collected. A leachate test was carried out on the solid waste sample collected from the processing area. The leachate contained elevated concentrations of dissolved Cu (183 µg/l), Ba (168 µg/l) and Zn (27 µg/l), but none of these concentrations exceeds current drinking water standards so the potential of the solid waste at Letter to contaminate groundwater used for drinking purposes appears to be low.

3. Stream sediments

No stream sediment samples were taken.

4. Solid waste

A sample of fine-grained solid waste was collected from the processing area at Letter Cu mine and analysed by XRF in the GSI laboratory. Both Cu and Ba were detected in relatively high concentrations (Table 1). Other elements of interest were present in minor amounts.

Table 1 Solid waste XRF analyses, Letter Cu mine

mg/kg	Cu	Ba	Pb	As
SP01.1	6821	7147	239	<DL

5. HMS-IRC Site Score

The HMS-IRC Site Score for Letter is 1. The low volume of solid waste, the absence of other waste sources, such as adit discharges, the lack of significant concentrations of high-relative toxicity elements such as Pb and As, the low concentrations of contaminants in the leachate and the absence of surface water courses within the mine site all contribute to the low total score.

Table 2 HMS-IRC Site Score, Letter

Waste	Solid Waste
1. Hazard Score	12
2. Pathway Score	
<i>Groundwater</i>	0.79
<i>Surface Water</i>	0.15
<i>Air</i>	0.00
<i>Direct Contact</i>	0.00
<i>Direct Contact (Livestock)</i>	
3. Site Score	1

6. Geochemical overview and conclusions

Letter mine was a very minor producer of copper and barite in the 19th century. A small volume of solid waste around the processing floor of the copper mine had modest measured concentrations of Cu (6821 mg/kg) and Ba (7147 mg/kg). A leachate test on the waste yielded concentrations of dissolved Cu (183 µg/l) and Ba (168 µg/l) that were elevated but below limits set by the drinking water standards. The HMS-IRC Site Score for Letter (1) is very low, reflecting the absence of major volumes of waste on site as well as the low concentrations of high-relative toxicity elements.

References

- Cole, G.A.J. (1922) Memoir and Map Localities of Minerals of Economic Importance and Metalliferous Mines in Ireland. *Memoirs of the Geological Survey of Ireland*.
- Cowman, D. and Reilly, T.A. (1988) The Abandoned Mines of West Carbery. Promoters, Adventurers and Miners. *The Geological Survey of Ireland*.