

# LADY'S WELL

## Background information:

**Mine District:** West Cork

**Mine Name:** Lady's Well

### Alternative Names:

Duneen Bay, Duneen, Mukruss Head, Muckross Head

### Elements of interest:

Ba

**Project Prefix:** LDW

**County:**  
Cork

**Townland:**  
Dunmore

**Grid Reference:**  
E139626, N37092



## 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 eastnortheast-trending anticlines that now comprise the rugged peninsulas of the southwest corner of the island. The barite lode at Lady's Well is fault-hosted and cuts the strike of the host rocks at an angle of 15 to 45°. The vein is split into north and south branches and varies in width from 1 to 3m (Reilly 1986). The host rocks at Lady's Well are sandstones and minor siltstones of the Old Head Formation. According to Cole (1922) specks of Fe and Cu pyrites were present in the vein along with some galena. The sandstones are extensively bleached, veined and iron-stained up to 25m away from the main vein (photo, right) (Reilly 1986).



## Production and Mining History

The existence of barite at Lady's Well was noted as far back as 1822 (Reilly 1986). Opencast mining began in 1852 but the most successful mining period followed reopening of the mine as an underground operation in 1870 by the Duneen Bay Mineral Company. Records suggest that between 1876 and 1887 an average of 5,000 tons was raised per annum (Cole, 1922). A change of ownership took place in 1885 and a group from Newcastle upon Tyne by the name of J. Cameron, Swan & Co. took over. Between 1908 and 1918 the Liverpool Barytes Company extracted 39,000 tons. They extended the mine into the adjoining townland, Mountain Common. The mine closed when the pumps were destroyed by corrosive mine water and the mine became flooded. The mine reopened under the ownership of the Cookson Barytes Company, which raised approximately 13,128 tons by 1923

(Cowman & Reilly, 1988). The mine was again abandoned owing to failing pumps and the falling price of barite. Assessment by Milchem in the 1970s led to a resumption of production between 1979 and 1985.

## Site Description and Environmental Setting



Most of the original features on the site have now been lost. The main open pit on the western side of the road forms the bulk of what remains of the site. Although the pit is largely backfilled, the original northern pit wall is still visible (photo, left). The quarry or open pit on the seaward side of the road is also backfilled. The area of the old ore stockpile became the site of serious subsidence in the mid 1980s and was backfilled with low-grade waste (Fig. 1). Some concrete buildings remain on site, apparently dating from the last period

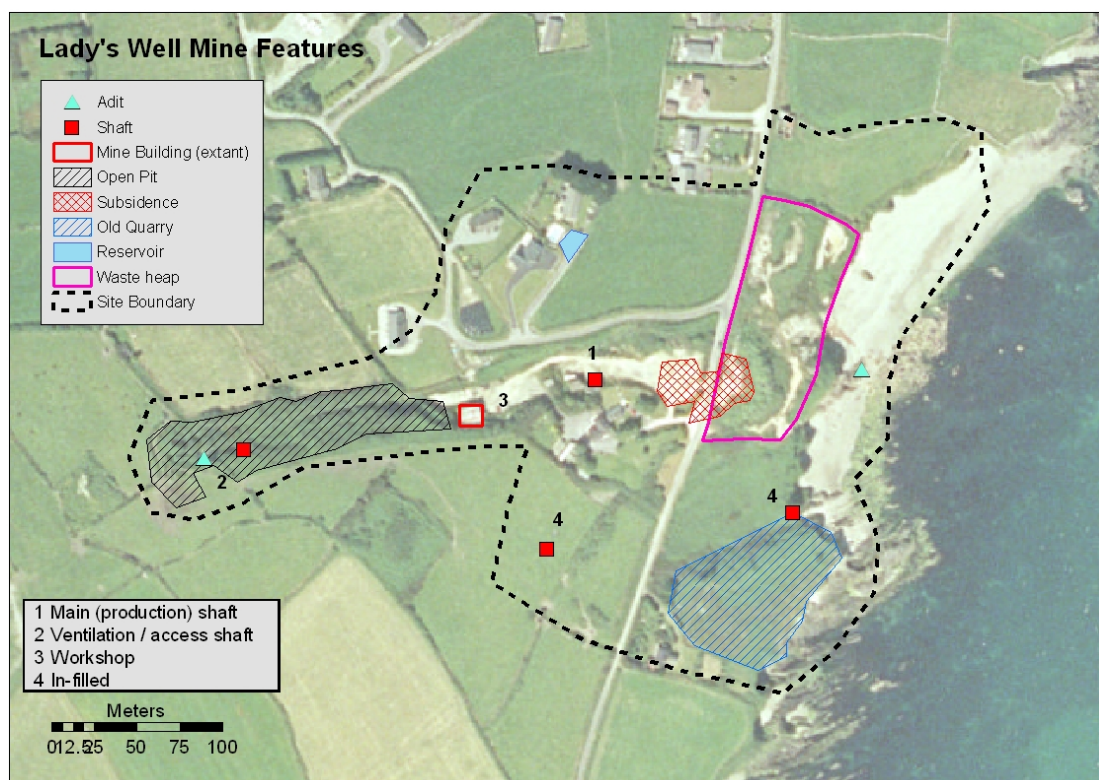
of mining in the 1980s (photo, below right). The site has been used in recent years as a dump for domestic and other waste.



The main, eastern shaft has been capped with concrete. The western shaft is backfilled and not visible. The other shafts shown on Fig. 1 are in-filled and the ground landscaped. The adit at the western end of the site is backfilled although its outline is discernible. The entrance to the northern adit on the beach is covered by a collapsed fan of waste material. Iron-stained water discharges from beneath the waste, apparently a discharge from the collapsed adit. Its pH was measured as 6.76. Mine water at Lady's Well has been reported to be corrosive, i.e. of low pH, presumably as a consequence of pyrite in the vein material. The adit at the south end of the beach (photo, left) was driven on the South Lode and is intact – it can be entered for 20m or more.



A significant volume of solid waste is disposed along the top of the cliff east of the public road. A series of benches can be discerned as one descends to the beach. The surface area of waste is estimated to be 7602 m<sup>2</sup>. Its volume has not been directly measured but a thickness of 0.5m has been assigned to it for the purposes of calculating a volume (3801 m<sup>3</sup>) for scoring the waste under the HMS-IRC Site Scoring system.



**Fig 1 Lady's Well: Mine Features**

## Geochemical assessment

### 1. Surface water

No surface water samples were taken at Lady's Well. The apparent adit discharge on the beach was measured *in situ* for pH (6.76) and EC (0.45 mS/cm) but neither were remarkable and no further analysis was carried out.

### 2. Groundwater

No groundwater samples were taken nor was any solid waste subjected to a leachate test.

### 3. Stream sediments

No stream sediment samples were taken the site is on the coast and there are no streams nearby.

### 4. Solid waste

Three XRF analyses were taken on some low-grade waste that was used as backfill of the subsidence that developed in the 1980s. The three points were immediately east of the road, opposite the gate to the western part of the site. Barium was detected in significant concentrations, ranging from 3.5 to 4.3%, and sulphur (from barite –  $\text{BaSO}_4$ ) was detected in one sample at close to 1%. Lead was measured in minor amounts ranging up to 196 mg/kg.

## 5. Risk Ranking Score

The total HMS-IRC Site Score for Lady's Well is less than one but has been rounded up to one. Although the amount of solid waste on the site is substantial, the only element of significance in it is Ba which is a low-relative toxicity element. In addition, the lack of other forms of waste, the absence of potential receptors such as a surface water drainage system and the lack of leachate or groundwater data all combine with the waste chemistry to produce the low score.

**Table 1 HMS-IRC Site Score, Lady's Well**

<b>Waste</b>	<b>Solid Waste</b>
<b>1. Hazard Score</b>	12
<b>2. Pathway Score</b>	
<i>Groundwater</i>	0.60
<i>Surface Water</i>	0.02
<i>Air</i>	0.00
<i>Direct Contact</i>	0.15
<i>Direct Contact (Livestock)</i>	
<b>3. Site Score</b>	<b>1</b>

## 6. Geochemical overview and conclusions

Lady's Well barite mine contains a significant concentration of Ba-rich waste but concentrations of elements of concern within it are low. A previous history of subsidence and evidence of collapse of waste represent more immediate issues of concern than the geochemistry of the waste.

## 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*.

Reilly, T.A. (1986) A review of vein mineralization in SW County Cork, Ireland. In Andrew, C.J, Crowe, R.W.A., Finlay, S., Pennell, W.M. and Pyne, J.P. *Geology and genesis of mineral deposits in Ireland*, Irish Association for Economic Geology (Dublin), 475-480.