Lousal, an example of mining rehabilitation

Less than ten years after the closure of the mine in 1988, the Frédéric Velge Foundation, which forms part of the company SAPEC, the old mine’s owner, and the Grândola Municipal Council began to implement an integrated plan for the revitalisation of the mining village (RELIOUSAL), exploring the mining area’s immense potential as a museum and tourist site. The Foundation’s work made it possible to restore various buildings and put them to a new use. This led to the creation of the Mining Museum (the former electricity and air compressed plant), the craft centre (involving the adaptation of the offices), a luxury hotel (previously the administration building), a restaurant (in the central warehouse) and the gourmet food market. The Lousal mine has a «Ciência Viva» Centre, known as the SCIENCE MINE, dedicated to the theme of Georesources. This centre is part of the Portuguese Ciência Viva Centres Network and has the main purpose to promote education in science and technology (geology, mining engineering, chemistry, physics, geophysics, biology, ecology, information technology). Making use of some of the mine’s former infrastructures, such as the miners’ changing rooms, the Live Science Centre is equipped with facilities that preserve and enhance the original architecture of these spaces. At the Science Mine, special emphasis is placed on interactivity with the public, through the handling of materials and/or experimental modules, using the most modern techniques for image enhancement in 2D and 3D versions and virtual reality. Next to the Ciência Viva Centre is the Main Shaft No. 1 and its respective cable housing and the building used for crushing the ore. Close by, on the main road is a small iron cap next to the Miguel mine shaft, with a gallery where the inhabitants of Lousal set up their crib at Christmas time. Visible in the open pit are mine shafts Nos. 1 and 2 and the Green and Red lagoons, the latter having a spring of acid water (pH=3). The wooden trail leads to the Valdemar Gallery, equipped with wooden and cement casing (in the rooms that were used as the explosive store). On the banks of the Corona stream, wetlands were created by the EDM «Empresa de Desenvolvimento Mineiro», for the purposes of phytoremediation and control of the acid effluents from the mine.

Lousal, a past that is present in the future

The mining village of Lousal reflects the history of the mine, and in particular the improvements introduced by the SAPEC company from the 1950s onwards. With a village’s population of 2,500 inhabitants, with 1,100 mineworkers, this mining area was organised in such a way that its total area was divided into nine concessions, each with all of the main services and equipment that were needed by the 1,100 mineworkers, this mining area was organised in such a way that its total area was divided into nine concessions, each with its own engineering, administrative and maintenance teams. The iron caps, tailings, acid water spring and hundreds of deposits of manganese and copper, lead, barium and antimony mineralised veins. Pyrite is the most common ore, occurring in deposits with over 200 million tons of sulphides, such as Rio Tinto, Neves Corvo and Aljustrel. Sulphide mineralisations were formed in the Upper Devonian to the Lower Carboniferous period (geological period covering the interval 362 - 346 million years, before the present day) in a submarine volcanic and sedimentary environment. Located in the south of Portugal, the Pyrite Belt is a vast geological heritage characterised by its main mines (in Portugal, Neves Corvo, São Domingos, Aljustrel, Lousal and Cavéira) and geological structures such as Pomarão, Ourique, Castro Verde, Cercal, Serra Branca and Albernôa and the valleys of the Guadiana and Sado rivers, or the streams of Barrigão, Foupiana and Odeleite. Visit the mines of the Pyrite Belt and you will find a very rich and diversified heritage. We recommend a visit to the Aljustrel Museum and the Lousal Ciência Viva Centre, as well as a tour through the mining towns and villages.

USEFUL CONTACTS

Lousal Ciência Viva Centre
Av. Frédéric Velge
7570-006 Lousal
T +351 269 750 520 (info@lousal.cienciaviva.pt)
GPS: Lat. 38.035663; Long. -8.42604


Funding: Atlantterra – INTERREG IVB Espaço Atlântico project

IBERIAN PYRITE BELT

The Iberian Pyrite Belt is one of the most important mining region of Europe, with more than 90 deposits of polymetallic massive sulphide ores and hundreds of deposits of manganese and copper, lead, barium and antimony mineralised veins. Pyrite is the most common ore, occurring in deposits with over 200 million tons of sulphides, such as Rio Tinto, Neves Corvo and Aljustrel. Sulphide mineralisations were formed in the Upper Devonian to the Lower Carboniferous period (geological period covering the interval 362 - 346 million years, before the present day) in a submarine volcanic and sedimentary environment. Located in the south of Portugal, the Pyrite Belt is a vast geological heritage characterised by its main mines (in Portugal, Neves Corvo, São Domingos, Aljustrel, Lousal and Cavéira) and geological structures such as Pomarão, Ourique, Castro Verde, Cercal, Serra Branca and Albernôa and the valleys of the Guadiana and Sado rivers, or the streams of Barrigão, Foupiana and Odeleite. Visit the mines of the Pyrite Belt and you will find a very rich and diversified heritage. We recommend a visit to the Aljustrel Museum and the Lousal Ciência Viva Centre, as well as a tour through the mining towns and villages.

5 places not to miss!
• Ciência Viva Centre
• Mining Museum
• Mine Shaft No. 1 and Ore Crushing Mill
• Open pit and acid water spring
• Valdemar Gallery

Visit the old sulphide mine

Located in the municipality of Grândola, 50 kilometres from the Atlantic coast, the origin of Lousal is related to the mining activity undertaken here between 1900 and 1988. Forming part of the Iberian Pyrite Belt, the mine has a rich architecture and ethnography, as well as an important natural, human, archaeological and industrial heritage. The must see highlights are the Ciência Viva Centre and the Mining Museum.
A pyrite mine

The Lousal Mine was in operation from 1900 to 1988, being worked fundamentally for the extraction of pyrite, an iron sulphide. Mining work took place from the surface down to a depth of 500 metres (Shaft No. 1). The company Mines et Industries S.A. (belonging to the SAPEC Group) was the last mining owner. The deposit had been discovered in 1882 by António Manuel, who identified the iron cap of the South and Extreme South orefields situated in the left bank of the Corona stream. The iron caps of the West, Central, South and Extreme South orefields were mined until the 1920s for copper. From 1928 to 1988, the mine produced crushed pyrite to be used in the superphosphates manufacture at the SAPEC and CUF factories in Barreiro. The method adopted for the mining of the deposit was based on a series of ascending horizontal galleries which were subsequently filled in with rubble quarried from the open pit. The ore that was extracted was sorted by hand, crushed, granulated and sifted at the treatment workshop and then transported by rail. During the 1960s and the early 1970s, the annual output from the mine was 250,000 to 250,000 tons, with the ore containing 45% sulphur and 0.7% copper.

Geology of Lousal

With 50 million tons of sulphides, the Lousal deposit is defined by two main horizons of sub-vertical massive sulphides: the western group – the West, South and Extreme South orefields; the eastern group – the Miguel and Central orefields, António, North - East, North, Fernando, José (the thickest of them all with a thickness of 40 metres) and José South. Pyrite, the iron sulphide that is mainly predominant in Lousal, is accompanied by chalcopyrite, galena, sphalerite, pyrhotite, marcasite, bournonite, tetrahedrite, cobaltite, safflorite and native gold. The two horizons of sulphides are located in a structure whose centre is occupied by sediments of the Phyllite-Quartzite Group (from the geological age of the Givetian-Strunnian). The pyrite orefields and stockworks are associated with black shales and felsic volcanic rocks of the Volcano-Sedimentary Complex of the Pyrite Belt, dated Strunnian age. In the upper part of this complex, basic volcanic rocks and siliceous shales are found. These rocks form the Palaeozoic basement of the Lousal region, which is bordered to the south and east by much more recent sediments from the Alvalade Cenozoic Basin. The geology of Lousal is marked by late Variscan faults, North-South direction, the most important of which are the Corona Fault and the Miguel Shaft Fault.

Microfossils of Lousal

Recent studies undertaken by LNEG on the sediments of the Lousal region have revealed the existence of organic-walled microfossils, palynomorphs, which are very useful for dating geological units with great precision. These microscopic fossils allowed to open a window in geological time and understand the evolution of life on Planet Earth. In the case of the Lousal region, the rocks reveal spores and remains of primitive plants, as well as traces of phytoplankton (microalgae) from marine environments that gradually colonised the land.

1. KEEP to the MAIN FOOTPATHS and TRAILS;
2. DO NOT CAUSE ANY DAMAGE to the infrastructures;
3. DO NOT TOUCH the reddish-coloured ACID WATERS;
4. DO NOT LITTER;
5. If you wish to take some ROCKS AND MINERALS away with you, pick them ONLY FROM THE TAILINGS.

Alvalade Cainozoic Basin
- Alluvium, Cenozoic sediments
- Iberian Pyrite Belt
- Volcano-Sedimentary Complex (Strunnian-Upper Visean)
- Basic volcanic rocks (Vb)
- Acid volcanic rocks (Va)
- Siliceous schists and black schists (Xn)
- Massive sulphide ores (iron cap)
- Phyllite-Quartzite Group (Givetian-Strunnian)
- Shales and quartzites
- Main shaft, shaft, gallery
- Tailings
- Footpath
- Acid waters
- Road, railway, mine railway

Shats and quartzites
- Main shaft, shaft, gallery
- Tailings
- Footpath
- Acid waters
- Road, railway, mine railway