Nomination for Inclusion in the World Heritage List

Roșia Montană
Mining Landscape

Nomination Document

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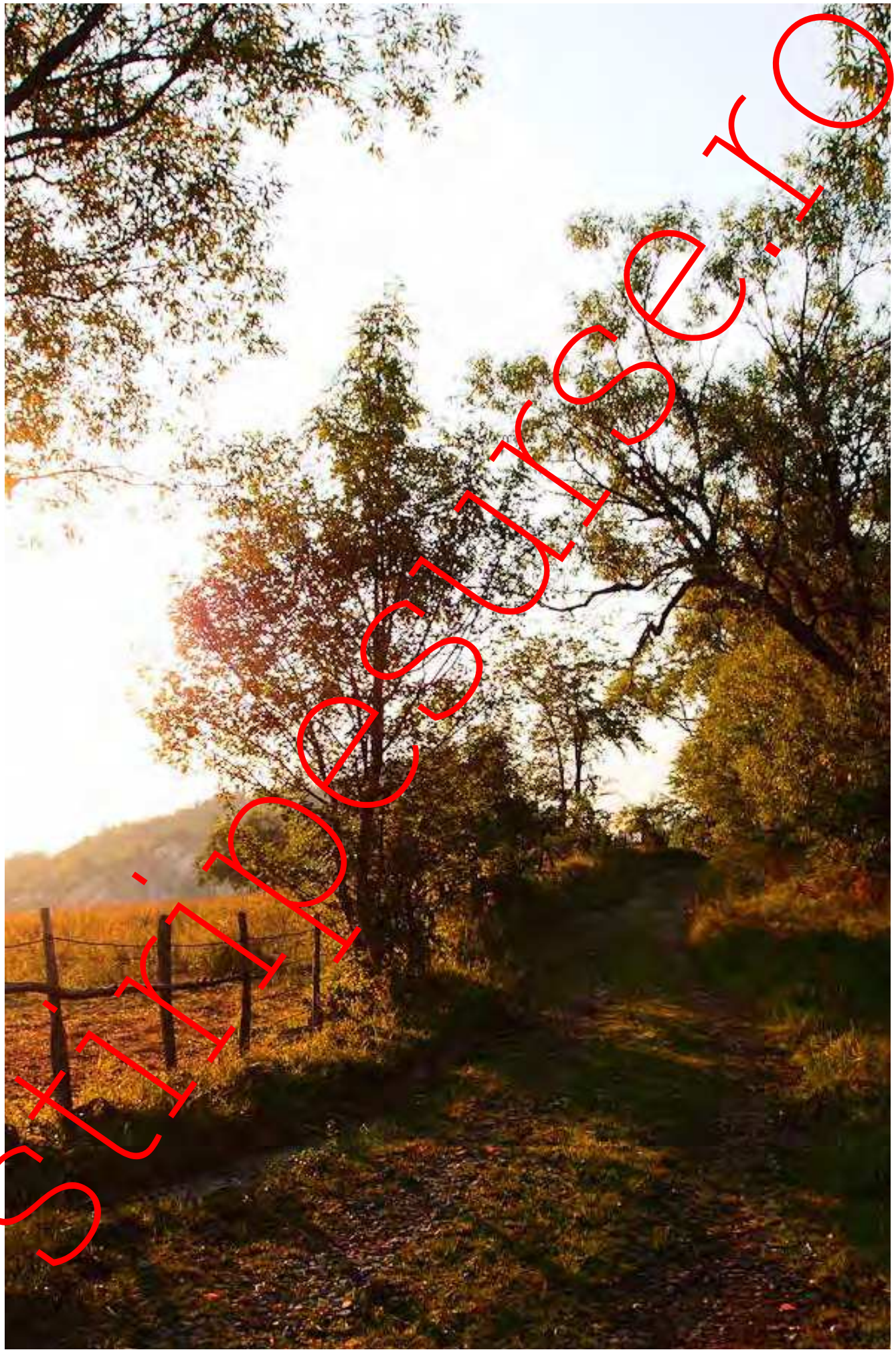


Path to Rosia Montana © Daniel Vrăbioiu

Foreword

It is with great pleasure and honour that I support and promote *Roșia Montană Mining Cultural Landscape* to be part of the UNESCO World Heritage List.

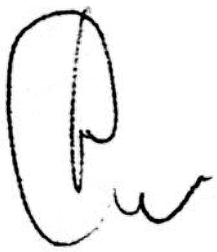
There are a great many things which recommend Roșia Montană. Not only was it the most active mining hub in our Carpathians, but also the one with the greatest longevity in the documented history of mankind. Mining activity has occurred practically uninterrupted since the Bronze Age, it blossomed in the Antiquity, further developed in the Middle Ages, sustained during the Modern Era, and was recently suspended. One thing that strikes me is how, until the communist regime nationalized private properties – in 1948 – that mining activity was entirely traditional. The industrialisation phenomenon in the area is thus quite recent. For thousands of years, mining in the region served the families living there. This type of mining – provided by minimal, yet consistent incursions – has led to a unique landscape, which now fosters a distinct area and identity, shaped by the symbiotic interaction between humans and nature. What we are witnessing is a gradual, meticulous modelling of the natural habitat, generation by generation, in such depth that the people living there bear the mark of the very thing they have been trying to possess.

One must tread lightly when it comes to striking the right balance between the economic development agenda and the environmental one. My government strived to achieve this equilibrium focused on sustainability, therefore I believe the mining landscape can serve as a prime example of how society and the local comunity can gracefully benefit from the two.

Roșia Montană is the first industry-related heritage site that Romania nominates to be part of the World Heritage family. This is no small feat. Having gone through intensive, anachronistic industrialisation during the communist regime, modern Romania has disconnected itself from the cultural value of its industrial sites, associating them with planned economy and authoritarian rule. It is now time for our country to make amends with its past and learn from it. This is why *Roșia Montană* is the most remarkable and complex case Romania can present to the world in this sense.

Regardless of the signature at the end, this letter voices the resolution of the Romanian people to give humanity an archeological gem and my government's commitment to this nomination to UNESCO, in an effort to ensure that *Roșia Montană* may not only be forever in our hearts, but so too in those of our global community.

Dacian Cioloș
Prime Minister



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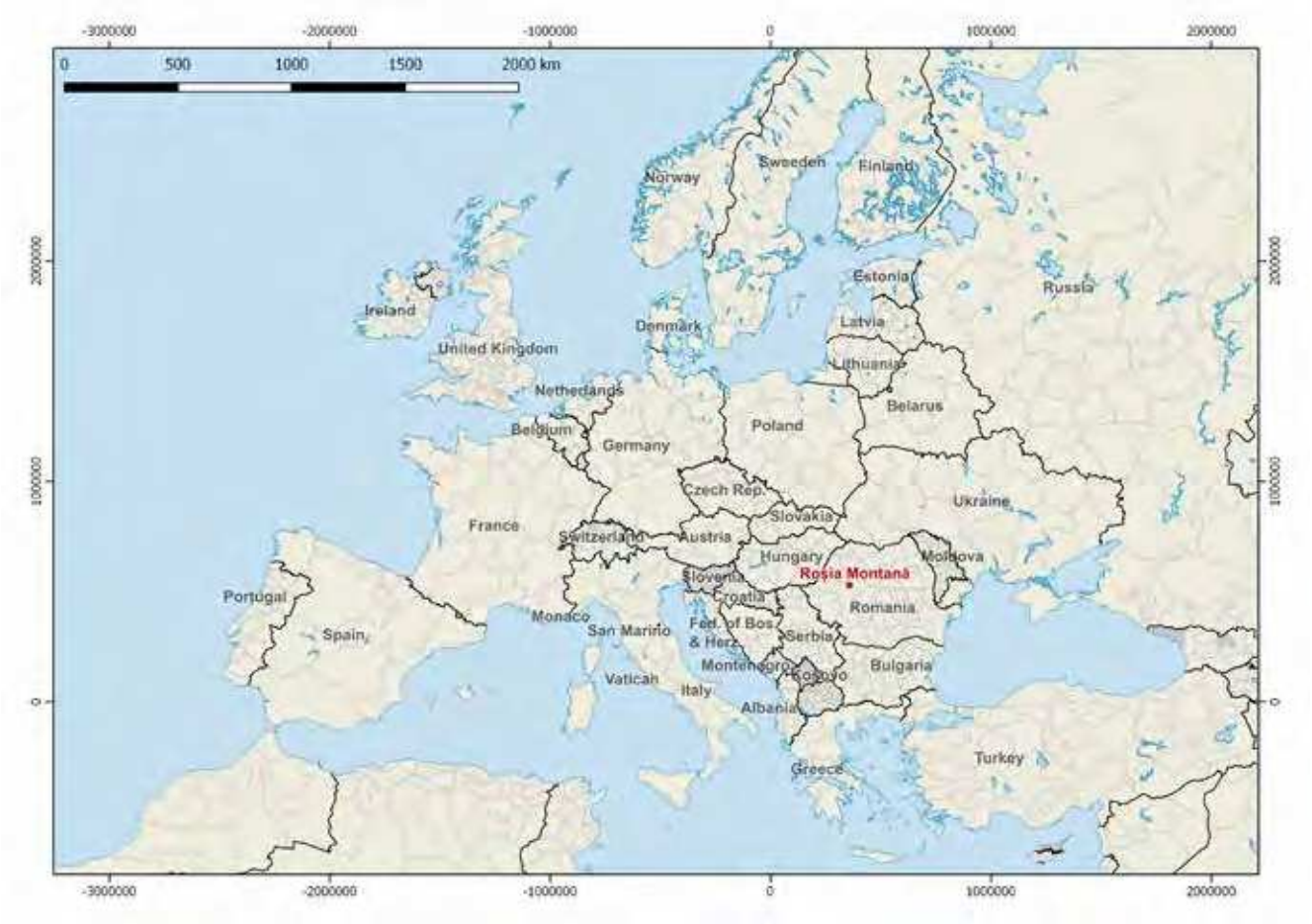

1. Identification *of the* Property

1.a Country (and State Party if different)
Romania

1.b State, Province or Region
County Alba
Municipalities of Roșia Montană and Abrud

1.c Name of Property
Roșia Montană Mining Landscape

1.d Geographical coordinates
N 46° 18’ 22”
E 23° 7’ 50”

1.e Maps and plans, showing the boundaries of the nominated property and buffer zone

1.f Area of nominated property (ha.) and proposed buffer zone (ha.)
Property: 1663.65 ha
Buffer zone: 341.42 ha
Total: 2005.08 ha

NO.	MAP / PLAN	SCALE	COMMENT
Pl. 1	Map showing the location of the property within Europe		A4
Pl. 2	Map showing the location of the property within Romania and Alba County		A4
Cadastral plans of the nominated property			
Pl. 3	Cadastral plan showing the boundary of the nominated property and the buffer zone		A4
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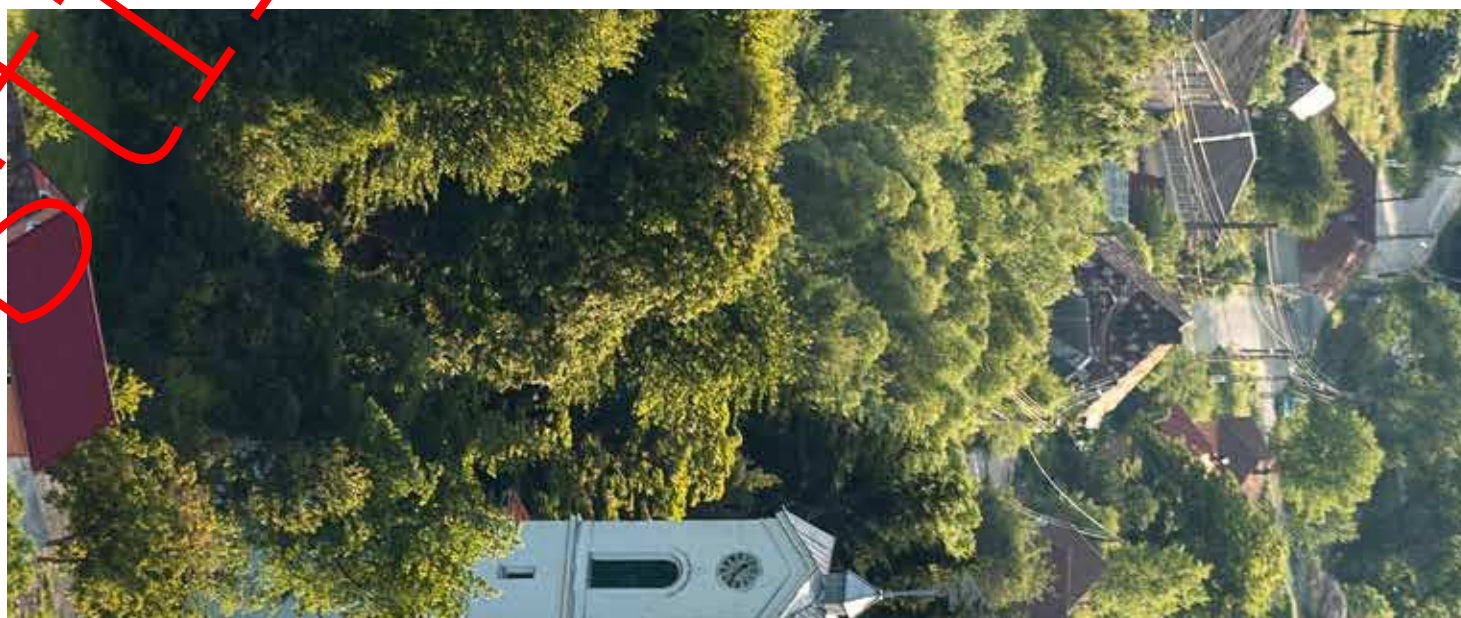
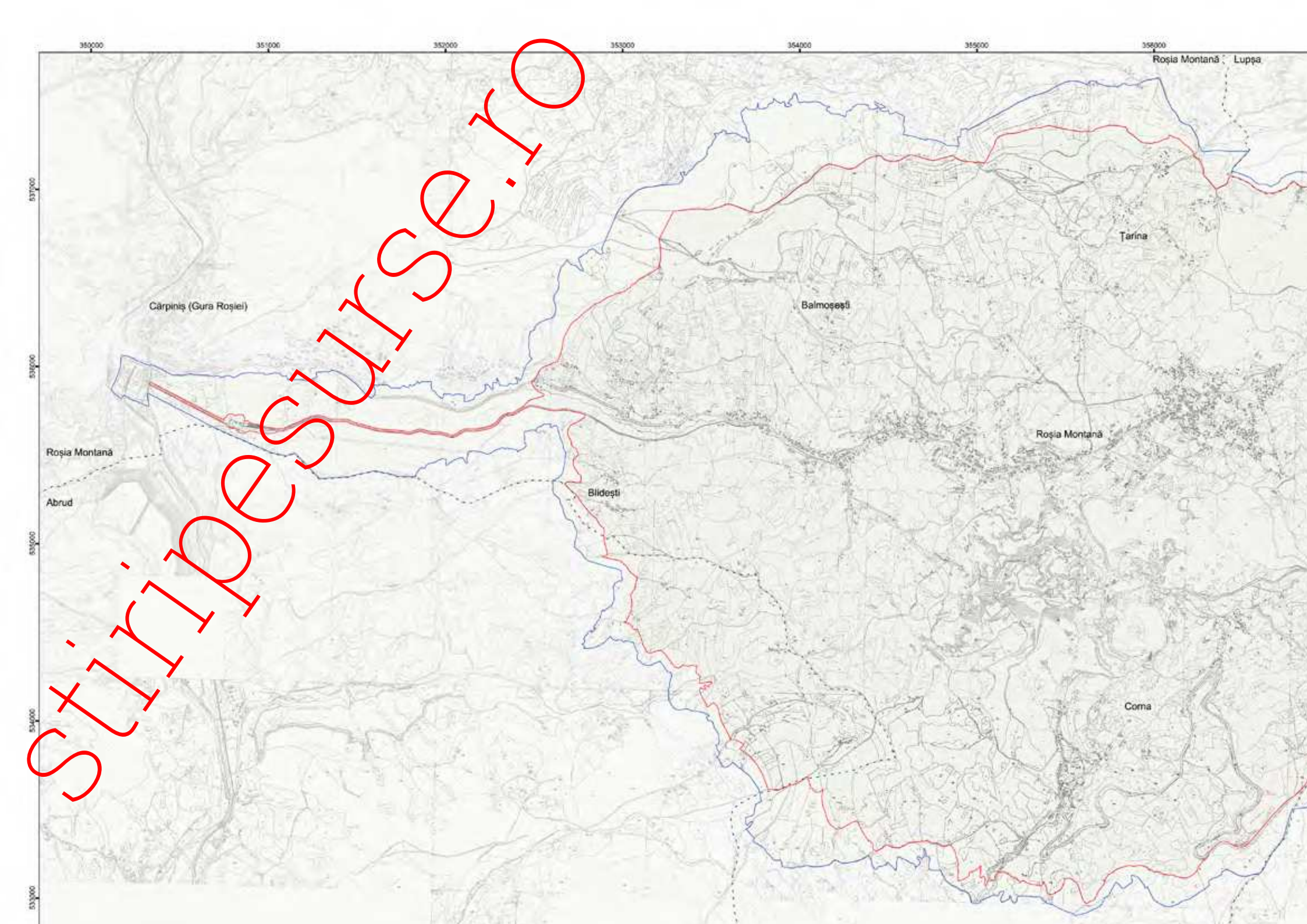
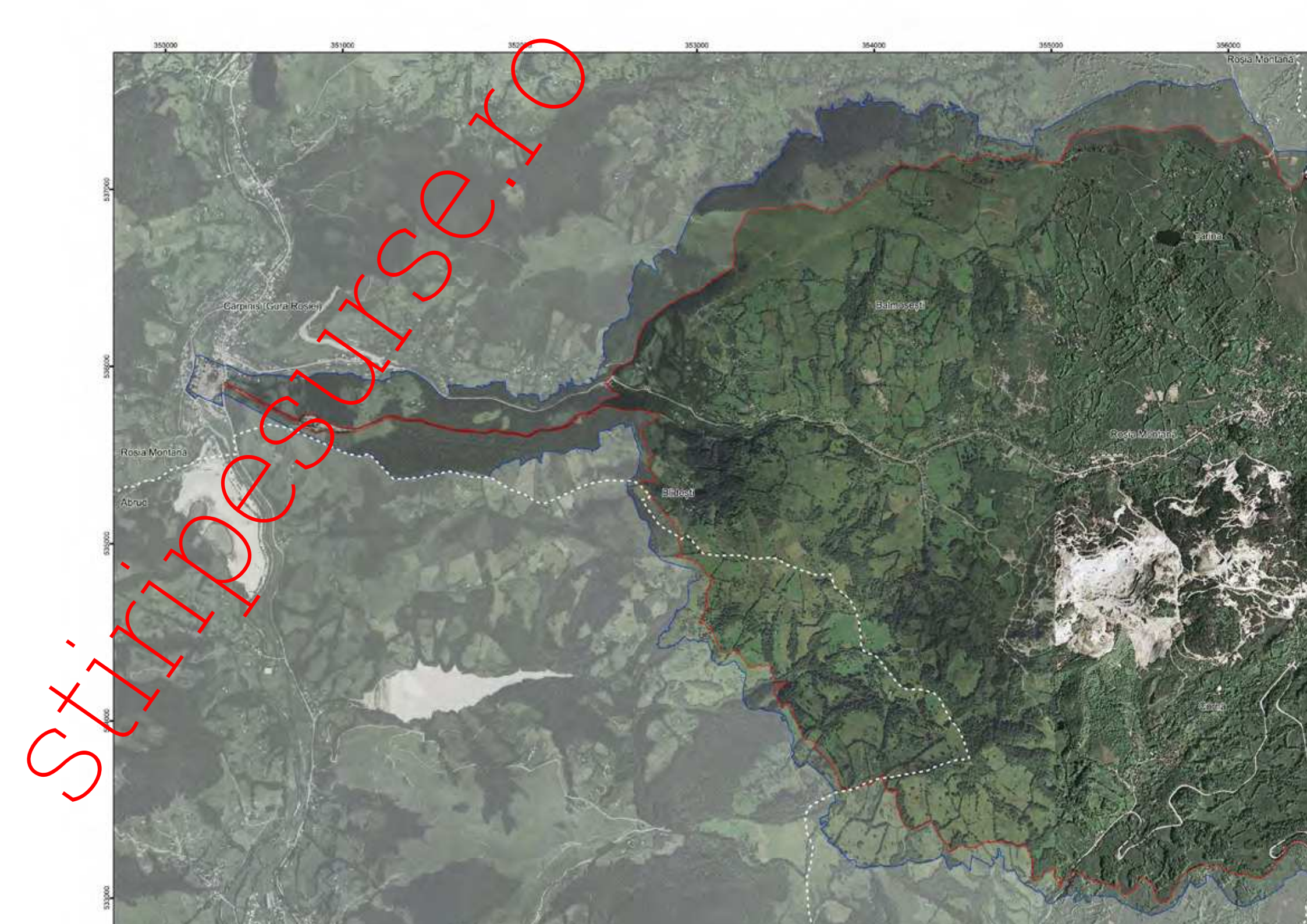
Pl. 7	Cadastral plan showing the boundary of the nominated property, the buffer zone and indicating legal protection areas within the nominated property	1/5000	- annexed, at the back of nomination (folded large format)
Pl. 8	Cadastral plan showing the boundary of the nominated property, the buffer zone and the technical characterization of the nominated property	1/5000	- annexed, at the back of nomination (folded large format)







Overview in Tăul Mare, Roșia Montană
(© Radu Sălcudean)

2. Description

2 a Description of Property

Roșia Montană Mining Landscape is a single area that comprises the gold mining landscape of Roșia Montană together with its historic underground mine networks.
The property is nominated as a cultural landscape.

This section is divided into:

2.a A Location and setting

Roșia Montană is situated in a natural amphitheatre of massifs and radiating valleys in the Metalliferous range of the Apuseni Mountains, located in the historical region of Transylvania in the central part of present-day Romania. The site represents the centre of the so-called Golden Quadrilateral of the Romania's Western Carpathians - the richest precious metals province in Europe

2.a B Attributes

CODE	CATEGORY	NAME
1	**Mining Exploitation: Underground and Surface**	
1.1	Mining Exploitation: Underground	
1.1.1		Cârnic Massif Roman Galleries
1.1.2		Lety Massif Roman Galleries: Cătălina Monulești Roman Galleries
1.1.3		Cetate Massif Roman mining features

1.1.4		Orlea Roman Galleries
1.1.5		Cârnic Roman fire-setting complex
1.1.6		Cârnic Early Modern Galleries
1.1.7		Cătălina Monulești Early Modern Galleries
1.1.8		Cetate Early Modern Galleries
1.1.9		Văidoaia Massif: Early Modern underground workings
1.2	Mining exploitation: Surface	
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1.3	Ore-processing features: Header Ponds	
1.3.1		Tăul Mare
1.3.2		Tăul Țarina
1.3.3		Tăul Corna
1.3.4		Tăul Orzi
1.3.5		Tăul Anghel
1.3.6		Tăul Cartuș
1.3.7		Tăul Țapului
1.3.8		Tăul Căuri
1.3.9		Ore Rail
1.4	Mining administration	
1.4.1		State Mining Headquarters (18th – 20th centuries)
1.4.2		Miners' Dormitory (early 20th century)
1.4.3		Mining Professional School (late 19th century)
2	**Archaeological Areas**	
2.1	Roman archaeology	
2.1.1		Hăbad Sacred Area
2.1.2		Găuri – habitation
2.1.3		Hăbad – habitation
2.1.4		Tăul Țapului
2.1.5		Hop Necropolis
2.1.6		Nanului Valley Sacred Space
2.1.7		Carpeni Zone
2.1.8		Jig-Piciorag Area

2.1.9		Țarina Necropolis
2.1.10		Pârâul Porcului - Tăul Secuilo
2.1.11		Tăul Cornei - Corna Sat Zone
2.1.12		Balmoșești - Islaz Area
3	**Built Heritage Features**	
3.1	Modern town / Village	Roșia Montană (Modern)
3.1.1	neighbourhood in the upper zone	Squ[illegible]
3.1.1.a	cluster	Townhouses with commercial ground floors; no. 323-328, 388 (late 18th – early 19th century)
3.1.1.b	cluster	"Sicilian Street"
3.1.1.c	cluster	Roman-Catholic Church and parish ensemble (18th - middle 19th, early 20th century)
3.1.1.d	cluster	Unitarian Church and parish ensemble (1796, 18th - middle 19th cent, 1933)
3.1.1.e	cluster	The Casino (1880-1900), no. 329, and Summer Garden
3.1.1.f	cluster	The former Administrative Palace (1896), no. 310
3.1.2	neighbourhood in the upper zone	Brazi
3.1.3	neighbourhood in the upper zone	Ieruga
3.1.4	neighbourhood in the upper zone	Tăul Brazi
3.1.5	neighbourhood in the upper zone	Văidoaia
3.1.6	neighbourhood in the upper zone	Berk
3.1.7	neighbourhood in the upper zone	Sosași
3.1.8	neighbourhood in the upper zone	Orlea
3.1.8.a	cluster	Greek-Catholic Church and parish ensemble (1720, 1741, mid 19th century), no. 135
3.1.8.b	cluster	Orthodox Church and parish ensemble (1781, mid 19th century), no. 175
3.1.8.c	cluster	The administrative centre. Town Hall
3.1.9	neighbourhood in the lower zone	Gura Minei
3.1.10	neighbourhood in the lower zone	Vercheș
3.1.10.a	cluster	Aitaj House, later Miners' Club (no. 242), Maternity ward (no. 251), Gritta House (no. 258), Miner households
3.1.10.b	cluster	State school and kindergarten; no. 274 (1905-1915)
3.1.10.c		Blocks of flats of the 1960s
3.2	Town / Village	Corna (Modern)
3.2.1		Orthodox Church (1719), no. 707
3.2.2		Greek-Catholic Church (19th century), no. 692

3.2.3		Miners households
3.3	Town / Village	Țarina (Modern)
3.3.1		Traditional farmhouse (19th century), Țarina no. 1248
3.3.2		Traditional farmhouse (20th century), with polygonal stable, Țarina no. 1254
3.4	Town / Village	Balmoșești, Blidești (Modern)

1 Mining exploitation: Underground and Surface

1.1 Mining exploitation: Underground

Underground mining networks in Cârnic (MNIR Archives).

1. Recent works, 2. Unaccesible works, 3. Mine entrance, 4. Recent pillar room, 5. Modern gallery, 6. Vertical Modern site, 7. Horizontal Modern site, 8. Roman gallery, 9. Roman site.

70 km of underground works have so far been surveyed during recent investigation (out of 150 km estimated), with archaeologists assigning a time bracket in the following approximate proportions:

- 7 km (10%) "Ancient" workings excavated by hand with iron tools and/or fire;
- 10 km (14%) "Modern" workings (17th and 18th centuries) excavated by blasting with black powder;
- 53 km (76%) "Recent" works (19th and 20th centuries) excavated by dynamite and modern powered equipment.

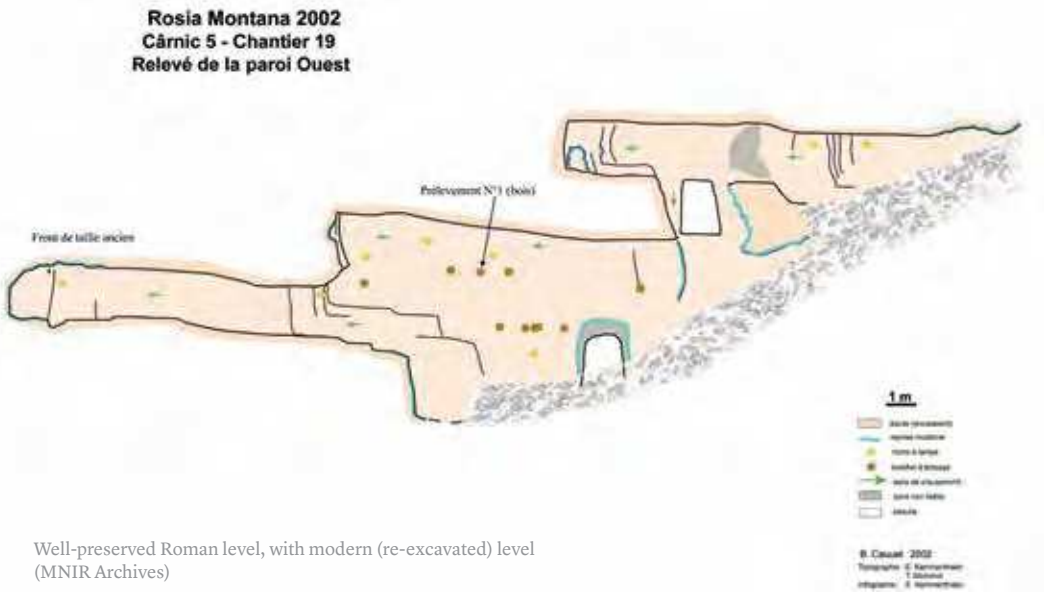
The Roman workings recorded are not a single network but a total identified across all the targeted massifs (with greatest emphasis placed on the investigation of the Cârnic and Cetate Massifs). All such workings were encountered in a condition described as back-filled, a common mining practice that indeed has aided the structural preservation of certain features and artefacts. Such backfill, however, was commonly not "ancient", most ancient workings having been reopened by subsequent generations of miners during the medieval and modern periods ('Roman' miners were heavily selective of the highest-grade ores, leaving a resource of profitable values exposed and in situ for later miners). Most Roman workings are therefore commonly intersected by later workings, inevitably leading to a loss of integrity. What survives – and indeed what is recorded so far – still means that Roșia Montană represents the most extensive and technically diverse underground Roman gold mining complex currently known in the world.

Based on a meticulous inter-disciplinary approach, and some modern technology – including 3D scanning – the broad layout of the Roman mining works could be reconstructed. This revealed a systematic consistency in shape and distribution of uniform, highly engineered, workings – all likely made within the space of a little over 60 years.

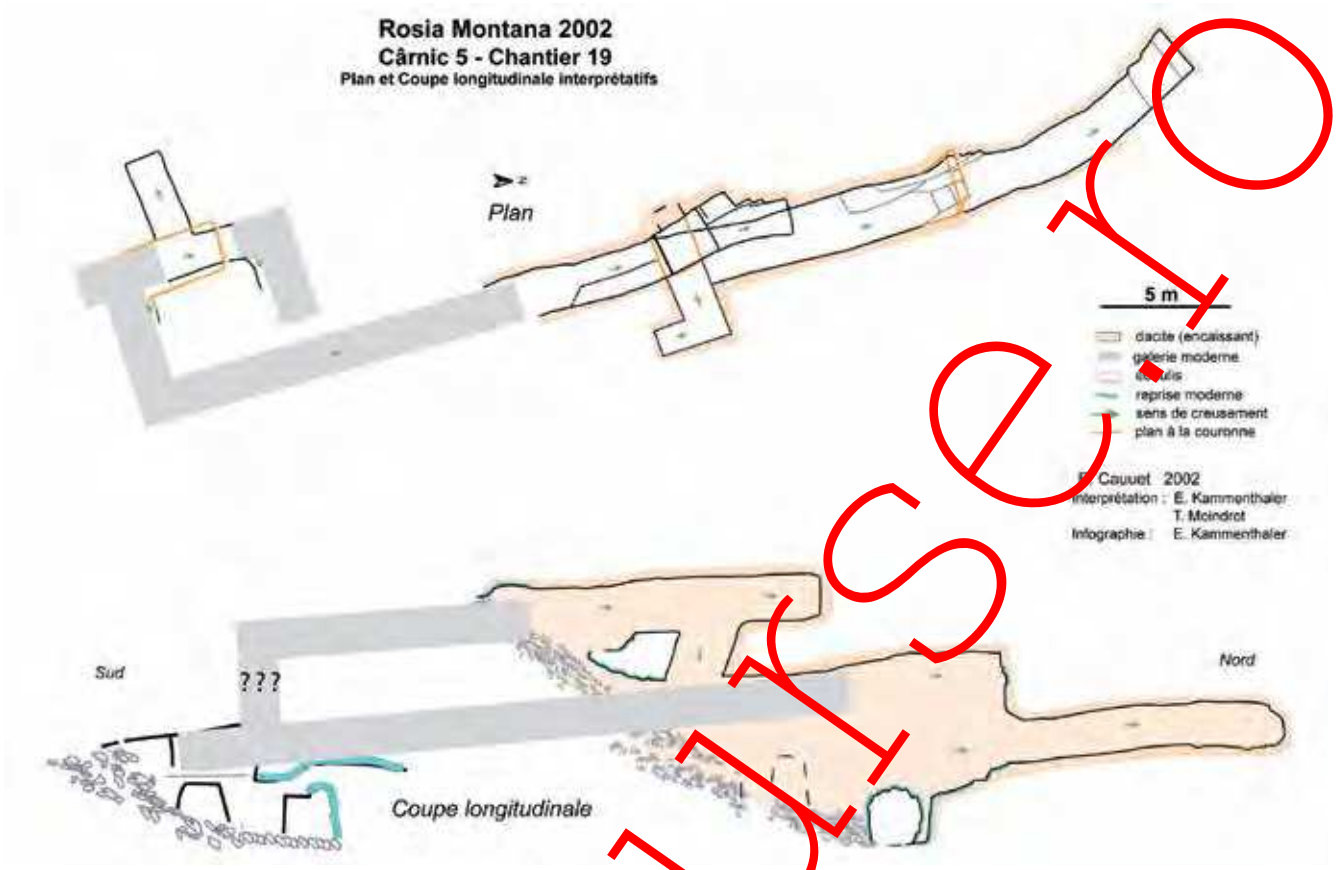
→ 1.1.1 Cârnic Massif Roman Galleries

This is the most extensive and significant mining system recorded anywhere in the Roman Empire. The Roman galleries in Cârnic contain three major technical typologies of mining that are unparalleled elsewhere, including within other Roman networks in Roșia Montană: spiral staircase galleries; vertical stopes with roofs cut in reverse stairs; and pillar-supported stopes. A fourth typology, seen in other Roman mines, inside and outside of Romania, are stepped communication galleries.

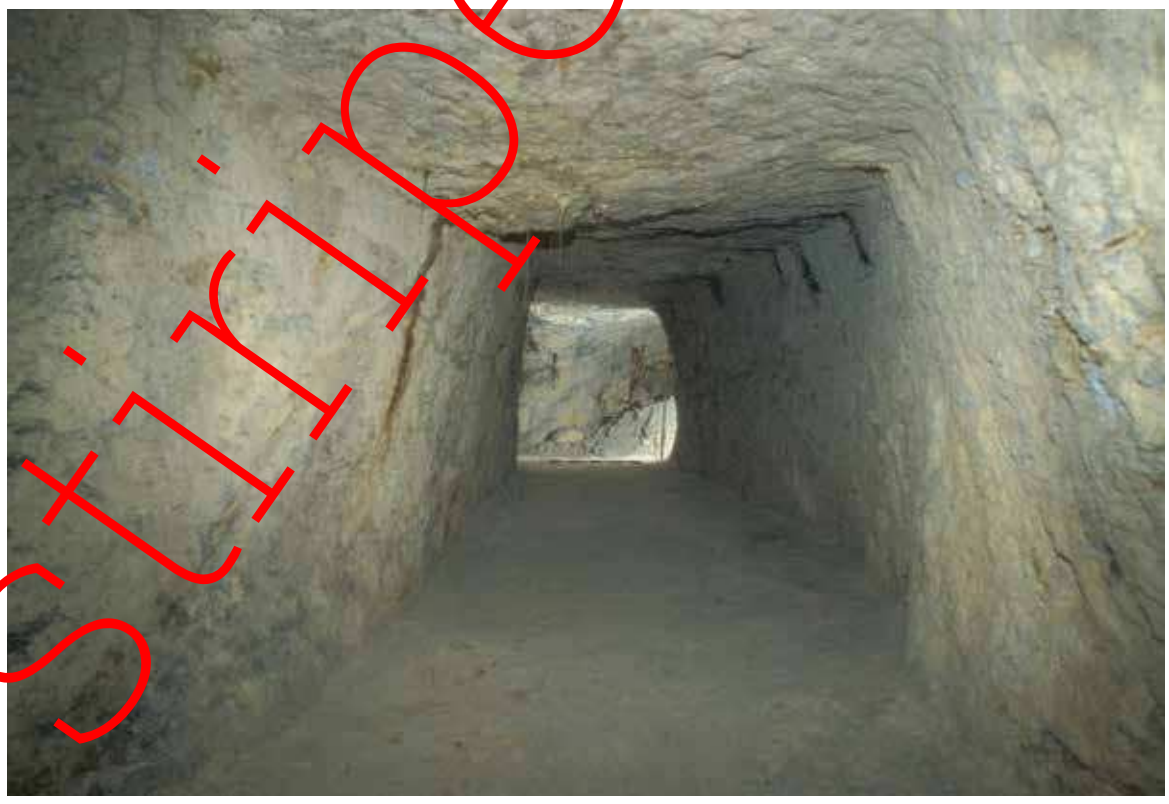
A precious discovery was that of a Roman hydraulic system in the Păru Carpeni mine, a very significant property in the ensemble. This was the first such example to be found and properly recorded in Romania by archaeologists. In a relatively good state of conservation, it is a rare discovery in the Roman world and its remains have been recorded and left in a state of preservation in the humid levels of the mine.



Well-preserved Roman level, with modern (re-excavated) level (MNIR Archives)



Roman level crossed by modern level
(MNIR Archives)

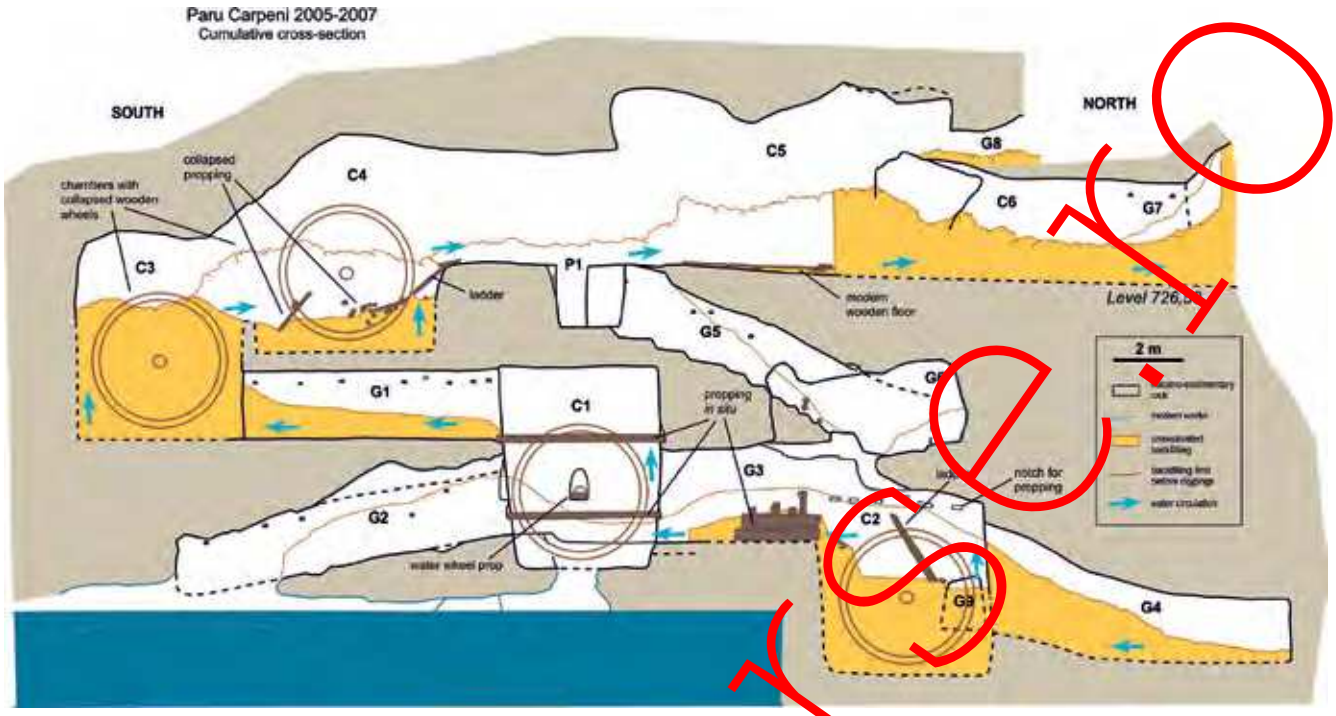


Blackened wall markings indicating positions of lamp niches
(MNIR Archives)

Roman adit level (MNIR Archives)

Roman galleries with evidence for fire-setting
(MNIR Archives)

Roman galleries intersected by modern workings
(MNIR Archives)



Păru Carpeni: Cumulative cross-section of the two levels with four water wheel chambers for drainage (B. Cauuet)

Păru Carpeni: Water wheel chamber with monoxyle ladder - as discovered in situ. (© B. Cauuet)

This network includes the galleries of Cătălina Monulești, Sf. Iosif and Sf Laurențiu, and contains much pristine archaeology, including dated Roman woodwork in various contexts. The specific conditions of humidity are ideal for preservation and many artefacts discovered have been recorded and left in situ.

A remarkable treadmill-powered water-dipping wheel system was discovered in Cătălina Monulești during archaeological investigations in the 2000s, installed in multiple chambers, one upon the other, it represents the same design as that discovered in Păru Carpeni mine in Cârnic Roman Galleries.

A monoxyle notched ladder (4.70 m length) discovered in a perfect state of preservation inside the backfill of a vertical, stepped, stope in Cătălina Monulești Mine. Well-organised transport routes for miners include stone-cut stairways and ramps, and larger stopes climbed with wooden ladders that suggest that ore and waste rock was removed from underground carrying loads on their backs. (© B. Cauuet)

Launder (wooden water-channel) that received water from the still adjacent remains of the upper waterwheel in Cătălina Monulești Mine. (© C. Tamas)

Waterwheel hub – still in connection with its spokes – discovered in Cătălina Monulești Mine. Two complex treadmill-powered water-dipping wheel systems (Cătălina Monulești, and Păru Carpeni mines) were found installed in multiple chambers, one upon the other, and which eventually discharged via a short adit. (© C. Tămaș)

→ 1.1.3 Cetate Massif Roman mining features

Cetate Massif has been subject to archaeological excavations (Zeus Area, Găuri Area), but most of the Roman mining features have not been yet addressed. An important part of the Cetate Massif has been compromised in terms of integrity by the incursion of modern workings. Still, under the modern exploitation level there is an area of great potential, poorly or never researched to date.

Cetate-Zeus Area. Roman works (MNIP Archives)

→ 1.1.4 Orlea Roman Galleries

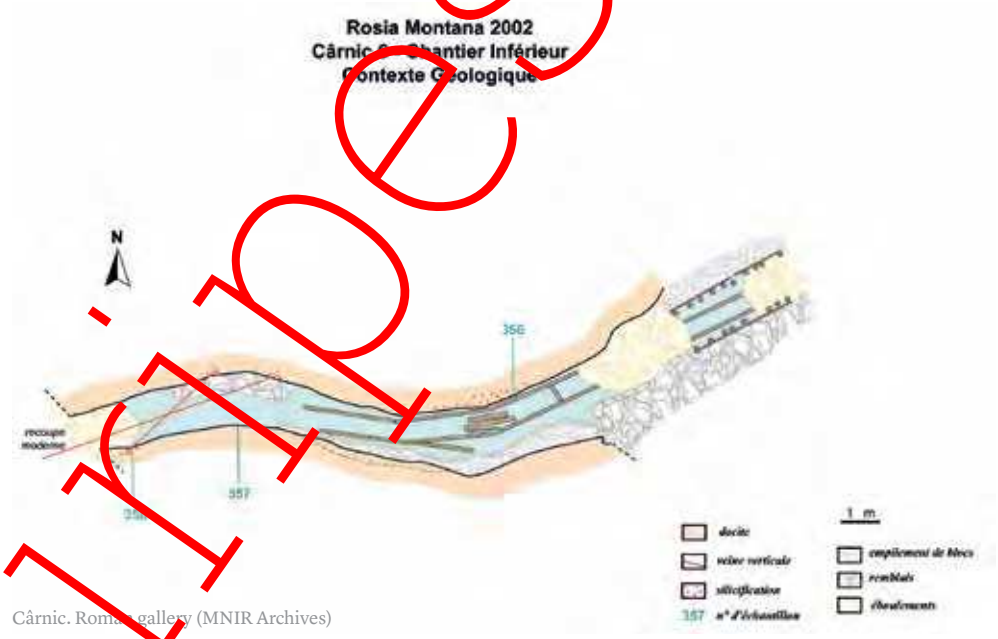
Orlea Massif has only been subject to preliminary archaeological investigation – both underground and at surface where it is thought that there are likely concealed Roman entrances to mine workings. A wooden notched ladder was found in the Roman galleries and radiocarbon dated to the 2nd century CE.

The quality of Roman mining engineering is apparent in the perfectly carved trapezoidal-section galleries and stepped inclined shafts of the Orlea Galleries, open to visitors since the communist period in the 1970s when the mining museum was first established. Some authenticity has been partially impacted in the provision of access, but this is partly reversible, as is some rather obtrusive cabling infrastructure.

Roman galleries with trapezoidal cross-section (© L. Niculae)

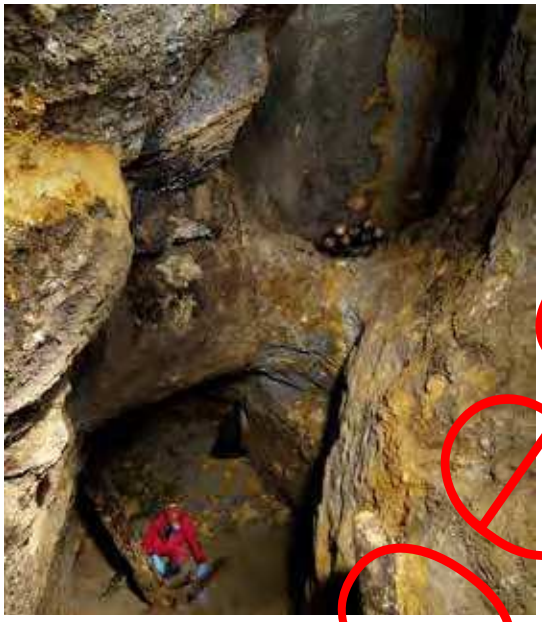
Roman mining works – room with pillars (© L. Niculae)

Fire-setting complex (MNIR Archives)



Cârnic. Roman gallery (MNIR Archives)

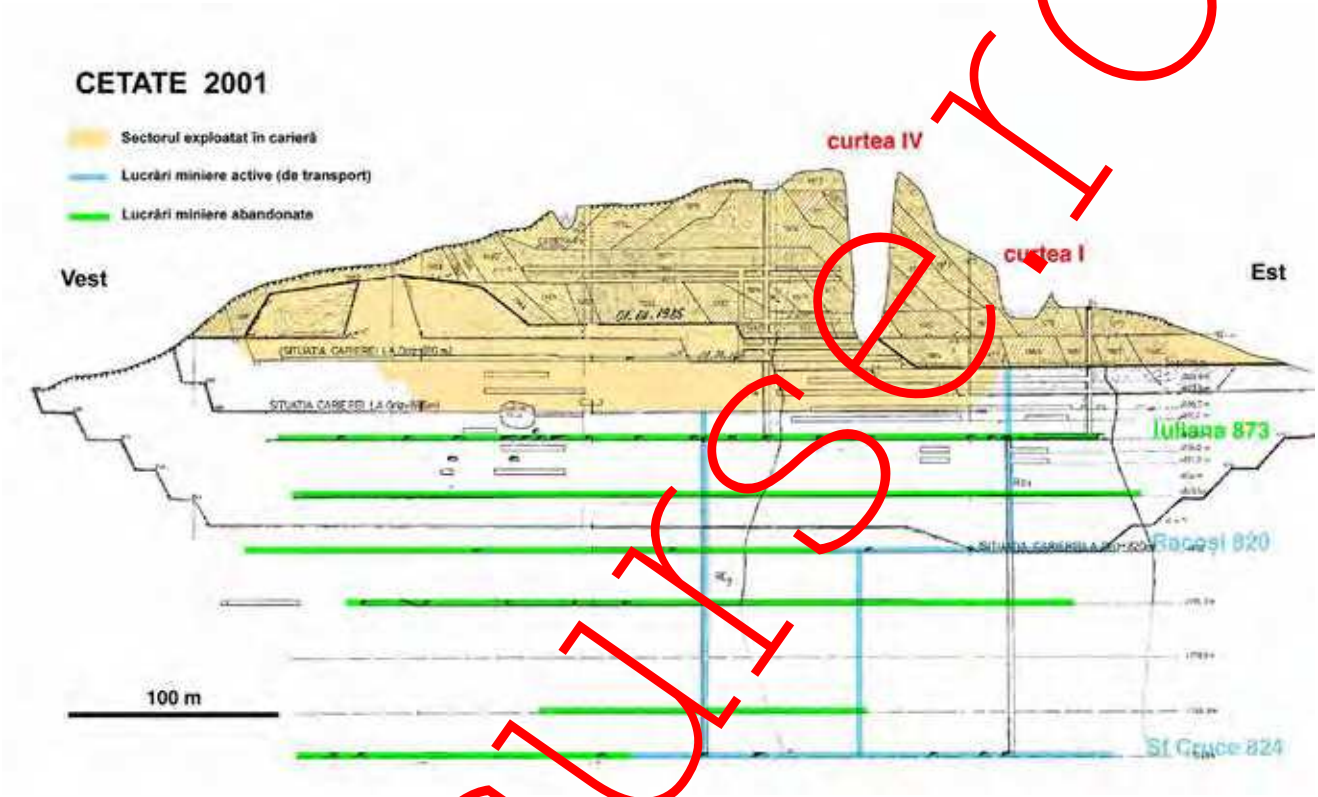
Cârnic Early Modern Gallery (MNIR Archives)



Cârnic Modern works – “caverns” (© I. Rous)

→ 1.17 Cătălina Monulești Early Modern Galleries

Cătălina Monulești. Modern pillar alongside Roman gallery (© C. Tămaș)



Cetate Early Modern galleries (MNIR Archives)

Beneath the floor of Cetate pit there is a modern underground network of workings along veins and in extraction chambers. All levels are interconnected by shafts and caverns.

Văidoaia. medieval and modern open works (© L. Niculae)

→ 1.1.9 Văidoaia Massif: Early Modern underground workings

Mining works in Văidoaia Massif are thought to be Medieval or Early Modern. Also, surface Roman exploitations vestiges can be expected to be detected.

1.2 Mining exploitation: Surface

→ 1.2.1 Cârnic Roman Openworks

Intensive archaeological excavations have been conducted at Cârnic Massif in Piatra Corbului area where vestiges of surface Roman exploitations are in evidence.

Cârnic-Piatra Corpbului Roman slope-side works opened with fire and water (© H. Ciugudean)

→ 1.2.2 Cetate Roman Open Pit

Intensive archaeological excavations have been conducted at Cârnic Massif in Piatra Corbului area where vestiges of surface Roman exploitations are in evidence.

Cetate - Găuri Area: Roman works opened with fire and water (MNIR Archives)

1.3 Ore-processing features: Header Ponds

An extensive network of header ponds was created, probably incorporating pre-existing ponds, starting in the first half of 18th century. Set into favourable positions on the slopes of the mountains surrounding Roșia Montană and Corna, they gather water from springs and streams, from rain and melting snow, kept by artificial dams. The dams of the larger ponds – Mare, Corna, Țarina, Brazi, Anghel, Găuri – are built of substantial well-engineered earth embankments lined and faced with stone, sometimes with particular architecture elements to define the sluice outlets at their base. Sophisticated water supply control mechanisms were installed in the larger ponds, and survive in good condition.

After the cessation of traditional mining they were abandoned, absorbed into the natural and agricultural landscape and developed specific ecosystems of high natural significance. They contribute significantly to the character of the entire property.

→ 1.3.1 Tăul Mare

The largest of all the header ponds in Roșia Montană, *Tăul Mare* is also among the first to be (re)built in the 18th century, starting in 1733. It is set at an altitude of 1025 m, it covers an area of 40,000 m2 and retains 200,000 m3 of water behind a 110 m dam, 25 m high. It has been enlarged, reinforced and repaired several times, from the late 18th century, in 1779, to 1913 and 1929.

Its sluice outlet portal, dated 1742 on its keystone, is among the examples of fine architectural detailing, typical for early industrial architecture in the area.

Today the dam is overgrown with high vegetation, which hides it from view and poses a serious problem for its conservation, an issue to be addressed in the forthcoming Property Management Plan.

Tăul Mare (© R. Sălcudean)

Tăul Mare after the reinforcement works in 1929 (Postcard)

→ 1.3.2 Tăul Țarina

Set high above Roșia Montană, on the slopes of Țarina, at an altitude of 950 m, it covers 8,500 m² and has a capacity of 25,000 m³ of water. Its dam is made of earth, clad in stone. The sluice outlet chamber opens at the base of the dam through a fine stone portal.

It was enlarged in 1779. Of its repairs, the most important happened in 1914. Now it is covered by young forest vegetation.

Upstream from it there are several other smaller ponds, gathering the waters from the surrounding slopes and flowing in a cascade from one to the next.

Tăul Țarina (© L. Niculae)

Set at an altitude of 965 m, above the village of Corna, bellow the peaks of Cârnic - Piatra Corbului, Ghergheleu and Citera, the pond is defined by its sinusoidal dam, with the most elaborate architectural portal at its sluice outlet. Like the others, it is overgrown with vegetation and will be subject to conservation management.

Tăul Corna (© S. Florian)

The two header ponds are one next to the other, set at the upper, eastern end of Roșia Valley, just above the last houses of the mining town. *Tăul Anghel* is higher, set at 990 m, at the rim of the slopes closing *Tăul Brazi*, at 950 m. Together they illustrate the network approach to the ore processing water management of the mining site.

Tăul Brazi had a small wooden control cabin on its dam, now lost. Today the pond is used for recreational/festival activity.

Tăul Anghel is highly overgrown, which makes it less visible and raises conservation issues that will be dealt with in the forthcoming Property Management Plan.

Tăul Brazi (A.O. Bach)

Tăul Brazi and Tăul Anghel (© R. Sălcudean)

→ 1.3.6 Tăul Cartuș

Tăul Cartuș (MNIR Archives)

→ 1.3.7 Tăul Țapului

Tăul Țapului (MNIR Archives)

→ 1.3.8 Tăul Găuri

Tăul Găuri (MNIR Archives)

→ 1.3.9 Ore Railway

The property boundary has been extended to include the Ore Railway (mid 19th century) from the mining area to the site of the former ore-processing plant. Authenticity and integrity are high, including the impressive inclined plane section that descends to the current road where the property is terminated as integrity is compromised beyond. The line was decommissioned in 2006 and the track removed. However, most substantial engineering structure remains.

Holy Cross ore railway 1927 (V. Zotinca)

Ore railway incline (NLR Archives)

1.4 Mining administration

→ 1.4.1 State Mining Headquarters (18th – 20th centuries)
Roșia Montană no. 178

The headquarters were established here from the moment when the Habsburg government took over the organization of the underground mining and developed it on a large scale. It is therefore important for the modern history of mining in Roșia Montană.

The present buildings are transformed mid-19th century and again at the turn of 20th century, on the background of the 18th century structures. The headquarters include the roll-call house with the mine entrance shaft, offices and housing for the higher staff, along with ancillary buildings. Set apart from these, lies the house of the mine leader. The architecture is restrained but distinctive, with several features specific to early industrial architecture in the area.

It incorporates in the former roll-call house a descent into the "Holy Cross" master gallery, dug in the time of Empress Maria Theresa. This unites all major operating systems underground. Today it is still the headquarters of the state mine, hosting as well the local mining museum.

State Mining Headquarters. Roll-call room and shaft leading to the mines (v. Zotinca)

→ 1.4.2 Miners' dormitory (early 20th century)
Roșia Montană no. 185

Miners' dormitory (INP Archives)

→ 1.4.3 Mining Professional School (late 19th century)
Roșia Montană no. 208

Mining Professional School (INP Archive)

2 Archaeological Areas

2.1 Roman archaeological areas

Ancient archaeological monuments have been grouped into three typologies:

- → Residential areas with accompanying infrastructure (Hop-Găuri, Hăbad, Tăul Țapului, Carpeni Hill);
- → Sacred areas with temples (Hăbad, Nanului Valley and possibly Carpeni);
- → Zone funeral (cremation necropolises - Hop, Tăul Corna, Jig-Piciorag, Țarina Pârâul Porcului - Tăul Secuilor and groups of graves in the Nanului Valley and Carpeni Hill).

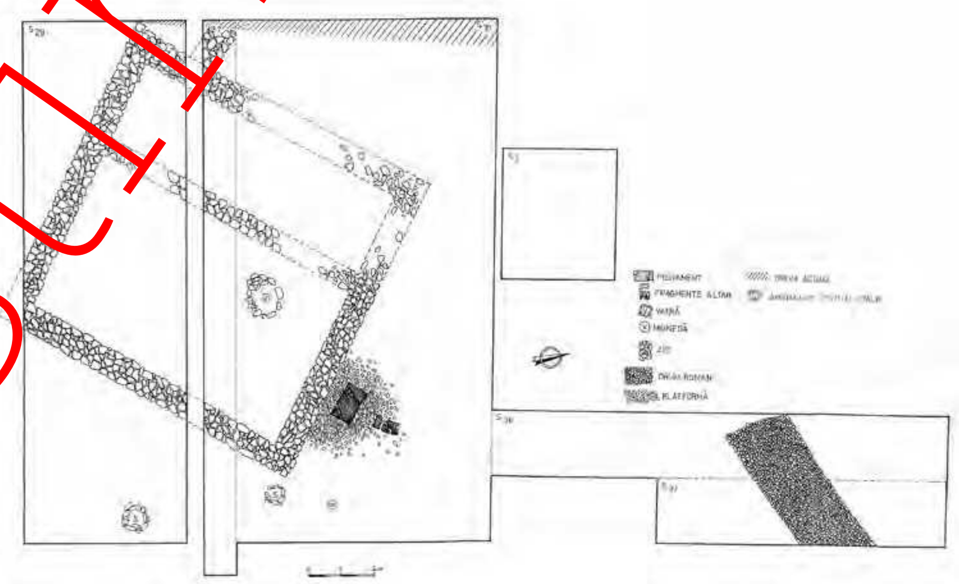
The funerary practices of the ancient populations that were colonised at Alburnus Maior by the Romans feature strongly in archaeological revelations: notably 7 necropolises (Hop Găuri, Tăul Corna, Țarina, Pârâul Porcului / Tăul Secuilor, Jig Piciorag, Carpeni and Szekely) and an outstanding Roman funerary precinct at Tăul Găuri, with more than 1,450 cremation graves.

Apart from significances conferred upon individual archaeological sites, the characteristics and distribution in the landscape of necropolises on the slopes and plateaus, as well as habitat and sacred places, provides data to help reconstruct an ancient local topography that was intimately associated with ancient gold mining and processing areas. Remains of habitations, sacred areas, necropolises and funerary areas, together with evidence of ore-processing activities integrated within dwellings, and paved Roman roads, are buried beneath a shallow earth veneer and are more or less well preserved.

Artefacts discovered (particularly during preventive archaeological campaigns) include an astonishing more than 70 votive altars in 2001–02, alone. The artefact collection also includes everyday Roman ceramics and pieces of funerary architecture – over 10,000 items, their conservation undertaken by specialised staff in the laboratories of a number of Romanian museums. Much has been published, and new interpretations that have emerged from the discoveries at Roșia Montană have laid foundations in defining new directions for the research of Roman Dacia.

→ 2.1.1 Hăbad Sacred Area

This is the site that comprises the remains of buildings that are associated with inscribed altars that provide information on the mining community and its religious beliefs, as well as ancient toponyms on guild organisations (collegia).

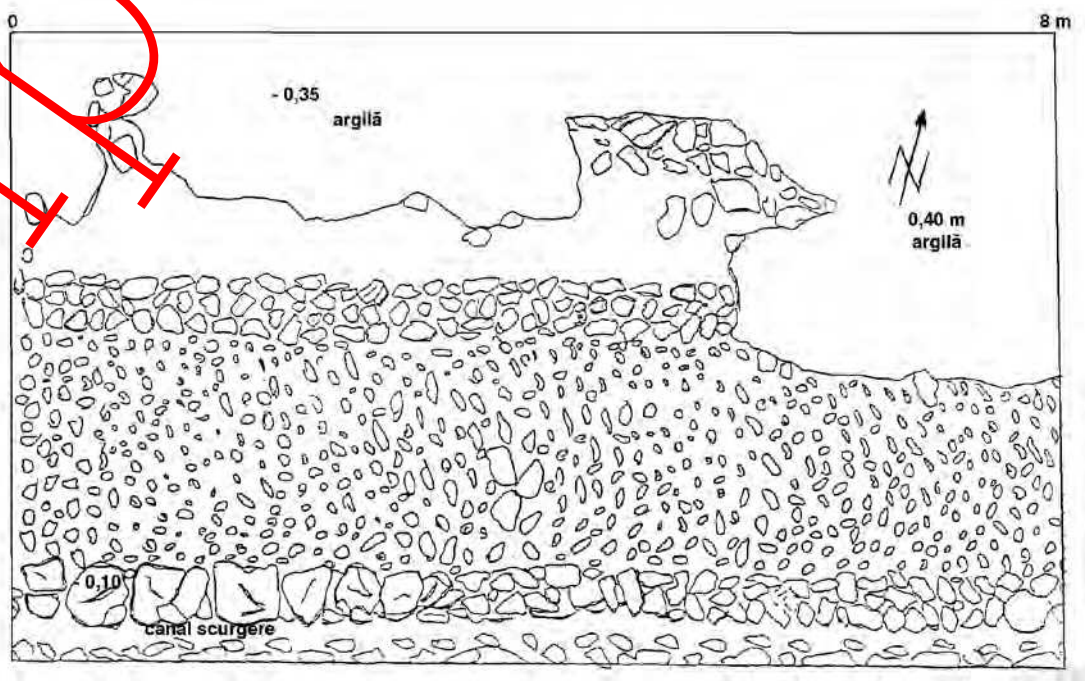


Building in the sacred area of Hăbad (MNIR Archives)

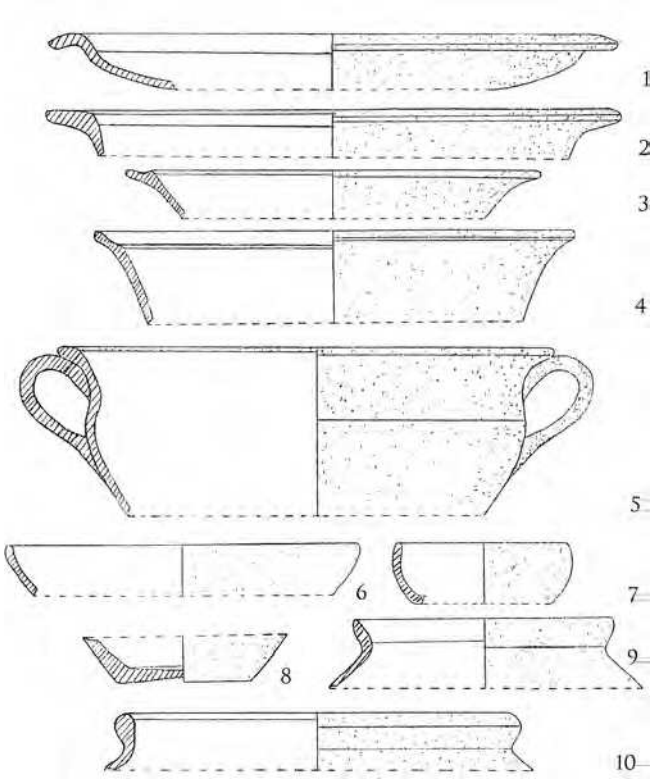
Hăbad votive altars (MNIR Archives)

General view of the excavation area in Hăbad (MNIR Archives)

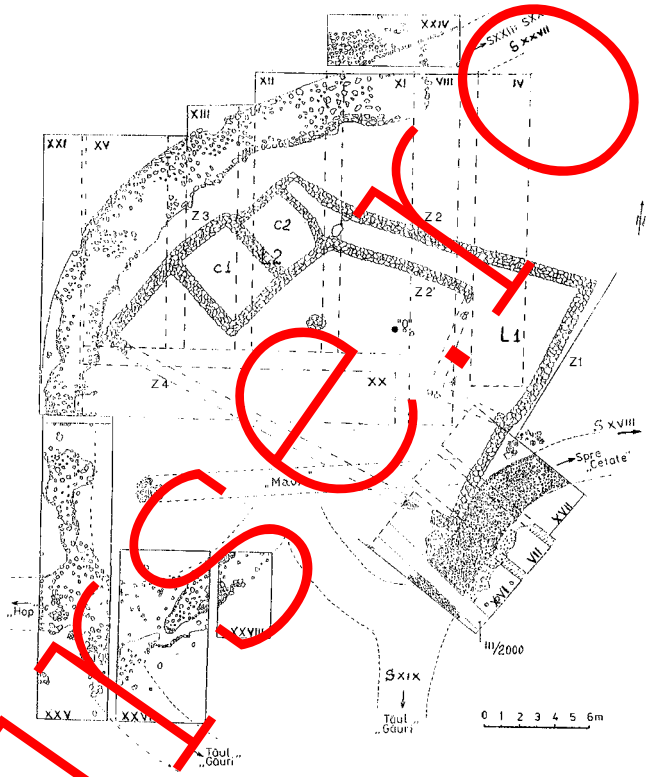
→ 2.2.2 Găuri – habitation



A section of the roman road crossing the site in the Găuri area.
(MNIR Archives)



Roman pottery recovered from inside the dwelling in the "Găuri" section (MNIR Archives)



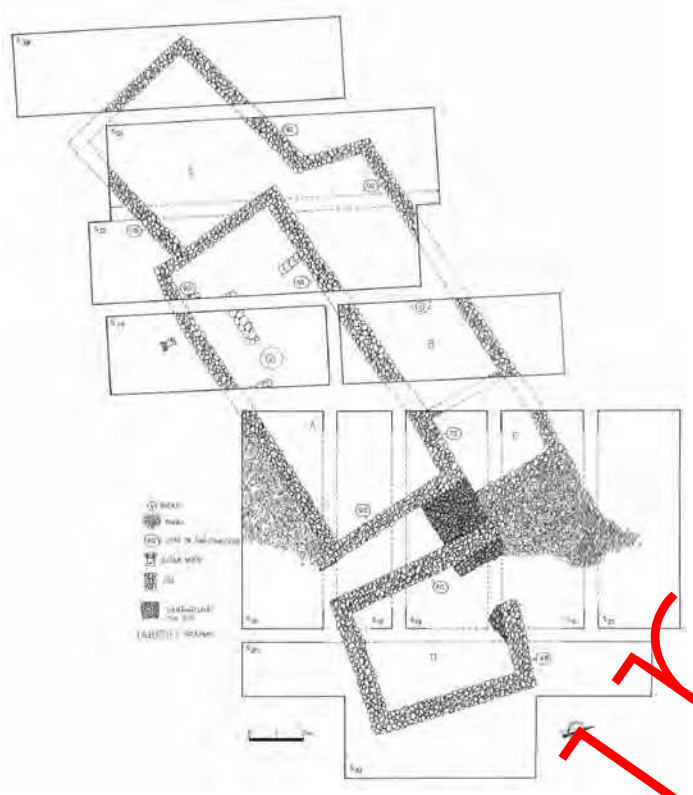
Găuri Plan of dwelling in the "Găuri" section (MNIR Archives)

Detail of dwelling in the "Găuri" section (MNIR Archives)

Excavated habitat structures in Găuri area (MNIR Archives)

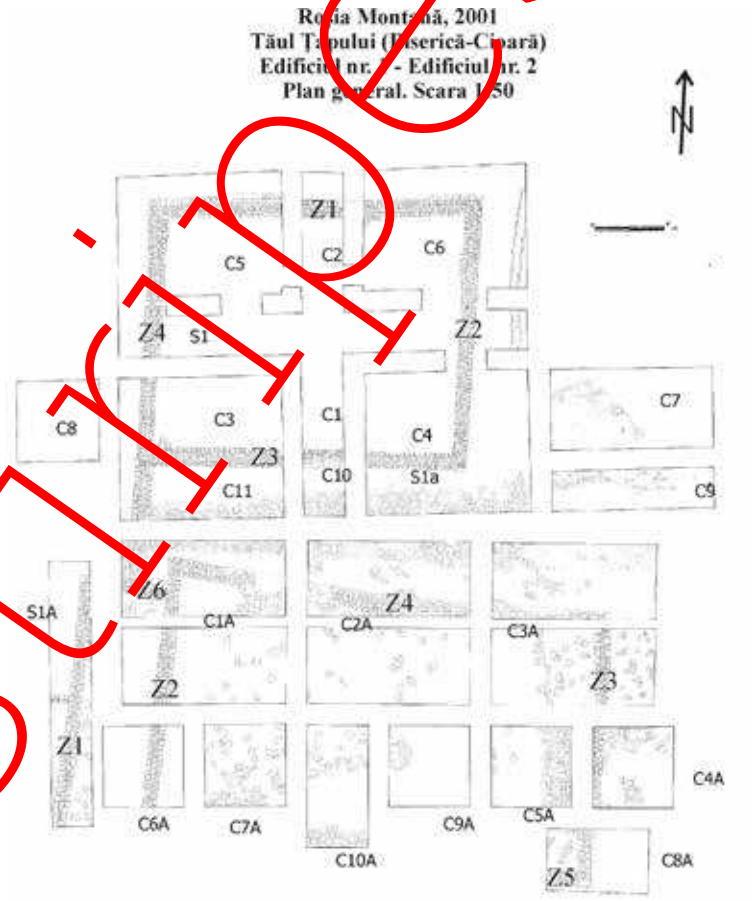
→ 2.1.3 Hăbad – habitation

Roman pottery recovered from the dwelling in the "Hăbad" section (MNIR Archives)



Plan of Roman dwelling in "Hăbad" section
(MNIR Archives)

→ 2.1.4 Tăul Țapului archaeological area



Plan of Building no. 1 - Building no. 2 at Tăul Țapului
(MNIR Archives)

→ 2.1.5 Hop Necropolis

The discovery, restoration and conservation in situ of the Tăul Găuri circular funerary monument remains a rare example in Romania. It is a stone circular mausoleum, with a drum of ashlar blocks enclosing a low tumulus over two phases of primary cremation burials.

Circular monument in the foreground with Hop Necropolis in the background (MNIR Archives)

→ 2.1.6 Nanului Valley Sacred Zone

Extensive archaeological excavations have taken place in the Nanului Valley and sacred places ('temple' complexes) have been identified at Szekely, Tomuș, Drumuș and Dalea, with a Funerary Area at Drumuș – Szekely.

Nanului Valey general view of TII worship edifice (MNIR Archives)

General view of Dalea sacred space in Nanului valley (MNIR Archives)

Roman altars and pottery are amongst the principal artefacts recovered from Nanului Valey–Dalea (MNIR Archives)

→ 2.1.7 Carpeni Zone

Carpeni Hill has been the target of preliminary archaeological excavations and in situ preservation of the entire area (surface and underground). A habitation area identified on the hill comprises a series of Roman public buildings with hypocaustum (e.g. Bisericuță and Tomuș) that emphasise a potential administrative role and are to be considered in relationship with a possible sacred area and a funerary zone in the western sector.

Artefacts recovered from Carpeni Hill: Trajan coins minted in Caria Province, Asia Minor (MNIR Archives)

Silver buckle from Carpeni Hill; Ceramic roof tile with stamp Leg. XIII Gemina (MNIR Archives)

→ 2.1.8 Jig-Piciorag Area

There is a Roman cremation necropolis, and an ancient primary ore-processing site at Jig Piciorag. Artefacts recovered include Roman pottery and costume adornments.

General view from the east of the point Bara (MNIR Archives)

General view of the properties Gomboș and Bara, from the north (MNIR Archives)

→ 2.1.9 Tăul Tarina

In the present state of research there have been identified and excavated cremation graves (on-the-spot or *ad ustrina* cremation types), with elements of funerary architecture and funerary enclosures.

Funerary precint from Țarina area
(MNIR Archives)

Decoration from the funerary precint in țarina
(MNIR Archives)

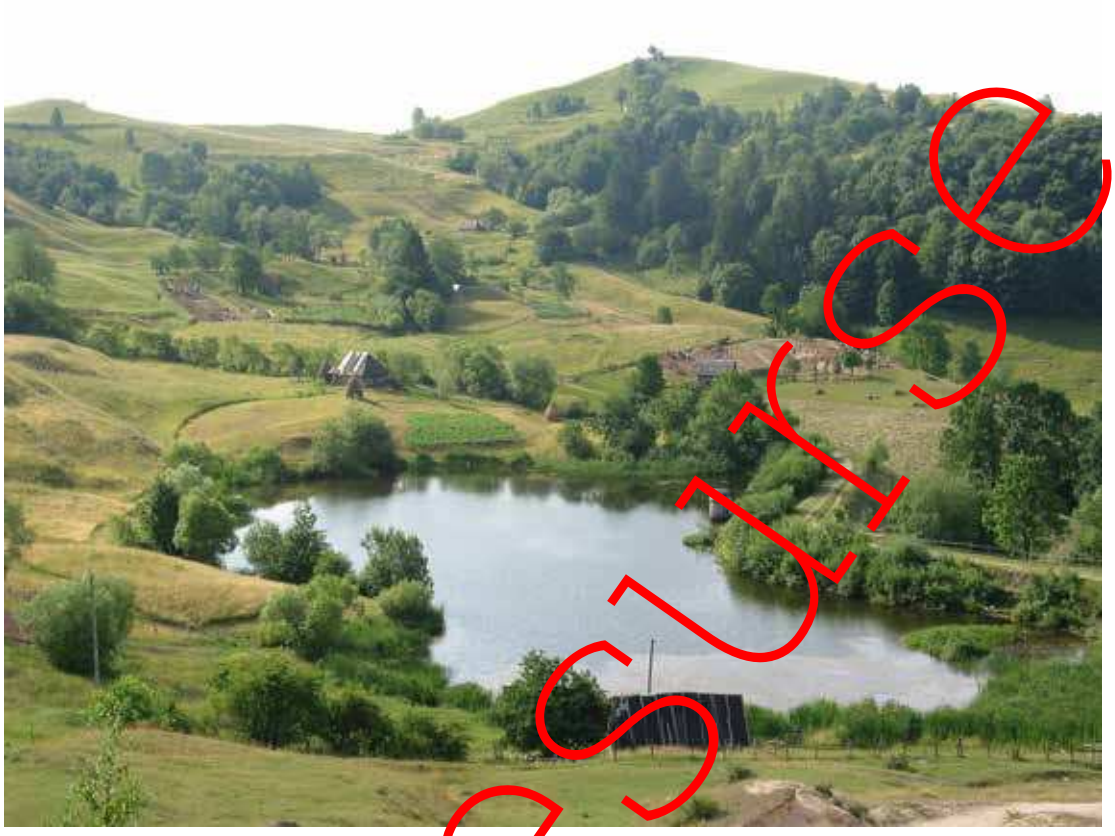
→ 2.1.10 Pârâul Porcului – Tăul Secuilor

Extensive archaeological excavations have taken place at Pârâul Porcului - Tăul Secuilor. A Roman necropolis of the 2nd century CE was discovered, with 287 cremation graves identified and 277 excavated. The relationship with other buildings nearby is as yet unclear. Artefacts recovered include Roman altars, pottery, elaborate funerary architectural elements, costume adornments, coins and glassware.

Funerary precint from Pârâul Porcului – Tăul Secuilor area
(MNIR Archives)

→ 2.1.10 Tăul Cornei – Corna Sat Zone

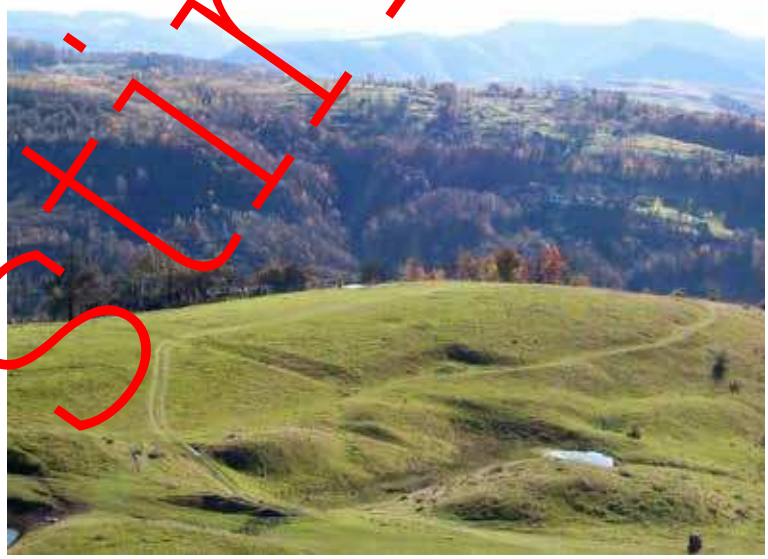
Extensive archaeological excavations have taken place in Tăul Cornei and Corna village area. A Roman cremation necropolis was located close to Tăul Cornei.Artefacts discovered include Roman altars, pottery, funerary architectural elements, costumes, coins and glassware



Tăul Corna. Overview of the necropolis.
View of Citera Budeștilor (MNIR Archives).

→ 2.1.11 Balinoșești – Islaz Area

Preliminary archaeological evaluation, the character of archaeological research being confined to surveys, does not provide sufficient data for more than a preliminary assessment of cultural resources. However, earlier archaeological investigations suggested a Bronze Age date for several features, and possible Roman date for others. This area has been prudently included within the property for its archaeological potential, particularly the perceived linkages between gold and local Bronze Age culture.



Islaz Fortification (MNIR Archives)

3 Built heritage features

3.1 Town / village: Roșia Montană (Modern)

In Roșia Montană there are currently (2016) 43 architectural structures placed on the national list of historical monuments. The existing historic building stock dates mostly from the 18th to early 20th century, with few conspicuous later additions.

The general structure of the town and its street pattern respond to the territorial distribution of extraction areas, with two main nuclei, one – the administrative centre – set between Orlea and Cetate massifs, the other one – the historic centre – between Jig-Văidoaia, Lety and Cârnic. The numerous now-abandoned public functions set into the town centre speak of prosperity and of the bustling life of gold mining, and so do the conspicuous 'cultured' features of the street façades of houses. Starting from the Square, where the public activities were concentrated in an urban architectural ensemble with a strong representational character, the urban structure gradually dilutes into the mining-and-agro-pastoral suburbs which are represented by loose groups of households which combine common agricultural areas and annexes – barns and pens and gardens – with traditional processing installations and spaces or even mine adits opening in their backyards.

The overall image of the town, as a built landscape, is defined to a considerable degree by the materiality of its architecture. This, however, has changed during the past decades, with cement renders often taking the place of the bright white-washed lime plaster, and tin or even corrugated cement taking place of the soft and perfectly integrated wooden shingle. This is an aspect to be dealt with in the Property Management Plan.

→ Neighbourhoods

→ 3.1.1 Square

An ethnically mixed population belonging to the economic and social elites inhabited "Piata" (the Square) and its immediate neighbourhood, the former economic and administrative centre of the locality. The presence of three churches (Roman Catholic, Calvinist and Unitarian), grouped in this limited area, defines the image of a religious and cosmopolitan society without tracing strict boundaries on ethnic or religious means. However, the social demarcation is here clearly visible by the scale and preciousness of the architecture.

The former site of the weekly fair has an irregular shape, with slightly sloping level, surrounded by two storey buildings, in compact fronts, as an amphitheatre at the eastern end of the main street.

Central area with three churches: Unitarian (left), Protestant (centre), Roman Catholic (right) (postcard)

→ 3.1.1 a — cluster: Townhouses with commercial ground floors; no. 323–328, 388 (late 18th - early 19th century).

This group of houses with urban aspect on the north-eastern and south-eastern fronts of the Square generates one of the main landmarks of Roșia Montană. With commercial shops, pubs, workshops – spaces to the ground floor and living spaces on the first floor, opening up towards the Square through many shop-windows and windows, with their facades decorated with insignia and historicist stuccos at the first floor, they lend to this upper nucleus of the locality the character of a typical small town in the time of the Austrian and Austrian-Hungarian Empire.

Despite being to a large extent inscribed in the local typology, with a porch to the courtyard, all these houses exhibit an elaborate decor facing the street, like an urban scenography set against a mostly rural background.

Four of the houses – nos. 324, 326, 327, 328 – are individually listed as historical monuments

North-east front of the Square early 1940s (Silviu Bocaniciu Sr.)

→ 3.1.1 b — cluster: "Sicilian Street"

The street, its starting point in the Square, follows a sinuous path with the same urban character, continued fronts of two-storey houses. It is narrow and without sidewalks, and preserves (under the recent asphalt) the historic cobblestone pavement. Basalt blocks protect the facades against the vehicles. Houses no. 390, 391, 393, 395, 397, 398, are all individually listed as historical monuments. In spite of this, house no. 393 collapsed through neglect.

→ 3.1.1 c — cluster: Roman-Catholic Church and parish ensemble (18th - middle 19th, early 20th century)

The church, no. 549; 1866: historical monument – the largest among the places of worship in Roșia Montană dominates the historical centre from a high plateau at the south-east of the Square, looming its white, stern neoclassical silhouette on the slopes of Cârnic mountain marked by mining.

A cultural landscape shaped by mining: the Roman-Catholic Church at the foot of Carnic Massif and a backdrop of a steep scree of mined waste rock. Surrounding it, the cemetery (no. 549B), dressed in dense trees, descends to the Square and contains the Chapel (no. 549A) that marks the site of the first Catholic church. Recent archaeological excavations have revealed that the terrace behind the church is an old dump. Near the church there is the Catholic rectory (no.

317), the Parish school and culture hall (no. 318 – now the public cultural centre), the bell-ringer's house (no. 319 – recently collapsed and later demolished) and the teachers' house (no. 320). They are large buildings revealing urban aspect and structure. Apart from the bell-ringer's house, which has, traditionally, the first level in stone and the second level in wood, these buildings are entirely of stone and brick masonry.

→ 3.1.1 d cluster: Unitarian Church and parish ensemble

The Unitarian church (16th Century; rebuilt 1796), no. 530 - set on a plateau, dominates the Square from the northeast, in a dialog with the Roman-Catholic church to the opposite side. The exact date of its reconstruction, 1796, is recorded in an inscription.

The Unitarian Parish House (no. 391) and the chorister's house (no. 390) as well as the bell-ringer's house (no. 553) define by their massive, particular silhouettes, the crossroad in the eastern corner of the Square, at the starting point of Sicilian Street.

→ 3.1.1 e The Casino (1880–1900), no. 329, and summer garden

The Casino served as a bar, cinema, ball-room and general place of celebration until recently, when it was abandoned. The main hall preserves a wooden board vaulted ceiling.

On its side and to the rear the Casino connects to the once Summer garden, where a brass band would have played in a gazebo, on the higher platform of this small public park. The high trees, alleys and platforms are still preserved.

→ 3.1.1 f The former Administrative Palace (1896), no. 310

The headquarters of all the public services of the village, is located in close proximity to the Square. Together with the State school and kindergarten (no. 274), it is among the last major investments of imperial administration in Roșia Montană. Sitting on a terrace to 2-3 m above the street level, it dominates the entrance to the Square by its classicized proportions, order and decorations.

→ 3.1.2 Brazi neighbourhood

The area spreads along a few ascending ridgelines and valleys, south-east of the Square, towards the Brazi header pond. It comprises several outstanding historic dwellings, with Baroque and Classical character, and many others characteristic for the Interwar period. They are all set into a diffuse historical fabric, with mostly historical buildings, a not much altered street pattern and streetscape – with cobbled steep and rugged streets, fenced by dry stone walls and tree lines.

→ 3.1.3 Ieruga neighbourhood

A particular small group of houses, concentrated around a crossroads up street from the Square, this neighbourhood features three massive houses, of Baroque allure (nos. 407-409), form the compact eastern front of a little square where the Ieruga mine used to be. Built around 1875, they represent a particular type of dwelling, preferred by the wealthy families of miners. Houses have walls and vaults of stone and brick at the first level and high second level built of wooden beams and plastered, containing up to 6 rooms. To the street, the large windows are fitted with "roștele" - iron bars with rich floral decorations. The roof of the house no. 407 keeps the voluminous, double sloped baroque structure. On the side facing the courtyard there is a generous

porch (Ro. târnaț). House and annexes surround the courtyard paved with stone slabs. In the yard no. 408, an underground cavity appears to be an old entrance to a mine gallery. The obstructed arch at the base of the façade indicates a former channel, which crossed the cellar to feed an ore washing basin ("jomp"). The sidewall, supported by buttresses contribute to the particular, unmistakable appearance of this area.

The smaller houses' position on the parcel is dependent on parcels' shape and the characteristics of the land, which often needs to be levelled, terraced and strengthened with dry stone walls ("maur"). On the north side of the little square, House no. 406 features the specific Interwar period traits – larger windows, gable roofs with trelliswork – and bears on the facade the year of building (1937) along with the mining insignia of the crossed hammers.

→ 3.1.4 Tăul Brazi neighbourhood

© Daniel Vrancioiu

→ 3.1.5 Văidoaia neighbourhood

© Ștefan Bâlici

→ 3.1.6 Berk neighbourhood

© Lorin Niculae

→ 3.1.7 Sosași neighbourhood

© Ștefan Bâlici

→ 3.1.8 Orlea neighbourhood

3.1.8 a cluster: Greek-Catholic Church and parish ensemble

The Greek-Catholic Church of the Dormition (1720, 1741, mid 19th century), no. 135, stands on a terrace descending to the valley of Roșia at the foot of Orlea Massif, millennial area of gold mining. The church shares the lower, western core of the locality, concentrating around it the material and immaterial values of this predominantly Romanian area. The high bell tower, with its stepped, pyramidal roof erupts from this low position to dominate the image of Roșia Montană from any viewing angle. Thereby, the parish rectory (1815, 1854), no. 137, distinguishes between surrounding households through both age, size and position on the plot. Nearby, until 1918, stood the Greek Catholic confessional school built in 1868. In the cemetery is the tomb and memorial of Simion Balint, parish priest at this Church and leader of the 1848 Revolution, the most imposing local historic figure.

The Greek-Catholic Church of the Dormition
(R. Slotta, J. Lehmann, I. Dordea)

→ 3.1.8 b cluster: Orthodox Church and parish ensemble

The Orthotox Church with Mt. Cetate in Background, Roșia Montană
(V. Zotinca)

→ 3.1.8 c cluster: administrative centre – Town Hall

The administrative centre, Town Hall (INP Archives)

→ 3.1.9 Gura Minei neighbourhood

Gura Minei Neighbourhood, 1927 (V. Zotinca)

→ 3.1.10 Verches neighbourhood

3.1.10 a cluster: representative houses along the main street

It includes the Ajtai House, later Miners' Club, the house used as Maternity ward, a pair of rural vernacular houses and the imposing Gritta House. The street front is loose, the houses alternating with wide empty spaces - orchards, gardens, pastures.

→ 3.1.10 b State school and kindergarten; no. 274 (1905–1915)

The ensemble occupies a large plot, unlike the small parcels of the neighbouring households, midway between the two centres of the village – the lower one around the Orthodox and Greek catholic churches and the upper, surrounding the Square. It is a large building, following an official architectural program and marks the last significant economic and demographic boom of the community. It is now under restoration, with significant changes to its historical layout (complete change of roof structure) and with the works interrupted

→ 3.1.10 c cluster: Blocks of flats in the sixties

Blocks of flats in the sixties (© Claudia Apostol)

3.2 Corna (Modern)

This is a village situated in the upper, more open, part of the Corna Valley. While some of the households are scattered on the slopes, the rest of the buildings gather around more compact nuclei, close to the two header ponds and the communal road. The lowest nucleus consists of several houses along the communal road. A second nucleus is formed around the two churches and several other public functions, below Tăul Cartuș, with plots distributed along the paths connecting to the upper part of the village. The upper part of the village consists of the third nucleus of houses, close to Tăul Corna. The last two nuclei are connected by a network of intertwining paths and were built in direct relation to the historical mining activity. The layout of the household is typical for the mountainous area, enhancing the rural appearance characterized by the lack of a continuous street front and the alternation of houses and gardens with different functions. As in the rest of the area, the sloped terrain determines adaptations of the house structure. Its skyline is defined by the presence of the churches, the open pit mining works on the Cetate quarry, Cârnic Massif and Piatra Corbului.

→ 3.2.1 Orthodox Church

This is the oldest church in the area of Roșia Montană, and it occupies a large flat plot in the widening of the Corna Valley. Built in 1719, it illustrates the church typology present in the Apuseni Mountains since the 18th century. It is part of a less compact nucleus of constructions, together with the parish house and public buildings such as the kindergarten or the cultural centre and a few other houses. The appearance of the public and private constructions, plastered but undecorated, with a traditional structure, and their position within the plots, is closer to the scattered village type of the area.

→ 3.2.2 Greek-Catholic Church

Surrounded by the cemetery and more detached from the village centre buildings' nucleus, the church is situated on a small, sloped plateau in the wider area of the Corna Valley. It dates from the 19th century, being an important landmark for the landscape of the village. It is smaller than the other churches in the area, but it also illustrates the typology of the stone-built churches of the Apuseni Mountains.

→ 3.2.3 Miners households

Upper nucleus in Corna village (© Lorin Nicolae)

3.3 Țarina (Modern)

Țarina is a village located near the eastern part of Mt. Orlea and its minefield, covering an area defined by hills with rather high slopes. This proximity to the minefiled had influenced the activities and generated the inhabitation of the territory in a very peculiar way. The Josephine Land Survey of the 18th century presents the settlement as a string of houses along the stream that comes from Țarina header pond.

The village followed the stream until it reaches Foieș (Roșia stream). Its location had favoured the construction of traditional houses, typical for miners: rather small constructions with ground floor made of stone masonry, while the single upper level was built of wooden beam construction, plastered on the inside.

The connection with the stream permitted the rise and use of stamping mills on both sides. Its natural hilly landscape had also been favourable for the other type of habitat: the typical mountain household.

Țarina is composed of three defined areas gathered along the main paths that historically linked Roșia Montană to Câmpeni and other villages from the north. The main paths have a northwest orientation, the easiest way the mountain could be crossed with oxen and carts.

The hierarchy of the paths leading to Tarina is influenced by the proximity to the Market Square.

Few traditional miners' households can be seen in the landscape close to the stream. The other two areas are more recent, with modern houses that reflect a peasant way of life.

→ 3.3.1 Traditional farmhouse (19th century), Țarina no. 1248

A representative example of a traditional house in Țarina, house no. 1248, built in the late nineteenth century. It has a spatial and functional structure typical for the area: the living part consists of two rooms accessible by the corridor and an annex – kitchen – added on one side of the house. The main level rises above a cellar which adjusts to the slope. The building system is also locally specific, representing a version of a widespread solution in the Apuseni. The 'Blockbau' system (log construction) with walls composed of horizontal beams arranged in crowns is applied here in a version with urban remnants. The basement walls are made of stone masonry and lime mortar, like the vault that used to cover the space. The roof is hipped and covered with shingles.

In the middle of the one room basement stands the mining 'jomp', a small shallow basin used to retain the water for washing the processed ore during winter time. Signs of a previous stamping mill could be read in the terrain configuration.

19th century Traditional farmhouse, Țarina
© Ștefan Bâlici

→ 3.3.2

Traditional farmhouse (20th century), with polygonal stable

Located on the fringe of the Orlea mining field, where miners gathered the rocks from the exploitation, the house presents vernacular and mining features. It is built with two storeys. The cellar is made of stone masonry, having two rooms covered with wooden beams. The upper level is accessible from the traditional corridor, exposing two rooms. The outside plaster still preserves blue paint, used as traditional rendering.

Close to the house is the old stable, a peculiar wooden construction with four sides, of which one has a polygonal shape. This feature is said to be inspired by rural architecture, as a response to harsh windy weather conditions. It was used for sheep and cattle. The high loft was used as a hay stockpile.

Traditional farmhouse with polygonal stable
© Ștefan Bâlici

3.4 Balmoșești - Blidești (Modern)

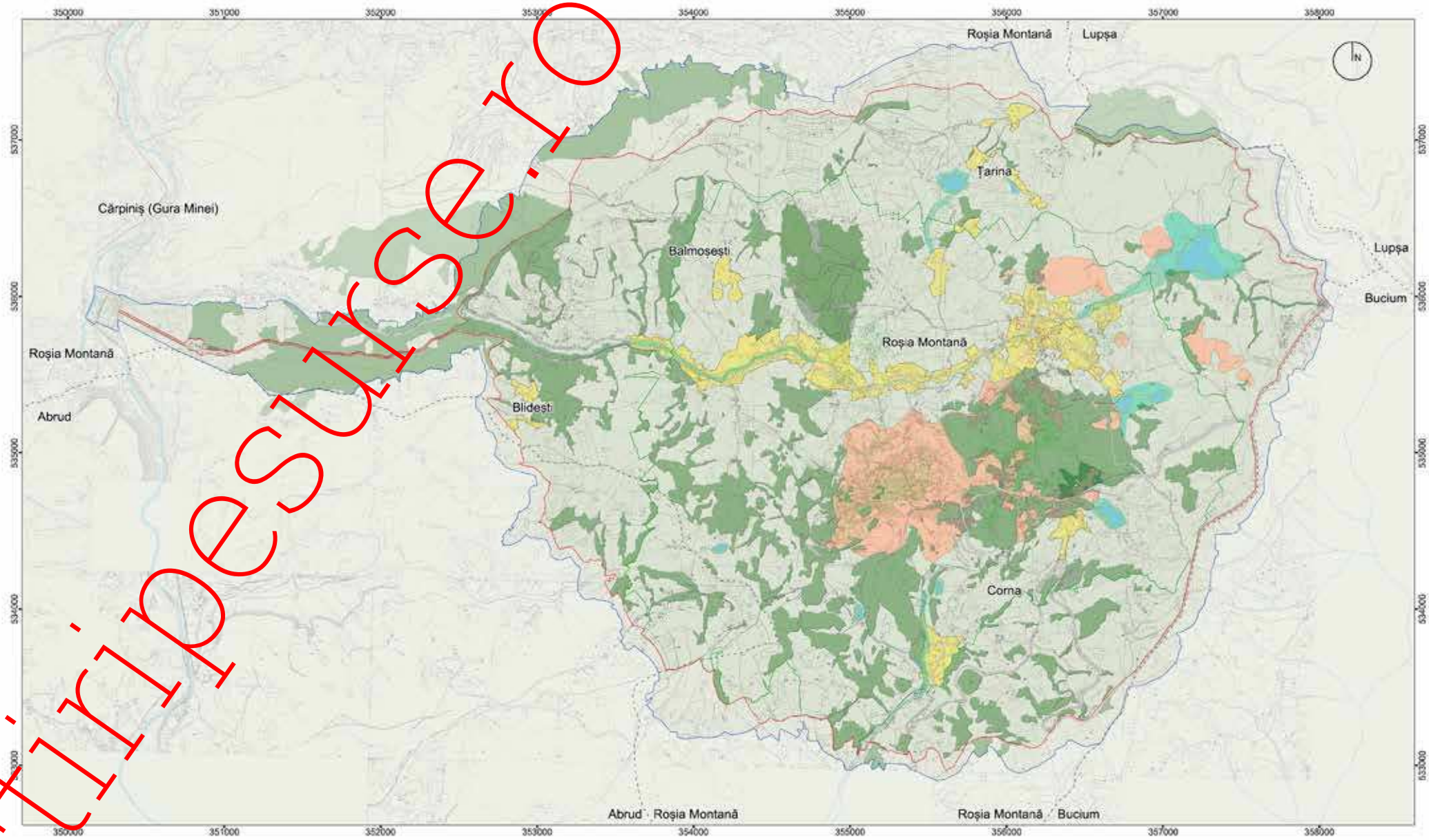
Balmoșești, one of the smallest satellite-villages of Roșia Montană, is located on the northern slopes of Roșia valley, west of Mt. Orlea. Its importance lays in adding a rural layer to the mining area. This settlement is formed of simple scattered houses with modern appearance (modern vernacular style), built mainly in the 20th century.

The households are close to the main path, an unpaved road that follows the slopes of the mountain. The path leaves Roșia Montană, near the Mining Enterprise ensemble, going around Orlea quarry and ascending towards northwest. The settlement is approximately at half the distance from the starting point to the top of the mountainside. A small artificial lake lays over the settlement, as a sign of a possible small-scale mining background.

Blidești (Modern)

Another satellite village of Roșia Montană, Blidești stands on the western section of the southern slopes that define Roșia valley. Hidden from the daily routes, Blidești is linked with Corna valley through a northwest oriented path. It comprises three groups of scattered buildings. Of all Roșia Montană valley this settlement has the fewest households, being inhabited by a small number of families as their houses with annexes show.

Piatra Corbului, protected area of national interest
© Edmond Kreibic



The altitude ranges between 600–1200m and the physical elements that define the geographical landscape are the peaks (900–1100 m altitude) with amplitude, depth and filtered perspectives by the forestland and meadows and the valleys (500-800 m altitude) with meadow landscape and dry valleys. The geographical landscape is modelled also on the hydrographic network and the geological structure of the mountains:

The landforms dominate the territory to the south, east and north by the Tile (918m), Cetate, Cărnic (1807m), Ghergheleu (1157m), Rotundul (1187m), Brădețel (1011m), Ghipidele (1050m) and Coltău Hill (1094m). Due to differences in height of 700-800m and different hardness and composition of rocks, erosion and human activities has contributed extensively to shape the land.

The hydrological network is formed by streams flowing into the Roșia and Corna Valley and the header ponds used in the past to serve the streams for the stamp mills. Groundwater gravity-flow mine drainage enters the rivers Roșia and Corna, as do tributaries from the Roșia Montană commune.

Reserves and Monuments of Nature

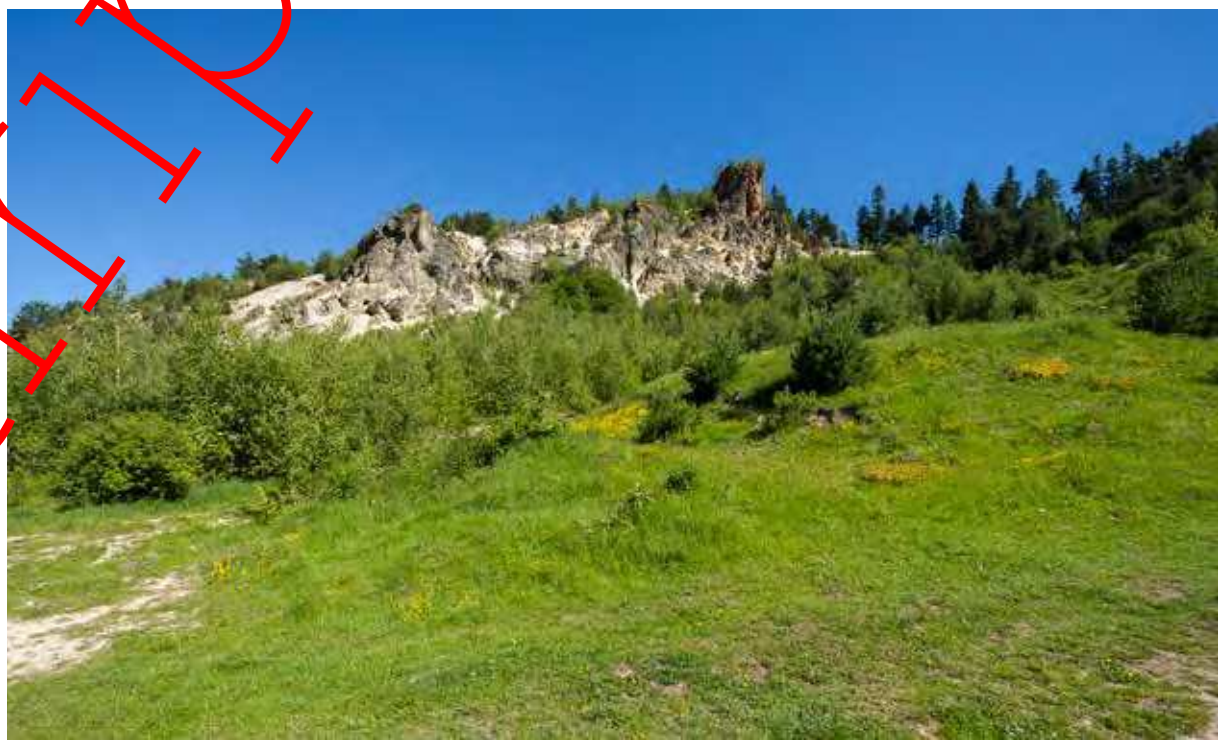
There are two protected geological sites: Piatra Despicată (Cleft Stone) and Piatra Corbului (Raven's Stone), are protected areas of national interest (ZNPIN) and natural monuments and were defined by Law no. 5/2000 - Law of the approval of National Spatial Development Plan- Section III - Protected Areas.

Both sites were formed at the beginning of the Quaternary.

Piatra Despicată, with an area of 0.25 hectares, is located 1 km southwest of Roșia Montană, between Cârnic and Cetate peaks and has isolated aspect of block resistant to erosion.

The site was declared a "natural monument" in 1954. Its geological composition is different from the geology of the area, being an andesite block, weighing several tonnes, located over the dacite rock of Cârnic Massif. It is believed that the stone block gained its current location after a volcanic explosion from the Ore Mountains produced in the last phase of the Neogene period approximately 15-20 million years ago.

Piatra Corbului with an area of 5 ha, situated between Ghergheleu and Curmătura peaks, surrounded to the east and west roads that go to Roșia Poieni mining area. The natural reserve is situated at 1100–1150 m altitude, with an aspect of black basalt.



View on Piatra Corbului and Cârnic Massif - Southern slope
© Radu Sălcudean

Landscape character types: Agro-pastoral landscape

Overview of Roșia Montană Mining Landscape
© Petru Mortu

Land management, for industrial and agro-pastoral practices, takes places on plateaus and steep slopes. Consists of: pastures, hay-meadows, meadows adjacent to the village, orchards, interspersed with small patches of arable land. It is widespread in the territory and also on perimeter settlements.

Human intervention in this landscape is of considerably lower intensity compared to other similar areas in the Apuseni mountains. Thus, pastures, orchards and meadows have been continually maintained with a low intensity land use and traditional practice that is highly beneficial for species richness. Cattle grazing and crop rotation biennial or triennial systems (ploughing one year and fallow for two or three years) and soil terracing sustains land fertility.

View of Tăul Mare and Roșia Valley. Field patterns: spatial arrangement of the keys elements and shape of landscape plots.
© Radu Sălcudean

Hay-meadows adjacent to the pastures are colourful and species-rich with the presence of "6520 Mountain hay-meadows" (Annexe 1 of the EU Habitats Directive), 'High Nature Value' meadow habitat. Lower fields around the settlements receive more fertilization, in the form of animal dung, than the other with more nutrient-poor hay-meadows. The pastures near the ponds are "6230 Species-rich Nardus grassland, on siliceous substrates in mountain areas" listed as a priority habitat in Annexe 1 of the EU Habitats Directive.


View on cattle stable with a agro-pastoral production facility with solitary trees which through particular usage or historical tradition gain a specific significance; high cultural and historical value and biodiversity potential, (© Radu Sălcudean)

The agro-pastoral landscape, woodland, the hydrological network, archaeological sites and mining exploitation areas, are defined by distinctive morphologies and typologies due to process characteristics and in relation to the settlement.

Rough grazings with terraced field and shrubs succesion in the background
© Radu Sălcudean

There are fields elongated perpendicular to the slope. A difference of the texture fragmentation is visible between the Țarina, Balmoșești, Blidești areas, where the agro-pastoral landscape is less fragmented and dominant due to the geographical characteristics of the Corna Valley, where is more fragmented and interspersed with the woodland and industrial landscapes. Different types (sub-units) of the agro-pastoral landscape are bounded by plantation property boundaries, fences or dry stone masonry ("mauri"), for example in the meadows around the settlements (Roșia Montană, Țarina).



Small trees hedge with individual trees, fences and dry stone masonry and crosses to delineate or mark boundaries
© Radu Sălcudean, Mihaela Hărmănescu

Landscape value is enhanced by the good state of preservation of specific plant habitats, protected and rare plants cited in the Red List of Plants in Romania and Romanian rare vulnerable Inventory of meadows (2003).

Rocks and stony ground landscape

On the highest slopes toward the top of the hill, inside the pastures areas there are rocks and stony ground characterized by "natural rock gardens" where vegetation is influenced by the secondary effects of metalliferous mineralisation.

"Natural rock gardens", (© Daniel vrăbioiu)

Woodland / Forest landscape

Woodland occupies the altitudinal area between 600 - 1200 m, with a distinctive substrate and micro-climate sometimes leading to the phenomena of vegetation inversion. The landscape is characterized by the deciduous and coniferous forests and the woodlands stretch over small fragmented areas with different utilities. The spread of deciduous trees is inside the inhabited area and on the southern slopes of the Jig and Văidoaia massifs, in the eastern part delimiting the settlement and Tăul Mare.

Due to characteristic processes, the background southeast of Roșia Montană is heavily vegetated with coniferous woodland (on Cârnic), linking historic extraction and agro-pastoral landscapes. Woodland is also characterized by deciduous stands. Along with the presence of species and training for fixing the sterile soil (junipers), vegetable groups punctuate the whole area near Roșia Montană - becoming stronger environmental elements.

Conifers, massive trees and resinous shrubs are spread on rocky substrate on the north slope of Cârnic, in Tăul Brazi and Corna areas. These create a natural reinforcement of the soil against erosion, landslides and the formation of debris. They also contribute to soil formation.

Forest in relation with mining exploitation with high historical and cultural value and high ecological potential

Another characteristic of the woodland are the trees with distinctive vegetation composite on watercourses and near the ponds that confirm the relation between nature and mining activity. Grouped trees and deciduous shrubs mark the limits of different properties (meadows, households) through linear plantations.

Living fences created as rows of shrubs to delineate boundaries, ponds and roads, ensure erosion protection and improve landscape (© Radu Sălcudean)

The resulting patchwork of fields, meadows, wetlands and woodlands created a unique pattern of land uses, which was carefully adapted to topographical conditions.

Wetland landscape/ Flushes and mires

These areas are defined along rivers, streams and ponds and are set in relation to the agro-pastoral landscape and woodland. They also derive from mining activities and water management.

The hydro-technical ensemble made by header ponds, and the installation of water control and routing, fundamentally changed the hydrology within the landscape. These artificial elements, arranged throughout the territory, were partially absorbed into the natural environment while generating lower specific wetland landscape (characterized by the relation between anthropogenic and natural elements), characterized by "High Natural Value" and rare aquatic vegetation with distinctive and unique acid bog (7110 on Annexe 1 of EU Habitats Directive). The cultural importance of these facilities is given by more harmonious (medieval) mining activity and its interaction with the natural environment. Meanwhile, the main ponds (Tăul Mare, Tăul Brazi, Tăul Corna) have become important geographical landmarks.

Tăul Brazi landscape (© Radu Sălcudean)

Former header ponds with water retention function and specific flora (© Radu Sălcudean)

Archaeological landscape

The archaeological heritage, through the way to adapt to the natural environment, is currently building a specific landscape: Necropolises, sacred areas and housing areas are subordinate to the natural environment through their arrangement on the terracing of slopes or high points with a broad perspective on the valley; probably directly related to mountain ranges and the place of gold ore exploitation.

→ The necropolises are located on slopes or on plateaus oriented towards the valleys, following the same script, where the southern orientation is favourable. There are seven necropolises: Tăul Cornei, Carpeni-Balea, Hop-Găuri, Valea Nanului, Pârâul Porcului, Țarina and Jig-Piciorag.

→ The sacred buildings are built on heights and probably were connected with entries to galleries. Sacred spaces were identified in five points: Hăbad-Oprișa, Hăbad-Brădoaia, Dalea, Szekely and Drumuș points.

→ Ancient habitat structure has housing systems typical for mountain areas and in direct relation with the mining activities.

→ The ore processing zone (at Jig-Piciorag Point) confirms that the ancient habitat is connected with the historical centre of Roșia Montană and Cârnic Massif (underground exploitation).

The representative landscape of archaeological sites scattered diffusely throughout the entire territory provides a comprehensive and accurate picture of the land topography and the ancient habitat both at micro scale by type and their position and large scale by the built landscape history as a whole.

Overview of Roșia valley from Balmoșești (MNIR Archive)

Mining landscape

Important preserved mining landscapes bear testimonies to the history of Roman, medieval and modern mining, located at the edge of the settlement and beyond.

Roman period evidence is significant testimony to a concerted effort of around 50 years, in which one of the largest known underground Roman mining complexes developed at Roșia Montană. Medieval and modern testimonies are significant in terms of underground developments and of preindustrial ore processing.

Preindustrial exploitation profoundly impacted upon the natural landscape: header ponds, bare mountains, mine openings and the sites of stamp mills and water management infrastructure create distinctive features within the mining landscape. After the cessation of traditional mining, these traces of human activity have mellowed into the natural landscape.

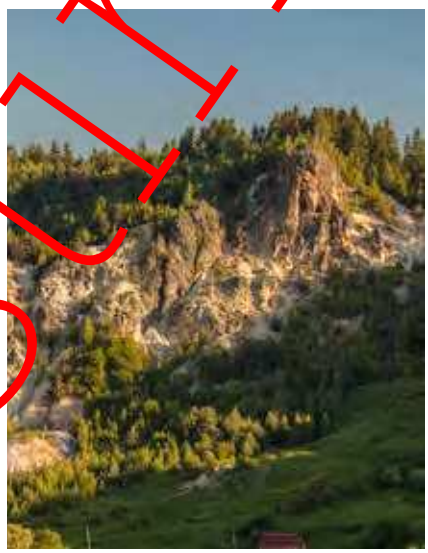
The landscape of the hydro-technical system is also characterized by a stream and pond infrastructure that formerly supplied the stamp mills in Cerna, Roșia Valley and part of Țarina.

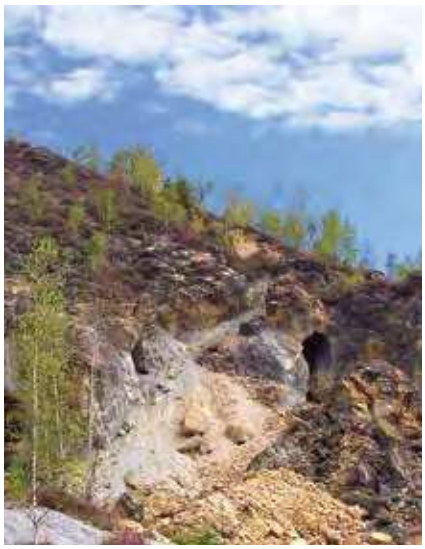
Rocks and debris from mining operations are characterized by specific habitats.

Overall view of the Tăul Mare and mining landscape (© Radu Sălcudean)

Landscape of surface mining exploitation:

Cârnic and Cetate massifs bear traces of traditional and modern (late 20th century) mining in the form of mine entrances and rocky slopes devoid of vegetation.





Mount Cârnic – vestiges of prehistoric and Roman slope-side works opened with fire and water (© Horia Ciucudean, Radu Sălcudean)

Mining exploitation underground network

The underground network is characterised by Roman galleries and early modern galleries. Roman galleries form a dense network excavated into the following massifs: Orlea, Carpeni, Cetate, Cârnic and Letea. Exploration, transport, ventilation and drainage galleries converge on mineral extraction areas. Traces of habitation and sacred areas highlighted on the south side of Rosia Valley (Carpeni and Valea Nan) link with the areas of ore exploitation of the Cetate and Orlea massifs.

Built–up (architectural) landscape

This landscape contains built–up elements: from ponds and their mining heaps to settlement and buildings. The typology and morphological structure of human settlements are in relation to natural elements and main activities. The following types are distinguished:

→ linearly developed along watercourses, valleys and the main roads, with interdependent relationships with water in the past (former stamp mills, in Roșia Montană, Corna, Țarina)

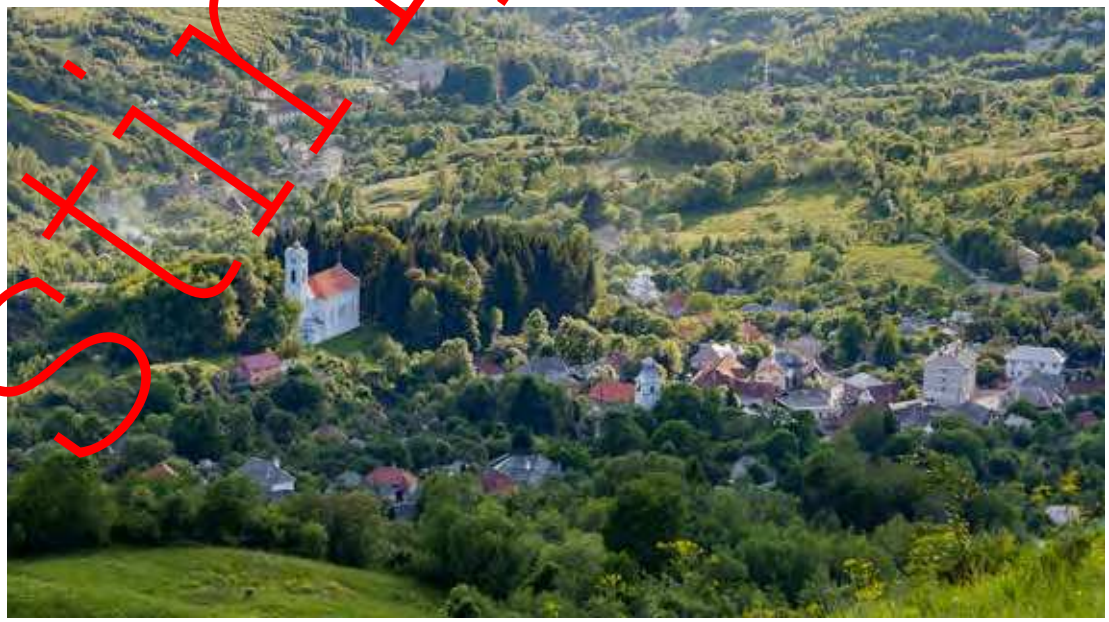
→ in the proximity of mining activities: mine accesses in Jig massif, Cârnic and Letea, mining heaps, historic earthworks, etc. influenced the settlement structure in the two main cores (the valley and historic centre)

→ in the proximity of woodlands, as an "extension" of the natural element (Blidești, Corna)

→ in the proximity of agro-pastoral landscape (Blidești, Balmoșești) with diffuse limits and types of the settlement.

Roșia Montană (550–580 m altitude)
Rural - urban type settlement with mixed structure related to geomorphology and topography: nuclei include the churches, various buildings, and areas of mining exploitation, and the core of Roșia Valley with the Roșia River (its use correlated with former stamp mills).

Mountain massifs, that are places of ore exploitation, constrain a settlement structure that ties in with the linear structure of the valley: Cetate and Orlea flanking the lower pole, with churches in the valley; and Jig, Văidoaia, Letea and Cârnic around the higher pole of the historical centre. Anthropogenic changes in the landscape shaped for industrial purposes become a significant defining factor in the urban structure of settlement.



Overview of Roșia Montană settlement
© Radu Sălcudean

Street network is not regular, small streets winding through properties, following the uneven, sinuous topography. Stones extracted during the mining exploitation and stone ground of stamps mills were used to pave the roads, properties delimitation and construction material.

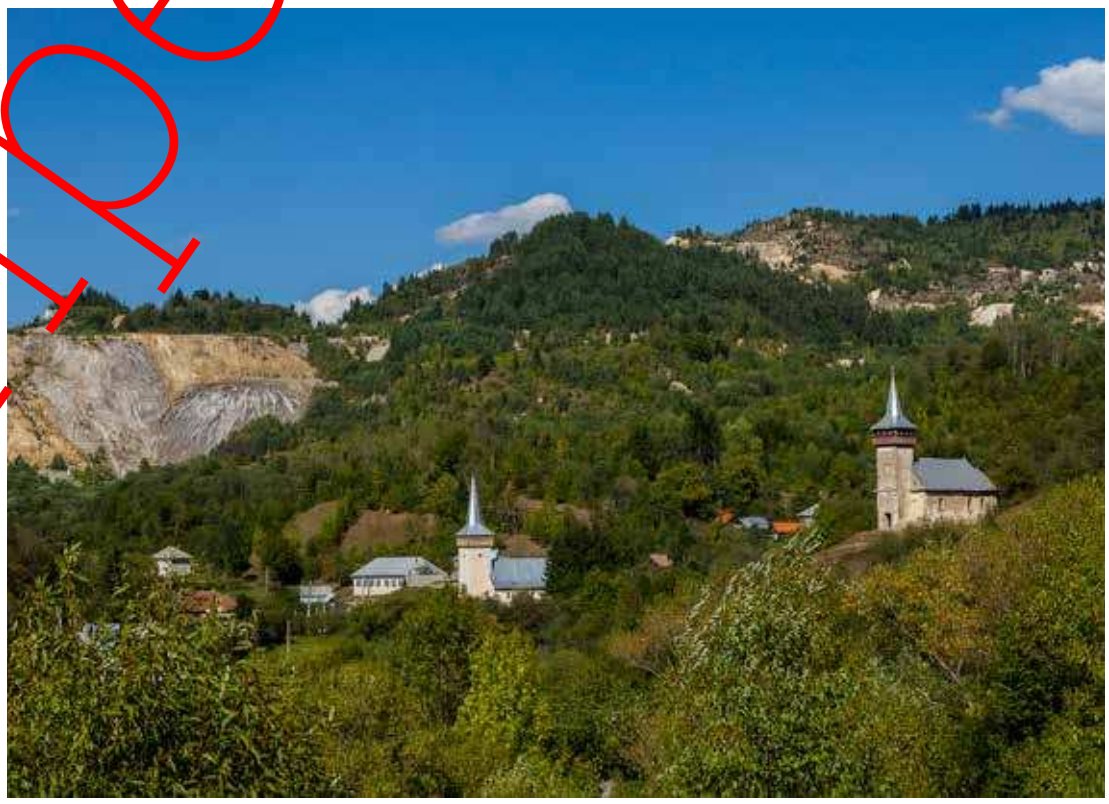
The crossroads, public spaces and settlement boundary are marked by crosses, votive, memorial and funeral monuments adding symbolic, historical value to associated spaces.




Monument of World War I, ca. 1930; located next to a Memorial Cross, in front of one of the buildings of the mining administration (professional school, c.1910) (© Iozefina Postăvaru)
Cross "from Ghenoveva", located close to the Square, nearby the Casino, attached to house no. 31 (19th century); (© Iozefina Postăvaru)
Cross of Mihail Gritta, 1837, marks the grave of the rich miner and donor of churches, today overlaid by the street with blocks of flats dating from the 1960s; (© Ioan Andron)
Cross, 19th century, located on the road to Tăul Brazi (© Iozefina Postăvaru)

Corna (600–800m altitude)

Rural settlement with mixed structure. One linear nucleus emerges along Corna Valley, whilst other concentrations are located around the churches and the ponds. In the highland area of the settlement, the limits are diffuse and allow passage from one property to another, related to the agro-pastoral activities and in the valley area. The limits are defined by natural elements and are in direct relation to the mining activities.

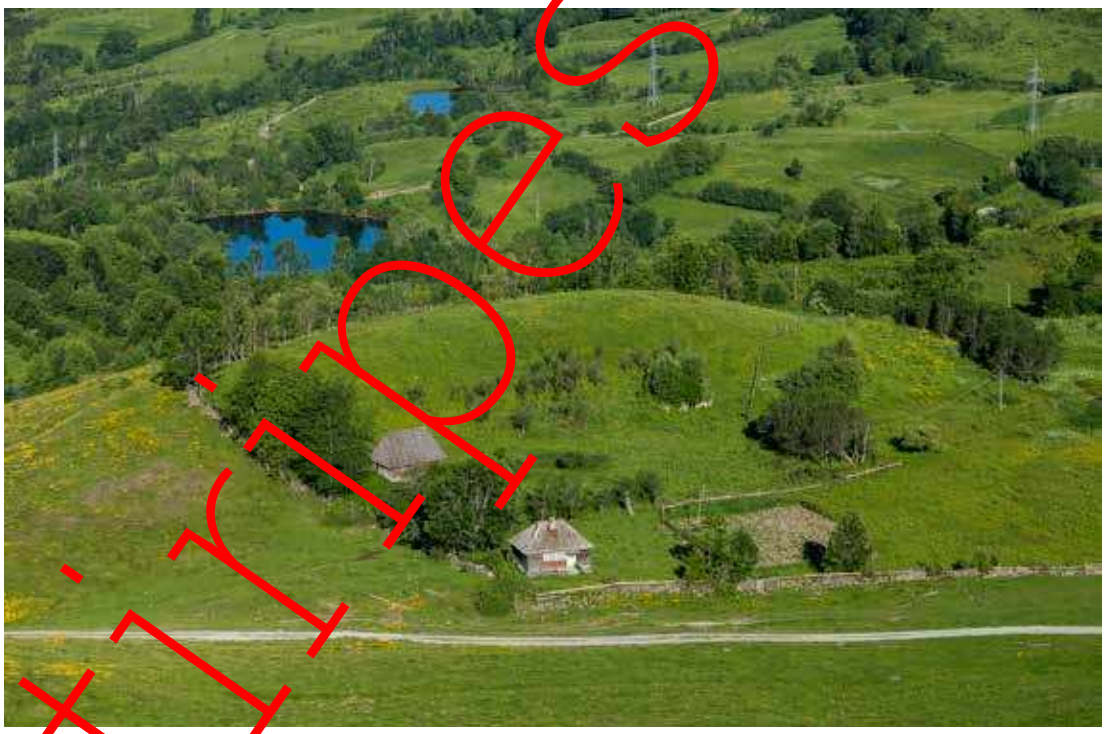


View on Corna churches with Cârnic and Cetate Peaks in the background, mining exploitations from the Roman to modern period (© Radu Sălcudean)

Overrview on Corna Valley dwelling, among the Corna brook (© Ștefan Angelescu)

Țarina(1004 m altitude)

Situated near the eastern part of Orlea Massif has also a mixt structure. The dwellings, close to Roșia Montană, were related to mining activities. In its upper part it is a scattered hamlet with agro-pastoral activities.



View on the Tăul Țarina and Țarina hamlet with dispersed households on the hills (© Radu Sălcudean)

Balmoșești (846 m altitude) and Blidești (825m altitude) are rural/vernacular settlements (hamlets) with diffuse and scattered structure and natural limits, and rural households that are related to agro-pastoral activities. The hamlets' structure is typical for Apuseni Mountains' rural settlements: the households and outbuildings are situated in the middle or as extension of the property, perpendicular with the road and depending on the relief. Dispersed, the hamlets are settlements form with no communal facilities, and weak infrastructure.

Households are spread on the hills and their inhabitants are called "side – settlers" ("lă-tureni"), their main occupation being agriculture and cattle breeding. There is a temporary form of living of the hayfields where cattle stable and one-room buildings are situated.

Single farmstead with a agro-pastoral production facility (© Radu Sălcudean)

Priorities for management

- → maintenance of traditional use of agro-pastoral landscapes and the preservation of their habitats
- → maintenance of constitutive landscape elements such as boundaries, landmarks, enclosures, singular elements that contains testimonials of the historical evolution
- → the field margins of low intensity agro-pastoral land that often contains a diversity of flowers
- → preservation of the character of the landscape
- → maintenance of constitutive elements of landscape characteristics that support identity
- → reference to appropriate(heritage, archaeology, biodiversity, etc) strategies for different landscape types

Geological setting and Mineralisation

Geological setting

Roșia Montană is situated in the Apuseni Mountains, located in the heart of the Romanian Carpathians. Three main ore deposit districts are known in the Metalliferous Range, a very rich gold-silver province worked since the Roman period, and likely before (a selection of mines found within this province are listed in the annexe of the national comparative analysis). It is known as the *Golden Quadrilateral*, and for over two millennia it was one of Europe's principal goldfields.

The precious metals deposits (gold-silver) are epithermal in origin – deposited from warm waters at comparatively shallow depths under conditions of comparatively low temperature and pressure. The Roșia Montană deposit relates to two major events of Neogene volcanism/magmatism: Cetate dacite (13.5 - 1.1 million years ago) and andesites (9.3 – 0.47 million years ago).

The bulk of the gold-silver in the deposit is concentrated within two adjacent dacitic intrusives: Cetate and Cârnic; which appear to join at depth. Two main types of gold-silver mineralisation are present with the deposits - disseminated (within dacite) and breccia. Within the Cetate and Cârnic intrusives the highest-grade mineralisation is confined to sub-vertical breccia pipe structures (often containing fragments of crystalline basement). Two (Cetate and Carpeni) are located within the Cetate intrusive, and four (Napoleon, Coranda, Cănțălișteand Piatra Corbului) are located within the Cârnic intrusive. Amongst these common breccia pipes, the largest is the Cetate Breccia that was mined at surface by the Romans (and possibly in prehistoric times, also) as evidenced by numerous historic photographs of the large opencast (the "Citadel"), mined-out during open pit operations from 1972 to 2006 for the low-grade gold the Romans left behind.

Surrounding the dacitic intrusives is a unit of volcanoclastic sediments that also hosts precious metal mineralisation. Situated between the Cetate and Cârnic intrusives, and extending along the southern boundary of the Cetate intrusive, is a breccia body known as the Black Breccia.

Mineralisation

Roșia Montană Mining Landscape is centred on a world-class gold deposit (with a low - intermediate sulphidation state). It comprises various types of ore bodies: veins, breccia structures (breccia pipes and breccia dykes), stockworks, and impregnations. The geological age of mineralisation is indicated around 12.7 million years ago.

Gold occurs as free gold, and in electrum (natural gold – silver alloy). In addition, silver minerals occur (argentite, proustite, polybasite), sulphides (common pyrite, and uncommon chalcopyrite, sphalerite, galena, tetrahedrite, arsenopyrite) and tellurides (hessite, sylvanite, petzite, altaite and Te-bearing argyrodite).

Gold grades decrease with depth, and a horizon of maximum concentration occurs. Geological investigations evidenced the skill of Roman period miners who chased high-grade gold values, only, restricting 'dead' work in barren ground only where necessary for access and transport, drainage and ventilation – and only then if they were not able to drive in mineralised ground.

Reserves and Monuments of Nature

There are two "Reserves and Monuments of Nature" within Roșia Montană Mining Landscape, comprising two rare geological formations, Piatra Corbului (Raven Stone) and Piatra Despicată (Cleft Stone).

The Raven Stone was declared a "monument of nature" in 1969 and placed within a protected area of 5 hectares. It is a mostly sheer-faced crag located at an altitude of 950 metres on the southern slope of Cârnic Massif, and in which Roman mining (and even possibly prehistoric mining) was conducted, including the use of primitive methods using fire, water and vinegar. The name of the monument comes from the shape of the stone, suggesting a raven's head, but also perhaps from the large number of ravens that nest in the area.

The Cleft Stone was declared a "natural monument" in 1954. Its geological composition is different from the geology of the area, being an andesite block, weighing several tonnes, located

over the dacite rock of Cârnic Massif. It is believed that the stone block gained its current location after a volcanic explosion from the Ore Mountains produced in the last phase of the Neogene period approximately 15 – 20 million years ago.

2.a E Flora

Geological setting

Roșia Montană Mining Landscape is a cultural landscape that provides a distinctive habitat for rich botanical diversity. Geographical position, geology, mineralogy, climate, soil and hydrographical factors, together with prolonged anthropogenic interventions, have produced a distinctive territory characterised by a wide variety of typologies.

Two millennia, and more, of gold mining activity imposed substantial cumulative disruptive action upon the biogeography of the property. But that does not mean that the current ecosystem lacks biodiversity; the situation is quite the opposite – especially at the landscape scale. Indeed, a lack of modernisation in traditional agro-pastoral practice preserves what is effectively a relict Bronze Age landscape, set among scenery that is of high aesthetic value.

The property is characterised by a distinctive mosaic of natural and exposed rocky massifs strewn with metalliferous mine debris, lakes (former header ponds) that occupy the higher elevations, forest (coniferous and deciduous), mountain meadows and hayfields, and the built-up area of Roșia Montană village. In close proximity are semi-natural habitats of High Nature Value grasslands (oligotrophic pastures and mesotrophic hay-meadows, traditionally farmed and lush with wildflowers) and mires - listed in Annexe I of the EU Habitats Directive, together with orchids and other plant species that are Red-listed in Romania.

The following significant plant communities are present at Roșia Montană (Annexe I EU Habitats Directive listings shown where relevant, after Akeroyd, 2006):

HABITAT	SPECIES	LISTING
Metal-rich rock outcrops	Asplenium septentrionale Silene dubia subsp. Dubia. 'Dacian communities of fissures of siliceous rocks with Asplenium adiantum-nigram, Asplenium septentrionale and Silene nutans subsp. Dubia (Red listed as Near Threatened). 'Silceous rock with pioneer vegetation of the Sedo-Scleranthion'	EU 8230
Metal-rich mine debris	Metallophyte species	
Oligotrophic pastures, locally species-rich	'Acidophilous mountain Nardus pastures'	Priority habitat EU 6230
Oligotrophic, dwarf shrub, montane heaths		Lety Massif Roman Galleries: Cătălina Monulești Roman Galleries
Mesotrophic, montane, species-rich hay-meadows		EU 6520 Mountain hay-meadows
Base-rich mire	Eriophorum latifolium (Central European yellow-sedge fen)	
Acid mire	Drosera rotundifolia	EU 7110
Woodland edge	Alnus incana and Telekia speciosa – 'Alluvial forestsof the Alnion incanae'	Priority habitat EU 91E0

Traditional mining lanscape in early 1940s (Silviu Bocaniciu Sr.)

Introduction

Ancient *Alburnus Maior*, medieval *Rubeo Flumine*, Verespatak, Goldbach, Rotbach, Roșia de Munte and Roșia Montană: they are all the same place. Here an evolution almost exclusively determined by people's quest to exploit gold spans more than two millennia; perhaps even twice that. What is certain is that today we find a socio-technical palimpsest created by successive empires and cultures that has unparalleled time-depth, above and below ground. The landscape displays significant natural assets – some that determined the path of cultural interaction, and some that developed as a direct result of it. These attributes combine with cultural richness to produce a type of countryside that not only conveys authentic Romanian rural culture, but which also represents a traditional scene that has disappeared across much of Europe. This landscape, and the processes that shaped and sustain it, is not just property with an inventory. It gives us a point of entry into a common emotional ground of memory and belonging. It is a precious asset that needs to be fully understood in order to value it, and then one might hope to share in the knowledge of those that truly care for it.

That the highest values must be assigned to Roșia Montană as an ancient gold mining centre of the Roman Empire is well known amongst top academics and experts in the field. There are, however, substantial visible marks of uninterrupted habitation and mining operations for at least 700 years from the 13th century CE.

The combination of evidence for underground gold mining exploitation, surface ore-processing, and related, often integrated, surface habitation, cemeteries, sacred places and other remains, together constitute an ancient mining landscape that is rare for the Roman Empire, and extremely rare for Romania. The significance of this cultural landscape is elevated further by intensive and well-resourced archaeological investigation, tight radiocarbon dating and by the discoveries of numerous wooden artefacts and mining implements within the galleries, some of which have been dated by dendrochronology.

The cultural landscape holds much knowledge yet to be discovered, in good time and by sensitive method. Like Greeks, the Romans began their rise to power with very little gold in their natural resources and, once Hispania breathed signs of exhaustion, gold-rich Dacia was fair game. Archaeological research during the 2000s, by multi-national teams coordinated by the National History Museum of Romania, elucidates the opinion of Romanian historian and archaeologist Vasile Pârvan (1882–1927) that *Alburnus Maior* was, in ancient times: *a Californian town of international civilisation*, a frontier place that incorporated several temporary and permanent areas related to the presence of Dalmatian-Illyrian colonists, and others from regions of Hellenistic tradition south of the Danube that specialised in gold exploitation.

This section is divided into:

2.b A Pre-Roman

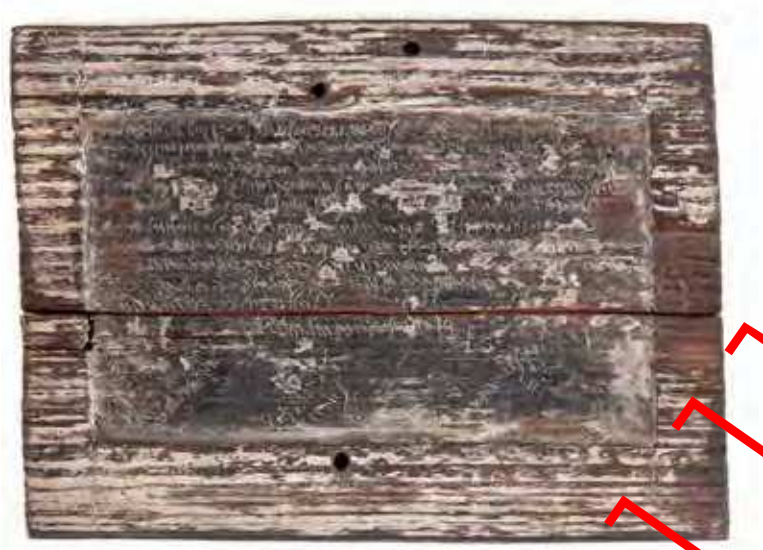
Prehistoric surface mining works along a seam
© Horia Ciugudean

The earliest elements of the site, however, date back to the Bronze Age, and a number of exceptional gold artefacts dating to this period have been found in the region.

Small-scale placer gold recovery is believed to have started in this period. Placer refers to alluvial, from rivers, the word derived from Catalan and Spanish meaning a shoal or sand bar, and which entered international mining vocabulary in the 1848 Californian Gold Rush. It is also likely that shallow hard-rock surface mining (trenches along the surface exposures of gold veins) also took place. In 513 BCE Heredotus wrote of the Persian king Darius who started a war against the Agathyrsi - a branch of the Scythians living on the banks of the Maris (Mures River) in order to seize their gold. Heredotus remarks that: "they were highly delighted with large amounts of gold." The Mures River delimits the *Golden Quadrilateral* in the south.

In 218 – 202 BCE, the Romans gained access to the gold mining region of Spain during the second Punic War with Carthage, and recovered gold by alluvial and hard rock methods. In 50 BCE the Romans began the issue of a gold coin called the Aureus.

2.b B Roman (106–170 CE)

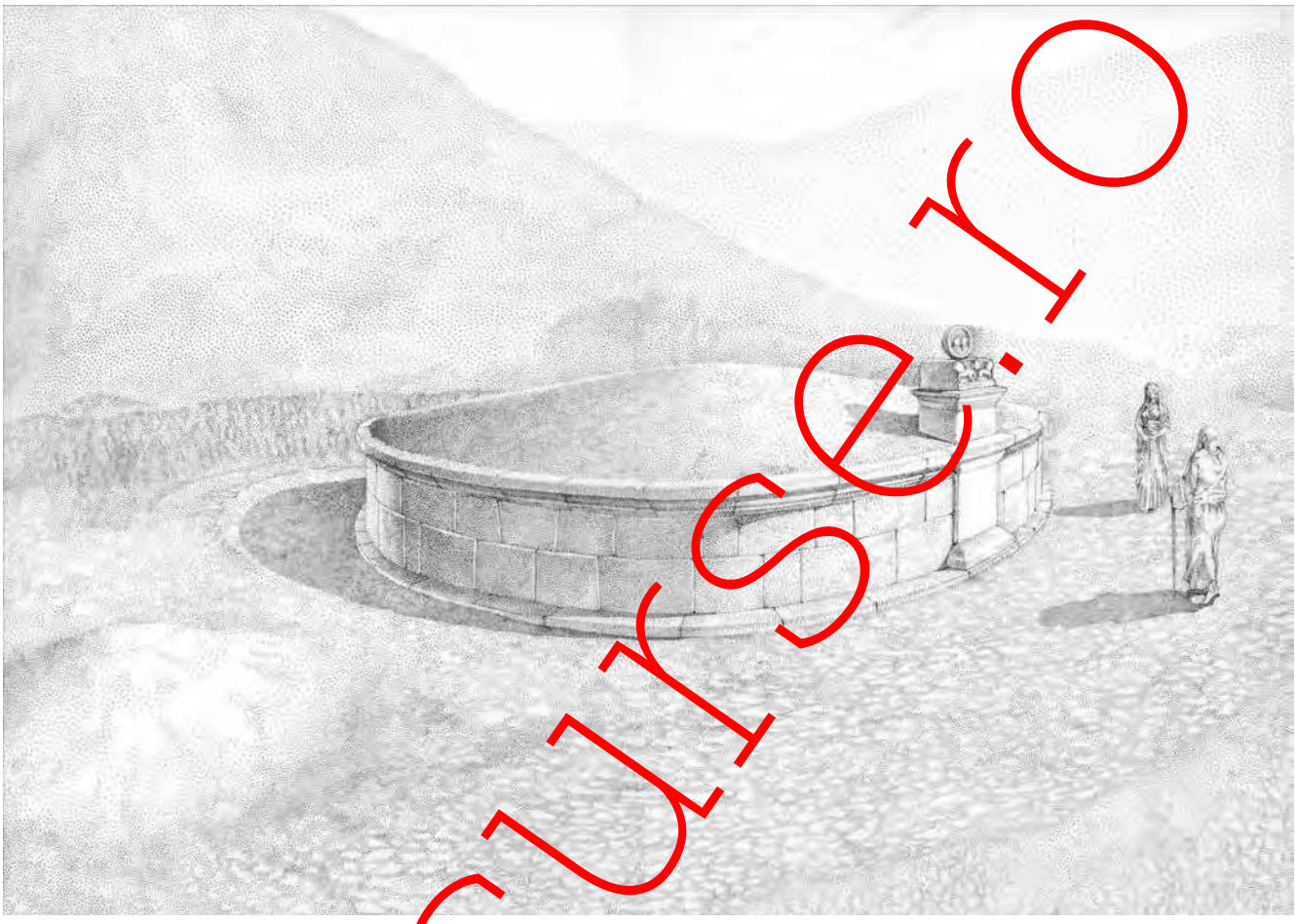


Wax Tablet XI (MNIR Archives)

Votive altar dedicated to Janus.
Hop Găuri Area (MNIR Archives)

Roman funerary monuments,
Drumuș Area (MNIR Archives)

Funerary Monument, Mining Museum,
Roșia Montană (© Lorin Niculae)



Reconstuction of the Circular Funerary Monument at Hop Găuri (© Virgil Apostol)

There was major gold mining and socio-economic activity in Roșia Montană during the Roman period (2nd century CE). The first underground mines in the property date immediately following the Roman conquest of Dacia in 106 CE. Dacians were known to the Romans as great metalworkers. In pre-Roman Dacia, where gold mines were very probably the property of Dacian kings, their direct passing into the property of the Roman state took place immediately after Dacia's conquest, as early as the reign of Emperor Trajan (as seemingly proved by the inscription laid by Hermias, *libertus* of the emperor, *procurator aurariarum*).

By August 106 CE the war was over and Dacia was set up as a Roman province.

Ancient sources report that the Romans found the equivalent of over 165 tonnes of gold in the Dacian thesaurus. Kriton (private doctor to Emperor Trajan) wrote about huge amounts of Dacian gold transported to Rome by their conquerors. Emperor Trajan celebrated his victory by announcing over 100 days of games and, with a boosted treasury from the spoils of Dacia, built his Forum and Column in Rome. The price of gold in the Empire sank during the following years: in 97 CE one pound of gold cost 3,962 dr.; by 127 CE it cost at most 3,800 dr.

After occupation the Romans improved the organisation of gold mining and processing methods, extracting an estimated 500 tonnes of gold during their 166-year rule. *Aurariae Dacicae*, together with the *metalla Illyrici* presented the richest source of metals in the entire Empire during 100 CE – 400 CE.

What is now Roșia Montană became the most important precious metals mining centre in the new Roman province. Its first attestation, on a wooden wax-coated writing tablet discovered in one of the mining galleries is dated February 6th, 131 CE. It also records the Roman name of the place: *Alburnus Maior*.

The Italic civilization of Ancient Rome was amongst the most remarkable in the world, its imperial period lasting a remarkable 1,500 years. Ultimately what creates and sustains empires is military force and trade. Rome – essentially devoid of precious metals on its own territory – needed gold and silver as coinage to pay its fighters; the term soldier (Medieval Latin *soldarius*, literally meaning "one having pay") ultimately derives from the Roman word *solidus* (Latin for "solid"),

the name of the Late Empire gold coin. And in terms of trade, Rome became the largest city in the world in ancient times – a gigantic emporium of luxury goods such as silk, pearls, ivory and spices - imported from India, China and elsewhere and paid for in gold. Gold was also something the citizens of Rome deeply desired: for jewellery, and to simply convey sheer wealth. Trajan's sights fell on Dacia at a time when he wanted to defend his Roman frontiers, but also a time when precious metal mining under Imperial control in Hispania had peaked in the first century CE. Whether it is coincidence, or not, it is certain that after the Dacian Conquest, gold mining began immediately and a procurator was brought to the Carpathian province, more likely directly from Rome rather than from Dalmatia - as presupposed on the basis of his wife's name Salonia (liberta from Salona).

The mining exploitation and organisation forms based on the Dalmatian and Illyrian model suggest that the Romans adapted the fiscal administration to specifically Roman organisational forms. In this a series of local (foreign) institutions were meant to provide economic and demographical prosperity to such provinces. The importance of the Dacian gold territory, especially of *Alburnus Maior*, in the framework of the customs system is reflected in the presupposition of the existence of a customs station.

Roșia Montană is un-paralleled as a Roman mining centre in terms of its documented epigraphy, an exceptional contribution to the authenticity of our understanding of the place. The wax-coated wooden writing tablets are first-rate sources of legal, socio-economic, demographic and linguistic information - not only regarding *Alburnus Maior*, but the entire Dacian province and, implicitly, the Roman Empire. The tablets reveal explicit details of mining organisation, sale and purchase contracts, receipts of loans with interest, and the sale of slaves. The evidence attests not only Illyrians, but also Greek and Latin migrants hired to work in the mines and organised in associations (e.g. *collegia aurariorum, societas danistaria*).

The writing tablets are also correlated with an unparalleled number of stone epigraphic monuments, votive and funerary. Most epigraphs seem to derive from the settlement on "Carpeni" and the cemetery at "Țarina". They were made of the Orlea gritstone. Those emerged before the recent archaeological campaigns were discovered by chance, without systematic and scientific research, which facilitated their migration to various collections; others vanished altogether. Many sculptural monuments of medallions and reliefs bear decorative and symbolic elements that evidence the intensive colonisation of mining technicians and specialists from Dalmatia. A number of the epigraphs have been preserved at the mining museum in Roșia Montană, whilst others are in the care of museum collections in Cluj-Napoca, Turda, Alba Iulia, Deva and Bucharest.

Roman mining techniques

Roman knowledge of geology was rudimentary, and they possessed limited technical mining skills. They were soldiers and farmers first, and never real miners. When they extended their dominion by conquest they made use of the submissive skill of the conquered peoples in the mining regions they overran. They had a tendency to retain, whenever possible, inherited "barbarian" socio-technical forms of mineral exploitation. In the case of Roșia Montană, hard rock mining expertise may have been limited, or absent, however, as it is known that skilled migrant Illyrian-Dalmatian miners were imported to exploit gold in such ways that suited the technical nature of the deposit.

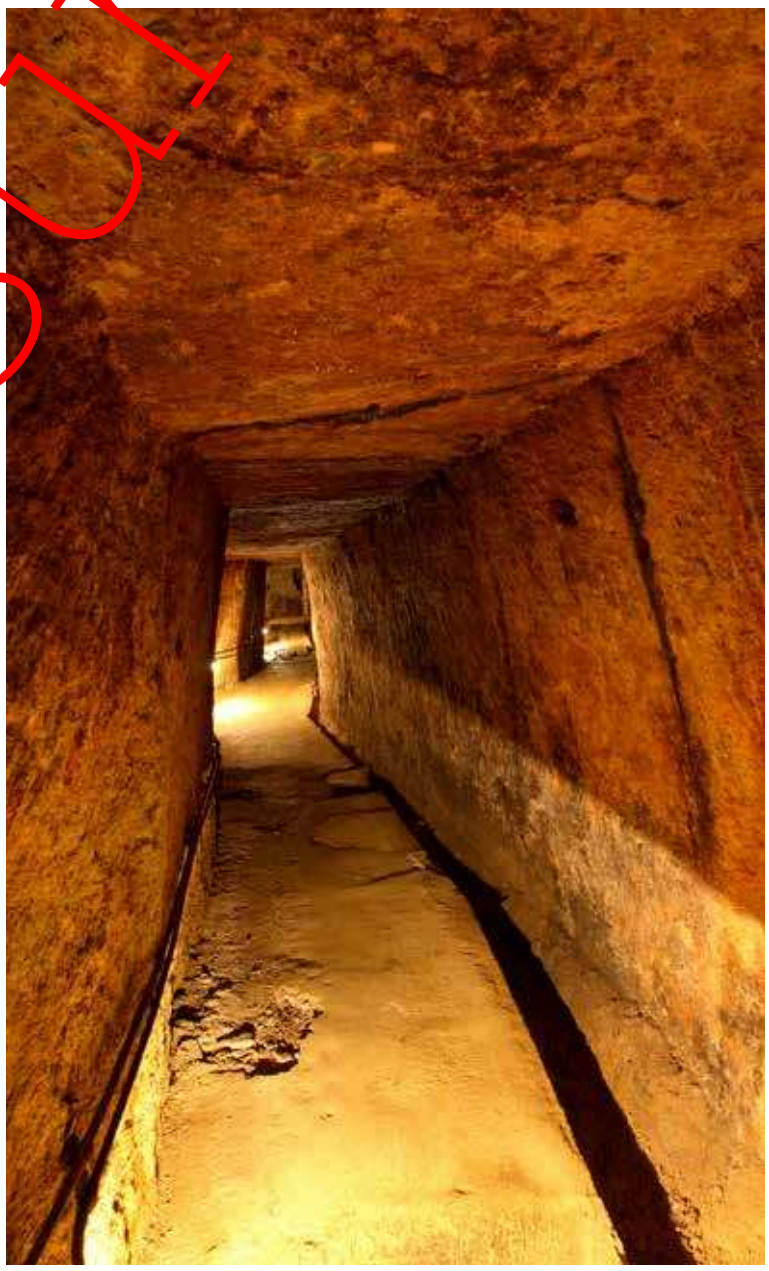
The pre-eminent underground Roman mining network that survives at Roșia Montană possesses outstanding technical attributes that provide exceptional testimony to the diffusion and further development of precious metals mining technology during the expansion of the Roman Empire in the 2nd and 3rd centuries CE. Archaeological investigation has revealed important aspects that contribute to the global history of mining. Such extensive perfectly carved trapezoidal-section galleries, helicoidal shafts and inclined communication galleries with stairways cut into the bedrock, and vertical extraction areas (stopes) superimposed above one another with the roof carved out in steps, are unknown elsewhere from such an early era and, further, are not described in known literature. Features such as multiple chambers for treadmill-powered water-dipper wheels (and the wooden remains of such equipment), whilst recorded but mostly destroyed elsewhere in the Roman world by subsequent modern mining, are preserved at Roșia Montană. These are of exceptional value due to their rarity, extent and state of conservation.

The Roman period did not involve revolutionary technology, it involved adequate, and appropriate, technology applied to the extraction and processing of ores and metals – sufficient to

meet a high level of demand, at affordable prices. The Roman Imperial period brought intensification of that which already existed in Greek and Roman republican times, rather than innovation in methods of exploitation and is characterized by the extent of operations and the quantity of output. Under Augustus, existing mines expanded and new mines opened, using extensive shafts and underground galleries. Crude devices such as tarred baskets and buckets for bailing were used, hoisting them with a hemp rope. Drainage adits were used in combination with wooden treadmill-powered water-dipping wheels, in pairs and in series, worked by men who pushed the treads with their feet. Examples of these have been discovered at Roșia Montană. The Archimedean Screw, or cochlea, which was brought from the irrigation ditches of Egypt to the mines of Spain was also likely used.

Mining was done by hand using iron tools: picks, hammers and chisels. Timbering for support was rarely used in Roșia Montană because the inclined shafts and levels were small; but cross beams supported by uprights are evidenced in more dangerous ground (the same as in the case of Rio Tinto mines). Pillars of rock were sometimes left as supports for the roof in larger stopes, and filling with waste was another method for preventing collapse. Many entries were steeply inclined. Lighting was by rush lamps, and niches in the sidewalls of levels are commonly encountered. Many ancient lamps have been recovered.

Roman galleries in Cârnic Massif (© Ivan Rous



Roman Mining Gallery in Orlea Massif
© Lorin Niculae

Roman Gallery in Cârnic Massif, Roșia Montană
© Ivan Rous

Roman works with evidence for fire-setting
© Radu Călcădean

Roman ore processing (gold and gold-silver ores), concentration and smelting

The Romans commonly used cupellation, an ancient technique where a gold-silver alloy (electrum) is treated under high temperatures under a controlled operation to separate the noble metals from any base metals that might be present in the ore. Precious metals do not oxidize or react chemically like the base metals that form slags or other compounds. The Romans also developed advanced methods of parting gold and silver (the removal of silver from gold, therefore increasing the purity of gold).

Ore containing precious metals was first roasted in order to oxidise any minor sulphides present; this also helped to better disintegrate harder rock. It was then crushed using hammers or mechanical stamps, then ground into a fine powder with pestle and mortar, or with rotary grinders like a grain mill. Crushing and grinding workshops have been discovered in Roșia Montană during several recent archaeological campaigns. The ore is then concentrated by water and gravity, either by panning, or on inclined wooden boards using some material to collect the heavy gold (the origin of the "Golden Fleece"). The concentrate is then charged in crucibles with specific additives, like lead metal or lead oxide, to facilitate the smelting process and to extract the two noble metals. Gold and silver pass into the lead metal and then, the lead-gold-silver mixture is poured into moulds and subjected to cupellation to separate the noble metals from the alloy by oxidising the lead. During underground archaeological excavations at Roșia Montană, a litharge (lead oxide) roll was discovered in the Roman underground galleries of Cârnic massif, being found within a secondary backfilling deposit of an inclined adit situated very close to the surface (few examples of archaeological evidence concerning the various steps of gold-silver metallurgy are known from prehistoric and ancient periods). The last step of the smelting process involved the separation or parting of gold and silver by the cementation process, using reagents such as salt, including sodium chloride, antimony sulphides and nitrates, a process that originated in Lydia in 6th century BCE.

After abandoning the rich gold and silver mines in Roman Dacia, the focus of Roman exploitation of ore was transferred to the provinces on the right bank of the Danube, to *Moesia Prima* and *Dacia Ripensis* and farther into the hinterland of the Balkan Peninsula, in Dacia Mediterranea and Dardania. In 271 CE most Roman troops abandon Dacia after fighting off barbarian Goths.

2.b C Medieval and Early Modern (to 17th century)

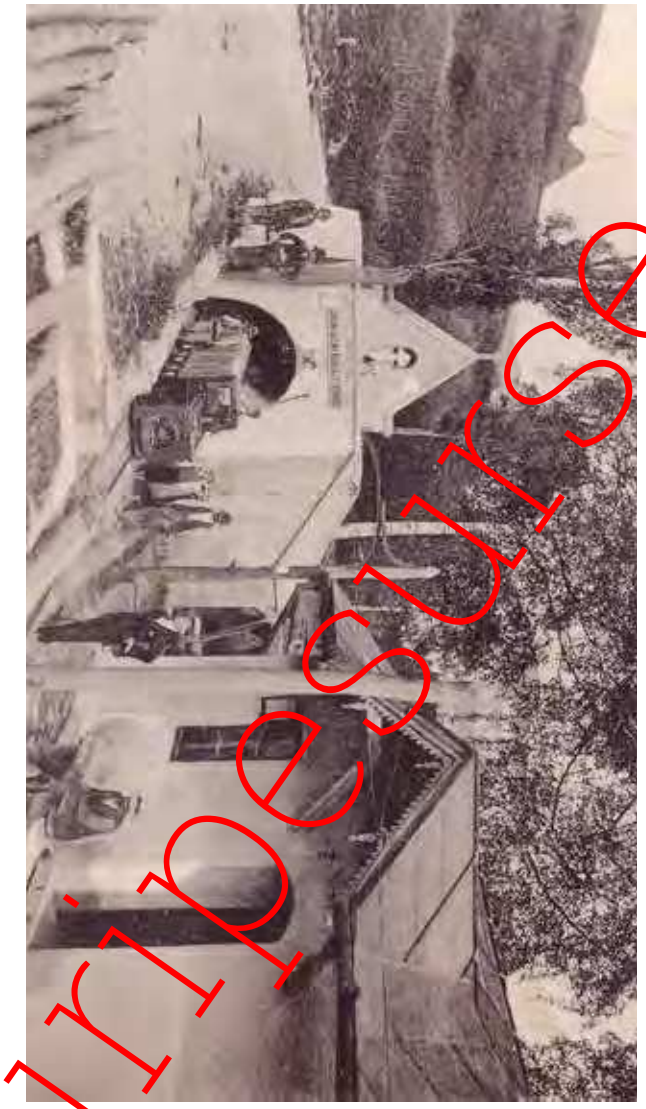
It is assumed that there was little activity between the 3rd and 13th centuries in terms of gold exploitation in Roșia Montană, a period substantially with no written evidence. After the Romans left, society was organised into village communities and unions of village communities which, in time, united into larger political-administrative formations named knezdoms, dukedoms and lands, constituting the core of the future Principality of Transylvania.

Gold mining is next attested in the 1230s and continued to grow through the Medieval and into Modern Times. Although there is much archaeological work needed to investigate this period, there are a number of historical references that serve to highlight this activity. Following the Hungarian conquest of Romanian principalities and dukedoms, gold mining expanded as German miners (*hospites*) were colonised in the area. Under Béla IV (1206–1270), King of Hungary and Croatia (1235–1270), administrative structures had their own Romanian organisation, settlements usually conferred with the name of a respective river - as the majority of the Romanian population lived along river valleys. The date 1238 is significant as, at Cricău and Ighiu, German miners received the right to extract gold from "Chernech" - which is identified with the Cârnic massif in Roșia Montană. After Béla, in 1271, King Stephen donated the gold producing "land of Abrud and Zlatna" to the Alba Iulia diocese. In 1327–28, under King Carol Robert, the mining law was changed: previously, when a gold or silver mine was discovered on private property, the king took the land into his possession, giving the owner other estates in exchange, and taking 1/8 of gold and 1/10 of silver. The new rules meant owners could keep land with precious metals, keeping 1/3 themselves and giving the king 2/3 of the exploitation. Mining developed intensely and *Chernech* mine was again mentioned, this time in 1347.

At the beginning of 16th century, gold mines belonged to local patricians, and in 1579 some townspeople from Abrud are recorded as owning stamps and washing machines in Corna and Roșia valleys. In 1618, under Gabriel Bethlen's reign, an exemption from military service was introduced for miners, together with special aids for disabled miners, and freedom of circulation. In 1642, documents mention the so-called "fortress" – the Roman gold mine of Roșia Montană, together with hayfields and stamps. In 1676 there were 77 stamps recorded in the property. In 1690, the Habsburgs gained possession of Transylvania through the Hungarian crown.

2.b D 18th and 19th centuries

Private stamping mills, photograph from the 1900s
(Csíky Lajos)

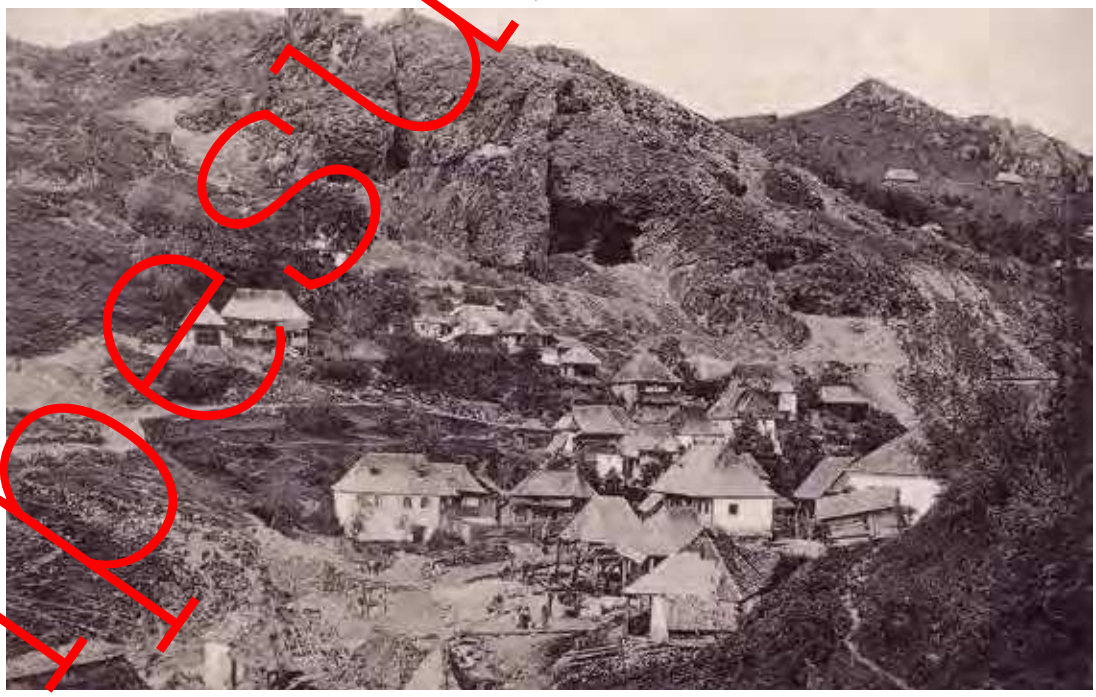


The entrance to the Holly Cross Master Gallery of the gold mines, photograph from the 1900's (Csíky Lajos)

Corna Reservoir, photograph from the 1900s (Csíky Lajos)

Brazi Reservoir, photograph from the 1900s (Csíky Lajos)

The Square on a market day. In the background Ajtai Palace, demolished in the 1980s, photograph from the 1900s (Csíky Lajos)



Văidoaia area, a typical small-scale mining neighborhood; each house or group of houses had a stamping mill, photograph from the 1900s (Csíky Lajos)

In the 18th century Transylvania was under Habsburg rule and became part of the Habsburg Empire. During the reign of Empress Maria Theresa (1740–1780) and Joseph II (1780–1790), a revival of mining took place in Roșia Montană under a well-organised framework related to the creation and development of the Mining Treasury by the Habsburg Empire. During this fresh impetus the underground network was greatly extended using gunpowder blasting and assisted by the introduction of ore-transport in wagons on rails. Ore processing, by numerous waterwheel-powered stamping mills located in the main valleys (119 in 1757, 226 in 1772), was organised and sustained by the creation and possibly by the reuse of a series of large header ponds (HU: *tó*, RO: *tău* from DE: *Teich*). The creation of ponds, the setting up of new mines with waged labour, together with private capital participation, characterises this period. In 1746 the first private mine in Roșia Montană was Sfânta Treime (Vercheșul de Jos - Râzna). Stamps were donated to the churches (e.g. to Roșia, donated by Jurca Dumitru and Lupea Achim). From 1760-62 the commune

was called Verespatak and Maria Theresa, like her predecessors, administered Transylvania as a separate province (she proclaimed it a principality in 1765). In 1773, Empress Maria Theresa signed the statute of mining in Abrud, and made a donation to the Roșia Montană Catholic church. This included the cherished icon of Virgin Mary with a necklace of black pearls. Maria Theresa also modernised the large header pond of Tăul Mare, from which there are detailed records, including the use of an innovative water outlet control mechanism.

In 1781–82 the community lodged a complaint against compulsory labour hours “by hand and by cart” for the arrangement of such a “storage lake”. In the uprising that ensued – the Revolt of Horea, Cloșca and Crișan, of 1784 – citizens of Roșia Montană set fire to Hungarian houses, the Catholic church and a few mine entries. Soon, mining specialists from Austria and upper Hungary were colonised in the area, a move that significantly changed the ethnic composition of the community and brought Western culture in the form of Central European houses, together with elements of Baroque and Neo-classical decorative art. Roșia Montană citizens took part in the Revolution of 1848–49 and George Gritta and priest Simion Balint became local heroes. After 1854 Roșia Montană acquired a dual name: Verespatak-Roșia, aligned with both Hungary and Romania. It separated from Abrud in 1857, and received an official statute in 1860. In 1867 Transylvania falls under the direct rule of Hungary. In the 1880 census there were 758 households with a population of 3,439.

The underground heritage of the 18^{th} to 19^{th} centuries is prolific and significant as one of the larger mining complexes of the Austro-Hungarian Empire. Further, in terms of a technological mining ensemble, it retains rare features such as wooden trackways or railways, the humid conditions in the mine having preserved, like their Roman wooden predecessors, substantial archaeology that rarely survives elsewhere. A characteristic of this new era was the use of gunpowder explosives in driving galleries much faster than ever before, allowing a more extensive penetration of the massifs. These workings have been archaeologically investigated in the Cârnic massif, only.

The hydro-technical system is impressive, and more extensive than presently visible; originally it counted over 100 header ponds and each will have had extensive leats (watercourses) of which some are visible in the landscape, and some not. Less visible, too, is evidence of the large number of small waterwheel-powered stamping mills that were operated by numerous families in the valleys. Traditional, pre-industrial mining was brought to an end by the communist nationalisation in 1948, all private stamping mills being abolished and destroyed. But their archaeology will still be there, and is worthy of detailed study.

Historic events that happened in, and around, Roșia Montană include the 1784 Revolt of Horea, Cloșca and Crișan, and the 1848 Revolution. They have left their traces on the ground, and in the intangible history of the place.

This first mining revival under the Habsburg reign of Empress Maria Theresa (1740–1780) and Joseph II (1780–1790) not only brought fresh socio-economic impetus to Roșia Montană, but also led to a succession of important discoveries that relate to the history of the place, and of the Roman Empire. This was a time when the celebrated Roman wax-coated wooden writing tablets began to be discovered, the largest cache of 11 items being recovered from the Cătălina Monulești Roman Gallery (tablets were discovered in 1786, 1788, 1790, 1820, 1824, 1854 and 1855). The unanimously accepted view among experts is that they were placed in relatively inaccessible mine galleries for safe keeping at a time of crisis: the Germanic Marcomanni incursions into Roman Dacia during 167–170 CE, part of the Marcomannic Wars that embraced the whole length of the Roman Empire’s northeastern European frontier along the river Danube. The great scholar Theodor Mommsen, who visited Roșia Montană in 1851–53, studied these tablets. Arguably, as one of the most important attestations of Roman law, he published them in his *Corpus inscriptionum Latinarum*. The newest dated tablet coincides with a sudden suspension of the ancient archaeological record at Roșia Montană.

Some tablets were destroyed immediately after they had been found because of their critical state of preservation and the sudden contact with drying air when taken from their humid hiding places. Others disappeared. 24 are preserved, however, as remarkable epigraphic documents that yield unique, abundant and precise information regarding the economic aspects, the habitat system, the religious life and the juridical relations that governed this mining community. Unlike other similar discoveries in the Roman Empire, such as the batches of tablets from Vindolanda (Britannia) or Pompei (Italy), which also include elements of correspondence or literary

exercises, the Transylvanian Triptychs are official documents, exclusively. They are namely legal documents-instrumenta, with a strictly particular and individual nature.

2.b 20th century
E

Procesing Plant. Stamping mills and electric power station at Gura Roșiei, 1927 (V. Zotinca)

Private mine in Rosia Montana, 1929 (A.O. Bach)

Cetate Massif, before and during the explosions in 1974 that destroyed the upper level of the historic mining works, as captured by geologist Aurel Sîntimbrean

After the Great Union of 1918, Roșia Montană was called Roșia de Munte.

During World War I, most mining activity ceased. In 1930 California stamps were introduced for more efficient crushing of gold ore. Share holding companies (cuxe) supervised mining activity. The 1940s precipitated a decline, and emigration of miners and their families to other Romanian mining fields, such as Valea Jiului, became commonplace.

After World War II, a communist-dominated government was installed under the sphere of Soviet influence. The 1948 nationalisation of the private exploitation of gold ore made the use of stamps forbidden and many private mines were closed. Traditional, pre-industrial mining was replaced by large-scale, underground industrial-scale mining and, subsequently, by opencast mining. The mining community suffered intimidation, brutal treatment and reprisals by repressive authorities in attempting to coerce family members to reveal the places where they "had hidden the gold for hard times". This was a dark time for the people of Roșia Montană. There was a rapid decline in prosperity, a general persecution of former mine owners, of stamps, stores and taverns, and a steady exodus from the place. In 1956 the population of Roșia Montană had fallen to 2,371, with 3,41 in Corna. Properties changed ownership at an unprecedented rate and underwent rapid physical degredation and decay. The spectacular Roman mining remains that survived in the Cetate Massif - the "Big Fortress" and the "Small Fortress" - were taken off the jurisdiction of the Monuments of Nature 2 February, 1970, to allow for large-scale opencast mining.

Communist era mining has left an indelible legacy in the landscape, but its less durable components have already substantially disappeared. Of course this period also forms an important part of the property's story, an era that represents the third and final phase of large-scale gold exploitation.

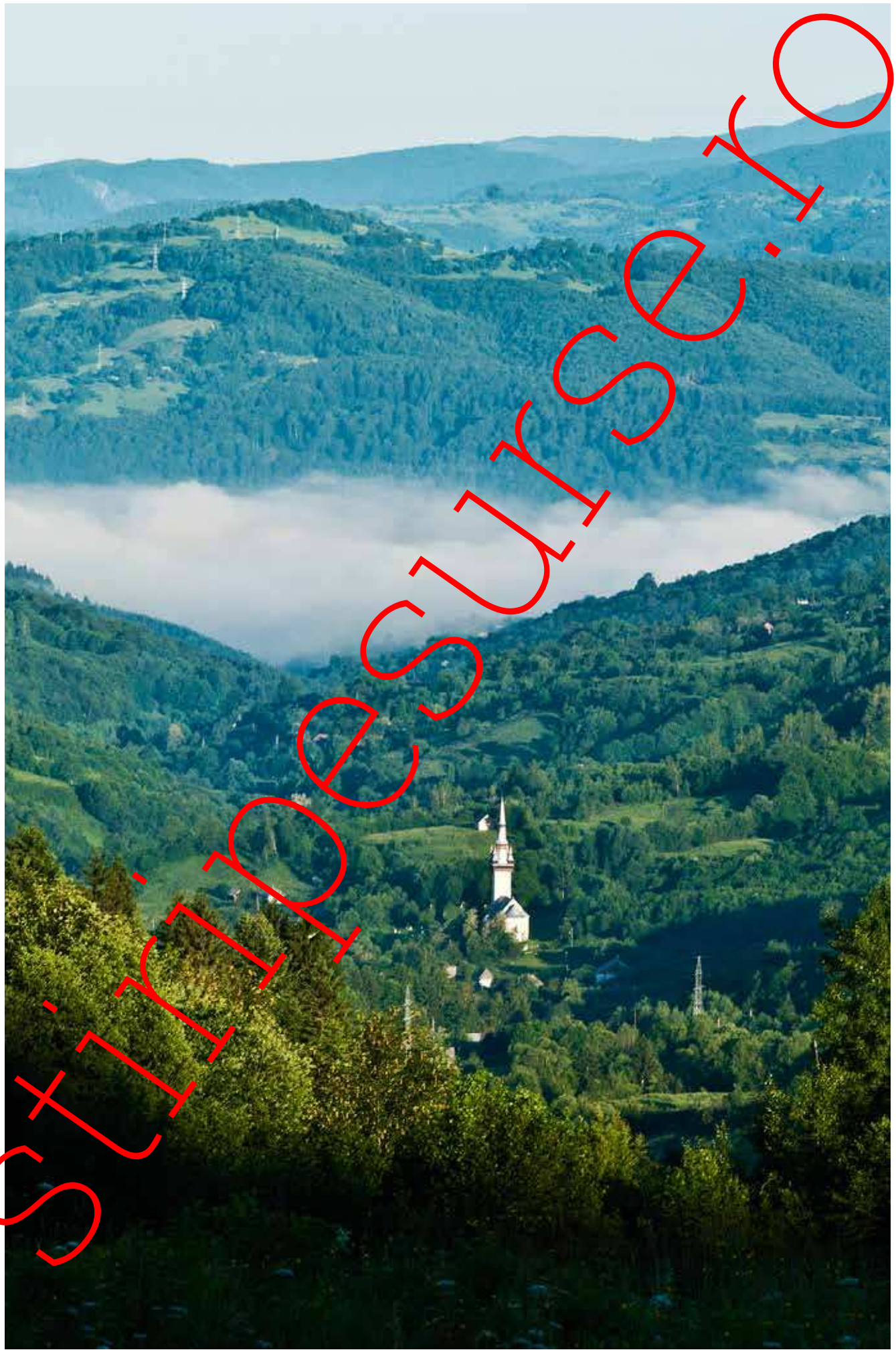
General View - Tăul Mare, Cârnic Massif, Cetate Massif and the former mining exploitation (©Radu Sălcudean)

During the 1990s the state mine continued its open-cast exploitation of Mt Cetate (and in its final years even of Mt Cârnic), to be closed in 2006, on the eve of Romania's accession to the European Union, as a non-profitable, state subsidized enterprise. From the late 1990s a new proposal emerged, from a potential private investor, for resuming open-cast mining and expanding it to the entire site. From the early 2000s, this turned into a project that has taken several administrative steps in view of receiving approval, but never succeeded. At the same time, a strong public opinion emerged, in favour of preserving the cultural heritage of the site, which would have been endangered by the implementation of the mining project, considering at least the superposing of planned mining elements with specific, listed cultural heritage features.

The mining company has acquired properties within the footprint of the mining project, and became one of the major landowners in the area. It has also benefitted from a mining-only zoning plan. In 2016, the zoning plan of the municipality was annulled in court, closing the circle and bringing the community to the situation of no- mining plans.

During this interval, the active citizens of the area and supporting NGO's mounted a strong case for the preservation of the site, on ownership, environmental and cultural rights. Within the ensuing civic movement, the desire of promoting the site for the World Heritage emerged.

The same period saw the first systematic archaeological research campaign, developped within the framework of the proposed mining project. Database and GIS location systems were adopted since 2001, within the specially established Alburnus Maior National Research Programme, under the coordination of the National Museum of Romanian History, of Bucharest. This led to a great advance in knowledge on the site, which brought further detail and precision to the overall assessment, indicating a most valuable cultural and natural heritage place.



Overview of Rosia Montană valley (© Ștefan Angelescu)

3. Justification *for* Inscription

3.1 Brief synthesis

a

Roșia Montană Mining Landscape contains the most significant, extensive and technically diverse underground Roman gold mining complex currently known in the world. Workings attested by the famous Roman wax-coated wooden writing tablets, have been dated to the Roman occupation of Dacia (106–170 CE) and, together with potentially previous and subsequent phases, mining activity spans more than two millennia. Historically, precious metals coinage financed trade and military force that, together, created and sustained empires. At Roșia Montană all phases have left their mark, both underground and at surface, an evolution almost exclusively determined by people's quest for gold. This socio-technical palimpsest of successive empires and cultures has unparalleled time-depth and is exceptionally diverse and readable in such a compact area.

Roșia Montană is situated in a natural amphitheatre of massifs and radiating valleys in the Metalliferous range of the Apuseni Mountains, located in the historical region of Transylvania in the central part of present-day Romania. The site represents the centre of the so-called *Golden Quadrilateral* of the Southern Carpathians – the richest precious metals province in Europe.

Gold occurred in veins within seven small mountains that visually dominate the landscape of Roșia Montană, itself surrounded on three sides by dividing ridges and peaks. Towering crags are pierced by old mine entrances, their tops scarred by opencast working. Roman archaeology at surface is prolific and pervasive, comprising ore-processing areas, living quarters, administrative buildings, sacred areas and necropolises, some with funerary buildings with complex architecture, all set in relation to over 7 km of ancient underground workings discovered to date. Forest and scree mix on steep slopes and, mounted on rocky knolls, the towers and spires of historic churches command the villages of Roșia Montană and the much smaller Corna, settlements constrained by relief in valleys that also provided for ore-dressing, communication and transport. Steeply sloping meadows are characterised by agro-pastoral practices that are as old as the mining activity itself, and a number of artificial lakes, formerly header ponds for ore processing that were greatly expanded from 1733, punctuate higher elevations.

The village of Roșia Montană boasts an impressive inventory that illustrates a diversity of architectural styles, eclectic influences fused with local tradition, a cosmopolitan settlement whose roots and embellishments are based on freeholders' exploitation of gold. Five religious denominations and several ethnic groups have lived together in work and community life, a situation that is reflected in the current character of this Transylvanian mining settlement substantially frozen in the eighteenth and nineteenth centuries at the inception of its prosperous urbanisation under Austro-Hungarian rule. Churches dominate the built environment and contribute substantially to its symbolic imagery. Characteristic buildings with outer porches form a typological background to a series of distinctive and mostly decorative features that were borrowed from the repertoire of Classical or Baroque architecture. This structure, distinguished also by grand walls and monumental gates that face winding roads, gradually gives way in the industrial suburbs to miners' households consisting of wooden dwellings above high stone-built basements, many of which housed ore-processing workshops with water sumps fed by springs that could be used in the harshest of winters. Final interventions derive from the communist regime that imposed nationalisation in 1948, and which ended traditional family- or small group-operated mining. State-run mining by underground and opencast ended in 2006. Properties that today proclaim a past built on gold, are still home to a living community; and the landscape continues to yield a living. Its cultural and natural assets are of such quality, however, that opportunities for a sustainable future have perhaps never been brighter.

3.1 b Criteria under which inscription is proposed (and justification for inscription under these criteria)

→ Criterion (ii):

to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town–planning or landscape design

Roșia Montană Mining Landscape contains the world's pre-eminent example of an underground Roman gold mine and, further, demonstrates over 2,000 years of subsequent exploitation and continuous settlement.

Many of the mining features preserved in over 7 km of Roman workings demonstrate exceptional innovative techniques developed by skilled migrant Illyrian-Dalmatian miners to exploit gold in such ways that suited the technical nature of the deposit. Control of precious metal resources, to use as currency, was a fundamental factor in the development of Roman military power and Imperial expansion. When in possession of the Apuseni Mountains there was an imperative to immediately commence mining in an efficient manner.

A decade of professional underground archaeological campaigns, beginning in 2001, elucidates a fusion of imported Roman mining technology with locally developed techniques, unknown elsewhere from such an early era. Multiple chambers that housed treadmill-operated water-dipping wheels for drainage represent a technique likely routed from Hispania to the Balkans, whilst perfectly carved trapezoidal-section galleries, helicoidal shafts, inclined communication galleries with stairways cut into the bedrock, and vertical extraction areas (stopes) superimposed above one another with the roof carved out in steps, are in a combination so specific to Roșia Montană that they likely represent pioneering aspects in the technical history of mining.

The significance of *Roșia Montană Mining Landscape* is not limited to antiquity as the Apuseni Mountains were Europe's main source of gold from the end of the Crusades in the thirteenth century until the discovery of the Americas in the sixteenth century, thereafter remaining pre-eminent in terms of output, during the era of Austro-Hungarian rule in particular, when German, Austrian and Hungarian miners were brought in and used their own advanced technology to exploit the deposits on a much larger scale.

→ Criterion (iii):

to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared

Roșia Montană Mining Landscape embodies the cultural tradition of one of the oldest documented mining communities in Europe, anciently founded by the Romans and which survived under influences of successive socio-technical and organisational systems whilst gradually waning until its final disappearance at the beginning of the twenty-first century.

The site was the most important precious metal mine located in the *Golden Quadrilateral* of the Romanian Carpathians and is associated with exceptional epigraphic testimony from the Roman Imperial era. Wax-coated wooden writing tablets discovered in the mine during the eighteenth and nineteenth centuries have been correlated with numerous stone epigraphic monuments discovered on site. Together they provide an authentic picture of daily life and cultural practice in this ancient frontier mining camp community.

Roșia Montană Mining Landscape is rooted in a past that evolved in a tradition consistently bound by efforts to extract gold. Detailed physical testimony is provided by: the underground mining works, chronologically differentiated by distinctive technical features; the socio-technical surface mining landscape consisting of ore-processing areas, habitation areas, sacred areas,

necropolises; the current mining village built at the dawn of the industrial era; and the extensive documentation of the communities that generated them.

Archaeological evidence survive alongside the legacy of modern underground mining operations, whilst the landscape reveals evidence of an increasing scale of modification through time to serve mining and the way of life of its communities under successive control of empires and state, each phase adding to, or in some case erasing, its predecessors. Today, life continues in a landscape little changed in some respects, retaining its capacity to yield a limited yet traditional living from agriculture. Its cultural and natural assets, however, are of such quality that they have the potential to offer a sustainable future for generations that follow.

→ **Criterion (iv):**

to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history

Roșia Montană Mining Landscape is testimony to the long history of gold exploitation in the Carpathian precious metals province of the *Golden Quadrilateral*, from the Roman era to the twenty-first century. It is an exemplar that illustrates the strategic control and vigorous development of precious metals' mining by the Roman Empire, essential for its longevity and military power. Following the decline of mining in Hispania (Iberian Peninsula, modern Spain and Portugal), *Aurariae Dacicae* (Roman Dacia, AD 106 to AD 272) was the only significant new source of gold and silver for the Roman Empire, among the likely key motivations for Trajan's conquest.

The pre-eminent underground Roman mining network, with its outstanding technical attributes and associated landscape, is exceptional testimony to the diffusion and further development of precious metals mining technology during the expansion of the Roman Empire in the 2nd and 3rd centuries CE. Archaeological investigation has revealed important aspects that contribute to the global history of mining. Such extensive perfectly carved trapezoidal-section galleries, helicoidal shafts and inclined communication galleries with stairways cut into the bedrock, and vertical extraction areas (*stopes*) superimposed above one another with the roof carved out in steps, are unknown elsewhere from such an early era. Features such as multiple chambers for treadmill-powered water-dipper wheels (and the wooden remains of such equipment), whilst recorded but mostly destroyed elsewhere in the Roman world by subsequent modern mining, are preserved at Roșia Montană, are of exceptional value due to their rarity, extent and state of conservation.

The modern socio-technical mining legacy is significant, too, from the prolific Habsburg legacy of the seventeenth to nineteenth centuries to the pre-industrial mining and ore-processing methods captured at the moment of technological changes on the verge of the modern industrial revolution. Mining operations undertaken at this time were mostly by 'freeholder' families that favoured the continuation of such ore-dressing methods until nationalisation in 1948.

Large-scale underground mining started under the communist regime, an era that has left enormous caverns, and in 1971 this switched to large-scale opencast working of the Cetate massif, destroying the spectacular Roman mining works known as the "Citadel" and continuing until 2006 by which time it had effectively reduced the elevation of the mountain by as much as twenty per cent. The apartment blocks inserted in the first stage of the socialist age into an essentially eighteenth-nineteenth century architectural ensemble is a striking relic of this era.

→ **Criterion (vi):**

to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance

The Roman wax-coated wooden tablets (*tabulae ceratae*) of *Alburnus Maior* (Roșia Montană) were made famous by the great German historian Theodor Mommsen (1817–1903), generally regarded as one of the greatest classicists of the nineteenth century. They represent a significant source for his interpretation of Roman law and on the law of obligations, which had

a significant impact on the German Civil Code, subsequently forming the basis for similar regulations in other countries such as Portugal, China, Japan, South Korea, Taiwan, Greece and Ukraine.

Around 50 Roman wax-coated wooden tablets were discovered during the 1780s and 1850s in mining galleries at Roșia Montană, with some 24 surviving in museums around the world. These are first-rate sources of legal, socio-economic, demographic and linguistic information not only regarding *Alburnus Maior* but the entire Dacian province and, implicitly, the Roman Empire. The tablets provide intimate details of life in the mining community and are also correlated with an unparalleled number of stone epigraphic monuments, votive and funerary, discovered on site and preserved in museums at Roșia Montană, Cluj-Napoca, Turda, Alba Iulia and Deva. Information reveals explicit details of mining organisation, sale and purchase contracts, receipts of loans with interest, and the sale of slaves. Epigraphic evidence attests not only Illyrians but also Greek and Latin migrants hired to work in the mines and organised in associations (e.g. *collegia aurariorum, societas danistaria*).

Academic research into the history of the Roman Empire during the Antonine dynasty and its relationship to the Dacians' gold and gold extracted from Roman Dacia has opened a new area of research into European cultural history: the economic recovery of the Roman Empire, the commencement of monumental public construction works in Rome, among which the Forum and Trajan's Column are perhaps the most important elements, and the direct linkage to the gold-mining area of Dacia where Alburnus Maior was its principal centre.

The perceived value of Roșia Montană's gold resources, like that of other gold-producing regions, changes with time, trade, technology and ownership of territory. The destination and uses of gold also change with the above. For the Romans, gold was vital for currency to pay its soldiers across its Frontiers - and for funding the import traffic that plied the 'roads' of silk and spices that led to Rome.

3.1 C Statement of Integrity

The property contains all the necessary attributes that express Outstanding Universal Value. It is constrained within a natural amphitheatre that is radically different from the surrounding landscape and includes all metalliferous massifs of *Alburnus Maior* and the two principal valleys (Roșia and Corna) for ore-dressing, settlement, transport and communication. The landscape represents a palimpsest of successive empires and cultures that have shaped it. Its most recent exploitation, open pit mining from 1971 to 2006, is responsible for its largest scale and most dramatic physical changes, though this activity is ultimately representative of irreversible loss and unsustainable practice.

The boundary has been determined using a combination of geological/mining maps, natural features such as ridgeline watersheds (functional, for water supply in ore-processing) and viewsheds (into and out of the property), roads, and the administrative boundaries that will assist with management of the property. It includes all areas with significant archaeological potential.

Roșia Montană Mining Landscape has undergone multiple transformations; some gradual over the centuries, and some sudden and devastating such as the destruction of the Roman open-works on Cetate (the "Citadel") by opencast mining starting in the 1970s, and the recent sustained buildings demolition campaign that began in 2004 in preparation for the resumption of open pit mining and the creation of processing facilities. During the latter, important exemplars of local architectural heritage and even entire portions of built fabric (such as the central area of Corna), were destroyed in a total that exceeded 250 properties. A significant number survive, however, as a direct result of local owners maintaining efforts, or due to new investor's repairs. The state of conservation of many historic buildings remain poor - making the preservation and conservation of this precious heritage all the more important - and some unauthorised development of small-scale housing has taken place. At the same time community based heritage programmes have made the connection between local owners, professionals in the field of conservation and volunteers from all over the world. During the last decade a range of historic buildings have been rescued using local resources and traditional techniques.

In terms of the integrity of individual components and elements:

The underground mining network comprises successive phases that exploited the same deposit – from the Roman period to the 20th century. It is remarkable that so much of the Roman network – highly selective in mining the richest ores – still survives (over 7 km currently recorded). Ore grades were highest near the surface but, by the 18th century, not only did modern technology enable the mines to operate at greater depths, but improved and larger-scale ore-processing enabled much lower grade ores to be mined, profitably. These later phases no doubt destroyed extensive Roman remains (in many extant cases there are modern workings intersecting Roman workings) but these later workings are part of the full history of the property and serve to highlight the incredible extent of Roman mining.

The header ponds (ore processing features) are each high in terms of integrity, including those with surviving equipment. Further work will be done in locating and defining smaller ponds, and the watercourses both 'upstream' and 'downstream' that are part of functional integrity.

In terms of the settlements, the Roman archaeological investigations have yielded prolific evidence, and no doubt much more remains to be discovered. Interpretation, at this stage, is difficult at the landscape scale, including broader relationships between components. In this regard, a comprehensive Lidar survey will be undertaken for the first time at Roșia Montană, and this will not only assist with interpretation but will guide the future research programme.

Modern settlements have been degraded to a certain extent by the loss of properties, post-World War II economic decline, and indeed hardship, causing an acceleration in this respect, but damaging, too, have been the preparations for the revival of opencast mining that has resulted in the demolition of significant numbers. Some unauthorised building of structures in an effort to obtain compensation from mining investors has also created some negative impacts.

3.1 d Statement of Authenticity

The area proposed currently constitutes a detailed testimony to unparalleled Roman gold mining and humanity's relationship with the landscape, as well as to more than two millennia of mining practices by successive empires and cultures. It contains attributes that are high in authenticity in terms of the location and the form and materials of surviving historic features, with a clear sense of how, when and by whom mining shaped the land.

In terms of knowledge, unparalleled epigraphic and documentary evidence combined with a decade of intensive systematic archaeological investigation has already provided a major contribution to the understanding of Roman mining techniques and organisation. Significant potential remains for the Roman period as well as for further stages in the mining landscape evolution.

In terms of the authenticity of individual components and elements:

The underground mining network comprises successive phases that exploited the same deposit – from the Roman period to the 20th century. Almost all networks are highly authentic, though some tourist access works during the 1970s at Orlea Roman Galleries have slightly impacted negatively, though to a certain extent this is reversible. In terms of enhancing knowledge for the networks of the 18th century onwards, it is planned to undertake research in several German and Czech archive collections which are known to hold material concerning Roșia Montană and other mines in the *Golden Quadrilateral*.

The header ponds (ore processing features) are each high in terms of authenticity, including those with surviving equipment. Enlargements, and modifications, are part of their historical and industrial development, and their modern adapted function. Almost all of the original engineering structures (including impressive dams) remain intact with original detailing, and contemporary construction drawings survive.

In terms of the settlements, the Roman archaeological investigations have yielded prolific authentic evidence that has been undisturbed and in its original context. Substantial dating, combining various techniques, has confirmed consistent dates of occupation.

Modern settlements are remarkably high in terms of authenticity, not only in terms of location and surviving associated elements of plots, but so too in terms of materials and workmanship. Ironically, socio-economic decline has not only frozen development but prevented in many cases any alterations and modernisations to fabric. Understandably, in many cases, the state of conservation is poor, but conservation interventions can now be incorporated within a conservation management plan to be implemented incrementally and with the objective of being foremost able to maintain such pristine authenticity by using traditional materials and local traditional craftmanship.

3.1 e Protection and management requirements

The property is included in a wider area that is designated in view of its protection by urban planning regulations, an area that also comprises several individually designated elements, from the Roman mining works, to the historic houses and two geological formations.

The more direct protection is granted by listing, with 50 elements within the property included in the Historic Monuments List. They comprise the archaeological site with a few particular sub-components, the historic centre of the mining town, the Roman mines in Mt. Cârnic, houses and churches. Several other components are currently being assessed for listing, among them the header ponds of the extensive hydro-technical system.

Under this protection framework, the responsibilities fall with the municipality, in respect to the protection through urban planning measures, and with the respective owners, when it comes to listed properties.

According to the law, once a nomination is submitted, all provisions in place for World Heritage sites will apply to the respective property as well. These include the management system designed to protect all World Heritage properties in Romania. Roșia Montană will benefit from these provisions with the submission of the nomination file to UNESCO. Until then, heritage authorities in Romania are preparing new forms of management for such multi-governance sites and landscapes uniting different heritage typologies that will integrate local partnerships and programmes in which relevant players come together to achieve each management goal.

An active citizenship journey over the last decade, where civic society and heritage practitioners have come together in recognition of the unique Roșia Montană heritage, show that the management of the property can be founded on cross-sectorial support and people-centred approaches. These programmes also triggered systematic monitoring campaigns which are now being endorsed by heritage institutions. This is already improving the capacity for specialized institutions and local authorities to work with other institutions and civil society to build on the successes of Roșia Montană and learn from the experience of working there for other heritage places.

3.2 Comparative analysis

Comparison between Roșia Montană and:

A. Relevant World Heritage Sites
B. Relevant Tentative List Sites (2016)
C. Relevant, selected, other mine sites
D. Roman gold mines in Romania

METHODOLOGY An initial scoping exercise systematically considered a large number of properties (see annexe) in order to isolate those that have an appropriate relevance in terms of like-for-like comparisons. More detailed comparisons made with these properties that express similar values to the nominated property are presented here. Additional scrutiny has been applied in instances of shared typological and chronological-regional provenance.

Precious metal (gold, silver, platinum) mining is necessarily a separate category compared to base metals, coal and iron, and other industrial minerals. The comparative rarity of such metals together with the economic dimension creates obvious ramification in terms of the physical testimony of associated cultural heritage. However, even gold deposits commonly vary considerably from silver deposits: They sometimes require different technology to mine, especially in alluvial or eluvial exploitation that is strongly related to gold and not silver (except, to a much lesser degree, when the two metals occur naturally as a gold-silver alloy called electrum); different technology to process the ore; and due to the value of the output may command different organisational methods.

Values for gold mining at Roșia Montană are highly significant under the theme of mining in the Roman Empire (therefore, as a comparator, then other sites must clearly relate to the geography and economy of the Roman world) and also under the theme of European Gold Mining (so, with a significant heritage of Austro-Hungarian mining then classic central European properties are especially relevant).

CONCLUSION The conclusion is that ancient mines, especially precious metal mines, are under-represented on the World Heritage List, and **that *Roșia Montană Mining Landscape* contains the most extensive, technically diverse, and significant underground Roman gold mining complex currently known in the world.**

It is an exemplar that illustrates the strategic control and vigorous development of precious metals' mining by the Roman Empire, essential for its longevity and military power. **Following the decline of mining in Hispania** (Iberian Peninsula, modern Spain and Portugal), *Aurariae Daciae* (**Roman Dacia**, AD 106 to AD 271) was the **only significant new source of gold and silver for the Roman Empire**, amongst the likely key motivations for Trajan's conquest. The highest quality, extent and technical diversity of underground Roman workings at Roșia Montană – in the second, successor, principal precious metals region under Roman imperial control – makes the property stand out as exceptional.

Further, mining continued in phases that span two millennia. Although the 2nd century CE and 18th – 19th century phases are the most significant, all phases have left their mark, both underground and at surface, creating a socio-technical palimpsest of successive empires and cultures with unparalleled time-depth, exceptionally diverse and readable in such a compact area.

No comparable properties are known to exist which might be nominated in the future, either in Romania, the same geo-cultural area, or the world.

World Heritage Site	Country	Date inscribed	Criteria	Date range						Principal typology								
				pre-17th century	1600–1699	1700–1799	1800–1899	1900–1999	2000–	Gold mining	Silver mining	Salt mining	Coal mining	Copper mining	Lead mining	Zinc mining	Iron mining	Other mining
Roșia Montană	Romania		(iii), (iv)	■	■	■	■	■		▒	▒							
Europe and North America																		
Las Médulas	Spain	1997	(i), (ii), (iii), (iv)	■						▒								
Hallstatt-Dachstein/Salzkammergut Cultural Landscape	Austria	1997	(iii), (iv)	■	■	■	■	■	■			▒						
Major Mining Sites of Wallonia	Belgium	2012	(ii), (iv)				■	■	■				▒					
Kutna Hora: Historical Town Centre with the Church of St Barbara and the Cathedral of Our Lady at Sedlec	Czech Republic	1995	(ii), (iv)	■	■	■	■	■	■		▒				▒	Minor		
From the Great Saltworks of Salins-les-Bains to the Royal Saltworks of Arc-et-Senans, the Production of Open-pan Salt	France	1982	(i), (ii), (iv)	■	■	■	■	■	■			▒						
Nord-Pas de Calais Mining Basin	France	2012	(ii), (iv), (vi)				■	■	■				▒					
Mines of Rammelsberg, Historic Town of Goslar and Upper Harz Water Management System	Germany	1992 2010	(i), (ii), (iii), (iv)	■	■	■	■	■	■	▒	▒			▒	▒	▒		
Zollverein Coal Mine Industrial Complex in Essen	Germany	2001	(ii), (iii)				■	■	■				▒					
Røros Mining Town and the Circumference	Norway	1980	(iii), (iv), (v)		■	■	■	■	■					▒				
Wieliczka and Bochnia Royal Salt Mines	Poland	2008 2013	(iv)	■	■	■	■	■	■			▒						
Historic Town of Banská Štiavnica and the Technical Monuments in its Vicinity	Slovakia	1993	(iv), (v)	■	■	■	■	■		▒	▒			Minor	Minor	Minor		
Heritage of Mercury. Almaden and Idrija	Spain, Slovenia	2012	(ii), (iv)	■	■	■	■	■	■									Mercury
Mining Area of the Great Copper Mountain in Falun	Sweden	2001	(ii), (iii), (v)	■	■	■	■	■						▒				
Ironbridge Gorge	UK	1986	(i), (ii), (iv), (vi)				■	■	■				Minor				▒	
Blaenavon Industrial Landscape	UK	2000	(iii), (iv)				■	■	■				▒				▒	
Cornwall and West Devon Mining Landscape	UK	2006	(ii), (iii), (iv)			■	■	■						▒				Tin Arsenic

World Heritage Site	Country	Date inscribed	Criteria	Date range: pre-17th century	1600–1699	1700–1799	1800–1899	1900–1999	2000–	Principal typology: Gold mining	Silver mining	Salt mining	Coal mining	Copper mining	Lead mining	Zinc mining	Iron mining	Other mining
Africa																		
There are no relevant properties listed.																		
Latin America and the Caribbean																		
City of Potosi	Bolivia	1987	(ii), (iv), (vi)	■	■	■	■	■	■		■							
Historic Town of Ouro Preto	Brazil	1980	(i), (iii)			■	■			■								
Historic Centre of the Town of Diamantina	Brazil	1999	(ii), (iv)			■												Diamonds
Sewell Mining Town	Chile	2006	(ii)					■						■				
Humberstone and Santa Laura Saltpeter Works	Chile	2005	(ii), (iii), (iv)				■	■			■							Salpeter
Historic Town of Guanajuato and Adjacent Mines	Mexico	1988	(i), (ii), (iv) and (vi)	■	■	■	■	■	■	■	■							
Historic Centre of Zacatecas	Mexico	1993	(ii), (iv)	■	■	■	■	■						■	■	■	■	
Asia and the Pacific																		
Iwami Ginzan Silver Mine and its Cultural Landscape	Japan	2007	(ii), (iii), (v)	■	■	■	■	■			■							
Sites of Japan's meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining	Japan	2015	(ii), (iv)				■	■					■				■	

Las Médulas, (© Barry Gamble)

3.2 A Comparison of the property with relevant World Heritage Sites

SPAIN
Las Médulas
Inscribed 1997 under criteria (i), (ii), (iii), (iv)

CONCLUSION **The properties of Las Médulas and Roşia Montană are entirely different: Las Médulas represents opencast mining of a consolidated palaeo-alluvial deposit, which was then abandoned during the Roman period, whilst Roşia Montană represents underground hard-rock mining with extensive development, including settlement, by multiple empires and cultures from Roman times to the 20th century.** But they are also somewhat complementary, as together they represent two of the principal gold exploitation systems under Roman imperial control, in the two most important source regions of the precious metal that provided currency to sustain the Roman Empire and its military power that was key to its survival.

BACKGROUND Las Médulas is the world's largest and best-preserved example of a **Roman opencast gold mine**. Located in modern northwest Spain, it operated during the 1st and 2nd centuries CE in Roman Hispania, a region that was of crucial economic importance as the principal source of gold during the early period of the Roman Empire. When the gold resources of Hispania were depleted, the only principal new source of gold for the Roman Empire was from Roman Dacia (Roşia Montană).

The World Heritage property of Las Médulas comprises the mines themselves, represented by ancient working faces of sheer cliffs above the once-productive layer of palaeo-placer gold, together with large areas of tailings now given over to agriculture. Tens of kilometres of leats (aqueducts, with some sections cut in bedrock and in short tunnels) survive as the feeder part of the Roman hydraulic technique known as *ruina montium*. This was described by Pliny in *Historia Naturalis* published in 77 CE and comprised a system of water capture from distant sources by such long leats, its storage in reservoirs, and its sudden release to surge through vertical and horizontal tunnels excavated in the mountain. Erosion and massive pressure caused catastrophic collapse of the working face of the opencast mine. This was hydraulic (water pressure) mining 1,700 years before it was famously re-introduced in the American California Gold Rush in 1853. Authenticity has been preserved, the site being subjected to little subsequent industrial activity and land-use pressure. Well managed visitor access since inscription has meant that the site preserves many of its highly authentic features in a form little different from abandonment in ancient times. Integrity is intact and almost the entire site is included within the property. There remains considerable opportunity for archaeological work in terms of understanding associated Roman settlement.

In terms of relative state of conservation, the principal rock type (conglomerate) is relatively well cemented and sheer faces have reasonable stability, though some more sandy-clay sections continue to preferentially weather. Tailings areas are now used for agriculture, including large plantations of sweet chestnut trees, a species introduced by the Romans and which responds well to coppicing, a practice responsible for the characteristic appearance of many specimens that may be as old as 500 years or more. The tailings pond is maintained as a lake. There is also evidence of Roman social infrastructure, including some excavated and protected archaeology (e.g. mine official's residence), but much remains located but unexcavated.

In terms of protection and management, the Regional Government declared the Archaeological Zone of Las Médulas a Cultural Space in 2010. This is a legal category created for Sites of Cultural Interest, the highest legal protection for cultural sites in Spain. No buffer zone was created at the time of inscription (nor is one deemed necessary), but the site boundary was enlarged for the Cultural Space in order to mitigate any negative impact on the property. There is a Manager and a Governing and Advisory Committee for both the Natural Monument and Cultural Space, and three Directorates-General of the Castilla y Leon Regional Government are involved: Cultural Heritage and Sites; Tourism; and Natural Environment; with the latter taking greatest active responsibility for management.

SLOVAKIA
Historic Town of Banská Štiavnica and the Technical Monuments in its Vicinity
Inscribed 1993 under criteria (iv), (v)

CONCLUSION The property **does not contain any evidence of Roman mining heritage or Roman settlement**. It shares with Roșia Montană a similar geology, mineral deposit type and structure, topography, and a predominantly 18th-19th century precious metals (silver) mining heritage developed under Austro-Hungarian imperial rule. Contemporary and similar attributes relate to surface hydro-technical systems (though primarily for water powered pumping and winding at Banská Štiavnica, versus ore-dressing at Roșia Montană) and underground mining technology, with underground networks being available to visitors at both locations. However in terms of settlement, Banská Štiavnica's population was more than a magnitude greater than Roșia Montană, and in general was more prosperous with almost continuous urban development that spanned some five centuries. Consequently, this is reflected in large-scale harmonious urbanism with rows of compact burgher architecture, a formal and very high status mining town more akin to some of the German medieval mining towns than the small-scale and irregular plan of the Transylvanian mountain mining village of Roșia Montană – albeit with some of the architectural style and embellishments borrowed from a shared Viennese cultural influence. Therefore the **mining settlements** of Banská Štiavnica and Roșia Montană **are complementary**.

BACKGROUND The rich central Slovakian mining region is located in one of the largest volcanic areas in Europe and was the most important centre of precious metal mining in the Hungarian and Austro-Hungarian empires. It was divided into "Silver" (Banská Štiavnica), "Copper" (Banská Bystrica) and "Gold" (Kremnica). In Banská Štiavnica silver (and to a lesser extent gold and base metals) were concentrated in steeply dipping veins and deep, 400-500 m, sub-horizontal veins hosted in a large caldera.

Mining is recorded by the Romans as being undertaken by the Celtic Cotoni tribe who settled here until they were deported to Pannonia by Rome in the Marcomannic Wars (166–180 CE). Thereafter mining continued in phases from the medieval to modern periods, and is distinguished by innovative technology, pioneering mining education, and prolific output. Consequently, the property includes two castles, churches, late-Gothic buildings and burgher houses, Renaissance palaces and squares. The town's first silver (and gold) mining boom came in the 15th and 16th centuries, the second (peak production) came in the 18th century when the waterpower supply system for winding and pumping from ever-deepening workings was greatly expanded. During the reign of the Austro-Hungarian empire, Empress Maria Theresa founded the Mining Academy of Banská Štiavnica (1762) and the diffusion of technology and migration of mining expertise (many of whom in Hungary also came earlier from Germany and the Tirol) continued, impacting positively upon Roșia Montană.

The property name was justifiably changed in 2006 to include the 'technical monuments' in its vicinity. The surrounding area contains important remains of early mining and metallurgical operations and includes large historic mining waterpower supply networks at surface - similar to those in the Harz and the Erzgebirge. The remarkable system (fifteenth to eighteenth century, collectively known as tajchy) comprises over 30 reservoirs (the oldest of which, Velkà Vodarenska, was built before 1510), an elaborate series of dams (the longest 775 m long) and over 70 km of collecting channels and 50 km of connecting channels. The development of mining technology in the vicinity is well-recorded and includes the first global use of black powder in mining (1627), the water column pumping engine (1749) and other steam pumping engines (Newcomen), first turbine (1840s) and steel winding rope (1837).

Authenticity is high and has been preserved and integrity is intact, although in terms of relative state of conservation, a number of fine buildings in the town suffer from severe conservation issues, the situation improving, however, through the subsidy programme of the Ministry of Culture. The property is protected under the legal mechanisms of Historic Sites (Conservation Reserve) and National Cultural Monuments.

CZECH REPUBLIC
Kutna Hora: Historical Town Centre with the Church of St Barbara and the Cathedral of Our Lady at Sedlec
Inscribed 1995 under criteria (ii), (iv)

CONCLUSION The property **does not contain any evidence of Roman mining heritage or Roman settlement, nor of gold mining**. It shares with Roșia Montană a similar geology, mineral deposit type and topography, and a predominantly 18th-19th century precious metals (silver) mining heritage under Austro-Hungarian imperial rule. The settlements are very different in comparison, the development of the medieval Bohemian Royal Mining Town of Kutna Hora (1276) spanning the 13th to 19th centuries and once competing with Prague in terms of its cultural, political and economic importance. Therefore the **mining settlements** of Kutna Hora and Roșia Montană **are complementary**.

BACKGROUND Silver was mined following rich strikes made in the late 13th century. Mining laws and a mint were founded by King Wenceslaus II in 1300 and the area boomed with unrestricted mining development, beneath and to the south of the city. The peak period of prosperity was during the 14th and 15th centuries, although mining continued until the 19th century.

The property is essentially the city, and many architectural masterpieces stand as testimony to an exceptional prosperity from silver. These include the late Gothic church of St Barbara (patron saint of miners), Cathedral of the Holy Virgin Barbara and the Cathedral of Our Lady at Sedlec, together with Hradek castle and Baroque Jesuit College.

Authenticity is preserved and integrity is intact. The site is in a good relative state of conservation and the standard of protection is regarded as adequate, and of management, excellent.

GERMANY
Mines of Rammelsberg, Historic Town of Goslar and Upper Harz Water Management System
Inscribed 1992 with an extension in 2010 under criteria (i), (ii), (iii), (iv)

CONCLUSION The property **does not contain any evidence of Roman mining or Roman settlement, nor of gold mining**. It shares with Roșia Montană an exceptional longevity of activity, being worked systematically and almost continuously for 1,000 years, although of course commencing at a much later date. Each mine applied an extensive use of water: solely for ore dressing at Roșia Montană, whilst the Harz employed much larger-scale water management for power. Both mines possess underground visitor access. **In terms of settlement, they are complementary**: the form and much of the buildings in the Hanseatic timber-framed merchants' town of Goslar are a product of the Middle Ages, with a lack of subsequent prosperity freezing much development, whilst Roșia Montană, a miners' village of different scale, form, materials and architecture, is also frozen in time, except some several centuries later.

BACKGROUND Rammelsberg possesses extensive underground remains, particularly significant being those from the Middle Ages and Renaissance period. The water management ensemble is the largest of its kind in Europe, developed over a period of some 800 years primarily for power to drive waterwheel-powered pumps at surface and underground, together with surface processing and smelting facilities. Mining water energy systems similar to the Harz survive in the Erzgebirge (Germany, nomination in progress with the Czech Republic as part of a transboundary mining cultural landscape), Banská Štiavnica (Slovakia, inscribed as part of the technical monuments of the World Heritage Site) and Kongsberg (Norway).

The two mining centres are historically connected in terms of the diffusion of such technology (to Roșia Montană, e.g. waterwheel-powered stamps) and migration of mining masters and experienced miners and ore-dressers.

Authenticity is high in the mining technical ensemble, the water management system and the town of Goslar, and integrity of the series is intact. The relative state of conservation is good, with positive activity and no current threats. Legal protection is provided via the Monument Protection Act and each part of the series is well managed.

BOLIVIA
City of Potosi
Inscribed 1987 under criteria (ii), (iv), (vi)

CONCLUSION The property **does not contain any evidence of Roman mining or Roman settlement, nor of gold mining** and was **developed in an entirely different geo-cultural context** (colonial Latin America) at a much later date (16^{th} century). It shares with Roșia Montană: the mining of precious metals (silver from true silver ores, however, as opposed to electrum and native gold); a similar deposit type (vein) in a mountain setting; similar mining technology; ore-processing using aqueducts and artificial lakes; an exceptional longevity of activity from the 16^{th} century to the present day (continuing); and both properties include the settlement - though of course Potosi, in stark contrast to Roșia Montană, is a large **Spanish colonial-era silver mining city** with distinctive "Andean Baroque" style architecture that heavily influenced architectural development elsewhere in the Andes.

BACKGROUND The site consists of the silver mines of the Cerro Rico, notably the Royal mine complex, an ore-processing water management system comprising an intricate system of aqueducts and artificial lakes, the colonial town with its Royal Mint (reconstructed in 1759) and no less than 22 parish or monastic churches and a cathedral, patrician houses and the *barrios* where the workers lived. Following a period of disorganized exploitation of the bonanza of near-surface pure native silver lodes, the Cerro de Potosí reached full production after 1580 when the patio amalgamation process was implemented and it became one of the world's largest industrial complexes. Production continued on a large scale until the 18^{th} century, slowing down only after the country's independence in 1825. It continues on a small scale today.

The authenticity of the Cerro de Potosi (Cerro Rico, Rich Mountain) is threatened as continued and uncontrolled mining caused portions of the summit to collapse (as in 2011). Integrity is intact but threatened, and there are deficiencies in conservation of the archaeological industrial heritage, and insufficient attention in the restoration and upgrading of residential structures. Churches in the historical centre were restored in 2015 and 2016. Former Municipal Regulations for the Preservation of Historic Zones of the City of Potosi is now law, although inefficient enforcement of protective legislation and control of unregulated mining activity in Cerro de Potosi continues. A Management Committee is presently being established to implement an Integrated Management Plan.

BRAZIL
Historic Town of Ouro Preto
Inscribed 1980 under criteria (i), (iii)

CONCLUSION The property **does not contain any evidence of Roman mining or Roman settlement**, and was **developed in an entirely different geo-cultural context** (colonial Latin America) at a much later date (from 17^{th} century). It shares with Roșia Montană: gold mining (although the primary inscription is for the urban ensemble), and its associated mining settlement - although they each share an irregular urban pattern, Ouro Preto is a much larger, **Spanish colonial-era, mining town** with outstanding Baroque architecture.

BACKGROUND Ouro Preto (Black Gold) is the old capital of Minas Gerais, and owes its origins to the discovery and exploitation of gold during the 'Black Gold rush' in the 17^{th} century and in the 18^{th} century period known as Brazil's 'Golden Age'. This was a time when the city played a leading role in Brazil's history, and the fine Baroque city is the principal component of the property, with mining features limited to the gullies in the river valley where alluvial 'black' gold was exploited together with minor levels and stopes into the mountainside.

Authenticity has been preserved, and integrity of the urban nucleus built in the colonial period is intact. Protection is organised under a Municipal Master Plan that incorporates a Special Protection Zone designation. The Municipal Cultural and Natural Heritage and Urban Policy Councils, supported by the Municipal Secretariat of Urban Heritage and Development, manage it.

MEXICO
Historic Town of Guanajuato and Adjacent Mines
Inscribed 1988 under criteria (i), (ii), (iv), (vi)

CONCLUSION **The property does not contain any evidence of Roman mining or Roman settlement**, and was **developed in an entirely different geo-cultural context** (colonial Latin America) at a much later date (from mid-16th century). It shares with Roșia Montană: precious metals mining (although silver, from true silver ores, as opposed to gold), a similar mineral deposit (vein) in the mountains, with similar technology employed, except in ore processing. Underground workings (for example La Valenciana) are included, but the primary inscription is for the urban ensemble of the mining town: Guanajuato is a much larger, **Spanish colonial-era, mining town** with outstanding neo-classical and Baroque architecture that influenced buildings throughout Mexico. It is very different in scale, form, design and architecture, being developed in a very different culture and time.

BACKGROUND Founded by the Spanish in 1548 when rich outcrops of silver were discovered in the La Luz area of Guanaxhuata. The region became the world's leading silver-mining centre in the 18th century, and silver mining continues, albeit on a much smaller scale, today.

The cultural landscape is centred on the town with its fine Baroque and Neoclassical monuments resulting from the prosperity of the mines, and the nearby Spanish colonial silver mining ensemble including the shafts (impressive on a world scale for the period) of La Valenciana and Ryas mines, together with outstanding patio ore-dressing floors.

Authenticity of the urban plan (based on four original forts), its surviving form (not laid in a grid pattern) and fabric of the town is preserved. Integrity is intact though the layout and scale of the historic town is threatened by urban pressure due to population growth, something that also has the ability to compromise the overall characteristic of the landscape. In terms of conservation, restoration works are to a high standard. The law for the protection of the historic town was one of the first such laws in Mexico (1953), and protection is the responsibility of Instituto Nacional de Anthropologia e Historia (INAH, under the Ministry of Public Education). Management is implemented by the State of Guanajuato which receives collaboration from the national Ministry for Urban Development and Environmental Protection, the Junta de Monumentos and the Ayuntamiento (Federal, State and Local Authorities).

MEXICO
Historic Centre of Zacatecas
Inscribed 1993 under criteria (ii), (iv)

CONCLUSION The property **does not contain any evidence of Roman mining or Roman settlement**, and was **developed in an entirely different geo-cultural context** (colonial Latin America) at a much later date (from mid-16th century). It shares with Roșia Montană: precious metals mining (although silver, from true silver ores, as opposed to gold), a similar mineral deposit (vein) in the mountains, with similar technology employed, except in ore processing. Underground workings (El Eden) are included, but the primary inscription is for the urban ensemble of the mining town: Zacatecas is a much larger, **Spanish colonial-era, mining town** with outstanding Baroque architecture. It is very different in scale, form, design and architecture, being developed in a very different culture and time.

BACKGROUND Zacatecas was founded by Spain in 1546 as a result of the discovery of a rich silver lode (San Bernabé). Located in mountainous, ravine-like, topography, the town developed to the south of the mining area, on the road from the capital of "New Spain", and reached the height of its prosperity in the 16th and 17th centuries; being overtaken by Guanajuato in the 18th century.

This colonial city retains an exceptional preservation of 16th century urban design, taken as the basis for further development in the 18th and 19th centuries (when it also retained an important role as the site of a mint). Many fine buildings with a profusion of Baroque facades where European and indigenous decorative elements are found side by side. The Baroque cathedral, built between 1730 and 1760, is one of many fine religious buildings.

Authenticity of the original street pattern and fabric of the town is preserved, with few modern interventions among the buildings. Integrity is intact though the layout and scale of the historic town is threatened by urban pressure due to population growth, something that also has the ability to compromise the overall characteristic of the landscape. In terms of conservation, restoration works are carried out to a high standard. Protection is afforded by the Federal Law on Monuments and Archaeological, historic and Artistic Zones (1972), with the Historic Zone of Zacatecas under the control of the State Government by Law on the Protection and Conservation of Monuments. The Management Plan is implemented by cooperation of *Instituto Nacional de Anthropologia e Historia* (INAH, under the Ministry of Public Education) with the *Junta de Monumentos* and the *Ayuntamiento* (Federal, State and Local Authorities).

JAPAN
Iwami Ginzan Silver Mine and its Cultural Landscape
Inscribed 2007 under criteria (ii), (iii), (v)

CONCLUSION The property **does not contain any evidence of Roman mining or Roman settlement**, and was **developed in an entirely different geo-cultural context** (mining commenced at a much later date, 16th century, in Japan whilst under its Edo "isolation period", and during the later Meiji period development). It shares with Roșia Montană: mining landscape including extensive archaeology, precious metals mining (silver, and to a much lesser extent gold), a similar mineral deposit (vein) in the mountains, with similar technology employed, except in ore processing. Underground workings are included. The settlement is very different in design and architecture, being developed in a very different culture: an **archetypal Japanese Edo-era coastal mining settlement**, comprising fortresses and castles, temples, merchants' and miners' houses.

BACKGROUND Iwami Ginzan Silver Mine pioneered the development of silver mining in pre-Modern Asia and contributed to the exchange of values between East and West by achieving the large-scale production of high quality silver through the development of the Asian cupellation techniques transferred from China through Korea. Archaeological remains date from the 16th to 20th centuries, and include silver mines, smelting and refining sites and mining settlements, and transport infrastructure including roads and ports. Elements of the property collectively demonstrate the original mining land-use system and the whole process ranging from silver exploitation to shipment.

Authenticity is preserved and integrity intact, with the relative state of conservation being predominantly intact. Protection is via domestic laws and a municipal ordinance, and management implements a strategic preservation and management plan.

Relevant Tentative List Sites 101 Justification for inscription	Country	Tentative listing	Criteria	Date range						Principal typology								
				pre-17th century	1600–1699	1700–1799	1800–1899	1900–1999	2000–	Gold mining	Silver mining	Salt mining	Coal mining	Copper mining	Lead mining	Zinc mining	Iron mining	Other mining
Latin America and the Caribbean																		
Ancient Lavrion	Grece	2014	(ii), (iv)															
Mining Historical Heritage	Spain	2007	(i), (ii), (iv)															
Mining basins on the Tinto River (Rio Tinto) and Tharsis River, Huelva, Andalusia																		
Rodalquilar Mines, Almeria																		
Linares-La Carolina Mining District, Jaen																		
Alto Guadiato Mining District: Belmez, Espiel, Pefiarroya-Pueblonuevo. Cordoba																		
Sierra Almagrera Mining District, Almeria																		
Ojos Negros Mines, Teruel, Aragon																		
Bellmunt del Priorat Mines, Tarragona																		
Cartagena and La Union Mining Basins, Murcia																		
Las Encartaciones iron ore mines, Ortuella, Vizcaya																		
Iron Trail with Erzberg and the old town of Steyr	Austria	2002	(i), (ii), (iii), (iv)															
Industrial Complexes in Ostrava	Czech Republic	2001	(i), (iv), (v)															
Cultural Landscape of the Ore Mountains	Czech Republic with Germany	2012	(ii), (iii), (iv), (v), (vi)															Tin Uranium
Tarnowskie Gory Lead-silver mine and its underground water management system	Poland	2013	(i), (ii), (iii), (iv)															
The Klondike	USA	2004	(iv), (v)															

Relevant Tentative List Sites	Country	Tentative listing	Criteria	Date range						Principal typology								
				pre-17th century	1600–1699	1700–1799	1800–1899	1900–1999	2000–	Gold mining	Silver mining	Salt mining	Coal mining	Copper mining	Lead mining	Zinc mining	Iron mining	Other mining
Africa																		
The former metallurgical sites for the reduction of iron (Ronguin, Tiwega, Yamane, Kindbo, Bekuy, Douroula)	Burkina Faso	2012	(iii), (iv)															
The paleo-metallurgical sites in Bangui	Central African Republic	2006	not stated															
Metallurgical site Begon II	Chad	2005	not stated															
Curious iron mines of Tele-Nugar	Chad	2005	not stated															
The Barberton Mountain Land, Braberton Greenstone Belt or Makhonjwa Mountains	South Africa	2009	(viii)															
The Zaghouan-Carthage Roman hydraulic complex	Tunisia	2012	(i), (iv)															
Latin America and the Caribbean																		
Pulacayo, Industrial Heritage Site	Bolivia	2003	(iii), (iv), (vi)															
Gold Route in Parati and its landscape	Brazil	2004	(ii), (iv)			Various												
Asia and Pacific																		
The Sado complex of heritage mines, primarily gold mines	Japan	2010	(ii), (iii), (iv)															
The Salt Range and Khewra Salt Mine	Pakistan	2016	(v), (viii)															

3.2 B — Comparison between Roșia Montană and Relevant Tentative List Sites (mining-related properties)

GREECE
Ancient Lavrion
Tentative Listing 2014 under proposed criteria (ii), (iv)

CONCLUSION The property **does not contain any evidence of Roman mining or Roman settlement** but is a highly significant **silver mine** with ancient origins.

Ancient Lavrion and Roșia Montană are very different. Lavrion was a **silver** mine, as opposed to gold, and there are **no Roman mining works at Lavrion**. Further, the **underground technological exploitation ensemble** at Roșia Montană is **completely different**, as is the development of **settlement**. There is some complementarity, however, each being representative of the two major European powers of Ancient Greece and the Roman Empire, ancient Europe's largest and most powerful civilisation that also conquered the Greek peninsula. The properties, located within the same geo-cultural region, represent the two most important precious metals (silver and gold) that were fundamental in the rise and power of each civilisation.

It shares with Roșia Montană: mining landscape including extensive archaeology, precious metals mining (silver, as opposed to gold), a similar mineral deposit (steeply dipping veins), with similar technology employed, except in ore processing. Extensive underground workings are included, as are impressive archaeological vestiges of settlement, including impressive temples.

BACKGROUND Like the Romans, the Greeks began their rise to power in antiquity with very little gold in their natural resources. Under Greek rule there was a little active gold mining taking place in the Thrace Mountains located in the northern part of the country but, overall, it was massively subordinate to silver production – which was centred upon Ancient Lavrion, the largest silver-mining centre in both ancient and modern Greece.

During the Classical period (5th and 4th centuries BCE), exploitation of the mines by the city of Athens became extremely important to the creation of the great Athenian fleet and the financing of the major building projects of the Athenian Hegemony. The silver of Lavrion literally set the foundations of the city-state of Athens, building the Acropolis and Parthenon and making it possible to mint silver coinage as amongst the first widely used international coins.

Scattered settlements-industrial villages, secular and religious buildings (including the Temple of Poseidon at Cape Sounio), fortifications and cemeteries make up the overall operation of the site: economic, military, religious, cultural and administrative. From the 3rd century CE the mines entered a period of decline, and in the 6th century CE the mines were abandoned, with substantial renewed activity only resuming in the 1860s and continuing through to the 20th century. Extensive remains also survive from this era.

SPAIN
Mining Historical Heritage
Tentative Listing 2007 under proposed criteria (i), (ii), (iv)

CONCLUSION The list of extensive properties, located in the same geo-cultural region as Roșia Montană, **contain evidence of Roman mining and Roman settlement**. Roman *Hispania* (today's Spain and Portugal) was the richest source of precious and base metals to the Roman Republic and the early Empire - until they became increasingly impoverished by intensive exploitation and were eclipsed in terms of gold production by Roman Dacia following the conquest in 106 CE.

Within Spain's *Mining Historical Heritage*, the **Mining basins on the Tinto River** (Rio Tinto) **and Tharsis River**, Huelva, whilst being the closest comparator, is **entirely different from Roșia Montană**: they were **not gold mines**, and they **no longer contain an extensive underground Roman network** (mostly destroyed by modern opencast mining). This property, however, possesses some complementarity with Roșia Montană as they both represent some of the largest metal mines of the Roman Republic and early Empire. This complementary case with Roșia

Montană is certainly not a displacement case – either way - and both properties contribute to an essential understanding of the astonishing success of the Roman Empire, one of the world's largest and long-lived ancient civilisations.

It shares with Roșia Montană: mining landscapes including extensive archaeology, precious metals mining (silver and gold), similar mineral deposits (steeply dipping veins), with similar technology employed (underground mining and opencast), and similar ore processing technologies. Extensive underground workings are included (though most Roman evidence was destroyed by modern open pit mining), as are archaeological vestiges of settlement together with diverse modern remains.

Writing tablets discovered at Rio Tinto, Aljustrel copper mine in Portugal, and those at Roșia Montană combine to provide exceptional epigraphic testimony of mine organisation in the Roman Empire.

BACKGROUND Some of the mines inventoried in this large tentative listing were operated during the Roman period. Evidence of Roman mining in Spain dates from 206 BC (Second Punic War), and the territory represented the Empire's most important source of silver, gold, copper and lead that was fundamental in the rise of the Roman Republic and subsequent Empire. Two examples, Rio Tinto and Rodalquilar, are the most relevant in terms of Roman mining of precious metals, although modern mining has largely destroyed Roman evidence. Much of what has been lost, however, was reported, and some recorded, during the 19th century.

Rio Tinto once demonstrated the most spectacular scale of Roman opencast and underground mining, with many important discoveries of ancient technology being made in the advancement of modern workings, from 1724 and particularly from 1873. This is one of the most significant metallurgical regions of the ancient world, and although modern mining destroyed spectacular Roman vestiges (some Roman shafts were 450 feet deep with galleries drained by a combination of wooden treadmill dipper wheels and adits), some important sites survive.

The overall mining operation was run by a sophisticated system of Roman governance. Two bronze tablets, discovered in 1876 and 1906, showed how the government of Rome would lease out Iberian mines to individual conductores who paid 50 per cent commission on the ore they excavated. They also related issues of safety, slaves, bathhouses etc. Along with bronze tablets discovered at Aljustrel copper mine in Portugal, those of Rio Tinto and Roșia Montană combine to provide exceptional epigraphic testimony of Roman mine organisation.

Modern mining heritage comprises a number of conserved mining and industrial infrastructure. The notable architectural heritage of Rio Tinto settlement dates mostly to the 19th and early 20th centuries.

CZECH REPUBLIC *with* **GERMANY**
Cultural Landscape of the Ore Mountains
Tentative Listing 2012 under criteria (ii), (iii), (iv), (v), (vi)

CONCLUSION Located in the same geo-cultural region as Roșia Montană, the property **contains no evidence of Roman mining and Roman settlement.** It shares with Roșia Montană an exceptional longevity of activity, being worked systematically and almost continuously for more than 800 years, although of course commencing at a much later date. Mines included precious metals (though silver as opposed to gold) and applied similar technology in the exploitation of vein deposits, an extensive use of water, solely for ore dressing at Roșia Montană, whilst the Ore Mountains employed much larger-scale water management for power. Both properties possess underground visitor access. **In terms of settlement, they are complementary**: the form and much of the buildings in the ensemble of mining towns in the Ore Mountains is a product of the Middle Ages, with subsequent development added primarily in the 18th and 19th centuries. The settlements, in comparison, developed at a different time in a very different environmental context and are much greater in scale, with a different form and layout, architecture and materials to the miners' village of Roșia Montană.

BACKGROUND The Mining Cultural Landscape Erzgebirge/Krušnohoří illustrates the formative influence of mining and metallurgy on the development of the landscape and its culture

for more than 800 years, from the 12th to the 21st centuries. It is a very large transboundary serial property that represents a decentralised mining landscape in a Central European mountain region.

The mines of Saxony are the sites of many important medieval advances in mining technology, including adit drainage from the 12th century. Silver production expanded rapidly in the Erzgebirge after 1470 with important mining centres in Schneeberg, St Annaberg, Bucholz and Marienberg. The mines of St Annaberg and Marienberg achieved their maximum output around 1560 and declined rapidly after 1577 due to low prices created by the surge of silver imports from the New World (after 1551). Mining towns such as Freiberg were world centres of excellence for mining education – the Freiberg Mining Academy, established in 1765 as the world's oldest university of mining and metallurgy.

JAPAN
The Sado complex of heritage mines,
primarily gold mines
Tentative Listing 2010 under proposed criteria (ii), (iii), (iv)

CONCLUSION The property **does not contain any evidence of Roman mining or Roman settlement**, and was **developed in an entirely different geo-cultural context** (mining commenced at a much later date, 16th century, in Japan whilst under its Edo "isolation period", and during the later Meiji period development and beyond until the late 20th century). It shares with Roșia Montană: mining landscape including extensive archaeology, precious metals mining (gold, and to a lesser extent silver), a similar mineral deposit (vein) in the mountains (it also includes an alluvial gold mining site), with similar technology employed. Underground workings are included. The settlements are very different in design and architecture, being developed in a very different geo-cultural region: two archaeological 16th century settlement sites, typically early-Edo era mining camps, and an archetypal Japanese Edo-era coastal mining settlement, comprising miners' houses and an archaeological site of an important Shogunate Magistrate's Office with associated gold-silver parting and smelting remains

BACKGROUND The historic gold mine is located on Sado Island in the Sea of Japan. It was originally considered as a joint nomination with Iwami Ginzan silver mine, now inscribed as a World Heritage Site and described above. Its values relate to 400 years of gold-silver mining and its socio-technical and economic impacts.

An extensive underground system is included, together with a comprehensive socio-technical ensemble. The impact of Japanese gold (half of which came from Sado) on the international economy during the 17thcentury was significant.

Relevant, selected, other mine sites	Country	Date inscribed	Criteria	Date range						Principal typology								
				pre-17th century	1600–1699	1700–1799	1800–1899	1900–1999	2000–	Gold mining	Silver mining	Salt mining	Coal mining	Copper mining	Lead mining	Zinc mining	Iron mining	Other mining
Montefurado, Rio Duerna, Asturias	Spain																	
Pino del Oro, Zamora	Spain																	
Las Cavenes, Salamanca, Leon	Spain																	
Três Minas (Tresminas)	Portugal																	
Jales	Portugal																	
Serra de Santa Justa, Valongo, Porto	Portugal																	
Castromil, Castromil, Sobreira, Paredes, Porto	Portugal																	
Aljustrel	Portugal																	
Tagus River, Castelo Branco District	Portugal																	
Sao Domingos Mine, Corte do Pinto, Alentejo	Portugal																	Pyrite
Dolaucothi, Wales	UK																	
Salsigne Gold Mine	France																	
Salassi (northern Italy) and Durias river	Italy																	
Sardinia	Italy																	
Garam	Hungary																	
Rauris	Austria																	
Adatepe (Krumovgrad	Bulgaria																	
Bor	Serbia																	
Astyra (northwest Anatolia, near the city of Troy) and others	Turkey																	

Relevant, selected, other mine sites	Country	Date inscribed	Criteria	Date range						Principal typology								
				pre–17th century	1600–1699	1700–1799	1800–1899	1900–1999	2000–	Gold mining	Silver mining	Salt mining	Coal mining	Copper mining	Lead mining	Zinc mining	Iron mining	Other mining
Sakdrisi	Georgia			■						■								
Wadi Dara area	Egypt			■						■				■				
Mahd adh Dhahab	Saudi Arabia			■														
Pachuca-Real del Monte Silver Mines	Mexico			■	■	■	■	■			■							
El Cobre copper mine	Cuba			■	■	■	■	■						■				
Sala silver mine	Sweden			■	■	■	■	■			■					Minor	Minor	
Kongsberg silver mines	Norway			■	■	■	■	■			■							
Kimberley Mines and Associated Early Industries	South Africa		(i), (ii), (iv), (vi)				■											Diamonds
The Namaqualand Copper Mining Landscape	South Africa		(ii), (iii), (iv)				■							■				
Pilgrim's Rest Reduction Works	South Africa		(i), (ii), (iv), (vi)				■			■								

3.2 C Relevant, selected, other mine sites

Comparison of the property with international mining-related properties not on the World Heritage List and not on state party Tentative Lists

The phase with the highest significance related to gold mining at Roșia Montană is the Roman era (106–272 CE). It is therefore relevant to compare the nominated property with other known Roman mines (particularly gold mines) in the main areas providing the Empire with key metals (gold, silver-lead, copper, iron): Spain and Portugal, United Kingdom, France, Italy, central Europe, Greece and Turkey. Evidence concerning Roman mining in some countries is scant but literature, the web, scientific papers and various organisations have been investigated and contacted to reveal as much information about the most significant sites as possible within the scope of this comparative exercise.

Lastly, some other mining properties around the world have been selected for comparison, not that they, like most of the Roman examples, will ever be considered for nomination to the World Heritage List.

PORTUGAL
Tresminas

CONCLUSION Tresminas (Três Minas) is the largest and most important ancient gold mining complex in Portugal (part of ancient Roman **Hispania**) and is one of the world's best examples of a preserved **open-pit hard-rock Roman gold mine** together with its socio-technical context, including several crushing and grinding mill sites.

The properties of Tresminas and Roșia Montană are **very different. Roșia Montană** contains an **underground Roman mining network that is vastly greater in extent, and one that illustrates a far greater diversity in terms of its Roman mining technological exploitation ensemble**. The underground galleries at Tresminas were predominantly used for transportation of gold ore, drainage and removal of waste. **Roșia Montană also demonstrates subsequent extensive development, including settlement**, by multiple empires and cultures **from Roman times to the 20th century**. There is, however, some **complementarity** as, together, they represent two different gold exploitation systems under Roman imperial control, in the two most important source regions of the precious metal that provided currency to sustain the Roman Empire and its military power that was key to its survival.

BACKGROUND The mine consists of three open pits, two of which are of an impressive size: Ribeirinha and Covas, the largest being approximately 500m long, 100m wide and 80m to 100m deep. There are also shafts and galleries, predominantly used for transportation of gold ore, drainage and removal of waste, the largest of which is 250 metres in length with a 5 x 1.5m cross-section. The site includes not only mining features but also the metallurgical processes to extract gold from the ore such as crushing and grinding at several sites. The site is an Archaeological Protection Site and survey in the surrounding area has detected settlement structures for housing and an aqueduct.

Mining likely commenced during the reign of Augustus (27 BCE – 14 CE) and continued into the second century CE.

PORTUGAL
Serra de Santa Justa, Valongo, Porto

CONCLUSION Roșia Montană and Valongo are **very different**. Roșia Montană contains an underground network that is **vastly greater in extent, and one that illustrates an exceptional and diverse Roman mining technological exploitation ensemble**. Further, **Roșia Montană also demonstrates subsequent extensive development, including settlement**, by multiple empires and cultures **from Roman times to the 20th century**.

The Valongo Roman gold mining area is characterised by a number of **underground Roman gold mines** that make it the largest group of its type in Portugal (ancient Roman Hispania). There is, therefore, some complementarity as, together they represent two of the most extensive surviving underground gold mines under Roman imperial control, in the two most important source regions of the precious metal that provided currency to sustain the Roman Empire and its military power that was key to its survival. Other underground Roman gold mines occur in Portugal (and Spain) that employed the same techniques, but Valongo is the largest yet discovered.

BACKGROUND The Valongo anticline (a large overturned fold) hosts a number of gold occurrences that were disseminated in veins that were exploited by the Romans. The largest was Volongo (its historical significance has been recognised since the 18th century) with others at Castelo de Paiva (24 km distant). Twin shafts, large gunnises (worked-out stopes) and drainage galleries survive (one gallery is 350 m long). Roman lamps have also been found.

UNITED KINGDOM
Dolaucothi, Wales

CONCLUSION Roșia Montană and Dolaucothi are **very different**. Roșia Montană contains an **underground network that is vastly greater in extent, and one that illustrates a greater diversity in its Roman mining technological exploitation ensemble**. Further, Roșia Montană contains, in addition, **an extensive archaeological and cultural landscape of socio-technical attributes that span a period of more than two millennia**.

Dolaucothi mine is the only **underground Roman gold mine** in **Imperial Rome's Western Britannia** (S Wales). Whilst Britannia was a comparatively insignificant source of gold, it was a prolific source of base metals (tin, lead, copper), and silver. In this sense the two properties share some **complementarity**.

BACKGROUND Dolaucothi gold mine is the only Roman gold mine known in the UK. The site illustrates the stages of ore extraction from simple surface mining to underground mining, together with the use of water – water channels (almost 10 km) and reservoirs on the hillside above the opencast, and suggested evidence of steps down the hillside that may have had a series of sieves and tables for washing. The opencast areas contain a number of tunnels of varying age. Due to dip of veins a deep vertical shaft was sunk and horizontal galleries (stopes) opened out on three levels. Fragments of a water-lifting wheel were recovered that provides evidence that mechanical drainage was provided – similar to that discovered in multiple levels in Roșia Montană (recorded, and some conserved remains) and Rio Tinto (destroyed).

3.2 D Roman gold mines in Romania; a National Comparative Analysis

Roșia Montană is Romania's most important Roman gold mine, the richest gold-silver deposit in Europe that continued to be exploited in multiple phases of activity until closure in 2006

Roman mining

Following the Roman occupation of Dacia, some 500 tonnes of gold were extracted from *Aurariae Dacicae* during 166 years of Imperial rule. The Romans organised gold mining (alluvial/surface and underground) and ore-processing in two principal regions of the Carpathians (see map): Roșia Montana and the *Golden Quadrilateral* in the Apuseni Mountains in present-day western Romania (district 1 on map); and in Caraș-Severin County in the southern Carpathians in present-day southwest Romania (district 3 on map). Regarding district 2 on the map (Baia Mare and Baia Sprie, Maramures County), mining exploration for gold and silver commenced in the Gutâi Mountains of northwest Romania during the era of

Roman Dacia, however the Maramures region remained outside the Roman province and contains no Roman mining activity.

Principal gold mining districts of Romania (after Baron et al, 2011)

Of the 37 "suspected" Roman gold mining sites described in Romania (see annexe), approaching a third are placer/alluvial/gold-washing sites, therefore not comparable with the hard-rock underground mines of Roşia Montana. Only Bucium (also in the *Golden Quadrilateral*) possesses extensive known Roman mining works.

ROMANIA
Bucium, Alba County

CONCLUSION Roşia Montana and Bucium are **very different in terms of scale, and of subsequent development, including settlement**. The Bucium deposit is the nearest (6 km SSE) Roman gold mining site to Roşia Montana, and is geologically similar. Substantial traces of mining activity from the Roman period survive, including **limited underground workings**, similar in level type (only) to Roşia Montana, although substantially this is an **opencast mine**. There are associated **traces of a settlement site and cemetery**, though very much less significant than the extensive Roman archaeology of Roşia Montana. There is little subsequent mining heritage, modern operations by open pit having destroyed former evidence.

BACKGROUND Mining at Bucium is mostly confined to surface exploitation in opencuts, but also several hundreds of metres of gallery, one, at least, trapezoidal in section as commonly encountered at Roşia Montana.

3.3 Proposed Statement of Outstanding Universal Value

Roșia Montană Mining Landscape

Roșia Montană Mining Landscape contains the most significant, extensive and technically diverse underground Roman gold mining complex currently known in the world. Workings date from the Roman occupation of Dacia (106–271 CE) and, together with potentially previous and subsequent phases, mining activity spans more than two millennia. All phases have left their mark, both underground and at surface, an evolution almost exclusively determined by people's quest for gold. This socio-technical palimpsest of successive empires and cultures has unparalleled time-depth and is exceptionally diverse and readable in such a compact area.

Roșia Montană is situated in a natural amphitheatre of massifs and radiating valleys in the Metalliferous range of the Apuseni Mountains, located in the historical region of Transylvania in the central part of present-day Romania. The site represents the centre of the so-called *Golden Quadrilateral* of the Southern Carpathians - the richest precious metals province in Europe.

Gold occurred in veins within seven small mountains that visually dominate the landscape of Roșia Montană, itself surrounded on three sides by dividing ridges and peaks. Towering crags are pierced by old mine entrances, their tops scarred by opencast working. Roman archaeology at surface is prolific and pervasive, comprising ore-processing areas, living quarters, administrative buildings, sacred areas and necropolises, some with funerary buildings with complex architecture, all set in relation to over 7 km of ancient underground workings discovered to date. Forest and scree mix on steep slopes and, mounted on rocky knolls, the towers and spires of historic churches command the villages of Roșia Montană and the much smaller Corna, settlements constrained by relief in valleys that also provided for ore-dressing, communication and transport. Steeply sloping meadows are characterised by agro-pastoral practices that are as old as the mining activity itself, and a number of artificial lakes, formerly header ponds for ore processing that were greatly expanded from 1733, punctuate higher elevations.

The village of Roșia Montană boasts an impressive inventory that illustrates a diversity of architectural styles, eclectic influences fused with local tradition, a cosmopolitan settlement whose roots and embellishments are based on freeholders' exploitation of gold. Five religious denominations and several ethnic groups have lived together in work and community life, a situation that is reflected in the current character of this Transylvanian mining settlement substantially frozen in the eighteenth and nineteenth centuries at the inception of its prosperous urbanisation under Austro-Hungarian rule. Churches dominate the built environment and contribute substantially to its symbolic imagery. Characteristic buildings with outer porches form a typological background to a series of distinctive and mostly decorative features that were borrowed from the repertoire of Classical or Baroque architecture. This structure, distinguished also by grand walls and monumental gates that face winding roads, gradually gives way in the industrial suburbs to miners' households consisting of wooden dwellings above high stone-built basements, many of which housed ore-processing workshops with water sumps fed by springs that could be used in the harshest of winters. Final interventions derive from the communist regime that imposed nationalisation in 1948, and which ended traditional family – or small group-operated mining. State-run mining by underground and opencast ended in 2006.

→ **Criterion (ii):**

to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design

Roșia Montană Mining Landscape contains the world's pre-eminent example of an underground Roman gold mine. Many of the mining features preserved in over 7 km of Roman workings demonstrate exceptional innovative techniques developed by skilled migrant Illyrian-Dalmatian miners to exploit gold in such ways that suited the technical nature of the deposit. Control

of precious metal resources, to use as currency, was a fundamental factor in the development of Roman military power and Imperial expansion. When in possession of the Apuseni Mountains there was an imperative to immediately commence mining in an efficient manner.

A decade of professional underground archaeological campaigns, beginning in 2001, elucidates a fusion of imported Roman mining technology with locally developed techniques, unknown elsewhere from such an early era. Multiple chambers that housed treadmill-operated water-dipping wheels for drainage represent a technique likely routed from Hispania to the Balkans, whilst perfectly carved trapezoidal-section galleries, helicoidal shafts, inclined communication galleries with stairways cut into the bedrock, and vertical extraction areas (stopes) superimposed above one another with the roof carved out in steps, are in a combination so specific to Roșia Montană that they likely represent pioneering aspects in the technical history of mining.

The significance of *Roșia Montană Mining Landscape* is not limited to antiquity as the Apuseni Mountains were Europe's main source of gold from the end of the Crusades in the thirteenth century until the discovery of the Americas in the sixteenth century, thereafter remaining pre-eminent in terms of output, during the era of Austro-Hungarian rule in particular, when German, Austrian and Hungarian miners were brought in and used their own advanced technology to exploit the deposits on a much larger scale.

→ **Criterion (iii):**

to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared

Roșia Montană Mining Landscape embodies the cultural tradition of one of the oldest documented mining communities in Europe, anciently founded by the Romans and which survived under influences of successive socio-technical and organisational systems whilst gradually waning until its final disappearance at the beginning of the twenty-first century.

The site was the most important precious metal mine located in the *Golden Quadrilateral* of the Romanian Carpathians and is associated with exceptional epigraphic testimony from the Roman Imperial era. Wax-coated wooden writing tablets discovered in the mine during the eighteenth and nineteenth centuries have been correlated with numerous stone epigraphic monuments discovered on site. Together they provide an authentic picture of daily life and cultural practice in this ancient frontier mining camp community. Combined with a well-resourced recent, intensive and systematic archaeological investigation and interpretation, an exceptional picture of the organisation, strategies and practices of ancient mining at the site have emerged.

Roșia Montană Mining Landscape is rooted in a past that evolved in a tradition consistently bound by efforts to extract gold. Detailed physical testimony is provided by: the underground mining works, chronologically differentiated by distinctive technical features; the socio-technical surface mining landscape consisting of ore-processing areas, habitation areas, sacred areas, necropolises; the current mining village built at the dawn of the industrial era; and the extensive documentation of the communities that generated them.

Archaeological evidence survives alongside the legacy of modern underground mining operations, whilst the landscape reveals evidence of an increasing scale of modification through time to serve mining and the way of life of its communities under successive control of empires and state, each phase adding to, or in some case erasing, its predecessors.

→ **Criterion (iv):**

to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history

Roșia Montană Mining Landscape is testimony to the long history of gold exploitation in the *Golden Quadrilateral*, from the Roman era to the twenty-first century. It is an exemplar that illustrates the strategic control and vigorous development of precious metals' mining by the Roman Empire, essential for its longevity and military power. Following the decline of mining

in *Hispania* (Iberian Peninsula, modern Spain and Portugal), *Aurariae Daciae* (Roman Dacia, AD 106 to AD 271) was the only significant new source of gold and silver for the Roman Empire, among the likely key motivations for Trajan's conquest.

The pre-eminent underground Roman mining network, with its outstanding technical attributes and associated landscape, is exceptional testimony to the diffusion and further development of precious metals mining technology during the expansion of the Roman Empire in the 2nd and 3rd centuries CE. Archaeological investigation has revealed important aspects that contribute to the global history of mining. Such extensive perfectly carved trapezoidal-section galleries, helicoidal shafts and inclined communication galleries with stairways cut into the bedrock, and vertical extraction areas (stopes) superimposed above one another with the roof carved out in steps, are unknown elsewhere from such an early era. Features such as multiple chambers for treadmill-powered water-dipper wheels (and the wooden remains of such equipment), whilst recorded but mostly destroyed elsewhere in the Roman world by subsequent modern mining, are preserved at Roșia Montană, are of exceptional value due to their rarity, extent and state of conservation.

The modern socio-technical mining legacy is significant, too, from the prolific Habsburg legacy of the seventeenth to nineteenth centuries to the pre-industrial mining and ore-processing methods captured at the moment of technological changes on the verge of the modern industrial revolution. Mining operations undertaken at this time were mostly by 'freeholder' families that favoured the continuation of such ore-dressing methods until nationalisation in 1948.

Large-scale underground mining started under the communist regime, an era that has left enormous caverns, and in 1971 this switched to large-scale opencast working of the Cetate massif, destroying the spectacular Roman mining works known as the "Citadel" and continuing until 2006 by which time it had effectively reduced the elevation of the mountain by as much as twenty per cent. The juxtaposition of socialist-era apartment blocks inserted into an essentially eighteenth-nineteenth century architectural ensemble is a striking relic of this era.

→ **Criterion (vi):**

to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance

The Roman wax-coated wooden tablets (*tabulae ceratae*) of *Alburnus Maior* (Roșia Montană) were made famous by the great German historian Theodor Mommsen (1817-1903), generally regarded as one of the greatest classicists of the nineteenth century. They represent a significant source for his interpretation of Roman law and on the law of obligations, which had a significant impact on the German Civil Code, subsequently forming the basis for similar regulations in other countries such as Portugal, China, Japan, South Korea, Taiwan, Greece and Ukraine.

Around 50 Roman wax-coated wooden tablets were discovered during the 1780s and 1850s in mining galleries at Roșia Montană, with 24 surviving in museums in Romania and abroad, in Bucharest, Alba Iulia, Cluj, Blaj, Aiud, Berlin, Budapest. These are first-rate sources of legal, socio-economic, demographic and linguistic information not only regarding *Alburnus Maior* but the entire Dacian province and, implicitly, the Roman Empire. The tablets provide intimate details of life in the mining community and are also correlated with an unparalleled number of stone epigraphic monuments, votive and funerary, discovered on site and preserved in museums at Roșia Montană, Cluj-Napoca, Turda, Alba Iulia and Deva. Information reveals explicit details of mining organisation, sale and purchase contracts, receipts of loans with interest, and the sale of slaves. Epigraphic evidence attests not only Illyrians but also Greek and Latin migrants hired to work in the mines and organised in associations (e.g. *collegia aurariorum, societas danistaria*).

Academic research into the history of the Roman Empire during the Antonine dynasty and its relationship to the Dacians' gold and gold extracted from Roman Dacia has opened a new area of research into European cultural history: the economic recovery of the Roman Empire, the commencement of monumental public construction works in Rome, among which the Forum and Trajan's Column are perhaps the most important elements, and the direct linkage to the gold-mining area of Dacia where *Alburnus Maior* was its principal centre.

Statement of integrity

The property contains all the necessary attributes that express Outstanding Universal Value. It is constrained within a natural amphitheatre that is radically different from the surrounding landscape and includes all metalliferous massifs of Alburnus Maior and the two principal valleys (Roșia and Corna) for ore-dressing, settlement, transport and communication. Though a greater part is overprinted by more modern mining activity, the landscape represents a palimpsest of successive empires and cultures that have exploited it.

The boundary has been determined using a combination of geological/mining maps, natural features such as ridgeline watersheds (functional, for water supply in ore-processing) and viewsheds (into and out of the property), roads, and the administrative boundaries that will assist with management of the property. It includes all areas with significant archaeological potential.

Roșia Montană Mining Landscape has suffered many aggressions followed by multiple transformations; some gradual over the centuries, and some sudden and devastating such as the destruction of the Roman openworks on Cetate (the “Citadel”) by opencast mining starting in the 1970s, and the recent sustained buildings demolition campaign that began in 2004 in preparation for the resumption of open pit mining and the creation of processing facilities. During the latter, important exemplars of local architectural heritage and even entire portions of built fabric (such as the central area of Corna), were destroyed in a total that exceeded 250 properties. A significant number survive, however, making the preservation and conservation of this precious heritage all the more important. Significant threats remain, the state of conservation of many historic buildings is poor and some unauthorised development of small-scale housing has taken place.

Statement of authenticity

The area proposed currently constitutes a detailed testimony to more than two millennia of mining practices by successive empires and cultures. It contains attributes that are high in authenticity in terms of the location and the form and materials of surviving historic features, with a clear sense of how, when and by whom mining shaped the land.

In terms of knowledge, unparalleled epigraphic and documentary evidence combined with a decade of intensive systematic archaeological investigation has already provided a major contribution to the understanding of Roman mining techniques and organisation. Significant potential remains.

Requirements for protection and management

The property is included in a wider area that is designated for protection by urban planning regulations. The property also contains several individually designated elements, from the Roman mining works, to the historic houses and two geological formations.

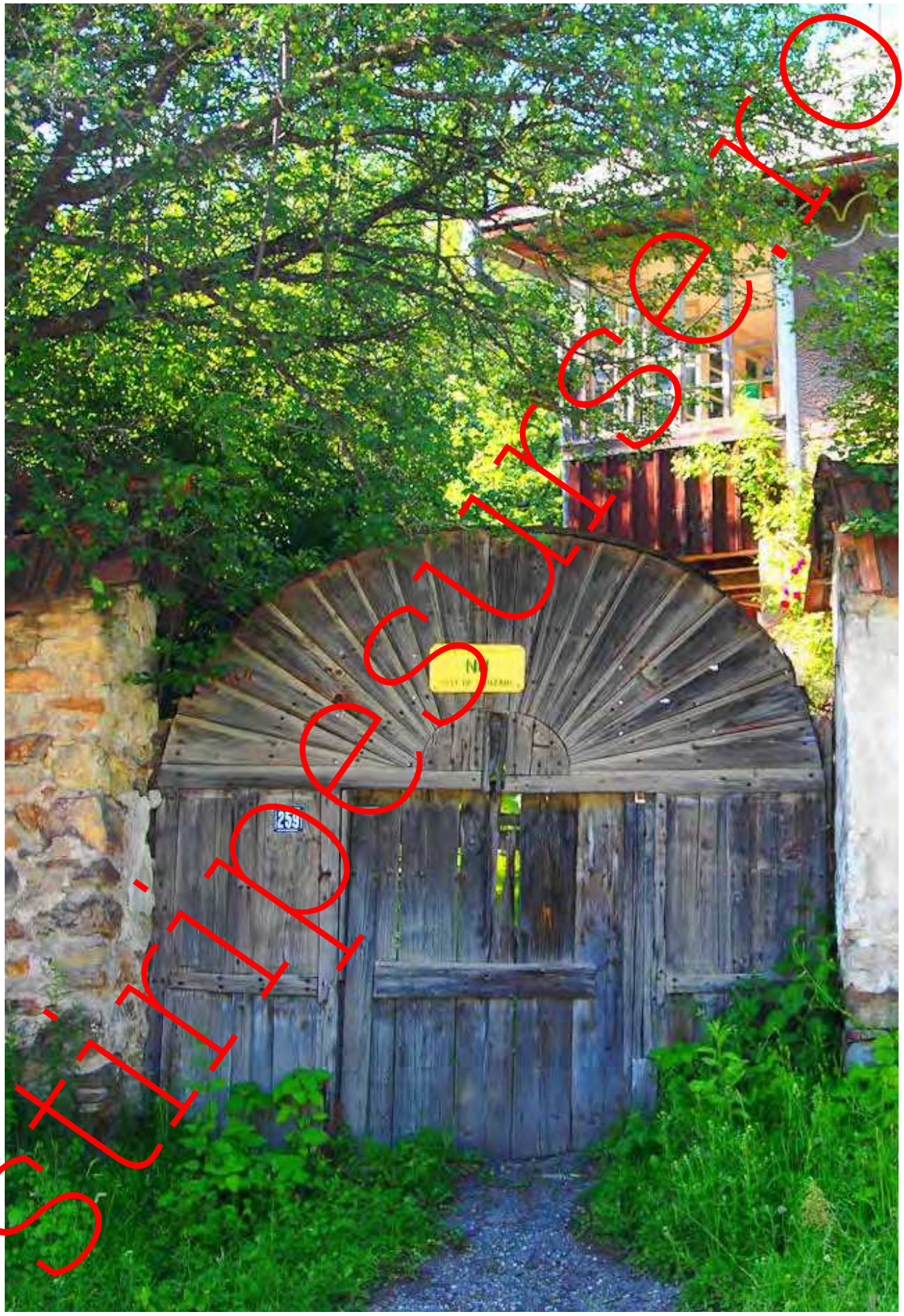
More direct protection is granted by listing, with 50 elements within the perimeter of the property included in the Historic Monuments List. They comprise the principal archaeological site with a few particular sub-components, the historic centre of the mining town, the Roman mines in Mt. Cârnic, houses and churches. Several other components are currently being assessed for listing, among them the header ponds of the extensive hydro-technical system.

Under this protection framework, responsibility is with the municipality for protection via urban planning measures, and with the respective owners in the case of listed properties.

In accordance with Romanian law, once a nomination is submitted, all provisions for World Heritage sites apply to that nominated property. These include the management system designed to protect all World Heritage properties in Romania.

Roșia Montană will benefit from this enhanced implementation of protection following the submission of the nomination file to UNESCO.

Overview of Corna Valley
© Daniel Vrăbioiu



Traditional wooden gate in Rosia Montană
© Daniel Vrăbioiu

4. State *of* Conservation *and* factors affecting *the* Property

4 a Present state of conservation

The mining landscape is comprised of historical structures and textures whose substance is, as may be expected, preserved in different degrees. A general assessment of the three main categories, as set out in chapter 2, shows a broad division, with (i) the mining exploitation in the category of generally well preserved features, with the exception of certain surface modern elements, while (ii) the archaeological areas are fair and (iii) the built heritage in the category of fair to poor preservation.

Whereas the state of conservation of archaeological heritage is directly connected to the frail character of archaeological ruins, that of built heritage is caused by general decline since the 1950s, and the social and economic rupture created over the past 17 years when a new open-cast mining project involved massive relocation and out-migration from the area.

Cetate-Găuri Area. Roman works (© Ivan Rous)

Cetate-Găuri Area. Roman works (© Ivan Rouse)

(i) Mining exploitation

The state of conservation of the historic underground mining system can be evaluated based on archaeological reports produced within the preventive research programme developed between 2000 and 2006. The state of conservation differs significantly from one area to another, from the very well preserved (e.g. Modern and Roman galleries, with their wooden equipment and structures preserved), to areas that researchers decided not to investigate because of safety reasons. Unsurprisingly for such a vast system, there are areas which will require consolidation, conservation works and consistent maintenance, but there are others where minimal intervention will suffice.

The surface mining features are unevenly preserved. The most conspicuous alteration was created by the move to modern open-cast mining in Mt. Cetate in the 1970s, which led to the

destruction of the largest part of the Roman surface exploitation, known as 'The Fortress' (Rom. Cetate). The fundamental change created in the communist period - the nationalisation of private property and the conversion to centralised mining - might have led to the disappearance of the whole hydrotechnical system, but that did not happen. Even though the traditional installations for crushing the ore (stamping mills) and the water channeling system have disappeared, the header ponds are conserved to a large degree. Presently used for leisure, their state of conservation is good, and they mostly need only maintenance work. In contrast, the ore transportation system to the processing plant at Gura Roșiei is severely altered. The ore railway needs sustained works to recover its historical attributes: the route is still visible in the landscape of the valley, and the embankment is preserved, while the now vegetated historical mining dumps are living its way. The tracks have been removed after the closure of the state mine, in 2006.

There is no known immediate threat to these elements. A long-term step-by-step conservation and enhancement programme is necessary, and this is programmed within the management plan under preparation.

Tău Cornei sluice gate (© APA Association)

(ii) Archaeological areas

The archaeological vestiges discovered to this moment have been to a large degree reburied after conclusion of research. In the case of the circular funerary monument from the Hop-Găuri Necropolis, a temporary shelter was built. The archaeological vestiges that were the subject of the mentioned protective measures are in a fair state of conservation, while the areas that were not protected after conclusion of research (Hop and Hăbad areas) are in a poor state of conservation. In these cases conservation works must be carried out, to be programmed within the management plan under preparation.

(iii) Built heritage

The built heritage is to a large extent brought to a poor state of conservation, either as a result of 'natural' abandon (occurring at various points, in various moments as a result of individual circumstances) or – much graver – by means of organized vacation of properties by the systematic acquisition campaign conducted by the mining company. This led to a loss of building stock. The existing structures require a comprehensive conservation plan to be prepared within the management plan.

The buildings which are still owned and lived in by their traditional, local, owners are generally in a much better state. There are exceptions, however: some of the historic churches (of smaller, shrinking communities, such as Unitarian and Calvinist) are not in a good state, or the uninhabited houses or agricultural and other ancillary structures.

State funded projects for conservation of listed buildings have been initiated this year.

Outside the town, the semi-natural areas, the pastures that need the traditional farming activities – hay harvesting and grazing – in order to sustain their biodiversity and character are threatened by the same general abandon. Some areas are already in the course of spontaneous forestation. The continuation and/or resumption of traditional practices are among the measures devised in the management plan.

Unitarian parish house before and after restoration works(© ARA Association)

4 b Present state of conservation

(i) Development Pressures (e.g., encroachment, adaptation, agriculture, mining)

Encroachment

Encroachment has not been a significant pressure on the property as, in addition to socio-economic decline, population has also been falling. Over the past 50 years, buildings density has decreased overall.

Depopulation

On the background of the general population decline came the extensive purchase campaign by the mining company, which led to a severe depopulation, transforming certain neighbourhoods into vacant areas - e.g. Sosaşi, where just two families are left. This has created social devastation for the community.

Pressure for demolition

Demolition has occurred in some restricted cases in response to safety issues (severely degraded and collapsing structures), and planned demolition in a series of other cases, or wanton in others (e.g. preparation of clearance for intended mining operations). A conservation management plan will be prepared that includes a risk register that targets vulnerable significant buildings.

The Ministry for Development and Public Administration, at the initiative of the County Council, establishes the priorities for elaborating risk maps and for establishing prevention and mitigation measures according to the law. After the submission of the World Heritage nomination file, new zoning plans will be initiated at government level, and they will include risk mapping at local level and regulations for prevention and mitigation.

(iv) Responsible visitation at World Heritage sites

Baseline data

The property is well-known in Romania, and internationally. At present it attracts more than 10,000 visitors per year (as reported by media), without any tourism infrastructure or advertising. This broadly equates to the number formerly attained by other, now famous, rural World Heritage sites in Romania, like Biertan or Viscri, after years of planning and communication (now, these figures are much exceeded).

In terms of infrastructure, the main facility is the Mining Museum, which currently operates under the state mining company, Rosiamin, within its premises. The museum hosts an underground section presenting a stretch of Roman galleries, belonging to the Orlea mining field and also exhibits an open-air collection of mining installations, equipment and tools, a Lapidarium of Roman and later epigraphical funerary and votive stelae, altars and other pieces, an indoor exhibition with its main focus on an exceptional documentary photographic collection.

For a few years there was a second museum exhibition, operated by the Roșia Montană Gold Corporation, in a house it owns in the Market Square. It is now closed, but contains many important artefacts, which belong to the state, in custody of Romania's National Museum of History.

There are only a few accommodation facilities in Roșia Montană (a hostel and three bed-and-breakfasts), to which is added a tourism association (NGO) and a few impromptu tourist guides.

Several info-points run by different organisations and the Roșia Montană Gold Corporation have been functional in buildings on Market Square over the past years. They are now all closed.

Despite underdeveloped physical infrastructure (that has, ironically, preserved a high level of authenticity), there is fairly good and easy to reach virtual infrastructure for tourism information and activity planning, set up by private individuals. This will of course be coordinated, supported and developed into a one-stop portal for the site, and surrounding area, which has high potential for sustainable tourism, to be developed based on the website associated to the nomination, *www.rosiamontana.world*.

→ Patterns of uses

Place based visits:

The main visitor destinations are the state Mining Museum, the historic centre, the natural and mining landscape – with the mountain peaks and header ponds as principal attractions. In summer, the ponds – especially Tăul Brazi and Tăul Mare – serve as recreational areas for locals and members of neighbouring communities.

Educational tourism and professional tourism has also developed, with many school groups visiting the Mining Museum, and groups of students and professionals from various fields, such as geology, mining, ecology, architecture and territorial planning, visiting specific parts of the nominated property.

Activity based visits:

For the past decade, the main local community NGO, Alburnus Maior, organised a protest and later cultural festival, called FânFest (Hay Festival). This attracted between 5,000 and 15,000 visitors a year, for a period of 4 to 6 days, featuring art, debate, theatre, music, film, guided tours and much more, engaging the participants with the place and the cause for its rescue – especially the internationally significant mining landscape, both above and below ground. Visitors were mostly accommodated in the households of the local community. In 2016 the festival was interrupted by its organizing committee, for re-planning.

Similarly, the municipality of Roșia Montană has been organising the annual Miners' Day, drawing several thousand participants over one weekend in late August or early September for a popular feast with music, dance and sports events.

During the past ten years, there has also been a new type of activity that regularly draws a diverse range of people, including young people, to Roșia Montană: voluntary participation in the professionally supervised conservation of architectural heritage, through summer schools, workshops and volunteer camps organised by a heritage NGO, ARA, in partnership with the local community organisation, Alburnus Maior. This activity has evolved into the successful Adopt-a-House at Roșia Montană programme that has attracted more than 200 people from 10 European countries, to work on the conservation of local historic houses and churches.

Most tourism is aestival, except for smaller-scale holidaying, which brings visitors for New Year and Easter, with organised holiday packs provided by local NGOs and families, exhibiting local customs and traditions.

Most of the visits are day-visits, with the exception of the activity-based, which range from a few days to two weeks.

→ Planned changes

If the property achieves inscription on the World Heritage List, the existing legal provisions placed upon the management body – the Organizing Committee for UNESCO – include the duty to enhance tourism at the property that supports sustainable development. Future progress will be guided, and implemented, by this body.

Under a planned change to the legal definition of the management system applicable across existing, and tentative, World Heritage Sites in Romania (presently published for consultation by the Ministry of Culture), a local partnership will be introduced into the system, aimed to better represent local communities. This will ensure that local people will be able to better contribute into the assessment, planning and decision making process, including local knowledge, plans and resources, and engaging more people on the ground with their heritage.

The most important decision for the improvement of the existing visiting infrastructure has already been initiated: transfer of the Mining Museum (currently operated by the state mining company) to public property of the state. This will then be developed to become a national museum under the Ministry of Culture. This transfer will create the conditions to enable funding for the restoration of the historic complex (built during the Habsburg era as the mining headquarters) and an upgraded museum that relates its important collections directly to the nominated property. The new mining museum will make the perfect place to exhibit the important archaeological collections resulted from the recent ground research campaigns, partly exhibited in the past years in the RMGC museum, now closed.

In the future, and especially with a successful inscription, it will be possible for more underground sections of the Orlea mining field, together with those from other mining fields (also protected historic monuments) to be gradually opened for conservation works and visitor access. This could be done based on specialized technical projects. Great potential exists for connections from one mining field to another, engaging with different interpretive themes and access/difficulty levels that respect, for example, the pristine authenticity of ancient remains in one sector versus the robust, less-constrained and more 'adventurous' activity in another.

Similarly, it will be possible for various sections of surface archaeological sites to be subject to further conservation prior to becoming open for visitors. A significant educational potential exists, in addition to tourism.

In terms of planned activities, priority shall be given to resume the high-summer FânFest (Hay Festival) organized by the local community. This has become a brand event, bringing visitors, and most importantly, creating awareness from the local to international scale, generating a better understanding of the property, its history, its current problems and its place in today's world.

In terms of potential forms of deterioration of the property due to visitor pressure, a potential threat is perceived to be inappropriate construction works and new buildings. The control and management of construction activity – be it for restoration and reuse of existing structures, or (if appropriate) for building new ones – will be ensured by means of zoning plans, at different scales, and corresponding regulations in the context of a conservation management plan (CMP) which will be initiated at government level after submission of the nomination file. Visitor impacts upon archaeological sites, above and below ground, will also be strictly controlled in the context of the CMP, and its interpretation and visitor management remit.

Compared to present visitation levels, the carrying capacity of the site is much higher, especially with visitor management planning in progress. Thus, there is no immediate danger in this regard, and there is time to proceed with a thorough study, in order to inform the policy making of the Organizing Committee for UNESCO.

An estimated increase in visitation levels should be subjected to caution at this stage, with no more than 15,000 people projected per year in the first three years. This is to allow for the better physical infrastructure to be developed, and to manage community expectations. Desired outcomes include overnight stay visits, and the sale of high quality local products and services thus contributing to the economy of the property.

(v) Number of inhabitants within the property and the buffer zone

Estimated population located within:	AREA OF NOMINATED PROPERTY: **600** BUFFER ZONE: **100** TOTAL: **700** YEAR: **2016**

The most recent census (2011) indicates a total of 913 people living in the villages that are (partly or completely) included in the nominated property, 973 in the village of Abrud municipality that is partly included in the property, and 96 in those included in the proposed buffer zone (details below). Since the census, the population in the area has decreased – out of the general trend in the wider area (migration, natural decrease), and out of reasons particular to the place (mining project induced migration and blocked development). Moreover, the nominated property comprises some of the villages just partly. The village of Abrud municipality is included but marginally, with only a few houses. Therefore, an estimate can be made of the population within the property, which cannot exceed 600 people. Similarly, in the buffer zone the estimated population cannot exceed 150 people.

→ **2011 Census:**

Villages included in nominated property:

ROȘIA MONTANĂ — 618
BALMOȘEȘTI — 44
BLIDEȘTI — 19
BUNTA — 6
CORNA — 38
ȚARINA — 88
ABRUD-SAT — 973

Villages included in buffer zone:

CURA ROȘIEI — 96

Reformat parish house (© ARA Association)

Parohia reformată

Ruin of a traditional house (© ARA Association)

Ruină

4.a Location and setting

CODE	CATEGORY	NAME	STATE OF CONSERVATION		
			good	fair	poor
			21	**32**	**11**
1	**Mining Exploitation: Underground and Surface**		13	7	3
1.1	Mining Exploitation: Underground				
1.1.1		Cârnic Massif Roman Galleries	•		
1.1.2		Lety Massif Roman Galleries, Cătălina Monulești Roman Galleries		•	
1.1.3		Cetate Massif Roman mining features		•	
1.1.4		Orlea Roman Galleries	•		
1.1.5		Cârnic Roman fire-setting complex	•		
1.1.6		Cârnic Early Modern Galleries	•		
1.1.7		Cătălina Monulești Early Modern Galleries		•	
1.1.8		Cetate Early Modern Galleries		•	
1.1.9		Văidoaia Massif: Early Modern underground workings	•		
1.2	Mining exploitation: Surface				
1.2.1		Cârnic Openworks			•
1.2.2		Cetate Roman Open Pit			•
1.3	Ore-processing features: Header Ponds				
1.3.1		Tăul Mare	•		
1.3.2		Tăul Țarina	•		
1.3.3		Tăul Corna	•		
1.3.4		Tăul Brazi	•		
1.3.5		Tăul Anghel	•		
1.3.6		Tăul Cartuș	•		
1.3.7		Tăul Țapului	•		
1.3.8		Tăul Găuri	•		
1.3.9		Ore Rail			•
1.4	Mining administration				
1.4.1		State Mining Headquarters (18th – 20th centuries)		•	
1.4.2		Miners' Dormitory (early 20th century)		•	

1.4.3		Mining Professional School (late 19th century)		•	
2	**Archaeological Areas**		0	8	4
2.1	Roman archaeology				
2.1.1		Hăbad Sacred Area			•
2.1.2		Găuri – habitation			•
2.1.3		Hăbad – habitation			•
2.1.4		Tăul Țapului		•	
2.1.5		Hop Necropolis			•
2.1.6		Nanului Valley Sacred Space		•	
2.1.7		Carpeni Zone		•	
2.1.8		Jig-Piciorag Area		•	
2.1.9		Țarina Necropolis		•	
2.1.10		Pârâul Porcului - Tăul Sculor		•	
2.1.11		Tăul Cornei - Corna Sat Zone		•	
2.1.12		Balmoșești - Isiaz Area		•	
3	**Built Heritage Features**		6	17	4
3.1	Modern town / village	Roșia Montană (Modern)			
3.1.1	neighbourhood in the upper zone	Square			
3.1.1.a	cluster	Townhouses with commercial ground floors; no. 323-328, 388 (late 18th - early 19th century)		•	
3.1.1.b	cluster	"Sicilian Street"		•	
3.1.1.c	cluster	Roman-Catholic Church and parish ensemble (18th - middle 19th, early 20th century)	•		
3.1.1.d	cluster	Unitarian Church and parish ensemble (1796, 18th - middle 19th, 1933)	•		
3.1.1.e	cluster	The Casino (1880-1900), no. 329, and Summer Garden			•
3.1.1.f	cluster	The former Administrative Palace (1896), no. 310	•		
3.1.2	neighbourhood in the upper zone	Brazi		•	
3.1.3	neighbourhood in the upper zone	Ieruga		•	
3.1.4	neighbourhood in the upper zone	Tăul Brazi		•	
3.1.5	neighbourhood in the upper zone	Văidoaia		•	
3.1.6	neighbourhood in the upper zone	Berk		•	
3.1.7	neighbourhood in the upper zone	Sosași			•
3.1.8	neighbourhood in the upper zone	Orlea		•	
3.1.8.a	cluster	Greek-Catholic Church and parish ensemble (1720, 1741, mid 19th century), no. 135		•	

3.1.8.b	cluster	Orthodox Church and parish ensemble (1781, mid 19th century), no. 175	•		
3.1.8.c	cluster	The administrative centre. Town Hall		•	
3.1.9	neighbourhood in the lower zone	Gura Minei			•
3.1.10	neighbourhood in the lower zone	Verches			
3.1.10.a	cluster	Aitaj House, later Miners' Club (no. 242), Maternity ward (no. 251), Gritta House (no. 258), Miner households		•	
3.1.10.b		State school and kindergarten; no. 274 (1905-1915)	•		
3.1.10.c	cluster	Blocks of flats of the 1960s		•	
3.2	Town / Village	Corna (Modern)			
3.2.1		Orthodox Church (1719), no. 707		•	
3.2.2		Greek-Catholic Church (19th century), no. 692			•
3.2.3		Miner's households		•	
3.3	Town / Village	Țarina (Modern)			
3.3.1		Traditional farmhouse (19th century), Țarina no. 1248	•		
3.3.2		Traditional farmhouse (20th century), with polygonal stable, Țarina no. 1254		•	
3.4	Town / Village	Balmoșești, Blidești (Modern)		•	

Overview of Rosia valley
© Radu Sălcudean

5. Protection *and* Management *of the* Property

The Property Management Plan of *Roșia Montană Mining Lanscape* is under preparation, and will sit within the existing management framework - anticipating/following the current revision of the national system of protection, management and monitoring for World Heritage in Romania. The new national system is aimed at meeting higher expectations of heritage (e.g. contribution to Sustainable Development) as well as to meet obligations of the World Heritage Convention. Published by the Ministry of Culture for consultation in December 2016, the expectation is for implementation during the first half of 2017. It integrates new provisions regarding the active role of local communities in the management of World Heritage properties, coordinated management measures for natural/cultural sites in connection with the State's support mechanisms for management and heritage-based development. The present status as a 'nominated property' also triggers formal procedure and national requirements in terms of urban planning and a Property Management Plan.

A campaign for the information of the local community upon the advantages and responsibilities brought by the World Heritage status has been conducted (august – november 2016). The survey afterwards showed that the major part of the local population is aware of the and in favour of achieving this status and, based on this, the active involvement of the community in the preservation of the property's values is to be expected.

5 a Ownership

The main category of land ownership is private, comprising individual owners, associations of owners, local authorities, organisations and companies. Out of this category, the largest owners are currently the Municipality of Roșia Montană and the State Mining Company Minvest S.A. Deva with an estimated share of around 45% of land within the nominated property, as well as Roșia Montană Gold Corporation with an estimated share of around 30 % of land within the nominated property. The rest is comprised of individual owners, associations of owners, organisations (churches). This information is being constantly updated and is being integrated in the new cartographic portal of the National Agency for Cadaster and Land Registration, which has been operational since 2015.

The surface area of the mining fields which have been operated as opencast mines in the latter part of the communist period – Cetate and Cârnic – is in the public property of the Municipality of Roșia Montană. The underground resources, by Constitution, are in public property (art. 136 (3) – therefore all underground mining fields are public property, belonging to the state.

5 b Protective designation

The entire Municipality of Roșia Montană is designated as "very high concentration of built heritage with cultural value of national interest", by the Law for the approval of the National Spatial Development Plan – Section III, Protected areas (L. 5/2000), in view of its protection by means of territorial and urban planning measures.

The same law designates, in its annexes (I and III), specific values within the territory of the municipality, which must be protected by urban planning measures. These include nature values and cultural values, as listed on the next page.

Annex I (excerpt):

I. Protected natural areas of national interest and nature monuments

2.	Reserves and nature monuments
2.8	Piatra Despicată [Split Rock], 0.20 ha
2.83	Piatra Corbului [Raven's Rock], 5.00 ha

Annex III (excerpt):

I. Cultural heritage values of national interest (historic monuments of exceptional national value)

g)	Urban ensembles:
g) 3.	The historic centre
l)	Industrial architecture:
l) 1.	The Roman galleries of the gold mining works
m)	Monuments of vernacular architecture (village dwellings):
m) 2.	Houses (18th–19th Cent.)

II. Municipalities with very high concentration of built heritage with cultural value of national interest

Roșia Montană, Abrud

The next complementary level of protection is granted by the *Law for the protection of historic monuments* (L. 422/2001), by means of listing of individual monuments, ensembles and sites.

Based on the provisions of the above-mentioned law, the official List of Historic Monuments includes, in its latest edition from December 2015, 51 items located in the Municipality of Roșia Montană, of which 50 are included in the nominated property.

List of Historic Monuments of County Alba (excerpt):

I. Archaeological monuments

140	Alburnus Maior – Roșia Montană archaeological site (for which a clear perimeter was established in November 2016)
141–145	Roman settlements and vestiges, mining works (5 distinctive sites included in the above)
146	Galleries of Mt. Cârnic (distinctively listed but also included in the above perimeter)

II. Architecture monuments

471	The historic centre of the town
473–513	Houses, churches and parish houses (41)

III. Commemorative and agora monuments

666	Commemorative monument to Simion Balint

Of all designated or listed components of the property, the two nature monuments have been declared first, in 1969, and later designated by the law in 2000, together with all other positions presented above.

Of the listed monuments included in the nominated property, 44 have been designated in 1991–1992, and included in the List of historic monuments of 1992, and 6 have been added in 2004 as sub-components or divisions of the existing listed archaeological site.

The assessment of other 18 architectural and technical elements within the property started recently (September 2016), as part of the listing procedure initiated at the request of National Commission for Historic Monuments. The procedure includes former miners' dwellings in the

property of the municipality, all the presently unlisted historic churches, the headquarters of the state mine, and the header ponds belonging to the hydrotechnical system of the site. According to the Law for the protection of historic monuments, these properties have the legal status of historic monuments until the completion of the listing process (but no more than one year), when a final decision is reached and published by order of the Minister of Culture.

Landscape integrated protection is to be further consolidated together with the recent (November 2016) Government Decision regarding the Heritage Theses. These principles for law modification are to ensure for the first time, a correlated vision for a landscape protection approach within Romanian legislation.

Gritta House (© ARA Association)

5 c Means of implementing protective measures

Protected areas

The first level of protection, ensured by the designation of the municipality and certain components of the property as protected areas, should be applied by means of urban regulations, establishing the dos and don'ts in terms of urban planning indicators. The aim of protection is to ensure an integrated protection of the cultural and natural values.

In the case of Roșia Montană, this overarching protection status has not yet been effectively applied, as the urban planning documents – zoning plan and regulation for the entire municipality, called Plan Urbanistic General (PUG), and zoning plan and regulation for distinctive areas, called Plan Urbanistic Zonal (PUZ) – have been initiated by local authorities, but later aborted. The situation is critical as presently there is no regulation in place after the previous PUG - based mainly on the opencast mining project - has been definitively cancelled in court.

Currently, the responsibility for initiating, approving and implementing such documents is with the municipality, through the Local Council. Once the nomination file for the property is submitted, the central authorities take over the responsibility to initiate and fund such documents, and thus the planning blockage shall be removed. Until the approval of such urban planning, a newly passed (November 2016) Emergency Order of the Government that modifies the Law of territorial and urban planning (No. 350/2001), is now allowing maintaining and restoration works even in the absence of urban planning regulations.

The perspective that the law, and especially the subsequent methodology for the elaboration of such zoning plans, gives to the protection of values is that of sustainable development. Therefore, the vision is not purely restrictive, but constructive.

All measures set forth by the law in respect to protected areas are compulsory for all public authorities, and all the works entailed by the protection of designated values are declared of public utility (Law no. 422/2001 regarding the protection of historical monuments)

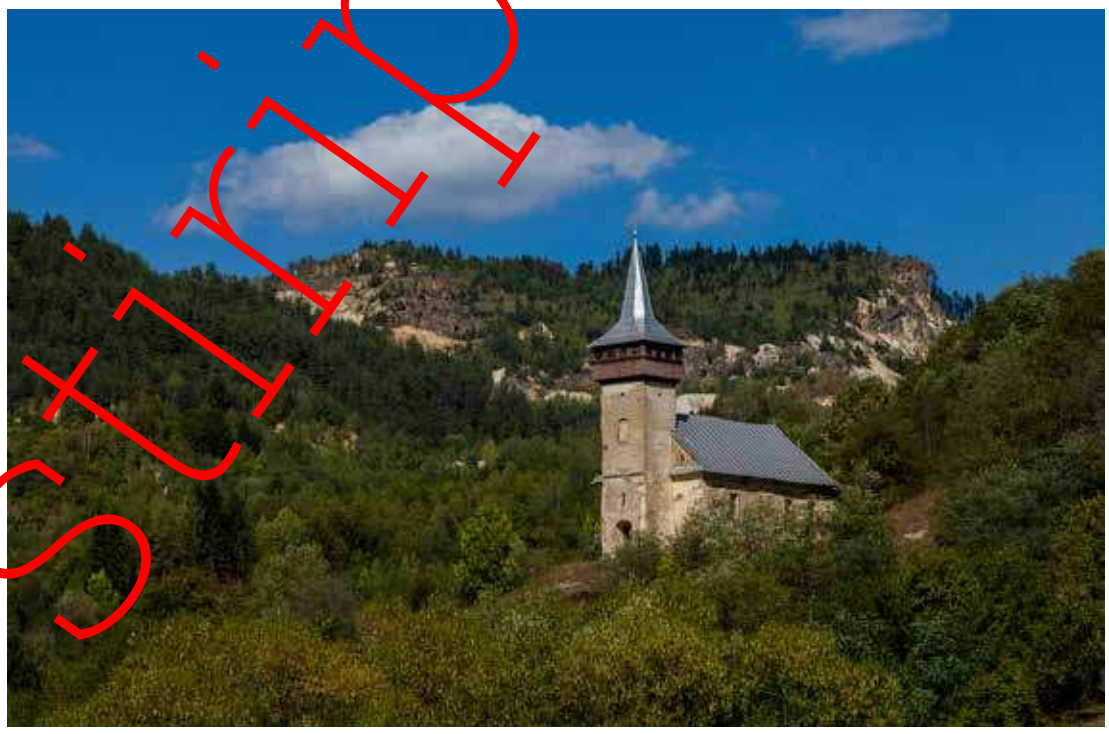
Historic monuments

The next level of protection, ensured by listing of specific built heritage as historic monuments, is applied by establishing clear control and responsibility levels on all action or non-action in respect to those listed values. It sets the duty: of owners to maintain, protect and restore; of local authorities to monitor and issue building permits and of central authorities to control, offer technical assistance and enforce the law in case of illegal actions against the protected values. Listing also creates the premise for accessing funding for the protection of the respective historic monuments, from national or European Union sources, under the National Restoration Programme or dedicated lines of structural funds (e.g. Regional Operational Plan, Rural Development National Plan).

The priorities of the Ministry of Culture in terms of protection of built heritage, set forth in September 2016 by its professional advisory body, the National Commission for Historic Monuments, include Roșia Montană. This makes it possible to grant funds for the restoration of historic monuments through the National Restoration Programme.

The National Institute of Heritage, which is managing the National Restoration Programme, has received three applications from Roșia Montană for next year's funding plan, which were assessed and included in the budget proposed to the Ministry of Culture. This is unprecedented for historic monuments from Roșia Montană. The score of the evaluation for funding of those three historic monuments was raised significantly by the presence of the site on the national Tentative List for World Heritage.

According to the law (Law no. 564/2001 for the approval of the GO no. 47/2000), once a nomination is submitted, all provisions in place for World Heritage properties will apply to the respective property as well. These include the management system designed to protect all World Heritage properties in Romania. Roșia Montană will benefit from these provisions with the submission of the nomination file to UNESCO.



Greek-Catholic church in Corna, currently undergoing listing procedure (© Radu Sălcudean)

5 d Existing plans related to municipality and region in which the proposed property is located (e.g., regional or local plan, conservation plan, tourism development plan)

Strategy for Culture and National Heritage 2016–2022
Ministry of Culture, 2016

Under the current revision of the sectorial Strategy for Culture and National Heritage 2016–2022, the Ministry of Culture sets up a new programme dedicated to World Heritage properties and Tentative List properties, in order to ensure the protection, maintenance, conservation and socio-economic inclusion of these resources within the local communities. Roșia Montană is specifically listed under several other objectives of the Strategy as well as under the key projects section.

Sustainable Development Strategy of Alba County for the period 2014–2020
Alba County Council, 2014

The development vision for County Alba, stated in the Sustainable Development Strategy 2014-2020, sets out from the beginning the role of its unique cultural and natural heritage resources for the development of the county, and puts among its strategic objectives "Heritage as a motor of creativity" (strategic objective 3), and among the priority objectives, the restoration of heritage buildings, starting with World Heritage properties, and the protection and enhancement of archaeological sites (priority objective 3.1). Under the same objective, the strategy indicates the creation of cultural routes, with specific provisions for a Gold and Mine Crystal Route in the Apuseni Mountains and for the Narrow-gauge Railway Route, which crosses the same mountains, reaching the bottom of the Roșia Valley, a Route of UNESCO World Heritage in County Alba, along with many other projects.

The strategy also sets provisions for the modernization of the routes infrastructure, with both the national road Abrud-Cîmpeni and the county roads being included, and of the electricity, energy, water, sewage and waste-water treatment infrastructure (Priority objective 2.1).

The programmes set forth by the county strategy are correlated to the thematic objectives of the Europe 2020 Strategy.

Zoning Plans for the Municipality of Roșia Montană – to be initiated by the Ministry of Development

Legislation in place regarding protection of World Heritage in Romania also includes nominated properties that benefit from it as soon as they are officially submitted. The initiation of the General Urban Plan (PUG) elaboration by the Ministry of Regional Development and Public Administration will be then legally possible immediately after the *Roșia Montană Mining Landscape* is officially nominated. The PUG objective is to ensure the desired state of conservation of the property while making the transition from industrial zoning, in support of open pit mining and processing, to that of heritage-lead zoning appropriate to a nominated World Heritage property.

The Ministry of Culture, through the National Institute of Heritage & The National Museum of Romanian History already ensured one of the essential documentations on which the PUG is to be initiated – **the study establishing the overall boundaries of the Alburnus Maior listed archaeological site.** The study was validated by the National Commission for Historic Monuments as well as the National Commission for Archaeology and is to be used also as one of the key scientific studies for the future conservation plan.

At the same time, within the National Restoration Programme, the National Institute of Heritage included in its monuments selection and budget proposal for 2017 three of the monuments of Roșia Montană in need of restoration – one church and two parish houses out of which one is in need of urgent intervention.

A Conservation Plan, is to be prepared by the County Council after submission of the nomination to UNESCO, according to legal provisions. It will involve specialized public institutions - mainly the National Institute for Heritage - as well as heritage practitioners, urban planners, landscape architects and civil society entities that already proved their professional capability and dedication to the heritage of Roșia Montana during the last decades. This cooperation between public authorities, heritage institutions and civil society can be built - on an already solid foundation – as a model of conservation in Roșia Montană and can be further used as an example to be followed for other heritage places. Based on the already existing experience for conservation action on the site, an integrated conservation plan is bound to be compiled effectively in the next 6–9 months.

5 e Property management plan or other management system

Although there is as yet no effective management plan in place for the property, a new management system is being constructed within the revision of the national system for the protection, managing and monitoring of World Heritage Sites - and nominated properties. The system integrates three levels of intervention: Under the current revision of the sectorial Strategy for Culture and National Heritage 2016–2022, the Ministry of Culture sets up a new programme dedicated to World Heritage properties and Tentative List properties, in order to ensure the protection, maintenance, conservation and socio-economic inclusion of these resources within the local communities. Roșia Montană is specifically listed under several other objectives of the Strategy as well as under the key projects section.

→ **administrative**, through the Alba County Council that is responsible, by law, with establishing the management plan through a UNESCO Organizing Committee (COU)

→ **professional and scientific**, through the National Institute of Heritage (INP) that is responsible by law with the scientific coordination and monitoring of World Heritage and nominated properties (member of the **COU**). INP is - **local community action**, through the local **partnership** that was integrated (as member of the COU) in the new national system. The partnership for Roșia Montană in the World Heritage List was legally created (November 2016) by local people and entities to the purpose of supporting the nomination and contributing to the elaboration and implementation of the Management Plan.
The management system includes a 5-year programme for the protection and management of the property (the Property Management Plan) as well as implementation and monitoring annual action plans to be prepared. Along with the three principal poles described above, it includes the cooperation of the Roșia Montană local authority and of representatives (members of the COU) of central or local county offices of the Ministry of Environment, Ministry of Development and Local Administration, Ministry of Interior Affairs, National Tourism Authority, Emergency Situations Authority, with their respective legal specific responsibilities. A key role is the one of the local county office of the Ministry of Culture (member of the COU), in charge for monitoring all the area and issuing the Ministry's permits for interventions in the nominated area.

As a result of this system being operational, the Property Management Plan for the *Roșia Montană Mining Landscape* will be prepared according to the legal provisions of Romania, with the scientific coordination of the National Institute of Heritage, the cooperation of independent experts and specialized other institutions, the input of the local community and the assistance of the COU. It will be guided by key international documents such as *Managing Cultural World*

Heritage (UNESCO resource manual due to be translated and published, with permission, by the INP), the ICOMOS Charter for the Interpretation and Presentation of Cultural Heritage Sites ("ENAME Charter", 2008), and others. The plan will include a section on the management of tourism as support of sustainable development and one on heritage interpretation. The plan will illustrate the increasing preoccupation in Romania for the European Landscape Convention implementation as well as industrial heritage recognition through the integrated management of a multi-layered landscape (nature, archaeology, heritage, agro-pastoral, industry).

Note: all interventions made before the approval of the PUG and the management and conservation plans are being carefully monitored through the existing legal mechanisms and they are concentrated on maintenance and conservation works aimed at the preservation of the identified valuable attributes of the nominated property.

5f Sources and levels of finance

As stated above, urban planning instruments for nominated areas are to be financed by the state through the Ministry of Regional Development and Public Administration. The management plan – i.e. the 5-year programme for management and protection - is to be financed by the Ministry of Culture, through the National Institute for Heritage (INP), possibly also with the budgetary contribution of the local county authorities. All functioning of the COU and monitoring activities will be financed by the County Council.

A pilot strategy recently adopted by the government, for three disadvantaged areas with one centre in Roșia Montană – Apuseni Mountains include technical and financial assistance for interventions in the nominated property for conservation, infrastructure, small business development etc. The assistance is being provided through a Governmental Unit for Technical Assistance (UGAT) newly based in Roșia Montană.

Regional (county) and national government structures, depending on type of project and eligibility are in place to assist National funds (through the National Institute for Heritage within the National Restoration Programme) or European funds projects of the local authorities, NGO-s and private owners. Research, conservation and restoration projects, urban/rural regeneration and infrastructure are all eligible for European funding mechanisms (POR, PNDR, SEE, SUERD etc.)

5g Sources of expertise and training in conservation and management techniques

Conservation of the site requires preservation and continuity in traditional construction techniques as well as producing traditional building materials. The already gained expertize through conservation and rescue programmes of professional associations integrating also local know-how, have already produced a solid ground for future conservation and management of the property. Specialized institutions of the state such as the National Institute of Heritage, National Museum of Romanian History, several universities, The Dendrochronology Laboratory in Transylvania etc., have joined these efforts in various specialized projects and are therefore continuing to "produce" professional expertize. Several key projects are to be implemented such as the restoration of three architectural monuments through the National Restoration Programme and the continuation of the Adopt a House in Roșia Montană volunteer summer programme.

The Ministry of Culture and the Ministry of Education have drafted recently (November 2016) the mission and functional structure of a new centre of excellence in arts and crafts which is to be created in Roșia Montană under the auspices of the two and will benefit from the UGAT assistance. The centre is to function in some and to restore some other historic buildings of the site while creating also local capacity / training young local people in traditional building techniques.

Shingle maker (© Radu Sălcudean)

Blacksmith (© Radu Sălcudean)

5 h Visitor facilities and infrastructure

Although no formal infrastructure for tourism is in place at the desired standards, a spontaneous hospitality network is regularly receiving guests (bed and breakfast); hiring bicycles; offering guided theme tours, holiday packages, in relation or not with the summer festivals and activity-based tourism. This is one of the property's authentic attractions and should be encouraged by networking complementary initiatives of the existing (*La Gruber, Casa Petri, Visit Rosia Montana, Rosia Montana Verde Association*), and future local tourist operators.

The State Mining Museum is the main visitor facility, providing access to a section of the Mt. Orlea Roman galleries as well as exhibiting unique Roman funerary monuments, mining technology, a collection of photographs and documents. The museum functions in the adapted buildings of the Sate Mining Company Rosiamin for which the development of the museum, the interpretation of the heritage and the visitor facilities were not a priority. These aspects are to be resolved through a new museum project once its transfer to the Ministry of Culture is realized (according to the Memorandum passed in the Government in December 2016). This will also integrate the public archaeological collections of the new museum founded by the private mining company which, although existing since 2010, is still not open to the public.

5 i Policies and programmes related to the presentation and promotion of the property

Internationally the property is extremely well known through high profile heritage organizations such as *Europa Nostra, World Monuments Watch*, ICOMOS, TICCIH etc., achieving prominence on their websites and also through their official actions. They publically and openly supported the protection of Roșia Montana's heritage.

National promotion is currently made through civic, environment protection and heritage Conservation NGO's (*Alburnus Maior Association, Mining Watch Romania, Architecture Restoration Archaeology – ARA Association* and others). On the local level, independent actions to present and promote the property have been developed by local NGO's, through their actions – most notably *FânFest*, but also *Gold Trail* – and their websites; likewise, small private operators in the area are promoting the property through their tourism related businesses (*Made in Rosia Montana* and others)

Key information related to the nomination process, heritage protection actions and the elaboration of management instruments is to be integrated in the newly created portal *www.rosiamontana.world* administrated by the National Institute of Heritage.

Landscape workshop (© ARA Association)

5 j Staffing levels and expertise (professional, technical, maintenance)

The National Institute of Heritage, responsible by law for the nomination files as well as for monitoring inscribed World Heritage Sites, is already employing a specialized team - architects, engineers, art historians, landscape architects etc. - for that purpose and has representatives in the respective UNESCO Organizing Committees (COU). According to the new project of Government Ordinance (to be decided during the first half of December 2016), INP will benefit from an increase in the staff number dedicated to the creation of a UNESCO department to better implement the World Heritage Convention.

Locally, the county office of the Ministry of Culture as well as the Government Technical Assistance Unit (UGAT), with the scientific cooperation of INP, are to provide assistance to local initiatives for conservation and restoration as well as for private or public new interventions and infrastructure works in order to ensure their integrated approach and compatibility with the authenticity and integrity requirements.

Already several local professionals who have been involved in conservation projects in the last decade can take the responsibility of small technical teams for maintenance and can assist local authorities in monitoring the property. On a medium term basis, the graduates of the Roșia Montană arts and crafts centre will be able to contribute with their newly acquired competences to the sites maintenance.

Văidoaia quarry and the Roman Catholic church
© Daniel Vrăbioiu

6. Monitoring

According to Romanian Legislation and article 29 of the World Heritage Convention, the National Institute for Heritage – INP is to produce periodic reports, every 6 years, on the state of conservation of the property as well as the administrative and legislative provisions for the property every 6 years. However due to the complexity of the site and the necessity of urgent intervention for acquiring the desired state of conservation in some of the attributes, a closer monitoring programme is necessary, on an annual basis. This is to look at specific technical issues related to the archaeological and built heritage conservation, mining works maintenance, forests and agro- pastoral landscape traditional use, habitats and biodiversity as well as overall management of the property. The INP will ensure through proper specialized partnerships, an integrated culture-nature vision upon this monitoring process.

6.a Key indicators for measuring state of conservation

	INDICATOR	PERIODICITY	LOCATION OF RECORDS
1	Maintenance and conservation of the immovable heritage (archaeological and built) • Authenticity of materials • Authenticity of techniques • Integrity of the material structures	Annual, with a 6 years report following the periodic reporting cycle	INP, Division for World Heritage, Monitoring Unit County office of the Ministry of Culture Report to be submitted to UNESCO every 6 years National Museum of Romanian History
2	Maintenance and conservation of the mining works (surface and underground) • Integrity of the material structures • the accessibility of the works	Quarterly / or as often as necessary following mining security standards (for areas opened for visitors Annual for other works	INP, Division for World Heritage, Monitoring Unit County office of the Ministry of Culture National Museum of Romanian History Specialized partners
3	Maintenance and conservation of the landscape character (pastures, ponds etc) • Traditional use of the land • Maintenance works	Quarterly / every season	INP, Division for World Heritage, Monitoring Unit County Office of the Ministry of Culture Specialized partners
4	Monitoring and conservation of the flora and fauna features • Protected fauna monitoring • Protected flora monitoring	Quarterly / appropriate season	INP, Division for World Heritage, Monitoring Unit Specialized partners
5	Geology and water systems • Protected geological structures monitoring • Water levels and water quality monitoring	Quarterly / appropriate season	INP - Division for World Heritage, Monitoring Unit Specialized partners

6.b Administrative arrangements for monitoring property

The nominated property is to be monitored, according to legal previsions in Romania, by the National Institute of Heritage - INP, possibly in cooperation with other specialized partners if the case.

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6.c Results of previous reporting exercises

World Monuments Fund Report	World Monuments Watch programme https://www.wmf.org/project/ro%C8%99ia-montan%C4%83-mining-landscape	2016
Europa Nostra Report	7 most endangered sites http://www.europanostra.org/rosia-montana/	2013
Romanian Academy Report on the Roșia Montană Mining Project	http://www.acad.ro/forumuri/doc2013/d0619-ProiectulRosiaMontana-AnalizaAR.pdf	2013
Architecture+ Urbanism. Traditional Rural Housing in Alba County. Survey and vernacular architecture valorization	Barbieri, M. coord., Consiliul Județean Alba,	2013
Archaeological Research Reports under the coordination of the National Museum of Romanian History	Published in the respective National Archaeological Annual Reports and Alburnus Maior series of publications 1999 - 2006	1999–2006
University of Toulouse – underground mining archaeological research reports	Beatrice Cauuet Published in the respective National Archaeological Annual Reports	2001–2008
Romania's Presidency, Report of the Presidential Commission for the Built Heritage and the Historic and Natural Sites	Editura ICR, București	2010
Roșia Montană Ethnological Study	Paula Popoiu, Ed. Ed. DAIM, București	2004
Heritage at Risk ICOMOS Report	http://www.icomos.org/risk/	2000, 2003
Research and inventory for the built heritage of the villages of Roșia Montană and Corna.	The Design Centre for National Cultural Heritage (CPPCN, now the INP) Stroe, A., Stroe, A,, Andron, I.G., Postăvaru, I. INP Archive	2000–2001
The Botanical and Anthropogenic Landscape of Roșia Montană (Apuseni Mountains, Romania)" In Roșia Montană in Universal History,	Akeroyd, John R. edited by P. Cocean, 101-113. Cluj-Napoca: Cluj University Press,.2012	2012
Rosia Montana: a case for protection rather than destruction	Akeroyd, John R., Jones, Andrew http://www.rosiamontana.org/sites/default/files/Anex1_Akeryod_Jones_biodiv_Ro.pdf	2006

7. Documentation

7.a Photographs and audiovisual image inventory and authorization form

Id. No.	Format (slide / print / video)	Caption	Date of Photo (mo/ yr)	Photographer/ Director of the video	Copyright owner (if different than photographer/ director of video)	Contact details of copyright owner (Name, address, tel/ fax, and e-mail)	Non exclusive cession of rights
1	JPEG	Path to Rosia Montana	08/2012	Daniel Vrăbioiu	same as photographer		YES
2	JPEG	Roman Catholic Church and Cemetery, in the historic centre of Roșia Montană	08/ 2012	Radu Sălcudean	same as photographer		YES
3	JPEG	Overview inTăul Mare, Roșia Montană	08/ 2012	Radu Sălcudean	same as photographer		YES
4	JPEG	Underground mining networks in Cârnic	2003	MNIR Archives	same as photographer		YES
5	JPEG	Well-preserved Roman level, with modern (re-excavated) level	2003	MNIR Archives	same as photographer		YES
6	JPEG	Roman level crossed by modern level level	2003	MNIR Archives	same as photographer		YES
7	JPEG	Blackened wall markings indicating positions of lamp niches	2003	MNIR Archives	same as photographer		YES
8	JPEG	Roman adit level	2003	MNIR Archives	same as photographer		YES
9	JPEG	Roman galleries with evidence for fire-setting	2003	MNIR Archives	same as photographer		YES
10	JPEG	Three Roman galleries intersected by modern workings	2003	MNIR Archives	same as photographer		YES
11	JPEG	Păru Carpeni: cumulative cross-section of the two levels with four water wheel chambers for drainage	2001	Beatrice Cauuet	same as photographer		YES
12	JPEG	Păru Carpeni: Water wheel chamber with monoxyle ladder – as discovered in situ	2001	Beatrice Cauuet	same as photographer		YES
13	JPEG	A monoxyle notched ladder (4.90 m length) discovered in a perfect state of preservation inside the backfill of a vertical, stepped, stope	2001	Beatrice Cauuet	same as photographer		YES
14	JPEG	Launder (wooden water-channel) that received water from the still adjacent remains of the upper waterwheel	2001	Călin Tămaș	same as photographer		YES
15	JPEG	Waterwheel hub - still in connection with its spokes - discovered in Cătălina Monulești Mine	2001	Călin Tămaș	same as photographer		YES
16	JPEG	Cetate-Zeus Area: Roman works	2003	MNIR Archives	same as photographer		YES
17	JPEG	Roman galleries with trapezoidal cross-section	2013	Ivan Rous	same as photographer		YES
18	JPEG	Roman mining works – room with pillars	2013	Ivan Rous	same as photographer		YES

19	JPEG	Fire-setting complex	2003	MNIR Archives	same as photographer	YES
20	JPEG	Cârnic Early Modern Gallery	2003	MNIR Archives	same as photographer	YES
21	JPEG	Cârnic. Roman gallery	2003	MNIR Archives	same as photographer	YES
22	JPEG	Cârnic: Modern works – "caverns"	2012	Ivan Rous	same as photographer	YES
23	JPEG	Cătălina Monulești Modern pillar alongside Roman Gallery	2012	Călin Tămaș	same as photographer	YES
24	JPEG	Cetate Early Modern Galleries	2003	MNIR Archives	same as photographer	YES
25	JPEG	Văidoaia: Medieval and Modern open works	2007	Lorin Niculae	same as photographer	YES
26	JPEG	Cârnic - Piatra Corbului: Roman slope-side works opened with fire and water	2010	Horia Ciugudean	same as photographer	YES
27	JPEG	Cetate - Găuri Area: Roman works opened with fire and water	2003	MNIR Archives	same as photographer	YES
28	JPEG	Tăul Mare	08/ 2012	Radu Sălcudean	same as photographer	YES
29	JPEG	Tăul Mare after the reinforcement works in 1929	1929	Postcard	same as photographer	YES
30	JPEG	Tăul Tarina	2007	Lorin Niculae	same as photographer	YES
31	JPEG	Tăul Corna	2011	Sebastian Florian	same as photographer	YES
32	JPEG	Tăul Brazi	1929	Artur Oskar Bach	same as photographer	YES
33	JPEG	Tăul Brazi-Tăul Anghel	08/ 2012	Radu Sălcudean	same as photographer	YES
34	JPEG	Tăul Cartuș	2004	MNIR Archives	same as photographer	YES
35	JPEG	Tăul Tapului	2004	MNIR Archives	same as photographer	YES
36	JPEG	Tăul Găuri	2004	MNIR Archives	same as photographer	YES
37	JPEG	Holy Cross ore railway	1927	NLR Archives	same as photographer	YES
38	JPEG	Ore railway incline	1920s	NLR Archives	same as photographer	YES
39	JPEG	State Mining Headquarters Roll-call room and shaft leading to the mines	ca. 1927	V. Zotinca	same as photographer	YES
40	JPEG	Miners' dormitory	2001	INP Archives	same as photographer	YES
41	JPEG	Mining Professional School	2001	INP Archives	same as photographer	YES
42	JPEG	Hăbad building in sacred area	2003	MNIR Archives	same as photographer	YES
43	JPEG	Bulding in the sacred area of Hăbad	2003	MNIR Archives	same as photographer	YES
44	JPEG	Hăbad. Votive altars	2003	MNIR Archives	same as photographer	YES
45	JPEG	General view of the excavation area in Hăbad	2003	MNIR Archives	same as photographer	YES
46	JPEG	A section of the roman road crossing the site in the Găuri area.	2003	MNIR Archives	same as photographer	YES
47	JPEG	Roman pottery recovered from inside the dwelling in the "Găuri" section	2003	MNIR Archives	same as photographer	YES
48	JPEG	Detail of dwelling in the "Găuri" section	2003	MNIR Archives	same as photographer	YES
49	JPEG	Excavated habitat structures in Găuri area	2003	MNIR Archives	same as photographer	YES

50	JPEG	Roman pottery recovered from the dwelling in the "Hăbad" section	2003	MNIR Archives	same as photographer	YES
51	JPEG	Plan of Roman dwelling in "Hăbad" section	2003	MNIR Archives	same as photographer	YES
52	JPEG	Plan of Building no. 1 - Building no. 2 at Tăul Țapului	2003	MNIR Archives	same as photographer	YES
53	JPEG	Tăul Tapului_Layout Building no. 1 - Building no. 2	2003	MNIR Archives	same as photographer	YES
54	JPEG	Circular monument in the foreground with Hop Necropolis in the background	2003	MNIR Archives	same as photographer	YES
55	JPEG	Nanului Valey general view of TII worship edifice	2003	MNIR Archives	same as photographer	YES
56	JPEG	General view of Dalea sacred space in Nanului valley	2003	MNIR Archives	same as photographer	YES
57	JPEG	Roman altars and pottery are amongst the principal artefacts recovered from Nanului Valey–Dalea	2003	MNIR Archives	same as photographer	YES
58	JPEG	Artefacts recovered from Carpeni Hill: Trajan coins minted in Caria Province, Asia Minor	2003	MNIR Archives	same as photographer	YES
59	JPEG	Silver buckle from Carpeni Hill; Ceramic roof tile with stamp Leg. XIII Gemina	2003	MNIR Archives	same as photographer	YES
60	JPEG	General view from the east of the point Bara	2003	MNIR Archives	same as photographer	YES
61	JPEG	General view of the properties Gomboș and Bara,from the north	2003	MNIR Archives	same as photographer	YES
62	JPEG	Funerary precint from Țarina area	2003	MNIR Archives	same as photographer	YES
63	JPEG	Decoration from the funerary precint in Țarina	2003	MNIR Archives	same as photographer	YES
64	JPEG	Funerary precint from Pârâul Porcului – Tăul Secuilor area	2003	MNIR Archives	same as photographer	YES
65	JPEG	Tăul Corna. Overview of the necropolis. View of Citera Budeștilor	2003	MNIR Archives	same as photographer	YES
66	JPEG	Islaz Fortification	2003	MNIR Archives	same as photographer	YES
67	JPEG	Central area with three churches: Unitarian (left), Protestant (centre), Roman Catholic (right)	20th C.	postcard	unknown	YES
68	JPEG	North-east front of the Square early 1940s	ca. 1940	Silviu Bocaniciu Sr.	same as photographer	YES
69	JPEG	Tăul Brazi neighbourhood	2012	Daniel Vrăbioiu	same as photographer	YES
70	JPEG	Văidoaia neighbourhood	2007	Ștefan Bâlici	same as photographer	YES
71	JPEG	Berk neighbourhood	2006	Lorin Niculae	same as photographer	YES
72	JPEG	Sosași neighbourhood	2007	Ștefan Bâlici	same as photographer	YES
73	JPEG	The Greek-Catholic Church of the Dormition	1930s	R. Slotta, V. Vollmann, I. Dordea	same as photographer	YES

74	JPEG	The Orthotox Church with Mt. Cetate in Background, Roșia Montană	1920s	V. Zotinca	same as photographer	YES
75	JPEG	The administrative centre, Town Hall	2010	INP Archives	same as photographer	YES
76	JPEG	Gura Minei Neighbourhood	1927	V. Zotinca	same as photographer	YES
77	JPEG	Blocks of the 1960s.	2014	Claudia Apostol	same as photographer	YES
78	JPEG	Corna Village, overview	2001	Ștefan Bâlici	same as photographer	YES
79	JPEG	Upper nucleus in Corna village	2007	Lorin Nicolae	same as photographer	YES
80	JPEG	19th century Traditional farmhouse, Tarina	2013	Ștefan Bâlici	same as photographer	YES
81	JPEG	Traditional farmhouse with polygonal stable	2014	Ștefan Bâlici	same as photographer	YES
82	JPEG	Piatra Corbului (Raven's Stone) protected area of national interest	2012	Edmond Kreibic	same as photographer	YES
83	JPEG	View on Piatra Corbului and Cârnic Massif Southern slope	2012	Radu Sălcudean	same as photographer	YES
84	JPEG	Overview of Roșia Montană Mining Landscape	2009	Petru Mortu	same as photographer	YES
85	JPEG	View of Tăul Mare and Roșia Valley. Field pattern: spatial arrangement of the keys elements and shape of landscape plots.	2012	Radu Sălcudean	same as photographer	YES
86	JPEG	View on cattle stable with a agro-pastoral production facility with solitary trees which through particular usage or historical tradition gain a specific significance; high cultural and historical value and biodiversity potential	08/ 2012	Radu Sălcudean	same as photographer	YES
87	JPEG	Rought grazings with terraced field and shrubs succesion in the background	2012	Radu Sălcudean	same as photographer	YES
88	JPEG	Small trees hedge with individual trees, fences and dry stone masonry and croces to delineate boundaries	08/ 2012	Radu Sălcudean	same as photographer	YES
89	JPEG	"Natural rock gardens"	2012	Daniel Vrabioiu	same as photographers	YES
90	JPEG	Forest in relation with mining exploitation with high historical and cultural value and high ecological potential	08/ 2012	Radu Sălcudean	same as photographer	YES
91	JPEG	Living fences created as rows of shrubs to delineate boundaries, ponds and roads, ensure erosion protection and improve landscape	08/ 2012	Radu Sălcudean	same as photographer	YES
92	JPEG	Tăul Brazi landscape	2004	Edmond Kreibic	same as photographer	YES
93	JPEG	Former head ponds with water retention function and specific flora	08/ 2012	Radu Sălcudean	same as photographer	YES

94	JPEG	Overview of Roșia valley from Balmoșești	2004	MNIR archive	same as photographer	YES
95	JPEG	Overall view of the Tăul Mare and mining landscape	08/ 2012	Radu Sălcudean	same as photographer	YES
96	JPEG	Mount Cârnic – vestiges of prehistoric and Roman slope-side works opened with fire and water	2012	Radu Sălcudean Horia Ciucudean	same as photographers	YES
97	JPEG	Overview of Roșia Montană settlement	08/ 2012	Radu Sălcudean	same as photographer	YES
98	JPEG	Monument of World War I, ca. 1930; located next to a Memorial Cross, in front of one of the buildings of the Mining Company (housing for workers, c.1910)	2015	Iozefina Postăvaru	same as photographer	YES
99	JPEG	Cross "from Ghenoveva"; located in the Market, nearby the Casino, attached to the house no. 331 (19th century), building that served as a hospital, bank, cinema and, since 1930, housing	2015	Iozefina Postăvaru	same as photographer	YES
100	JPEG	Cross of Michael Gritta, 1837; marks the grave of the rich miner and donor of churches, today overlaid by the street with blocks dating from the 1960s	2006	Ioan Andron	same as photographer	YES
101	JPEG	Cross, 19th century; located on the road to Tăul Brazi	2015	Iozefina Postăvaru	same as photographer	YES
102	JPEG	View on Corna churches with Cârnic and Cetate Peaks backgrounds, the mining exploitations from the roman to modern period	2012	Radu Sălcudean	same as photographer	YES
103	JPEG	Overview on Corna valley dwellings among the Corna brook	2012	Ștefan Angelescu	same as photographer	YES
104	JPEG	View on the Tăul Țarina Țarina hamlet with dispersed households on the hills	08/ 2012	Radu Sălcudean	same as photographer	YES
105	JPEG	Single farmstead with a agro-pastoral production facility	08/ 2012	Radu Sălcudean	same as photographer	YES
106	JPEG	Traditional mining landscape in early 1940s	1940s	Silviu Bocaniciu	same as photographer	YES
107	JPEG	Prehistoric surface mining works along a seam	2010	Horia Ciugudean	same as photographer	YES
108	JPEG	Wax Tablet XI	2003	MNIR Archives	same as photographer	YES
109	JPEG	Votive altar dedicated to Janus. Hop Găuri Area	2003	MNIR Archives	same as photographer	YES
110	JPEG	Roman funerary monuments, Drumuș Area	2003	MNIR Archives	same as photographer	YES
111	JPEG	Funerary Monument, Mining Museum, Roșia Montană	2003	Lorin Niculae	same as photographer	YES
112	JPEG	Reconstuction of the Circular Funerary Monument at Hop Găuri	2004	Virgil Apostol	same as photographer	YES

113	JPEG	Roman galleries in Cârnic Massif	2013	Ivan Rous	same as photographer	YES
114	JPEG	Roman Mining Gallery in Orlea Massif	2007	Lorin Niculae	same as photographer	YES
115	JPEG	Roman Gallery in Cârnic Massif, Roșia Montană	2013	Ivan Rous	same as photographer	YES
116	JPEG	Roman works with evidence for fire-setting	08/ 2012	Radu Sălcudean	same as photographer	YES
117	JPEG	Private stamping mills, photograph from the 1900s	1900s	Csíky Lajos	same as photographer	YES
118	JPEG	Brazi Reservoir, photograph from the 1900s	1900s	Csíky Lajos	same as photographer	YES
119	JPEG	Corna Reservoir, photograph from the 1900s	1900s	Csíky Lajos	same as photographer	YES
120	JPEG	The entrance to the Holly Cross Master Gallery of the gold Corna Reservoir, photograph from the 1900s mines, photograph from the 1900's	1900s	Csíky Lajos	same as photographer	YES
121	JPEG	The Square on a market day. In the background Ajtai Palace, demolished in the 1980s, photograph from the 1900s	1900s	Csíky Lajos	same as photographer	YES
122	JPEG	Văidoaia area, a typical small-scale mining neighborhood; each house or group of houses had a stamping mill, photograph from the 1900s	1900s	Csíky Lajos	same as photographer	YES
123	JPEG	Procesing Plant. Stamping mills and electric power station at Gura Roșiei, 1927	1927	V. Zotinca	same as photographer	YES
124	JPEG	Private mine in Roșia Montana, 192	1929	Arthur Oskar Bach	same as photographer	YES
125	JPEG	Cetate Massif, before and during the explosions in 1974 that destroyed the upper level of the historic mining works, as captured by geologist Aurel Sîntimbrean	1974	Aurel Sîntimbrean	same as photographer	YES
126	JPEG	General View - Tău Mare, Cârnic Massif, Cetate Massif and the former mining exploitation	08/ 2012	Radu Sălcudean	same as photographer	YES
127	JPEG	Overview of Rosia Montană valley	2012	Ștefan Angelescu	same as photographer	YES
128	JPEG	Las Medulas	2016	Barry Gamble	same as photographer	YES
129	JPEG	Overview of Corna Valley	2012	Daniel Vrăbioiu	same as photographer	YES
130	JPEG	Traditional wooden gate in Rosia Montană	2012	Daniel Vrăbioiu	same as photographer	YES
131	JPEG	Cetate-Găuri Area. Roman works	2013	Ivan Rous	same as photographer	YES
132	JPEG	Cetate-Găuri Area. Roman works	2013	Ivan Rous	same as photographer	YES
133	JPEG	Tăul Cornei sluice gate	2010	ARA Association	same as photographer	YES

134	JPEG	Unitarian parish house before and after restoration works	2008 2009 2010	ARA Association	same as photographer	YES
135	JPEG	Reformat parish house	2010	ARA Association	same as photographer	YES
136	JPEG	Ruin of a traditional house	2010	ARA Association	same as photographer	YES
137	JPEG	Overview of Rosia valley	2012	Radu Sălcudean	same as photographer	YES
138	JPEG	Gritta House	2010	ARA Association	same as photographer	YES
139	JPEG	Greek–Catholic church in Corna, currently undergoing listing procedure	08/ 2012	Radu Sălcudean	same as photographer	YES
140	JPEG	Shingle maker	2012	Radu Sălcudean	same as photographer	YES
141	JPEG	Blacksmith	2012	Radu Sălcudean	same as photographer	YES
142	JPEG	Landscape workshop	2011	ARA Association	same as photographer	YES
143	JPEG	Văidoaia quarry and the Roman Catholic church	2012	Daniel Vrăbiuiu	same as photographer	YES

ABBREVIATIONS:

BNR
Biblioteca Națională a României
National Library of Romania

INP
Institutul Național al Patrimoniului
National Institute of Heritage

MNIR
Muzeul Național de Istorie a României
National Museum of Romanian History

7 b Texts relating to protective designation, copies of property management plans or documented management systems and extracts of other plans relevant to the property

Romanian Legislation

Law no.378/2001 on the approval of Emergency Ordinance no. 43/2000 regarding the protection of archaeological heritage and the declaration of certain archaeological sites as areas of national interest, published on the 18th of July 2000.

Law no. 5/2000 on the approval of the National Spatial Development Plan - Section III, Protected Areas, published on the 6th of March 2000.

Law no. 182/2000 on the Protection of National Movable Cultural Heritage, published on the 27th of October 2000.

Law no. 350/2001 on Territorial and Urban Planning, published on the 6th of July 2001.

Law no.564/2001 on the approval of the Government Ordinance no. 47/2000 on establishing certain protection measures for the historical monuments included in the World Heritage List, published on the 1st of November 2001.

Law no. 311/2003 on Museums and Public Collections, published on the 8th of July 2003.

Law no. 12/2006 regarding changes and completions on Law no. 311/2003 on Museums and Public Collections published on the 11th of January 2006.

Law no. 6/2008 on the legal regime of Technical and Industrial Heritage published on the 14th of January 2008.

Law no. 85/2003 on Mining, published on the 18th of March 2003.

Emergency Ordinance no. 195/2005 on Environment Protection, published on the 30th of December 2006.

Emergency Ordinance no. 34/2013 on the organization, administration and exploitation of Permanent Meadows and on the change and completion of the Land Fund Law no. 18/1991, published on the 23rd of April 2013.

Emergency Ordinance no. 57/2007 on the status of Protected Natural Areas, the conservation of natural habitats and wild flora and fauna, published on the 29th of July 2007.

Law no. 213/1998 regarding Public Property Goods, published on the 17th of November 1998

The date of each law corresponds to its publishing in the Official Journal of Romania.

Romanian Governmental Policies and Guidance

Government Decision regarding the Heritage Theses, adopted on the 29th of November 2016.

Order of the Minister of Transportation, Construction and Tourism no. 562/2003 - Development methodology and framework content for planning documents for protected built areas (PUZ)

Memorandum on the Development of integrated pilot programmes through European funds and the national budget for improving the socio-economic situation of the inhabitants of the former mining areas of Valea Jiului, Roșia Montana - Apuseni Mountains and of the marginalized communities in Moldova (Vaslui – Iași), adopted by the Romanian Government in September 2016.

National Strategies

The Strategy for Culture and National Heritage 2016–2022
The National Sustainable Development Strategy 2013–2020–2030
The Sustainable Development Strategy of Alba County 2014–2020
The Strategic Concept of Spatial Development 2030
The National Strategy and Action plan for the Conservation of Biodiversity 2014-2020

Local Authority Policies

Roșia Montana Sustainable Development Strategy

International Conventions and Directives

The European Cultural Convention, ratified by Law no. 77/1991.
The Convention Concerning the Protection of the World Cultural and Natural Heritage, accepted by the Decree 187/1990
The European Convention on the Protection of the Archaeological Heritage, ratified by Law no. 150/1997
The Convention regarding the protection of European Architectural Heritage -The Granada Convention, ratified by Law no. 157/1997
The European Landscape Convention, ratified by Law no.451/2002
The Convention on Biological Diversity, ratified by Law no. 58/1994
The Habitat Directive
The Birds Directive

Other

The Population and Housing Census, 2011 - http://www.alba.insse.ro/cmsalba/rw/pages/rezultate_rpl.ro.do

Opinion survey regarding the inclusion of Rosia Montana in UNESCO World Heritage. Survey done by SC CSOP SRL (KANTAR-TNS), coordinator - Diana Anghel, research manager. November - December 2016.

7 c Form and date of most recent records or inventory of property

National List of Historic Monuments – LMI
http://patrimoniu.gov.ro/ro/monumente-istorice/lista-monumentelor-istorice

National Archaeological Record – RAN
http://ran.cimec.ro/

Section no. III - Protected Areas of the Law no. 5/2000 for the approval of the National Spatial Development Plan
http://www.cdep.ro/pls/legis/legis_pck.htp_act_text?idt=22636

7 d Address where inventory, records and archives are held

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7 e Bibliography

Archaeology:

Apostol, Virgil. "Funerary Architecture in Alburnus Maior (Roşia Montană): The Circular Monument." *Dacia*, N.S., tomes XLVIII-XLIX (2004-2005): 249-282.

Cauuet, Béatrice, *et al.* "Roşia Montană, com. Roşia Montană, jud. Alba [Alburnus Maior] Punct: Cârnic." *Cronica Cercetărilor Arheologice - Campania 2003* (2004): 283-288.

Cauuet, Béatrice. "Équipements en bois dans les mines d'or protohistoriques et antiques (Gaule et Dacie romaine)." *Archéologie et paysage des mines anciennes. De la fouille au musée*, edited by M.-Ch. Bailly-Maître, C. Jourdain-Annequin, M. Clermont-Joly, 57-73. Paris: Editions Picard, 2008.

Cauuet, Béatrice. "Gold and silver extraction in Alburnus Maior mines, Roman Dacia (Rosia Montana, Romania). Dynamics of exploitation and management of the mining space." *Paisagens Mineiras Antigas na Europa Ocidental. Investigação e Valorização Cultural, Atlas do Simpósio Internacional, Boticas, 25-26-27 julho 2014, coordinated by Luís Fontes,* 83-106. Boticas: 2014.

Ciobanu, Radu. "Kastellum Ansienses si templul lui Ianus din zona Găuri de la Roşia Montană – probleme de epigrafie, arhitectură şi simbolică spaţială." [Kastellum Ansienses et le temple de Janus de la zone Gauri de Rosia Montana: problèmes d'epigraphie, architecture et symbolique spatiale] *Apulum* 47 (2010): 57-76

Ciugudean, Horia, Wollman, Volker. "Noi cercetări privind mineritul antic în Transilvania (I)." [New research regarding ancient mining in Transylvania (I)] *Apulum* 42 (2005): 95-116.

Ciugudean, Horia. "Ancient gold mining in Transylvania: the Roșia Montană – Bucium area." *Caiete ARA 3* (2012): 219-232.

Damian, Paul, ed. *Alburnus Maior I*. Bucharest: Ed. Cimec, 2003.

Damian, Paul, ed. *Alburnus Maior II*. Bucharest: Ed. Cimec, 2004.

Damian, Paul, ed. *Alburnus Maior III/1. Necropola romană de la Tăul Corna.* [Alburnus Maior III/1. The Roman Necropolis of Taul Corna] Cluj-Napoca: Ed. Cimec, 2008.

Damian, Paul, Borș, Corina. "Considerații privind managementul arheologic în contextul proiectului minier Roșia Montană. Programul Național de Cercetare «Alburnus Maior» (2001-2006)." [Considerations regarding the archaeological management in the context of the Roșia Montană Mining Project. National Research Program «Alburnus Maior» (2001-2006)] *Cercetări arheologice* XIV-XV (2007-2008): 481-555.

Hoffmann, Andreas. "Die römischen Wachstafeln von Roșia Montană – Einführung, Text und Übersetzung, Kommentar." [The Roman Wax-tablets of Roșia Montană - Introduction, text and translation, commentary] *Silber und Salz in Siebenbürgen (2002)*: 65-90.

Milea, Zaharia. "Sculpturi romane de la Alburnus Maior în Muzeul de istorie din Turda." [Roman Sculpures from Alburnus Maior in Turda History Museum] *Apulum* 9 (1971): 435-441.

Momsen, Theodor. *Corpus Inscriptionum Latinarum*, vol. XVII - Miliaria imperii Romani. 1863.

Mrozek, Stanislaw. "Aspects sociaux et administratifs des mines d'or romaines de Dacie." *Apulum* 7, no. 1 (1968): 307-326.

Russu, Ioan Iosif, ed. *Inscriptiones Daciae Romanae*. [Daco-Roman Inscriptions] Bucharest: Ed. Romanian Academy: I, 1975, II, 1977, III/1, 1977, III/2, 1980, III/3, 1984, III/4, 1988.

Simion, Mihaela, Apostol, Virgil, Vleja, Decebal. Alburnus Maior II, *Monumentul funerar circular – The Circular Funeral Monument*. Bucharest: Ed. Cimec, 2004.

Sîntimbrean, Aurel, Bedelean, Horea. *Roșia Montană Alburnus Maior. Cetatea de scaun a aurului românesc*, [Rosia Montana Alburnus Maior. The Citadel of Romanian Gold] 2nd ed. Alba-Iulia: Ed. ALTIP, 2004.

Sîntimbrean. Aurel, Wollman, Volker. "Aspecte tehnice ale exploatării aurului în perioada romană la Alburnus Maior (Roșia Montană)." [Technical aspects of the gold mining in the Roman Alburnus Maior (Roșia Montană)] *Apulum* 12 (1974): 240-279.

Țentea, Ovidiu. "Legion XIII Gemina and Alburnus Maior." *Apulum* 40 (2003): 253-265.

Țentea, Ovidiu. *Bath and Bathing at Alburnus Maior – Băile Romane de la Alburnus Maior.* Cluj-Napoca: Mega, 2015.

Wilson, Andrew, Mattingly, David, Dawson, Michael. *Statement of Significance, Cârnic Massif, Roșia Montană, jud. Alba, Romania*. Oxford: University of Oxford, 2011.

Wilson, Andrew, Mattingly, David, Dawson, Michael. *Response to D. Jennings, A Critical Analysis of the Report: 'Statement of Significance: Cârnic Massif, Roșia Montană, jud Alba Romania' by A Wilson, D Mattingly and M Dawson*. 2013.

Wollmann, Volker. *Mineritul metalifer, extragerea sării și carierele de piatră în Dacia Romană – Der Erzbergbau, die Salzgewinung und die Steinbrüche in Römischen Dakien.* [Metal Mining, Salt Extraction and Stone Quarries in Roman Dacia] Cluj-Napoca - Klausenburg: Muzeul Național de Istorie a Transilvaniei, 1996.

Zerbini, Livio. "Le miniere d'oro della Dacia: appunti sulla loro cronologia." [The Gold Mines of Dacia: Notes on Their Chronology] *Apulum* 47 (2010): 241-247.

History, Sociology, Ethnography:

Balog, Iosif Marin. "Efectele socio-economice ale mineritului în «Patrulaterul Aurifer» al Apusenilor în perioada 1850-1914." [Socio-economic impacts of mining in the «Golden Quadrilateral» of the Apuseni Mountains during 1850-1914] *Anuarul Institutului de Cercetări Socio-Umane «Gheorghe Șincai» al Academiei Române,* no. LIII (2014): 147-165.

Balog, Iosif Marin. "Școală și societate în «Cadrilaterul Aurifer» al Apusenilor 1800-1914." [School and Society in the «Golden Quadrilateral» of the Apuseni Mountains 1800-1914] *Anuarul Institutului de Cercetări Socio-Umane «Gheorghe Șincai» al Academiei Române XVIII* (2015): 5-29.

Barbieri, M. coord., *Arhitectură+Urbanism. Locuirea rurală tradițională din județul Alba. Relevare și promovare valori arhitecturale tradiționale vernaculare din județul Alba.* [Architecture+ Urbanism. Traditional Rural Housing in Alba County. Survey and vernacular architecture valorization.] Alba Iulia: Consiliul Județean Alba, 2014.

David, Lucian, *Peisajele etnografice din România*. [Etnographical Landscapes of Romania] București: Ed. Etnologică, 2015.

Dunăre, Nicolae. "Mijloace tradiționale în agricultura Munților Apuseni în prima jumătate a secolului XX." [Traditional means in the agriculture of the Apuseni Mountains in the first half of the 20th century] *Apulum* 11 (1973): 573-634.

Ghinoiu, Ion (coord), *Atlasul Etnografic Român. (The Ethnographic Atlas of Romania), vol I – Ocupations*. Bucharest: The Publishing House of the Romanian Academy, 2003.

Ghinoiu, Ion (coord), *Atlasul Etnografic Român. (The Ethnographic Atlas of Romania), vol II – Habitat*. Bucharest: The Publishing House of the Romanian Academy, 2005.

Popoiu, Paula, ed. *Roșia Montană: Studiu etnologic.* [Roșia Montană: Ethnological Study] Bucharest: DAIM, 2004.

Țuțuianu, Adriana. "Contribuții la o clasificare etnografică a așezărilor din Munții Apuseni." [Contributions concerning an ethnographical classification of the settlements from Apuseni Mountains] *Apulum* 38, no. 2 (2001): 41-53.

Veres, Mădălina-Valeria. "Putting Transylvania on the Map: Cartography and Enlightened Absolutism in the Habsburg Monarchy." *Austrian History Yearbook* 43 (2012): 141–164.

Sîntimbrean, Aurel. *Muzeul Mineritului din Roșia Montană*, [Rosia Montana Mining Museum] Bucharest: Sport-Turism, 1989.

Sîntimbrean, Aurel. "Învățământul minier la Roșia Montană, județul Alba." [Mining Education in Rosia Montana, Alba County] *Apulum* 38, no. 2 (2001): 147-154.

Architecture:

Apostol, Virgil, Bâlici, Ștefan, eds. *Roșia Montană. Documente de arhitectură. I.* [Roșia Montana. Architectural documents. I.] Bucharest: Ed. ARA, 2010.

Apostol, Virgil, Bâlici, Ștefan, eds. *Roșia Montană. Documente de arhitectură. II.* [Roșia Montana. Architectural documents. II.] Bucharest: Ed. ARA, 2012.

Niedermaier, Paul. "Zur Entstehung von Goldbach (Roșia Montană)." [On the origin of Goldbach (Roșia Montană)] *Silber und Salz in Siebenbürgen* (2002): 163-166.

Pop, Virgil. "Die städtebauliche Struktur von Roșia Montană." [The Urban Structure of Roșia Montană] *Silber und Salz in Siebenbürgen* (2002): 167-179.

Stroe, A., Stroe, A,, Andron, I.G., Postăvaru, I. "Roșia Montană. Inventarierea patrimoniului construit." [Roșia Montana. Built Heritage Inventory] *Buletinul Comisiei Monumentelor Istorice XX,* 1-2 (2009): 66-112.

Wollmann, Volker. *Patrimoniu preindustrial și industrial în România.* [Preindustrial and industrial heritage in Romania], vol. I-II. Sibiu/Hermannstadt: Honterus, 2010-2011.

Natural and Cultural heritage:

Akeroyd, John R., Jones, Andrew. *Rosia Montana: a case for protection rather than destruction.* http://www.rosiamontana.org/sites/default/files/Anex1__Akeryod_Jones_biodiv_Ro.pdf

Akeroyd, John R. "The Botanical and Anthropogenic Landscape of Roșia Montană (Apuseni Mountains, Romania)" *In Roșia Montană in Universal History,* edited by P. Cocean, 101-113. Cluj-Napoca: Cluj University Press, 2012.

Bâlici, Ștefan. "Roșia Montană. An overview on the question of cultural heritage" *Caiete* ARA 4 (2013): 205-228.

Cocean, Pompei, ed. *Roșia Montană in Universal History.* Cluj-Napoca: Cluj University Press, 2012.

Scazzosi, L. *Politiche e culture del paesaggio. Esperienze internazionali a confronto.* [Landscape policies and cultures. New comparison] Roma: Gangemi, 1999.

Monographs:

Roman, Bazil, Sîntimbrean, Aurel, Wollmann, Volker. *Aurarii din Munții Apuseni. Studiu istorico-tehnic și album.* [The Goldminers of the Apuseni Mountains. Historical-technical study and album] Bucharest: Editura Sport-Turism, 1982.

Slotta, Rainer, Wollmann, Volker, Dordea, Ion, eds. *Silber und Salz in Siebenbürgen,* Katalog zur Ausstellung im Deutschen Bergbau-Museum Bochum „Das Gold der Karpaten – Bergbau in Roșia Montană" vom 27. Oktober 2002 bis zum 05. August 2003. [Silver and Salt in

Siebenbürgen. Catalog of the Exhibition in the German Mining Museum Bochum "The Gold of the Carpathians - Mining in Rosia Montana" from 27 October 2002 to 5 August 2003] Bochum: Deutsches Bergbau-Museum, 2001-2002.

Official reports and documents:

Romanian Academy, Position Statement of Romanian Academy regarding Roșia Montană mining project. Accessed December 05, 2016. http://www.acad.ro/forumuri/pag_forum_RosiaMontana.htm.

Administrația Prezidențială. *Raportul Comisiei Prezidențiale pentru Patrimoniul Construit, Siturile Istorice și Naturale* [Romania's Presidency, Report of the Presidential Commission for the Built Heritage and the Historic and Natural Sites; in Romanian]. Bucharest: Editura Institutului Cultural Român, 2010.

Other

Szabo, Jozsef. *O evaluare a studiului de impact asupra mediului pentru proiectul Roșia Montană cu accent pe aspectele de biodiversitate* [An evaluation on the environmental impact study of the Roșia Montană project with emphasis on biodiversity aspects] 2006. http://www.rosiamontana.org/sites/default/files/Studiu_Principal_Joszef_Szabo_ro.pdf

Plan Urbanistic Zonal – *Zona istorică centrală Roșia Montană* [Zonal Urban Plan – Central Historical Area of Roșia Montană] 2006, S.C. OPUS. S.R.L.

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8.b Official Local Institution/ Agency

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National Institute of Heritage
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8.c Other Local Institutions

Roșia Montană Gold Mining Museum
178 Principală, Roșia Montană

Câmpeni National Information and Tourist Promotion Centre
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Alba County Office of the Ministry of Culture / Direcția Județeană pentru Cultură Alba
20, Regina Maria, Alba Iulia, județul Alba
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Roșia Montană Local Council / Consiliul Local Roșia Montană
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National Union Museum, Alba Iulia
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