
Heritage of Mercury. Almadén and Idrja (Spain, Slovenia) No 1313rev

Official name as proposed by the States Parties

Heritage of Mercury. Almadén and Idrja

Location

Almadén, Comunidad Autonoma de Castilla La Mancha,
Provincia de Ciudad Real

Spain

Idrja

Slovenia

Brief description

Mercury is a relatively rare metal, whose use has long been irreplaceable in a variety of technical, chemical and industrial processes. It has only been produced in substantial quantities and over a long period by a small number of mines worldwide, of which the two largest, until recent times, were at Almadén in Spain and Idrja in Slovenia. These two mining towns, whose origins date from ancient or Medieval times, demonstrate the lengthy period over which a socio-technical system of extraction specific to this metal was in operation, and the process of evolution it underwent. Controlling mercury extraction enabled control of the market, which very quickly became intercontinental in scope because of its decisive role in the extraction of silver from deposits in the New World. A heavy metal, which is liquid at room temperature and has very specific chemical and physical properties, mercury is also a pollutant, which is dangerous for human health.

Category of property

In terms of categories of cultural property set out in Article I of the World Heritage Convention of 1972, this is a serial nomination of two *groups of buildings*.

1 Basic data

Included in the Tentative List

27 April 2007 (Spain)

18 June 2007 (Slovenia)

International Assistance from the World Heritage Fund for preparing the Nomination

None

Date received by World Heritage Centre

29 January 2008

26 January 2010

1st February 2011

Background

This is a deferred nomination (34 COM, Brasilia, 2010).

An initial nomination dossier was examined by the World Heritage Committee at its 33rd session (Seville, 2008), and was referred back to the States Parties. This was a serial nomination for three sites, presented by three States Parties (Spain, Slovenia, Mexico) on a broader theme than mercury extraction: "The Mercury and Silver Binomial on the Intercontinental Camino Real: Almadén, Idrja and San Luis Potosí".

A revised nomination dossier was examined by the World Heritage Committee at its 34th session (Brasilia, 2010) and the World Heritage Committee adopted the following decision (decision 34COM 8B.40):

The World Heritage Committee,

1. Having examined Documents WHC-10/34.COM/8B and WHC-10/34.COM/INF.8B1.Add,

2. Defers the examination of the nomination of the Mercury and Silver Binomial, Almadén and Idrja with San Luis Potosí, Spain / Slovenia / Mexico to the World Heritage List in order to enable the States Parties to:

a) Reconsider the definition of the property in San Luis Potosí, but also with its mining region, and more broadly in comparison with the other silver extraction sites using the amalgamation process in Mexico, to bring it into line with the mining and industrial theme of the mercury and silver binomial, and so to establish its Outstanding Universal Value. An inventory of the technical and industrial heritage linked to the silver mines would be necessary for such a redefinition;

3. Considers that any revised nomination, with new boundaries, requires an expert mission to the site;

4. Recommends that the States Parties:

a) Continue the contacts established with towns and silver mines which used the same mercury amalgamation process, particularly in Mexico and Bolivia, and with the Huancavelica mercury mine in Peru. However, the inclusion of additional sites which are not yet inscribed on the World Heritage List must give rise to a new nomination;

b) Better integrate into the definition of the property the concepts of pollution and risks for human health resulting from the production and use of mercury. The international institute projected at Idrja for the study and raising of public awareness of these issues is enthusiastically supported.

In January 2011, a revised dossier was submitted to the World Heritage Centre, based on a serial property centring on mercury and its mining heritage.

Consultations

ICOMOS consulted its International Scientific Committee on Cultural Landscapes and the International Committee for the Conservation of the Industrial Heritage (TICCIH).

Literature consulted (selection)

Cañizare-Ruis, M., "Patrimonio minero-industrial en Castilla-La Mancha: el área Almadén-Puertollano", *Investigaciones Geográficas*, 31, Alicante, 2003, p. 87-106.

Dizdarevic, T., *The influence of Mercury production in Idrja mine on the environment*, Ljubljana, 2001.

Lescovec, I., "Maintenance and presentation of the technical heritage of the Idrija Mercury Mine", *Patrimoine de l'industrie*, Paris, 2004.

Technical Evaluation Mission

An ICOMOS technical evaluation mission visited the property from 19 to 25 September 2011.

Additional information requested and received from the States Parties

ICOMOS requested additional information from the States Parties in a letter dated 12 December 2011, so as to determine precisely the specific protection measures which apply to the buffer zones and the authorities in charge of their application; and to confirm the functioning of the International Committee in charge of coordination between the two properties. For Almadén: to ensure that the precise boundary of the property matches up between the various plans, and to include the buffer zone, with its specific regulations, in the Municipal General Plan (POM); to put a stop to works undertaken in the buffer zone which do not comply with the applicable regulations in this zone. For Idrija: to carry out a photographic inventory of the technical elements and industrial buildings currently present inside the property boundaries.

The States Parties replied on 21 February 2012, providing additional information which has been taken into account in this evaluation report.

Date of ICOMOS approval of this report

14 March 2012

2 The property

Description

The nominated property consists of the two mining sites of Almadén (Spain) and Idrija (Slovenia), used for the extraction of mercury (quicksilver). These were the world's two main extraction centres of this strategically important metal until recent times. The relationship between them was established when the Spanish empire, from the mid-16th century to the early 19th century, was seeking precious metals in America. The mercury amalgamation process was used for the cold extraction of silver in the mines of Mexico, Bolivia and Peru. Mercury mines of secondary importance also existed in China, Italy and California.

Almadén

Almadén is situated in the central southern part of the Iberian peninsula. The town was connected in particular to the ports of Seville and Cadiz, which were engaged in the international trade in mercury, under the control of the king. The mining area of Almadén contains elements of a geographic, geological and landscape nature; it includes mining, industrial and land use elements, together with urban, architectural and social elements. This is the world's largest deposit of cinnabar (mercuric sulphide), the principal mercury ore which was first extracted in antiquity. The main mining site today contains large mining slag

heaps whose residual contents are under technical surveillance, to prevent the diffusion into the environment of the residual mercury. Other less important mines, which in some cases have long been abandoned, are also present in the region, but they have not been included in the property nominated for inscription on the World Heritage List.

The property consists of a main part, located to the west of the town of Almadén, together with a number of monuments scattered through the rest of the town, inside the buffer zone. The property consists primarily of:

1) The mining site and the elements directly related to the history of its exploitation:

- the mines themselves, consisting of interlinked shafts and galleries of various periods;
- the entrances to the del Pozo, del Castillo, and La Contramina mines; the shafts, the machinery and the buildings of San Aquilino, San Teodoro, San Andrés, and San Joaquin;
- the constructions of the del Castillo mine, the mercury store (today the museum), and the administrative and social buildings, etc.;
- various tunnels with specific functions, such as the forced labour tunnel, Caña Gitana, and the mining transport tunnel of San Aquilino;
- the Bustamante cinnabar furnace, designed in 1720;
- remains of the brick furnace (17th century);
- traces of the road to Seville used for the transport of the mercury to its port of embarkation.

2) The property also includes the town centre, still in its original fabric, stretching from the mining site to Constitution Square, with the following noteworthy elements:

- Retamar Castle,
- the Chapel of San Miguel,
- the historic San Miguel shaft,
- the Mining Academy building,
- the remains of the mine superintendent's house,
- the Inquisitor's House,
- the San Sebastian el Nuevo church,
- the Carlos IV and Carros gates,
- groups of traditional dwellings.

3) Various monuments in the buffer zone:

- the archaeological remains of the forced labour gaol;
- the San Rafael Miners' Hospital, which today houses the museum and archives of Almadén;
- the bullring.

Idrija

The mining site of Idrija is located in western Slovenia, not far from the Italian border and more particularly the port of Trieste on the Adriatic coast, from where some of the mercury was exported. The presence of mercuric

sediment is the characteristic geological feature of the Idrija region. It was associated with the presence of mercuric sulphide (cinnabar) which made up the ore. It is the second largest mine in the world, after Almadén. The network of galleries dug during its lifetime is around 700 km in length, at depths of up to 420 m. Considerable quantities of wood were necessary for the mine's operation, to provide props to support the galleries and as fuel for the furnaces. The Idrija region was equipped with dams in order to permit the transport of the wood by flotation.

The site today presents vestiges of the mining area and its outbuildings, the shafts and tunnels, the facilities for extraction by ore smelting, the pumps, the machinery and the associated equipment, and the hydraulic facilities used for generating energy or transporting wood. It also contains a specific set of urban buildings which bear testimony to mining exploitation over a long period. Finally, it includes a number of traces of historic pathways used for mercury transport.

The nominated property is divided into the main urban and industrial zone, two adjacent additional zones inside the buffer zone, and four peripheral hydraulic zones.

1) the main zone of the old town includes the following heritage elements:

- the mercury stores and the mine administration in Gewerkenegg Castle,
- the Francis shaft,
- the miners' theatre,
- the town hall,
- the secondary school for science,
- the miners' living quarters,
- the paths in Idrija linking the mine, its facilities and the stores, in particular 'Anthony's Main Road,' which leads to the entrance of a shaft dating from the beginning of the 15th century.

2) furnace 2 and the mercury extraction workshop;

3) the Kamšt water pump and the Joseph shaft, together with traces of the point of departure of the Mercury Route in Idrija;

4) the Gorenja dam;

5) the Vojsko dam;

6) the Putrih dam;

7) the Belca River dam.

ICOMOS notes that the nominated serial property is different from the two previous nominations, examined in 2009 and 2010. The Mexican mercury use site, which formed the grounds of the World Heritage Committee's decision to defer examination of the nomination (34COM 8B.40), has been withdrawn. The new serial property is centred on the mercury and its mining heritage.

History and development

Mercury and its mineral derivatives have been known and used since Greco-Latin antiquity, in small quantities, as a coloured pigment (vermilion), in jewellery making, and as an ingredient of the pharmacopoeia. The amalgamation process, based upon the ability of liquid mercury to dissolve the precious metals of gold and silver, has been known ever since this period. In the Middle Ages the Arabs described the process and they passed it on to the European alchemists. Mercury, the only metal that is liquid at room temperature, was known at the time as 'quicksilver'.

Mercury resources, which are usually in the form of an ore containing mercury sulphide (cinnabar), sometimes with small amounts of native mercury (in the metallic state), have the geological particularity of being few in number across the globe. Historically, only four or five main locations have been worked. The largest deposit is at Almadén in Spain, which has been known since ancient times; the second largest is Idrija, in present-day Slovenia, discovered in 1490. The other main mercury deposits are the mines of Monte Amiata in Italy, which have also been known since ancient times, the mines of Huancavelica (Peru), discovered in 1564, the mines in China, the existence of which became known to Europeans in the modern period, and finally the mines of California dating from the Gold Rush in the second half of the 19th century.

In the early 16th century the Idrija mine was developed under the control of the Republic of Venice, which brought in German master miners and sold the mercury produced throughout Central Europe, in the Eastern Mediterranean, and in Flanders. An initial amalgamation test for the extraction of silver was probably carried out in Venice in 1507. The powerful trading dynasty of the Fuggers, who hailed from southern Germany, gained a dominant position in non-ferrous metal mines in Europe, thanks to an agreement with the reigning house of the Habsburgs. Almadén formed part of this entity, and the extraction of mercury was revived there in around 1550, because of its use for the extraction of precious metals from deposits in South America and Central America, which were one of the main motivations for Spanish colonial expansion. Initially the resource concerned was gold, but very quickly the amalgamation process was applied to the large-scale cold extraction of silver, which required no furnaces and thus no abundant supplies of firewood. The workings in the Andes and Mexico used this process, which requires large amounts of mercury. While the workings in the Andes took advantage of the discovery of the mercury deposits at Huancavelica, New Spain had to import mercury on a massive scale from European mines.

Control of Almadén mercury extraction and the organisation of its transportation and trade then became an issue of great economic and geopolitical importance. The Spanish royal treasury acquired a monopoly in these activities in 1559. The Habsburgs then took direct control of the Idrija mines in 1575.

Remains of the terrestrial routes for mercury transport survive at the point of departure at Almadén for the ports of Andalusia, and at Idrija for the port of Trieste. The east-west mercury route and the return silver route across the Atlantic had considerable economic consequences in Spain and Europe, and in America, from the 16th century to the early 19th century. In this context, production at the Idrija mines supplemented Almadén, whenever the latter experienced production difficulties or if production was insufficient. This was the case in particular during the period 1620-1645, and again in the second half of the 18th century.

Considerable efforts were made to develop a furnace to enable intensive extraction of mercury from cinnabar in the early 17th century, particularly in Spain and in Spanish America. After a number of tests, the furnace constructed by Alonso Bustamante at Almadén in 1646 was found to be the most efficient, and it became standard equipment, particularly in the Spanish-speaking world. Almadén today has a complete and well-restored furnace of this type, whose initial installation dates back to the early 18th century.

Concern for the safety and diseases of miners exposed to mercury was first expressed as early as the 16th century in the case of the Idrija mines, and it grew in the centuries that followed. The presence of medical staff and a pharmacy is attested there in the mid-18th century. An initial work on the mercury-related diseases of miners was published in 1761. An insurance system for miners was in place at the end of the 18th century, an extremely pioneering development in this region. The problem of industrial diseases arising from exposure to mercury is a serious issue, and one which affected workers engaged both in mining and in operating the furnaces. Steps were taken at a very early stage at Idrija to reduce exposure to mercury vapours for the workers, such as the use of masks for those close to the furnaces and the use of a roster system for the jobs involving the most severe exposure. In the 17th century hot baths were used for treatment. The medical question continued to be studied in the 19th century and in the 20th century, when, for example, the miners were provided with preventive ionisation treatment.

At Almadén, forced labour was used over a long period to provide the work force. The remains of the forced labour gaol bear witness to this, together with a tunnel used to control access to the mine by the forced labourers. A large part of the museography at Almadén is concerned with the forced labourers and the health consequences of exposure to mercury (the site of the forced labour gaol, the museum of the former hospital). Furthermore, the mercury ore extraction zone extended beyond the boundaries of the property nominated for inscription on the World Heritage List, and a number of mining and architectural elements bear testimony to this fact.

In the early 19th century, there was a decrease in Mexican demands for mercury from Almadén and Idrija

because of events which affected the country, later because of the use of mercury from California, and finally because of a change in silver extraction techniques during the Industrial Revolution. It is significant that two of the principal Californian mines were given the names New Almaden and New Idrija. The early Bustamente furnaces were replaced, first at Idrija by the use of the new ČermakŠpirek furnace (1887), and then by rotating furnaces in the mid-20th century. Remains of furnaces of this type are still preserved at Idrija.

In the same tradition as its secondary school for science, Idrija acquired a school of geology in the 20th century which is today well known in Central Europe. Almadén developed a higher level of technical education related to the mercury mines. Subsequent efforts have been made both at Idrija and at Almadén to set up scientific institutions carrying out research and studies into mercury pollution and its effects on human health.

The working of mercury at the two sites ended in 1993-1994 at Idrija, and in 2002-2004 at Almadén. It is estimated that Almadén supplied about one-third of the world's mercury over a period of 2000 years of exploitation, and Idrija about one-eighth over a period of 500 years.

3 Outstanding Universal Value, integrity and authenticity

Comparative analysis

The comparative analysis in the nomination dossier begins with a comparison with international serial transboundary properties which are already inscribed on the World Heritage List, or those projects which are at an advanced stage of development. Few of the properties mentioned in the comparison have no transboundary territorial continuity whatsoever.

The nominated property belongs to the larger group of mining sites and mining towns which are present in various parts of the world. It is important to examine the type of mining exploitation, the periods of exploitation and their historic role, and finally their integrity and authenticity, in order to enable a comparison between them, and with the nominated serial property. There are currently around twenty on the World Heritage List, and around forty mining sites (including sites on the Tentative Lists) are examined in the nomination dossier. They are located in different parts of the world, and are divided up by type of extraction into categories such as mineral salts, copper and ferrous ores, precious metals and precious stones, and by the periods during which they were exploited. Almadén and Idrija are fully in line with the group of major mining sites of international significance, together with the associated mining towns. Several of these sites have important landscape aspects.

The theme of mercury extraction is not yet represented amongst the properties inscribed on the World Heritage List. No properties representing this theme other than Almadén and Idrija are included in the Tentative Lists. The single and specific theme of mercury extraction is what connects and constitutes the specific nature of the two transboundary serial properties nominated. Furthermore, the two sites provide a direct link between the mining testimony and its urban and social dimensions. They are furthermore complementary in terms of technical and scientific expertise. They have important historic links with regard to the very early European and then transatlantic market, from the mid-16th century until the early 20th century. The market and commercial distribution of mercury are represented by the silver-bearing sites of Mexico: the silver mines of the Historic Town of Guanajuato (1988, criteria (i), (ii), (iv) and (vi)), the mines of Zacatecas (1993, criteria (ii) and (iv)), and the Camino Real of Tierra Adentro and the Town of San Luis Potosi (2010, criteria (ii) and (iv)).

Finally, and as recommended by the World Heritage Committee (34COM 8B.40, point 4.a), particular attention has been paid to the mercury extraction site of Huancavelica in Peru, whose importance in mining and historical terms is comparable to that of the two nominated sites. The working of the Huancavelica site began in 1563, in association with the development of the celebrated silver mining complex of Potosi, which is inscribed on the World Heritage List (Bolivia, 1987, criteria (ii), (iv) and (vi)). The use of mercury from Huancavelica was however more wide-ranging, and it formed part of a wider market which was already supplied by Almadén and Idrija, generating very substantial revenues for the Spanish crown. The main mine of Santa Barbara and the town are separated by a distance of four kilometres. Both today contain a certain number of elements which illustrate the heritage of mercury and its mining.

ICOMOS considers that the Huancavelica site could indeed significantly reinforce the value of the nominated serial property, and in particular provide an important example of a mercury mine in the American context. However, it seems that the site of Huancavelica does not have the necessary degree of integrity, and no conservation and management policy is currently in place for this property.

With regard to the mining sites in California, they were closed in the 1970s and abandoned. Their state of conservation and their integrity seem weak. The mine at Monte Amiata near Siena in Italy played a very important role in ancient times and in the Middle Ages, but it was then abandoned until the end of the 19th century, when extraction began once again. The heritage it represents today would seem to be mainly of a museographic nature.

ICOMOS considers that the selection of the two sites in the serial nomination is justified by the comparative analysis, particularly bearing in mind the specific nature of mercury extraction in the context of general mining history, and the importance of the two sites in this field. The series

could be extended, in a limited way, to certain elements in the mining environment of Almadén, and by a complete extension dossier for Huancavelica, if this site can demonstrate that it has sufficient elements demonstrating its integrity and the management of its conservation.

ICOMOS considers that the comparative analysis justifies consideration of this property for the World Heritage List.

Justification of Outstanding Universal Value

The nominated property is considered by the States Parties to be of Outstanding Universal Value as a cultural property for the following reasons:

- Mercury is a unique metal in terms of its physico-chemical properties and of its uses in many human societies, from ancient times to the present day.
- It was once used on a vast scale, particularly for the extraction of precious metals in America, which gave rise to early and substantial international commercial, cultural and technological interchanges.
- Mercury is a relatively rare metal, whose extraction was only possible in a very small number of large mines, of which Almadén and Idrija were the largest in the world over a very long time span. Mercury extraction is a specific and exemplary example of the relationship of man with nature.
- Mercury has toxicological properties which make it dangerous to handle, which was one of the reasons which led to its abandonment at the end of the 20th century. The great mines of the past, such as Almadén and Idrija, ceased to function, and have become testimony to a technical and industrial culture which has disappeared.
- The two mines provide comprehensive cultural testimony, over a long time span, of extraction techniques, social and economic conditions, and the architectural and urban environment, together with the associated cultural and social traditions.

The justification of the serial approach is based on the fact that Almadén and Idrija were the two most important mines in the world for mercury extraction, that they had historic links, and that together they have preserved a diversified and unique cultural and technical heritage relating to mercury extraction.

ICOMOS considers that this justification is appropriate, because the two mining sites in the serial nomination are the most important for mercury extraction, both in quantitative terms and in terms of historic time span. They adequately represent the various aspects of mercury culture, both in technical, industrial and economic terms and in urban, social, environmental and toxicological terms.

Integrity and authenticity

Integrity

Almadén

The nominated property has retained since the 16th and 17th centuries traces of its mining function and the associated evidence of the exploitation of mercury, its processing, and its transport, as well as significant urban and architectural elements of the development of the mining town of Almadén. The property is set in a mining and urban landscape which evokes its history, linked to the beginnings of the 'Mercury Route' to Seville and then to the Americas.

The vestiges of mining illustrate the evolution of the techniques of mercury exploitation and processing up to and including the 20th century. A sufficiently significant series of elements of tangible testimony has been conserved for its history to be represented with coherence and integrity.

The urban planning perceptible today is close to that of the 18th century. Some housing has been modified, and other buildings have been largely destroyed (house of the mine superintendent, the forced labour gaol).

Idrija

Like Almadén, Idrija bears witness to mining techniques throughout the different periods of its exploitation, up to its closure beginning at the end of the 1980s. Efforts to protect the mining elements as heritage began in 1952. These elements are extremely varied: shafts and galleries, machinery, hydraulic systems with dams for the transport by flotation of wood (for props and as fuel), industrial buildings and urban planning linked to the mine, and remains of the mercury transport routes. They provide a meaningful insight into the history of mercury mining at Idrija and its transport system.

ICOMOS considers that the two nominated sites form a coherent and complementary whole, which adequately illustrates all the technical, cultural and social aspects associated with mercury extraction. They are the two most important sites for this activity which have been preserved, at once in terms of volumes produced, historic time span and completeness of testimony. The integrity of the serial nomination has been justified.

Authenticity

Almadén

The presence of underground mining elements dating from the 16th and 17th centuries has been authenticated.

A pair of Bustamante furnaces, the technical design of which dates from the 17th century, have been restored by the Spanish Historic Heritage Institute, in accordance with the principles of the Venice Charter. The restored parts are clearly identified.

The functions of some of the urban buildings have been changed from their original purpose and have undergone substantial alterations (e.g. Retamar Castle). However, most have a good level of architectural authenticity.

Idrija

All the mining elements and their technical annexes are authentic. Most of the water control systems date from the 18th century, the most recent from the start of the 19th century.

The most noteworthy architectural and monumental elements have in general a high degree of authenticity. The town itself has, however, undergone changes that affect its built structure and its urban layout.

ICOMOS considers that the conditions of integrity and authenticity have been met.

Criteria under which inscription is proposed

The property is nominated on the basis of cultural criteria (ii), (iv) and (v).

Criterion (ii): 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;

This criterion is justified by the States Parties on the grounds that the trade and transport of mercury, which became intercontinental from a very early date, generated important interchanges, which were scientific, technological and cultural. This was particularly the case for the use of mercury in the amalgamation process, which led to transfers of techniques and expertise between America and Europe, particularly in the 16th and 17th centuries. The use of mercury for the extraction of silver in America gave rise to unprecedented commercial flows and financial developments. At a later period, the creation of academies of science and interchanges of scientists and technical processes, particularly in Europe, created an international scientific and professional community. Mining traditions also influenced the creation of towns containing emblematic and singular buildings.

ICOMOS considers that the new definition of the serial nomination is essentially centred on mercury extraction, and that it only partially illustrates the economic and cultural interchanges referred to, particularly those linked to the development of the amalgamation process in America. However, there were indeed interchanges between the various mercury production sites with regard to the metal extraction processes, and they took place at a very early stage on a European and then an intercontinental scale, because of the nature of the mercury market and the specificity of the technical and scientific problems linked to its extraction and use.

ICOMOS considers that this criterion has been justified.

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

This criterion is justified by the States Parties on the grounds that the mines of Almadén and Idrija were and remain the largest mercury mines in the world. Closed relatively recently, they today represent the most significant events regarding mercury exploitation by man, in terms of mining techniques and impact on the environment, in terms of trade and transport, and in urban and social terms. The metal extraction processes involving the use of furnaces are specific to mercury, and were innovative, from the mid-16th century to the mid-19th century.

ICOMOS considers that the two mining sites of Almadén and Idrija constitute the most important heritage left behind by the intensive extraction of mercury, particularly in the modern and contemporary periods. This dual testimony is unique, and illustrates the various industrial, territorial, urban and social components of a specific socio-technical system in the metal production industries.

ICOMOS considers that this criterion has been justified.

Criterion (v): be an outstanding example of a traditional human settlement, land-use or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;

This criterion is justified by the States Parties on the grounds that the nominated sites constitute an outstanding example of the interaction of man with his environment, an environment which is today vulnerable because of the closure of the mines and mercury pollution.

This human intervention gave rise to important social aspects, through a workforce that included forced labourers and prisoners at Almadén, through the difficult life of the miners, and through the early consideration given to occupational diseases at Idrija.

Many elements of intangible culture are associated with the specific nature of the human communities who participated in the exploitation of the mines. The nominated sites also bear witness to the continuous scientific and technological efforts made by man in his relationship with the environment.

ICOMOS considers that the two nominated sites constitute an example of a distinctive form of human settlement for the intensive extraction of mercury, reflected in its underground, industrial and urban elements, which is specifically recognised by criterion (iv). There was moreover a strong and lasting interaction between man and his environment because of the

toxicity of mercury. This is why mercury production is currently being abandoned worldwide. Clearly this expresses a special relationship between man and nature, and ICOMOS considers that the pollution phenomena which are linked to the two mining sites form an integral part of the property today. However, the arguments put forward are insufficient to fully demonstrate criterion (v), as only mercury pollution constitutes a truly distinctive element compared with other types of mining uses of the territories.

ICOMOS considers that this criterion has not been justified.

ICOMOS considers that the serial approach is justified.

ICOMOS considers that the nominated property meets criteria (ii) and (iv) and conditions of integrity and authenticity and that Outstanding Universal Value has been demonstrated.

Description of the attributes

Mercury is a metal with unique physico-chemical properties, and it is only naturally abundant in a few rare deposits. Almadén and Idrija are the world's two largest mercury mines. They were exploited continuously over a long time span. Exploitation was particularly intense from the mid-16th century to the early 19th century, as part of intercontinental interchanges carried out with a view to extracting precious metals.

Almadén and Idrija bear witness to a specific mining and industrial system, dedicated to the production of mercury. It is illustrated by various types of furnaces designed for the smelting of mercury ore, and a large number of galleries, shafts, hydraulic systems, industrial and commercial facilities, storage areas, and surviving remains of paths used for the transport of the ore and the mercury, etc.

Through their urban developments, the two mining sites bear cultural testimony to the social and economic conditions of mercury extraction, and to the educational and medical traditions linked to the needs of the mercury mines.

Mercury has toxicological properties which make it dangerous to handle, and mean that its residues pollute the environment, which led to the decline in its use at the end of the 20th century. The great mines of the past, such as Almadén and Idrija, have ceased to function, and have become testimony to a technical and industrial culture which has disappeared

4 Factors affecting the property

Development pressures

Almadén

Cessation of mining activities at the end of the 1990s had important social consequences. An industrial reconversion zone has been put in place. More recently, several urban development plans have been launched, or are being considered, as part of the *Plan de Ordenación Municipal (POM)* (Municipal General Plan). An extremely visible urban facility has just been built on the hill, which required a substantial excavation opposite the property, and at the edge of the buffer zone. The POM provides for an extension of the town and new infrastructures in the buffer zone, including one immediately on the edge of the main urban property. The plan also provides for a new by-pass road. In the additional information sent by the State Party (February 2012), it was announced that the sociocultural centre, which is clearly visible from the property, would be hidden by a screen of trees.

ICOMOS considers that the projects (under way or being considered) referred to in the Municipal General Plan (POM) could have an impact on the visual integrity of the property and its environment.

Idrija

The pressure of economic development needs is limited naturally by the geography of the valley. Urban development pressure exists, however, under the control of the town's new land-use plan (2007). Recent industrial development has centred on new technologies, and its visual impact remains compatible with the values of the property.

Tourism pressures

Almadén

Industrial tourism is small-scale at present.

Idrija

The town is primarily a summer hiking centre. Industrial tourism related to the mines is small-scale at present.

Environmental pressures

Almadén

The Alcudia valley in which the mines and the town are situated is a region with an important natural heritage in terms of flora and fauna. A large part of the buffer zone consists of an ornithological reserve. The landscape and environmental changes linked to the mine are being dealt with under a natural environment project (2005). The main risk for the environment (soil, water table, air quality etc.) is the presence of mercury, as a result of slag from the mine.

Idrija

The mining activity has had serious adverse effects on the natural environment. 500 years of mine working have led to a high level of soil pollution by mercury and

radioactive radon (up to 900 mg of mercury per kilogram). These effects have however declined rapidly following the closure of the mines (1995). A great deal of slag has been discharged into the river, causing water pollution extending as far as the Adriatic Sea. Slag was also used to close up some disused shafts and galleries, and is thus continuing to generate a certain amount of water pollution.

Natural disasters

Almadén does not seem to be exposed to major natural disaster risks. The possibility of exceptional events such as tornadoes or very severe storms however cannot be excluded, as in the rest of Spain.

Idrija

The property is situated in a zone classified as prone to earthquakes.

Impact of climate change

Up to now there is no perceptible or expected effect linked to climate change on the two sites.

ICOMOS considers that the main threats to the properties are the urban projects at Almadén, in the buffer zone, or affecting the property's landscape environment.

5 Protection, conservation and management

Boundaries of the nominated property and buffer zone

Almadén

The nominated property has an area of 49.67 ha and it is occupied by 852 people.

The buffer zone has an area of 1,117 ha.

Idrija

The various parts of the property have the following areas: 1) 47.33 ha, 2) 0.6 ha, 3a) 1.33 ha, 3b) 0.28 ha, 4) 0.71 ha, 5) 1.21 ha, 6) 0.49 ha, 7) 2.49 ha, representing a total of 54.44 ha. The property is occupied by 3,871 people.

Parts 1), 2) and 3) of the property are surrounded by a single buffer zone of 563.60 ha, recently increased in size (January 2012). The other parts are hydraulic facilities in a protected forest or rural environment; they were recently (January 2012) allocated a buffer zone, whose surface area needs to be specified.

ICOMOS considers that the boundaries of the nominated properties and the associated buffer zones are appropriate.

Ownership

Almadén

The mines themselves, the adjacent spaces, and the section of the Mercury Route identified at its point of departure are the property of the private company *Empresa Minas de Almadén y Arrayanes S.A.*, as are the Miners' Hospital and the San Miguel Chapel, situated in the town.

The public spaces of the town and part of the buildings identified as having historic and heritage value are the property of the Municipality of Almadén (Castle, house of the mine superintendent, mining academy, bullring).

The other elements with historic and heritage value are the property of the Catholic Church (San Sebastián el Nuevo Church) and of the University (archaeological site of the forced labour prison).

The great majority of the housing is private property.

Idrija

The cultural property of national interest is covered by an inventory of 34 elements, whose ownership is divided up as follows:

- the State (two hydraulic elements);
- the Municipality and local authorities (seven elements, including the Theatre, the House of the Miners, part of the Castle, the Mercury Store);
- public institutions: the maternity hospital (three elements associated with the Castle), the Museum (four elements associated with the Castle and the hydraulic system heritage); the Gorica Hydroelectric Company (three hydraulic elements), and miscellaneous (one element in the Castle);
- the Idrija Mining Company, which is a private company (fourteen elements, mainly mining-related and industrial).

Protection

Legal Protection

Almadén

The set of mining buildings and the set of urban buildings are under the legal protection of:

- the Spanish Constitution defining the Organic Laws and the Status of the Autonomous Communities (27 December 1978),
- the Spanish Historic Heritage Act (16/1985) and its regional application acts and decrees (Act 4/1990 of Castilla-La Mancha, and Decree 7/2005 in particular),
- the Local Territorial Authorities Regulation Act (7/1985),
- the Territorial Regulation Act (6/1998),
- the Protected Natural Spaces Act (9/1999).
- The new Regional Land Use and Town Planning Law (1/2010).

The set of mining buildings was declared a Property of Cultural Interest on 29 October 2007. It includes an inventory of the site's technical, industrial, and architectural elements. Several sites or monuments had already received this official protection previously: the Bustamante furnaces, the Castle, the Bullring, and the Miners' Hospital.

The town centre and its monuments are covered by the Special Municipal Protection Plan.

Part of the buffer zone is protected as a European natural ornithological reserve (*Natura 2000*); another part belongs to the former mining site, which is protected by its cultural interest property status.

The buffer zone is divided between two municipalities: it is thus subject to the Municipal General Plan (POM) of Almadén, and the protected rural zone of Chillón.

In its answer in February 2012, the State Party (Spain) sets out the whole of the legal structure in place, and the authorities in charge of applying the legal measures at national, regional and local levels. It also indicates that the recommendations made by ICOMOS in December 2011 about better protection of the buffer zone, with regard to urban projects in the POM, were accepted by a municipal decision dated 26 January 2012. A recapitulative map of the subzones of protection in the buffer zone has been provided, together with a map of the POM including the boundaries of the property and buffer zone.

ICOMOS recalls that it is necessary to inform the World Heritage Committee of any urban project which could affect the visual integrity of the property, particularly at Almadén where real estate projects are being considered. This must be done at a sufficiently early stage, in accordance with Paragraph 172 of the *Operational Guidelines*.

Idrija

The mining ensembles and the urban ensemble are under the legal protection of:

- the Cultural Heritage Protection Acts (7/1999 and 96/2002) and their implementation decrees;
- the Administrative Procedures Code (24/2006);
- the Territorial Planning Act (33/2007);
- the Building Acts (102/2004 and 14/2005);
- the Nature Protection act (39/2006);
- the Decrees relating to the Creation of the Mining Site Landscape Park (11/1993 and 37/1995);
- seven Municipal Decisions on the town's cultural and historic heritage.

The technical and industrial heritage of Idrija and the surrounding area has been declared a Cultural Monument of National Importance (Decrees 66/2001 and 55/2002).

A list of elements of local interest exists, defining the extent of local protection. The recapitulative municipal document is the Municipal Space Plan or Municipal General Plan of the Town of Idrija (TPMP), approved in January 2011, and effective since June 2011. In the additional documents it provided in February 2012, the State Party indicates that this document governs the conservation of the property and its buffer zone, both from a strategic and operational viewpoint.

Traditional Protection

The dwellings are in most cases private property and are maintained by their owners.

The Catholic Church carries out direct or delegated management of the religious buildings at its disposal at Almadén and Idrija.

Effectiveness of protection measures

The additional information provided by the State Party (Spain) provides clarification of the way protective measures for the property and its buffer zone have been incorporated into the Municipal General Plan (POM) of the town of Almadén.

The additional information provided by the State Party (Slovenia) indicates that the protection of the buffer zone has been taken into account by the existing regulation, which had already been set up for the protection of the property.

The protection measures for the two properties and their buffer zones seem to be sufficiently effective.

ICOMOS considers that the legal protection is appropriate for the two sites, and that guarantees have been provided about the allowance made for the buffer zones of the property in the municipal spatial plans of the two towns Almadén and Idrija. ICOMOS recalls however that it is necessary to inform the World Heritage Committee of any urban project, particularly at Almadén, which could affect the visual integrity of the property, in accordance with Paragraph 172 of the *Operational Guidelines*.

Conservation

Inventories, recording, research

Almadén

Inscription as a property of national cultural interest led to the creation of an inventory by the Spanish Heritage Institute. This inventory includes a description of the state of conservation.

The mining company has undertaken a substantial programme to survey the mine and maintain its cultural elements. The survey constitutes the documentary and material base for the museography and the mining park project. The company has also contributed to the creation of the Francisco Javier de Villegas Foundation,

which is in charge of the mine museum and the mining archives (San Rafael Hospital).

The Technical University is also contributing to the museography and archaeological knowledge of the forced labour gaol.

Idrija

The documentation work is being carried out in conjunction with the surveillance and maintenance activities.

The inventories and documentation relating to the mining heritage of Idrija are available at both national and regional level (Institute for the Protection of the Slovenian Cultural Heritage at Ljubljana and its Regional Office at Nova Gorica).

The Museum has archive material and documentation.

The Idrija mining company also has its own archives and documents.

The additional documentation of February 2012 includes a rich collection of illustrations of the Idrija site, but it would be advisable to carry out a thorough inventory of the technical and industrial heritage which is in fact present, for both sites, so as to ensure high-quality conservation and enhancement.

Present state of conservation

Almadén

The Bustamante furnaces were recently restored and are in a good state of conservation. The remaining two gates of the mining site have been restored, and elements of the Route are clearly identifiable. The monuments and urban buildings are generally in a good state of conservation.

Idrija

Many restorations have been undertaken over recent years for components of the built structure, the technical and civil engineering elements of the mine, and the hydraulic elements.

Active Conservation measures

Almadén

Each of the management partners implements the relevant part of the conservation plan: the Foundation and the Mining Company for the mining park and its activities; the Municipality for the urban space and the monuments belonging to it; and the University and the private partners for the other real-estate and archaeological elements of the property.

Idrija

Substantial conservation and renovation activities have been carried out recently, including restoration of the main monuments and restoration of Anthony's Main Road. The Municipality is coordinating the introduction of current and future conservation measures.

Maintenance

At both sites, the public urban parts are maintained by municipal services. The other parts are directly maintained by the owners, or by the contractual occupiers.

Effectiveness of conservation measures

ICOMOS considers that the conservation measures at the two sites are satisfactory, and they seem to be effective. The conservation situation has improved significantly over the last few years, particularly as regards urban conservation both at Almadén and Idrija. Efforts are also being made in both cases in the conservation of the mining and industrial sites, to enable visits by the public.

ICOMOS considers that the conservation measures for both sites of the property are adequate.

Management

Management structures and processes, including traditional management processes

Almadén

The management structure consists of the grouping together of several public and private institutions which are either in charge of specific aspects of the management of the property or have cultural functions:

- the mining company MAYASA,
- the Francisco Javier de Villegas Foundation (FJV), which is in charge of the Museum of the San Rafael Royal Hospital, the historic archives of the mines, and the cultural management of the mining site,
- the Municipality of Almadén,
- the University, which manages the historic mine museum and the royal forced labour prison interpretation centre,
- the Almadén Office, which has a cross-functional role in promoting the town's economic and cultural activities,
- the Almadén Mining Academy,
- the Almadén Mining Park (2008), in which the Municipality, the FJV Foundation and the Polytechnic School participate.

Idrija

The structure for the direct management of the property is based on two main partners:

- the Municipality of Idrija, which is in charge in particular of the Museum of Idrija,
- the structure in charge of closing down the Idrija mines.

The public institutions in charge of monitoring conservation and protection are:

- the Slovenian Cultural Heritage Protection Institute, Regional Office of Nova Gorica,

- the Slovenian Nature Conservation Institute, Regional Office of Nova Gorica.

The local institutions recently put in place are:

- the Mercury Research and Information Centre (2008),
- the Idrija Heritage Centre (2010),
- the Heritage of Mercury Interpretation Centre (in preparation).

An International Committee to coordinate the activities of the two States Parties was created in 2008. It has met regularly since it was set up, and coordinates the management of the properties nominated for serial inscription. Common initiatives have been set up by the Committee: contacting of other sites under consideration for an extension of the series, organisation at Idrija of an international conference on the environmental and socio-economic impact of the extraction and use of mercury (2009), and more generally scientific coordination between the research institutes studying the mercury risk at both towns (see Risk Preparedness).

Policy framework: management plans and arrangements, including visitor management and presentation

Almadén

The direct management of the property is covered by the following main plans:

- the FJV Foundation's management plans for the Hospital Museum and the mining archive centre,
- the Municipal General Plan of the Almadén Mining Park, under the auspices of the FJV Foundation and in association with other partners of the property,
- the Special Municipal Plan for the Protection of the Historic Town Centre (ARI, 2010),
- the university plans and programmes, and in particular the mercury risk laboratory,
- the mining territory pollution clean-up plan.

The other plans and measures relating to the property and the buffer zone are:

- the catalogue of protected properties and areas (CAT),
- the Municipal General Plan (POM), which is currently being revised.

Idrija

The management of the property is covered by the following main public plans:

- the National Programme for the Rehabilitation of the Mining Site of Idrija, set up when the closure of the mines was being considered (1987),
- the Regional Development Plan (Gorica, 2007-2013),
- the Emerald Tourism Route,
- the Sustainable Development Plan for the Italo-Slovenian border,
- the regional tourism development plan ("Overture"),

- the municipal economic and tourism development plan ("Revit"),
- the Idríja Long-Term Territorial Plan (2007, revised in 2011, under the name TPMP).

The Idríja Integrated Cultural and Natural Heritage Protection Programme was approved in October 2010. Drawn up under the auspices of the Municipality, it establishes a basis for coordination between the institutions and organisations in charge of the property, and ensures synthesis and harmonisation of the various plans and programmes. Its role is effectively that of a property management plan for Idríja

Risk preparedness

Almadén

The main risk is related to residual mercury and its possible effects on the environment. The facilities have been decontaminated. A programme of environmental surveillance of mercury levels is in place. A substantial pollution clean-up programme (2008) sets out soil pollution clean-up measures on the mining site (residual slag deposits). The results are encouraging, as the mercury levels recorded in the air and in water tables are now close to zero.

There are today two research and study centres at Almadén related to residual mercury pollution:

- the Institute of Applied Geology, Matelles Pesados biochemistry laboratory (University of Castilla-La Mancha),
- the National Mercury Decontamination Technical Centre (a governmental organisation).

Idríja

A system has been put in place for the surveillance of levels of mercury in the water. The seriousness of the illnesses of former workers is proportional to the number of years of employment at the mine.

Today Idríja has a Mercury Research Centre which looks at the effects of mercury on the environment and on human health.

The mine closure plan was accompanied by a soil control programme, to protect against a weakening of the built structure as a result of the presence of underground galleries, particularly as regards the historic town centre.

Involvement of the local communities

The local communities are mainly involved through the town councils, which in both cases play a major role in the management and conservation of the properties.

A certain number of citizens' associations are involved in aspects of the conservation of the cultural and natural heritage, on both sites.

Resources, including staffing levels, expertise and training

Almadén

The Culture Ministry intervenes by means of its budget, which is guaranteed by the principle of 1% earmarked for culture. The same approach applies to the cultural heritage of the Autonomous Region of Castilla-La Mancha. The Municipal budget also contributes to the management of the property.

The Mining Park of Almadén is financially supported by the Regional Government, under the auspices of the Department of Industry and Labour. It is also supported by the European Community as part of the overall project with Idríja.

The Javier de Villegas Foundation has been active at Almadén since 2004. Its resources come from public subsidies (State, Region), for specific research and/or conservation programmes.

The University receives funds for its management of the Museum and the forced labour prison site. It also receives specific funds for its Mercury Research Centre.

Tax incentives are offered for all investments in the maintenance and restoration of heritage elements belonging to private individuals, and for all private contributions to actions in the cultural heritage field.

The human resources consist in the first instance of the specialist staff of the Ministry (Spanish Historic Heritage Institute). The Technical University College of Almadén provides specialists in mining questions and in technical museography. It offers a mining engineering course.

The University of Castilla-La Mancha offers training courses in construction engineering, architecture and cultural heritage.

Idríja

The Municipality devotes a substantial proportion of its annual budget, between 8% and 15%, to property conservation operations and to the town Museum. It receives governmental aid in the form of finance and the secondment of staff with scientific and technical expertise (curator of the Museum).

The European Union is also involved in the overall programme in conjunction with Almadén.

The Slovenian Cultural Heritage Law includes measures to encourage private investment in heritage conservation.

The museographic and tourism activities generate funds for the property.

The expertise is provided by the Slovenian Institute for Cultural Heritage Protection, which organises training. Locally, the Geology Institute has scientific specialists;

there are also museum specialists and guides in the Museum trained in the specific aspects of the mining heritage. The Mining Park has a staff of around fifteen people. The Mining Company has its own maintenance and surveillance personnel.

Effectiveness of current management

ICOMOS considers that a management system is in place for the two sites forming the nominated serial property. In both cases, the system seems to be under dual control: firstly by the municipality, and secondly by one or more institutions directly connected to the mining past or to educational activities associated with mining, and which still remain in place today, in forms which have been renewed to a greater or lesser extent.

At Almadén, coordination between the urban development bodies (POM plan) and the bodies in charge of protecting and conserving the property should be stepped up. The property and its protection have only been taken into account at a very late stage, at the explicit request of ICOMOS (letter of 12 December 2011).

Decision 34COM 8B.40 point 4. b) by the World Heritage Committee concerning more assertive management of pollution and health questions linked to residual mercury, being a fully fledged component of the mercury mines heritage, has been followed, in terms of both institutions and programmes. A more thorough assessment would however require the views of international specialists in such questions.

The International Coordination Committee has been set up and has functioned, particularly when the earlier dossiers were assessed (2009-2010). The States Parties have provided additional information (February 2012) about its regular operation, and the diversity of its overarching responsibilities.

ICOMOS considers that particular attention should be paid to the coordination between the municipal services in charge of town planning, and the organisations in charge of the protection and conservation of the properties, particularly at Almadén.

ICOMOS considers that the management system for the two properties is on the whole appropriate, but that the coordination between the municipal services in charge of town planning, and the organisations in charge of the protection and conservation of the property at Almadén should be reinforced.

6 Monitoring

The two States Parties declare that they have based their monitoring of the property on the same general criteria: the state of conservation, a study of possible environmental impacts on the property, and the value of the elements forming part of the property.

Periodical monitoring and assessments are carried out for the following:

- the mercury mines and the possibility of potentially toxic residues of mercury, the surveillance of the atmosphere (Polytechnic University of Almadén, the mining companies of Almadén and Idrija);
- the technical and civil engineering elements of the mines, the machines (Polytechnic University of Almadén, the mining companies of Almadén and Idrija);
- the architectural features and surveillance of potential invasive elements, such as new buildings (national ministerial institutes, regional delegations).

Four tables of indicators are proposed, indicating the intervals at which checks are made, and the organisation in charge:

- state of conservation of elements of the properties directly related to the establishment of the value of the Heritage of Mercury;
- evaluation of the effectiveness of management system measures;
- evaluation of the factors affecting the state of conservation of the properties;
- evaluation of the degree of sustainable development of the properties and their buffer zones in connection with regional programmes.

ICOMOS considers that the monitoring of the component elements of the serial property is satisfactory in principle; it must however lead to effective decisions concerning the monitoring of visual integrity at Almadén.

7 Conclusions

ICOMOS considers that the Outstanding Universal Value of the property "Heritage of Mercury. Almadén and Idrija" has been demonstrated, and that it meets criteria (ii) and (iv).

Recommendations with respect to inscription

ICOMOS recommends that Heritage of Mercury. Almadén and Idrija, Spain, Slovenia, be inscribed on the World Heritage List on the basis of **criteria (ii) and (iv)**.

Recommended Statement of Outstanding Universal Value

Brief synthesis

Mercury is a relatively rare metal, whose use has long been irreplaceable in a variety of technical, chemical and industrial processes. It has only been produced in substantial quantities and over a long period by a small number of mines worldwide, of which the two largest, until recent times, were at Almadén in Spain and Idrija in Slovenia. These two mining towns, whose origins date from ancient or Medieval times, demonstrate the lengthy

period over which a socio-technical system of extraction specific to this metal was in operation, and the process of evolution it underwent. Controlling mercury extraction enabled control of the market, which very quickly became intercontinental in scope because of its decisive role in the extraction of silver from deposits in the New World. A heavy metal, which is liquid at room temperature and has very specific chemical and physical properties, mercury is also a pollutant, which is dangerous for human health. The two sites contain technical remains of large numbers of mine shafts, and their galleries and surface facilities, with artefacts which are specific to the extraction of mercury-bearing ores; they also include significant urban, monumental and infrastructure elements and material and symbolic materials associated with the life styles and social organisation of mercury extraction.

Criterion (ii): Mercury extraction took place in a very limited number of mines, of which the two largest were Almadén and Idrija. From the Renaissance period in Europe, the activity took on an international dimension. Its worldwide strategic importance increased steadily, particularly because of its role in the working of gold and silver mines in America. The interchanges were at once economic, financial and related to technical expertise.

Criterion (iv): The mining sites of Almadén and Idrija constitute the most important heritage left behind by the intensive extraction of mercury, particularly in the modern and contemporary periods. This dual testimony is unique, and it illustrates the various industrial, territorial, urban and social elements of a specific sociotechnical system in the mining and metal production industries.

Integrity

The mining sites of Almadén and Idrija form a coherent whole with complementary components, satisfactorily illustrating all the technical, cultural and social aspects associated with mercury extraction. The elements are present in sufficient number to enable satisfactory interpretation. These are the two most significant sites for this activity to have been preserved, in terms of volumes produced, historical duration, and the completeness of the evidence provided. The integrity of the serial property has been justified.

Authenticity

At both sites, the presence of mining infrastructure elements both underground and on the surface, the presence of technical artefacts linked to mining extraction, its upstream needs (hydraulic energy, wood) and its conversion into “quicksilver” (furnaces), its transport and its storage are authentic. This also applies to the urban and monumental elements, and for the testimony to the miners’ working conditions.

Management and protection requirements

The protection measures for the sites are satisfactory; in both cases they have led to municipal general plans of land use and the control of construction works projects which could affect the sites. These urban and rural planning measures also apply to the buffer zones. At Almadén however, the existence of projects which could have a visual impact on the property and the belated inclusion of the property and its boundaries in the municipal general plan demonstrate the need for closer cooperation between the municipal authorities and the property management entity. For both sites, a satisfactory local management system exists, and the overarching International Committee for the coordination of the serial property has demonstrated that it functions satisfactorily.

ICOMOS recommends that the States Parties give consideration to the following:

- Carrying out a thorough inventory of the technical and industrial heritage elements which are actually present, for the two sites, in order to ensure high-quality conservation and enhancement;
- At Almadén, reinforcing the cooperation between the municipal authorities in charge of the General Plan and the property management authority;
- At Almadén, confirming that maintaining the visual integrity of the property and its environment is properly taken into account with regard to the various urban projects being considered in the town. It is also necessary to inform the World Heritage Committee of such projects at a sufficiently early stage, in accordance with Article 172 of the *Operational Guidelines for the Implementation of the World Heritage Convention*;
- At Idrija, specifying the surface areas of the new buffer zones, following the recent redrawing of their boundaries (January 2012).



Map showing the location of the nominated properties



View of Almadén and the mine



Almadén - San Aquilino tower



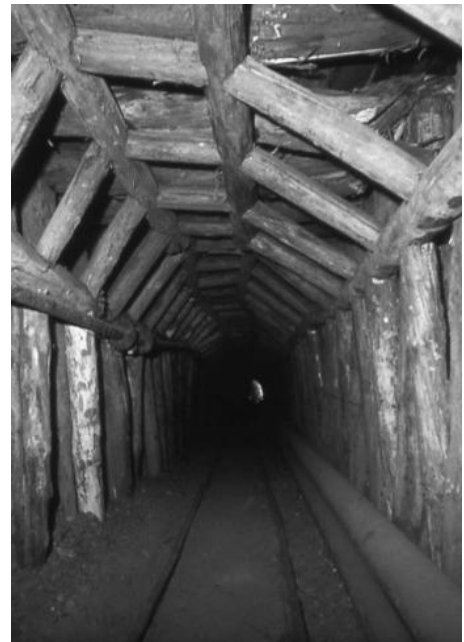
Almadén - Mining Academy building



General view of the city of Idrija



Idrija - dam



Idrija – view of a gallery