Humberstone and Santa Laura (Chile)

No 1178

1. BASIC DATA

State Party: Republic of Chile

Name of property: Humberstone and Santa Laura Saltpeter Works

Location: Province of Iquique

Date received: 16 January 2004

Category of property:

In terms of the categories of cultural property set out in Article 1 of the 1972 World Heritage Convention, this is a *site*.

Brief description:

In the remote desert Pampa, one of the driest deserts on earth, thousands of men lived and worked for over sixty years from 1880 to process the largest deposit of saltpeter in the world, producing the fertiliser sodium nitrate that was to transform agricultural land in North and South America, and Europe, and produce great wealth for Chile.

Humberstone and Santa Laura works represent over 200 saltpeter works that once existed, where workers, drawn from Chile, Peru and Bolivia, to this hostile environment, lived in company towns and forged a distinctive communal Pampinos culture, manifest in their own rich language, creativity, and solidarity, and above all in pioneering struggles for social justice, that had a profound impact generally on social history.

2. THE PROPERTY

Description

The two abandoned saltpeter works lie in the Tamarugal Pampa, 47 km from the port city of Iquique. The two works are 1.5 km apart, separated by a road, Route A-16. Together they cover 585 ha and have a linear boundary of 10.7 km. A buffer zone of 12,055 ha surrounds both properties.

Saltpeter – or sodium nitrate – deposits are found in an arid, desert, *altiplano* (high altitude plateau) in the far north of Chile, in the regions of Tarapacá and Antofagasta, between Pisagua in the north and Taltal in the south. The Pampa, as the area is known, at an altitude of between 1,000 and 1,200 m, lies between the High Andes Mountains to the east, and in the west, the Coastal Range Mountains that runs the length of Chile with altitudes of up to 2,000 metres. To the south the Pampa becomes the Atacama Desert.

The porous Pampa filters water coming down from the Andes Mountains. Near the coastal ridge, the water formed small lakes in the impervious granite-like rock, giving rise to 'saltpans' due to the evaporation of water, and 'saltpeter' beds in fissures between the hard and softer rocks.

The Pampa is one of the driest deserts in the world with virtually no annual rainfall. There are also large differences in temperature between day and night from around 30 C in the day to 2 C or below at night.

The mining of saltpeter begun at the foot of the eastern edge of the Coastal Range, first as a base for manufacturing explosives and then more profitably as a fertiliser that was exported around the world. Defying the extremes of climate, 200 works to mine and process the saltpeter, with towns to house the workers, and railways to transport the powder to coast, were established in an intensive period of around 50 years from 1880.

The huge extent of the deposits, the high grade and thickness of the saltpeter veins, turned the Pampa into the main producer in the world of natural nitrate. In 1910, Chile produced 65% of the world's nitrogenized fertiliser and the saltpeter industry accounted for 80% of Chile's exports. At the height of its prosperity, some 21% of the urban population of the country were living in the mining towns. During the 1920s, competition from synthetic nitrates in Europe led to the closure of many works and by 1933 most of the industry had come to an almost complete standstill.

The Humberstone and Santa Laura Saltpeter works are two that have managed in part to survive the asset stripping that followed the decline of the nitrate industry. The Humberstone work is also atypical in having investment made in it in the 1940s (see ***History*** below).

In spite of their close proximity, the Humberstone and Santa Laura Works were originally two independent works, which over the years amalgamated with ten other saltpeter mines. The two works complement each other: whilst in Santa Laura the remains of the saltpeter processes are still evident, in Humberstone the urban settlements have survived. None of the buildings are now in use apart from some bathrooms restored for visitors and a reception building.

Together they represent the technical and social systems that created great wealth and prosperity for some and arduous, communal living for others. The *Pampinos*, those who live in the Pampa, are now seen as pioneers in the social struggle for better working conditions, and their distinctive and creative culture is celebrated in print and film. The saltpeter industry as a whole was a key part of the industrial revolution and made a major contribution to the agricultural revolution.

The main features of the nominated sites are tangible remains and intangible associations as follows:

- *Humberstone buildings*
  - Industrial equipment
  - Living quarters
  - Main square & community buildings
- *Santa Laura Buildings*
  - Industrial equipment
  - Impact of saltpeter on Chilean and world economy

- Pampinos culture and its social impacts

These are considered separately:

➢ *Humberstone buildings:*

The Camp (as the town was known) was laid out in a regular grid pattern intercepted by a diagonal railway. The Camp was built in stages and the remaining buildings reflect various architectural styles. The focus of the town was the Main Square around which were clustered the communal buildings.

- Industrial equipment

The industrial sector has mainly been demolished. Its 40 m chimney, industrial sheds, constructed out of Douglas Fir and corrugated iron sheets, and tailing pikes (the large mounds of residue of the nitrate process) are all that remains.

- Living quarters

The houses were simple, single storey, structures built of Douglas Fir, with stuccoed walls and sheet metal roofs. There were semi-detached or corridor houses for married workers, with a covered veranda running the length of the front, enclosed quarters for bachelors controlled by guards' houses, and larger houses for professionals, with arched porches. As well as the surviving houses, some 15,000 square metres of living space have been demolished.

- Main square & community buildings

The main square covered a 50 metre square and was delineated by banks and fences. It offered shade from a pergola, and darob and Tamarugo trees. Most of the buildings around the square were constructed between 1934 and 1936 in the 'swan song' for the industry.

Facing the square are:

- The Market, a one storey concrete block building with a clock tower, which gives access to an enclosed yard of shops with a central fountain.
- The Theatre of Art Deco design built of rendered timber. The seats, floor and ceilings have been recently restored.
- The General Store with bakery and cold storage.
- The Swimming Pool, built of bolted sheets of iron, with a diving board, changing rooms, terrace and garden.
- The Hotel and social club, a single storey building built of wood with stuccoed walls, still contains part of the bar furniture.
- The Chapel built of Douglas fir with a shallow overhanging metal sheet roof and large paned windows at the east and west ends.

Elsewhere in the town the following buildings survive: Administration House & Canteen built in 1883 in British Colonial style with covered veranda running round two sides, a Hospital, School, Boy Scout centre, Nursery, Basketball, Tennis courts, and a Soccer Pitch.

➢ *Santa Laura Buildings*

All the living quarters have been demolished and only some of the urban buildings survive. These are the Administration House, which is similar in style to the one at Humberstone, and the School. The Main Square with its central pergola also survives.

- Industrial equipment

The basic saltpeter processing system consisted of underground silos (*buzon*) to store the mined ore, crushers for the ore, leaching tanks to heat and dissolve the crushed ore in water to make 'broth', clarifying iron tanks to settle the broth, crystallisation troughs for the liquid solution, drying yards of wooden platforms to dry the saltpeter to a powder and *tailing cakes* (walled enclosures) to store the waste material.

The Tailing cake at Santa Laura is of enormous size covering an area of 300,000 square metres. Retaining walls of masonry contain the gravel filled sacks of industrial waste.

The Leaching shed is the only structure of its type to survive in Chile. This large building of some 47 metres by 17 metres rises to a height of 17 metres. It is built of Douglas Fir frames over four levels. The exterior walls were covered in zinc sheets; the floors partly clad in wooden tiles. The whole building is in a parlous state and needs shoring to allow it to survive.

Next to the Leaching shed is a stone and brick chimney for the boiler that heated the nitrate ore broth, and wooden frames to support the water tanks.

The *Buzon* is a semi-underground construction of stone with a lining of corrugated zinc.

Three mills or grinders with their conveyor belts survive, constructed in a similar way to the leaching shed.

Other surviving buildings include: corral for the blacksmith, locomotive sheds, storerooms, foundry and communal bathrooms. Most are in a decayed state apart from the bathrooms, which have been restored for visitors.

There are also some remains of the railway line that joined Santa Laura to Humberstone.

➢ *The economic impact of saltpeter on the Chilean and the world economy*

The saltpeter industry grew in response to demand from more developed countries for the primary product of sodium nitrate that could only be found in large quantities in Chile. Such was the economic potential of nitrate fertilisers, in substantially improving the yield on agricultural land, that many businessmen in Europe were willing to invest in the saltpeter works in South America.

Unlike some other industries, where all the investment came from outside the country, in Chile not only did wealthy citizens also invest in the industry, but the Chilean government kept a high stake, calculated to be about half the profits.

The saltpeter industry thus not only brought wealth to those individuals who invested in it, from Europe and locally, it also came to underpin the Chilean economy from 1880 to the 1920s. The saltpeter riches were felt by the whole of Chile as export duties and customs duties on

the huge range of newly imported goods allowed spectacular public works across the country in Iquique, Antofagasta, and Santiago. The money made from the industry was also invested in applying fertilisers to transform Chilean agriculture.

The industry also brought social transformations: state funding was injected into education across the country, and railways and ports and the building of towns for the industry brought about the very rapid urbanisation of around a fifth of the population in little more than two generations.

However the single focus wealth had its limitations: the industry could not be sustained in the face of competition from synthetic fertilisers from Europe, and Chile suffered far worse than any other country in the Great Depression of the 1920s.

- Pampinos *culture and its social impacts*

Although the saltpeter towns had a wide range of communal and social buildings, life for most workers was harsh. Once they had arrived in the towns, workers had little alternative employment opportunities and they therefore were at the behest of their employers. The majority of workers had no possessions whatsoever: their tools, furniture, clothes and houses were all provided by the company. Payment was often in tokens that could only be exchanged in the general store. The climate was harsh, discipline was fierce and there was no recourse to impartial authority. It was not until 1924 that laws were enacted in respect of labour conditions.

This harsh, and at times violent regime, prompted several workers' uprisings and by the late 19th century a saltpeter workers movement begun to appear, independent from other workers movements. The workers first formed 'Mutual Societies' to provide protection for each other and then, in the early 20th century, Unions that, over time, became the centres of social and cultural life. These organisations were unique in Chile in trying to transform labour relations. They had a profound impact for the welfare of workers all over the country. They also produced an acute awareness that led indirectly to the development of political parties.

Another type of organisation that emerged was the 'Philharmonics' that worked to provide recreational facilities.

During the fifty years that the saltpeter fields were worked by the self-sufficient desert communities, a common language grew up to bind together workers from many countries: Bolivia, Peru as well as Chile. This, linked with distinctive creative expressions, and with the suffering and active pressure for reform, led the Pampa worker to consider himself special and different. This mixture of heroism and tragedy has come to define *Pampino*s culture.

This culture is still shared by the descendents of the workers and gives the properties a strong cultural significance. Every year there is a party in honour of the Tirana Virgin where all the *Pampinos* and people related to workers from different saltpeter mines get together for a whole day in devotion and co-fraternization.

Innumerable academic papers have been written and books edited, trying to define the social, economic and political life of the saltpeter-mines and of the Pampinos. Humberstone and Santa Laura Saltpeter Works are seen as a national focus or symbol of the Pampino life and culture.

History

From pre-Hispanic times indigenous peoples in the area, the Atacamenos and the Incas, used nitrate as a fertiliser, extracting and grinding the saltpeter and spreading it on fields.

The first Europeans used the saltpeter for explosives. The mineral was mined and sent on mules to Lima to be processed into gunpowder. Increase in demand for explosives in the late 18th century led to exploration of new fields in northern Chile and the discovery of the Tarapaca seams. At around the same time, a German scientist, Thadeus Haencke, discovered how to manufacture potassium nitrate. The first saltpeter works were opened in 1810. These were small-scale individual operators who extracted and crushed the material by hand, boiled it in simple vats and left it in the sun to evaporate. The first shipments were made to Great Britain in the 1820s and to the USA and France in the 1830s, all for use in explosives.

Its fertilising properties were discovered in Europe in the 1830s and demand started to soar as cereal production begun to spread to unexploited lands in USA, Argentina and Russia. The fertiliser also begun to be used for coffee in Brazil, Sugar in Cuba and the Dominican Republic. Chile became the main world producer of natural nitrate. What transformed the scale and scope of the works was a new processing technique developed by the Chilean Pedro Gamboni in 1853 for dissolving saltpeter. This encouraged owners to install fixed equipment: boilers, troughs etc and expand homes for workers. A second factor was improved transport: until the railways arrived in the second half of the 19th century, transport to the coast on packhorse mules limited the scale of the industry. The railways spread rapidly, funded by private investment: by 1905 there were 1,787 km of track and by 1913, 5,000 km.

In 1879 the so-called Saltpeter War involving Chile, Bolivia and Peru (who supported Bolivia) gave Chile dominance of the industry. The aftermath encouraged European investment and this in turn acted as a trigger for a surge in the nation's economy. By 1890 saltpeter accounted for 50% of the country's total revenue; by 1913 80% of all its exports.

The First World War brought terrible consequences for the saltpeter producers. The sea routes became unsafe and Germany, one of the largest importers, begun to develop its own saltpeter based on synthetic ammonia. However as European investors withdrew, Chilean participation increased. Nevertheless demand continued to decline and in spite of re-structuring, the creation of the Chilean Saltpeter Company (COSACH) split between state and private investors, and a new production system, which allowed the use of lower grade ore, the market did not improve and COSACH was wound up. By 1930s only 10% of the world's nitrate came from Chile and this had dropped to 3% by 1950s. COSACH's successor, COSATAN, which had a monopoly of saltpeter, survived until 1961.

The Peruvian Nitrate Company built Humberstone saltpeter works, originally known as La Palma, in 1862. Until 1889, it was one of the biggest saltpeter-mines in Tarapacá zone with about 3,000 inhabitants. With the economic crisis that affected all the production of sodium nitrate, La Palma was shut down to be reopened in 1933 under the ownership of the COSACH and bearing the name by which it is known now, the Humberstone saltpeter work, in homage to chemical engineer Humberstone. Between 1933 and 1940 the operations were expanded, new buildings built around the Market Square and the population reached 3,700 people.

Santa Laura Work, built ten years after Humberstone in 1872 by the '*Barra y Risco*' Company, was smaller and had only 450 families in 1920. After facing successive crisis, it too was taken over by COSATAN.

In 1959 COSATAN was wound up and the two works closed finally. The works were auctioned in 1961. Both were bought by the same private individual for scrap. In order to avoid them being destroyed, the properties were declared national monuments in 1970. This has not stopped quite drastic deterioration, robberies and vandalism and some dismantling.

After the owner went bankrupt, in 1995 the properties came under the control of the 'Ministerio de Bienes Nacionales' (National Assets Ministry) and they have assigned them for a period of thirty years to the Saltpeter Museum Corporation, a non-profit organization, which has taken over the management.

Management regime

Legal provision:

Humberstone and Santa Laura Works were declared Historical Monuments on January 16, 1979, by means of the Supreme Decree no. 320. The area under protection was successively enlarged until its present delimitation. At first, on November 07, 1989 the present 'Tortas de Ripio' were included by means of the Decree no. 536. Later decrees on August 11, 1997 and March 31, 1998 widened and rectified the limits, by incorporating both monuments under a single protection area.

Legal protection measures did not prohibit the dismantling and looting of building materials and machinery from these works for a period of 40 years.

However, from 1997, with the formation of the Saltpeter Museum Corporation, supported by Pampinos, authorities of the area and entrepreneurs, by the Architecture Board of the Public Works Ministry and by the National Monuments Council, measures have begun to be taken with the aim of preserving the saltpeter Works as a museum. Work has begun on some emergency work and a reception has been provided for visitors. The Corporation was strengthened in 2002, by a Public Act.

Management structure:

See below

Resources:

The nomination dossier sets out the funds that have been made available from the Regional Government and from the Municipality during 2002-3. These amount to $ 216,000 and $ 33,000 respectively and have been used for creating an exhibition room and bathrooms for visitors, and for security personnel, water and electricity, cleaning the site and transport.

Other bodies such as the Fund for the Development of Arts are financing cultural projects such as the restoration of the theatre.

The acquisition of the site by the Saltpeter Museum Corporation was made possible by a grant from the Mining Company, Dona Ines de Collhuasi. The Chemical and mining Company of Chile has also financed the Corporation's operating expenditure.

Other organisations, such as the Arturo Prat University, are helping with training in dissemination and research.

The urgent need is for resources for restoration and stabilisation of the structures. An application was submitted to the World Monument Fund in 2002. A detailed conservation plan for each of the buildings, setting out how the conservation will be undertaken, and the principles to be adopted, is yet to be undertaken.

Justification by the State Party (summary)

The Humberstone and Santa Laura Saltpeter works are of outstanding universal value for a combination of the following qualities:

- The works represent the way the mining of saltpeter transformed a totally desert region into a complex cultural universe.
- The nitrate mining has never existed anywhere else on such a scale or size.
- The mining community generated a way of life that was unique and which persisted for around 100 years.
- The mining processes reflect enterprise and innovation.
- The mining created huge wealth for Chile, which is reflected in public buildings in many towns around the country and in the development of Chilean agriculture.
- Saltpeter is a paradigmatic example of the symbiotic relationship between countries, both developed and lesser developed; and of how reliance on a single produce can have disastrous consequence when downturn happens.
- The two works represent the distinctive Pampa culture with its strong social coherence and pioneering approaches to labour laws.

3. ICOMOS EVALUATION

Actions by ICOMOS

An ICOMOS Mission visited the site in October 2004.

Conservation

State of conservation:

The main issue to be highlighted is the extremely fragile nature of the buildings. As with most mining buildings, they were constructed using local materials and lightweight construction that functioned with regular maintenance and could be altered in response to changed circumstances. At Humberstone and Santa Laura the materials used were timber for frames, corrugated sheet for roofs and some walls, and stucco. There has been no maintenance for 40 years, and there has been damage and vandalism as well as some dismantling. The metal cladding has corroded and some of the structural elements dismantled. A few buildings, such as the Leaching house, are liable to structural collapse if no support is given.

Very little conservation work has yet been carried out although architect's reports have been written on all the structures. This says that the majority of the buildings are in a 'mediocre and hardly recoverable state'.

The key issue is how far the original, or latest materials, can be conserved. What is not given in the nomination dossier is a conservation approach that outlines how the flimsy character of the buildings will be sustained by conservation work. This is a common issue for mining buildings and one that has been addressed elsewhere, for instance by having a policy that allows for only a small percentage of the materials to be replaced at any one time in order to prevent almost total replacement of the main elements at any one time. A conservation approach needs to be developed as soon as possible to articulate how the particular character of the complex will be conserved.

Management:

Day to day management rests with the Saltpeter Museum Corporation, which has the support of all the key stakeholders. At regional level, responsibility lies with the Regional Government of Tarapacá who has responsibility for development strategies. At community level, the Municipality of Pozo Almonte is the responsible body. The area has been considered as a cultural capital for tourism development, which should support sustainable tourism.

A management plan has been prepared which envisages the restoration of the buildings and the development of the site for tourism activities. The multi-disciplinary plan also foresees an increase in activities related to research of both the material and immaterial culture, including its economic, social and political aspects.

What the plan does not cover is the very difficult task of conserving the structures: how this will be achieved and where the funds will come from. There is no action plan attached to the text. Urgent work is needed in the very near future to safeguard many of the structures.

Risk analysis:

- Looters

The greatest threat is from looters searching for re-usable materials. During the time when the works were closed and still in private hands much was lost. Looters look for all sorts of memorabilia on the sites such as timber, bottles, coins and tokens. Although looting has dwindled, the dossier notes that Douglas Fir is much prized and, as it is now nationally protected in the USA, prices for it have risen. Timber was stolen from the Santa Laura Leaching plant in 1999.

- Re-processing

The Tailing Cakes deposits of waste material are now seen to have useful chemicals. On other sites, many have been reprocessed to extract iodine, borax, etc.

- Roads

The Route A-16 road runs between the two works and this acts as a divide between the two sites. The road also produces much litter. On the other hand, the road provided easy access, which helped preserve the sites and their memories.

- Environmental

Although the site is a virtually rain-free desert, windborne salt from the coast has an impact on the metal sheeting causing corrosion. Wind has also affected the wooden structures: those painted have been given a protective mineral coating by the salty wind whereas those unpainted have been eroded by the wind.

Only regular maintenance will stop these impacts.

Authenticity and integrity

Authenticity:

The two works nominated have endured better than any other saltpeter works in the Pampa of northern Chile. What remains on the two sites is undoubtedly authentic.

Integrity:

More of an issue is integrity: undoubtedly looting and demolition has compromised the overall integrity of the two works. Nevertheless, between them they still reflect sufficient of the overall pattern, when combined, to reflect the key manufacturing processes and the social structures of the company towns. It is however absolutely essential to keep the remaining buildings standing, particularly the industrial structures, to ensure that no further erosion of integrity takes place.

Comparative evaluation

The Chilean saltpeter works are unique in the world. No other rich seams of saltpeter are known to exist and nowhere else has a saltpeter industry developed of the same scope and scale, with its strong associated urban culture in inhospitable surroundings and its major impact on a country's economy and the wider world's agricultural development.

The two nominated works are being put forward to represent this international industry, because they are the best surviving sites and because they were leading players.

The only other comparison that could be made is with company towns developed in association with the extraction of other minerals. Sewell, a copper mining town high up in the Andes is one such example. This persisted until the 1960s. There because of the steep slopes of the valley high-rise buildings were developed. Also copper-

mining enterprises existed in many parts of the world. It is not therefore comparable.

There are few examples of inscribed industrial World Heritage sites in South America. The silver mines of Potosi in Bolivia and those of Guanajuato in Mexico are two examples. These were both exploited with the arrival of Europeans and are not comparable.

The dossier gives a detailed analysis of other industrial sites inscribed on the list around the world, and makes a convincing case for the uniqueness of the Humberstone and Santa Laura works. They are industrial sites, in a desert environment that developed as part of international trade and had a considerable impact on the economy of Chile and Europe. As such they have no comparators.

Outstanding universal value

General statement:

The Humberstone and Santa Laura saltpeter works are of outstanding universal value for the way the two works represent the following qualities of the saltpeter industry, which once thrived in the remote desert Pampa:

- The industry had a profound impact on the wealth of Chile and on investors in Europe over a period of some 60 years.
- The output of the industry, nitrate fertilisers, had indirectly a transforming influence on existing agricultural lands in Europe, and on newly cultivated land in Russia and North America
- The pioneering social agenda of the saltpeter workers' unions had far-reaching effects on labour laws throughout Chile and further afield.
- The distinctive culture of the Pampinos that evolved in association with the industry still has resonance amongst the local population today.
- The remaining buildings are testimony to the social order and technical processes that drove the industry.

Evaluation of criteria:

The site is nominated on the basis of criteria ii, iii and iv.

Criterion ii: The development of the saltpeter industry reflects the combined knowledge, skills, technology, and financial investment of a diverse community of people who were brought together from around South America and from Europe, in response to the challenges and rewards of mining saltpeter. The saltpeter industry became a huge cultural exchange complex where ideas were quickly absorbed and exploited.

Criterion iii: The saltpeter mines and their associated company towns developed into an extensive and very distinct urban community with its own language, organisation, customs, and creative expressions, as well as displaying technical entrepreneurship. The two nominated works represent this distinctive culture.

Criterion iv: The saltpeter mines in the north of Chile together became the largest producers of natural saltpeter in the world, transforming the Pampa and indirectly the agricultural lands that benefited from the fertilisers the works produced. The two works represent this transformation process.

4. ICOMOS RECOMMENDATIONS

Recommendation for the future

The two saltpeter works nominated are clearly of outstanding universal value as the sole remaining vestiges of an industry that transformed the lives of a large proportion of the population of Chile, brought great wealth to the country, and indirectly supported the agricultural revolution of the late 19th century in many parts of the world.

The sites are protected; a management structure has been put in place and a management plan drawn up. The management structure has yet to tested and the management plan implemented. Both of these should allow the development of the site as a tourist attraction.

What remains to be addressed is the conservation of the mining structures. Many of the mining building are insubstantial structures, which need conserving, and then regular maintenance. The buildings are in a parlous state and no funds have so far been identified for their conservation or for their subsequent regular maintenance. The buildings must be considered to be at great risk. Without intervention in the near future there is a strong possibility that some of the structures will be lost or at least severely compromised.

Recommendation with respect to inscription

ICOMOS recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Document WHC-05/29.COM/8B,

2. Inscribes the property on the World Heritage List on the basis of ***criteria ii, iii and iv*** and also immediately on the List of World Heritage in Danger, in order to allow support to be given to finding ways to carry out urgent necessary consolidation work to vulnerable structures:

> ***Criterion ii***: The development of the saltpeter industry reflects the combined knowledge, skills, technology, and financial investment of a diverse community of people who were brought together from around South America, and from Europe. The saltpeter industry became a huge cultural exchange complex where ideas were quickly absorbed and exploited. The two works represent this process.
>
> ***Criterion iii***: The saltpeter mines and their associated company towns developed into an extensive and very distinct urban community with its own language, organisation, customs, and creative expressions, as well as displaying technical entrepreneurship. The two nominated works represent this distinctive culture.
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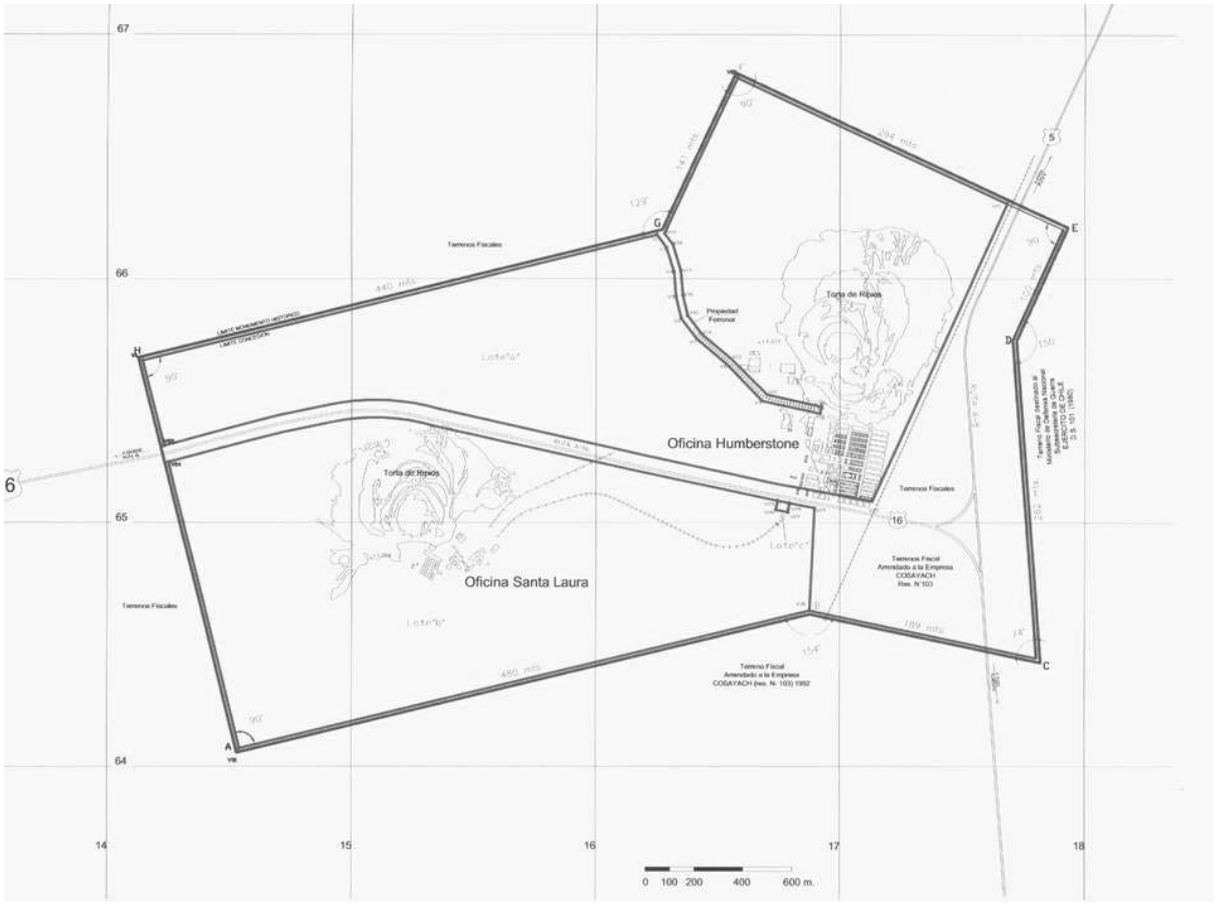
> ***Criterion iv***: The saltpeter mines in the north of Chile together became the largest producers of natural saltpeter in the world, transforming the Pampa and indirectly the agricultural lands that benefited from the fertilisers the works produced. The two works represent this transformation process.

ICOMOS, April 2005



Map showing the boundaries of the nominated property

Aerial view of the living quarters of the Humberstone Saltpeter Works

Leaching Shed of the Santa Laura Saltpeter Works