

ANNEX 14
REPORT ON CULTURAL AND ARCHAEOLOGICAL ASPECTS

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1 INTRODUCTION

This report contains the Baseline information and preventive measures concerning the Heritage and Archaeological aspects identified for the area of the project “Los Maitenes S/S - El Alfalfal S/S and El Alfalfal II Power Plant - El Alfalfal S/S Power Transmission Lines”, owned by AES Gener S.A., which will be set up in the commune of San José de Maipo, Cordillera Province, Metropolitan Region.

The Project will consist of two 17.1 km power transmission lines that will provide for connecting the Las Lajas and El Alfalfal II Power Plants, both of them approved within the framework of the Proyecto Hidroeléctrico Alto Maipo (PHAM), to the grid (Sistema Interconectado Central, SIC). Thus, the power transmission system consists of two lines:

- Line between the Los Maitenes S/S and El Alfalfal S/S: one 7.6 km long 110 kV circuit.
- Line between El Alfalfal II Power Plant and El Alfalfal S/S: two 9.5 km long 220 kV circuits.

The Project also envisages expanding the existing Alfalfal S/S by 0.45 ha in order to make the respective connections to the new lines.

In particular, the research focused on seeking and identifying national monuments (archaeological, paleontological, historic, public, typical zones, nature’s sanctuaries) and religious heritage represented by places of worship near the area envisaged for the Project, such as cemeteries, churches, grottos and roadside shrines locally called animitas, among others.

2 LEGAL FRAMEWORK ON CULTURAL HERITAGE AND THE SEIA

A collateral and inevitable consequence of the implementation of public and private investment works is the interference with Cultural Heritage, and specifically with archaeological sites. The latter are rarely ruins, but rather apparently insignificant structures or material remains lying above or below the ground. Nevertheless, these sites have a very high cultural and scientific value. Chilean legislation enabling regulations concerning Cultural and National Heritage include three laws that apply to the study carried out.

The main legal body governing Cultural Heritage is Law No. 17,288 on National Monuments of February 4, 1970 and its Enabling Regulations of April 2, 1991. This law states that “National monuments are all those places, ruins, constructions or objects of a historic or artistic nature; burial grounds or cemeteries or other aboriginal remains; anthropological, archaeological, paleontological or naturally formed pieces or objects existing below or above the surface of the national territory or on the submarine shelf of its territorial waters and whose conservation is of interest to History, Art or Science, and they are placed under the custody and protection of the State.” In its Articles 11 and 12, the law stipulates that “national monuments are under the control and oversight of the National Monuments Council, whether they be public or private property, and all conservation work thereon will be subject to prior authorization.”

In the particular case of all the existing archaeological evidence, Article 21 declares that “by the mere operation of law, Archaeological Monuments owned by the State are any places, ruins, archaeological sites and anthropo-archaeological pieces existing above or below the surface of the national territory,” even if they have not been so declared beforehand.

To conclude, it sets forth that Cultural Heritage is owned by the State, that the destruction thereof is penalized, and that mandatory reporting of all potential object discoveries is required (Art. 20 and 23).

A second legal body governing the studies is Law No. 19,300, General Framework Environmental Law, which in Article No. 1, letter k), defines environmental impact as “the alteration of the environment caused directly or indirectly by a Project or activity in a given area,” in Article No. 10 lists the Projects or activities likely to cause environmental impacts and, finally, in Article No. 11, stipulates that “the Projects or activities listed in the preceding article will require an environmental impact assessment report if they generate or exhibit at least the following characteristics or circumstances,” and in letter f) specifies “alteration of monuments, sites of anthropological, archaeological, historical value and, in general, those pertaining to cultural heritage.”

The third and last legal body is Law No. 19,253 on Indigenous Peoples, which in Article No. 28 states that “the recognition, respect and protection of indigenous cultures and languages will include, pursuant to the provisions in letter f), the advancement of artistic and cultural expressions and the protection of architectural, archaeological, cultural and historical indigenous heritage.”

3 METHODOLOGY

Considering the objectives of the study, three methodological actions were implemented to characterize the Baseline for the Project area:

- Compilation of bibliographic material.
- Review of MOP’s Cadaster on national monuments in the Metropolitan Region.
- Archaeological survey of the Project’s Direct Area of Influence.

Each of these is described below.

3.1 *Compilation of Bibliographic Material*

This activity was conducted in order to determine the areas where national monuments and other relevant cultural heritage elements are most likely to be found. Special emphasis was placed on reviewing numerous scientific publications on the area made by archaeologist Mr. Luis Cornejo and his team, who have been researching the area for over 20 years. Environmental impact assessment studies that provide information on the area were also reviewed.

3.2 *Review of MOP’s Cadaster on national monuments in the Metropolitan Region*

Most of the scientific information scattered in numerous publications and reports was reviewed in this stage.

3.3 *Archaeological survey of the Project’s Area of Direct Influence*

In this stage a walking tour was conducted covering all the sectors; these are described below with their respective total areas:

- Line between the Los Maitenes S/S and El Alfalfal S/S: 7.6 km in length, with a 30-m wide restriction strip equivalent to an area of 22.8 ha.
- Line between El Alfalfal II Power Plant and El Alfalfal S/S: 9.5 km in length, with a 40-m wide restriction strip equivalent to an area of 38.0 ha.
- Expansion of the existing El Alfalfal S/S by 0.45 ha.

For area works such as the expansion of the El Alfalfal S/S, a full walking tour was considered, while for linear works such as cable laying routes, a 20 m wide strip was surveyed on each side of the cable route centerline.

The sectors surveyed are located between 900 masl and 1,500 masl and correspond to a few terraces, gullies, abrupt slopes, and affluents of the Maipo River, i.e. areas considered as part of Andean foothills southeast of the city of Santiago.

In general, the surveyed areas where the Project is under development range from extremely abrupt slopes, several of which undergo considerable erosion that continuously fills the bottom of the gullies leaving very little space for the development of pastures, up to extensive terraces where rocky blocks or overhangs capable of providing shelter may be found.

According to the geo-morphological and meteorological characteristics prevailing in the sectors under study and to the bibliographic information compiled, it follows that most of the likely pre-Hispanic occupations of the area should be associated to camps intended for hunting, mining, pathways, or others linked to ritual or symbolic activities in the high Andean peaks. Conditions also provide for finding settlements from the historical, current and early 20th century period, associated to such activities as mining, livestock farming and sports, e.g. mountaineering. In any case, it was to be expected that an ample archaeological record would be found in the area.

It should be noted that the survey gave special emphasis to seeking locations within the area of indirect influence of the Project that stand out as important in the review of the literature, especially rocky overhangs and blocks suitable for taking shelter or for developing cave art, respectively.

4 FINDINGS

4.1 *Literature Review*

4.1.1 National Monuments Given a Declared Monument Status

The review of the literature and of the Archives of the National Monuments Council regarding the Project's area of direct influence led to ascertaining that there are declared monuments, i.e. historic, nature's sanctuary, and typical zone (Cabeza, A & M. Vega, 1997), within the project area.

4.1.2 Archaeological Monuments

The settlement pattern of pre-Hispanic populations in the area of the Project tends to prioritize locations such as sheltered spots between two mountains, places close to minor watercourses, pathways, rocky overhangs, and sites suitable for extracting lithic or mineral raw materials. Between

the upper and medium basin of the Maipo River, a gradient of sites has been recorded from the highest altitudes, with Highland Inca Sanctuaries (Cabeza, A. 1984: 1998); Andean passes (Thomas, C. et al., 1995); settlements in the inland affluents and small valleys (Saavedra, M. 1993; Saavedra, M. et al 1991; Stehberg, R. 1978); limited development sites in the area where the canyon opens up to the central valley, in the zones of the Mapocho, Clarillo and Pirque Rivers (Cabeza, A. & P. Tudela, 1985; Cabeza, A. et al., 1992), and extensive habitational sites from the Early Pottery Period until the Historic Period, located over interfluvial terraces in the south bank of the Maipo River (Vásquez, M. & L. Sanhueza, 1999, personal communication).

Moreover, archaeological research studies and surveys, both of a scientific nature and within the framework of the SEIA, have been conducted for the overall area and for the area adjacent to the Project works.

The general information available includes studies on the Olivares River; the sector called Infiernillo Norte Quarry inside the La Disputada Mine; the south bank of the Maipo River in the town of El Toyo, as well as in the La Yerba Loca Stream (Sánchez, R. 2000a; 2000b; 2002; 2004; Hermosilla 2008), according to which there would be low probabilities of discovering archaeological sites in the sectors involved by the Project. Nevertheless, this does not mean that there are no settlements in the area. In fact, several important archaeological sites have been identified in the Farellones sector and in the El Plomo Hill (Domínguez, G. 1965; Reyes, F. 1958); additionally, in the Andean highland of the Metropolitan Region and the V Region, archaeological sites have been found from the Archaic Period until the beginning of the Inca presence (Cabeza, A.1984) that exhibit both habitational settlements, cemeteries, and other specific-purpose sites such as those for extracting lithic or mineral raw materials (Cornejo, L. & J. Simonetti. 1992; 1997-98).

In the upper part of the Maipo River there are several rocky overhangs, occupied by hunters, some dating from the Archaic Period. For the Laguna del Encañado sector, Luis Cornejo has reported the presence of an Inca route or *capac ñam*, which joins the eastern and western Andean slopes, and an architectural installation that might well be a tambo or way station, a place where travelers could rest (Cornejo et al., 2006). The presence of a number of rocky overhangs called Las Morrenas has also been reported on the east bank of the El Manzanito Stream, occupied from the Late Archaic Period (1725-1260 BC) to the Early Pottery Period (circa 0-1000 years AD (Cornejo et al., 2003; Peralta et al., 2000; Galarce et al., 2005).

As mentioned earlier, indications of the presence of archaeological sites have been found quite near or adjacent to the sectors involved by the Project, i.e. the Colorado River – Aucayes Stream. In the Colorado River sector, there are indications of sites dating from the Early Pottery Period in the Quempe Stream, although they are far from the Project works (Cornejo et al., 1997), and in the Aucayes Stream, a small camp from the Pottery Period is located far from the project area (Sánchez 2007).

4.2 Archaeological Survey

As suggested by the information available, the archaeological survey carried out made it possible to ascertain the existence of an archaeological site (Sánchez, 2007). The overall area is characterized by average obstructiveness due to the presence of pastures and native forest.

The 9.5 km long cable-laying route between the El Alfalfal II Power Plant - El Alfalfal S/S includes abrupt slopes and scanty terraces east of the Colorado River, except for a small sector in El Alfalfal,

where the 7.6 km cable-laying route between the El Alfalfal S/S and the Los Maitenes S/S takes up approximately one (1) km of the west bank of the Colorado River, ending at the Los Maitenes S/S, while the longest cable-laying route runs along the northern slope of the Aucayes Stream up to the El Alfalfal II Power Plant.

The survey made it possible to re-determine the location of the abovementioned archaeological site, i.e. a small camp exhibiting lithic material, ceramic and grinding material, on the south bank of the Aucayes Stream, i.e. the bank opposite the area of the Project (See Appendix).

5 Impact Identification and Assessment

5.1 Construction and Operation Stages

The Archaeological and Cultural Heritage baseline study has determined that there are no elements of an archaeological, paleontological and/or anthropological nature in the area where the Project is located.

However, as a preventive measure in the event that remains such as those mentioned above are found during earthmoving (excavation) activities, archeological monitoring of the site will be conducted throughout the period in which this activity takes place during the construction stage.

In the event any archaeological sites or remains are discovered during the construction stage in the area where the Project is located, works will be stopped and the discovery will be reported to the competent authority, i.e. the Provincial Governor, who will instruct the police to keep watch over the site until the National Monuments Council takes charge thereof, as provided in Article No. 23 of the Enabling Regulations of Law No. 17,288.

6 PREVENTIVE MEASURES

The measures proposed for the execution of the Project have a preventive character, given that the area planned for the Project has been intensely occupied by pre-Hispanic peoples, as ascertained by a significant number of archaeological sites. Thus, rather than compensation measures, Archeological Monitoring of the Project's construction works is required, specifically during earthmoving (excavation) works.

Archaeological Monitoring of the Project's works, specifically during earthmoving (excavation) activities is required on a continuous basis for two reasons. First, due to the archaeological wealth of the area where the Project is located and the closeness of the so-called Aucayes 1 Site to the Project works; and second, due to the inevitable changes that take place from the so-called conceptual engineering through to Project execution.

The archaeological survey carried out was superficial and restricted to the planned works only; any variation of even a couple of meters might affect an archaeological site that has not been recognized in the survey. Additionally, the discovery of archaeological sites when removing the subsoil cannot be discarded; hence, the presence of a specialist at all the active working faces is required while the Project's construction works are underway, to conduct continuous archaeological monitoring throughout the excavation period associated to the construction of the foundations.

7 ENVIRONMENTAL FOLLOW-UP PLAN

Even though no impact has been identified, environmental follow-up is aimed at detecting the potential presence of further archaeological remains that may be found below the ground surface and have not been identified in the baseline survey. To this end, visual follow-up inspections will be implemented throughout the earthmoving (excavation) period associated to the construction of foundations, with foundation construction areas being used as control points. If any archaeological remains are identified, the provisions of Law No. 17,288 will be followed, with the National Monuments Council acting as a supervisory agency.

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APPENDIX
DESCRIPTION OF THE AUCAYES 1
SITE

Table 1 Description of the Aucayes Stream No. 1 Site

CARD No. 1. Aucayes 1 Site	AUCAYES STREAM SECTOR
Type: Open Camp	This is a dispersion area with very low density. The archaeological record consists almost exclusively of lithic material, with only one undefined ceramic fragment. This area is located on a small terrace south of the Aucayes Stream. This lithic material consists of derivatives from a nucleus, with unmodified edges, made from local raw materials with a prevailing presence of andesites. The presence of a fractured grinding instrument made from granodiorite was also recorded. No diagnostic material has been recorded, but this is undoubtedly a pre-Hispanic settlement.
Coordinates	Psad 56 384.081 E 6.287.687 N. Altitude: 1.416 masl approx.
Overall Dimensions	North – South Axis: 30 m East – West Axis: 40 m Approximate Total: 1.200 m ²
Location	The site is located on a plain in the south bank of the Aucayes Stream.
Area of Indirect Influence	Located on a terrace on the south bank of the Aucayes Stream, at approximately 500 m from the layout of the cable route.
State of Conservation: Very Good	The overall state of conservation of the site is very good, as there is no evident anthropic or natural alteration.
Cultural materials identified in the Aucayes 1 Site	
	

Source: In-house preparation.

Figure 1 Views of the area envisaged for the Project



Source: In-house preparation.