

<b>Gener</b> <small>una empresa AES</small>	<b>"ELECTRIC TRANSMISSION LINES  MAITENES S/S – ALFALFAL S/S &amp; ALFALFAL II  POWER PLANT -ALFALFAL S/S" PROJECT</b>	
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**CHAPTER 3. DESCRIPTION OF THE EFFECTS, CHARACTERISTICS OR CIRCUMSTANCES OF ARTICLE 11 OF LAW No 19,300 THAT CREATE THE NEED TO CONDUCT AN ENVIRONMENTAL IMPACT STUDY**

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## 1 APPROPRIATENESS OF ENTERING THE ENVIRONMENTAL IMPACT ASSESSMENT SYSTEM

Article 10 of Law No 19,300 concerning the General Bases of the Environment (LB GMA) hereinafter "the Bases Law" as well as Article 3 of the Environmental Impact Assessment System Regulations (SEIA) approved by D.S. N° 30/97 and modified by D.S. N° 95/01 of the General Secretariat of the Presidency, hereinafter "the Regulations", identify and list the projects or activities likely to cause environmental impacts in any of their phases and should, therefore, be subjected to the SEIA.

Article 8 of Law 19.300 sets forth that the projects or activities as mentioned in article 10 may only be carried out or modified after a prior evaluation of their environmental impact.

As a complement, Title 1 of the MINSEGPRES D.S. N° 95/01, which lists the general provisions which govern the SEIA, establishes in its article 2 letter b) that the execution of a Project or activity is understood as the carrying out of works, actions or measures contained in a Project or activity and the adoption of measures intended to materialize one or more of its construction, application or operation stages, as well as closures and/or abandonment.

Furthermore, Letter b) of article 3 of the D.S. N° 95/01 establishes that the projects consisting in high voltage transmission lines and their substations (among others) should be subjected to the SEIA. It also indicates in letter p) that the execution of works, programs or activities in national parks, national reserves, natural monuments virgin zones reserves, nature sanctuaries, marine parks, marine reservations or any other area placed under official protection should be subjected to the SEIA.

In this case, the Project which is the object of the Environmental Impact Study (EIA), consists of two electric transmission lines with a total extension of 17.1km. They will connect the Las Lajas and Alfalfal II plants to the Central Interconnected Grid (SIC). Both lines in the agenda of the Alto Maipo Hydroelectric Project (PHAM) were approved by means of Exempt Resolution N° 256/09 of March 30, 2009. This electric transmission system will then consist of two lines:

- Line between the Maitenes and Alfalfal S/Ss: An 110kV circuit, 7.6km long.
- Line between the Alfalfal II Power Plant and El Alfalfal S/S: Two 220 kV circuits, 9.5 km long.

Furthermore, the Project contemplates the expansion of the existing Alfalfal S/S by 0.45ha to install the corresponding connections to the new lines.

Therefore, the Project "Electric Transmission Lines Maitenes S/S – Alfalfal S/S and Alfalfal II Plant – Alfalfal S/S" should be subjected to the SEIA, due to the application of:

- Letter b) of Article 10 of Law N° 19.300 and Letter b) of article 3 of the Environmental Impact Assessment System Regulations (D.S. N° 95/01 of the MINSEGPRES), as it pertains to a new high voltage electric transmission line and expansion of the Alfalfal S/S.

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- Letter p) of Article 10 of Law N° 19.300 and letter p) of Article 3 of the Environmental Impact Assessment System Regulations (D.S. N° 95/01 of the MINSEGPRES), as it pertains to works that will be set in an Tourism Interest Zone (according to D.L. N° 1.224), under official protection

## 2 NEED TO CARRY OUT AN ENVIRONMENTAL IMPACT STUDY

Additionally the Regulations set forth in letter e) of Article 12 that the EIA should include a “description of the effects, characteristics or circumstances of Article 11 of Law 19.300 that create the need to carry out an Environmental Impact Study”.

According to the provisions of the 4 LBGMA, the projects or activities that require entering the SEIA should prepare an Environmental Impact Study if they generate or show at least one of the effects, characteristics or circumstances as detailed in Article 11 of the Law. Furthermore the SEIA Regulations establish in their articles 5 to 11 the effects, characteristics or circumstances that require the submittal of an Environmental Impact Study.

Articles 5 to 11 of the SEIA Regulations that describe the effects, characteristics or circumstances that create the need to carry out an Environmental Impact Study for the Project Electric Transmission Lines Maitenes S/S – Alfalfal S/S and Alfalfal II Plant – Alfalfal S/S” are analyzed below.

- **Article 5 The Owner should submit an Environmental Impact Study if the Project or activity generates risks for the health of the population due to the quantity or quality of the effluents, emissions or residues generated or produced.**

The following should be considered in order to evaluate if the risk referred to above is generated or occurs:

Letter a) as established in the primary norms in force concerning environmental quality and emissions. In the absence of such norms, those in force in the States indicated in Article 7 of these Regulations will be used as reference.

### **Letter a) analysis:**

During the Project construction stage, few atmospheric emissions will be produced, which will mostly correspond to particulate material (MPIO) and the internal combustion gases of the vehicles. These emissions will be temporary, of low scale and local in character. The application of a series of measures tending to prevent this impact is envisaged (detailed in section 3 of Chapter 6). Otherwise and due to the characteristics of the Project, during its operation the scant atmospheric emissions will be reduced to the maintenance activities only, associated to the eventual passing of machinery and vehicles.

In both opportunities, the emissions will comply with the primary environmental quality and emissions norms identified in Chapter 2 of this EIA.

Letter b) the composition, dangerousness, quantity, concentration of liquid effluents and of emissions to the atmosphere;

Letter c) the frequency, duration and place of the liquid effluent discharges and emissions to the atmosphere;

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**Letters b) and c) analysis:**

Due to the characteristics of the Project, no liquid effluents or emissions to the atmosphere will be generated whose composition, dangerousness, quantity and concentration as well as frequency, duration and discharge site could represent a danger to the health of the population.

Letter d) the composition, dangerousness and quantity of solid residues:

Letter e) the frequency, duration and place of handling of the solid residues.

**Letters d and e) analysis:**

Although the Project will generate solid residues of varied nature, their volumes and adequate management (indicated in sections 3.1 0, 4.2, 6.1.4 and 6.2.2 of Chapter 1, and section 3.3 of Chapter 2), allow to state that these will not constitute any danger for the health of the population.

Letter f) the difference between the estimated noise levels with Project or activity and the background noise level representative and characteristic of an environment where there is human activity.

**Letter f) analysis:**

The noise levels expected during the construction of the Project will be local and temporary, and together with the mitigation measures contemplated for this component (see section 3 of Chapter 6) allow to affirm that no risk will be generated for the health of the population that will find itself in the area of service of the same, as they comply with the limits established by D.S. N° 146/97 of the MINSEGPRES.

Likewise, the noise levels generated during the operation of the Project also comply with the norms in force.

Letter g) the energy forms, radiation or vibration generated by the Project or activity.

**Letter g) analysis:**

Concerning the forms of energy, radiation or vibrations associated to the construction and operation of the Project, there will be a restriction strip to the activities to be developed under the line; this strip will be 30 meters wide for the line between the Maitenes and Alfalfal S/Ss and 40 meters wide for the line between the Alfalfal II Plant and the Alfalfal S/S. In short, no risks will be generated for the health of the population, due to the existence of this restriction strip.

Letter h) the effects of the combination and/or known interaction of the contaminants emitted or generated by the Project or activity.

**Letter h) analysis:**

According to the characteristics of the emissions of the Project, the combination or known interactions among the contaminants is not possible, since they will not be produced jointly nor react among themselves, since there are mainly emissions of particulate material (PM10), noise and generation of solid residues.

To conclude: the Project will not present risks for the health of the persons, as it will not generate emissions, residues or effluents whose quantity and quality could affect human health.

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- **Article 6** The Owner should submit an Environmental Impact Study if the Project or activity generates significant adverse effects upon the quantity and quality of the renewable natural resources, including the ground, water and air.

The following should be considered in order to evaluate if the significant adverse effects referred to above are generated or occur:

Letter a) as established in the primary norms in force concerning environmental quality and emissions. In the absence of such norms, those in force in the States indicated in Article 7 of these Regulations will be used as references.

**Letter a) analysis:**

Due to its characteristics, the Project will not produce significant emissions during its construction or operation. Likewise, the emissions will comply with the primary environmental quality and emissions norms identified in Chapter 2 of this EIA.

Letter b) the composition, dangerousness, quantity, concentration of liquid effluents and of emissions to the atmosphere.

Letter c) the frequency, duration and place of the liquid effluent discharges and emissions to the atmosphere.

**Letters b) and c) analysis:**

The Project will not generate emissions that might affect the natural resources, since these are mainly scant emissions of particulate material (PM10), and internal combustion gases from vehicles and machinery used during the construction stage. Those emissions will be local, temporary and of short duration. Notwithstanding the above, the Owner will adopt measures tending to prevent these emissions, as indicated in section 3 of Chapter 6 of this EIA.

Likewise, chemical toilets will be installed at work faces during the construction stage; these toilets will comply with the indications established in D.S. N° 594/00; and will be maintained and removed by a specialized firm authorized to carry out this type of activity.

Letter d) the composition, dangerousness and quantity of solid residues:

Letter e) the frequency, duration and place of handling of the solid residues.

**Letters d) and e) analysis:**

Although the Project will generate solid residues of varied nature, their volumes and adequate management (indicated in sections 3.1 0, 4.2, 6.1.4 and 6.2.2 of Chapter 1, and section 3.3 of Chapter 2), allow to state that these will not constitute any danger for the quality and quantity of the renewable natural resources.

Letter f) the difference between the estimated noise levels with Project or activity and the background noise level representative and characteristic of an environment where there is a native fauna associated to relevant habitats for its nesting, reproduction or feeding.

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**Letter f) analysis:**

The noise levels generated during the construction of the Project at each work face will be local, temporary and if short duration. The Owner will control noise at the work faces and will avoid the alteration of sites near the future line and the expansion of the substation by means of the execution of the abatement measures indicated in section 3 of chapter 6.

Letter g) the energy forms, radiation or vibration generated by the Project or activity.

**Letter g) analysis:**

The Project envisages the protection strip established by law to safeguard agents sensitive to the electromagnetic waves emitted by the Project.

Letter h) the effects of the combination and/or known interaction of the contaminants emitted and/or generated by the Project or activity.

Letter i) the relationship between the contaminants generated by the Project or activity and the environmental quality of the renewable natural resources.

Letter j) the capacity of dilution, dispersion, auto depuration, assimilation and regeneration of the renewable natural resources present in the service area of the Project or activity.

**Letters h), i) and j) analysis:**

According to the characteristics of the emissions of the Project, the combination and known interaction among the contaminants is not possible, since they will not be produced jointly nor react among themselves, since there are mainly temporary emissions of particulate material (PM10), noise and generation of solid residues.

Letter k) the quantity and surface of intervened and/or exploited native vegetation as well as its intervention and/or exploitation mode.

Letter l) the quantity and surface of intervened and/or exploited native fauna as well as its intervention and/or exploitation mode.

Letter m) the conservation condition of the flora or fauna to be extracted, exploited, altered or managed according to what is indicated in the national lists of species in danger of extinction, vulnerable, unusual or insufficiently known.

**Letters k, l and m) analysis:**

The Project has considered the necessary adjustments in its engineering, so as to place its structures in areas without native vegetation in a conservation category; therefore, cutting, eliminating, destroying or clearing of those species is not envisaged. On the other hand, the preparation of the restriction strip envisages a duly established pruning process only, carried out according to forestry criteria (see annex 2) with the purpose of avoiding the generation of significant adverse effects upon this environmental component and at the same type comply with the electrical norms in force.

Likewise, it is envisaged to avoid, within possible limits, cutting native trees that are not in the conservation category. However, if it should not be possible to relocate the foundations of a tower, the individual will be rescued, according to the procedure specified in Annex 2, so as to avoid an impact upon the species. It is important to point out clearly that under no case this activity will affect native species in the conservation category.

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Concerning the fauna, the presence of seven species which are within some of the conservation conditions defined by the SAG (2006) has been identified within the service area of the Project. In order to avoid generating significant adverse effects upon these species, a series of environmental management measures are envisaged, which are explained in section 3 of Chapter 6.

Letter n) the volume, flow and/or surface as the case may be of the water resources to be intervened and/or exploited in:

- N.1. meadows and/or marshes located in Regions I and II which could be affected by the rise or fall of ground waters;
- N.2 wetlands areas or zones which could be affected by the rise or fall of ground or surface waters;
- N.3 underground water bodies containing millenary and/or fossil waters;
- N.4 a hydrographic basin or sub-basin diverted to another; or
- N.5 lakes or ponds where level fluctuations could be generated.

**Letter n) analysis:**  
Given the nature of the Project, no water courses will be intervened.

Letter ñ) the alterations that could be generated upon other natural and/or artificial elements of the environment the introduction into the national territory of some flora or fauna species; as well as the introduction to the national territory, or use, of genetically modified organisms or other similar techniques.

**Letter ñ) analysis:**  
Given the nature of the Project, the introduction to the national territory of flora or fauna species and/or genetically modified organisms is not envisaged.

Letter o) the ground surface likely to be lost or degraded due to erosion, compacting or contamination.

**Letter o) analysis:**  
The loss of the ground resource will be slight and restricted to the construction area of the foundations; in practice this represents an area of less than 0.9ha.  
Given the characteristics of the Project, the erosion, compacting or contamination of the ground is not envisaged.

Letter p) the biological diversity present in the service area of the Project or activity and its regeneration capacity.

**Letter p) analysis:**  
The engineering design of the Project as well as the mitigation repair and/or compensation and prevention envisaged, have as consequence that there will not occur any significant adverse effects upon the quantity and quality of the renewable natural resources, nor on the biological diversity present in the service area.

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- **Article 8: The owner should submit an Environmental Impact Study if the Project or activity generates a resettling of human communities or significant alterations to the life and mores of human groups.**

In order to assess if the Project or activity generates resettling of human communities, the displacement and resettling of human groups which live in the service area of the Project or activity, including its works and/or associated actions will be analyzed.

Human communities or human groups will be understood as any assemblage of persons who share a territory in which they interact permanently, originating a life system created by social, economic and cultural relationships which eventually tend to generate traditions, community interests and belonging feelings.

Furthermore in order to assess if the Project or activity generates a significant variation of the life systems and mores of human groups, the changes produced in the following dimensions that characterize the life system will be considered:

Letter a) geographic dimension, consisting in the distribution of the human groups in the territory and the spatial structure of their relationships, taking into account the density and spatial distribution of the population; the size of the land and land ownership; and the communications and transport links.

letter b) demographic dimension consisting in the structure of the local population by age, sex, activities, employment category and migratory status, considering the urban-rural structure; the structure according to type of economic activity and employment category; the economically active population; the age and sex structure; schooling and educational level and the migrations.

Letter c) anthropologic dimension, considering ethnic characteristics and culture manifestations, such as religious ceremonies, peregrinations, processions, celebrations, festivals, contests, fairs and markets;

Letter d) socio-economic dimension considering employment and joblessness; and the presence of productive activities depending from the extraction of natural resources on the part of the human group, individually or associated.

Letter e) Basic social welfare dimension concerning the access of the human group to goods, equipment and services such as housing, transport, power, health, education and sanitation.

**Letters a) to e) analysis:**

The construction and operation of the Project will not entail the resettling of human communities and will not affect the life systems or the human groups.

As the workers will travel every day to the site of the Project and a maximum of 145 workers is envisaged, there will not be any alterations in the structure of the local population by age, sex, activity type, employment category and migratory status, considering the urban-rural structure; structure according to economic activity sector and employment category; the economically active population; structure by age and sex; schooling and educational level and migrations.

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- **Article 9: The Owner should submit an Environmental Impact study if the Project or activity is placed near populations, resources and protected areas liable to be affected, taking also into account the environmental value of the territory where it is proposed to place it.**

The following will be considered to assess if the Project or activity is located near a population, resource or protected area liable to be affected:

Letter a) the size or duration of the intervention or location of the Project or activity in or around areas where a population should dwell and be protected by special laws.

**Letter a) analysis:**

No populations protected by special laws dwell near the Project.

Letter b) the size or duration of the intervention or location of the Project or activity in or around areas where there are officially protected resources.

**Letter b) analysis:**

The engineering design of the Project, as well as the mitigation, repair and/or compensation measure envisaged have as consequences that there will no significant adverse effects upon the officially protected resources.

Letter c) the size or duration of the intervention or location of the Project or activity in or around areas where there are protected resources or resources placed under official protection.

**Letter e) analysis:**

The Project will be sited in a Natural Value Area, specifically of Ecologic Protection according to the Metropolitan Regulation Plan of Santiago; the approval of projects in this sector is conditioned in all cases to their entering the Environmental Impact Assessment System.

- **Article 10: The Owner should submit an Environmental Impact Study if the Project or activity causes a significant alteration in terms of size and duration to the landscape or tourism value of the zone. |**

The following will be considered in order to assess if the Project or activity, in any of its stages, generates or presents a significant alteration in terms of size or duration of the landscape or tourism value of a zone.

Letter a) the duration or magnitude in which the visibility to zones with landscape value is obstructed;  
Letter b) the duration or magnitude in which environmental resources or elements in zones of landscape or tourism zones are altered.

Letter c) the duration or size in which the access to the environmental resources or elements of zones with landscape or tourism value is obstructed.

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**Letters a) to e) analysis:**

The Project will be sited in the San José de Maipo Municipality, considered as National Tourism Interest Zone according to Decree-Law N° 1.224 and D.S. N° 515; for this reason and complying with Law N° 19.300, this Project submits to the Environmental Impact Assessment System by means of an Environmental Impact Study. It is important to state that the Project envisages the application of environmental management measures tending to avoid impacts in the analyzed area.

- **Article 11: The Owner should submit an Environmental Impact Study if the Project or activity generates or has alteration of monuments, sites with anthropologic-archaeological value, archeological, historic and in general, those belonging to the cultural heritage.**

The following will be considered in order to assess if the Project or activity, in its service area, will generate or show alteration of monuments, sites with anthropological, archaeological, historical and in general belonging to the cultural heritage:

Letter a) the proximity to a Natural Monument among those defined by Law 17.288;

Letter b) the scale in which a National Monument as defined by Law N° 17.288 is removed, destroyed, excavated, moved, deteriorate or modified;

Letter c) the extent in which buildings, places or sites that, by their construction characteristics, antiquity, scientific value, historical context or singularity belong to the cultural heritage are modified or permanently deteriorated; or

Letter d) the proximity to places or sites where manifestations belonging to the culture or folklore of some population, community or human group are carried out.

**Letters a) to d) analysis:**

The study of the baseline of the Cultural and Archaeological Heritage shows that the archaeological sites existing in the zone are distant and will not be affected by the Project works.

### 3 CONCLUSION

By virtue of the statements herein, the Project "Electric Transmission Lines Maitenes S/S – Alfalfal S/S and Alfalfal II Plant – Alfalfal S/S" is subjected to the SEIA by means of this Environmental Impact Study as it might generate or present some of the effects, characteristics or circumstances as indicated in Article 10 letter d) of D.S. N° 95/01 SEIA Regulations so as to analyze those circumstances and propose the pertinent mitigation, repair and/or compensation measures.