



PERÚ

Ministerio de Economía y Finanzas
(Ministry of Economy and Finance)

Agencia de Promoción de la
Inversión Privada
(Private Investment Promotion
Agency)

Projects Portfolio
Directorate

“Decade of Equal Opportunities for Women and Men”
“Year of Dialogue and National Reconciliation”

STS Concession Contract

“500 Kv La Niña – Piura Link and Associated Substations, Lines and Expansions”

(Version 1)

9 January 2019

Important: This is an unofficial translation. In the case of divergence between the English and Spanish text, the version in Spanish shall prevail



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STS Concession Contract for the “500 Kv La Niña – Piura Link and Associated Substations, Lines and Expansions” Project

You are hereby requested in your capacity as notary public to enter into your Notary Record Book an instrument evidencing the Secure Transmission System Concession Contract for the design, construction, operation, and maintenance of the “500 Kv La Niña – Piura Link and Associated Substations, Lines And Expansions” project (hereinafter, the “Contract”), entered into by and between the government of the Republic of Peru, acting by and through the Ministry of Energy and Mines (hereinafter, the “Grantor”), duly represented by the _____ of the Ministry of Energy and Mines, _____, holder of National Identity Document (DNI) No. _____, with legal address at Av. Las Artes Sur 260, San Borja, Lima, Peru, authorized as per Ministerial Resolution (Resolución Ministerial) No. _____-MEM/DM; and the firm of _____, registered in Electronic Filing Card No. _____ of the Registry of Companies of the Public Records Office in and for Lima, with usual place of business in the city of Lima, Peru, acting by and through _____, holder(s) of _____, who are _____ citizens, and are duly authorized as per powers registered in Filing Card No. _____ of the Registry of Companies of the Public Records Office in and for Lima (hereinafter, the “Concessionaire”), in accordance with the following terms and conditions:

1. RECITALS

The Contract is the result of the promotion process conducted by PROINVERSIÓN under the Act for the Efficient Development of Electricity Generation (Law No. 28832); the Transmission Regulations (Executive Order (Decreto Supremo) No. 027-2007-EM); the Electric Concessions Act (Decree Law (Decreto Ley) No. 25844); the Regulations on the Electric Concessions Act (Executive Order No. 009-93-EM); the Legislative Order regulating the promotion of private investment via public-private partnerships and projects in assets (Legislative Order (Decreto Legislativo) No. 1362); and the Regulations on Legislative Order No. 1362 (Executive Order No. 240-2018-EF); and other Applicable Laws and Provisions, as well as the following provisions and acts:

- a) Ministerial Resolution No. 450-2017-MEM/DM issued by the Ministry of Energy and Mines, published on 2 November 2017, which entrusts PROINVERSIÓN with conducting the necessary bidding process through the awarding of the contracts for the binding projects approved in the 2017-2026 Transmission Plan, which includes the “500 KV La Niña – Piura Link and Associated Substations, Lines And Expansions” project.
- b) PROINVERSIÓN CD Resolution No. 54-3-2018-CD adopted by the PROINVERSIÓN Board of Directors in its meeting held on 10 July 2018, by virtue of which it was agreed to incorporate the private investment promotion process for the binding projects of the 2017-2026 Transmission Plan referred to in Ministerial Resolution No. 450-2017-MEM/DM, which includes the “500 KV La Niña – Piura Link and Associated Substations, Lines And Expansions” project.
- c) Resolution of the Executive Director’s Office of PROINVERSIÓN No. 38-2018/DPP/EL.10, dated 17 July 2018, approving the Promotion Plan governing the Process, published on the institutional website of PROINVERSIÓN.
- d) The act for the submission of Envelopes 1 and 2 and the awarding of the contract, held on ____/____/____, in which the contract was awarded.

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- e) Ministerial Resolution No. _____-MEM/DM, which authorized _____ to execute the Contract.

The Contract has been negotiated, drafted, and executed in accordance with the internal laws of Peru; and its contents, performance, and other consequences originating therefrom shall be governed by said law.

The execution of the Contract does not eliminate or affect the Concessionaire's obligation to request, execute, and perform the Definitive Electrical Transmission Concession Contract, which the Concessionaire shall process with the Ministry of Energy and Mines. For such effects, the Concessionaire attach to its request a copy of the schedule and a copy of the Performance Bond in force, in accordance with the provisions established in Section 25, Paragraph 2 of the Electrical Concessions Act and Section 37-D of the Regulations on the Electrical Concessions Act.

In the Contract:

- a) The terms beginning with a capital letter, whether used in the singular or the plural, have the meanings established in Annex 3.
- b) The terms beginning with a capital letter, whether used in the singular or the plural, which are not defined in Annex 3 or other sections of the Contract, shall have the meanings attributed to them in the Bidding Terms and Conditions or the Applicable Laws and Provision, or correspond to terms that are commonly capitalized.
- c) All reference made in the Contract to “clause,” “annex,” “point,” or “item” shall be understood as made to the clauses, annexes, points, or items of the Contract, unless expressly indicated otherwise.
- d) The titles have been included solely for effects of systematizing the presentation and shall not be considered a part of the Contract that limits or expands on its content, or for purposes of determining the Parties' rights and obligations.
- e) Terms in the singular shall include the same terms in the plural and vice versa. Masculine terms shall include the feminine and vice versa.
- f) The use of the disjunction “or” in an enumeration shall be understood to exclude one or more of the elements of such list.
- g) The use of the conjunction “and” in an enumeration shall be understood to include all of the elements of said enumeration or list.

2. REPRESENTATIONS OF THE PARTIES

2.1 The Concessionaire warrants to the Grantor, on the Closing Date, the truthfulness and accuracy of the following representations:

- a) That: (i) it is duly incorporated and validly exists in accordance with the Applicable Laws and Provisions; (ii) it is duly authorized by its board of directors or similar body to assume the corresponding obligations as a result of the execution of the Contract in all those jurisdictions in which said authorization is necessary given the nature of its activity, or due to the ownership, lease, or operation of its assets, except for those jurisdictions in which the lack of said authorization has no substantially adverse effect on its business or operations; and (iii) it has complied with all of the requirements necessary to formalize the Contract and to comply with the commitments established therein.

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- b) The execution, delivery, and performance of the Contract by the Concessionaire falls within its powers and has been duly authorized by its board of directors or similar body.
 - c) The Concessionaire does not need to perform other acts or procedures to authorize the execution and performance of the obligations assumed under the Contract. The Contract has been duly and validly executed and delivered by the Concessionaire, and constitutes a valid, binding, and enforceable obligation for the Concessionaire in accordance with its terms.
- 2.2 The Grantor warrants to the Concessionaire, on the Closing Date, the truthfulness and accuracy of the following representations:
- a) The Ministry of Energy and Mines is duly authorized in accordance with the Applicable Laws and Provisions to act on behalf of the Grantor in this Contract. The execution, delivery, and performance of the Contract by the Grantor fall within its powers, comply with the Applicable Laws and Provisions, and have been duly authorized by the Competent Governmental Authority.
 - b) No other action or procedure by the Grantor or any other Competent Governmental Authority is necessary to authorize the execution of the Contract or for the performance of the Grantor's obligations as established herein. The Contract has been duly and validly executed by the authorized representative(s) of the Grantor and, along with the execution and delivery thereof by the Concessionaire, constitutes a valid, binding, and enforceable obligation for the Grantor.
- 2.3 The Concessionaire warrants to the Grantor that, during the period starting on the Closing Date and ending upon the completion of ten (10) years of the Commercial Operation of the Project, the Qualified Operator shall be the holder of the Minimum Ownership Interest, and the party responsible for the technical operations of the Concession from the design of the Project until the conclusion of said period.
- At the request of the Concessionaire, the Grantor shall permit the replacement of the Qualified Operator by another Person before the expiration of the indicated period, provided that said Person meets the minimum qualification requirements set forth in the Bidding Terms and Conditions. If the Grantor does not respond to the request within sixty (60) Days, the request shall be understood as accepted, without prejudice to the corresponding subsequent evaluation, for the purpose of verifying and/or demanding the compliance with the minimum requirements. A denial may only be based on the failure to meet the requirements established in the Bidding Terms and Conditions for the Qualified Operator.
- The Base Rate includes the concepts set forth in Definition 3 found in Annex 3 to the Contract, understanding this to include the labor of the Qualified Operator. Therefore, under no circumstances shall any consideration or compensation that may have been agreed to, or is agreed to in the future, between the Concessionaire and the future Qualified Operator be added to the Base Rate.
- 2.4 As from the Closing Date, the Concessionaire shall be responsible, in accordance with the Applicable Laws and Provisions, for the damages, harm, or losses caused to, or by, the Concession Assets. Starting with the Startup of Commercial Operation, it shall also be responsible for the provision of the Service.
- The Concessionaire shall hold the Grantor harmless from any action or challenge of a legal, administrative, arbitral, or contractual nature, or claim of any kind with regard to the Concession Assets or the provision of the Service, except in the event that the damages or losses are caused by the Grantor, its personnel, representatives, agents, or the Inspector.



3. PURPOSE, VALIDITY, AND CONTRACT TERM

- 3.1. The Concessionaire undertakes to design, finance, supply the assets and services required; to build, operate, and maintain the Project; and to provide the Service, all in accordance with the Contract, and the Applicable Laws and Provisions. For said reason, the Concessionaire shall define, among others, the route and the alignment of the Project, in order to meet the deadlines established in Annex 7 to the Contract. The location of the Project described in Annex 10 is for reference purposes.

The activities or provisions that form part of the Concession, and which therefore constitute the purpose of the rights and obligations assumed by the Parties, are those contained in this Contract.

- 3.2. While the Contract remains in force, the Concessionaire shall be the owner of the Concession Assets and shall use them for the provision of the Service. Upon the termination of the Contract, the Concessionaire shall transfer the Concession Assets to the Grantor in accordance with the provisions established in Clause 13.
- 3.3. The Contract shall enter into force on the Closing Date and expire thirty (30) years after the Start up of Commercial Operation. The Contract term comprises the construction and commercial operation period.

4. CONSTRUCTION

- 4.1. The electrical rights (Definitive Electrical Transmission Concession Contract), the imposition of easements, and, in general, any other authorization or the like that, according to the Applicable Laws and Provisions, is required by the Concessionaire to comply with its obligations under the Contract, are Concession Assets, and shall be requested by the Concessionaire from the Competent Governmental Authority as per the procedure and in compliance with the requirements established in the Applicable Laws and Provisions.

The Grantor shall impose the easements required in accordance with the provisions set forth in the Applicable Laws and Provisions but shall not assume the costs incurred in obtaining or maintaining said easements.

The Concessionaire shall also obtain the permits, licenses, authorizations, concessions, easements, rights of use, and other surface rights and the like, in accordance with the requirements and formalities set forth in the Applicable Laws and Provisions.

- 4.2. The Concessionaire shall acquire and safeguard the rights over the land required by the Project and its future expansions, as per Annex 1, and shall perform the corresponding legal clearing of property. The Concessionaire shall acquire and install in the lines and substations new equipment and materials from manufacturers recognized for their quality and prestige in the electricity market, in accordance with this Contract and in compliance with the Applicable Laws and Provisions. Such manufactured must be ISO 9001 certified. New equipment and materials shall be understood to mean those manufactured no more than two (2) years prior to the Closing Date and that have not been used.

Used equipment or materials may be employed only during the operation of the Project, provided it is necessary to do so to temporarily address defects or failures while the compromised equipment or materials are replaced with new ones. The maximum period for the use of used equipment or materials shall be twelve (12) months. These decisions shall be notified to the OSINERGMIN, who shall perform the necessary supervision, in accordance with the procedure approved for such purpose.



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Contractors and subcontractors hired for the construction of the work shall hold ISO 9001 certification and comply with all labor laws.

- 4.3. The milestones established in Annex 7 shall be attained by the deadlines set forth in said annex, without prejudice to the provisions established in Clause 10.

When the failure to attain any of said milestones is due to an improper action or omission by the Competent Governmental Authority, understood as the halting, hampering, or delay of the approval of the Pre-Operating Study or other authorizations issued by the COES with regard to the **POC**, as well as the granting of permits, licenses, authorizations, concessions, easements, rights of use, and other similar surface rights necessary for the construction of the Project (despite the fact that the Concessionaire has met all the requirements and fulfilled all the procedures demanded by the Applicable Laws and Provisions), such deadlines shall be understood as extended for a period equal to that of the halting, hampering, or delay, provided the critical path for the construction of the Project has been affected. For the extension of the deadline, it is required to notify the Grantor by the third Day following the start of the improper action or omission by the Competent Governmental Authority, attaching the respective supporting documentation, with a copy to the OSINERGMIN. The Grantor may request clarifications or the rectification of objections by the Concessionaire, granting it a reasonable term to do so.

Any dispute regarding the extension of deadlines shall be resolved in a domestic arbitration, in accordance with Clause 14.

- 4.4. Prior to the start of construction, the Concessionaire must obtain the certificate of acceptance of the Pre-Operating Study from the COES, as per the requirements and procedures established by said entity.
- 4.5. The Experimental Operation shall begin once the OSINERGMIN approves the final report referred to Clause 5.3 and once the COES has approved the integration of the Project into the SEIN, as per COES Procedure PR 20, as substituted, and the Applicable Laws and Provisions.
- 4.6. The Concessionaire undertakes to contract and assume the costs required for the supervision of the work. It shall hire a company specializing in the supervision of transmission lines with voltages of 220 kV or higher, which shall not be a Related Company to the Concessionaire. The selection of the supervisor shall be in accordance with the Terms of Reference set forth in Annex 11 to the Contract, and be approved by the OSINERGMIN. The expenses incurred in said supervision form part of the Concessionaire investment proposal.
- The Supervisor shall begin its work upon the start of the Project's engineering or Pre-Operating Study, whichever occurs first.

- 4.7. The schedule of activities that the Concessionaire plans to follow for the performance of the works shall be submitted by the Concessionaire, properly paginated and approved, to the OSINERGMIN and the Grantor, within twelve (12) months from the Closing Date. The schedule shall contain the milestones detailed in Annex 7. The Concessionaire shall initiate, and, in general, perform all the activities established in the schedule, taking the necessary precautions that a diligent electrical transmission concessionaire could be expected to take, in order to avoid any delay or failure to comply with the schedule.

By the same deadline, the Concessionaire shall also submit the source hardcopy and digital copy of the Project's definitive engineering plans, which shall include the Descriptive Report indicated in Annex 8, which shall also include the following sections: Supporting Calculations, Schedule of Quantities, Supply and Erection Specifications, and AutoCAD drawings.

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The Supervisor shall issue a Report confirming that said engineering plans comply with the technical scope specified in Annex 1 and the Pre-Operating Study, approved in accordance with CEOS Technical Procedure No. 20, as substituted. In case of any discrepancy between the technical scope established in Annex 1 and the Pre-Operating Study approved by the COES, the latter shall prevail, without this resulting in any change to the Base Rate. Said Report shall be submitted to the OSINERGMIN.

Within thirty (30) Days after receiving the Report, the OSINERGMIN shall issue its technical opinion regarding the definitive engineering, which shall be submitted to the Grantor so that, as applicable, it may grant its approval. In the event that any objections are raised, they must be rectified by the Concessionaire by the deadline established by the OSINERGMIN. The responsibility for compliance with the Engineering specifications falls on the Concessionaire.

The Concessionaire shall provide the OSINERGMIN and the Grantor with an updated version of the schedule within eighteen (18) months after the Closing Date.

- 4.8. Any change in the construction deadlines during the performance of this Contract shall result in the automatic updating of the works performance schedule contained in the Definitive Concession Contract, considering that, according to Section 37-D of the Regulations on the Electrical Concessions Act, the definitive concession includes the works performance schedule set forth in the Contract. The schedule referred to in Clause 4.7 shall be expressed in Dollars, based on monthly periods, in a hardcopy, duly paginated and approved by the Concessionaire, and in a digital version (MS Project). The digital version shall allow the OSINERGMIN to perform verifications on an automated basis, and shall clearly indicate the critical path of the work as a whole.

The progress reports submitted by the Supervisor shall comply with the schedule structure currently in force, with a clear and precise indication of the critical path. If changes are made to the critical path and such changes cause a delay of more than thirty (30) calendar days in the planned date for the Start up of Commercial Operation, the Concessionaire shall provide the Grantor and the OSINERGMIN with an updated schedule within ten (10) calendar days following the occurrence of such event, detailing the actions taken.

- 4.9. The Concessionaire shall provide the OSINERGMIN and the Grantor with an updated version of the schedule referred to in Clause 4.7 within twenty-four (24) months following the Closing Date.
- 4.10. A copy of the reports prepared by the Supervisor, as indicated in Clause 4.8, shall be delivered on a monthly basis to the OSINERGMIN and the Grantor. Without prejudice to the foregoing, the OSINERGMIN may, through its own personnel or specialized firms, on its own account and at its own cost and risk, monitor the performance of the works and perform the technical inspection of the construction quality, for which purpose the Concessionaire shall provide all facilities reasonably requested of it, provided they do not affect the normal development of the Project's construction schedule.

However, if, during the technical inspection, deficiencies are identified of such a nature that they affect the scope of the Project, affect the technical quality of the facilities, or pose a risk to the quality of the Service, the Grantor—with the supporting information provided by the OSINERGMIN—shall request that the Concessionaire make the necessary changes before continuing with the works or facilities subject matter of such objections.

For such purposes, the Grantor shall provide the Concessionaire with sufficient information in support of the deficiencies detected by the OSINERGMIN that effectively warrant the requested corrections, along with a favorable report on the matter issued by the Supervisor. The Concessionaire shall have a term of ten (10) Days, counted as from



the reception of the aforementioned information, to raise any objections it may deem relevant to the requested corrections.

- 4.11. Starting with the sixth month after the Closing Date, the Concessionaire shall be obligated to submit a monthly report to the Grantor and the OSINERGMIN, within the first fifteen (15) calendar days following the month being reported on, regarding the progress of the Project, including the development of engineering, procurement of equipment and materials, the construction of works, and other relevant aspects requested by the Grantor and/or the OSINERGMIN. The structure of said report shall be established by the OSINERGMIN.
- 4.12. The Concessionaire is obligated to create and keep a works log, in triplicate, duly numbered and authorized by a notary public, which shall be created one day before the start of the performance of works, and in which the duly accredited representatives of the Supervisor and the Concessionaire shall note down and sign all major incidents in the course of performing the works. The works log shall be kept at the Works site at all times, under the custody of the Concessionaire. The OSINERGMIN may access the works log whenever so required. At the end of each month, the Concessionaire shall deliver a copy of the updated works log to the Grantor and the OSINERGMIN.

5. COMMERCIAL OPERATION

- 5.1. Once construction has been completed and the internal operating tests have been conducted, including functional tests on the equipment, among others, with the system de-energized, the Concessionaire shall proceed, in the presence of the Inspector, the Supervisor, and the OSINERGMIN, to perform the onsite verification tests, aimed at proving—according to the methodology established in Annex 2—that the Project meets the requirements established in Annex 1 and the Pre-Operating Study approved by the COES. In case of discrepancy in the technical scope of the Project, the abovementioned approved study shall prevail. The Concessionaire shall provide the Inspector with the facilities necessary to perform the required technical inspections.
- 5.2. The Inspector referred to in the preceding point shall be selected by the Concessionaire from a list of at least three (3) companies to be proposed by the Grantor no less than twelve (12) months prior to the scheduled date of Start up of Commercial Operation, so that it may commence its duties no less than eight (8) months prior to said date. The Concessionaire shall be free to choose the Inspector if the Grantor does not propose a list of three (3) companies by the abovementioned deadline.

The Concessionaire shall be responsible for negotiating the Contract and hiring the Inspector. The expenses required for the inspection shall form part of the Concessionaire's investment proposal. The scope of the Contract with the Inspector shall be previously approved by the Grantor, and shall include the duties set forth for such purpose in this Contract. The Inspector's professional fees shall be covered by the Concessionaire.

The results of the selection shall be submitted to the Grantor for informational purposes.

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5.3. Upon the successful completion of the Project Test Verification Procedure contained in Annex 2, with the OSINERGMIN’s approval of the final report referred to in said Annex, the prerequisite for the start of Experimental Operation shall be understood to have been met. Once the Experimental Operation has been successfully completed, Commercial Operation shall begin.

5.4. Experimental Operation shall be performed for a period of thirty (30) calendar days, beginning upon the successful completion of the Project Test Verification Procedure contained in Annex 2 and after the COES approves the Project’s integration into the SEIN, in accordance with COES Procedure PR-20, as substituted, and the Applicable Laws and Provisions. If the Project and its components operate during this period without interruptions attributable to the engineering study, operating study, material quality, construction quality, or system equipment, the Start up of Commercial Operation shall occur.

If, during the Experimental Operation period, interruptions occur that are attributable to the engineering study, operating study, material quality, construction quality, or system equipment, the Experimental Operation period shall be suspended by virtue of a notice to be issued by the OSINERGMIN. If the rectification and respective tests require more than five (5) calendar days, the period of thirty (30) calendar days shall restart once the interruption has been overcome. If five (5) or fewer days are required, the calculation of the Experimental Operation period shall continue.

The day on which the Experimental Operation is determined to be compliant, the corresponding certificate shall be entered into by and between the OSINERGMIN and the Concessionaire.

5.5. The right to receive the payment under the rate regimen referred to in Clause 8 shall be acquired with the Start up of Commercial Operation.

5.6. Starting on the Closing Date, the Concessionaire shall be responsible, in accordance with the Applicable Laws and Provisions, for the damages, harm, or losses caused to or by the Concession Assets. Starting with the Start up of Commercial Operation, it shall be additionally responsible for the provision of the Service.

The Concessionaire shall hold the Grantor harmless with regard to any action or challenge of a legal, administrative, arbitral, or contractual nature, or any claim of any nature with regard to the Concession Assets or the provision of the Service, except in the event that the damages or harm are caused by the Grantor, its personnel, representatives, agents, or the Inspector.

5.7. The Service shall be provided in accordance with the Contract, the Applicable Laws and Provisions, and Annex 1, so as to guarantee the quality, efficiency, and continuity of the Service.

The failure to comply with the Applicable Laws and Provisions during the provision of the Service shall be penalized by the OSINERGMIN according to the Offense Classification and Sanctions Scale established for such purpose, which does not exclude compensations for poor supply quality or poor service quality specified in the NTCSE, as applicable.

In accordance with the Applicable Laws and Provisions, the Concessionaire shall allow third parties to access the Essential Installations subject matter of this Contract, so that they are able to connect to said installations whenever this is economically and technically feasible and does not affect the provision of the Service. For such purpose, the Concessionaire is obligated to allow the use of its facilities by third parties, who shall assume the costs for any expansions to be performed, as necessary.

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If, in addition to receiving the expansion costs, the third party pays the Concessionaire considerations or other payments for the use of the installations in addition to the costs in question, such considerations or payments shall be deducted from the Base Rate during the corresponding settlement process.

- 5.8. The Concessionaire shall be a member entity of the COES prior to the start of the Experimental Operation and shall provide the Service while acting at all times in accordance with the provisions established by said body, with regard to normal operating conditions, maintenance scheduling, and states of alert, emergency, or recovery, as each of them is defined by COES.
- 5.9. The Concessionaire shall provide the Competent Governmental Authority with the information and inspection facilities required to supervise the correct performance of its obligations under the Contract. Inspections shall be performed in such a way that they do not affect the Project's operation.
- 5.10. The Concessionaire shall keep an up-to-date inventory of the Concession Assets, indicating their characteristics, location, state of conservation, operating condition, and performance, among other information. Said inventory shall contain the valuation of the Concession Assets according to the audited Financial Statements. The Concessionaire shall update the inventory of Concession Assets annually as of the closing date of the audited Financial Statements and shall deliver each updated inventory to the Grantor and the OSINERGMIN no later than June 30 of each year, together with the audited Financial Statements for the immediately previous fiscal period, as well as the supporting documentation on those Concession Assets that have been included in the Financial Statements during the corresponding year. In the event that the Concessionaire is carrying out more than one electrical transmission concession, it shall keep separate accounting records for the Project. For such purpose, the Concessionaire shall organize the accounts related to the Project such that its economic-financial situation can be assessed independently from the other accounts. The inclusion of accounts from other projects or assets unrelated to the Project shall not reduce, change, or prevent the combination of the Project's accounts and its independent economic-financial assessment.
- 5.11. The Concessionaire shall implement and maintain an adequate quality assurance program that meets, at a minimum, the provisions established in the NTP-ISO-9001 standard during the construction of the Project; and those established in the NTP-ISO-9004-2 standard during the exploitation of the Service, as substituted.
- 5.12. The Concessionaire has no right to challenge, in any form or under any jurisdiction whatsoever, any installation that, according to the Transmission Plan, must form part of the Project, nor any Reinforcement to be implemented in accordance with Section 22, Subsection 22.2, Item b) of Law No. 28832, as substituted, nor the Base Rate that the OSINERGMIN has approved for the Reinforcement. It shall only have the option to decide whether or not to exercise its preemptive right.

If the Concessionaire does not exercise its preemptive right to perform a Reinforcement in the form and by the deadline established by the Applicable Laws and Provisions, the Grantor shall send the Concessionaire a notice indicating the facilities that the Concessionaire must provide during the bidding process, as well as the facilities, arrangements, and distribution of responsibilities for the design, construction, operation, and maintenance of the Reinforcement, along with the budget approved by the Grantor for the connection costs proposed by the Concessionaire.

The additional costs incurred in the activities requested by the Grantor by virtue of this Clause shall be covered by the new concessionaire who performs the Reinforcement.



If the Concessionaire disagrees, in whole or in part, with said notice, the dispute shall be resolved in accordance with Clause 14. The start of the bidding process for the Reinforcement or the facility that will form part of the Project is not subject to the conclusion of the arbitration, but the awarding of the contract in the bidding process for the Reinforcement may be subject to the conclusion of the Arbitration, at the criteria of the Grantor.

- 5.13. The Concessionaire shall penalize with a payment in favor of the Grantor when the out-of-service rate for the line exceeds the tolerance established in Point 2.2.5 h) of Annex 1. The calculation of the penalty shall be determined by multiplying the excess of the out-of-service-rate beyond the tolerance by 0.5% of the corresponding Base Rate.

For such purpose, the procedure set forth in Clause 11.3 of the Contract shall be applied. Said penalty shall be applied independently of the compensations to third parties specified in the NTCSE due to poor supply quality or poor service quality.

6. CONTRACTS WITH THIRD PARTIES

- 6.1. In all contracts or agreements that the Concessionaire enters into with its partners and with third parties in direction relation to the construction, operation, and maintenance works and the provision of the Service, with the exception of (i) Contracts by adhesion with administratively approved contracting clauses; and (ii) the Contracts to be entered into with the Permitted Creditors, shall include Clauses establishing the following:

- a) The Grantor is not responsible for the credits or rights derived from contracts between the Concessionaire and third parties.
- b) Limitations on the duration thereof, so that it does not exceed the validity or term of the Contract, under any circumstances.
- c) The waiver of the right to file suits for civil liability against the Grantor and its officers, representatives, and any type of personnel tied thereto.
- d) Clause permitting the Grantor, at its exclusive decision, to assume the position of the Concessionaire in said Contract, through the assignment of contractual position authorized irrevocably in advance by the corresponding legal entity, in case of the termination of the Concession for any reason, making it possible to continue with such Contracts under the same terms, and thus, the performance of the Project or the provision of the Service.

In those contracts and agreements that the Concessionaire enters into with third parties and with the Permitted Creditors, it shall be established that the Grantor is not liable for the credits or rights derived from said Contracts entered into by and between the Concessionaire and third parties.

The Concessionaire shall send the Grantor, with a copy to the OSINERGMIN, within ten (10) calendar days after entering into and/or amending them, as applicable, a copy of the Contracts it deems indispensable for the performance of the Project and the provision of the Service (construction, operation, and maintenance Contracts or the like). Likewise, it shall submit a detailed and complete list of all Contracts entered into and currently in force regarding the performance of the Project and the provision of the Service, to be submitted within the first fifteen (15) calendar days of each year.

Where applicable, the Concessionaire shall provide copies of those Contracts that are additionally requested by the Grantor within ten (10) calendar days after the corresponding request is made.



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Under no circumstance shall the Concessionaire be exempted from liability before the Grantor for acts or omissions arising from the performance of Contracts entered into with third parties that may influence or affect the Concession.

- 6.2. In its labor relations, the Concessionaire shall obey all labor laws in force in the Republic of Peru.

Employment contracts with the Peruvian or foreign personnel of the Concessionaire, the performance of said contracts, and their termination, are subject to the laws regulating labor relations with private sector workers. Special employment systems shall apply, as applicable.

The Concessionaire shall strictly comply with the Applicable Laws and Provisions on labor matters regarding the employer's formal obligations (payrolls, pay slips, etc.), the payment and withholding of pension contributions, and contractual and legal obligations regarding occupational health and safety. In particular, the Concessionaire shall observe the provisions established in Law No. 29783—the Occupational Health and Safety Act, its regulations, and related provisions, as amended, supplemented, or substituted.

The Concessionaire shall have a team of personnel, whether its own or subcontracted, that guarantees the adequate provision of the Service during the agreed schedule of Operation, in case of any emergency.

In case of the termination of the Concession, the Concessionaire is exclusively responsible for the payment of all labor benefits, considerations, and other legal, conventional, or unilateral benefits owed to its workers as of the date on which the termination of the Concession occurred.

In the event that the Grantor is ordered by the courts to pay any workers' compensation debts to one or more of the Concessionaire's workers that arose during the term of the Concession Contract, the Grantor shall have the right to file a claim for recovery against the Concessionaire.

The Concessionaire shall freely determine the number of personnel it requires for the performance of the Contract.

7. INSURANCE CONTRACTS

- 7.1. The Concessionaire shall take out all insurance policies required by virtue of this Contract with insurance companies that have a minimum rating of “A,” according to an evaluation performed by a national credit rating agency, duly authorized by the Peruvian Securities and Exchange Commission (SMV).

In the event that the insurance companies with which the Concessionaire wishes to take out insurance policies do not operate in the Republic of Peru, the Concessionaire shall prove to the Grantor, for its approval, that said company:

- a) It is legally established in its country of origin and has the ability to insurance risks originating abroad;
- b) It has the power, in accordance with the laws in force in its country of origin, to issue the policies required in this Clause;
- c) It has an international credit rating equal to or better than “BBB+” (or equivalent rating). Said rating shall be granted by a credit rating agency that rates the Republic of Peru.

The international reinsurers that cover the risks of the insurance company with which the Concessionaire takes out its insurance policies shall have a minimum rating of “A-,”

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granted by an international credit rating agency that rates the Republic of Peru at the time the policies are taken out and upon their subsequent renewals.

- 7.2. While the Contract is in force, the Concessionaire—assuming all costs, including the deductible, premiums, and/or coinsurance—shall take out and maintain the following insurance policies, as from the start of the works:
- a) Civil liability insurance against any damage, loss, or injury that may occur to assets and people. This policy shall cover an amount not less than that established by the risk assessment that the Concessionaire shall obtain from a specialized, internationally recognized company, with a minimum insured amount of US\$ 5,000,000 (Five Million U.S. Dollars). In this case, the Grantor shall be given as an additional insured party.
 - b) Insurance covering the value of the Concession Assets. The policies taken out shall be in keeping with the nature of each asset. The coverage shall include the following, at a minimum: partial or total damages, damages caused by water or flooding, earthquakes, cave-ins, fire, terrorism, vandalism, civil disturbance, robbery, theft, unlawful appropriation, and damages caused by third-party error or failure. The policies shall cover an amount not less than the probable maximum loss (PML), the amount of which shall be determined by the risk assessment indicated in the preceding item.
 - c) Labor insurance, as required in accordance with the Applicable Laws and Provisions.
- 7.3. The insurance certificates for each policy shall include the following characteristics:
- a) Contain a declaration in which the Grantor is listed as an additional beneficiary, as applicable.
 - b) Contain a declaration in which the insurance company waives all rights of subrogation against the Grantor.
- 7.4. In case of underinsurance or events not covered due to insufficient insurance of the Concessionaire, the Concessionaire shall be responsible for the amount not covered.
- 7.5. Those policies issued in accordance with the provisions set forth in this Clause shall contain the following stipulations:
- a) The insurance company is obligated to notify the Grantor of any failure to pay by the Concessionaire, no less than twenty-five (25) Days before the date on which such omission may result in the expiration or loss of force of the policy, in whole or in part. The notification obligation shall also apply to cases of discontinuance, withdrawal, cancellation, or failure to renew any insurance that the Concessionaire is required to maintain in accordance with this Contract.
 - b) In case of Total Destruction, the policy beneficiary shall be the Grantor. The insurance company shall pay the benefits of the respective policies by delivering them directly to a trustee, which shall be instructed, with the prior approval of the Grantor, to deliver the money to the Concessionaire in the event that the Parties agree to carry out the reconstruction in accordance with Clause 13.7.2, Item a), in which case the provisions established in Clause 7.6 shall apply. Otherwise, the trustee shall proceed to apply the provisions established in the final paragraph of Clause 13.7.2. The establishment of the trust and its cost shall be assumed by the Concessionaire.
- 7.6. If the loss does not qualify as Total Destruction:
- a) The Concessionaire undertakes to use the money received from the insurance to replace and/or repair the assets affected by the respective loss.

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- b) In the event that the resources from the insurance are insufficient to replace or repair the affected assets, the Concessionaire shall be responsible, at its own cost, for covering the remaining amount.
- c) The works for the replacement and/or repair of the assets shall be performed in such a way that the Service is suspended only for the minimum indispensable amount of time.

8. RATE REGIMEN

8.1 For the purposes of this Clause, the following definitions shall apply:

- a) **Base Rate:** Annual Amount defined in Section 1 of Law No. 28832, to be paid for the provision of the Service and determined in accordance with this Clause 8.
- b) **Capital Expenditure:** The amount of US\$ _____. Constitutes the investment or investment component referred to in Sections 24 and 25 of Law No. 28832 (Forms 4 and 4-A, included as Annex 6 hereto).
- c) **Annual Operating and Maintenance Cost:** The amount of US\$ _____. Constitutes the efficient operating and maintenance costs referred to in Sections 24 and 25 of Law No. 28832 (Forms 4 and 4-A, included as Annex 6 hereto).
- d) **Recovery Period:** The term of thirty (30) years, counted as from the Start up of Commercial Operation.
- e) **Adjustment Rate:** Corresponds to the value of the updating rate referred to in Section 79 of the Electrical Concessions Act, in force as of the date on which the Bids are submitted.
- f) **Adjustment Index:** Is the WPSFD4131 index (*Finished Goods Less Food and Energy*) published by the United States Department of Labor. The most recent published data shall be considered definitive on the reporting cutoff date to be used to implement the corresponding regulation. The initial index shall be based on the most recent definitive published data for the month in which the Bids are submitted.
If the WPSFD4131 index is discontinued, it shall be replaced with the equivalent index that substitutes it according to the official declaration of the United States Department of Labor, or the body that replaces it.

8.2 The Capital Expenditure and the Operating and Maintenance Cost indicated in Clause 8.1 are expressed as of the Bid Submission date. Said amounts shall be updated annually using the Adjustment Index established in Clause 8.1, Item f). The adjusted values are those expressed at the end of each rate period.

8.3 The Base Rate shall be governed by the provisions established in Law No. 28832 and the Transmission Regulations in force as of the Bid Submission date.

8.4 The OSINERGMIN establishes the Base Rate in accordance with Sections 24 and 25 of Law No. 28832 and Section 22 of the Transmission Regulations, using the Adjustment Rate defined in Clause 8.1, Item e).

8.5 The Base Rate shall be paid by the users in accordance with Section 26 of Law No. 28832 and Section 27 of the Transmission Regulations. The calculation of the monthly rate shall be performed using the Adjustment Rate defined in Clause 8.1, Item e).

8.6 The Base Rate includes the results of the annual settlement to be performed by the OSINERGMIN in accordance with Section 24, Item c) of Law No. 28832 and Section 22, Subsection 22.4 of the Transmission Regulations.

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- 8.7 The OSINERGMIN shall approve the detailed procedures required for the application of this Clause, including all matters related to the conversion to Dollars of the revenue received in Soles, the rounding of figures, the preliminary settlement of revenue, and the information and documentation to be presented, in accordance with the Applicable Laws and Provisions.
- 8.8 The Base Rate remunerates all costs associated with the Project and the provision of the Service and includes only those concepts expressly established in the Contract.

9. CONCESSION FINANCING

- 9.1. To comply with the purpose of the Contract, the Concessionaire may obtain its own financing or third-party financing, as it deems most advisable.

The preceding paragraph does not release the Concessionaire from its obligation to comply with each and every one of the provisions established in this Contract, the Definitive Concession Contract, and the Applicable Laws and Provisions. The financial institutions or any person acting on behalf of the Concessionaire shall not be responsible for the compliance with the Concessionaire's obligations established in the Contract and in the Applicable Laws and Provisions.

- 9.2. In the structuring of the financing, the Concessionaire may include:
- a) Guarantees to be granted to the Permitted Creditors, which include encumbrances on the Concession Assets, the Concession right, the shares or ownership interests in the Concessionaire, or any other right corresponding to the Concessionaire according to the Contract.
 - b) The transfer of ownership in trust of the Concession right to a trust estate. In such case, to be accepted by the Grantor, the Concessionaire shall maintain all the obligations undertaken by virtue of this Contract, without any exception whatsoever.
 - c) For cases a) and b), the prior approval of the Grantor shall be required, to be given within no more than thirty (30) Days, counted as from the reception of the request submitted by the Concessionaire. To the contrary, the request shall be understood as approved. In the event that the guarantees include only the cash flows from the provision of the Service, the prior approval of the Grantor shall not be required.
 - d) The Concessionaire shall submit the documents proving the Financial Close to PROINVERSIÓN for its review and approval, in accordance with the provisions set forth in Section 26, Subsection 26.4 of Legislative Order No. 1362.
- 9.3. If the financing includes or is guaranteed by the Concession Assets, the Concession right, the cash flows from the provision of the Service, or any right to which the Concessionaire is entitled under the Contract (hereinafter, the “Permitted Secured Debt”), the Concessionaire shall comply with the following Clauses.
- 9.4. Those Contracts supporting the Permitted Secured Debt shall stipulate the following:
- a) Financial terms, including the interest rate(s), capital adjustments, payment conditions, and other terms, as usual for operations under similar conditions in the domestic and/or international market.
 - b) The resources obtained:
 - i) Shall be allocated exclusively for the financing of the Concession Assets, for the procurement of goods and contracting of services required to provide the Service, or as working capital for the exploitation of the Concession Assets, as well as to construct, equip, and operate the Concession.

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- ii) Without prejudice to the provisions set forth in the preceding Item i), any long-term financing arranged for by the Concessionaire may be used: (a) to pay bridge loans and other debts used for the procurement of Concession Assets, or for the provision of the working capital necessary for the exploitation of the Concession Assets; or (b) to substitute loans from shareholders or Related Companies (provided they have been allocated for the purposes indicated in the preceding Items i) or ii)), in accordance with the maximum debt parameters established in the financing Contracts executed.
- c) None of such transactions may directly or indirectly cause the Concessionaire to be released from its obligation to comply with each and every one of the provisions of the Contract and the Applicable Laws and Provisions.
- d) The Concessionaire and the Permitted Creditors shall release all guarantees, liens, and encumbrances that may exist on the Concession Assets or the Concession rights no later than the end of the period of twenty-five (25) years counted as from the POC. In case of the termination of the Contract for causes other than the expiration of the Contract term and termination by mutual accord, the aforementioned obligation shall be complied with within a term of no more than sixty (60) Days after the decision to terminate the Contract has been notified in application of the corresponding grounds.

The obligations indicated in this item shall be enforceable even if the pending obligation by the Concessionaire to the Permitted Creditors or third parties subsists. The failure to comply, or the partial, late, or defective compliance with these obligations shall give rise to the Concessionaire's obligation to pay the Grantor the penalty established in Point 5 of Annex 10.

9.5. The Contracts supporting the Permitted Secured Debt may stipulate:

- a) That if the Concessionaire or the Permitted Creditors so request, the Grantor shall send the Permitted Creditors a copy of the correspondence sent by the Grantor to the Concessionaire and inform them of any event that may result in the termination of the Contract. The Permitted Creditors shall indicate to the Grantor the correspondence with regard to which they are seeking a copy.
- b) That the Permitted Creditors may ask the Grantor to substitute the Concessionaire, without the need for the Concessionaire's consent, in case of the occurrence of an event of substantial default, as defined in each financing Contract.

To make this request, the Permitted Creditors shall have notified the Concessionaire of such event and proceeded in accordance with the provisions established in the financing Contract itself.

The substitution of the Concessionaire shall be performed as follows:

- i) The Permitted Creditors shall propose to the Grantor a company with the technical qualifications necessary to meet, whether met directly or through Related Companies, the Qualification requirements demanded in due time in the Process, to assume the contractual position of the Concessionaire or change the Qualified Operator, as applicable, and to guarantee the continuity of the Service.
- ii) The Grantor shall not deny the substitution without expression of just cause and shall respond to the request within thirty (30) Days. To the contrary, the request shall be understood as accepted.

The new concessionaire shall have a term of one hundred eighty (180) calendar days, counted as from the submission of the request, to commence its operations.

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Once said term has expired, the Grantor shall be forthwith entitled to request the Termination of the Contract.

- c) That the Permitted Creditors, in case of the termination of the Contract, shall have the right to receive the applicable sums of money following the tender process for the Concession in accordance with the order of priority established in Clause 13.14.
- 9.6. Once the Financial Close has occurred, the Concessionaire shall deliver to the Grantor and PROINVERSION a copy of the respective Contracts with the Permitted Creditors, trustees, and any other Person involved in the transaction. The Concessionaire shall likewise deliver a copy of any amendment to said Contracts, or other Contracts executed subsequently, within thirty (30) days following the execution thereof. Additionally, it shall inform the Grantor every six (6) months of the outstanding balances owed to each creditor.
- 9.7. This Contract does not include the granting or taking out of financial guarantees on the part of the Peruvian State in favor of the Concessionaire.

10. FORCE MAJEURE EVENTS OR ACTS OF GOD

- 10.1. The construction stage, which runs from the Closing Date to the Start up of Commercial Operation, shall be subject to the provisions established in Clauses 10.2 to 10.8. Starting with the Project's integration into the SEIN, the research, assignment of responsibilities, determination and payment of compensations, review or challenge, request for force majeure or acts of God for issues involving the interruption of the supply, as well as any other matters related to the Technical Quality Standards for Electrical Services, as supplemented, shall follow the provisions established in said standards, as supplemented or amended, and the Applicable Laws and Provisions.
- 10.2. None of the Parties shall be held responsible for the failure to perform an obligation, or for the partial, late, or defective performance thereof, if such failure is due to a force majeure event or act of God.
- 10.3. For the purposes of Clause 10.2, force majeure events or acts of God shall be considered to mean any event, condition, or circumstance not attributable to the Parties, interchangeably, of an extraordinary, unforeseeable, and unavoidable nature, that may prevent any of them from comply with the obligations under their responsibility, or cause the partial, late, or defective performance thereof.

The event shall be out of the reasonable control of the Party invoking the grounds, which, despite all reasonable efforts to prevent or mitigate its effects, is unable to avoid the occurrence of the situation of default.

Force majeure events or acts of God include, but are not limited to the following, provided the foregoing definition is met:

- a) Any act of external, internal, or civil war (whether declared or not), siege state, invasion, armed conflict, embargo, revolution, mutiny, insurrection, civil disturbance, or acts of terrorism, that prevent the Concessionaire from completing the performance of the works or normally providing the Service during the Contract term.
- b) Any strike or stoppage by workers who do not have a labor or business relationship with the Concessionaire or its suppliers that prevents the completion of the works or the normal provision of the during the Contract term.
- c) Any protest, act of violence or force carried out by communal, social, union, or political organizations that directly affect the Concessionaire due to causes not of its own intention, which are not attributable to it and that exceed its reasonable control.

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- d) The discovery of archaeological remains that prevent the Concessionaire from completing the works within the Contract term, or that results in the order to halt the works, issued by the Competent Governmental Authority.
 - e) Any earthquake, flood, drought, fire, explosion, or any other meteorological or hydrological phenomenon, provided it directly affects all or part of the Concession Assets and/or the Work or its elements, and which in turn prevents the Concessionaire from completing the performance of the works or normally providing the Service during the Contract term.
 - f) Any epidemic, contamination, plague, or similar event that prevents or limits the Concessionaire from completing, by the contractually established deadlines, the performance of the works or normally providing the Service during the Contract term.
 - g) The destruction of the Works, in whole or in part, or damages to the Concession Assets, provided that such situation prevents the Concessionaire from performing the obligations under its responsibility.
 - h) The confiscation or requisition of the Concession Assets and the impossibility of their recovery, caused by the order of any public authority, for reasons not attributable to the Concessionaire, that seriously affect the performance of the Contract and prevent the Concessionaire from complying with the obligations under its responsibility.
- 10.4. For those cases affecting the timely performance of any of the milestones established in Annex 7, it shall be possible to prove a force majeure event or act of God only when the critical path of the Project's construction is affected.
- In the cases referred to in this Clause, the Concessionaire shall send the Grantor a notice described the force majeure event or act of God and its impact on the critical path of the Project, attaching the corresponding proof. The Grantor may ask the Concessionaire to clarify any point of doubt or confusion, or to complete the supporting evidence whose content the Concessionaire must know or possess, granting a reasonable term for such purpose.
- 10.5. The Party affected by a force majeure event or act of God shall inform the other Party, within seventy-two (72) hours after the occurrence thereof or after finding out about it, of the following:
- a) The circumstances comprising said force majeure event or act of God; and
 - b) The estimated duration of the total or partial restriction of its activities and the estimated degree of impact. Additionally, it shall keep the other Party apprised of the development of such events.
- In the case that the affected Party fails to submit a request by the established deadline, it shall be understood that said event does not constitute an impediment to the performance of the obligations under its responsibility, unless it is able to justify, by that same deadline, that it requires more time to provide the content indicated hereinabove.
- 10.6. The Concessionaire may likewise request, on grounds of force majeure or act of God, if the circumstances so require, the suspension of the concession term. In such case, the concession term shall be extended for a term equal to that established for the suspension.
- The affected Party shall have a maximum of seven (7) Days after the occurrence of the event or after becoming aware thereof to submit its suspension request to the other Party, attaching a report, which must substantiate the following, as a minimum:

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- i. The occurrence of the event, indicating the start date and the estimated duration of the total or partial suspension of the obligations, including the estimated date for the recommencement of the works.
- ii. The obligation or condition affected.
- iii. The degree of the impact expected to be caused to the affected obligation or condition.
- iv. The mitigative measures adopted.
- v. Proposed regimen for insurance, contractual guarantees, and other obligations whose performance is not directly affected by the event.
- vi. Other actions originating from these occurrences.

The Grantor may ask the Concessionaire to clarify or rectify any objections, granting it a reasonable term to do so. Where applicable, the Grantor, with the prior opinion of the OSINERGMIN, shall update the schedule contained in Annex 7 to the Contract via an addendum.

In the event that the affected Party does not submit a suspension request within seven (7) Days after the occurrence of the event or after becoming aware thereof, it shall be understood that said event does not constitute an impediment to the performance of the obligations under its responsibility, unless it is able to justify, by that same deadline, that it requires more time to provide the content indicated hereinabove.

- 10.7. The declaration of force majeure or an act of God shall not give rise to any right to indemnity between the Parties.
- 10.8. In the case that one of the Parties disagrees with the classification of the event as a force majeure event or act of God, or the consequences thereof, it may avail itself of the dispute settlement procedure established in Clause 14, in accordance with the national arbitration rules.
- 10.9. For the stage starting with the connection to the SEIN, as declared by the COES, and ending with the expiration of the Contract, the evaluation, definition, and declaration of force majeure events or acts of God, as well as their consequences, shall be subject to the Applicable Laws and Provisions.
- 10.10. The Concessionaire is obligated to minimize the scheduled stoppages for maintenance and similar events, in accordance with the Applicable Laws and Provisions, or in the absence thereof, in accordance with best industry practices.
- 10.11. The force majeure event or act of God shall not release the Parties from the performance of those obligations that are not affected by said events. The Concessionaire shall make the best efforts reasonably expected of a diligent electrical transmission concessionaire to ensure the recommencement of the corresponding activity or provision in the shortest time possible following the occurrence of said events. Likewise, if the Grantor requests the declaration of the force majeure event or act of God, it shall make its best effort to overcome said situation.
- 10.12. The Concessionaire may not invoke the approval or effects of the Applicable Laws and Provisions as a force majeure event or act of God in relation to the performance of its obligations.

11. PENALTIES AND SANCTIONS

A. Penalties for Breach of Contract

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- 11.1. Without prejudice to other remedies or powers that the Contract or the Applicable Laws and Provisions may establish in favor of the Grantor in the event of the failure to comply with obligations, the Grantor may demand that the Concessionaire pay a penalty in accordance with the provisions set forth in Annex 12. This power may be exercised without prejudice to the Grantor’s decision regarding whether or not to terminate the Contract in accordance with Clause 13.
- 11.2. The cases of noncompliance referred to in Clause 11.1 shall result in the obligation to pay the respective penalty, without the need for any prior notice. The payment thereof shall not release the Concessionaire from performing the respective obligation.
- 11.3. The payment of the penalties referred to in Clause 11.1 is subject to the following rules:
- a) Said payment shall be requested in writing by the Grantor from the Concessionaire, indicating the bank account in which it shall deposit the corresponding amount, which shall be done within ten (10) Days following reception of the request.

Before said deadline, the Concessionaire may challenge the admissibility of the payment request, thus leading to a dispute to be settled in accordance with Clause 14.

The deadline established in the first paragraph of this item for the payment of penalties shall be suspended in case of a challenge to the admissibility of the payment request by the Concessionaire. The calculation of the deadline shall recommence once the imposition of the penalty is ratified.
 - b) If the dispute is settled in favor of the Grantor, whether through direct negotiations or by virtue of an arbitration award, or the term of ten (10) Days indicated in Item a) hereinabove elapses without any challenge by the Concessionaire to the payment requirement, it shall be understood that the obligation to pay the penalty is enforceable.

In such case, the obligation to pay the penalty shall be complied with on the Day following the expiration of said term, or within three (3) Days after the Concessionaire is notified of the arbitration award, or within three (3) Days after the dispute is settled through direct negotiations, as applicable.
 - c) In the event that the Concessionaire fails to comply with the penalty payment, the Grantor shall be entitled to request the execution of the respective guarantee.

B. Administrative Sanctions due to Violation of the Law

- 11.4 Failure to comply with the legal provisions in force shall be sanctioned by the OSINERGMIN in accordance with the Offense Classifications and Sanctions Scale established for such purpose, which does not exclude compensations for poor supply quality or poor service quality specified in the NTCSE, where applicable.

12. GUARANTEES

- 12.1. In order to guarantee the faithful performance of the obligations assumed under the Contract, including the payment of the penalties referred to in Clause 11, the Concessionaire shall deliver to the Grantor a Performance Bond, in accordance with the following rules:
- a) The Performance Bond shall be joint and several, irrevocable, unconditional, without the benefit of excussion or division, and automatically realizable, issued by any of the banking entities indicated in Annex 6 to the Bidding Terms and Conditions, using the form and indicating the amount established in Annex 4. The submission of the Performance Bond is required by the Closing Date.

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- b) The Performance Bond shall remain in full force from the Closing Date up until one month after the Start up of Commercial Operation. The Performance Bond shall be granted for annual periods until the aforementioned term of validity has been completed. Said Performance Bond shall be returned upon delivery of the Operating Bond described in Clause 12.2.
 - c) In case of delay of the Startup of Commercial Operation, the Performance Bond shall be renewed or extended until the penalty is paid or a final and binding ruling issued stating that there is no applicable penalty payment, as applicable.
- 12.2. In order to guarantee the faithful performance of the obligations assumed under the Contract, including the payment of the penalties established in Clause 11, the Concessionaire shall issue an Operating Bond to the Grantor, as per the following rules:
- a) The Operating Bond shall be joint and several, irrevocable, unconditional, without the benefit of excussion or division, and automatically realizable, issued by any of the banking entities indicated in Annex 6 to the Bidding Terms and Conditions, using the form and indicating the amount established in Annex 4-A.
 - b) The Operating Bond shall be delivered on the occasion established in Clause 12.1, Item b), and remain in force for up to six (6) months after the completion of the Contract's term of validity.
 - c) The Operating Bond shall be granted for annual periods and shall be renewed or extended until the complete transfer of the Concession Assets or so long as any disputes subsist with regard to the Contract or its termination.
- 12.3. If the bonds are about to expire and have not been renewed or extended in accordance with Clauses 12.1 and 12.2, the Grantor may execute the respective bond in its entirety. In such case, the funds resulting from the execution shall automatically, without the need for any additional approval, constitute the corresponding bond until such time as the Concessionaire delivers a new bond to the Grantor. Once the new bond has been provided, the Grantor shall proceed to immediately deliver to the Concessionaire the funds resulting from the execution of the original bond, without interest.
- 12.4. In case of the partial or total execution of the Performance Bond for the Contract or the Operating Bond, the Concessionaire is obligated to replenish to the original amount, in the same conditions established in Clauses 12.1 and 12.2, which shall be done within thirty (30) calendar days following the date on which said bond was executed, in whole or in part, except when it has been executed in compliance with Clause 13.10. If said deadline passes and the Concessionaire has still not replenished the full amount, the Grantor shall be entitled to exercise its right to terminate the Contract as per Clause 13.

13. TERMINATION OF THE CONTRACT

- 13.1. The Contract shall be terminated due to:
- a) Expiration of the Contract term.
 - b) Termination by mutual accord.
 - c) Termination due to breach of contract by the Concessionaire.
 - d) Termination due to breach of contract by the Grantor.
 - e) Termination at the unilateral decision of the Grantor.
 - f) Termination due to force majeure event or act of God.
 - g) Termination in application of the Anticorruption Clause.
- 13.2. Termination due to Expiration of the Contract



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The Contract shall be terminated upon the expiration of the term established in Clause 3, unless the Contract term has been extended or suspended.

13.3. Termination by Mutual Accord

The Contract shall be terminated by written Contract between the Concessionaire and the Grantor. Within five (5) Days after conversations begin for the purpose of terminating the Contract on these grounds, the Concessionaire shall inform the Permitted Creditors of such fact.

13.4. Termination due to Breach of Contract by the Concessionaire

13.4.1 Without prejudice to the applicable penalties, the Grantor may terminate the Contract in the event that the Concessionaire incurs in a serious breach of its contractual obligations, including the following:

- a) It is verified, following the execution of the Contract, that any of the representations established in Clause 2.1 is false.
- b) Delay of over one hundred fifty (150) calendar days in any of the milestones established in Annex 7.
- c) Failure to renew, extend, or replenish the bonds, in accordance with Clause 12.
- d) Stoppage in the operation of the Project, without justified cause, as per the Applicable Laws and Provisions.
- e) Persistence, after the imposition of an administrative sanction by the OSINERGMIN, in the failure to uphold its obligations for the provision of the Service by the established deadlines and in accordance with the safety regulations and quality standards established in the Contract and the relevant technical standards, provided that such sanctions have been ruled final and binding via administrative channels, and by the courts in case the respective contentious administrative proceeding has been brought.
- f) The partial or total transfer of the Contract, under any title, without the prior approval of the Grantor.
- g) Sanction(s) with non-tax-related administrative fines imposed by the Grantor or the el OSINERGMIN, which, in one (1) calendar year—understood as each period running from January 1 to December 31—that exceed ten percent (10%) of the Base Rate for the previous year, provided said fines have been ruled final and binding via administrative channels, and by the courts in case the respective contentious administrative proceeding has been brought. These grounds shall apply starting with the second year of Commercial Operation.
- h) The start, at the petition of the Concessionaire, of a procedure for the merger, spin-off, or transformation of companies or other corporate reorganization, without the corresponding authorization of the Grantor.
- i) Declaration of insolvency, bankruptcy, winding-up, or liquidation.
- j) The start, at the petition of the Concessionaire, of a corporate, administrative, or administrative proceeding for its winding up or liquidation.
- k) The disposal of the Concession Assets in any way other than those provided for in the Contract by the Concessionaire, without the prior written authorization of the Grantor.
- l) A final and binding judicial sentence for a crime of public action to the detriment of the Grantor that causes a serious impact on the Concession.
- m) The issuing of a final and binding court order or administrative decision that prevents the Concessionaire from performing a substantial part of its business,

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provided that any of these measures remains in force for more than sixty (60) calendar days.

- n) The failure to take out any of the insurance policies or the contracting thereof without including the conditions set forth in Clause 7.
- o) The execution of the financing Contracts referred to in Clause 9.1 without including the provisions indicated in Clause 9.4, or, having included them, the violation thereof.
- p) Failure to comply with the provisions established in Section 33 of Executive Order No. 240-2018-EF, regarding the hiring of individuals or private-sector legal entities for the preparation of studies and consultancies on the Project, during the process for the promotion thereof.
- q) Failure to perform any of the activities requested by the Grantor, as set forth in the second paragraph of Clause 5.13 hereof.
- r) A final and binding resolution via administrative channels, and by the courts in case the respective contentious administrative proceeding has been brought, declaring the expiration of the definitive concession.
- s) A declaration by the Competent Governmental Authority, via a final and binding resolution, determining a serious impact on the environment, the cultural heritage of the nation, and/or natural resources caused by the willful or negligent violation of the recommendations set forth in the respective Environmental Management Instrument.
- t) Unjustified, serious, and repeated failure to perform any obligation of a substantial nature established in the Contract or the Applicable Laws and Provisions, different from those referred to in the preceding items.

13.4.2 The Grantor may also terminate the Contract in the event that the Concessionaire fails to comply with the obligations of the Qualified Operator during the period required as per the Contract, in relation to:

- a) Conserving the Minimum Ownership Interest;
- b) Maintaining or exercising the right and obligation to control the technical operations.

The cases referred to in Clauses 13.4.1 and 13.4.2 are considered grounds for termination only if a written request is issued and the Party at fault fails to rectify the lack of compliance, to the satisfaction of the other Party, within thirty (30) calendar days, extendable for up to an additional thirty (30) calendar days, counted as from the date on which the notice is received.

The termination of the Contract due to breach of contract by the Concessionaire shall not give rise to any right of indemnity on the part of the Concessionaire for damages and losses.

13.5. Termination due to Breach of Contract by the Grantor

The Concessionaire may put an end to the Contract in the event that the Grantor incurs in a serious violation of the contractual obligations under its responsibility, as detailed herein below:

- a) Any of the deadlines indicated in Annex 7 is extended for more than twelve (12) months, due to an improper action or omission attributable to the Grantor.
- b) Unjustified failure to comply with the procedure put in place for the reestablishment of the economic-financial balance set forth in the Contract.
- c) The Grantor incurs in any unjustified, serious, and repeated failure to perform any of its obligations established in the Contract or the Applicable Laws and Provisions.

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The aforementioned cases are considered grounds for termination only if a written request is issued and the Party at fault fails to rectify the lack of compliance, to the satisfaction of the other Party, within thirty (30) calendar days, extendable for up to an additional thirty (30) calendar days, counted as from the date on which the notice is received.

13.6. Termination at the Unilateral Decision of the Grantor

For duly justified reasons of public interest, the Grantor has the power to terminate the Contract, for which purpose it shall previously notify the Concessionaire in writing no less than six (6) months before the date established for the termination of the Contract. It shall also notify the Permitted Creditors of such decision by the same date.

Said notice shall also be sent to the Competent Governmental Authority so that it can attend to the problem of public interest.

During these six (6) months, the Concessionaire shall not be obligated to comply with those obligations established in the Contract that involve the performance of investments, except for the scheduled replacement of assets.

13.7. Termination due to Force Majeure Events or Acts of God

13.7.1 Either of the Parties may terminate the Contract in case of the occurrence of a force majeure event or act of God, as per Clause 10.3, and such event or its effects cannot be overcome within twelve (12) consecutive months following the start of the event. In such case, the Parties shall proceed in accordance with Clause 13.9.

Additionally, once the **POC** has occurred, for the force majeure event or act of God to be considered grounds for the termination of the Contract, it shall entail a loss of operating capacity in excess of sixty percent (60%) of the capacity achieved at the time of occurrence of the force majeure event or act of God, except in the case of Total Destruction.

13.7.2 In case of Total Destruction, the Parties shall proceed as follows:

- a) The Parties shall evaluate the technical and economic advisability of repairing the damages and the terms and conditions under which the reconstruction and recommencement of the Service would be carried out.
- b) The Contract shall be automatically terminated once sixty (60) Days pass as from the occurrence of the Total Destruction, without the Parties reaching a Contract in accordance with the preceding item. In such case, the deadline established in Clause 13.7.1 shall not apply.

The benefits received from the insurance policies, plus the amounts obtained from the bidding process for the Concession Assets not affected by the Total Destruction, shall be considered “the product of the bidding process” for the purposes of Clause 13.14, and the trustee referred to in Clause 7.5 b) shall pay the debts of the Concession, following the order established in Clause 13.14.

13.8. Anticorruption Clause

The Concessionaire represents that neither it, nor its shareholders, partners, or related companies, nor any of their respective directors, officers, employees, or any of their advisors, representatives, or agents, have paid, offered, or attempted to pay or offer, nor shall they attempt to pay or offer in the future, any illegal payment or commission to any authority in relation to the awarding of the contract, the Concession, or the performance of this Contract.

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It is hereby expressly established that in the event that it is verified that any of the individuals or legal entities mentioned in the preceding paragraph have been found guilty, by virtue of final and binding rulings, or have admitted to and/or acknowledged the commission of the crimes defined in Title XVIII, Chapter II, Section IV of the Penal Code, or equivalent crimes in the event that they were committed in other countries, before any competent Peruvian or foreign authority, in relation to the performance of this Contract, the Concession, or the awarding of the contract in the Bidding Process, the Contract shall be terminated by operation of law and the Concessionaire shall pay the Grantor a penalty equivalent to ten percent (10%) of the product of the bidding process referred to in Clause 13.12, Item j), without prejudice to the execution of the Performance Bond or the Operating Bond, as applicable.

The termination of the Contract due to application of the present grounds shall not give rise to any right to indemnity on the part of the Concessionaire for damages and losses.

The economic bond referred to in the first paragraph shall be determined based on SMV Resolution No. 019-2015-SMV/01, as substituted.

- 13.9. For the termination of the Contract, except in the case set forth in the preceding point, the following procedure shall apply:
- a) The Party affected by the breach of contract or the event giving rise to the termination shall inform the other Party in writing, via notary channels, of its intention to terminate the Contract, describing the breach or event and indicating the respective termination Clause.
In case of failure to comply, said notice shall be sent following the deadline for rectification established in the final paragraph of Clause 13.4 or 13.5, as applicable.
 - b) Once the notarized letter for the termination of the Contract has been received, the recipient thereof may express its disagreement with the existence of grounds for termination, for which purpose it shall send a notarized letter to the other Party, which shall be received no later than fifteen (15) Days after the reception of the first notarized letter. In such case, a dispute or disagreement shall be understood to exist with regard to the termination of the Contract, and Clause 14 shall apply.
 - c) If the abovementioned term of (15) Days elapses and the recipient of the first notarized letter has not expressed its disagreement, the Contract shall be understood as terminated on the date of reception thereof.
 - d) Once the termination has been declared by virtue of an arbitration award, or the case set forth in Item c) has occurred, the Parties shall proceed in accordance with the following Clauses.
- 13.10. In case of the termination of the Contract in accordance with Clause 13.4 or 13.8, the Grantor shall execute the Performance Bond for the Contract or the Operating Bond, as applicable, without any right to reimbursement whatsoever on the part of the Concessionaire. Additionally, the Grantor shall have the right to appoint the Administrator of the Concession, in accordance with the following Clauses of the Contract.
- 13.11. Following the occurrence of any of the cases established in Clause 13.1, the Grantor shall proceed to intervene in the Concession. This process shall involve the performance of the corresponding Bidding Process. The intervention process is subject to the following rules:
- a) The intervention is a process that begins:

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- i) On the date established by the Parties, in case of termination by mutual accord.
 - ii) Twelve (12) months before the expiration date of the Contract, in case of termination due to expiration of the Contract term.
 - iii) On the date indicated by the Grantor, according to the Applicable Laws and Provisions, in case of termination of the Contract due to Expiration of the Definitive Electrical Transmission Concession. Any judicial challenge to the ministerial resolution declaring the termination of said Contract shall not postpone the start of the intervention.
 - iv) On the date indicated by the Grantor for the start of the procedure referred to in Clause 13.9, in case of termination of the Contract on the grounds set forth in Clause 13.1, Items c), d), e), and f).
 - v) On the date indicated by the Grantor, in case of termination of the Contract on the grounds established in Clause 13.1, Item h).
 - vi) On the date indicated by the Grantor after accepting the request for the substitution of the Concessionaire referred to in Clause 9.5, Item b).
- b) The finalization of the intervention is subject to the following rules:
- i) The process concludes eighteen (18) months after the start of the intervention, or upon the entry of the new concessionaire, whichever occurs first.
 - ii) The Grantor shall assume the full and direct management of the Concession Assets and the provision of the Service until the transfer of the Concession is completed, in the following cases:
 - If the new concessionaire is not selected within eighteen (18) months from the start of the intervention, unless the Parties agree to the continued participation of the Concessionaire.
 - If, during the intervention process, the Concessionaire becomes insolvent, or if, for any reason, it is unable to maintain the Service or carry out the instructions issued to it by the Administrator.
 - iii) If the termination of the Contract occurs due to the declaration of expiration of the Definitive Electrical Transmission Concession and the Concessionaire has decided to lodge a judicial challenge against such declaration, the intervention shall subsist for the entire period until the conclusion of the challenge, at which point the preceding Items i) and ii) shall apply.
- c) The Administrator may be a Person, a committee of individuals, or a directorate or line agency of the Ministry of Energy and Mines, at the choice of the Grantor, and shall hold, by mere virtue of its appointment, the broadest powers to:
- i) Determine the administrative actions necessary to continue with the construction or operating stage of the Project, as applicable; and
 - ii) Determine the technical actions necessary for the prompt and efficient provision of the Service.
- d) While the Contract remains in force or any dispute subsists with regard to the force thereof, during the intervention, the Concessionaire shall continue providing the Service, but shall be obligated to follow the instructions of the Administrator in relation to the provision of the Service. Nevertheless, the Concessionaire may request the reconsideration of such constructions from the General Directorate of Electricity of the Ministry of Energy and Mines, which shall issue a ruling within

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five (5) Days. To the contrary, the request shall be understood to be admitted. The Concessionaire shall not be responsible for any damages derived from the Administrator's instructions.

- e) The total expenses required for the intervention shall be assumed by the Concessionaire, except when the intervention occurs due to causes attributable to the Grantor. In this latter case, the intervention expenses shall be subject to the provisions established in Clause 13.14, Item a).
- f) So long as the Concessionaire provides the Service, it shall be entitled to receive the revenue generated by the Concession during the intervention, without prejudice to the provisions established in the preceding Item e).

13.12. The Grantor shall organize and carry out the bidding process for the Concession, which shall be subject to the following rules:

- a) The Ministry of Energy and Mines, or PROINVERSIÓN, at the designation of the Ministry, hold the broadest powers to organize, call, and carry out a public bidding process for the transfer of the Concession and delivery of the Concession Assets to the new concessionaire, within a term not to exceed twelve (12) months, as from the date on which the termination of the Contract is declared, or the corresponding award is issued.
- b) The bidders in the bidding process shall be shortlisted by the Grantor or PROINVERSIÓN, as applicable. If the Contract is terminated due to expiration of the definitive electrical transmission concession or due to causes attributable to the Concessionaire, the Concessionaire, its main partners, and the Related Companies of both may not participate as bidders.
- c) The competition factor for the bidding process shall be the following, as applicable:
 - i) That established by the Applicable Laws and Provisions, in case of termination due to expiration of the Contract term.
 - ii) An amount of money, in case of termination on grounds other than the expiration of the Contract term. If the event occurs prior to the Startup of Commercial Operation, the base amount of the first call for bids shall not be less than the Book Value of the Concession Assets plus the existing pre-operating expenses (provided they are not included in the Concession Assets and are approved by the Grantor), including interest on the Permitted Secured Debt during the construction stage, as of the termination date of the Contract.

If the event occurs after the Startup of Commercial Operation, only the total Book Value of the Concession Assets shall be recognized. If there are no bidders and a second call for bids is issued, the Grantor in the new call for bids may reduce the base amount of the immediately prior bidding process by up to twenty-five percent (25%).
- d) In the event that a bidding process is declared null and void or the corresponding Contract is not executed, no more than sixty (60) Days shall pass for the publication of the next call for bids.
- e) The winning bidder of the public bidding process will be the one that submits the best economic offer for the Concession, in accordance with the respective bidding terms and conditions. In the case referred to in Item c).ii) hereinabove, the payment made by said winning bidder shall be in a lump sum, in Dollars, by the deadline established in the respective bidding terms and conditions.

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- f) The new concessionaire shall enter into a new Concession Contract with the Grantor, to be drafted by the Grantor or PROINVERSIÓN, in accordance with the Applicable Laws and Provisions in force at said time.
- g) In case of termination due to the expiration of the Contract term, the bidding process for the Concession shall only take place if the Transmission Plan in force establishes the need for the continuation of the Service in accordance with the Applicable Laws and Provisions.
- h) If no call for a bidding process is made for the first or second time, if the second call for bids is declared null and void or the corresponding contract is not executed, the Grantor shall be obligated to pay the Concessionaire the lesser between: (i) the base amount of the first or second call for bids; and (ii.a) the Book Value of the Concession Assets, plus the pre-operating expenses (provided they are not included in the Concession Assets and they are approved by the Grantor), if the event occurs before the Startup of Commercial Operation; or (ii.b) the Book Value of the Concession Assets, if the event occurs after the Start up of Commercial Operation.

Once any of the events indicated in the preceding paragraph has occurred, the Grantor shall include, in its budget for the following fiscal year, the applicable amount according to the preceding paragraph, making the respective payment during said year.

- i) In the case established in Item f), the new concessionaire shall pay the Concessionaire within sixty (60) Days, counted as from the execution of the new Concession Contract. Once said term has expired, interest shall accrue for the time elapsed. Said interest shall be calculated at a rate equivalent to the average for the six (6) months prior to the payment date, corresponding to the six-month LIBOR rate plus a spread of 2%.
- j) The amount to be paid by the Grantor to the Concessionaire shall be subject, where applicable, to the rules established in Clause 13.14. The foregoing shall not apply to the Grantor's payment obligation described in Clause 13.16.
- k) If the Contract is terminated due to a cause other than Total Destruction, and the Grantor decides that the Project shall not continue to be used, the Grantor shall be obligated to pay the Book Value of the Concession Assets. The value payable shall be subject, as applicable, to the rules established in Clause 13.14.
- l) The payment made by the winning bidder, as referred to in Item e), or the amount payable by the Grantor referred to in Item h) of this Clause, shall be “the product of the bidding process,” which shall be delivered to a trust previously established by the Concessionaire, who shall assume the corresponding expenses.

13.13. The transfer of the Concession Assets shall be subject to the following rules:

- a) The Concession Assets shall be delivered to the new concessionaire, the Grantor, or the person decided upon by the Grantor, in the event that the Grantor assumes the full and direct management of the Concession, so that the Concession Assets may continue to be used by the new concessionaire or the Grantor for the uninterrupted provision of the Service.
- b) The Concessionaire shall transfer ownership of the Concession Assets to the State, free from all liens or encumbrances.
- c) The assets to be delivered includes the following technical information:
 - iii) File of Plans, as-built.
 - iv) Plans and studies carried out in relation to the Project.
 - v) Technical information on each one of the assets.

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- vi) The operating and maintenance procedures and manuals for the Project.
 - vii) Quality assurance manuals for the Service.
 - viii) Any other relevant information for the continuity of the Service.
 - d) Contracts entered into with third parties shall be subject to transfer, provided the Grantor or the new concessionaire accepts the assignment, and provided said Contracts have not concluded upon the termination of the Concession.
 - e) The Concessionaire shall return the Concession Assets in proper operating order, except for the normal wear and tear caused by time and normal use. The Parties shall execute a reception certificate.
 - f) The Concessionaire shall provide its full cooperation for the orderly hand-over of the Concession Assets, so that there is no interruption in the provision of the Service. The Concessionaire shall grant the notarially recorded instruments and other private or public documents required for the transfer of the Concession, including, where applicable, the assignment of rights, contractual positions, or other Contracts.
 - g) All costs and expenses required for the transfer of the Concession Assets shall be assumed by the Concessionaire.
- 13.14. The Grantor shall pay the Concessionaire the product of the tender process in accordance with the provisions established in Clause 13.12, for up to a maximum equivalent to the Book Value of the Concession Assets. The surplus amount of the product of the tender process above and beyond the Book Value of the Concession Assets, if any, shall correspond to the Grantor. The distribution of the amount indicated in this Clause shall be subject to the following rules:
- a) Of the amount indicated in this Clause, as far as said amount reaches, the Concessionaire shall pay, where applicable, the penalty established in Clause 13.8 and the direct expenses incurred by the Grantor in relation to the intervention and bidding process, after which it shall pay, in the following order:
 - ix) The remunerations and other labor rights of the Concessionaire's employees, accrued as of the payment date and pending payment.
 - x) The amounts of money to be paid to the Permitted Creditors to satisfy all financial obligations, including the outstanding principal, plus interest and fees accrued as of the payment date.
 - xi) The taxes related to the Project, except those guaranteed in accordance with the Applicable Laws and Provisions.
 - xii) Any fine or penalty that has not been paid by the Concessionaire.
 - xiii) Any other liability of the Concessionaire related to the Project that is owed to the State.
 - xiv) Other liabilities not included in the preceding items.

The order of priority for the payment of the foregoing concepts shall be that set forth herein, unless the Applicable Laws and Provisions establish a different applicable order.
 - b) The remaining balance, if any, shall remain in the possession of the Concessionaire.
- 13.15. In case of termination of the Contract due to expiration of the Contract term, the Concession and the Concession Assets shall be transferred to the State at no cost whatsoever, except for the remaining value of the Reinforcements implemented during the Contract term. Said amount shall be calculated by the OSINERGMIN, and shall be paid: i) by the incoming concessionaire, at the moment it assumes the operation of the respective facility; or ii) by the Grantor, which shall include the corresponding amount

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in its budget for the following fiscal year, effectively making such payment during said year.

13.16. If the Concession is terminated on the grounds established in Clause 13.5 or 13.6, the following rules shall apply:

a) Without prejudice to the provisions established in Clause 13.12, the Grantor shall pay the Concessionaire, for all concepts, including the transfer of the Concession Assets to the Grantor and the indemnity referred to in Section 58, Subsection 58.2 of Legislative Order No. 1362, the following:

a.1 When the termination occurs prior to the Startup of Commercial Operation, the Book Value of the Concession Assets and the existing pre-operating expenses, provided they are not included in the Concession Assets and are approved by the Grantor.

The pre-operating expenses shall be those applicable as of the termination date of the Contract, and shall include, among others, the collateral costs associated with the termination of the Contract, as well as the financing costs related to the Permitted Secured Debt, which includes interest during the construction stage.

a.2 When the termination occurs after the Startup of Commercial Operation, whichever is the highest of the following two amounts:

xv) The present value of the economic/nominal cash flows of the Project that would have been generated during the remaining part of the Contract, using for such purpose a discount rate of 12% nominal in Dollars.

xvi) The Book Value of the Concession Assets.

b) The calculation of the amount payable shall be performed by an expert appointed by the Parties. The expert shall be appointed within thirty (30) Days, counted as from the termination of the Contract. To the contrary, either of the Parties may avail themselves of the dispute settlement procedure established in 14.

c) From the amount calculated in accordance with Item b), the Grantor shall deduct the indicated in Clause 13.14.a), with the exception of the expenses incurred by the Administrator and Grantor, in relation to the intervention and bidding process.

d) The net amount due shall be paid by the Grantor to the Concessionaire in a lump sum, in Dollars. The Grantor shall include the corresponding amount in its budget for the following fiscal year, effectively making the payment in said year, including the interest accrued during the period between the termination date and the effective payment date, at a rate equivalent to the average, for the six (6) months prior to the payment date, of the six-month LIBOR rate plus a spread of 2%.

13.17. Upon the termination of the Contract, with the exception established in Clause 13.10, the Grantor shall return the Performance Bond for the Contract or the Operating Bond, as applicable. The respective bond shall be returned no more than thirty (30) Days after the transfer of the Concession Assets is completed, provided no dispute subsists with regard to the Contract or its termination.

13.18. The Book Value of the Concession Assets referred to in this Clause 13 shall be that applicable as of the termination date of the Contract. In the case established in Clause 13.9 d), the Book Value of the Concession Assets shall be that applicable on the date on which the award is notified.

14. SETTLEMENT OF DISPUTES

14.1. Applicable Laws and Provisions

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The Contract shall be governed and interpreted in accordance with the Applicable Laws and Provisions. The Parties therefore represent that the content, performance, disputes, and other consequences arising therefrom shall be governed by said laws.

14.2. Scope of Application

This Clause governs the settlement of all disputes that may arise with regard to this Contract, as well as those related to the performance, interpretation, termination, unenforceability, nullity, or invalidity of the Concession Contract.

The decisions of the regulatory bodies or other Competent Government Authorities issued in the performance of their administrative duties, attributed by express legal provision, are not subject to direction negotiations or arbitration. The only channel available for challenging such decisions shall be the administrative jurisdiction.

14.3. Criteria of Interpretation

The Contract shall be interpreted as a whole. Under no circumstances shall any of its Clauses be interpreted independently.

In case of divergence in the interpretation of this Contract, the following order of prevalence shall be applied to settled such situation:

- a) The Contract, as amended;
- b) The Circulars referred to in the Bidding Terms and Conditions; and
- c) The Bidding Terms and Conditions.

The Concession Contract is executed in Spanish only. If there is any difference between the translation of this Contract and the Contract itself, the text of the Contract in Spanish shall prevail. Translations of this Contract shall not be taken into account for purposes of its interpretation.

The deadlines established shall be counted in Days, calendar days, months, or years, as applicable.

14.4. Waiver of the Right to Diplomatic Claims

The Concessionaire and its partners, shareholders, or capital holders expressly, unconditionally, and irrevocably waive their right to any diplomatic claim in relation to disputes or conflicts that may arise from the Contract.

14.5. Direct Negotiations

The Parties hereby represent it to be their intention that all conflicts or uncertainties of an arbitrable nature, with legal relevance, that may arise with regard to the interpretation, performance, compliance, existence, validity, force, or termination of the Contract and any other aspect related to the Contract, shall be settled through direct negotiations between the Parties, within a term of sixty (60) Days, counted as from the date on which one Party informs the other, in writing, of the existence of the conflict or legally relevant uncertainty. The request to initiate the aforementioned direct negotiations shall include a thorough description of the dispute and its grounds, as well as all applicable evidence.

In case of international arbitrations, the negotiation period shall be six (6) months. Said term shall be counted as from the date on which the Party invoking this Clause sends a written request to initiate direct negotiations, including detailed information (background, facts, points of dispute, claims, and proposed alternatives for the settlement thereof), to the Ministry of the Economy and Finance, in its capacity as Coordinator of the State Coordination and Response System for International Investment Disputes, by virtue of

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the provisions established in Law No. 28933 and its regulations, approved by Executive Order No. 125-2008-EF.

The deadlines referred to in the preceding paragraphs may be extended at the joint decision of the Parties, which must be expressed in writing.

The provisions established in the preceding paragraph shall not apply when the dispute is submitted to the international dispute settlement mechanism referred to in Law No. 28933, where the direct negotiations shall be assumed by the Special Commission of the State Coordination and Response System for International Investment Disputes.

In the case that the Parties, within the period provided for direct negotiations, are unable to settle the conflict or uncertainty that has arisen, they shall define it as a technical or non-technical conflict or uncertainty, as applicable. Technical conflicts or uncertainties shall be settled in accordance with the procedure set forth in Clause 14.6, Item a). Those conflicts or uncertainties that are not of a technical nature shall be settled in accordance with the procedure established in Clause 14.6, Item b).

When the Parties are unable to reach an agreement with regard to the nature of the dispute, both Parties shall argue their position in a written communication, to be delivered to the opposing party. In this communication, they shall explain the reasons for which they believe the dispute is technical or non-technical.

In the event that the disagreement between the Parties persists with regard to whether the conflict that has arisen is a Technical Dispute or Non-Technical Dispute, or in the event that the conflict has elements of both Technical and Non-Technical Disputes, then such conflict or uncertainty shall be considered a Non-Technical Dispute and shall be settled in accordance with the respective procedure established in Clause 14.6, Item b).

14.6. Arbitration

Forms of arbitration proceedings:

- a) *Ex Aequo et Bono* Arbitration: Each and every one of the Technical Disputes that cannot be settled directly by the Parties within the term provided for direct negotiation shall be submitted to an *ex aequo et bono* arbitration, in accordance with Section 57, Subsection 3 of Legislative Order No. 1071, in which the arbitrators shall rule in accordance with their knowledge and their best understanding.

The arbitrators may be Peruvian or foreign experts, but in all cases they must have ample experience in the subject matter of the respective Technical Dispute, and shall not have any conflict of interest with either of the Parties at the time of and after their appointment as such.

The Arbitration Court may ask the Parties to provide the information it deems necessary to settle the Technical Dispute it is hearing, as a consequence of which it may present to the Parties a conciliation proposal, which they shall have the option to accept or not. The Arbitration Court may call for all kinds of evidence and ask the Parties or third parties to provide the evidence it deems necessary to rule on the claims filed.

The Arbitration Court shall prepare a preliminary ruling to be notified to Parties within thirty (30) Days following its creation, after which the Parties shall have a term of five (5) Days to prepare and submit to the Court their comments on said preliminary ruling. The Arbitration Court shall issue its final ruling on the Technical Dispute within ten (10) Days following the reception of the Parties' comments, its preliminary ruling, or the deadline for the submission of said comments, whichever occurs first. The proceeding for the settlement of a Technical Dispute shall be held

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in the city of Lima, Peru. On an exceptional basis, due to the nature of the specific case, the Arbitration Court may travel to another location solely for the purpose of gathering evidence, such as the performance of an expert evaluation, a visual inspection, or any other means of proof that must be gathered at a different location, for a term not to exceed ten (10) Days.

The members of the Arbitration Court shall maintain absolute secrecy and confidentiality regarding the information to which they are privy based on their participation in the settlement of a Technical Dispute.

The dispute shall be settled via a national arbitration and shall be overseen by the Arbitration Center of the Lima Chamber of Commerce. The regulations of said institution shall apply in all matters not provided for in this Contract.

- b) *De Jure* Arbitration: Non-Technical Disputes shall be settled via a *de jure* arbitration, in accordance with Section 57, Subsections 1 and 2 of Legislative Order No. 1071. In this proceeding, the arbitrators shall analyze and settle the matter in accordance with the applicable Peruvian laws, including Legislative Order No. 1362 and its Regulations, as amended or substituted.

The *de jure* arbitration may be local or international, in accordance with the following:

- i) When Non-Technical Disputes involve an amount in excess of thirty million Dollars (US\$ 30,000,000) or its equivalent in local currency, the Parties shall try to resolve the disputes through direct negotiations, within a term of six (6) months established in Clause 14.5, which may be extended by mutual agreement of the Parties in the established terms.

In the event that the Parties are unable to reach an agreement during the period of direct negotiations referred to in the preceding paragraph, the disputes shall be settled by an international *de jure* arbitration, in a proceeding carried out in accordance with the Conciliation and Arbitration Rules of the International Center for the Settlement of Investment Disputes (ICSID), established in the Convention on the Settlement of Investment Disputes between States and Nationals of Other State, ratified by Peru via Legislative Resolution (Resolución Legislativa) No. 26210, to the provisions of which the Parties unconditionally submit themselves.

For the purpose of conducting international *de jure* arbitration proceedings, in accordance with the arbitration rules of the ICSID, the Grantor—acting on behalf of the government of the Republic of Peru—represents to consider the Concessionaire a “National of Another Contracting State,” given that it is subject to foreign control, as per Article 25, Point 2, Item b) of the Convention on the Settlement of Investment Disputes between States and Nationals of Other State, and the Concessionaire accepts its classification as such.

The arbitration shall take place in the city of Washington, D.C., United States of America, and shall be conducted in Spanish. The arbitration award shall be issued in accordance with arbitration regulations of the corresponding institutions in charge of overseeing the arbitration.

If, for any reason, the ICSID declines to register the arbitration undertaken by virtue of this Clause, the Parties hereby agree to submit the dispute, in the same terms, to the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL).

Alternately, the Parties may agree to submit the dispute to a different jurisdiction, should they deem it advisable. Said agreement shall be set forth in writing.

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- ii) Non-Technical Disputes involving an amount of thirty million Dollars (US\$ 30,000,000) or less, or its equivalent in local currency, and those disputes that are purely questions of law and are not quantifiable in money, shall be settled via a *de jure* arbitration overseen by the Arbitration center of the Lima Chamber of Commerce.

The arbitration shall take place in the city of Lima, Peru, and shall be conducted in Spanish. The Regulations of said institution shall apply in all matters not provided for in this Contract.

14.7. Common Procedural Rules

The following general provisions shall apply to both *Ex Aequo et Bono* Arbitrations and *De Jure* Arbitrations, as referred to in this Clause, whether international or national:

- a) The Arbitration Court shall consist of three (3) members. Each Party shall appoint one (1) arbitrator and the third arbitrator shall be appointed by agreement of the two (2) arbitrators designated by the Parties. This third arbitrator shall act as President of the Arbitration Court. The Party filing the arbitration request shall include therein the appointment of its arbitrator, and request that the other Party appoint its arbitrator within sixty (60) Days, counted as from the date on which the respective request for appointment is received.

Once each Party has appointed its arbitrator, if the two arbitrators thus appointed are unable to reach an agreement regarding the designation of the third arbitrator within sixty (60) Days following the date on which the second arbitrator is appointed, the third arbitrator shall be designated by the corresponding arbitration center. This deadline may be extended by agreement between the Parties.

If one of the Parties fails to appoints the corresponding arbitrator together with the Arbitration Request, or within the term of sixty (60) Days counted as from the date of reception of the respective appointment request, the arbitrator may be designated, at the request of the other Party, by the corresponding arbitration center.

- b) The arbitrators may remedy, at their sole discretion, any divergence or loophole existing in the law or in the Contract, through the application of the general principles of law and the Contracts, Conventions, and/or Treaties to which the Republic of Peru is a signatory.
- c) In accordance with the provisions established in Section 133, Subsection 133.2 of Executive Order No. 240-2018-EF, the arbitrators shall allow the Regulator to participate in arbitration proceedings involving the discussion of decisions and subjects related to said Regulator's competence, except in the case of disputes subject to the dispute settlement mechanisms and procedures set forth in Law No. 28933—the Act Establishing the State Coordination and Response System for International Investment Disputes, or those established in international treaties that are binding for the Peruvian government.

The Parties agree that the award issued by the Arbitration Court shall be final and unappealable. As such, the Parties shall deem it a final-instance judgment, with the force of *res judicata*. Consequently, the Parties represent that it shall be compulsory, subject to definitive compliance and immediate enforcement, except in case of the occurrence of those grounds specifically established in Sections 62 and 63 of Legislative Order No. 1071, in Articles 51 and 52 of the ICSID Convention, or the laws on the matter, as applicable. The arbitration awards resulting from said mechanism shall be published by both Parties to the Contract, as well as the respective arbitration center.

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- d) While the arbitration is being conducted, the Parties shall continue to perform their contractual obligations, to the extent possible, even those that are the subject of the arbitration. If the arbitration revolves around the performance of the secured obligations under Clause 12, as applicable, the respective term shall be suspended and said bond may not be executed for the reason that gave rise to the arbitration, for which reason it shall remain in force for the duration of the arbitration proceeding.
- e) All expenses incurred in the settlement of a Technical or Non-Technical Dispute, with the exception of the professional fees of the arbitrators participating in the settlement of a dispute, shall be covered by the losing Party. This same rule applies in the event that the respondent or counterclaim respondent acquiesces or admits the claim of the petitioner or counterclaimant. Such expenses shall also be assumed by the petitioner or counterclaimant in the event that it abandons its claim. The arbitrators' professional fees shall be paid by the Parties in equal proportions.
- In the event that the proceeding ends without a pronouncement on the merits of the claims due to a transaction or conciliation, said agreement shall establish who is responsible for assuming said expenses. In the event that the transaction or conciliation fails to establish this point, each party shall cover its own expenses.
- Likewise, in the event that the award partially admits the positions of each Party, the Arbitration Court shall decide on the distribution of said expenses.

The provisions established in this Clause do not include costs and expenses such as internal costs or others individually attributable to a given Party.

Arbitration awards shall be published by the Grantor on its institutional website within fifteen (15) business Days after receiving the corresponding notice.

15. ECONOMIC-FINANCIAL BALANCE

- 15.1. The Parties recognize that the economic-financial balance of the Contract, in accordance with the rights, responsibilities, and risks assigned to the Parties, is that in force on the Closing Date.
- 15.2. This Clause establishes a mechanism for reestablishing the economic-financial balance, to which both the Concessionaire and the Grantor shall be entitled in the event that the Concession is affected exclusively and explicitly due to changes in the Applicable Laws and Provisions, provided it is exclusively related to economic-financial aspects tied to a change in: i) capital expenditures; ii) revenues; or iii) operating and maintenance costs related to the provision of the Service.
- 15.3. Either of the Parties who believes that the economic-financial balance of the Contract has been affected may request the restoration thereof, sending a written proposal to the other Party with sufficient support for the solutions and procedures to be followed for its restoration.
- 15.4. In such case, the Parties shall be responsible for ratifying or rejecting the notice of economic-financial imbalance by one of the Parties, as well as determining the compensation amount necessary to restore said balance.
- 15.5. The economic-financial balance shall be restored if, as a consequence of the provisions set forth in Clause 15.2, and in comparison to what would have happened during the same period if the changes referred to in said point had not occurred:
- a) There is a variation in the capital expenditures made by the Concessionaire between the Closing Date and the Startup of Commercial Operation equivalent to ten percent (10%) or more of the Capital Expenditure established in Clause 8.1, Item b), in which case the entirety of such variation shall be included in the restoration of the economic-financial balance; or

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- b) The revenues or operating and maintenance costs of the Service are affected in such a way that the difference between the revenues less the operation and maintenance costs of the Concessionaire in the performance of the Service, during a period of twelve (12) consecutive months or more, varies by ten percent (10%) or more of the Base Rate in force.
- 15.6. If the economic-financial balance of this Contract is affected, as defined in the preceding Clause, the Concessionaire or the Grantor may propose in writing to the other Party, with the necessary supporting information, the solutions and procedures to be followed to reestablish the affected economic balance.
- 15.7. The restoration of the economic-financial balance shall be considered the present value of the effects on the Concessionaire's future cash flows. A copy of this request shall be forwarded to the OSINERGMIN, so that it may issue a non-binding technical economic opinion on the request to be evaluated by the Grantor. This opinion shall be sent to the Parties within twenty (20) Days.
- 15.8. The affected Party may claim an economic-financial imbalance at the following times:
- a) Within the six (6) first months, counted as from the Startup of Commercial Operation, in relation to the provisions established in Clause 15.5, Item a).
 - b) After twelve (12) months have passed from the Startup of Commercial Operation and during the Contract term, in relation to the provisions established in Clause 15.5, Item b).
- 15.9. The restoration of the economic-financial balance shall be based on the Concessionaire's audited Financial Statements (or the information used to prepare them) for the period in which the abovementioned variations are detected in the revenues, capital expenditures, or operating and maintenance costs.
- If the Concessionaire has multiple concessions, it shall submit the additional information necessary to prove the separation of revenues and costs, as applicable, among the different concessions.
- Without prejudice to the foregoing, the Grantor may request more information in support of the variations claimed. Additionally, the Parties may agree to use documentation other than the audited Financial Statements for the effects described in this Clause, provided it comes with due supporting information.
- 15.10. If the Parties are unable to reach an agreement regarding the result issued within the term of ten (10) Days after it has been notified to the Parties, either of them may deem a Non-Technical Dispute to have arisen, which shall be settled in accordance with the dispute settlement mechanisms regulated in this Contract.
- 15.11. The contents of this Clause shall not apply to changes that occur as a consequence of the provisions issued by the Competent Governmental Authority establishing violations or sanctions, or the application of penalties included in the Contract or that are the consequence of acts and events attributable to or resulting from the performance of the Concessionaire.
- 15.12. The existence of an imbalance may only lead to the amendment of the provisions contained in this Contract for purposes of restoring the balance, and shall not give rise to payments by the State.

16. TAX REGIMEN

- 16.1. The Concessionaire shall be subject to all applicable national, regional, and municipal tax laws, and shall comply with all of the tax obligations to which it is subject in relation

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to the performance of its activities. The Concessionaire shall be obligated, in the terms established in the Applicable Laws and Provisions, to pay all taxes, contributions, and fees, that apply, among others, to the Concession Assets or those that form part of or are incorporated into the Concession, whether said taxes are levied by the national, regional, or municipal government, provided said taxes, contributions, and fees are directly tied to the exercise of the activities by virtue of the Contract.

- 16.2. The Concessionaire may enter into a legal stability agreement with the Grantor, which, in accordance with the applicable laws, has the status of contract-law, in accordance with the provisions established in Legislative Orders No. 662 and No. 757, and paragraphs one and two of Section 19 of the TUO, after first meeting the conditions and requirements established in said laws.
- 16.3. The Concessionaire may likewise avail itself of the tax benefits to which it is entitled, provided it complies with the substantial and formal procedures, requirements, and conditions established in the Applicable Laws and Provisions.

17. ASSIGNMENT OF RIGHTS

- 17.1. The Concessionaire may transfer or assign its rights or obligations, assign its contractual position, or substitute any or all of its obligations by novation, in accordance with the Contract, provided it obtains the previous written consent of the Grantor, which may not be denied without express grounds.
- 17.2. The waiver by either of the Parties of one or more of the rights to which it is entitled in accordance with the Contract shall be effective provided it is done in writing and duly notified to the other Party. If, at any time, one of the Parties waives or ceases to exercise a specific right established in the Contract, said conduct may not be considered by the other Party to be a permanent waiver to enforce the same right or any other to which it is entitled under the Contract.

18. AMENDMENTS TO THE CONTRACT

- 18.1. Amendments and clarifications to the Contract shall only be valid when they are established in writing and executed by the Parties' representatives with sufficient powers for such purpose, provided they meet the relevant requirements established in the Applicable Laws and Provisions.
- 18.2. If any stipulation or provision of the Contract is deemed null, invalid, or unenforceable by virtue of an arbitration award, said ruling shall be interpreted strictly in reference to said stipulation or provision and shall not affect the validity of the rest of the Contract's provisions.

19. NOTICES

Except where expressly otherwise provided for in this Contract, all notices, summonses, petitions, complaints, and other necessary or permitted communications in accordance with the Contract, shall be made in writing and personally delivered to the following addresses:

When addressed to the Grantor:

Name: Ministry of Energy and Mines
Address: Av. Las Artes Sur 260, Lima 41, Peru
Attn.:



PERÚ

Ministerio de Economía y Finanzas
(Ministry of Economy and Finance)

Agencia de Promoción de la
Inversión Privada
(Private Investment Promotion
Agency)

Projects Portfolio
Directorate

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If addressed to the Concessionaire:

Name:

Address:

Attn.:

Or to any other address or person designated in writing by the Parties in accordance with the first paragraph of this Clause.

By the Concessionaire:

By the Grantor:

Representative's Signature

Representative's Signature

Signing Date: ____ / ____ /201__

Signing Date: ____ / ____ /201__

**ANNEX No. 1****PROJECT SPECIFICATIONS****“500 kV LA NIÑA – PIURA LINK AND ASSOCIATED SUBSTATIONS, LINES AND EXPANSIONS”****1. GENERAL PROJECT CONFIGURATION**

The general project configuration described in this annex has been prepared on the basis of a preliminary engineering project -available in the Virtual Data Room for the Interested Parties- and not on the basis of a Final Engineering; therefore, the characteristics and final details of the equipment of the project to be built, as well as the basic specifications, shall be those approved by the Committee for Economic Operation of the System (COES, by its Spanish initials) in the Pre-Operability Study. This study is intended to determine and assess the impact of the new facility on the operation of the National Interconnected Electric Grid (SEIN, by its initials in Spanish), on the Transmission System's capacity, and on the reliability and quality of its operations. The proposal developed in the Project's Final Engineering shall comply and be in accordance with the Pre-Operability Study approved.

Similarly, the Concession Holder shall be responsible for including other elements or components not described in this Annex that are required for the proper functioning and operation of the project, as well as for modifying or adjusting what is necessary and establishing its final characteristics, in order to ensure the proper operation of all its facilities and the provision of the service in accordance with the standards applied to the National Interconnected Electric Grid (SEIN).

In the case that the scopes, specifications or characteristics of the project contained in this Annex differ from the content of the preliminary engineering project, the provisions of this Annex shall prevail. In this regard, the preliminary engineering project shall be considered as a document with referential information.

The design criteria used for the project's development shall be in line with the existing facilities, the design criteria set out in the Technical Procedure COES PR-20 “Access, Modification and Removal of Facilities in SEIN”, the requirements of the National Electrical Code CNE-Supply and CNE-Utilization and other standards indicated in this Annex, in effect at the date of execution of the contract.

The General Project Configuration shown in Diagram N° 1 (at the end of this Annex) comprises the following facilities:

- a) National Backbone Transmission System
 - a) Piura Nueva 500/200 kV substation.
 - b) An Automatic Reactive Compensation Equipment (EACR, by its Spanish initials) to be installed in the Piura Nueva substation for monitoring the voltage in the 500 kV busbar, with an adjustment range from 150 MVar Inductive to +300 MVar Capacitive. It includes the control system with its own control house and auxiliary services in AC and DC.
 - c) La Niña – Piura Nueva 500 kV Transmission Line (T.L) , in single circuit line, with a length of approximately 87.1 km
 - d) Expansion of La Niña 500 kV substation.
- b) Local Transmission System:
 - e) Piura Nueva – Piura Oeste 220 kV Link:
 - o Variant of the 220 kV Felam – Piura Oeste and La Niña – Piura Oeste (L-2162/2241) transmission lines. It is comprised of two line sections in a double circuit line with a length of approximately 16 km, one of 180 MVA/three-phase line and the other of 450 MVA/three-phase line, that will link lines L-2162 and 2241 with the Piura Nueva substation from a junction or sectionalizing point.

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- Revamping to 450 MVA of the line section at 220 kV (L-2162/2241) of double circuit line, from the sectionalizing point to the Piura Oeste substation, with a length of approximately 9 km. (See Note).
- f) Adaptations to the 220 kV Piura Oeste substation.

Note: For the 220 kV Piura Nueva – Piura Oeste link, the Concession Holder shall evaluate whether to revamp the double circuit lines (L-2162 / 2241) to 450 MVA each, or implement a new double circuit line.

2. TECHNICAL CHARACTERISTICS OF THE PROJECT

2.1 GENERAL TECHNICAL REQUIREMENTS

- a) The Concession Holder shall be responsible for selecting the route and path of the transmission line. The preliminary section selected for the transmission line contained in the preliminary engineering project shall be assessed by the Concession Holder, who will determine the final section.

Measures shall be taken to prevent the line route from crossing archaeological zones, national parks and restricted zones.
- b) The Concession Holder shall be responsible for all aspects related to the construction and maintenance of the accesses to the substations, for which it shall adhere to the applicable existing standards.
- c) The Concession Holder shall be responsible for the following activities, among others:
 - Management of rights of way and payment of compensations to landowners or land occupants. The Grantor shall help with the awareness-raising activities for owners in order to have an expeditious management of the right of way.
 - Obtainment of Final Power Transmission Concession.
 - Coordinate with the concessionaires that are developing a project or have facilities within the route of the line, or where it is necessary to carry out works for the connection to the substations that are part of the scope of this project.
 - Obtainment of Certificate of Absence of Archaeological Remains - CIRA (certificate issued by the Ministry of Culture about the non-affectation of archaeological remains).
 - Preparation of the Environmental Impact Study and its monitoring plan, the same that shall be developed within the existing legal framework, besides the approval of the corresponding public entities.
- d) The Grantor shall be in charge of obtaining the favorable technical opinion for the referential section of the project issued by the Peruvian Service for Natural Protected Areas (SERNANP).
- e) The easement strip for 500 kV lines shall be of at least 64 m, and of 25 m for 220 kV lines. In the areas with presence of trees or objects that due to their height and proximity to the line pose a potential hazard for the people moving in the area, or for the line itself (in case of dangerous proximity or in the event of a potential fall of these trees on the line), the corresponding measures shall be considered to eliminate or minimize these risks, such as the removal or cutting of these trees.

2.2 TRANSMISSION LINES

2.2.1 General technical characteristics

a) Thermal limit transmission capacity

The minimum thermal limit capacity (design power) of the lines shall be:

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TRANSMISSION LINE	MINIMUM THERMAL LIMIT TRANSMISSION CAPACITY
500 kV La Niña – Piura Nueva T.L. Variant of the 220 kV Felam – Piura Oeste and La Niña – Piura Oeste (L-2162/2241) T.L. of double circuit line, from the sectionalizing point to the Piura Nueva substation. Revamping of line section at 220 kV (L-2162/2241) of the double circuit line, from the sectionalizing point to the Piura Oeste substation.	1400 MVA a) Variant 1: Double circuit line of 180 MVA / three-phase line (see Note 1) b) Variant 2: Double circuit line of 450 MVA / three-phase line 450 MVA (see Note 2)

Note:

- Equal to the design power of the existing lines (L-2162 / 2241).
- The Concession Holder shall evaluate whether to revamp the lines (L-2162 / 2241) of double circuit line to 450 MVA each, or implement a new double circuit line for the 220 kV link of the Piura Nueva – Piura Oeste substations.

Compliance with the indicated capacity shall be verified for the environmental conditions set out in Chapter 1, Paragraph 3.1.1, of Annex 1 of PR-20, the main requirements of which are:

- The temperature in phase conductors shall not exceed the thermal limit of 75 °C.
- The maximum room temperature is the maximum average temperature of the region in which the line is installed. It represents the average of the annual maximums for a minimum period of 10 years.
- The solar radiation is the maximum recorded in the region in which the line is installed.
- Minimum wind of 0,61 m/s perpendicular to the conductor.

The safety distances shall be respected in all operating conditions. It is recommended to consider, to ensure compliance with the safety distances, a minimum reserve margin of 0,30 m during the distribution of the structures.

b) Transmission capacity in emergency condition

In conditions of SEIN emergency, for a period of up to thirty (30) minutes, the transmission line shall be capable of withstanding an overload of not less than 30% above the Thermal Limit Transmission Capacity.

A temperature of more than 75 °C shall be admitted in the conductor, during the above-mentioned period, keeping the safety distances set out in the applicable standards.

c) Design factors

The line shall be considered acceptable when it meets the following requirements:

c.1) Thermal limit

As per the Design Criteria for Transmission Lines set out in Chapter 1, Annex 1 of PR-20, described in subparagraph a).

c.2) Voltage drop

As per the Performance Criteria set out in Annex 2 of PR-20, Paragraph 8.

2.2.2 500 kV La Niña – Piura Nueva Transmission Line

This single circuit transmission line shall be built to connect the La Niña and Piura Nueva substations.

The main characteristics of this line are:

- Length: 87.1 km
- Number of three-phase lines: One (1)
- Voltage: 500 kV
- Maximum system voltage: 550 kV
- Phase arrangement: Horizontal.
- Type of supports: Self-supporting lattice made of galvanized steel
- Phase conductor: ACSR, AAAC or ACAR may be used

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- Number of conductors per phase: Four (4) or more
- Guard wires: Two (2) wires: one of OPGW type, with 24 fibers as a minimum, with 108 mm² as referential section and the other of EHS galvanized steel wire, with a minimum nominal section of 70 mm².
- Altitude: 11 m.a.s.l. minimum
116 m.a.s.l. maximum

2.2.3 Variant of the 220 kV Felam - Piura Oeste and La Niña – Piura Oeste (L-2162/2241) T.L.

The variants of the 220 kV Felam – Piura Oeste (L-2162) and La Niña – Piura Oeste (L-2241) transmission lines shall be comprised of double circuit line sections that will link the L-2162 and 2241 lines with the Piura Nueva substation from a junction or sectionalizing point with a length of approximately 16 km, forming the Felam – Piura Nueva / La Niña - Piura Nueva (of 180 MVA per three-phase line) and Piura Nueva – Piura Oeste (of 450 MVA per circuit) double circuit lines.

The main characteristics of each line variant are:

	Variant 1 (of 180 MVA per three-phase line)	Variant 2 (of 450 MVA per three-phase line)
▪ Approximate length:	16 km	16 km
▪ Number of three-phase lines:	Two (2)	Two (2)
▪ Rated operating voltage:	220 kV	220 kV
▪ Maximum system voltage:	245 kV	245 kV
▪ Phase arrangement:	Vertical	Vertical
▪ Type of supports:	Self-supporting lattice made of galvanized steel	Self-supporting lattice made of galvanized steel
▪ Type of conductor:	(*)	ACSR, AAAC, ACAR or special high temperature conductors may be used.
▪ Number of conductors per phase:	(*)	Two (2) or more One (1) in case of using special high temperature conductors
▪ Guard wires:	(*)	To be evaluated in the Pre-Operability Study
▪ Altitude:	Less than 1000 m.a.s.l.	Less than 1000 m.a.s.l.

- (*) The design of variant 1 shall be similar to the one considered in lines L-2162/2241:
- 400 mm² ACAR conductor, double circuit line with one conductor per phase.
 - Guard wire; none. Currently, lines L-2162/2241 have double circuit towers with vertical arrangement and house an ADSS wire property of INTERNEXA.

The Concession Holder shall check with REP and INTERNEXA the characteristics of the equipment specified.

2.2.4 Revamping of line at 220 kV (L-2162/2241) – Sectionalizing Point – Piura Oeste section

It considers the revamping of 220 kV line section L-2162 and L-2241 comprised between the sectionalizing point and the Piura Oeste substation, with a length of approximately 9 km, forming the Piura Nueva – Piura Oeste double circuit line link.

To this end, the Concession Holder may assess the following alternatives, the main characteristics of which are:

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	Revamping (*) (Alternative 1)	New link (**) (Alternative 2)
▪ Approximate length:	9 km	9 km
▪ Number of three-phase lines:	Two (2)	Two (2)
▪ Rated operating voltage:	220 kV	220 kV
▪ Maximum system voltage:	245 kV	245 kV
▪ Phase arrangement:	Vertical.	Vertical.
▪ Type of supports:	The existing towers will be used.	Self-supporting lattice made of galvanized steel
▪ Type of conductor:	Special thermo-resistant high temperature conductor that will replace the existing conductors	ACSR, AAAC or ACAR may be used.
▪ Number of conductors per phase	One (1)	Two (2)
▪ Guard wires	None.	None.
▪ Altitude:	Less than 1000 m.a.s.l.	Less than 1000 m.a.s.l.

(*) The Concession Holder shall coordinate with REP (holder of lines L-2162/2241) the adaptations that shall be made to the existing towers of lines L-2162/2241 as a result of the change of conductors, and with INTERNEXA about the potential changes to the ADSS wire layout.

(**) The Concession Holder shall coordinate with REP and INTERNEXA the use and final arrangement of lines L-2162/2241 and the relocation of the ADSS wire layout.

In both cases, the two 220 kV line cells (L-2162/2241) present in the Piura Oeste substation shall be used.

2.2.5 Technical line requirements

Modifications to these specifications will not be accepted, except when requested or proposed by the Concession Holder, upon presentation of due technical support and the Grantor's approval.

a) The lines, according to their voltage level, shall meet the following minimum requirements:

500 kV T.L.

▪ Rated operating voltage	:	500 kV
▪ Maximum operating voltage	:	550 kV
▪ Lightning impulse withstand voltage	:	1550 kV _{peak}
▪ Switching impulse withstand voltage (phase-to-ground)	:	1175 kV

220 kV T.L.

▪ Rated operating voltage	:	220 kV
▪ Maximum operating voltage	:	245 kV
▪ Lightning impulse withstand voltage	:	1050 kV _{peak}
▪ Industrial frequency withstand voltage (60 Hz)	:	460 kV

The above values shall be corrected according to the elevation of the facilities. Also, the safety distances in the supports and insulation shall also be corrected by altitude.

The length of the creepage distance of the T.L. insulation shall be checked in accordance with the level of contamination of the zones it crosses, the maximum voltage level reached and the altitude of these zones.

The minimum creepage distances to be considered will be:

▪ In coastal areas with an altitude of up to 1 000 m.a.s.l.:	31 mm/kV _{phase-to-phase}
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- b) The minimum phase-to-ground distances in the structures shall be obtained using the methodology of standard IEC 60071.
- For the case of 500 kV lines, a lightning impulse withstand voltage of 1550 kV_{peak}, and a switching impulse withstand voltage of 1175 kV_{peak} shall be considered, regardless of the use of surge arresters and/or pre-insertion resistors in the circuit breakers.
- For the case of 220 kV lines, a lightning impulse withstand voltage of 1050 kV_{peak}, and an industrial frequency withstand voltage of 460 kV (60 Hz) shall be considered.
- c) The individual ground resistance in the line structures shall not exceed 25 ohms. This value shall be verified for normal site conditions and, under no circumstances, after a rain or when the ground is wet. However, this value shall be verified in such a way Rule 036.A of the CNE (Supply 2011) is complied with. The fact of meeting this value does not release from having to verify the maximum step and touch voltages allowed in case of failure, as well as the measures necessary to keep these values within the allowable ranges.
- d) The following values shall be complied with:
- d.1) The maximum surface gradient per phase is given by the average value of the values of the maximum surface gradient of each subconductor.
The maximum surface gradient in the conductors shall not exceed the following critical gradient values:
 - 16 kV_{rms}/cm, in coastal region with altitudes of up to 1 000 m.a.s.l.
Note: It is not applicable for the variants of existing lines at 220 kV, in which case the original design criteria shall be maintained.
 - d.2) The non-ionizing radiation limits to the limit of the easement strip for population exposure, in accordance with Annex C4.2 of CNE-Utilization 2006.
 - d.3) Audible noise at the limit of easement strip for residential zones, in accordance with Annex C3.3 of CNE-Utilization 2006.
 - d.4) The radio interference limits shall meet the provisions of Chapter 1, Annex 1 of PR-20.
- e) Safety distances, considering a 20-year creep, shall be estimated in accordance with Rule 232 of CNE-Supply 2011 or the one in effect at the date of closure. For the application of Rule 232, the electrical component values -indicated in Table 232-4 of NESC- shall be used. The safety distances shall not be less than the values indicated in in Table 232-1a of CNE-Supply 2011 or the one in effect at the date of closure.
- f) The Concession Holder shall consider a number of transpositions for the transmission lines, as indicated in Chapter 1, Annex 1 of PR-20.
- g) The Concession Holder shall consider the line design, a failure rate by atmospheric discharge, as indicated in Table No. 6 of Chapter 1, Annex 1 of PR-20.
- h) The design of the insulation, safety distances, grounding, use of suitable materials, as well as the proper execution of maintenance works, among other aspects, shall be such that the rate of the line service outage does not exceed “1 outage/(100 km.year)”, for the level of 500 kV and “2 outages/(100 km.year)”, for the level of 220 kV.

To meet the outage rate indicated, the following is recommended, as a reference:

- Check that the line insulation level is appropriate.
- Check that the ground resistance value of the supporting structures is appropriate.
- Carry out a shielding study.
- Use materials (insulators, hardware, OPGW wires, etc.) of proven quality, for which supplies with a minimum of 10 years of experience in manufacture and worldwide use shall be used.

Unscheduled service outages surpassing this limit shall be penalized, as indicated in Clauses 5.14 and 11.1 of the Contract.

The above-mentioned penalties do not exclude compensations for bad quality supplies or services, as specified in the NTCSE (Technical Standard of Quality of Electric Services).

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- i) A 24-fiber OPGW guard wire shall be used, apart from an EHS galvanized steel wire with a nominal section of 70 mm², to allow the actuation of the line's differential protection in a quick, safe and selective manner, as well as the transmission of data to the COES in real time, remote control and telecommunications. In the case of the variants, the following shall be considered:
- “Sectionalizing point - Piura Nueva Substation” variant of 180 MVA/three-phase line; without guard wire.
 - “Sectionalizing point - Piura Nueva Substation” variant of 450 MVA/three-phase line. If the Concession Holder opts for revamping the 220 kV link, a guard wire will not be implemented. If the Concession Holder opts for implementing a new 220 kV link between the Piura Nueva and Piura Oeste substations, a 24-fiber OPGW guard wire shall be used.

The OPGW and galvanized steel guard wire shall be capable of withstanding an estimated short to ground to ensure a service life of not less than 30 years. The Concession Holder shall support the calculation methodology.

- j) For the line maintenance services, a communication system with satellite cellphones may be used, instead of an UHF/VHF radio system.
- k) ACSR, AAAC or ACAR wires may be used, according to the appropriate transport capacity, loads, spans and blasts that present the best construction and operation option, provided a service life of not less than 30 years is guaranteed.

Note: For the case of variants, conductors similar to the design of the existing lines shall be used. Similarly, take into account the provisions of item 2.2.3.

- l) The maximum limits of Joule losses, estimated for an output power value equal to the one indicated in the table below -with a power factor equal to 1,00 and an input busbar voltage equal to 1,00 p.u.- will be as indicated in the following table:

Line	% of losses /Circuit		
	Approximate length (km)	Reference Power (MVA) (See Note)	Maximum Losses (%/km)
500 kV La Niña – Piura Nueva TL	87.1	700	0.0068
220kV Piura Nueva - Piura Oeste Link	25	250	0.033

Note: Predominant transmission power in the line operation.

Compliance with these loss levels shall be verified by the Grantor, using the conductor's design calculations, before the Concession Holder purchases the supplies. The installation of the conductor will not be authorized if the limit loss values are not complied with.

The calculation formula to check the level of Joule loss will be:

$$P_{\text{érdidas}} = \left(\frac{P_{\text{ref}}}{V_{\text{nom}}} \right)^2 \times \frac{R_{75^{\circ}\text{C}}}{P_{\text{ref}}} \times 100\%$$

Where:

P_{ref} = Reference power in MVA

V_{nom} = Rated line voltage in kV

R_{75°C} = Total line resistance per phase (by km), at a temperature of 75 °C and a frequency of 60 Hz.

- m) Unavailability due to scheduled maintenance: The number of hours per year that each transmission line will be out of service due to scheduled maintenance shall not exceed two working days of eight-hours each.
- n) Maximum post-fault reset time: the maximum reset time of the line shall not be more than 15 minutes after COES' order, in application of Technical Procedure No. 40 of COES.

2.3. SUBSTATIONS

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The substations shall be designed and projected using the one and a half breaker connection arrangement for 500 kV, and the double busbar with transfer disconnector arrangement for 220 kV. In this regard, the Concession Holder shall provide for the spaces and areas necessary for this type of arrangements. In general, the areas foreseen for future expansions shall be duly graded and leveled.

The transit zones within the substations shall be provided or built with a layer of asphalt or similar.

2.3.1 New Piura Nueva 500/200 kV substation

This 500/220 kV substation will be completely new and it will be located in the Province of Piura, Department of Piura, at 30 m.a.s.l., approximately in the following UTM coordinates (datum WGS84):

EAST COORDINATE	NORTH COORDINATE
552776	9428344

This location is referential and shall be determined by the Concession Holder in the final substation study.

According to the scope foreseen for the implementation of future 500/220 kV Piura Nueva substation, this substation is comprised of the following equipment:

500 kV side

The busbar system and yard equipment at 500 kV shall have a double busbar with one and a half breaker connection arrangement, comprising the following installations:

- a) Two (02) cells for connecting the line to the La Niña substation, equivalent to 2/3 of the diameter of the one and a half breaker arrangement.
- b) One (01) cell for connecting the line reactor at 500 kV to the La Niña substation.
- c) Three (03) cells for connecting an Automatic Reactive Compensation Equipment at 500 kV and for the 500/220 kV autotransformer bank, equivalent to a full diameter of the one and a half breaker configuration.
- d) For the busbars: three (03) voltage transformers, which shall be connected to busbars “A” and “B” in the substation.
- e) One (01) 500 kV – 60 MVar three-phase line reactor (to the La Niña substation), comprised of 3 single phase units of 20 MVar each, plus a spare unit of 20 MVar. (**)
- f) One (01) 500 kV Automatic Reactive Compensation Equipment of -150 MVar (Inductive) / +300 MVar (Capacitive). (**)
- g) One (01) autotransformer bank at 500/220/(*) kV – 750/750/(*) MVA (ONAF), comprised of 3 single phase units of 250 MVA (ONAF) each, with a star/star/delta connection group (Y/y/d), plus one spare unit.
- h) Provision of space for five (5) future cells.
- i) Supplementary systems: protection, control, measurement, communications and grounding systems, auxiliary services, towers and busbars, civil works, etc.

220 kV side

The busbar system and yard equipment at 500 kV shall have a double busbar with transfer disconnector connection arrangement, comprised of the following installations:

- a) Two (02) line cells for connection with the Piura Oeste substation.
- b) One (01) line cell for connection with the La Niña substation.
- c) One (01) line cell for connection with the Felam substation.
- d) For the busbars: three (03) voltage transformers, which shall be connected to busbars “A” and “B” in the substation.
- e) One (01) transformation cell for connection with the 220 kV side of the 500/220 kV autotransformer bank.
- f) One (01) coupling cell.
- g) Provision of space for eight (8) future cells and provision of space for two (2) 220/60 kV transformers.

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- h) Supplementary systems: protection, control, measurement, communications and grounding systems, auxiliary services, towers and busbars, civil works, etc.
- (*) The tertiary winding voltage level shall be determined by the Concession Holder in the Pre-Operability Study, which shall be assessed and approved by COES.
- (**) See note A of paragraph 2.3.3.

Provision of space for future 220/60 kV substation

Space shall be provided for a future 220/60 kV substation, adjacent to the 220 kV switchyard of this project, which will comprise the following:

- a) Two (02) 220/60 kV power transformers. For the 220 kV connection cells, two (02) of the spaces foreseen in subparagraph g) above, 220 kV Side, shall be used.
- b) Simple double busbar system at 60 kV.
- c) One (01) coupling cell at 60 kV
- d) Two transformation cells for the connection of 220/60 kV power transformers on the 60 kV side.
- e) Six (06) line cells at 60 kV.
- f) Supplementary systems: protection, control, measurement, communications and grounding systems, auxiliary services, towers and busbars, civil works, etc.

2.3.2 La Niña 500 kV substation expansion

The 500 kV La Niña substation, property of CONSORCIO TRANSMANTARO (CTM), is located in the city of Sechura, Province of Sechura, Department of Piura, at 12 m.a.s.l., approximately in the following UTM coordinates (datum WGS84):

EAST COORDINATE	NORTH COORDINATE
551867	9344617

These coordinates are referential and shall be updated by the Concession Holder depending on the location of the area selected for the substation expansion.

The La Niña substation has a double busbar with one and a half breaker connection at 500kV, double busbar at 220 kV and simple busbar at 138 kV arrangement, and is connected from the SEIN to the 500 kV Trujillo substation, to the 220 kV Piura Oeste and Chiclayo Oeste substations and to the 138 kV Bayóvar substation

2.3.2.1 Existing facilities

The 500 kV switchyard, property of CTM, is equipped with:

- a) Two (02) cells for connecting the line to the Trujillo substation, and other for the 500/220 kV autotransformer bank of 600 MVA, equivalent to 2/3 of the diameter of the one and a half breaker arrangement. (*)
- b) One (01) cell for connecting the line reactor to the Trujillo substation.
- c) Two (02) cells for connecting the busbar reactor, equivalent to 2/3 of the diameter of the one and a half breaker arrangement. (**)
- d) One (01) 500/220 kV single phase autotransformer bank of 600 MVA, comprised of 03 single phase units, plus one spare unit of 200 MVA.
- e) One (01) 500 kV three-phase line reactor of 150 MVar (to the Trujillo substation), comprised of 03 single phase units of 50 MVar and an additional spare unit.
- f) One (01) 500 kV three-phase busbar reactor of 100 MVar, comprised of 03 single phase units of 33.3 MVar and an additional spare unit. (**)
- g) It has space for six (6) future cells.
- (*) As part of the project, 1/3 of the diameter will be implemented to be able to operate in the double busbar with one and a half breaker connection arrangement.
- (**) Currently under construction by CTM.

The equipment description is for information only. Therefore, before the expansion, the Concession Holder shall check the characteristics of this substation with CTM.

2.3.2.2 Facilities that are part of the expansion

The expansion of this substation comprises the works necessary for the implementation of the following cells:

- Two (02) line cells to connect to the Piura Nueva substation, equivalent to two thirds of the diameter of the one and a half breaker arrangement.
- One (01) cell to connect to the “B” bar, equivalent to one third of the diameter of the one and a half breaker arrangement. (*)
- One (1) cell for connecting the line reactor to the Piura Nueva substation.
- One (1) 500 kV – 60 MVar three-phase line reactor (to the Piura Nueva substation), comprised of three (3) 20 MVar single phase units and an additional spare unit. (**)
- Supplementary systems: protection, control, measurement, communications and grounding systems, auxiliary services, towers and busbars, civil works, etc.

(*) This equipment will allow completing the diameter used for connecting the line to the Trujillo substation and 500/220 kV autotransformer bank of 600 MVA to be able to operate the substation with the double busbar with one and a half breaker connection arrangement. The 500 kV yard equipment is comprised of:

- 03 three-pole pantograph busbar disconnectors.
- 01 three-pole single-throw switch.

(**) See note A of paragraph 2.3.3

The Concession Holder shall be responsible for coordinating with CTM to make, at its expense, the adjustments and/or modifications required for the coordination of the control, protection and telecommunication systems present at the 500 kV La Niña substation.

To maintain the equipment’s compatibility, the equipment to be installed at the La Niña substation shall have similar or superior characteristics than the yard equipment present in that substation.

2.3.3 Piura Oeste 220/60 kV substation expansion

The 220/60 kV Piura Oeste substation, property of RED DE ENERGÍA DEL PERÚ (REP), is located in the District of Piura, Province of Piura, Department of Piura, at 29 m.a.s.l., approximately in the following UTM coordinates (datum WGS84):

EAST COORDINATE	NORTH COORDINATE
533320	9428677

These coordinates are referential and shall be updated by the Concession Holder depending on the location of the area selected for the Piura Oeste substation expansion.

The Piura Oeste substation has a 200kV double busbar arrangement and is connected to the SEIN to the Talara, Felam and La Niña substations.

2.3.3.1 Existing installations

The switchyard at 220 kV is equipped with:

- a) One (01) cell for connecting the line to Cementos Piura.
- b) One (01) cell for connecting the line to the Talara substation.
- c) One (01) cell for connecting the line to the Pariñas substation.
- d) One (01) cell for connecting the line to the Felam substation.
- e) One (01) cell for connecting the line to the La Niña substation.
- f) One (01) coupling cell.
- g) One (01) busbar reactor cell.
- h) Three (03) 220/60 kV transformer cells.
- i) One (01) 220 kV - 20 MVar three-phase busbar reactor.
- j) Two (02) 220/60/10 kV – 50/50/30 MVA three-phase transformers.
- k) One (01) 220/60/10 kV – 100/100/70 MVA three-phase transformer.
- l) It has a reserve space for one (01) cell for a future expansion.

The equipment description is for information only. Therefore, before the expansion, the Concession Holder shall check the characteristics of this substation with REP.

2.3.3.2 Facilities that are part of the expansion

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The expansion of this substation comprises the works necessary for adapting the existing facilities in the Piura Oeste substation, as a result of the 220 kV link with the 450 MVA Piura Nueva substation.

In this regard, the Concession Holder shall use the 220 kV cells present in the Piura Oeste substation, corresponding to lines L-2241 and 2162, from which it will replace the current circuit equipment to meet the link design power, of 450 MVA. Similarly, it shall adapt the protection, control, measurements, communications and auxiliary service systems, etc. required for the 220 kV link between the Piura Nueva and Piura Oeste substations, with a length of 25 km approximately.

The Concession Holder shall coordinate with RED DE ENERGÍA DEL PERÚ to make, at its expense, the adjustments and/or modifications indicated in the Piura Oeste substation.

Note A: The sizing and number of components and basic specifications of the reactive compensation equipment shall be determined by the Concession Holder and approved by COES-SINAC in the Pre-Operability Study.

2.3.4 Substation technical requirements

It should be highlighted that, during the development of the final project study, the Concession Holder shall carry out all the studies required to ensure the proper operation of the equipment of the system proposed.

a) General technical characteristics

- a1. The low voltage equipment of control, protection, measurement and telecommunication systems shall be of the latest technology and have accredited operation references of the last three (03) years.
- a2. References of similar supplies (High Voltage Equipment) and accredited references of successful equipment operation, issued by transmission system operators, corresponding to the last ten (10) years, shall be presented.
- a3. The equipment shall have reports certified by acknowledged international institutes, proving that they have successfully passed the Type Tests. All the equipment shall be subjected to Routine Tests.
- a4. The equipment shall comply with the following standards: IEC, ANSI/IEEE, VDE, NEMA, ASTM, NESC, NFPA, as the case may be.

b) Location and space for future substation expansions

- b1. For the new substations, the Concession Holder shall acquire the land for the substation, including the areas for future expansions, set out in this annex and as indicated in Chapter 1, Annex 1 of PR-20.
The spaces for future expansions shall be graded and leveled, and will be located within the concrete perimetric fence of the substation, in such a way the Concession Holder has control over it.
- b2. It shall be the Concession Holder's responsibility to manage, coordinate or acquire, under any title, the right to use the spaces available in the existing substations, setting out the respective agreements with the holders of the substations.
- b3. The Concession Holder shall also be responsible for acquiring the land next to the existing substations, where necessary or required, and executing the works to modify or adapt the substations.

c) Voltage levels and insulation.

c1. 500 kV voltage levels

Rated voltage	500 kV
Maximum operating voltage	550 kV
Lightning impulse withstand voltage	1550 kVpeak
Switching impulse withstand voltage	1175 kV

c2. 220 kV voltage levels

Rated voltage	220 kV
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Maximum operating voltage	245 kV
Lightning impulse withstand voltage	1050 kV _{peak}
Industrial frequency withstand voltage	460 kV

c3. Protection levels

Minimum creepage distance	
In coastal zones with an altitude of up to 1000 m.a.s.l.	31 mm/kV _{phase-to-phase}
Minimum protection against atmospheric discharges	Class 4 (220 kV) and 5 (500 kV)

c4. Safety distance

The spacing between phases for conductors and bare busbars outside shall be of at least:

- In 500 kV:	8,00 m.
- In 220 kV:	4,00 m.

All distances shall comply with the provisions of standards IEC 60071 and ANSI/IEEE.

The values above are referential and refer to the sea level; therefore, they shall be corrected based on the altitude of the facilities, as applicable.

d) Current levels

All switchgear (circuit breakers and disconnectors) shall meet the following characteristics:

	500 kV	220 kV
Minimum rated current	2 000 A	2500 A
Three-phase short-circuit breaking capacity, 1s	40 kA	40 kA
Three-phase short-circuit breaking capacity	104 kA _{peak}	104 kA _{peak}

The reactor circuit breakers shall comply with Standard IEEE Std.C37.015 regarding current opening and closing requirements.

e) Current transformers

Current transformers at 500 and 220 shall have at least four secondary cores:

- Three 5P20 protection cores.
- One Class 0,2 core for measurement.

f) Seismic requirements

The foundations and support structures for high voltage equipment shall be designed to operate under the seismic conditions indicated in Chapter 1, Annex 1 of PR-20.

g) Automatic Reactive Compensation Equipment

The EACR shall be designed to control the voltage in the 500 kV busbar of the Piura Nueva substation (Connection Point). Likewise, it shall have an adjustment range from 150 MVar Inductive to 300 MVar Capacitive, referred to a voltage of 1.00 p.u. of this 500 kV busbar.

In the case of asymmetrical faults in the transmission system, the EACR must have all the components to change the transient control strategy of the voltage from three-phase mode to phase-to-phase control.

h) Autotransformers and Reactors
h1. Autotransformers

It will consider a bank comprised of single phase autotransformers (3 units plus one in standby), which shall meet the applicable requirements set out in paragraph 2.3.4 Substation Technical Requirements.

The autotransformers shall be provided with current transformers built into insulating bushings of three cores with 5P20 protection, for all three phases and in the three windings, apart from the respective cores for thermal image regulation and protection.

The rated voltage, voltage regulation and connection group of the bank of 500/220 kV autotransformers shall be as follows:

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- **Voltages**
 - Primary voltage 500 kV
 - Secondary voltage 220 kV
 - Tertiary voltage (*) (*)
- **Connection group** YN / YN / d(Δ)
 - Primary side, 500 kV Star, neutral solidly grounded
 - Secondary side, 220 kV Star, neutral solidly grounded
 - Tertiary side Delta (Δ)
 - Voltage regulation Under load on the 220 kV side
- **Rated power**
 - Three-phase bank (500/220/--*) kV

450/450/150	ONAN
600/600/200	ONAF1
750/750/250 MVA	ONAF2
 - Single-phase unit (500:√3/220:√3/--*) kV

150/150/50	ONAN
200/200/66	ONAF1
250/250/83 MVA	ONAF2

(*) This value shall be proposed by the Concession Holder in the Pre-Operability Study for the assessment and approval of COES-SINAC.

As a reference, it is recommended a regulation under a $\pm 10\%$ load on the 220 kV side, with 1% pitches. However, the Concession Holder shall determine the rated voltages, number and range of variation of the taps, and the mechanisms to activate and control the transformers, as determined, supported and approved in the Pre-Operability Study.

h2. Reactors

It will consider a bank comprised of single-phase neutral-to-ground reactors (3 unit plus one in standby), which shall meet the applicable requirements set out in paragraph 2.3.4 Substation Technical Requirements.

The reactors shall be provided with current transformers built into insulating bushings, phase side and neutral side, of two cores with 5P20 protection, apart from the current transformers in the neutral of the three-phase assembly.

The reactance and power values and final characteristics of the equipment shall be determined by the Concession Holder, as determined, supported and approved in the Pre-Operability Study.

h3. Losses

The loss levels in autotransformers for permanent load levels of 100%, 75% and 50% of rated voltage shall be ensured. The value of the losses in reactors operating at rated voltage shall also be guaranteed.

The values guaranteed shall meet the provisions of standard IEC 60076 or equivalent ANSI/IEEE.

h4. Fire protection

To prevent fires, each autotransformer unit and on-load tap changer shall be equipped with an explosion-proof and fire prevention system. This system shall depressurize the autotransformer tank, tap changer or in the reactors, as quickly as possible, to avoid explosions.

The explosion and fire prevention protection of the autotransformers shall comply with standard NFPA 850 in force or equivalent.

To prove the proper operation of the overpressure device, the manufacturer shall provide an additional unit of this device, which shall be tested on field.

h5. Oil recovery

All transformation units and reactors shall have an oil collection and recovery system in case of failure.

h6. Firewalls

The transformation units and reactors shall consider the installation of firewalls in order to insulate the units from each other.

i) 500 kV equipment

The recommended equipment shall be designed for outdoor installation (AIS) and for a double busbar with one and a half breaker arrangement.

The cells shall be comprised, at least, of the following equipment:

- a) Connection cell to the line: lightning arrester, capacitive voltage transformer, line breaker with grounding switch, current transformers, three-pole single-throw switch, busbar disconnector and wave trap.
- b) Connection cells to the transformer bank: lightning arrester, current transformers, three-pole single throw switch (with switching synchronization device) and busbar disconnector.
- c) Connection cells to the reactor bench: three-pole single throw switch, (with switching synchronization device) and busbar disconnector.

j) 220 kV equipment

The recommended equipment shall be designed for outdoor installation and for a double busbar with single switch and transfer disconnector arrangement.

The cells shall be comprised, at least, of the following equipment:

- Connection cells to lines: lightning arrester, capacitive voltage transformer, line breaker with grounding switches, current transformers, three-pole single-throw switch, busbar disconnector and wave traps.
- Connection cells to transformer bank: lightning arrester, current transformers, three-pole single-throw switch with switching synchronization device and busbar disconnector.

k) Equipment at winding voltage level in the tertiary side

The recommended equipment shall be comprised of metal-clad cells installed inside, in a closed environment, and it shall be made up, at least, of lightning arresters, withdrawable three-pole breakers, busbar inductive voltage transformer, current transformers, busbar system, measurement and protection equipment, and earthing disconnectors.

l) Protection and measurement

Following the criteria set out in Chapter 2, Annex 1 of Technical Procedure PR-20 of COES, the transmission system protection shall be comprised of main and backup protection.

11. Transmission lines

The transmission line shall have the following protections:

- Main protection: made up of a line differential relay (87L) that includes -among others- the functions of distance, reclosing, ground directional overcurrent, over and undervoltage, synchronization, switch on to fault, etc.
- Backup protection: similar to main protection.

The single-phase reclosing shall coordinate with the teleprotection system the activation of the circuit breakers located at both ends of the line.

Similarly, the 500kV transmission line protection system shall have synchronized phasor measurement units (PMU). It does not include the 220 kV line variants. The scope of the PMU installation shall consider a Wide Area Monitoring Protection and Control (WAMPAC) scheme.

Note:

With regard to the 220kV line variant, of 180 MVA, the protection relays to be implemented in the 220 kV Piura Nueva substation will have the same protection philosophy than the one in lines L-2162/2241.

With regard to the 220kV line variant, of 450 MVA:

- a) In case the Concession Holder opts for the reinforcement in the Sectionalizing Point - Piura Oeste section, the same protection philosophy than the one for lines L-2162/2241 shall be maintained.

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However, in case it is determined that the 220 kV Piura Nueva – Piura Oeste link corresponds to a short line section, line differential relays and a channel of communication to support it shall be incorporated.

- b) In case the Concession Holder opts for implementing a new link, line differential relays shall be implemented as main and backup protection, as well as a channel of communication to support it.

12. Autotransformers and reactors

The autotransformers and reactors shall have, at least, the following protection:

- Main protection: made up of a differential current relay.
- Backup protection: made up of a differential current relay and phase-to-ground overcurrent relays, in each winding, with trip and lock-up relay.
- Own protections: buchholz protection, overvoltage protection, thermal image, etc.

13. Busbar system

For both busbar configurations, two non-centralized busbar differential relays (one for each busbar) shall be implemented. These configurations shall incorporate the functions of breaker and overcurrent fault for the coupling.

m) Telecommunications

A main telecommunications system (optical fiber – OPGW) and secondary telecommunications system (carrier wave) -in parallel and non-exclusive-, plus a backup system (satellite or other deemed appropriate by the Concession Holder) for emergency situations that allow permanent voice and data communication between the substations and COES, shall be implemented.

Note:

With regard to the 220kV line variant, of 180 MVA, the same channel of communication present in lines L-2162/2241 shall be maintained.

With regard to the 220kV line variant, of 450 MVA:

- a) In case the Concession Holder opts for the reinforcement in the Sectionalizing Point - Piura Oeste section, the same channel of communication than the one in lines L-2162/2241 shall be maintained. However, if it is determined that the 220 kV Piura Nueva – Piura Oeste link corresponds to a short line section, a 24-wire optical fiber cable shall be implemented as a channel of communication.
- b) In case the Concession Holder opts for implementing a new link, a 24-wire optical fiber cable shall be installed in that link as a channel of communication.

n) Auxiliary services

The auxiliary service system of the new facilities shall consider the criteria set out in Chapter 1, Annex 1 of PR-20.

In the case of the expansion of the existing facilities, the system to be used shall be compatible with the existing system.

o) Control

The control and monitoring system of the new facilities shall meet the minimum equipment requirements of the automation and control system set out in Chapter 3, Annex 1 of PR-20.

Then each cell or bay shall be monitored from bay control units (BCU), one for each high voltage cell, the same that shall be different than the units built into the protection relays.

In the case of the expansion of the existing facilities, the BCU of the line cells shall be integrated into the control and monitoring system present in the La Niña and Piura Oeste substations.

To that end, the Concession Holder shall install its own SCADA system to exchange information with the SCADA system present at the substation.

p) Ground grid

The new facilities grounding system shall meet the minimum requirements set out in Chapter 1, Annex 1 of PR-20. Likewise, all de-energized elements (equipment, metal structures, insulators, support and others) shall be directly connected to the ground grid by means of exothermic welding joints.

q) Civil works

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- q1.** In general, the scope of the civil works comprises the works of the expansions to be carried out in the existing substations of La Niña and Piura Oeste (if it be the case), as well as of the new facilities of the Piura Nueva substation, such as: earthworks, excavations, equipment foundations, towers, concrete chutes, power cable ducts, drainages, construction of stands, vehicle narrow roads, demolitions, concrete perimeter fence, among others.
- q2.** The power and control cable chutes and ducts shall be provided with metal supports or shelves that allow classifying the power, control and communication cables separately and in an organized manner.

3 ADDITIONAL TECHNICAL SPECIFICATIONS

3.1 TRANSMISSION LINES

3.1.1 Configuration of supports

For the transmission line shall be used the conductors arrangement indicated in the following table:

Transmission Line	No. Of Three-phase lines	Cond. per phase	Guard wires	Supports	Conductors arrangement
500 kV Piura Nueva – La Niña TL	1	4 or more	2	Lattice type	Horizontal
220 kV Felam - Piura Oeste and La Niña – Piura Oeste (L-2162/2241) TL variant: Variant 1 (of 180 MVA/three-phase line) Variant 2 (of 450 MVA/three-phase line)	2 2	(*) 1 or more (**)	-- --	Lattice type Lattice type	Vertical Vertical
Revamping of 220 kV line (L-2162/2241) –Sectionalizing Point – Piura Oeste section	2	1 or more (**)	--	(***)	Vertical

(*) Similar to the one considered in the design of the existing line (L-2162/2241) Felam–Piura Oeste and La Niña–Piura Oeste.

(**) A conductor shall be used in case special high temperature conductors are used.

(***) The existing structures shall be used in case special high temperature conductors are used. In case a new link is implemented, galvanized steel lattice type structures shall be installed.

3.1.2 Line structures

The structures shall be designed for the configurations set out in section 3.1.1, of lattice and self-supporting type. The 500 kV structures shall have four conductors per phase (or more) and two (02) guard wires, one of OPGW type and the other of conventional type.

3.1.3 Phase conductors

The Concession Holder shall select a type of wire than ensures compliance with the technical requirements set out in sections 2 and 3 of this annex. To this end, it may assess the types of wire ACSR, ACAR or AAAC, based on the transport capacity, the number of conductors per phase, the design mechanical loads, span length and weather conditions specific to the different areas that cross the lines, in such a way that the alternative selected represents the best final construction option. For the 220 kV link between the Piura Nueva and Piura Oeste substations (of 450 MVA), special high temperature wires may be used.

3.1.4 Conventional guard wire

The conventional guard wire preliminarily foreseen for 500 kV lines is a high strength (EHS) galvanized steel wire with a nominal section of 70 mm² (11,11 mm in diameter) for all cases; however, the Concession Holder is in charge of selecting the wire type and section that is more suitable, in such a way compliance with the technical requirements set out for the line is ensured.

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The conventional guard wire shall be capable of withstanding an estimated short-circuit to earth to ensure a service life of not less than 30 years. The Concession Holder shall support the calculation methodology.

3.1.5 OPGW guard wire

The OPGW wire will be made up of optical fibers for telecommunication, contained in a central optical fiber protection unit surrounded by one or several layers of concentrically stranded metal wires.

The optical unit shall be designed to contain and protect the optical fibers from potential damages caused by mechanical stresses resulting from traction, bending, twisting, compression or humidity. The wire configuration shall be loose and longitudinally sealed to prevent the entry of water.

The wire shall have the electrical and mechanical characteristics required for the design of transmission lines and ensure that the optical fibers are not stressed throughout the service life of the wire.

The OPGW guard wire shall be capable of withstanding an estimated short-circuit to earth to ensure a service life of 30 years. The Concession Holder shall support the calculation methodology.

The optical fiber shall have the following characteristics:

a. Full wire

General characteristics

- | | |
|-----------------------------|-------------|
| • Type | OPGW |
| • Manufacturing Regulations | ITU-T G.652 |

Sizing characteristics

- | | |
|-------------------------------|-------------------------|
| • Wire's nominal diameter | 14,70 mm (*) |
| • Total section approximation | 106 mm ² (*) |

Mechanical characteristics

- | | |
|--|--|
| • Wire's approximate weight | 0,457 kgf/m (*) |
| • Minimum rupture under traction load | ≥ 6 370 kgf (*) |
| • Elasticity module (E) | 11 500 - 12 700 kg/mm ² |
| • Linear thermal expansion coefficient | 14x10 ⁻⁶ - 16x10 ⁻⁶ 1/°C |
| • Minimum bend radius | ≤12 Mn (*) |

Thermal and electrical characteristics

- | | |
|----------------------------------|------------------|
| • Electrical resistance 20°C | 0,37 Ohm/km (*) |
| • Short-circuit current capacity | 40 kA, 0,3 s (*) |
| • Maximum wire temperature | 210 °C (*) |

b. Protective tube

- | | |
|----------------|----------|
| • Material | Aluminum |
| • Construction | Extruded |

c. Optical core

- | | |
|--|-------------------|
| • Number of optical units | 1 |
| • Number of fibers per optical unit | 24 |
| • Construction | loose |
| • Tube filling | Anti-humidity gel |
| • Thermal barrier | Built-in |
| • Mechanical protection | Built-in |
| • Maximum temperature that the fiber and its liners can bear | 140 °C |

d. Optical fiber

Geometrical and optical characteristics

- | | |
|---|-------------------|
| • Single mode field diameter (at 1150 nm) | 9 ± 0,5 μm (*) |
| • Liner diameter | 125 ± 2,4% μm (*) |

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- Concentricity error of single mode field $\leq 0,6 \mu\text{m} (*)$
- Non-circularity of liner $< 2\% (*)$
- Cut-off wavelength $1\,260 \text{ nm} (*)$
- Proof test $\geq 1\% (*)$
- Color code Standard

Transmission characteristics

- Attenuation for $\lambda = 1\,550 \text{ nm}$ $\leq 0,23 \text{ dB/km} (*)$
- Attenuation for $\lambda = 1\,625 \text{ nm}$ $\leq 0,25 \text{ dB/km} (*)$
- Chromatic dispersion coefficient $\lambda = 1528\text{-}1561 \text{ nm}$ $\leq 2,0 \text{ a } 6,0 \text{ ps/km.nm} (*)$
- Chromatic dispersion coefficient $\lambda = 1561\text{-}1620 \text{ nm}$ $\leq 4,5 \text{ a } 11,0 \text{ ps/km.nm} (*)$

Environmental conditions

- Minimum relative humidity 75% to 40°C
- Maximum relative humidity 99% to 40°C
- Operating temperature range $5 - 50^\circ\text{C}$
- Installation Outdoors

Note (*): Referential values to be determined by the Concession Holder prior grantor's approval.

3.1.6 Conductor fittings

Scope

These specifications set out the technical requirements for the supply of conductor fittings, such as, assembly roads, splicing sleeves, repair sleeves and tools for their application, spacers, dampers, and others to be used with the selected conductor.

Standards

For the design, manufacture and transport of fittings, the current versions of the following standards shall be used, among others: CNE Supply in force, ASTM A 36, ASTM A 153, ASTM B201, ASTM B230, ASTM B398, IEC 61284, UNE 207009:2002.

Technical characteristics

- Assembly roads: these roads shall be made of aluminum alloy, helical shaped and preformed for easy assembly on the conductors. The assembly road dimensions shall be suitable to the sections of the conductors selected.
Once they have been mounted, the rods shall provide a uniform protective layer without interstices and with suitable pressure to prevent loosening caused by aging.
- Splicing sleeves: they shall be of compression type, made with a material and diameter suitable to the conductor selected. The breaking load shall be 95% of the breaking load of the corresponding conductor.
- Repair sleeves: they shall be of compression type or other repair system. They shall be used only in case of minor damage to the external conductor layer. The mechanical characteristics shall be similar to those of the splicing sleeves.
- Dampers: they shall be of stock-bridge or spacer-damper type, depending on the configuration of the bundle of conductors to control the wind vibration levels within the safety limits allowed; maintaining their mechanical and damping properties through the line service life.

3.1.7 Insulators

In general, the type and material of the insulators shall be selected based on the characteristics of the zones that cross the lines, taking into consideration the good practices and experiences of the transmission lines built in Peru and in similar zones. In this regard, the Concession Holder shall investigate what contaminating agents or potential sources of contamination are present in the zone, which may affect the insulators' operation. The insulation coordination studies shall comply with standards IEC 60815-1 and IEC 60815-2, in particular with regard to contamination.

From the results of this research, the measures to minimize the impact of contamination, such as the use of glass insulators with silicone liner, line section layout, increase of creepage distance,

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use of equipotential rings to improve the performance of insulators contaminated in wet areas, etc., shall be determined.

The insulators of the 500 kV and 220 kV lines shall be selected from the tempered glass or porcelain types, with a homogeneous structure and standard and/or anti-mist (fog) type, with forged steel or galvanized malleable iron metal parts, provided with lock pins manufactured with corrosion-resistant material.

The insulator chains shall be comprised of the number of units required to ensure a suitable creepage length according to a) the contamination level of the areas crossed by the lines, b) their altitude above sea level and c) the maximum voltage level of the system.

Similarly, these chains shall ensure the insulation level required against atmospheric surges, switching surges and industrial frequency surges, for the same altitude conditions previously discussed and the insulation level defined in section 2.2.5 of this annex.

The number of insulators to be considered per suspension chain -based on the altitude and voltage level of the facilities- is the one indicated as a reference below, which shall be assessed in the Pre-Operability Study:

Altitude	Units per suspension chain	
	500 kV	220 kV
Up to 1000 m.a.s.l.	28	17

In the case of structures with greater angles, end fittings and anchoring, the chains shall use one (01) insulator in addition to the ones used in the suspension chains.

The Concession Holder is in charge of establishing the technical characteristics of the insulators that will be used in the lines, in such a way they ensure the appropriate insulation levels; however, as a reference, the use of insulators with the following characteristics has been envisaged:

Characteristics	Value
Type of insulator	Fog
Insulating material	Tempered glass
Manufacturing standard	IEC -60305
Disc diameter	330 mm
Spacing per insulator	159 mm
Creepage distance length	620 mm
Breaking load	160 kN

In all cases, the proper mechanical strength of the insulators shall be verified, in accordance with the work conditions they are subjected to; evaluating, if necessary, the use of double chains or insulators with a greater breaking load.

3.1.8 Fittings for insulator chains

Scope

These specifications set out the requirements for the design and manufacture of the assembly fittings of insulator chains, both suspended and anchored, including adaptors, shackles, suspension clamps and anchorage clips, counterweights, unloaders, etc.

Standards

For the design, manufacture and transport of fittings shall be used, the current versions of the following standards, among others: CNE Supply 2011, ASTM B6, ASTM A153, ASTM B201, ASTM B230

3.1.9 Grounding

Materials to be used:

- a) Grounding conductor: it shall be a conductor with steel core and copper coating, with a minimum section of 70 mm² and a conductivity of approximately 40 % IACS.
- b) Electrodes or rods: they shall have a copper coated steel core with a conductivity of approximately 40 % IACS.
- c) Electrode-wire connector: it shall be made of bronze and join the wire with the electrode.
- d) Two track connector: it shall be made of tinned copper for splicing the ground wires.
- e) Conductive cement: it shall be used as an alternative to improve the ground resistance of the structures.
- f) In the cases in which the soil resistivity is too high, other means may be used to achieve an acceptable ground resistance value, like the use of capacitive grounding.

3.2 SUBSTATIONS

In general, the equipment specifications contained in this section shall be respected, and any amendment or change made to them proposed by the Concession Holder shall be previously reviewed and approved by the Grantor.

The yard equipment specifications shall meet the voltage and current levels set out in subparagraph **c) Voltage and Insulation Levels** and **d) current levels** of section 2.3.4.

- a) They shall meet the minimum design criteria set out in Chapter 1, Annex 1 of PR-20.
- b) The IEC standards applicable to each equipment and/or that comply with them shall be applied.
- c) The shelves and control boxes shall have an IP-54 protection degree.
- d) All metal parts shall be hot-dip galvanized according to the ASTM or VDE standards, and the windings shall be made of insulated copper.
- e) **Circuit breakers**

The circuit breakers to be used shall be of dead tank or live tank type and be provided with seismic dampers, if necessary.

The circuit breakers shall have the following supplementary characteristics:

Description	500 kV	220 kV
Short-circuit duration	1"	1"
Total opening time	2 cycles	3 cycles
Sequence of operation:		
a) Operation of autotransformers and reactors	CO-15"-CO	CO-15"-CO
b) Operation of lines	O-0.3"-CO-3'-CO	O-0.3"-CO-3'-CO
Type	Outdoor	Outdoor

f) Disconnectors

The disconnectors shall be designed for outside assembly, of pantograph, semi-pantograph or conventional type with three lateral opening columns (with central rotatory column), DC motor, and local and remote command.

The disconnectors can open and close circuits with live residual currents. The switches of the main and earthing disconnector shall have a mechanism to prevent the closure of one switch when the other is in the closed position.

All disconnectors and grounding switches shall have an electrical lock that will have to be released to carry out the manual opening or closing operation. In the case of line disconnectors, they shall be provided with a local command lock, both manual and electrical.

An automatic mechanical interlock shall be provided to prevent any sudden movement of the disconnector in its completely opened or closed positions.

g) Current transformers

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Current transformers shall be single phase, secondary ratio transformers for outdoors assembly, in vertical position, with oil immersed or SF6 gas insulation and will be hermetically sealed.

They shall be able to conduct the primary rated current for one minute, while the secondary circuit is open.

The core shall be toroidal and made up of steel magnetic foils with very low specific losses, and the windings shall be made of insulated copper.

In the case of the transformers that work in connection with the disconnectors, high frequency currents and voltages transferable to secondary and ground circuits shall be taken into consideration during the switching of adjacent live disconnectors. The manufacturer's structural design shall be such that it prevents:

- g1) High current density in certain points of the equipment causing localized overheating.
- g2) Internal surges of very short duration causing dielectric breakdowns in liquid and solid insulators.

Current transformers shall have the following additional characteristics:

Description	500 kV	220 kV
Normal current	1000 – 2000 A (T.L.– Autotransformer) Reactor - EACR (*)	600 – 1200 A (T.L.) 1000-2000 A (Autotransformer) Coupling (*)
Secondary current	1 A	1 A
Short-circuit thermal intensity	40 kA	40 kA
Characteristics of measurement cores a) Accuracy class b) Power	0,2 % 15 VA (minimum)	0,2 % 15 VA (minimum)
Characteristics of protection cores a) Accuracy class b) Power	5P20 15 VA (minimum)	5P20 15 VA (minimum)

(*) Current ratio to be supported in the Pre-Operability Study.

h) Autotransformers and reactors

The autotransformers and reactors shall be of immersed in oil type for outdoor installation, refrigerated by oil natural and air natural circulation (ONAN) and two-stage ventilation (ONAF1 and ONAF 2) with the following characteristics:

Autotransformers

Description	Nueva Piura 500 / 220 kV substation
Primary winding voltage	500 / $\sqrt{3}$ kV
Secondary winding voltage	220 / $\sqrt{3}$ kV
Tertiary winding voltage	-- kV (*)
Type	Single phase autotransformer
Rated power per single phase unit	250 MVA
Rated power of three-phase bank	750 MVA Plus one spare single phase unit
Refrigeration	ONAF2
Neutral connection	Solid to ground
Fittings	Bushing type current transformer

Reactors

Description	La Niña - Nueva Piura TL
Primary winding voltage	500 / $\sqrt{3}$ kV

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Type	Single phase
Rated power per single phase unit	20 MVA ^(**)
Three-phase bank rated power	60 MVA ^(**) Plus one spare unit
Refrigeration	ONAN
Neutral connection	Neutral reactor ^(**)
Fittings	Bushing type current transformer

(*) The final values shall be determined by the Concession Holder and approved in the Pre-Operability Study by COES.

(**) The sizing and number of components, as well as basic reactive compensation equipment specifications shall be determined by the Concession Holder and approved by COES-SINAC in the Pre-Operability Study.

They shall be mainly made up of the following components:

h1. Cores

The cores shall be built in such a way parasitic currents are reduced to a minimum. They shall be manufactured from silicon steel sheets with oriented crystals, free of aging fatigue with a high degree of magnetization and low losses due to hysteresis and high permeability.

The magnetic circuit shall be solidly grounded with the core adjustment structures and tank, in a safe manner, in such a way it allows easy ground disconnection, whenever the tank's core has to be removed.

h2. Windings

All wires, busbars or conductors used for winding shall be made of high quality and purity electrolytic copper.

The conductors shall be insulated with paper of high thermal stability and resistant to aging; however, a lacquer bath could be applied to improve the mechanical strength.

The winding and core assembly, fully mounted, shall be vacuum dried to ensure extraction of moisture so it can be later impregnated and submersed in dielectric oil.

h3. Tank

The tank shall be built with high strength structural steel plates, reinforced with steel profiles.

All openings required in the tank walls and cover shall be provided with flanges welded to the tank, prepared for the use of gaskets, made of elastic material, that do not deteriorate by the hot oil effect. Oil-resistant synthetic rubber gaskets shall not be accepted.

The tank shall be provided with two ground connections with their respective connectors located on the opposite ends of the bottom of the tank. Likewise, it shall be provided with valves and fittings (the list is not exhaustive).

h4) Insulating bushings and terminal boxes

Insulating bushings shall be of condenser type. The porcelain used in the bushings shall be homogeneous, free of cavities, bumps, exfoliations or cracks and impervious to moisture.

All the parts of the bushing exposed to the action of the atmosphere shall be made of non-hygroscopic material.

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h5) Insulating oil

A full provision of insulating oil plus a minimum stock of 5% of the net volume shall be supplied. These provisions shall be shipped separately in hermetically sealed steel vessels.

The autotransformer and reactor shall be shipped without oil; instead, they shall be filled with nitrogen gas for transportation.

The dielectric oil to be provided shall be refined mineral oil, whose chemical composition does not contain inhibiting substances, and it shall comply with standards IEC 60354 and IEC 60296.

h6) Current transformers

The reactors shall be provided with current transformers built into the bushing insulators, of two cores -both for protection- in all windings and in the three phases. In addition, they shall have current transformers for thermal image protection.

i) Voltage transformers

For the 220 and 500 kV levels, capacitive transformers shall be provided, according to the application.

It must be taken into account that the transformers shall not produce ferro resonance effects associated with the overhead line capacities.

Voltage transformers shall have the following main characteristics:

Description	500 kV	220 kV
Type of insulation	Outside	Outside
Secondary voltage	110/ $\sqrt{3}$ V	110/ $\sqrt{3}$ V
Characteristic of measurement cores		
a) Accuracy class	0,2 %	0,2 %
b) Power	15 VA	15 VA
Characteristics of protection cores		
a) Accuracy class	3P	3P
b) Power	15VA	15VA

j) Automatic Reactive Compensation Equipment (EACR)

The EACR shall be designed to control the 500-kV busbar voltage of the Trujillo 500 kV substation. In that regard, it shall contribute to the steady operation of the SEIN in stationary state conditions and in case of transient events that compromise the voltage stability in its area of influence, minimizing the disturbances caused by the faults in the system, and contributing to the restoration of post-failure voltage.

On the other hand, the EACR shall not cause ferro resonance or asymmetric saturation phenomena in the transformers of the SEIN in its area of influence.

The Concession Holder shall prepare electrical studies of operation in stationary state, permanent and transient stability, and electromagnetic transients, to prove that the EACR proposed fulfills the above-mentioned functionality features and has a positive impact on the SEIN.

j1. EACR capacity

The EACR shall operate under the following service conditions:

- a) Voltage levels
 - Rated voltage 500 kV
 - Maximum operating voltage 550 kV
- b) Frequency range
 - Rated frequency 60.0 Hz
 - Sustained variations ± 0.5 Hz
 - Sudden variations ± 1.0 Hz.

The EACR shall be capable of withstanding the maximum short circuit currents foreseen in the 500 kV busbar of the Piura Nueva 500kV substation with a 30-year time horizon.

The sizing of EACR components shall be adequate for the following rated capacity:

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- Inductive range 0 - 150 MVar (continuous variation)
- Capacitive range 0 - 300 MVar (continuous variation)

The EACR, in the inductive range, shall be capable of operating with overvoltage; that is, it shall remain in operation to contribute to the improvement of the voltage profile of its area of influence in the SEIN. On the other hand, in the capacitive range, it shall be disconnected to avoid contributing to the occurrence of overvoltage. The required characteristics are indicated in the table below.

Taking into consideration that the EACR has a range of 300 MVar capacitive to 150 MVar inductive, the Voltage – Current in p.u. characteristic must be shown, indicating its inductive overvoltage capacity vs. its service life. An inductive overvoltage of 5% without time limitation shall be highlighted.

Voltage level	Inductive range	Capacitive range
1.05 p.u.	without limitation	without limitation
1.20 p.u.	10 s	-
1.30 p.u.	1 s	-

j2. EACR configuration

The EACR alternatives shall be configured in such a way that one part of the system proposed is adjustable and does not have mechanical switching (that is, that the capacitor banks comprising it are not switchable or that they are switchable with thyristors) and, if necessary, the other part of the system can incorporate switchable capacitor banks (CB).

In this regard, the switching of CB shall be controlled by the EACR's Automatic Control System, the adjustments of which for the switching order issuance times (delays) will be initially defined in the Pre-Operability Study and ratified by the SEIN operator in the Operability Study. Likewise, the switching operations (connection/disconnection) of CB shall not cause transient excursions exceeding $\pm 5\%$ of the operating voltage of the Connection Point in the SEIN.

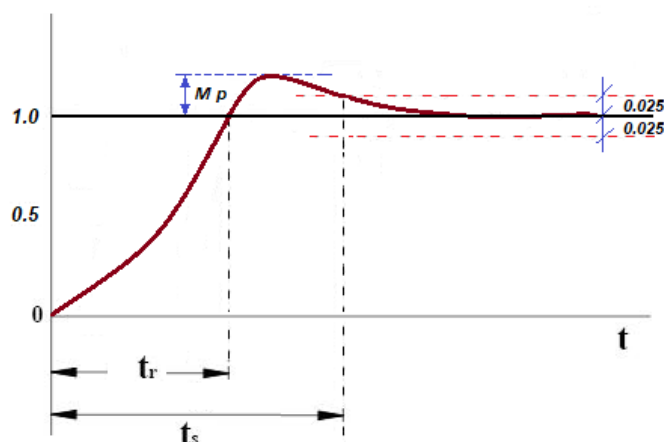
j3. Control System

The EACR control strategy shall be based on the automatic regulation of the 500kV busbar voltage, increasing or reducing the reactive power supplied depending on whether it is necessary to increase or reduce its voltage level.

In principle, three performance indexes -shown in the Figure- have been foreseen:

- a) The “Response Time” (t_r), has been determined as the time to achieve a change in the reactive power of the system from 0 to its rated value (or vice versa). This performance index shall not exceed 80 milliseconds.
- b) Maximum rising (M p) 500 kV of busbar voltage (Connection Point) as a result of the reactive power change indicated in subparagraph a) above. A rising of 20% will be tolerable.
- c) The “Restoration Time” (t_s) has been determined as the maximum time guaranteed to go back and not leave the $\pm 2.5\%$ range of the set voltage value. This performance index shall not exceed 100 milliseconds.

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These performance indexes shall be complied with even when the short circuit level is deteriorated due to transmission system disconnections caused by system faults. Similarly, the control system shall prevent fluctuations or intermittent operations (*hunting*) with other equipment of the SEIN nearby the Trujillo 500 kV substation, which shall be considered in the corresponding Pre-Operability Study and Operability Study.

The control system strategy shall be designed to respond not only to three-phase faults, but also to automatic single pole reclosing in 500 kV lines connected to the Trujillo 500 kV substation.

Also, an operating mode with manual adjustment of reactive power injected to the 500 kV busbar shall be envisaged.

For remote EACR management, this equipment shall be integrated under the communication protocols IEC 61850, DNP3, regarding TCP/IP.

j4. Transformers and reactors

The transformers shall be oil immersed single phase units (transformer bank of three units plus one in standby) designed to operate without saturation up to 1.4 p.u. of rated voltage. Also, they shall be capable of withstanding a short circuit in their secondary terminals for 2 seconds.

The reactors to be used as EACR components shall be single phase units and may be of air core or iron core type. They shall have an additional spare unit.

The maximum allowable losses for the EACR, viewed from the 500kV busbar shall not be higher than 1.5% of the rated power (400 MVA).

j4.1. Fire protection

To prevent fire, the oil immersed transformation units and reactors shall be equipped with an explosion-proof and fire prevention system. This system shall depressurize the unit's tank as quickly as necessary to prevent its explosion.

The explosion or fire protection shall comply with the recommendations of standard NFPA 850 in force or equivalent.

j4.2 Oil recovery

All transformation units shall have an oil collection and recovery system in case of failure.

j4.3 Firewall

The transformation units shall consider the installation of firewalls to isolate the units from one another.

j5. Shunt capacitor bank

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Capacitor banks are considered a unique assembly. Therefore, the Concession Holder shall provide both the parts specified in this Annex and those that are not, but that are necessary components for the successful operation of the serial compensation bank.

Possible capacitor banks that may be part of the EACR shall be designed as reactive compensators and harmonic filters. Their sizing shall be determined based on their intended operation, both for reactive compensation as for harmonic control. As a result, the bank disconnection operation by reactive power blocks shall be designed; however, the harmonic filter capacity of the banks that remain in operation shall not be undermined.

Capacitor Banks shall be designed with capacitor units with internal fuses. The units shall be connected in double star with ground insulated neutrals; being necessary to implement an alarm system to detect the imbalances.

To overcome emergency operation conditions, the capacitor banks (CB) that are part of the EACR equipment shall be comprised of units, in such a way that if one of these units fails, the EACR will not lose its compensation capacity.

Capacitive units shall be built with biodegradable insulation free of polychlorinated biphenyl (PCB), and -in general- with materials that ensure minimum dielectric losses (that do not exceed 0,16 W/kVAr to 25 °C) and maximum reliability.

Capacitive units shall be identical (electric dimensions and characteristics) and interchangeable in the bank. The arrangement of the capacitive units of each phase shall be formed of groups in series, formed by capacitive units connected in parallel. Each capacitive unit shall be protected by fusible elements (internal or external), specifically designed for their application in capacitors in series.

Capacitive units shall be equipped with an internal resistance that ensures its discharge from rated voltage to residual voltage not greater than 75 V, within 10 minutes from the time they are de-energized.

The circuit breakers for the capacitor bank shall be suitable for the operation and protection of Capacitor Banks. They are required to have very low probability of restrike, Class C2, as set out in Standard IEC 62271-100.

j6. Harmonic control

The EACR equipment must be designed to not inject harmonics in the SEIN in accordance with the limits set out by the Electric Service Quality Technical Standard (NTCSE, by its Spanish initials) and not deteriorate the levels before the EACR connection of the Total Voltage Harmonic Distortion Factor (THD) or single harmonic voltages.

To verify compliance with this requirement, the Concession Holder shall measure the harmonics in the 500 kV busbar of the Trujillo 500 kV substation, before and after connecting and commissioning the EACR.

k) Lightning arrester

Scope

These specifications cover the scope of the minimum characteristics required for the design, manufacture and testing of surge arresters at all voltage levels, including the auxiliary elements necessary for their proper assembly and operation.

Standards

For the design, manufacture and transport of lightning arresters, the existing versions of the following standards, among others, shall be used: CNE Supply, IEC 60099, IEC 60099-4, ANSI C.62.11.

Structural characteristics

In general, zinc oxide (ZnO) dischargers shall be provided for outdoor installation, of at least class 4 for 220 kV and at least class 5 for 500 kV.

They shall be suitable for protecting the equipment against atmospheric and switching surges. The permanent current shall return to a not increasing constant value after the dissipation of the transient caused by a discharge.

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The dischargers shall be suitable for systems with solidly grounded neutral, the residual voltage of impulse currents shall be as low as possible.

They shall not present corona discharges. Sharpest points in terminals or ends shall be duly shielded by means of corona rings to meet the radio interference and corona requirements.

The resistive unit shall be made of zinc oxide, and each discharger may be made up of one or several units, and each one of them shall be a discharger itself. They shall be provided with discharge counters.

4. CONDUCTOR AND INSULATOR CONTAMINATION CONTROL

The Concession Holder shall schedule regular inspection and cleaning activities for the line conductors and insulators to control the buildup of contamination and ensure proper levels of transversal losses (by corona effect and leakage currents), and radio interference effect.

From the first year of the project's Commercial Operation, the Concession Holder shall carry out the following activities:

- a) Regular visual inspections.
- b) Contamination sampling.
- c) Cleaning of conductors.
- d) Cleaning of insulators.

Before the end of the first year of Commercial Operation, the company shall submit to OSINERGMIN detailed and specific procedures, as well as inspection and cleaning programs.

The Concession Holder shall determine the methodology for this activity based on the experiences in countries with 500 and 220 kV lines.

4.1 REGULAR VISUAL INSPECTIONS

The Concession Holder shall carry out visual inspections to identify the line sections with high superficial contamination levels of conductors and insulator chains.

The inspections cover the entire length of the line and shall take place at least once a year.

OSINERGMIN has the power to witness the inspection and request their repetition, if necessary, to verify the contamination level reported.

The contamination levels of conductors and insulators shall be classified as Low, Medium and High, applying the criteria indicated in Table No. 1.







The procedure to carry out visual inspections is as follows:

- a) The inspections shall be carried out by technicians specialized in transmission lines, equipped with safety devices, binoculars and digital camera with dater.
- b) The inspections shall be carried out only during the day, with the presence of sunlight, absence of rain, low humidity and no strong winds.
- c) The technician in charge of the inspection will be on the floor, at a distance between 30 and 50 meters from the line axis; with the binoculars, he/she shall observe the buildup of contamination on the surface of the conductors and insulators of the three phases of the span. If necessary, he/she shall carry out the inspection scaling to the line's structure.
- d) Special attention shall be given to the installation points of spacers and dampers to check the condition of the conductors at the attachment points.
- e) With the criteria indicated in Table No. 1, the technician shall classify and register in the inspection log the contamination level of the conductors and insulators.
- f) If the contamination level corresponds to the Medium or High levels, the technician shall make a photographic record.
- g) The steps indicated in subparagraphs c) through f) shall be repeated for each one of the other spans of the line inspected, until 100% of the sections to be inspected are completed.
- h) The Concession Holder shall verify the contamination level classification reports and group the sections by contamination level. In case of observations to this classification, the proper

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classification shall be reassigned with the photographs or, if necessary, a new field inspection shall take place.

Table No. 1: Criteria to classify the contamination levels

Level	Visual aspect		Description
Low			Minimum contamination, there are no buildup points
Medium			Visible contamination with presence of small buildup points throughout the conductor
High			Visible contamination with presence of large buildup points

The reports of the visual inspections shall be submitted to OSINERGMIN.

4.2 CONTAMINATION SAMPLING

According to the results of visual inspections, the Concession Holder shall prepare a contamination level verification program by taking samples in all the sections classified as of Medium or High level, or in the sections in which the visual inspection is not determinant.

The sampling tasks shall be carried out when the lines are de-energized; therefore, the Concession Holder shall coordinate with COES the line decommissioning program, preferably to match the schedule maintenance shutdown periods.

The sampling procedure shall be as follows:

- The sampling is carried out when the transmission line is out of order, with presence of sunlight, absence of rain, low humidity and no strong winds.
- The samples are taken in sections of 60 to 100 m of the conductor, in one of the three phases of the section selected.
- With the conductor cleaning equipment, the contamination present in the conductor's surface is collected.
- The contamination collected is weighed in a precision scale in milligrams.
- The contamination level is determined (NC) in mg/cm², applying the following formula:

$$NC = \text{contamination weight [mg]} / \text{conductor surface [cm}^2\text{]}$$

Where:

The conductor surface is $2\pi r L$,

r refers to the conductor radius in cm and

L refers to the length of the conductor section where the sample was taken, in cm.

- In the case of insulator chains, the sample shall be taken from one of the bells, which at simple sight shows the greatest contamination. The contamination level (NC) is determined in mg/cm², applying the following formula:

$$NC = \text{contamination weight [mg]} / \text{outer bell surface [cm}^2\text{]}$$

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- g) The contamination level value is compared to the values of Table No. 2 and the contamination level in the conductors is determined.

Table No. 2: Contamination levels

Contamination level	Weight (mg / cm ²)
Low	5 – 20
Medium	20 – 45
High	> 45

- h) The steps indicated in subparagraphs c) through g) are repeated for the other line sections that have to be sampled.

The sampling reports shall be submitted to OSINERGMIN.

Upon OSINERGMIN's request, and in accordance with the Concession Holder, the values of the Contamination Levels set out in Tables No. 1 and No. 2 may be reviewed.

4.3 CLEANING OF CONDUCTORS

The cleaning of conductors shall be carried out in all the sections classified as of Medium and High level contamination.

Cleaning tasks shall be carried out to coincide with the decommissioning of the transmission line, according to the intervention program approved by COES, upon the Concession Holder's request.

The conductor cleaning procedure is as follows:

- The conductors shall be cleaned in the sections scheduled, with the transmission line out of order, with presence of sunlight, absence of rain, low humidity and no strong winds.
- The conductors shall be cleaned by technicians specialized in transmission lines, equipped with safety devices, conductor cleaning equipment, specialized switching equipment and shall meet the safety standard established.

The cleaning reports shall be submitted to OSINERGMIN.

4.4 CLEANING OF INSULATORS

It shall be scheduled simultaneously with the cleaning of conductors.

In general, the same procedure as indicated in the cleaning of conductors section shall be followed.

The Concession Holder may, if it deems it convenient, carry out hot cleaning tasks.

The Concession Holder shall prepare the procedures and protocols to verify the cleaning level of insulators, as well as the reference levels. The insulator cleaning reports shall be submitted to OSINERGMIN, who can verify them on site.



PERÚ

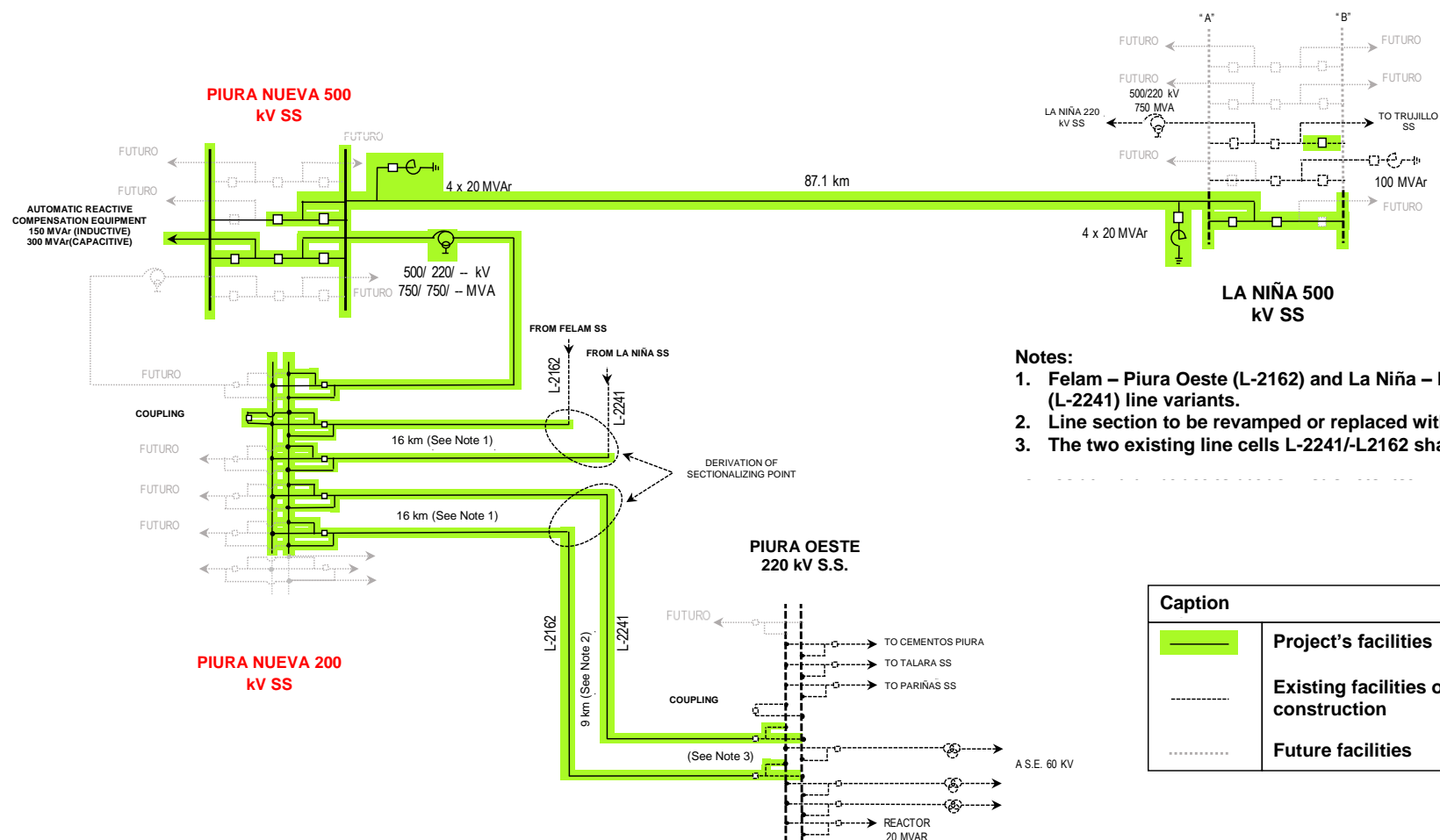
Ministerio de Economía y Finanzas
(Ministry of Economy and Finance)

Agencia de Promoción de la
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Diagram



Annex No. 2

VERIFICATION PROCEDURE

- 1. Objective of this Annex.-** This Annex describes the procedure that will be followed by the Parties and Inspector to verify, before the start of the Experimental Operation, that the Project meets the requirements set out in Annex No. 1. To that end, the different control parameters (voltage, current, active power and reactive power, off-load and on-load, losses, etc.) shall be verified with the project energized.
- 2. Organization of tests.-** The tests shall be organized in accordance with the following rules:

The Concession Holder shall select a recognized international standard. The units of the international metric system shall be used.

 - a. The Concession Holder shall inform the Grantor, Inspector, OSINERGMIN and COES -thirty (30) calendar days before the start of the tests- that it is ready to carry out the verification referred to in this annex. This communication shall indicate the date(s), time(s) and place(s) of the tests to be executed.
 - b. Together with the communication referred to in Subparagraph b), the Concession Holder shall deliver:
 - The overall program and protocols to be used, for the Inspector's consideration and approval.
 - The operability study approved by COES for the incorporation of the project to the SEIN, which shall contain the specifications set out in Technical Procedure PR-20.
 - The connection authorization by COES to carry out the tests, as set out in its Technical Procedure PR-20 (or the procedure replacing it) indicating the dates and times for their execution.
 - All designs relevant for the test, associated data, documents and specifications, as well as the certificates and reports on operating conditions, for the Inspector's consideration.
 - c. The Concession Holder shall designate and assign the Head of Testing and necessary support personnel, providing all the equipment and instruments -duly calibrated- necessary for the execution of the tests. The Inspector shall assign the personnel indicated in the inspection service agreement, and the Grantor will assign the personnel it deems necessary.
 - d. The personnel of the equipment manufacturers may participate as observers or support personnel for the execution of the tests.
- 3. Execution of tests.-** The tests shall be executed in accordance with the following rules:
 - a) The Head of Testing shall lead and supervise the tests and report on their status. Also, he/she will be in charge of all measurements, the calculation of results and the final report preparation. His/her decision will be determinant with respect to any questions concerning the test or its execution.

The tests shall be carried out in compliance with the procedures and instructions of COES.

The testing of the fiber optic system shall follow the technical specifications set out in Annex No. 5, Telecommunications, of this Contract.
 - b) The Concession Holder shall provide all reasonable facilities to the Inspector to obtain real, complete and acceptable data with respect to all the parts of the equipment associated with the project's electric power transmission. Also, the Inspector shall have physical access to all the components associated with the project's electromechanical equipment.

- c) The main constituent components of the project shall be subjected to inspection, upon the Inspector's request, before the beginning of the tests.
- d) Upon completion of each test, and in case it is within the acceptance levels, the corresponding certificate for that test shall be issued; with this the test will be finalized. Each certificate shall contain: i) the list of personnel of the Parties, OSINERGMIN's representatives, and Inspector that participated in the tests, ii) the protocol of the tests carried out indicating the results obtained, iii) the list of tests not carried out with the corresponding waiver; and, iv) additional information deemed appropriate by the Concession Holder, OSINERGMIN and/or the Inspector.
- e) In the event that the Inspector and/or OSINERGMIN considers that the result is unsatisfactory, as determined in the test certificates, the Concession Holder shall proceed with the corresponding rectifications. The new test shall be executed only in the point or points that delivered unsatisfactory results.

The Grantor and/or OSINERGMIN cannot request new tests or inspections, nor observe or reject their results, if their representatives were not present during such tests or inspections.

Upon completion of the tests, the Head of Testing shall submit to OSINERGMIN the corresponding certificates duly approved by the Inspector. Likewise, the Concession Holder shall submit to COES the tests and information indicated in Technical Procedure PR-20, for the integration of the project to the SEIN.

- f) Upon completion of all tests, the Head of Testing shall prepare and submit a final report with the details of the calculation and presentation of the results to the Inspector, OSINERGMIN and Grantor. The Inspector shall approve the final report within a period of not more than ten (10) calendar days upon the submittal of such document. The verification procedure referred to in this annex will be completed when OSINERGMIN approves the abovementioned final report within a period of not more than ten (10) calendar days counted from its submittal by the Inspector; otherwise, it will be considered approved. If OSINERGMIN observes the final report, the following steps shall be taken:
 - i. If, in accordance with the evaluation made by OSINERGMIN, the observations can be remedied (minor observations), the Concession Holder shall remedy them within the timeframe determined by OSINERGMIN, to then continue with the Experimental Operation.
 - ii. If, in accordance with the evaluation made by OSINERGMIN, the observations cannot be remedied (major observations, that is, they affect the safety of the facilities and public), they shall be remedied before resuming the Experimental Operation. In this situation, the deadline for the approval of the final report shall be suspended since the moment the observations are reported by OSINERGMIN until they are remedied by the Concession Holder.

Annex No. 3

DEFINITIONS

1. Creditors Allowed:

The concept of Creditors Allowed is only applicable for the cases of Guaranteed Indebtedness Allowed. The Creditors Allowed shall have the Grantor's authorization to accredit their status as such. To that end, the Creditor Allowed may be:

- i. Any multilateral lending institution of which the State of the Republic of Peru is a member;
- ii. Any institution, export credit agency or government agency of any country with which the State of the Republic of Peru maintains diplomatic relations;
- iii. Any international financial institution classified as a First-Class Bank in Circular Letter No. 030-2018-BCRP, issued by the Central Reserve Bank of Peru, or any other circular letter that subsequently amends or replaces it, but only to the extent that it incorporates new institutions.
- iv. Any other international financial institution with a risk rating not lower than Peru's sovereign debt rating corresponding to a long-term foreign currency assigned by an international risk agency grading the Republic of Peru.
- v. Any national financial institution with a local risk rating not lower than ("A"), evaluated by a national risk rating agency duly authorized by the Superintendency of the Stock Market (SMV, by its Spanish initials);
- vi. All institutional investors, seen as such by the prevailing legal regulations (such as Pension Fund Administrators – AFP), that directly or indirectly acquire any type of transferable security issued by i) the Concession Holder, ii) the trustee or securitization firm established in Peru or abroad that acquires rights and/or assets derived from the Concession Contract;
- vii. Any natural or legal person that directly or indirectly acquires any type of transferable security or debt instrument issued by the Concession Holder by public or private tender or by means of a trust fund, investment funds, or securitization firm established in Peru or abroad.

It is expressly stated that under no circumstances shall be allowed for the shareholders, partners or capital holders of the Concession Holder to be -directly or indirectly- Creditors Allowed. The Creditors Allowed shall not belong to the same economic group, as set out in Resolution SMV 019-2015-SMV/01 or standard superseding it.

In the situations indicated in subparagraphs (i) through (v), to be considered a Creditor Allowed, it shall have such a condition at the date of signing its corresponding financing Contract.

In the case of syndicated loans, the Creditors Allowed may be represented by an Administrative Agent or Security Trustee.

Likewise, for transferable securities, the Creditors Allowed shall be represented by the bondholders' representative (as set out in Article 87 of the Stock Market Law and Article 325 of the General Corporations Law).

2. Competent Government Authority:

National, regional, departmental, provincial or district body or institution -or any of its regulatory or administrative units or agencies- or any Peruvian public entity or body that, according to law, exercises executive, legislative or judicial powers, or that belongs to any of the above-mentioned governments, authorities or institutions, with jurisdiction over the people or matters in question.

3. Rate Base:

As set out in Clause 8.

4. Concession Assets:

Movable and immovable property comprised of lands, buildings, equipment, accessories, concessions (including the Final Power Transmission Concession), licenses, rights of way to be

constituted in accordance with the Applicable Laws and Regulations and, in general, all works, equipment, vehicles, spare parts stock, tools, facilities, drawings, studies, software, databases, manuals and technical information provided or acquired by the Concession Holder for the proper construction and operation of the Project and service provision, under the terms of this Contract and for compliance with the subject of the Concession. It includes Reinforcements, if executed by the Concession Holder, in accordance with the Applicable Laws and Regulations.

5. Assets of the Concession Holder:

All assets owned by the Concession Holder that do not qualify as Concession Assets and that are at its free disposal.

6. Financial Closing:

The date in which the Concession Holder signs the financing Contract that covers the needs for the Project's construction and equipment.

7. COES:

Committee for Economic Operation of the National Interconnected Electrical System.

8. Grantor:

The State of the Republic of Peru represented by the Ministry of Energy and Mines.

9. Concession:

Legal relationship of Public Law established between the Grantor and the Concession Holder since the Closing Date, by means of which the Grantor gives the Concession Holder the right to the Project's economic exploitation, throughout its term of effect, as per the terms of the Contract and Applicable Laws and Regulations.

10. Concession Holder:

Pre-existing or new legal entity established by the Successful Party under the Applicable Laws and Regulations. In any of these cases, the sole corporate purpose of the Concession Holder shall be to develop power transmission activities in which the Qualified Operator is the holder of the Minimum Participation. It signs the Concession Contract with the Grantor.

11. Agreement or Concession Contract:

It refers to this Contract, including the annexes and appendices that comprise it, through which the rights and obligations between the Grantor and Concession Holder are regulated.

12. Assurance and Guarantee Contract:

Contract referred to in Article 25 of Legislative Decree No. 1362, through which the State guarantee is granted in support of the statements, warranties and obligations of the Grantor set out in the Concession Contract.

13. Total Service Cost:

It is the sum of the annual operation and maintenance cost plus the project's investment cost annuity estimated with the Payback Period and Readjustment Rate defined in subparagraphs d) and e) of section 8.1 in the Contract.

14. Total Destruction:

A situation caused by any reason that may cause damage to the project, not attributable to any of the parties, estimated in more than:

- (a) thirty percent (30%) of its replacement value, or
- (b) maximum probable loss (MPL) referred to in Clause 7.2.b.

15. Days:

Business days other than Saturdays, Sundays or holidays, including non-working days for:

- a. The Public Administration nationwide, and/or;
- b. The territorial areas where, by law, a public holiday has been decreed in the Region(s) in which the project is developed.

All time references shall be understood as at the time of Peru.

16. Dollar o USD:

Lawful currency or monetary sign used in the United States of America.

17. Financial Institution:

Banking and insurance companies defined in conformity with Law No. 26702, General Law of the Financial and Insurance System and Organic Law of the Superintendence of Banking and Insurance. For the purposes of this Contract, they are listed in Annex No. 6 of the Bidding Terms and Conditions.

18. Supervision Company:

Entity hired and paid for by the Concession Holder, selected upon OSINERGMIN's approval. Its tasks start from the beginning of the engineering study, and it is in charge of verifying that the study has been carried out in conformity with the project specifications and in compliance with the corresponding standards.

19. Guaranteed Indebtedness Allowed:

It refers to the indebtedness incurred for financing or credit operations, issuance of transferable securities or debt instruments and/or loans granted by any Allowed Creditor under any modality, the funds of which are intended to comply with the purpose of the Contract. The Guaranteed Indebtedness Allowed includes any renewal, rescheduling or refinancing of such debt, as set out in Clause 9.

20. State:

The State of the Republic of Peru.

21. Pre-Operability Study:

Study referred to in procedure COES PR-20 or standard that replaces it.

22. Essential facilities:

The Concession Assets whose use is essential for the service provision and allows the provision of power transmission and distribution services by third parties, as set out in the Applicable Laws and Regulations.

23. Closing Date:

The date in which the Concession Contract is signed upon compliance with all the conditions and statements set out in the Bidding Terms and Conditions and/or Contract.

24. Performance Bond:

It is the Letter of Guarantee issued by a Financial Institution that will be presented by the Concession Holder to guarantee, since the execution of the Contract until the Commercial Start-Up: a) compliance with all of its contractual obligations; b) payment of penalties and c) payment of the amounts ordered by unappealable decision or enforceable arbitration award.

In all cases, the Performance Bond may be comprised of more than one letter of guarantee, provided that they add up the entire amount demanded for the corresponding guarantee.

Such guarantees shall be joint and several, unconditional, irrevocable, with express waiver of the benefit of excussion and division and automatically enforceable. The Performance Bond shall adhere to the format of Annex No. 4 of the Contract.

25. Operating Bond:

It refers to the letter of guarantee issued by a Financial Institution to be presented by the Concession Holder to ensure compliance with all of its contractual obligations since the Commercial Start-Up, including the penalties of the Contract.

In all cases, the Operating Bond may be comprised of more than one letter of guarantee, provided that they add up the total amount demanded for the corresponding guarantee.

Such guarantees shall be joint and several, unconditional, irrevocable, with an express waiver of the benefit of excussion and division and automatically enforceable.

The Operating Bond shall adhere to the format of Annex No. 4-A of the Contract.

26. Inspector:

Person that represents the Grantor during the on-site verification tests.

27. Concession Law or LCE:

Decree Law No. 25844, Law of Electrical Concessions and modifying standards.

28. Applicable Laws and Regulations:

Set of legal regulations that regulate and/or affect, directly or indirectly, the Concession Contract. They include the Political Constitution of Peru, laws, binding rules, supreme decrees, regulations, directives and resolutions, as well as any other that is applicable in conformity with the legal system of the Republic of Peru, the same that shall be of mandatory compliance for this Contract and include the regulatory standards, as well as their supplementary, additional or amending rules.

29. Bid:

Bid submitted by the Successful Party through Form No. 4 of the Bidding Terms and Conditions.

30. Qualified Operator:

Operator declared as such by reason of having proved that it complies with the technical Tender Qualification requirements, or who takes its place in accordance with the Contract. In the Concession Holder's shareholding structure, it shall have and maintain the ownership of the Minimum Participation.

31. Experimental Operation:

Period of thirty (30) calendar days that starts when the Project is connected to the SEIN and powered up, during which the Concession Holder will have no right to collect the Rate Base payment.

32. OSINERGMIN:

Supervisory Body on Investment in Energy and Mines, or the public entity that replaces it, authorized to monitor the compliance with the legal, technical and contractual provisions under its jurisdiction; as well as to audit and sanction in accordance with the Classification and Scale of Sanctions approved to that end.

33. Party:

It refers, as the case may be, to the Grantor or Concession Holder.

34. Parties:

The Grantor and Concession Holder together.

35. Minimum Participation:

Equity stake or ownership interest with voting rights that the Qualified Operator shall have and maintain in the Concession Holder's capital stock, amounting to twenty-five percent (25%) of the Concession Holder's capital stock subscribed and paid for, during the period of time stipulated in the Contract.

36. Person:

Any legal person, national or foreign, that can perform legal acts and undertake obligations in Peru.

37. Project:

It refers to the "500 kV La Niña – Piura Link, and Associated Substations, Lines and Expansions" project.

38. Stat-Up of Commercial Operation or "POC by its initials in Spanish":

The date in which the Concession Holder starts providing the service and is authorized to collect the Rate Base. It will correspond to the date shown on the record signed by OSINERGMIN and the Concession Holder once the Experimental Operation period is completed.

39. Regulation:

Transmission Regulations approved by Supreme Decree No. 027-2007-EM, and supplementary and amending standards.

40. SEIN:

National Interconnected Electric Grid.

41. Service:

Public power transmission service to be provided by the Concession Holder through the Project under the terms of the Contract and Applicable Laws and Provisions.

42. Book Value:

Regardless of the value set out for tax purposes or any other end, in this Contract, "book value" refers to the book value of the Concession Assets expressed in dollars (according to the audited Financial Statements prepared in accordance with the standards and principles generally accepted in Peru), the net of depreciations and amortizations accrued at the time of the calculation. For these purposes, the depreciation shall be estimated under the straight-line method, for a thirty-year period. If the depreciation for tax purposes is higher than the depreciation defined in this paragraph, it shall be discounted from the resulting book value the difference between (1) the income tax paid for under the straight-line depreciation method described and (2) the income tax resulting from the depreciation method used by the Concession Holder. For the purposes of this Contract, the book value will not include any kind of revaluations or tax credit.



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Annex No. 4

CONTRACT PERFORMANCE BOND FORMAT

(city), _____ of 201....

To:

MINISTRY OF ENERGY AND MINES

Av. de las Artes Sur N° 260, San Borja
Lima - Peru.-

Ref.: Letter of Guarantee No. _____

Expiration: _____

Tender for the "500 kV La Niña – Piura Link, and Associated Substations, Lines and Expansions" project.

Dear Sirs:

Hereby and at the request of our clients, _____ [name of Concession Holder] (hereinafter, "the Concession Holder") we provide this joint and several, irrevocable, unconditional and automatically enforceable guarantee, without benefit of excussion or division, for the amount of up to eighteen million US Dollars (USD 18 000 000) in favor of the Ministry of Energy and Mines to guarantee the proper and timely compliance with: 1) all and each one of the obligations the Concession Holder is responsible for; 2) the payment of penalties, and 3) the payment of the amounts ordered by unappealable decision or enforceable arbitration award, resulting from the execution of the Concession Contract for the "500 kV La Niña – Piura Link, and Associated Substations, Lines and Expansions" project (hereinafter, "The Contract").

To execute this guarantee in your favor, a requirement from the Ministry of Energy and Mines forwarded through notarial channels will suffice, the same that shall be signed by the Director General of Administration, or a person duly authorized by that entity, stating that our clients _____ (name of Concession Holder) have failed to fulfill any of the obligations guaranteed by this document.

Any delay on our part to execute the above-mentioned guarantee shall pay interest equivalent to the maximum LIBOR rate, plus an annual margin (spread) of 3 %. The LIBOR rate will be established by the daily Cable Reuter received in Lima at 05:00 p.m. London time, on the date in which the payment request was submitted through notarial channel. The interests shall be borne from the date in which its execution was requested until the date of effective payment.

This guarantee shall also secure the proper and timely compliance with the obligations of the Concession Holder under the provisions contained in Legislative Decree No. 1362 and regulations; or replacing or amending standards.

Our obligations under this guarantee will not be affected by any dispute between the Ministry of Energy and Mines, or any entity of the Government of Peru, and our clients.

This guarantee will be valid for a term of 12 months counted from _____ and it will expire on _____, inclusive.

Sincerely,

Signature _____

Name _____

Financial Institution



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Ministerio de Economía y Finanzas
(Ministry of Economy and Finance)

Agencia de Promoción de la
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(Private Investment Promotion
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Annex No. 4-A

OPERATION GUARANTEE FORMAT

(city), _____ of 201....

To

MINISTRY OF ENERGY AND MINES

Av. de las Artes Sur N° 260, San Borja
Peru.-

Ref.: Letter of Guarantee No. _____

Expiration: _____

Tender of "500 kV La Niña – Piura Link, and Associated Substations, Lines and Expansions" project.

Dear Sirs:

Hereby and at the request of our clients, _____ [name of Concession Holder] (hereinafter, "the Concession Holder") we provide this joint and several, irrevocable, unconditional and automatically enforceable guarantee, without benefit of excussion or division, for the amount of up to two million US Dollars (USD 2 000 000) in favor of the Ministry of Energy and Mines to guarantee that _____ ("the Concession Holder") _____, complies in a timely and proper manner with all and each one of the obligations, including the payment of penalties, it has undertaken under the Concession Contract for the "500 kV La Niña – Piura Link, and Associated Substations, Lines and Expansions" project.

To execute this guarantee in your favor, a requirement from the Ministry of Energy and Mines forwarded through notarial channels will suffice, the same that shall be signed by the Director General of Administration, or a person duly authorized by that entity, stating that our clients _____ (name of Concession Holder) have failed to fulfill any of the obligations guaranteed by this document

Any delay on our part to execute the above-mentioned guarantee shall pay interest equivalent to the maximum LIBOR rate, plus an annual margin (spread) of 3 %. The LIBOR rate will be established by the daily Cable Reuter received in Lima at 05:00 p.m. London time, on the date in which the payment request was submitted through notarial channel. The interests shall be borne from the date in which its execution was requested to the date of effective payment.

This guarantee shall also secure the proper and timely compliance with the obligations of the Concession Holder under the provisions contained in Legislative Decree No. 1362 and regulations; or replacing or amending standards.

Our obligations under this guarantee will not be affected by any dispute between the Ministry of Energy and Mines, or any entity of the Government of Peru, and our clients.

This guarantee will be valid for a term of 12 months counted from _____ and it will expire on _____, inclusive.

Sincerely,

Signature _____

Name _____

Financial Institution

Annex No. 5

TELECOMMUNICATIONS

In accordance with Annex No. 1, the Project shall have a main telecommunications system (optical fiber - OPGW), in respect of which the following is agreed:

1. The optical fiber cable to be installed shall meet the project specifications contained in Annex No. 1, among them, having at least twenty-four (24) wires.
2. The State acquires the ownership of eighteen (18) dark wires of the optical fiber cable installed by the Concession Holder, as set out in Supreme Decree No. 034-2010-MTC and Ministerial Resolution No. 468-2011-MTC/03, which will be used by the National Optical Fiber Backbone Network, in accordance with Law No. 29904 and its Regulations, approved by Supreme Decree No. 014-2013-MTC, which gives it sole right to use this fiber without limitations.
3. The Concession Holder shall use the remaining optical fiber wires for its own communication needs.
4. The transfer of the eighteen (18) optical fiber wires owned by the State shall be carried out according to the procedure determined by the Ministry of Transport and Communications, who will be in charge of granting them in concession. The Ministry of Transport and Communications is the state body with which the Concession Holder will directly discuss all aspects related to the telecommunications activity.
5. The Concession Holder is responsible for installing the optical fiber cable of the main telecommunications system, observing -at least- the following technical considerations:
 - a. The optical fiber cable shall be new and guaranteed against any manufacturing defect. Also, it shall consider the conditions of the environment where the optical fiber cable will be installed and operated to make sure that the cable characteristics are adequate.
 - b. The optical fiber cable manufacturer shall have ISO 9001-2008 and TL9000 (Quality Management System) certification.
 - c. The optical fiber to be implemented shall be of single mode type and its geometric, optical, mechanical, and transmission characteristics shall comply at least with Recommendation ITU-T G.652.D or G.655 of the International Telecommunication Union (hereinafter, ITU).
 - d. The optical fiber shall have a dispersion by polarization mode (PMDQ) less than or equal to integer zero with one tenth (0.1).
 - e. The attenuation of the whole fiber installed must be less than or equal to integer zero with thirty-five hundredths (0.35) dB per km at 1310 nm and at integer zero with twenty-five hundredths (0.25) dB per km at 1550 nm.
 - f. A type of optical fiber cable with a service life of at least twenty (20) years must be used. To that end, the recommendations provided by the manufacturer must be considered to ensure its service life.
 - g. The ITU-T recommendations of the International Telecommunication Union, as well as applicable ANSI EIA/TIA and IEC standards, shall be considered for optical fiber installation, splicing and testing, optical fiber cable maintenance and wire identification.
6. The maintenance of the optical fiber system shall be done at the Concession Holder's expense, according to the guidelines set out in Recommendation ITU-T L.25: "Optical fiber cable network maintenance", in order to keep it in good condition until the wires owned by the State are effectively used for the provision of the telecommunication services. As of that moment, the optical fiber cable maintenance will be shared with the telecommunications operators designated by the State. These operators shall assume the investment costs incurred to adapt and operate the State-owned wires necessary, as the case may be.

7. The Concession Holder shall give facilities to house the optical equipment required to light up the optical fiber owned by the State, including the shared use of spaces.

In addition, it shall allow access to the fiber wires owned by the State and for the installation of accessories and/or devices that will allow the provision of public telecommunications services, both for the telecommunications services start-up and for their operation and maintenance.

In this regard, the Concession Holder shall leave an optical fiber distributor (ODF) in the telecommunications room that will be built in each substation, ready to access the eighteen (18) wires owned by the State. Also, it shall provide, at least, the following: 220 Vac electric power and a power of not less than three (3) kilowatts; enough room to install and operate four (4) telecommunications racks, as well as to house air conditioning and power equipment; and room to install a telecommunications antenna, taking into account also the minimum safety distances.

For all of the above, the State or third parties designated by it will not have to make any consideration in favor of the Concession Holder. In case there are additional technical requirements for the use of optical fiber wires owned by the State, the Concession Holder shall agree -within ten (10) calendar days- the economic and technical terms with the State or third parties designated by it. This period may be extended by the State, up to forty-five (45) additional days, for duly justified reasons communicated to the Concession Holder. In case of disputes, these shall be settled pursuant to Clause 14.

8. The State shall ensure that the telecommunication activities carried out do not limit or jeopardize the continuity and security of the electric transmission service, providing for the mechanisms that may be required in the processes for the concession of the optical fiber owned by the State. In any event, if the electric transmission services are affected due to an action or omission during the operation of the optical fiber owned by the State, for which the Concession Holder is not responsible, the Concession Holder will be exempt from administrative, civil and/or criminal liability; and the telecommunications operator in charge of the optical fiber operation will have to assume the corresponding responsibilities.
9. The Concession Holder may supervise, directly or through third parties, the works and/or activities that are carried out to light up the optical fiber owned by the State and to make feasible the fiber exploitation in the public telecommunications service provision. In case the electrical infrastructure and/or electric service provision are jeopardized, the Concession Holder may order the suspension of these activities on duly substantiated grounds, the same that shall be reported in writing to the Ministry of Transport and Communications and to the Ministry of Energy and Mines, within forty-eight (48) hours after the suspension of the works. The activities shall be resumed within a period of not more than ten (10) calendar days, unless agreed otherwise by the parties. If no agreement is reached, the dispute shall be settled pursuant to Clause 14.
10. The Concession Holder shall submit to the Grantor, on a semi-annual basis, geo-referenced information regarding the laying of optical fiber, its current and projected use and, if applicable, the telecommunication companies and sections with or with respect to which they have executed Contracts for the use of their infrastructure.
11. The optical fiber wires that are not owned by the State, as well as supplementary or related equipment and services, are part of the Concession Assets.
12. The provisions of this annex shall not affect the Rate Base. In case the concession facilities are used to develop telecommunications businesses, the users of the electrical service shall be compensated as established by the sectoral authority. In this case, the commercial exploitation of the optical fiber wires of the Concession Holder shall be carried out by a telecommunications operator, which shall offer its services to all telecommunications operators requesting it, on non-discriminatory terms, subject to the telecommunications laws and regulations.



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Ministerio de Economía y Finanzas
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Projects Portfolio
Directorate

Annex No. 6

FORMS 4, 4-A and 4-AA

(Certified Copies)

Annex No. 7**TERMS FOR PROJECT DEVELOPMENT**

The following milestones shall be met within the specified terms (all of them counted from the Closing Date):

Milestones	Term
1.- Environmental Management Instrument approved by the Competent Government Authority.	Eighteen (18) months
2.- Financial Closing of the project.	Twenty-two (22) months
3.- Arrival of the reactors and transformers referred to in Annex No. 1 of the Contract to the corresponding sites.	Thirty-four (34) months
4.- Commercial Start-Up.	Forty (40) months

Any extension of the terms pursuant to Clause 4.3 or Clause 10.4 shall modify the terms of the milestones indicated above.

The date for the Commercial Start-up shall be the one indicated in the record referred to in Clause 5.4.

Annex No. 8

PROJECT'S WORK SPECIFICATIONS

“500 kV La Niña – Piura Link, and Associated Substations, Lines and Expansions”

A. Transmission Lines

1. General project description.
2. Line layout description.

Include start and end points with altitude in m.a.s.l., as well as geographical maps and planimetry on an adequate scale. The route of the line shall be described, highlighting the vertexes of the section, the crossing point with other lines, and its passage through populated and archaeological areas.

3. Design and construction standards used.

3.1 Overhead line:

The National Electrical Code will be mainly used. If required, it shall be supplemented by international standards such as ANSI/IEEE, IEC, VDE, NEMA, ASTM, NESC, NFPA.

4. Technical characteristics

- a) Line route length (km).
- b) Insulation level at 60 Hz and BIL corrected by elevation.
- c) Transmission capacity per circuit. The fulfillment of the transmission capacities stated in Annex No. 1 of the Contract shall be supported.
- d) The expected service outage failure rate for the entire line, in No. of outages/100 km-year, as required in Annex No. 1.
- e) Number of conductors per phase.
- f) Type, material and section of conductors. It shall be supported that the Joule losses are within the specified limits, as well as the surface gradients levels and non-ionizing radiation limits set out in Annex No. 1 of the Contract.
- g) Type, material and characteristics of insulators. Include the number of units per suspension chain and angle.
- h) Types of structures. Include typical diagrams of structures (suspension, angle and terminal).
- i) Foundations. Include type (concrete or metallic).
- j) Number and characteristics of guard wires.
- k) Type, material and section of guard wires.
- l) Grounding. Include the system to be used (electrodes, counterweights or other), as well as the dimensions and section of the elements to be used.
- m) Other characteristics or relevant information.
- n) Right of way used.
- o) Accesses and infrastructure.

B. Substations.

1. General project description.

2. Substation location.

Include the geographic plan and elevation in m.a.s.l. for each substation. The selected site and surrounding geographic features, if any, shall be described.

3. Design and construction standards used.

Basically, the National Electrical Code shall be used. If necessary, it will be supplemented by international standards such as ANSI/IEEE, IEC, VDE, NEMA, ASTM, NESC, NFPA.

4. Technical characteristics of the substation.

a) General description of the switchgear, indicating the plant arrangement. Include single line diagram, plan view and elevations.

b) Busbar configuration. Include the criteria used for its selection. If the reference configuration is modified, the modification support and verification that its performance is better than the reference diagram shall be presented.

c) Insulation level at 60 Hz and BIL corrected by elevation.

d) Description of the type of equipment proposed in each substation:

- Conventional
- Encapsulated (GIS)

The number of 220 and 500 kV cells shall be indicated, per type:

- line
- transformer
- coupling
- reactive compensation

e) Circuit breaker characteristics:

- Type: dead or live tank, in SF6 or other, activation, control: local and/or remote, etc.
- Rated and short-circuit current, breaking capacity (MVA).

f) Line and busbar disconnector characteristics:

- Activation, control: local and/or remote, etc.
- Rated and short-circuit current.

g) Measurement transformer characteristics.

h) Lightning arrester characteristics.

i) Power transformer characteristics.

- Transformation ratio.
- Power (MVA) with natural (ONAN) and forced (ONAF) ventilation
- Taps and taps changer system.

j) Reactive compensation system characteristics:

- Reactor power, SVC or capacitor bank.
- Type of actuation: continuous or staggered (discrete).

k) Description of protection, measurement, control and operation systems. Provide proof of compliance with COES' requirements.

- l) Description of telecontrol, remote control and data acquisition systems and its link to the COES system.
- m) Communication system description.
- n) Grounding. Include the system to be used (electrodes, deep ground grid or other), as well as the dimensions and section of the elements to be used.

e. Electrical System Pre-Operability Study.

The objective of the study is to verify if the final scheme of the facilities will allow the proper operation of the SEIN, in accordance with the requirements set out by COES.

The Pre-Operability Study shall comply with the provisions of Procedure PR-20 of COES and cover, among other things, the following aspects:

- Studies of steady-state operation for different generation and load conditions. Compliance with the voltage variation ranges allowed, load by lines and transformers, operation of reactive compensation devices, operation of automatic voltage regulation systems, effects on other elements of the grid, among others, shall be verified.
- Studies of contingencies in stationary state. The adequate operative response of the System will be demonstrated in case simple contingencies occur in the transmission system (N-1), during the emergency period and until COES's Control Center takes corrective actions.
- Studies of post-disturbance transient response and verification of the adequate response of control, regulation, protection and rapid action reclosing devices.
- Studies of overvoltage and insulation coordination.
- Study of harmonic voltages and currents, their effect in the SEIN and filter requirements.
- Design of protection systems and coordination of the protection with the rest of SEIN facilities, according to COES' standards.
- Calculations of power and short-circuit currents and verification of the capacity of the existing and projected facilities to support the new short-circuit levels. The modifications and reinforcements in existing substations, which will be extended as part of the project, will be identified and incorporated to the project. Likewise, the modifications and reinforcements of the facilities affected by the project but that are not part of it, shall be identified.

The details and scope of the Pre-Operability Study shall be coordinated with COES. Procedure PR-20 or the procedure replacing it, shall be applied.

ANNEX No. 9

Information Plan

According to the Applicable Laws and Regulations, after the approval of the Administrative Action, the Promoter Entity shall prepare the Information Plan within thirty (30) days. The Information Plan will not interrupt the activities approved by the Promoter Entity. The Promoter Entity will be in charge of financing the coordination actions of the Information Plan (travel, housing and food) that could be generated.

Definitions.-

- a) Promoter Entity: Public entities in charge of approving administrative actions that constitute operating licenses for the construction and/or maintenance of the infrastructure required for the provision of Public Services. In this case, the Promoter Entity is the Ministry of Energy and Mines.
- b) Administrative Action: It refers to the resolution that approves the Final Project Concession, as set out in Ministerial Resolution No. 209-2015-MEM/DM.
- c) Information Plan: Public document prepared by the Promoter Entity that approves the Administrative Action, intended to inform -at least- the indigenous or native peoples located within the scope of the measure about the following:
 - i) The result of the identification of indigenous or native peoples located within the scope of the measure.
 - ii) The activities to be developed during the execution of the construction and/or maintenance of health care and education infrastructure or public service-related infrastructure.
 - iii) The benefits generated by the construction and/or maintenance of health care and education infrastructure or public service-related infrastructure.
 - iv) Proposal of deadlines, meeting points, methodologies, among others, necessary to inform the indigenous or native peoples about the above-mentioned topics.
- d) Public service: Activity considered of public interest and essential, which fulfills the collective needs, and the provision of which is guaranteed by the State, in such a way it can be carried out in conditions of equality, continuity, universality and quality. As such, this activity represents a benefit in itself since it is intended to satisfy and guarantee the exercise of the population's fundamental rights. By means of a legal instrument with the status of a law, the public service nature of an activity, as well as the applicable legal system, is determined. Decree Law No. 25844, in subparagraph b) of Article 2 states that the transmission and distribution of electricity constitute public electricity services.

**PERÚ**Ministerio de Economía y Finanzas
(Ministry of Economy and Finance)Agencia de Promoción de la
Inversión Privada
(Private Investment Promotion
Agency)**Projects Portfolio
Directorate****ANNEX No. 10****Referential Section of the “500 kV La Niña-Piura Link, and Associated Substations, Lines and Expansions” project consulted to the National Service of Areas Protected by the State – SERNANP****PERÚ**Ministerio
de Economía y FinanzasAgencia de Promoción
de la Inversión Privada**Dirección de Portafolios
de Proyectos**“Decade of Equal Opportunities for Women and Men”
“Year of Dialogue and National Reconciliation”

Lima, 11 June 2018

CERTIFICATION No. 82-2018-SERNANP-DDE

In view of the Letter (unnumbered), received on 06 June 2018 (CUT-015921-2018), signed by Mr. Anibal del Águila Acosta, Representative of PROINVERSION, identified with Taxpayer No. 20380799643, with tax domicile in Av. Enrique Canaval y Moreyra No. 150, 9th Floor, District of San Isidro, Province and Department of Lima, by means of which he requests the certification of some points called “500kV La Niña-Piura Link, and Associated Substations, Lines and Expansions”, which are located taking as a reference the political boundaries of the census administration of the National Institute of Statistics and Informatics (INEI, by its Spanish initials), in the Provinces of Sechura and Piura, Department of Piura:

It is hereby certified, based on the information provided where the above-mentioned points are plotted, that such points do not overlap with a Protected Natural Area or Buffer Zone, as indicated in Report No. 358-2018-SERNANP-DDE and the map attached therein.

- (signature) Eng. Benjamín Lau Chiong - Director of Strategic Development – SERNANP
- (seal) Strategic Development Directorate – SERNANP
- (seal) National Service of Natural Areas Protected by the State – Strategic Development
Directorate - 14 June 2018 - Document Delivered – Illegible signature
- (seal) ProInversión - Electricity Projects - 14 June 2018 - Received

Address: Calle Diecisiete No. 355, Urb. El Palomar – San Isidro, Lima-Peru.**Phones:** (511) 717-7500 / 225-2803**Fax:** (511) 475-1555**E-mail:** sernanp@sernanp.gob.pe**Web:** www.sernanp.gob.pe

**NATIONAL SERVICE OF NATURAL AREAS PROTECTED BY THE STATE
STRATEGIC DEVELOPMENT DIRECTORATE**

“Decade of Equal Opportunities for Women and Men”
“Year of National Dialogue and Reconciliation”

REPORT No. 358-2018-SERNANP-DDE

To: Eng. Benjamín Lau Chiong – Director of Strategic Development

From: Marisela Huancauqui Torres –Strategic Development Directorate

Subject: Certification of location of point, line or polygon in connection with Protected Natural Areas and Buffer Zone.

Reference: Letter (unnumbered) received on 06 June 2018 (CUT-015921-2018)

Date: 11 June 2018

It is with great pleasure that I write to you to inform you about the review made to the information received for the analysis of the location of some points, with reference to the Certification of the location of areas or levels associated with Protected Natural Areas and Buffer Zones of the National System of Natural Areas Protected by the State (SINANPE, by its Spanish initials).

I. BACKGROUND

By means of the document indicated in the reference, Mr. Anibal del Águila Acosta, Representative of PROINVERSION, requested to the Strategic Development Directorate, the certification of the location of some points called “500kV La Niña-Piura Link, and Associated Substations, Lines and Expansions”, with respect to the Protected Natural Areas or Buffer Zones of SINANPE.

In the following link, <http://www.mtc.gob.pe/estadisticas/transportes.html>, on 07 May 2018, the digital information regarding the different thematic layers of the Departmental, National and Neighborhood Road Networks, was downloaded in shapefile format.

By means of Official Letter No. 191-2018-INEI/DNCE-DECG, dated 11 May 2018, through the National Institute of Statistics and Informatics-INEI, referential information regarding census political and administrative boundaries at national level and in populated centers was submitted to this Directorate in shapefile format.

II. LEGAL BASIS**2.1 Law 26834, Law of Protected Natural Areas**

The Protected Natural Areas are continental and/or marine areas within the national territory, expressly recognized and declared as such -including their categories and zoning- to preserve the biological diversity and other associated values of cultural, scenic and scientific interest. Due to their contribution to the sustainable development of the country, these can be: A) of national administration, which comprise the National System of Protected Natural Areas – SINANPE; B) of regional administration, called regional conservation areas; or C) Private conservation areas.

The Protected Natural Areas, except for Private Conservation Areas, are conclusively established as such. The physical reduction or legal modification of the areas comprised within the National System of Protected Natural Areas – SINANPE, can only be approved by law.

NATIONAL SERVICE OF NATURAL AREAS PROTECTED BY THE STATE STRATEGIC DEVELOPMENT DIRECTORATE

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2.2 About the competences of SERNANP

The National Service of Protected Natural Areas is a specialized technical public body assigned to the Ministry of Environment, by means of Legislative Decree No. 1013 of 14 May 2008, constituted as the steering entity in Protected Natural Areas, having among its main roles the management of Protected Natural Areas of national administration and the management of the official register of Protected Natural Areas.

III. ANALYSIS

The request for the Certification of the location of a point, line or polygon related to Protected Natural Areas and their Buffer Zones was assessed according with the requirements set out in the Tariffs for services to third parties, approved by Presidential Resolution No. 212-2014-SERNANP.

The analysis of compliance with the requirements set out in the service Tariffs is presented below:

ITEM	IN COMPLIANCE (YES/NO)	OBSERVATION/COMMENT
1. Service request (according to Format No. 1)	YES	It complied with the provisions of Presidential Resolution No. 2012-2014-SERNANP
2. CD containing the Certification request format filled out in Excel.	YES	
Shapefile file(s) of the point, line or level under consultation, in Datum WGS 84 and the UTM zone(s) spatially located; this shall be indicated as described in section V of Format No.1.	YES	
Payment invoice/slip	YES	

To analyze the location of some points in consultation, with regard to Protected Natural Areas and Buffer Zones, the cartographic information generated and stored in the Institutional Geographic Database of SERNANP was used, regarding:

- Protected Natural Areas of National, Regional and Private Administration
- Buffer Zones

Likewise, for the generation of the corresponding location map, referential information generated by other institutions was used:

Basic cartography (IGN)

Political boundaries, populated centers (INEI)

Road network (MTC).

Based on the information obtained, it has been determined that the location of some points called “500kV La Niña Piura Link, and Associated Substations, Lines and Expansions” does not overlap with a Protected Natural Area or Buffer Zone, as can be seen in the map attached herein.

**NATIONAL SERVICE OF NATURAL AREAS PROTECTED BY THE STATE
STRATEGIC DEVELOPMENT DIRECTORATE**

“Decade of Equal Opportunities for Women and Men”
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REPORT No. 358-2018-SERNANP-DDE**IV. CONCLUSION**

The location of the points in consultation called “500kV La Niña Piura Link, and Associated Substations, Lines and Expansions” does not overlap with a Protected Natural Area or Buffer Zone.

V. RECOMMENDATION

Submit this report to the user for the purposes intended.

This is my report for your information and for the purposes you deem appropriate.

Sincerely,

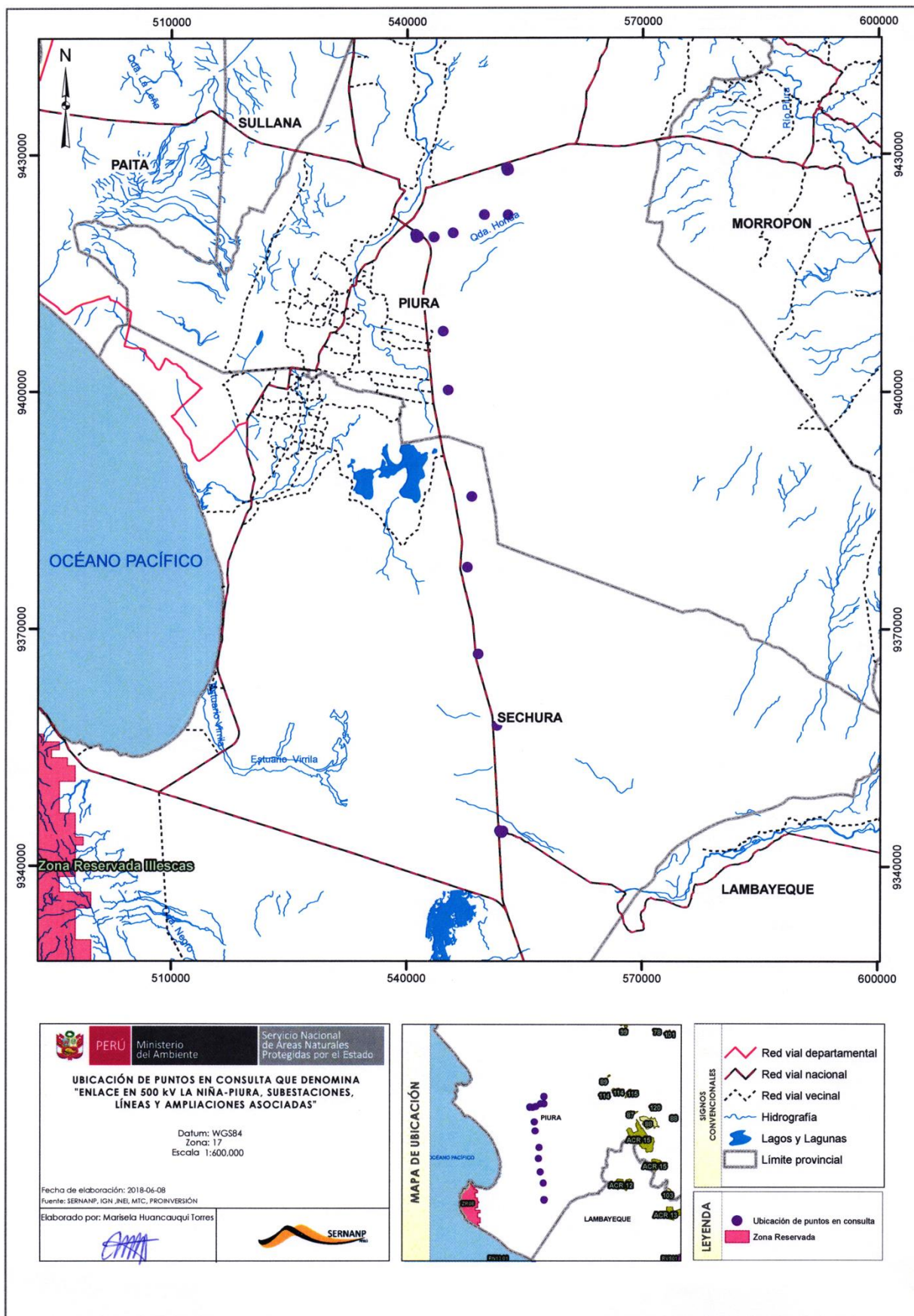
- *(signature)*
- **Geog. Marisela Huancauqui Torres**
- Strategic Development Directorate

In the light of the above report, I proceed to sign it for the corresponding proceedings, since it is in conformity with all technical aspects.

- *(signature)*
- **Biologist Edgar Vicuña Miñano**
- In charge of the Functional Operating Unit of Information Management
-

In the light of the above report, I proceed to sign it for the corresponding proceedings, since it is in conformity with all technical aspects.

- *(signature)*
- **Eng. Benjamin Lau Chiong**
- Director of Strategic Development – SERNANP
- *(seal)* Strategic Development Directorate - SERNANP



Annex No. 11**TERMS OF REFERENCE****Supervision of Engineering, Supply and Construction of the “500 kV La Niña – Piura Link, and Associated Substations, Lines and Expansions” project****1. OBJECTIVE**

To hire the services of an Engineering Consulting Company, with knowledge and expertise in the Supervision of the Engineering, Supply and Construction of High Voltage Transmission Lines to monitor the engineering and works of the SGT Concession Contract "500 kV La Niña – Piura Link, and Associated Substations, Lines and Expansions", upon the Concession Holder's request.

2. SUPERVISION COMPANY

The Concession Holder undertakes to hire and cover the expenses incurred for the works supervision. To that end, it shall propose a company specialized in the supervision of high voltage transmission systems, the same that should not have had any kind of connection with the Concession Holder over the past five (5) years, the selection of which shall be approved by OSINERGMIN.

The costs incurred to carry out such supervision, are part of the investment proposal submitted by the Concession Holder. The supervision company shall begin its work since the beginning of the transmission system engineering project (transmission line and high voltage substation).

3. SCOPE OF THE SUPERVISION

The Supervision Company shall report, on a monthly basis and in writing, to the Grantor and OSINERGMIN about the development of the works.

The supervision shall be provided during the execution of the “500 kV La Niña – Piura Link, and Associated Substations, Lines and Expansions” project, which comprises the following:

a) Piura Nueva 500/220 kV substation**500 kV side**

The busbar system and yard equipment at 500 kV shall have a double busbar with one and a half breaker connection arrangement, comprised of the following installations:

- Two (02) cells for connecting the line to the La Niña substation, equivalent to 2/3 of the diameter of the one and a half breaker arrangement.
- Once (01) cell for connecting the 500kV line reactor to the La Niña substation.
- Three (03) cells for connecting a 500kV Automatic Reactive Compensation Equipment and for the 500/220 kV autotransformer bank, equivalent to the full diameter of the one and a half breaker arrangement.
- For busbars: three (03) voltage transformers, which shall be connected to busbars “A” and “B” of the substation.
- One (01) 500 kV – 60 MVar three-phase line reactor (to the La Niña substation), comprised of 3 single-phase units of 20 MVar each, plus one spare unit of 20 MVar.
- One (01) 500 kV Automatic Reactive Compensation Equipment of -150 MVar (Inductive) / +300 MVar (Capacitive).
- One (01) autotransformer bank at 500/220/(*) kV – 750/750/(*) MVA (ONAF), comprised of 3 single phase units of 250 MVA (ONAF) each, with a star/star/delta connection group (Y/y/d), plus one spare unit.
- Provision of space for five (5) future cells.

- Supplementary systems: protection, control, measurement, communications and grounding systems, auxiliary services, towers and busbars, civil works, etc.

220 kV side

The busbar system and yard equipment at 500 kV shall have a double busbar with transfer disconnecter connection arrangement, comprised of the following installations:

- Two (02) line cells for connection with the Piura Oeste substation.
- One (01) line cell for connection with the La Niña substation.
- One (01) line cell for connection with the Felam substation.
- For the busbars: three (03) voltage transformers, which shall be connected to busbars “A” and “B” in the substation.
- One (01) transformation cell for connection with the 220 kV side of the 500/220 kV autotransformer bank.
- One (01) coupling cell.
- Provision of space for six (6) future cells.
- Supplementary systems: protection, control, measurement, communications and grounding systems, auxiliary services, towers and busbars, civil works, etc.

b) La Niña 500 kV substation expansion

- Two (02) line cells to connect to the Piura Nueva substation, equivalent to two thirds of the diameter of the one and a half breaker arrangement.
- One (01) cell connected to the “B” busbar, equivalent to one third of the diameter of the one and a half breaker arrangement.
- One (1) cell for connecting the line reactor to the Piura Nueva substation.
- One (1) 500 kV – 60 MVar line reactor bank (to the Piura Nueva substation), comprised of three (3) 20 MVar single phase units and an additional spare unit.
- Supplementary systems: protection, control, measurement, communications and grounding systems, auxiliary services, towers and busbars, civil works, etc.

c) Piura Oeste 220/60 kV substation expansion

- The expansion of this substation comprises the works necessary for the adaptation of the existing facilities in the Piura Oeste substation, as a result of the 220 kV link with the 450 MVA Piura Nueva substation.
- In this regard, the Concession Holder shall use the 220 kV cells present in the Piura Oeste substation, corresponding to lines L-2241 and 2162, from which the current circuit equipment will be replaced to meet the link design power of 450 MVA. Similarly, it shall adapt the protection, control, measurement, communications and auxiliary service systems, etc. required for the 220 kV link between the Piura Nueva and Piura Oeste substations, with a length of 25 km approximately.

d) 500 kV La Niña – Piura Nueva Transmission Line

- Length: 87.1 km
- Number of three-phase lines: One (1)
- Voltage: 500 kV
- Maximum system voltage: 550 kV
- Phase arrangement: Horizontal or triangular.
- Type of supports: Self-supporting lattice of galvanized steel
- Phase conductor: ACSR, AAAC or ACAR may be used
- Number of conductors per phase: Four (4) or more
- Guard wires: Two (2) wires: one of OPGW type, with 24 fibers as a minimum, with 108 mm² as referential section and the other EHS galvanized steel wire, with a minimum nominal section of 70 mm².
- Altitude: 11 m.a.s.l. minimum. 116 m.a.s.l. maximum.

e) 220 kV Felam - Piura Oeste and La Niña – Piura Oeste (L-2162/2241) T.L. Variant

	Variant 1 (of 180 MVA per three-phase line)	Variant 2 (of 450 MVA per three-phase line)
▪ Approximate length:	16 km	16 km
▪ Number of three-phase lines:	Two (2)	Two (2)
▪ Rated operating voltage:	220 kV	220 kV
▪ Maximum system voltage:	245 kV	245 kV
▪ Phase arrangement:	Vertical	Vertical
▪ Type of supports:	Self-supporting lattice made of galvanized steel	Self-supporting lattice made of galvanized steel
▪ Type of conductor:	(*)	ACSR, AAAC, ACAR or special high temperature conductors may be used.
▪ Number of conductors per phase:	(*)	Two (2) or more One (1) in case of using special high temperature conductors
▪ Guard wires:	(*)	To be evaluated in the Pre-Operability Study
▪ Altitude:	Less than 1000 m.a.s.l.	Less than 1000 m.a.s.l.

(*) The design of variant 1 shall be equal to the one considered for existing lines L-2162/2241.

f) Revamping of Line at 220 kV (L-2162/2241) – Sectionalizing Point – Piura Oeste Section

	Revamping (*) (Alternative 1)	New link (**) (Alternative 2)
▪ Approximate length:	9 km	9 km
▪ Number of three-phase lines:	Two (2)	Two (2)
▪ Rated operating voltage:	220 kV	220 kV
▪ Maximum system voltage:	245 kV	245 kV
▪ Phase arrangement:	Vertical.	Vertical.
▪ Type of supports:	The existing towers will be used.	Self-supporting lattice made of galvanized steel
▪ Type of conductor:	Special thermo-resistant high temperature conductor that will replace the existing conductors	ACSR, AAAC or ACAR may be used.
▪ Number of conductors per phase	One (1)	Two (2)
▪ Guard wires	None.	None.
▪ Altitude:	Less than 1000 m.a.s.l.	Less than 1000 m.a.s.l.

(*) The Concession Holder shall coordinate with REP (holder of lines L-2162/2241) the adaptations that shall be made to the existing towers of lines L-2162/2241 as a result of the change of conductors, and with INTERNEXA about the potential changes to the ADSS wire layout.

(**) The Concession Holder shall coordinate with REP and INTERNEXA the use and final arrangement of lines L-2162/2241 and the relocation of the ADSS wire layout.

4. SCOPE OF THE SUPERVISION COMPANY ACTIVITIES

The Supervision Company will be in charge of the project supervision, within the framework of the Concession Contract and applicable regulations, during the design, construction, testing and commissioning stages of the Project.

The purpose of the supervisory tasks is to make sure that the Project complies with the following:

- That the Final Engineering and Engineering at Work Level are in line with the scope specified in Annex No. 1 of the Contract.
- That the Supply of Equipment and Materials is in line with the scopes specified in Annex No. 1 of the Contract, verifying that the specifications, minimum requirements and standards set out in the Contract, as well as good engineering practices, are complied with.

- c. That the construction and testing of the Project are in line with the scopes set out in Annex No. 1 and Annex No. 2 of the Contract, respectively.
- d. That the construction of the facilities is carried out in accordance with the timetables and schedules of the Contract.
- e. Prepare a compliance report for the project's construction.

The list of activities to be developed by the Supervision Company is, without being exhaustive, as follows:

4.1 Supervision of Engineering Studies

To review and evaluate the studies prepared by the Concession Holder, the same that shall be in accordance with the scopes of the Agreement. Such studies, among others, are:

- Definitive level engineering
- As -built engineering

4.2 Supervision of Supplies

- Verification of factory test protocols (FAT).
- Verification of internal test run protocols (SAT).
- Supervise the quality of the supplies and the technical characteristics of the equipment, taking into account, among others, the provisions of Clause 4.2 and Annex No. 1 of the Contract.

4.3 Project construction supervision

To supervise the activities related to the project's construction. For indication only, without being exclusive, the following shall be supervised:

- Compliance with the Schedule of Activities for the Works Execution and Valued Schedules.
- The quality of the material, electrical system equipment and constructive quality of the project.
- The proper construction of civil works (mainly of the foundations), as well as the quality of the supplies and materials used to that end.
- The proper execution of the project's assembly.
- Verify compliance with the technical assembly specifications to fulfill the provisions of Annex No. 1 of the Contract.
- Proper transport, handling and storage of supplies and equipment.
- Verify that the contractor's organization is consistent with the importance of the project, which will ensure compliance with the construction procedures and the safety of personnel.
- Verify the experience and technical capabilities of the companies hired by the Concession Holder for the project's construction.
- Compliance with the Quality Assurance Program referred to in Clause 5.11 of the Contract.
- Compliance with the environmental protection and safety regulations, reviewing and authorizing safety and environmental protection procedures.
- The work of the Supervision Company shall not interfere with the roles and responsibilities of the Inspector of the Contract.

4.4 Test Supervision

- Participate in internal test runs.
- Participate in the project's verification tests set out in Annex No. 2 of the Contract.

5. SUPERVISION COMPANY PERSONNEL QUALIFICATIONS

The professionals required for the Supervision works shall be members of professional associations and qualified to exercise their profession in Peru. The profile of each professional includes, without limitation, the following:

- **Head of Project Supervision:** Electrical and mechanical engineer or electrician, with a minimum experience of five (5) years in the supervision of lines and substations of 220kV or higher.
- **Head Transmission Line Supervisor:** Electrical and mechanical engineer or electrician, with a minimum experience of five (5) years in the supervision of lines of 220kV or higher.
- **Head Substations Supervisor:** Electrical and mechanical engineer or electrician, with a minimum experience of five (5) years in the supervision of substations of 220kV or higher.
- **Head Civil Works Supervisor:** Civil engineer, with a minimum experience of ten (10) years in the supervision of civil works in high voltage lines and substations.
- **Specialist in Electrical Protection:** Electrical and mechanical engineer or electrician, with a minimum experience of five (5) years in protection systems for substations of 220kV or higher.
- **Specialist in Telecommunications:** Electrical and mechanical engineer or electrician, with a minimum experience of five (5) years in high voltage line telecommunications systems.
- **Geotechnics Supervisor:** Geological Engineer, with a minimum experience of ten (10) years in the supervision of works in high voltage lines and substations.
- **Head of Security:** Electrical and mechanical engineer or electrician -or related profession- with a minimum experience of ten (10) years in supervision of security during the construction of high voltage lines and substations.
- **Civil, electromechanical and telecommunication technicians:** with a minimum experience of two (2) years in similar works in high voltage power lines, substations and telecommunications (220 kV or higher).
- The professionals of the Supervision Company assigned to the site as residents shall be electrical and mechanical engineers or electricians with a minimum experience of five (5) years in lines and/or substations of 220 kV or higher. These professionals shall be hired exclusively for the project.
- The Supervision Company may replace the personnel originally assigned, provided their replacements meet the requirements set out in this section.

6. REPORTS

The Supervision Company shall submit to the Concession Holder and OSINERGMIN the following types of reports, during the service execution, in hard copy and on a magnetic file with source files:

- **Monthly reports:** At the end of each month and throughout the project's execution, the Supervision Company shall prepare a report about the Project status.
- **Observation reports:** Every time the Supervision Company makes an observation, it shall prepare the corresponding report, describing the details.
- **Specific reports:** It refers to the reports that OSINERGMIN will request during the execution of the works regarding specific aspects or technical problems, security situations, environmental aspects, incidents and accidents or any other aspects related to the execution of the Project.
- **Compliance Report of Annex No. 1 of the Contract.**
- **Review Report of the Definitive Level Engineering.**

- Final Report: Upon completion of the works, acceptance of tests and commissioning, the Supervision Company shall prepare the final report of its activities. In this report the Supervision Company shall express its approval of and conformity with the facilities.

A copy of the last three reports listed above will be submitted to the Grantor.

7. SERVICE EXECUTION SCHEDULE

The maximum period for the service execution is the one indicated in the Contract, counted from the day following the date of subscription of the consultancy service.

The Supervision Company shall start its work since the beginning of the transmission system engineering project.

In case the deadline has to be extended, the Parties shall come to an agreement in this regard.

8. INFORMATION FACILITIES AND SUPERVISION

The Concession Holder shall provide to the Supervision Company any documentation requested by it.

These Terms of Reference, in general, consider the obligations that must be fulfilled by the Concession Holder, the same that are established in the SGT Concession Contract “500 kV La Niña-Piura Link, and Associated Substations, Lines And Expansions”, included in Annex No. 1 “Technical Project Specifications” and Annex No. 2 “Project Verification Procedure”.

Annex No. 12

TABLE OF PENALTIES

The Concession Holder shall pay the penalties stipulated in this annex, in the amount and the number of times indicated below, for which the procedure set out in Clause 11 shall be followed. All penalties are independent and cumulative.

1. For each calendar day the beginning of the Commercial Start-Up is delayed, as set out in Annex No. 7, and taking into account the deadline extensions granted pursuant to Clause 4.3 and Clause 10, the Concession Holder shall pay the Grantor a penalty that will be calculated as follows:
 - c) USD 50 000 (fifty thousand dollars), for each one of the first thirty (30) calendar days of delay.
 - d) USD 100 000 (one hundred thousand dollars), for each one of the thirty (30) calendar days of delay following the period of time set out in a).
 - e) USD 150 000 (one hundred and fifty thousand dollars), for each one of the ninety (90) calendar days of delay following the period of time set out in b).

The calculation of the penalty will start the calendar day following the expiry of the deadline foreseen for the Commercial Start-Up.

2. For the breach or partial, late or defective compliance with the provisions of the arbitration award issued as a result of the dispute referred to in the third paragraph of Clause 11 of the Contract, or in the communication referred to in the second paragraph of that same clause -as the case may be- the Concession Holder shall pay the Grantor the amount equivalent to fifteen percent (15%) of the prevailing Rate Base in, without prejudice to its duty to comply with the arbitration award in its own terms.
3. In case any of the grounds for termination of the Contract indicated in subparagraph c) of Clause 13.1 takes place, and it has not been remedied as set out in Clause 13.4.2, the Concession Holder shall pay a penalty equivalent to the amount of the Performance Bond of the Contract or Operating Bond, without prejudice to the decision the Grantor could make regarding the termination of the Contract.

In the event that the Concession Holder has remedied the situations of breach as set out in Clause 13.4.2, the penalty shall be an amount equivalent to one thirtieth (1/30) of the amount of the Performance Bond of the Contract or Operating Bond, as the case may be, for each day the remediation of the non-compliance is delayed.

4. In case any of the situations that comprise the grounds for termination indicated in Clause 13.8 takes place, the procedure set out in such clause shall be applied.
5. For not extinguishing and/or releasing each one of the guarantees, liens and encumbrances that could exist on the liabilities, rights and assets of the Concession, the Concession Holder shall pay for each calendar day of delay a penalty equivalent to zero point five percent (0.5%) of the prevailing Rate Base.